Minebea intec
The true measure

Operating instructions

Weight Controller CSD-912

Translation of original operating instructions 949905091200 Edition 1.1.0 03/04/2022

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Foreword

Must be followed!

Any information in this document is subject to change without notice and does not represent a commitment on the part of Minebea Intec unless legally prescribed. This product should only be operated/installed by trained and qualified personnel. In correspondence concerning this product, the type, name, and release number/serial number as well as all license numbers relating to the product have to be cited.

Note

Table of contents

1 Introduction

1.1 Read the manual

- Please read this manual carefully and completely before using the product.
- This manual is part of the product. Keep it in a safe and easily accessible location.

1.2 This is what operating instructions look like

1. - n. are placed before steps that must be done in sequence.

▶ is placed before a step.

▷ describes the result of a step.

1.3 This is what lists look like

- indicates an item in a list.

1.4 This is what menu items and softkeys look like

[ ] frame menu items and softkeys.

Example:

[Start]- [Applications]- [Excel]

1.5 This is what the safety instructions look like

Signal words indicate the severity of the danger involved when measures for preventing hazards are not followed.

⚠ DANGER

Warning of personal injury

DANGER indicates death or severe, irreversible personal injury which will occur if the corresponding safety measures are not observed.

▶ Take the corresponding safety precautions.

⚠ WARNING

Warning of hazardous area and/or personal injury

WARNING indicates that death or severe, irreversible injury may occur if appropriate safety measures are not observed.

▶ Take the corresponding safety precautions.

⚠ CAUTION

Warning of personal injury.

CAUTION indicates that minor, reversible injury may occur if appropriate safety measures are not observed.

▶ Take the corresponding safety precautions.

NOTICE

Warning of damage to property and/or the environment.

NOTICE indicates that damage to property and/or the environment may occur if appropriate safety measures are not observed.

▶ Take the corresponding safety precautions.

Note:

User tips, useful information, and notes.

1.6 Hotline

Phone: +49.40.67960.444

Fax: +49.40.67960.474

eMail: help@minebea-intec.com

2 Safety instructions

2.1 General information

Thank you for purchasing the Weight Controller CSD-912.

This Operating instructions describes how to use the device and provides other useful information.

Incorrect handling may cause the device to malfunction.

Read this Operating instructions thoroughly in advance to ensure correct use.

Store this Operating instructions in a location that is readily accessible to end users.

Note:

Describes precautions and provides other information on operation and settings for the CSD-912. Read these indications to avoid malfunction.

2.2 Intended use

The device is intended for use of the analysis device for weighing functions.

Product operation, commissioning and maintenance must be performed by trained and qualified personnel who are aware of and able to deal with the related hazards and take suitable measures for self-protection.

The device reflects the state of the art.

The manufacturer does not accept any liability for damage caused by third-party system components or due to incorrect use of the product. The use of this product signifies recognition of the stipulations listed above.

2.3 For safe operation

2.3.1 Location of installation

NOTICE

Warning of damage to property and/or the environment.

Do not install in the following locations.

▶ To do so may damage the device.

- Places exposed to direct sunlight and/or high temperatures
- Places with high humidity
- Places where the device may be subject to vibrations or mechanical shocks
- Environments contaminated with dust and/or coarse particulates
- Environments containing corrosive gases or salt
- Environments subject to sudden temperature and/or humidity fluctuations
- Near devices that generate magnetic fields or electromagnetic waves
- Environments vulnerable to radioactivity or radioactive rays
- Laboratories or other environments where chemical reactions take place

Set up an operation control panel if the instrument is used in the following locations:

- Places exposed to water and/or spillages
- Places contaminated with dust and/or fine particles

NOTICE

Risk of malfunctions

Use the instrument under the following conditions of temperature and humidity.

- ▶ Environmental temperature: 0°C to 40°C.
- ▶ Environmental humidity: Less than 85 % R. H. or less (Non condensing)

2.3.2 Installing the instrument

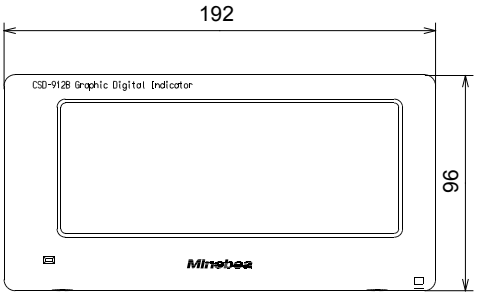
NOTICE

Warning of damage to property and/or the environment.

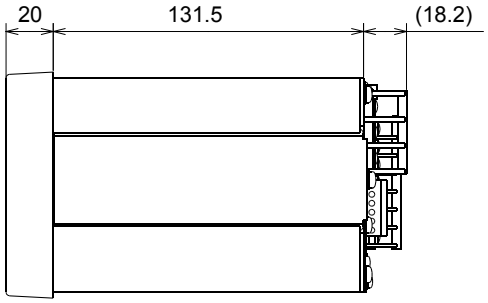
- ▶ Install CSD-912 based on the following dimensions.
- ▶ Ensure sufficient space around the instrument.

The following are the dimensions of CSD-912 and the clearance required.

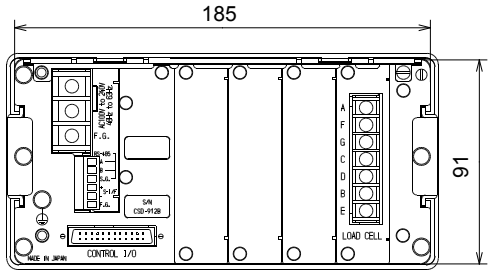
Front



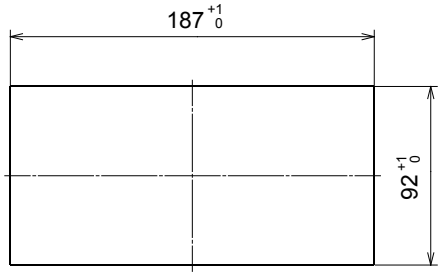
Side



Rear



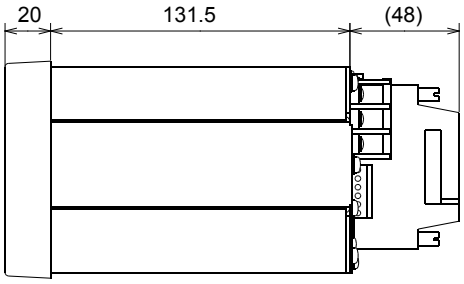
Panel cut size



all dimensions in mm

The following are the side dimensions when BCD output is connected.

Other connectors attached for external control input/output have the same dimensions as the BCD output.

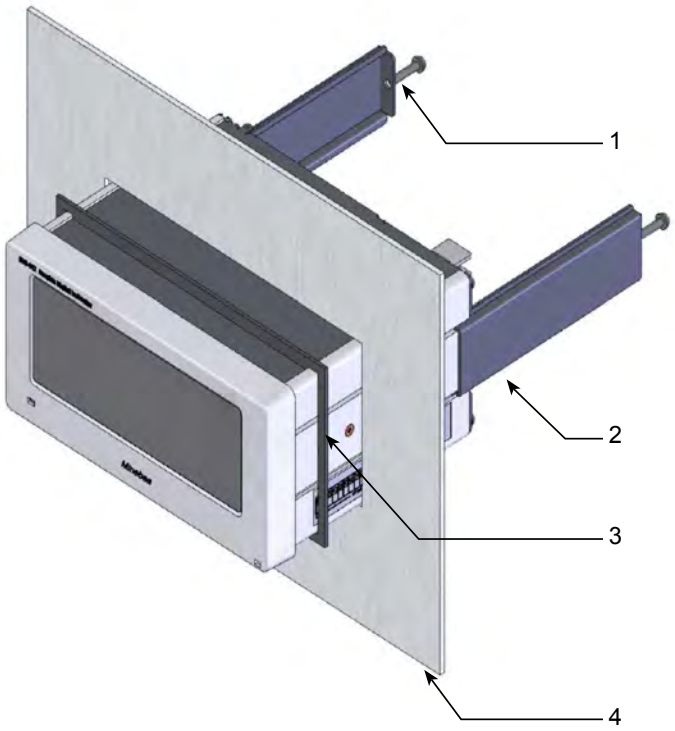


all dimensions in mm

If the CSD-912 is exposed to water or dust, use the attached panel mount gasket between the control board (cabinet) and the body.

The panel mount gasket ensures the front panel section of CSD-912 is dustproof and waterproof in compliance with IP65 (International Protection Code).

Carefully check the direction of the panel mount gasket so as not to install it upside-down. Install the gasket in a upright position and make sure that it is not twisted.



1	2× screw (M4×12)
2	Panel mounting metal
3	Panel mount gasket (dustproof/waterproof)
4	Control cabinet

2.3.3 Power supply

⚠ WARNING

Working on the instrument while it is switched on may have life-threatening consequences.

If the power is ON, the operator may get an electric shock or the device may be damaged.

- Check that the power supply is OFF when installing cables.
- Before switching on the power, check that the supplied power is identical to the device voltage/specifications. Please contact a Minebea Intec sales or service office if they do not match.
- Failing to check the above may cause damage to the device or result in electric shock.

⚠ WARNING

Working on an ungrounded instrument may have life-threatening consequences.

If the instrument is not grounded, the instrument may malfunction or the operator may receive an electric shock.

- It is essential to ground the device with grounding wire.

2.3.4 Operating precautions

⚠ CAUTION

Warning of personal injury and damage to property.

Incorrect wiring may falsify weighing results, lead to malfunction of the instrument, damage peripheral equipment or lead to critical accidents.

- Check that all wires are connected properly before use CSD-912.

NOTICE

Warning of damage to property.

Falsify weighing results, malfunction of the instrument or damage to peripheral equipment are possible.

- Calibrate the instrument before first-time use or when replacing the load cells.
- Recalibrate if problems persist after calibration.

NOTICE

Warning of damage to property.

Falsify weighing results, malfunction of the instrument or damage to peripheral equipment are possible.

- Do not change device settings during measurement.

NOTICE

Warning of damage to property.

Impact or shock may damage the instrument or cause electrical circuit failures.

- ▶ Protect the device from impact and shock. Do not strike the device with any other object.

⚠ CAUTION

Warning of personal injury and damage to property.

Negative impact on human health due to incorrect handling of chemicals are possible.

- ▶ Handle chemicals with great care.
- ▶ If the display surface gets dirty, wipe it gently with a soft cloth or a cloth moistened with neutral detergent or a small amount of ethyl alcohol.

⚠ CAUTION

Warning of personal injury.

Damaging the display may cause leakage of liquid crystal.

- ▶ Keep the liquid crystal away from your eyes and mouth.
- ▶ Wash away any liquid that adheres to your body immediately with soap.

⚠ CAUTION

Warning of personal injury and damage to property.

- ▶ Install the instrument based on the specified dimensions and clearance stipulations.

NOTICE

Warning of damage to property.

Damage to the case or the liquid crystal display, or effect durability and operability are possible.

- ▶ Do not disassemble the instrument, except for operations allowed in this manual, such as removing the liquid crystal display.

NOTICE

Warning of damage to property.

Damage to the touch panel and effect durability and operability are possible.

- ▶ Do not handle the display with excessive force.
- ▶ Do not push or scratch the display, such as with a screwdriver.

Note:

Avoid displaying a fixed pattern for a long time as this may cause persistence of vision.

Choose [BACK-LIGHT OFF TIMER] if displaying a fixed pattern for a long time.

2.3.5 Conformed standards

CSD-912 complies with the following standards.

EN61326: 2013	Electrical equipment for measurement, control and laboratory use — EMC requirements Immunity test requirements for equipment intended for use in industrial locations
EN61010-1: 2010	Electrical equipment for measurement, control and laboratory use — EMC requirements
EN50581: 2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
JIS B 7611-2: 2015	Non-automatic weighing instruments — Metrological and technical requirements and tests — Part 2: Measuring instruments used in transaction or certification

⚠ CAUTION

Warning of personal injury and damage to property.

Strictly observe the following conditions of use to comply with CSD-912 standards. Otherwise, the device may not conform to the above standards.

- Shield processing: Use shield cables for all cables except for the power cable. Refer to the sections on wiring for more information about the shield processing method.
- Grounding: D-class single grounding using the protective earth terminal.

NOTICE

Warning of damage to property.

Strictly observe the following conditions of use to comply with CSD-912 JIS (Japanese Industrial Standards). Otherwise, the device may not conform to the above standards.

- Set ["JIS B 7611-2: 2009" SET] to [VALID], to ensure the value of each item of the basic function settings is compatible with "JIS B 7611-2: 2009"

Functions	Setting value	Remarks
A/D SAMPLING RATE	200 TIMES/s	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [200 TIMES/s] or less, the value remains unchanged.
ANALOG FILTER	4 Hz	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [4 Hz] or less, the value remains unchanged.

Functions	Setting value	Remarks
DIGITAL FILTER	16	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [16] or more, the value remains unchanged.
STABILIZATION FILTER	40	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [40] or more, the value remains unchanged.
STABILIZATION FILTER TIME	0.5	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [0.5] or less, the value remains unchanged.
STABILIZATION FILTER BAND	2.0	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [2.0] or more, the value remains unchanged.
STABILIZATION DETECTION TIME	1.0	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [1.0] or more, the value remains unchanged.
STABILIZATION DETECTION BAND	2.0	If the value that was set before ["JIS B 7611-2: 2009" SET] is set to [VALID] is [2.0] or less, the value remains unchanged.
RANGE OF ZERO	2%	-
ZERO TRACKING BAND	0.0	-
ZERO TRACKING TIME	0.0	-
OPERATION OF TARE	IN STABLE MODE	in stable mode
RANGE OF TARE	0 < GROSS ≤ WEIGHING CAPACITY	0 < gross ≤ maximum load (Max)
PRINT COMMAND	IN STABLE MODE	in stable mode
OPERATION OF STABILITY	WEIGHING SCREEN ONLY	weight display only
OL DISPLAY CONDITION	-20 D to 9 D	-
NET WEIGHT SIGN INVERSE	INHIBIT	locked

3 Product overview

This chapter gives an overview of CSD-912.

3.1 Features of CSD-912

CSD-912 is a weighing controller with graphical digital display. It displays signals from a load cell as weighing values for various weighing systems.

The CSD-912 has various functions, for example, to indicate weighing status using display lamps, to control weighing operations and to extend weighing systems by connecting external devices.

Color liquid-crystal touch panel

The CSD-912 display adopts a wide-viewing-angle 6.2-inch TFT color liquid-crystal touch panel with high visibility.

The CSD-912 can be operated by touching the display directly, without complex, time-consuming button operations.

Status display using display lamps

The lamps light to indicate the current status of the CSD-912 and its weighing operation and can be recognized at a glance.

Register up to 100 brands

Brands are objects for weighing. The user registers numerical values for each object to control weighing. Brands registered in advance facilitate weighing by changing brands when the object to weigh changes. Recipes of more than one brand can be registered, too. Up to 100 brands can be registered.

Versatile weighing modes

The CSD-912 has three weighing modes. Modes can be selected to suit the weighing system and purpose of weighing.

Graphical display of weighing values

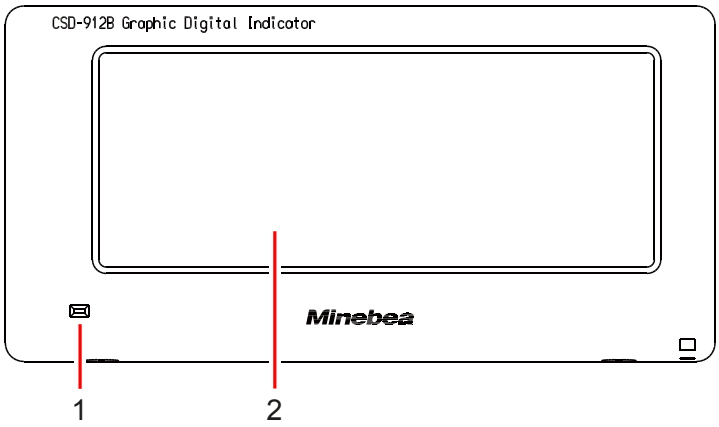
Weighing values are displayed as graphs. This illustrates the change in weighing values, which easily identifies weighing status and malfunctions.

Connection to external devices

The CSD-912 has terminal boards and connectors for external devices. Such external devices as a host computer, a printer and an indicator can be connected to the CSD-912 in accordance with the weighing system used.

3.2 Names and functions of parts

3.2.1 Front panel

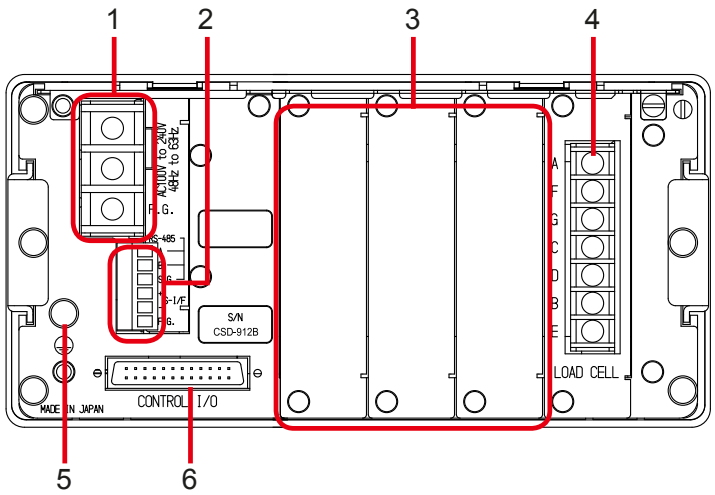


1	**Power LED** The LED lights when the CSD-912 power is on. The LED is off when the power of CSD-912 is off.
2	**Display** Various information is displayed, including weighing values and lamp status. CSD-912 can be operated by tapping the touch panel display.

Note:

The CAL switch inside the housing prevents calibration results from being changed. Refer to Chapter 6.4.6 for more information.

3.2.2 Rear panel



1	**Power supply terminals** Power cable and grounding wire connectors. Refer to Chapter 4.3 for more information.

2	**RS-485 interface terminals, 2-pin method serial interface terminals** Connect the RS-485 interface terminal, usually to a host computer. Refer to Chapter 11.7.3 for more information. Connect the 2-pin method serial interface terminal, usually to a printer and an external indicator. Refer to Chapter 11.2.3 for more information.
3	**Optional parts mounting section** Connectors for analog current output, analog voltage output, BCD output, Profi-Bus, RS-232C and RS-422/485 One optional part can be installed in each of the three available slots. **Note:** - One out of ProfiBus, RS-232C and RS-422/485 can be installed. - Duplicate optional parts cannot be mounted.
4	**Load cell terminals** Load cell terminals Connection for the load cell signal line. Refer to Chapter 4.2 for more information. **Note:** If the bridge power voltage is 12 V DC, up to 4 load cells (350 Ω) can be connected.
5	**Protective earth terminal** Connection for grounding wire to eliminate noise, including static electricity The protective earth terminal is linked internally to the power supply terminal. Refer to Chapter 4.3 for more information.
6	**External control input/output connector** External control input/output connector Connects an external control input/output Input and output are available for up to 11 points each. Refer to Chapter 11.3.1 for more information.

4 Wiring

This chapter describes how to connect load cells and power sources.

4.1 Precautions for wiring

Keep the following in mind when connecting CSD-912 with a load cell.

- Turn off the power to CSD-912 before wiring (refer to Chapter 5.1).
- Do not turn on the power to CSD-912 until all wiring is complete.
- The terminal boards are made from resin. Do not drop them or subject them to impacts.
- Install and use the attached acrylic cover for the terminal boards.
- The tightening torques for terminal screws on the terminal boards are listed below.

Terminal board	Tightening torque for screws
Power supply	1.4 Nm
Load cell	0.6 Nm

- Applicable solderless terminals are as follows.

Terminal board	Solderless terminal width	Applicable solderless terminal
Power supply	6.2 mm or less	1.25-3/Y type 1.25-3.5
Load cell	9.0 mm or less	1.25-4, 2-4/Y type 1.25-4, 2-4

- Be sure to connect a grounding wire. Grounding should be D-class single grounding.

  Do not use a common grounding with the power supply system.
- Isolate the cables connected to CSD-912 from noise sources, such as power supply lines and external control input/output.
- Use dedicated conduit wiring not shared with other lines.
- Use a shield cable line for wiring the external control input/output. Connect the shield to the F.G. terminal of the power supply terminal board.

4.2 Connection with load cells

The CSD-912 needs to be connected to a load cell to facilitate weighing.

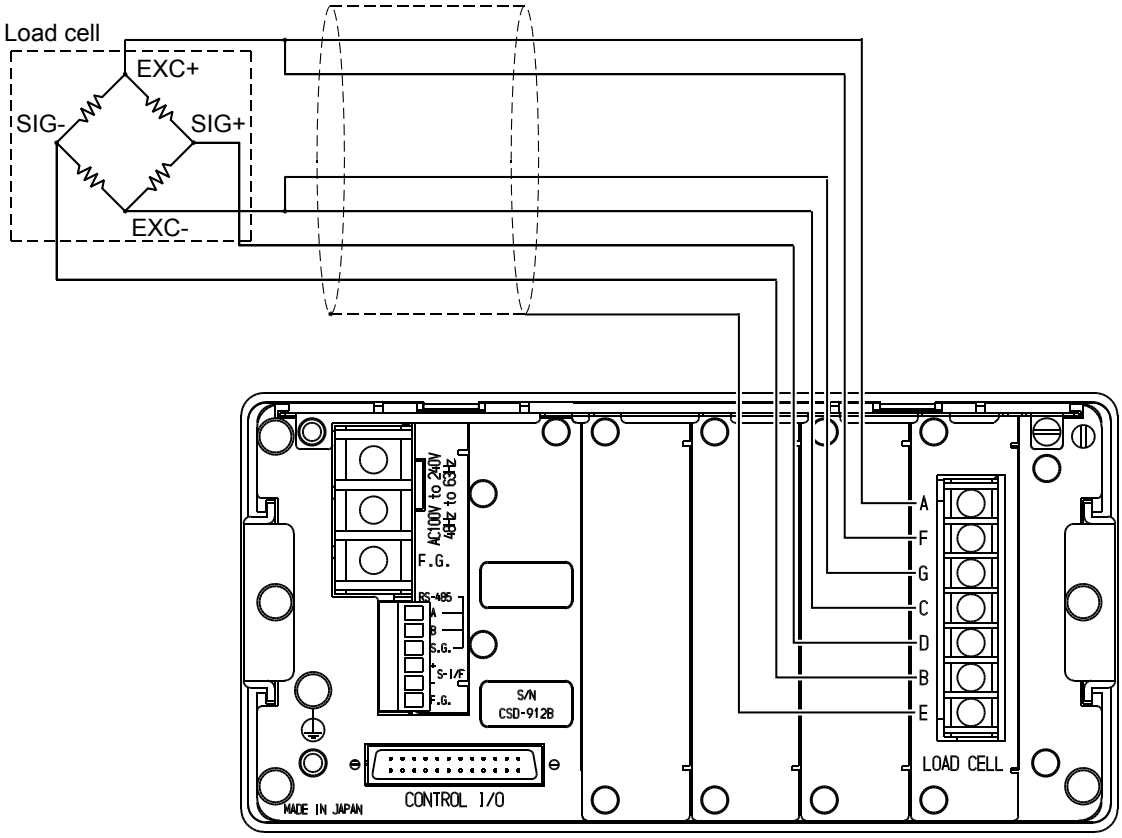
Examples of CSD-912 connected with load cells are given below.

4.2.1 6-wire connection cable

Connect CSD-912 to a load cell using a 6-wire cable as follows.

Note:

The colors listed here apply for the Minebea Intec load cell and connection cables of type "PR ..."



A	+ EXC	Load cell power supply V+	**red**
F	+ SEN	Sense S+	**white**
G	– SEN	Sense S–	**black**
C	– EXC	Load cell power supply V–	**blue**
D	+ SIG	Load cell signal (meas. voltage) M+	**green**
B	– SIG	Load cell signal (meas. voltage) M–	**gray**
E	SHIELD	Screen	**yellow**

Note:

- Be sure to bridge Sense+ and Sense- close to the load cell.

  If bridged Sense+ and Sense- close to the device, the sense function will not work.
- If the 6-wire cable length ≥100 m: It is possible that the resistance of the cable will cause the sense function of the device to not work correctly, resulting in accuracy outside of our guaranteed accuracy.
- To display the tensile direction of a tension-type and compression/tension-type load cell in positive values (+), connect the load cell signal + (green) and the load cell signal – (gray) to terminals B and D, respectively, of the load cell terminal board.

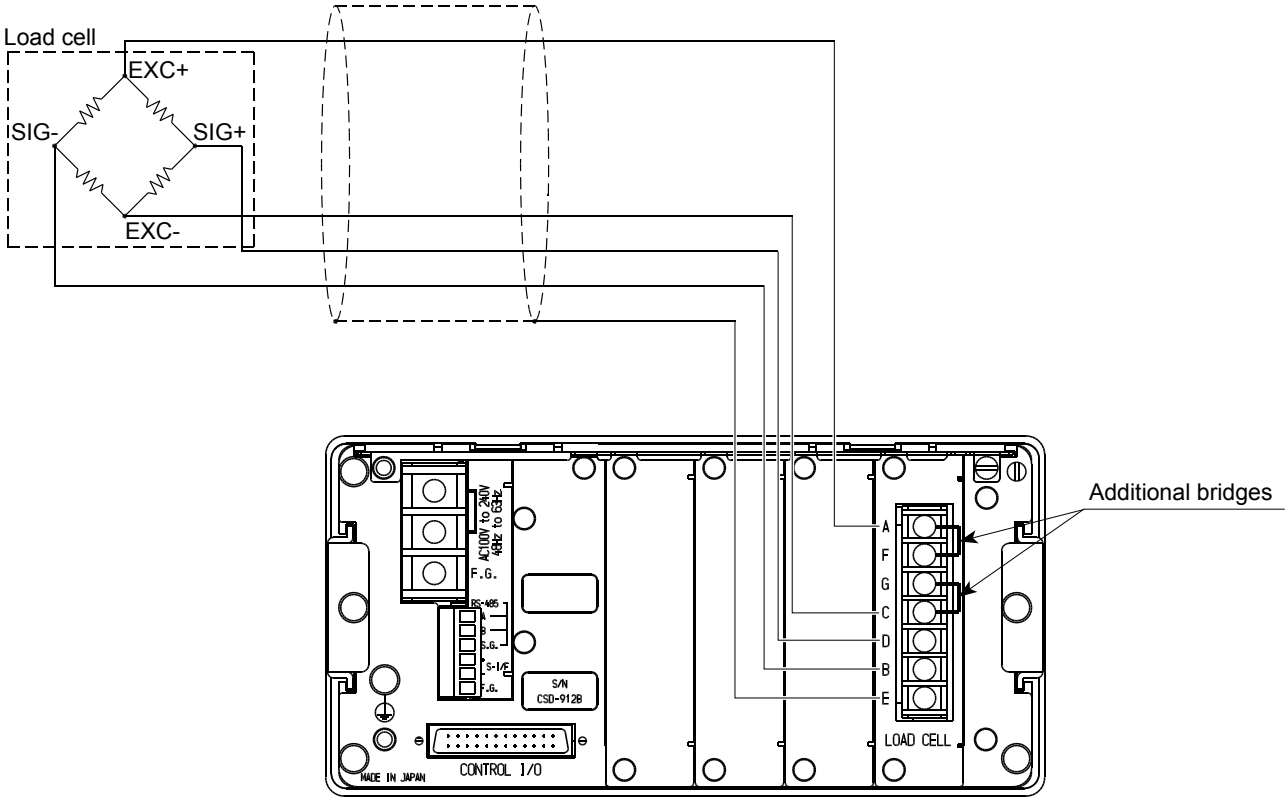
  If the wire colors are different from those of Minebea Intec standard cables, refer to the specification of the load cell.

4.2.2 4-wire connection cable

Connect CSD-912 to a load cell using a 4-wire cable as follows.

Note:

The colors listed here apply for the Minebea Intec load cell and connection cables of type "PR ..."



A	+ EXC	Load cell power supply V+	**red**
F	+ SEN	Sense S+	**white**

G	– SEN	Sense S–	**black**
C	– EXC	Load cell power supply V–	**blue**
D	+ SIG	Load cell signal (meas. voltage) M+	**green**
B	– SIG	Load cell signal (meas. voltage) M–	**gray**
E	SHIELD	Screen	**yellow**

Note:

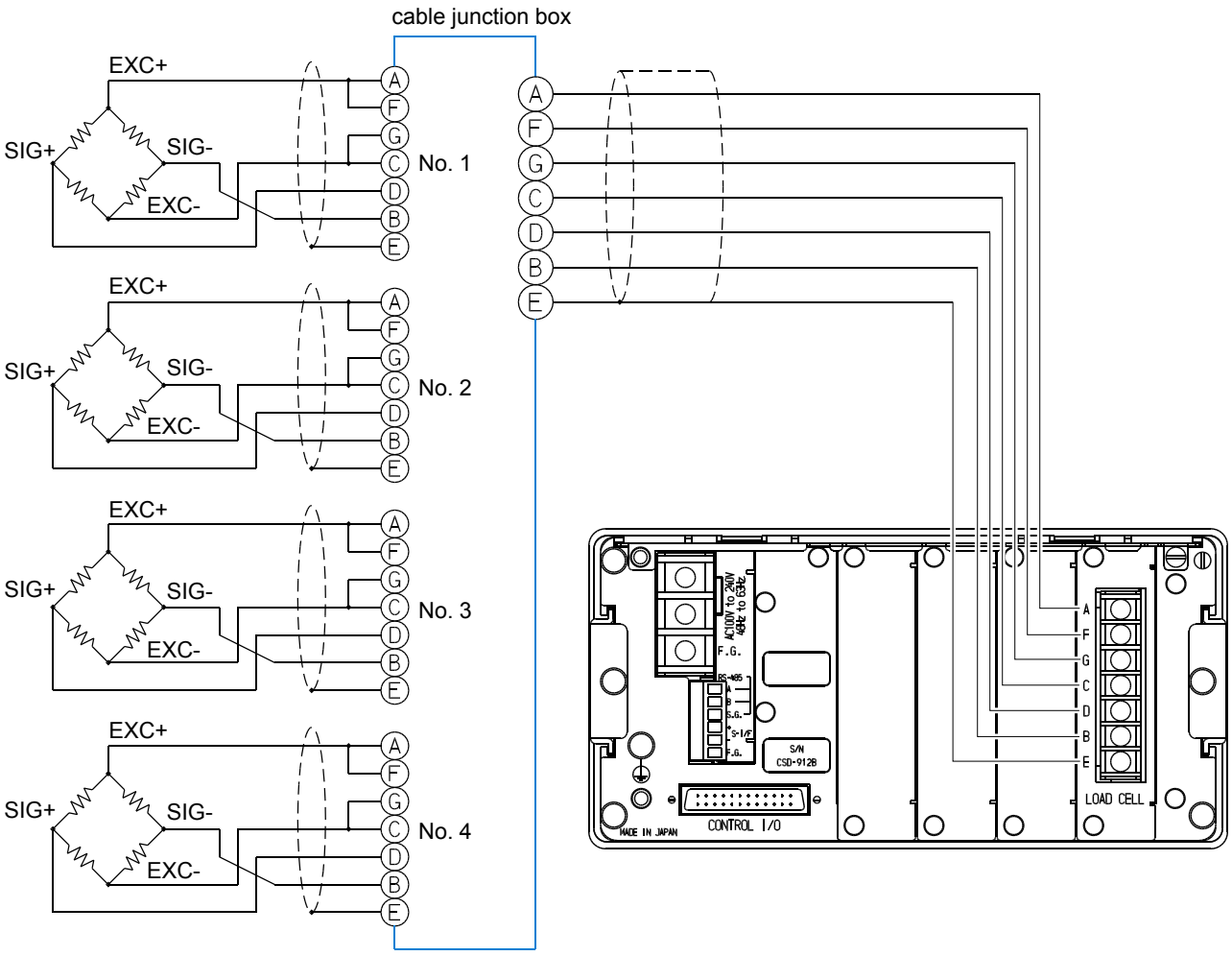
- When using a 4-wire cable, be sure to short between **A**-**F** and **C**-**G** on terminal block with the additional bridges. This device will not operate normally if terminals **F** and **G** are used in their open state.
- If the 4-wire cable ≥30 m: It is possible that the resistance of the cable will cause the input voltage of the device to decrease, resulting in accuracy outside of our guaranteed accuracy.

4.2.3 Connecting load cells in parallel

More than one load cell can be connected in parallel for use as a hopper scale or a truck scale. Cable junction box realizes easy parallel connection.

Note:

The colors listed here apply for the Minebea Intec load cell and connection cables of type "PR ..."

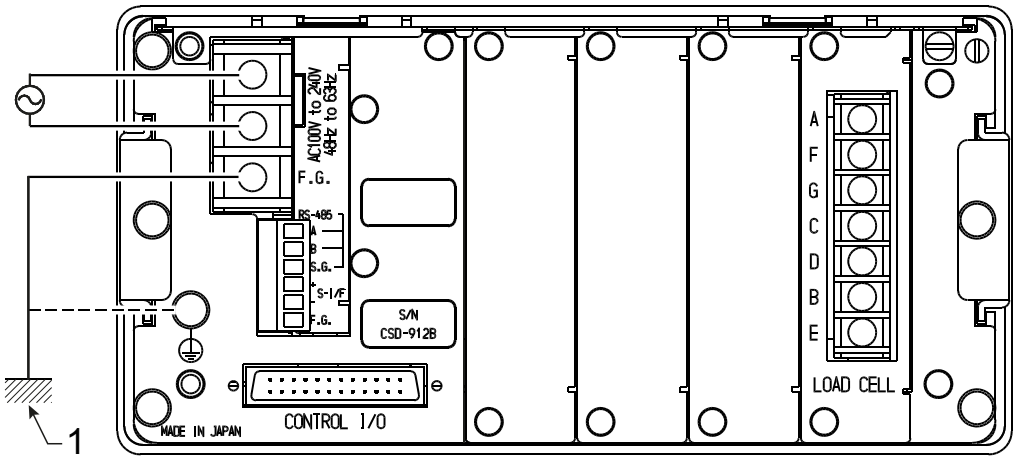


A	+ EXC	Load cell power supply V+	**red**
F	+ SEN	Sense S+	**white**
G	– SEN	Sense S–	**black**
C	– EXC	Load cell power supply V–	**blue**
D	+ SIG	Load cell signal (meas. voltage) M+	**green**
B	– SIG	Load cell signal (meas. voltage) M–	**gray**
E	SHIELD	Screen	**yellow**

4.3 Connection with power supply and the ground

Connect and ground the power supply with the terminals on the rear panel shown as below figure.

100 V AC to 240 V AC (Permissible range: 85 V AC to 264 V AC)



(1) D-class single grounding

⚠ CAUTION

Warning of personal injury.

- ▶ Connect the power supply and the ground correctly as shown in the figures and use within the prescribed power supply conditions (refer to Chapter 14.3.4).
- ▶ Since the CSD-912 does not have a power switch, a circuit breaker, etc. may need to be installed.

Note:

- Grounding should be D-class single grounding. Otherwise, noise from other devices may cause malfunctions.
- Perform single grounding with a protective earth terminal to ensure the device is compatible with CE mark applicable standards and JIS standards.

5 Basic operation

This chapter describes basic operations of CSD-912.

5.1 Power on/off

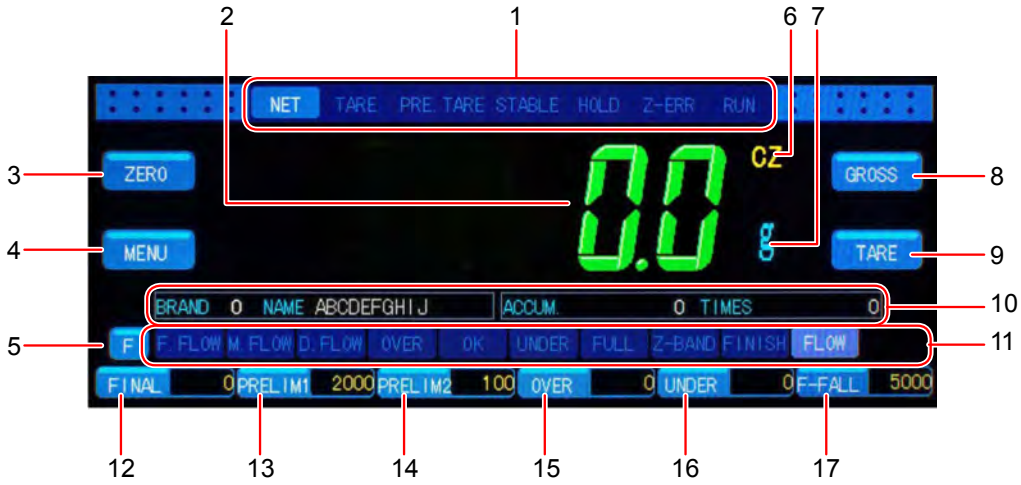
The CSD-912 does not has a switch to turn the power on/off.

Connect the power cable to a power supply to turn on the power.

Disconnect the power cable from the power supply to turn off the power.

5.2 How to read the display

Turning on, the CSD-912 displays the weight display.



1	**Status of CSD-912** The display changes according to operational state of CSD-912. [GROSS]/[NET] Displays [GROSS] if the weighing value is a gross weight. Displays [NET] if the weighing value is a net weight. [TARE] Lit when [TARE] is performed. [PRE. TARE] Lit when [PRE. TARE] is performed. [STABLE] Lit when the weighing value is stable. [HOLD] Lit when CSD-912 retains setting value comparison results for [BRAND CODE] and weighing values or data output from an external device. [Z-ERR] Lit when the [ZERO] key is touched although zero points cannot be set, or when the [TARE] key is touched although tare cannot be performed. [RUN] Lit when CSD-912 is carrying out weighings.
2	**Display of weight values** Displays [GROSS] (weight value including the weight of the container) or [NET] (weight value excluding the weight of the container). Displays [OL] when overloaded. Displays [OVF] when the A/D converter input exceeds its limit.

3	**[ZERO]** key Records the present weight value as the zero point and adjusts the weight value display to zero. Refer to Chapter 7.10.1 for more information about how to record zero points.
4	**[MENU]** key Displays menu screen. Refer to Chapter 5.4 for more information about the menu screen.
5	**[F]** key Switches the displays of the keys (12) to (17) between the function keys. Refer to Chapter 9.4.1 for more information about function key setting.
6	**CZ display** Displays [CZ] when the weight value display is zero and the weight value is within ±1/4 of the minimum scale value. Indicates that the present weight value is CZ ([CENTER OF ZERO]).
7	**[UNIT] display** Displays the currently set unit. Refer to Chapter 9.1.4 for more information about setting units.
8	**[GROSS]/[NET] key** Switches between [GROSS] and[NET] for the weight value display. Press [GROSS] to display gross weights. Press [NET]to display net weights.
9	**[TARE] key** Performs [TARE]. Refer to Chapter 7.10.2 for more information.
10	**Display of [BRAND] information** Displays the number, [NAME], [ACCUM. VALUE] and [ACCUM. TIMES] of the currently selected product. Refer to Chapter 7.2.3 for more information about brands.

11	**Display of weighing states** The display contents change according to weighing states.	
	[F. FLOW]	Lit in case of coarse flow.
	[M. FLOW]	Lit in case of middle flow.
	[D. FLOW]	Lit in case of fine flow.
	[OVER]	Lit when [NET] exceeds the value of "[FINAL]+[OVER]" for [BRAND CODE].
	[OK]	Lit if "[FINAL]-[UNDER]≤ [NET]≤[FINAL]+[OVER]".
	[UNDER]	Lit if the net weight falls below the value of "[FINAL]-[UNDER]" for [BRAND CODE].
	[FULL]	Lit when [GROSS] or [NET] exceeds the value of [FULL] for [BRAND CODE].
	[ZERO BAND]	Lit when [GROSS] or [NET] falls below the value of [ZERO BAND] for [BRAND CODE].
	[FINISH]	Lit when weighing is completed.
	[FLOW]/[DISCH.]	Displays [FLOW] while the weighed object is fed to the weighing hopper. Displays [DISH.] while the weighed object is discharged from the hopper.
	[S-COMP.]/[SEQ.]/[MEAS.]/ [4-COMP.]/[RECIPE]	Indicates the present [WEIGHING MODE]. [S-COMP.]: In case of [SIMPLE COMPARATIVE]. [SEQ.]: Not making a weighing in [SEQUENTIAL MODE]. [MEAS.]: Making a weighing in [SEQUENTIAL MODE]. [4-COMP.]: In case of [4 STEP COMPARATOR]. [RECIPE]: Recipe in [SEQUENTIAL MODE].
12	**[FINAL] key** Sets the value of [FINAL] for the currently selected [BRAND].	
13	**[PRELIM1] key** Sets the value of [PRELIM1] for the currently selected [BRAND].	
14	**[PRELIM2] key** Sets the value of [PRELIM2] for the currently selected [BRAND].	
15	**[OVER] key** Sets the value of [OVER] for the currently selected [BRAND].	
16	**[UNDER] key** Sets the value of [UNDER] for the currently selected [BRAND].	
17	**[F-FALL] key** Sets the value of [F-FALL] for the currently selected [BRAND].	

Note:

Refer to Chapter 7.2.3 for more information about the values of (12)-(17).

5.2.1 Character display pattern

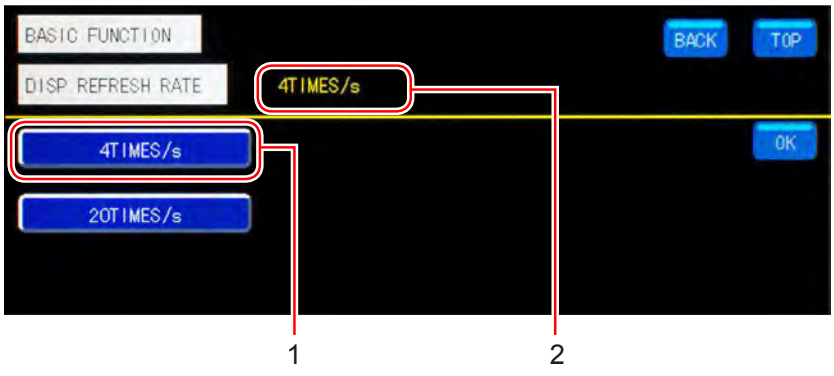
The display pattern in seven segments indicator of this device is shown in the table below.

0	0	D	d	Q	q
1	1	E	E	R	r
2	2	F	F	S	s
3	3	G	G	T	t
4	4	H	H	U	u
5	5	I	I	V	v
6	6	J	J	W	w
7	7	K	K	X	x
8	8	L	L	Y	y
9	9	M	M	Z	z
A	A	N	n	?	?
B	b	O	o	!	!
C	C	P	P	-	-

5.3 Item selection

CSD-912 has a touch panel display. To select items, directly touch keys and buttons on the display.

Example: Set [DISP. REFRESH RATE] to [4 TIMES/s].



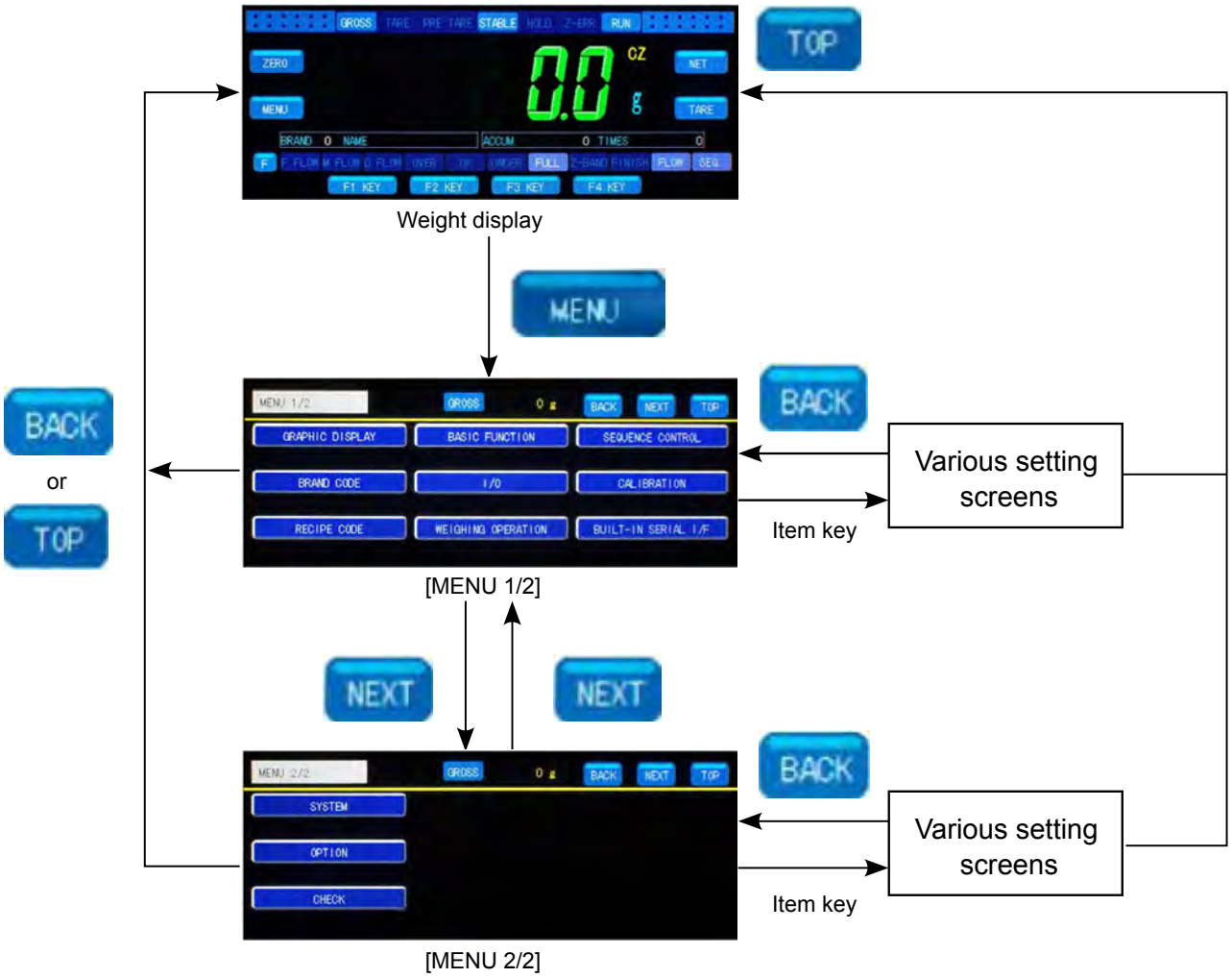
1	Touch the item.
2	The item you have selected appears.

5.4 How to switch screens

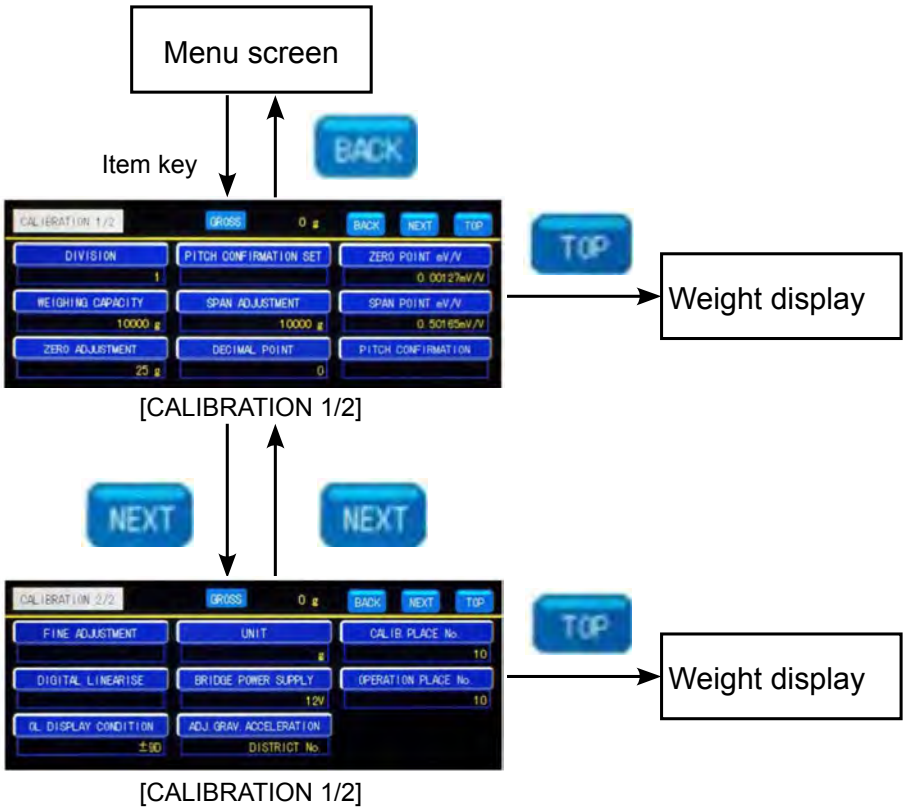
CSD-912 initially displays the weight display, switching to the menu display, which accesses various setting screens.

The menu display and some setting screens consist of more than one page. In this case, "current page/total pages" is displayed next to the screen name (such as 1/2 or 1/4). Switch pages to find the item to be set.

The following shows how to display the menu display and how to switch pages.



The following shows how to display various setting screens and how to switch pages. (The following example uses the calibration screen.)



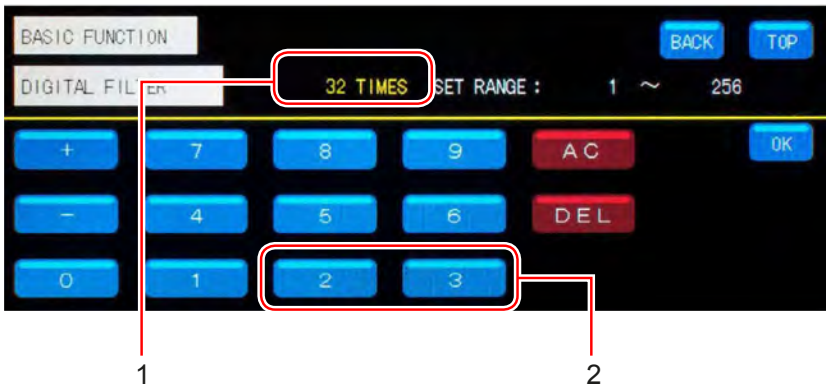
Note:

- Displayed menus to be displayed differ according to vary with the weighing mode.
- Some setting screens have only one page.

5.5 Input of numerical values

Select an item to set with numerical values and the screen to enter the numerical values is displayed. Use the numerical keypad to enter numerical values.

Example: Set [DIGITAL FILTER] to 32 times



1	The entered values appear.
2	Tap the numerical key [3], then tap [2].

Note:

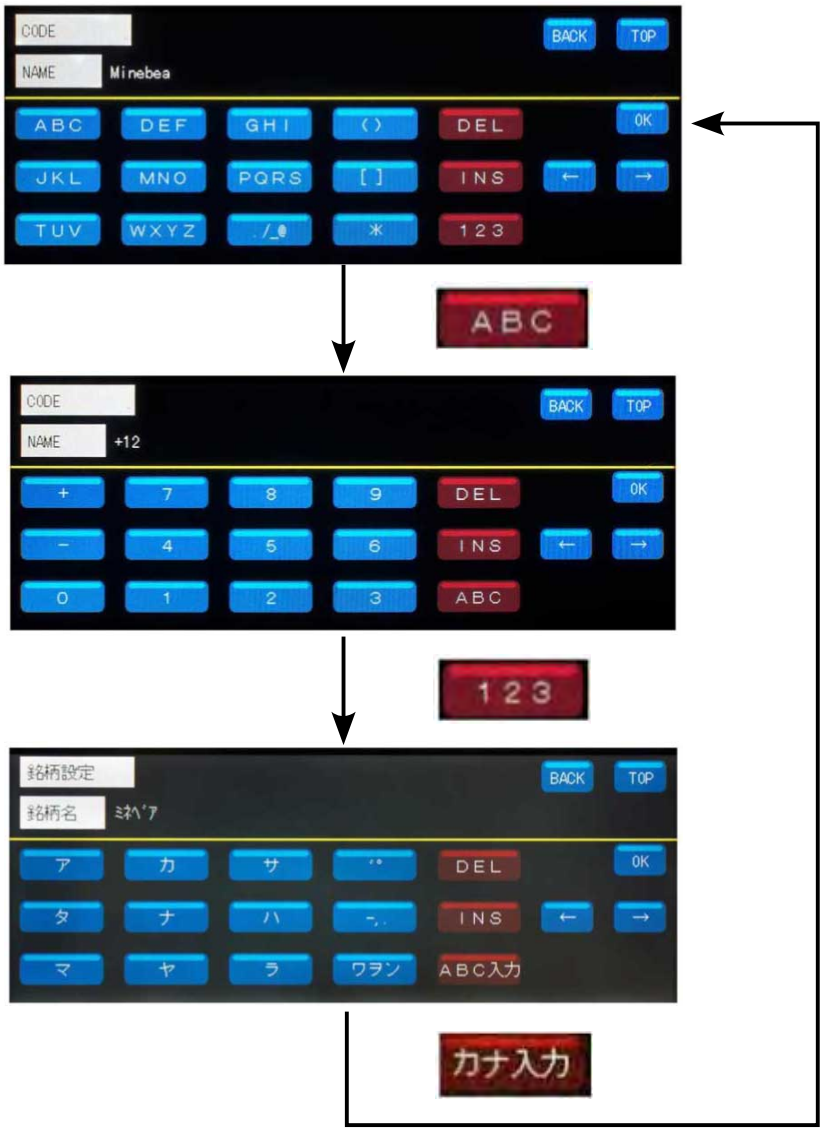
- Tap the [AC] key to delete all entered numerical values.
- Tap the [DEL] key to delete the rightmost and smallest numerical value. In the above example, tapping the [DEL] key deletes [2] and tapping the key again deletes [3].

5.6 Input of characters

Select an item to set, such as names, and the screen to enter the characters is displayed. Three input types are available in the character entry screen:

- katakana input
- alphabetical character input
- numerical character input

Switch between the input types as follows:



5.6.1 Input of katakana

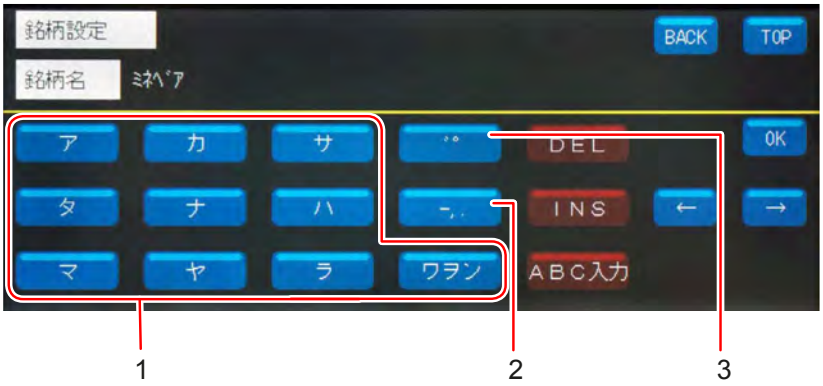
Katakana can be entered on the kana input screen. The characters of the Japanese "ア" to "ワ" columns, voiced/semi-voiced sound marks and punctuation marks are allocated to the numeric keypad. Press the key of the column that contains the required katakana until it appears.

Example: Characters allocated to [ア]

ア→イ→ウ→エ→オ→ア→イ→ウ→エ→オ

Example: To enter "ミネベア"

Tap [マ] twice. →Tap [ナ] four times. →Tap [ハ] four times. →Tap [゛ ゜] once. →Tap [ア] once.



1	Input of katakana
2	Input of punctuation marks
3	Input of voiced/semi-voiced sound marks

5.6.2 Input of alphabetical characters and symbols

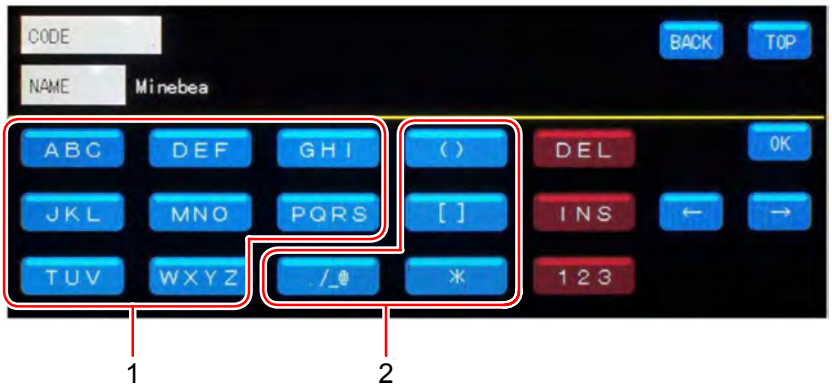
Alphabetical characters and symbols can be entered on the alphabetical character input screen. Capital and lower-case letters are allocated to the numeric keypad. Press the key for an alphabetical character or symbol until it appears.

Example: Characters allocated to [ABC]

A→B→C→a→b→c

Example: To enter "Minebea,"

Tap [MNO] once →Tap [GHI] six times →Tap [MNQ] five times →Tap [DEF] five times →Tap [ABC] five times →Tap [DEF] five times →Tap [ABC] four times



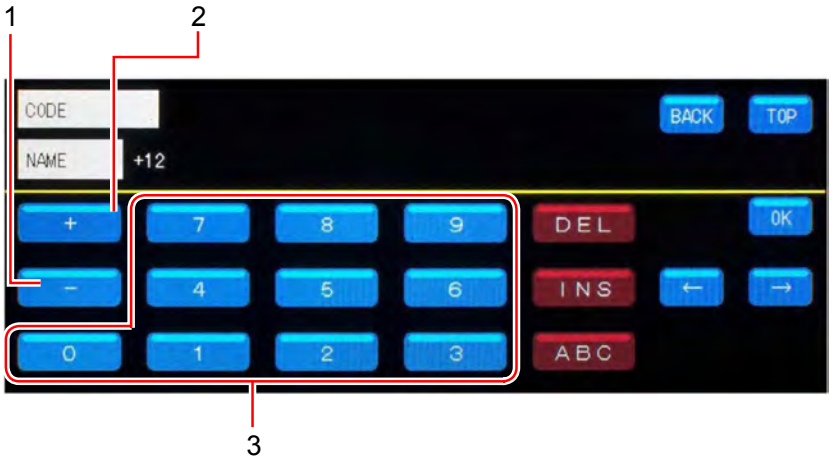
1	Input of alphabetical characters
2	Input of symbols

5.6.3 Input of numerical characters

Numerical characters, +, /, and - can be entered on the numeric character input screen. Numerical characters, +, /, and - are allocated to the numeric keypad. Press the keys of the numeric characters, +, /, and - to enter.

Example: To enter "+12"

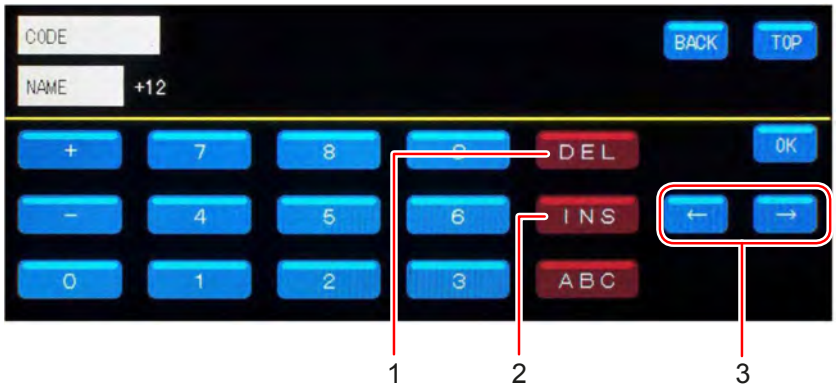
Tap [+] →Tap [1] →Tap [2]



1	Input –
2	Input +
3	Input of numerical characters

5.6.4 Other keys

In addition to the numerical keypad for entry of characters, such operations as delete entered characters or move the cursor can be carried out on the character input screens.



1	**[DEL]** Delete the character on which the cursor is placed

2	**[INS]** Switch between overwrite mode and insert mode. Tap[INS] to hold down a key and switch to insert mode. Tap[INS] again to cancel insert mode and switch to overwrite mode. In overwrite mode, the character on which the cursor is placed is overwritten. In insert mode, a character is inserted to the left of the cursor.
3	**[←] [→]** Move the cursor from side to side.

6 Calibration

This chapter describes how to calibrate CSD-912 and to make fine calibration after calibration.

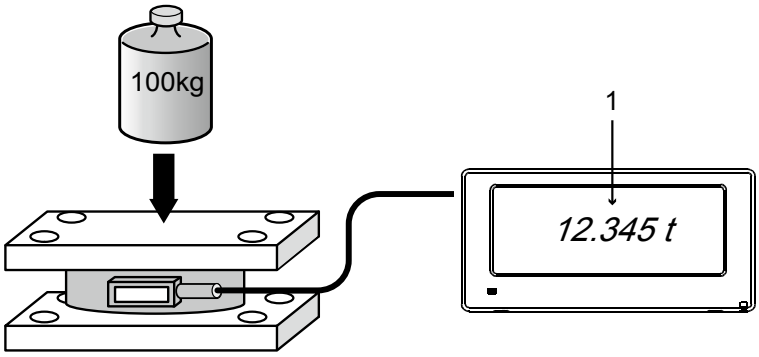
6.1 About calibration

Calibration is the process of matching the weight of the load cell with the display value of CSD-912. It is carried out to ensure that electric signals from the weighing device (load cell) are accurately displayed on CSD-912.

Without calibration, CSD-912 cannot display accurate load values. Calibrate the instrument after configuring the weighing system.

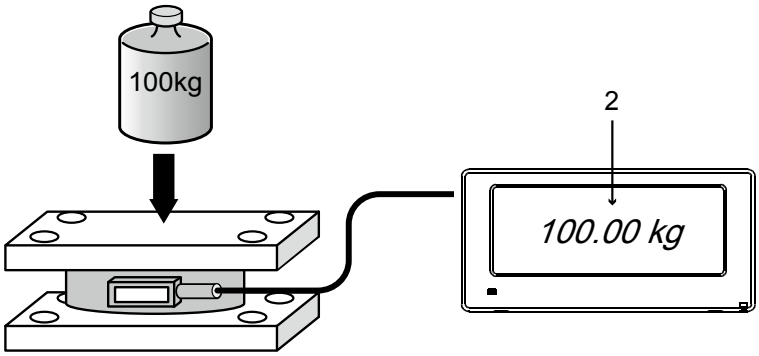
Example: Place a 100 kg weight on the load cell.

Without calibration:



The weight value, unit, position of decimal point, etc., are not displayed accurately.

With calibration:



The accurate weight value is displayed. The units and position of decimal point are properly displayed, too.

Note:

Recalibrate CSD-912 if the operational environment changes after calibration.

6.2 Calibration flow

Display calibration screen	Display calibration screen from menu display.
⇩	
Set [BRIDGE POWER SUPPLY]	Set the voltage (DC) to apply to the load cell.
⇩	
To stabilize CSD-912 and load cell, energize for about 10 minutes.	
⇩	
Set [DIVISION] (min. scale interval)	Set the minimum unit for weighing values
⇩	
Set the [WEIGHING CAPACITY]	Set the maximum load (Max) that can be weighed by the weighing part (load cell)
⇩	
[ZERO ADJUSTMENT]	Register the zero point of the weighing part (load cell). Read the output value of the load cell with no load on the weighing device (initial state including the weight of an empty container), or set the output voltage value of the load cell.
⇩	
[SPAN ADJUSTMENT]	Register the SPAN of the weighing part (load cell). Read the output value of the load cell with a weight on the weighing part, or set the value calculated by deducting the output voltage value at zero point from the output voltage value at the load cell's SPAN.
If CSD-912 requires calibration, use the settings below (see Chapter 6.4).	
Fine calibration of zero point	Carry out fine calibration of the zero point
Fine calibration of SPAN	Carry out fine calibration of the SPAN
[DIGITAL LINEARIZATION]	Correct the weighing disparities between the zero point and the SPAN.
[PITCH CONFIRMATION SET]	Register the A/D count value of an arbitrary load as the pitch point to complete calibration and verification.

Gravitational acceleration correction	Correct SPAN errors caused by changes in CSD-912 location between calibration and use.
Calibration lock	Lock calibration settings to protect them from changes.

6.3 Calibration

Before weighing, perform [CALIBRATION] following the steps below. Carry out [CALIBRATION] on the calibration screen. Tap [CALIBRATION] on [MENU 1/2] to display the calibration screen.

1	Tap [CALIBRATION].
2	The calibration screen is displayed.

Note:

- Before starting [CALIBRATION], confirm that the load cell is connected by CSD-912.
- The calibration screen consists of two pages. Refer to Chapter 5.4 for more information about how to switch pages.

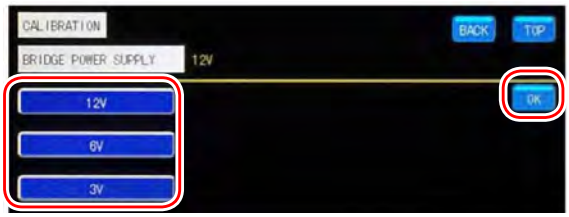
6.3.1 Setting the bridge power supply

Set the voltage (DC) to apply to the load cell.

Display the [BRIDGE POWER SUPPLY]setting screen

1. Tap [BRIDGE POWER SUPPLY] on [CALIBRATION 2/2].
   ▷ The [BRIDGE POWER SUPPLY] setting screen is displayed.

Set the [BRIDGE POWER SUPPLY]



2. Select [BRIDGE POWER SUPPLY]

   Selection items: 12 V, 6 V, 3 V ; Default: 12 V

Note:

Select a voltage that is within the load cell's recommended excitation range.

---

3. Tap [OK]
   ▷ [BRIDGE POWER SUPPLY] has been set. [CALIBRATION 2/2] is displayed.

Confirm settings

4. Confirm the [BRIDGE POWER SUPPLY]settings

   The setting is complete if the item set in step 2 appears under [BRIDGE POWER SUPPLY].

Note:

- Set the [BRIDGE POWER SUPPLY] as follows for weighing systems using a zener barrier.

  Example: 6-wire connection cable, Load cell: 350 Ω type

System configuration	[BRIDGE POWER SUPPLY] (DC)		
	12 V	6 V	3 V
One load cell + Zener barrier	X	O	O
Two load cells + Summing type junction box + Zener barrier	X	X	O
Three load cells + Summing type junction box + Zener barrier	X	X	O
Four load cells + Summing type junction box + Zener barrier	X	X	O

  O: Can be used; X: Cannot be used

- To stabilize CSD-912B and the load cell, energize for about ten minutes after setting [BRIDGE POWER SUPPLY].

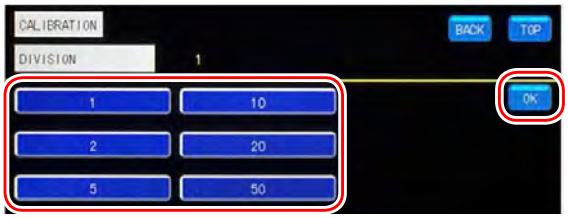
6.3.2 Setting the division (minimum scale)

Set the minimum unit for weight values.

Display the [DIVISION] setting screen

1. Tap [DIVISION] on [CALIBRATION 1/2].
   ▷ The [DIVISION] setting screen is displayed.

Set [DIVISION]



2. Select [DIVISION]

   Selection items: 1, 2, 5, 10, 20, 50; Default: 1

3. Tap [OK]
   ▷ [DIVISION] has been set.[CALIBRATION 1/2] is displayed.

Confirm settings

4. Confirm the [DIVISION]settings.

   The setting is complete if the item set in step 2 appears under [DIVISION].

6.3.3 Setting the max. load (Max)

Set maximum load (Max).

Display the [WEIGHING CAPACITY] setting screen

1. Tap [WEIGHING CAPACITY] on [CALIBRATION 1/2].

   ▷ The [WEIGHING CAPACITY] setting screen is displayed.

Set the [WEIGHING CAPACITY]

2. Enter the [WEIGHING CAPACITY]

   Permissible range: 0.0001 to 99.999

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ [WEIGHING CAPACITY] has been set. [CALIBRATION 1/2] is displayed.

Confirm settings

4. Confirm the [WEIGHING CAPACITY]settings

   The setting is complete if the value set in step 2 appears under [WEIGHING CAPACITY].

Note:

To stabilize the weight value display, enter settings that ensure display resolution ([WEIGHING CAPACITY] ÷ [DIVISION]) is 10 000 or less.

6.3.4 Zero calibration

Register the load cell output value when the load is zero

The following two methods can be used for [ZERO ADJUSTMENT].

- Reading the weight value (initial load value)

  Read the load cell output value with no load on the weighing part to register it as the zero point.

- Entering the numerical value of the output voltage.

  Enter the load cell output voltage value when the load is zero to register it as the zero point.

In normal operational environments, perform [ZERO ADJUSTMENT] by reading the weight value (initial load value).

Perform [ZERO ADJUSTMENT] by entering the numerical value of the output voltage value only when an object that cannot be removed is on the weighing part (an empty container cannot be included in the initial state).

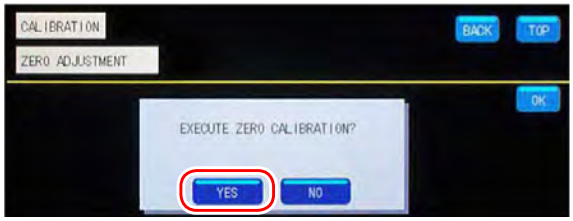
6.3.4.1 Reading the weight value (initial load value)

Prior to[ZERO ADJUSTMENT], make sure that there is no load on the weighing part (load cell).

Perform [ZERO ADJUSTMENT]

1. Tap [ZERO ADJUSTMENT] on [CALIBRATION 1/2]
   ▷ The [ZERO ADJUSTMENT] screen is displayed.

2. Tap [OK]
   ▷ [EXECUTE ZERO CALIBRATION?] is displayed.



3. Tap [YES].
   ▷ Reading of the weighing value begins.

Note:

To cancel [ZERO ADJUSTMENT], tap [NO] then tap [BACK] or [TOP].

If [CALIBRATION 1/2] is displayed after [ZERO] blinks on the load display section, [ZERO ADJUSTMENT] is complete.

6.3.4.2 Entering the numerical value of the output voltage

Enter the load cell output voltage value when the load is zero to register it as the zero point of the load cell.

The accuracy of zero calibration by entering output voltage is approximately 1/1,000. When greater precision than 1/1 000 is required, perform SPAN calibration by reading weight data (initial load values).

Display the [ZERO POINT] registration screen mV/V

1. Tap [ZERO POINT mV/V] on [CALIBRATION 1/2].

   The pre-shipment calibration value or the previous calibration appears under [ZERO POINT mV/V].

▷ The output voltage setting screen is displayed.

Set the output voltage

2. Enter the output voltage value to register.

   Unit: mV/V; Permissible range: -2.500 00 to 2.500 00

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ The output voltage value has been registered. [CALIBRATION 1/2] is displayed.

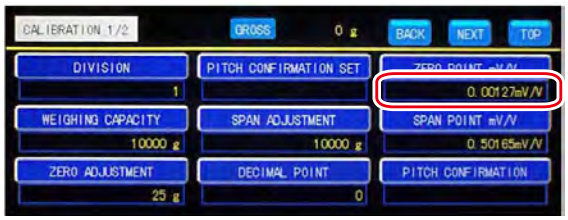
Note:

The following errors blink for about two seconds if a numerical value outside the permissible range is entered. Reset the numerical value within the permissible range.

rE-L [TE-L]: The input numerical value is less than -2.5.

rE-H [TE-H]: The input numerical value is more than 2.5.

Confirm settings



4. Confirm the value of [ZERO POINT mV/V].

   The setting is complete if the value set in step 2 appears under [ZERO POINT mV/V].

6.3.5 SPAN calibration

Register the SPAN of the weighing part (load cell).

The following two methods can be used for SPAN calibration:

- Reading weight data.

  Read the load cell output value with a weight on the weighing part to register it as the SPAN.

- Entering the numerical value of the output voltage.

Deduct the output voltage value at zero point from the load cell's output voltage when the maximum load is applied.

Then enter the value to register it as the SPAN.

Perform [SPAN ADJUSTMENT] by reading the weight data if a weight is available.

Perform [SPAN ADJUSTMENT] by entering the numerical value of the output voltage if a weight is not available.

6.3.5.1 Reading the weight data

Prior to [SPAN ADJUSTMENT], place a weight on the weighing device. To reduce calibration errors, use a weight equal to or more than 2/3 of [WEIGHING CAPACITY].

Display the [SPAN ADJUSTMENT]screen

1. Tap [SPAN ADJUSTMENT] on [CALIBRATION 1/2]
   ▷ The [SPAN ADJUSTMENT] screen is displayed.

Enter the mass of the weight

2. Enter the weight mass on the weighing device

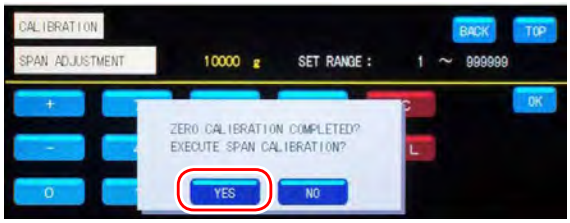
Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]
   ▷ [ZERO CALIBRATION COMPLETED?] and [EXECUTE SPAN CALIBRATION?] are displayed.

Perform [SPAN ADJUSTMENT]



4. Tap [YES].

Note:

To cancel [SPAN ADJUSTMENT], tap [NO] then tap [BACK] or [TOP].

If [CALIBRATION 1/2] is displayed after [SPAN] blinks on the load display section, [SPAN ADJUSTMENT] is complete.

6.3.5.2 Entering the numerical value of the output voltage

Deduct the output voltage value at zero point from the load cell's output voltage when the maximum load is applied. Then enter the value to register it as the SPAN point.

The accuracy of SPAN calibration by entering output voltage is approximately 1/1 000. When greater precision than 1/1 000 is required, perform SPAN calibration by reading weight data.

Display the [SPAN POINT mV/V] registration screen

1. Tap [SPAN POINT mV/V] on [CALIBRATION 1/2].

   The pre-shipment adjustment value or the previous calibration appears under [SPAN POINT mV/V].

   ▷ The output voltage setting screen is displayed.

Set the output voltage value

2. Enter the value calculated by deducting the output voltage value corresponding to the zero point from the output voltage value corresponding to [WEIGHING CAPACITY]

   Unit: mV/V; Permissible range: 0.00001 to 3.10000

3. Tap [OK]

   ▷ The output voltage has been set. [CALIBRATION 1/2] is displayed.

Note:

The following errors blink for about two seconds if a numerical value outside the permissible range is entered. Reset the numerical value within the permissible range.

rE-L [TE-L]: The input numerical value is 0.0 or less.

rE-H [TE-H]: The input numerical value is more than 3.1.

Confirm settings

4. Confirm the value of [SPAN POINT mV/V].

   The setting is complete if the value set in step 2 appears under [SPAN POINT mV/V].

Note:

- The numerical value displayed under [SPAN ADJUSTMENT] is the initial load conversion value for which [ZERO ADJUSTMENT] and [SPAN ADJUSTMENT] are complete. Use this value as the target initial load value (tare weight) after calibration.
- A numerical value may not appear under [SPAN ADJUSTMENT] if it is out of the displayable range, for example, because the initial load value is large and [WEIGHING CAPACITY] is small.

6.4 Fine calibration

Calibrate as needed, for example, any margin of error in weight values.

Settings	Contents	see Chapter
Fine calibration of zero point	Precisely calibrate the margin of error of the weight value with no load on the weighing part (initial load value).	6.4.1

Settings	Contents	see Chapter
Fine calibration of SPAN	Precisely calibrate the margin of error between the mass and the actual weight value.	6.4.2
Digital linearization	Calibrate the margin of error of the weight values.	6.4.3
Pitch confirmation/registration	Register the A/D count value of an arbitrary load as the pitch point to complete calibration and verification.	6.4.4
Gravitational acceleration correction	Correct SPAN errors caused by changes in CSD-912 location between calibration and use.	6.4.5
CAL switch (calibration lock)	Protect calibration results from changes.	6.4.6

6.4.1 Fine calibration of zero point

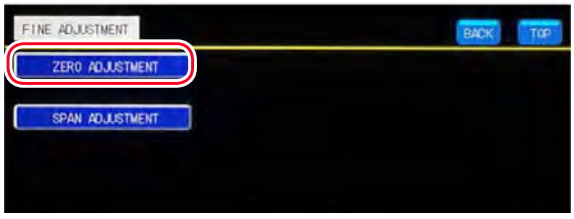
Carry out fine calibration of the zero point if there are differences among weight values with no load on the weighing part (initial load value).

Ensure there is no load on the weighing part (load cell) before adjusting the zero point.

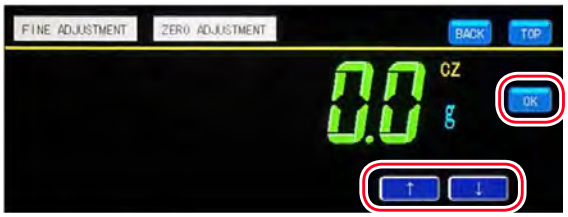
Display [FINE ADJUSTMENT]

1. Tap [FINE ADJUSTMENT] on [CALIBRATION 2/2].
   ▷ [FINE ADJUSTMENT] is displayed.

Carry out fine calibration of the zero point



2. Tap [ZERO ADJUSTMENT].
   ▷ The present weight value appears with 1/10 digit scale intervals.



3. Tap [↑] (increment) or [↓] (decrement) to set the weight value to zero.

Note:

Press and hold [↑] or [↓] to increase or decrease the weight value continuously.

4. Tap [OK]
   ▷ The zero point has been registered, and the weight display is displayed.

6.4.2 Fine calibration of SPAN

Carry out fine calibration of the SPAN if there is a difference between the mass of the weight and the actual weight value.

Before fine calibration of the SPAN, place a weight equal to or less than [WEIGHING CAPACITY] (maximum load) on the weighing part (load cell).

Display the [FINE ADJUSTMENT] screen

1. Tap [FINE ADJUSTMENT] on [CALIBRATION 2/2].
   ▷ [FINE ADJUSTMENT] is displayed.

Carry out fine calibration of SPAN

2. Tap [SPAN ADJUSTMENT].
   ▷ The present weight value appears with 1/10 digit scale intervals.

3. Tap [↑] (increment) or [↓] (decrement) to match the weight value with the massweight

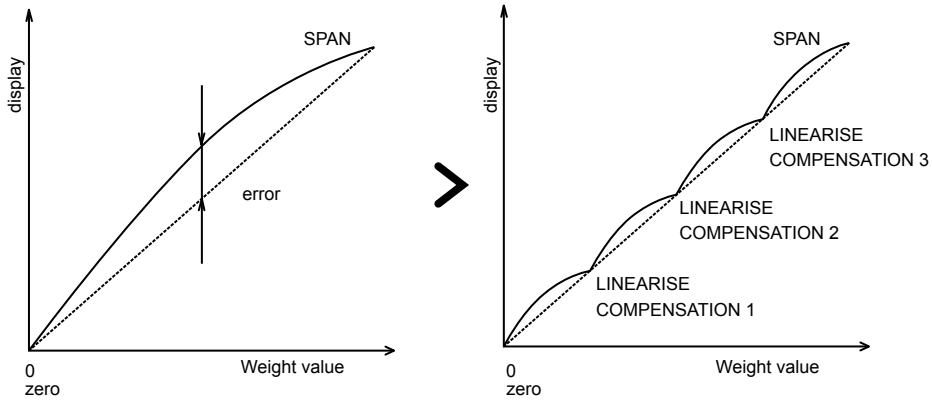
Note:

Press and hold [↑] or [↓] to increase or decrease the weight value continuously.

4. Tap [OK]
   ▷ The SPAN has been registered, and the weight display is displayed.

6.4.3 Digital linearization

There may be a subtle margin of error between the zero point and the SPAN due to influences on the weighing part (load cell). In such cases, measurement errors can be reduced by correcting the data at up to three points, not including the zero point and the SPAN. This is called [DIGITAL LINEARIZATION].



Before [DIGITAL LINEARIZATION] After [DIGITAL LINEARIZATION]

Note:

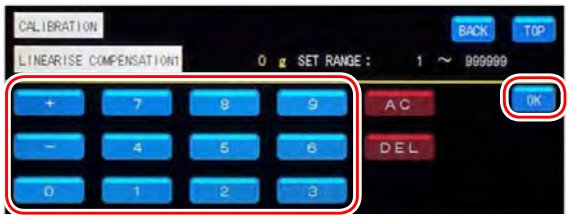
- Weights are used for [DIGITAL LINEARIZATION]. The masses of the weights should be LINEARIZATION COMPENSATION 1 < LINEARIZATION COMPENSATION 2 < LINEARIZATION COMPENSATION3.
- For [DIGITAL LINEARIZATION], use weights equal to or less than [WEIGHING CAPACITY] (maximum load).

Display digital linearization screen

1. Tap [DIGITAL LINEARIZATION] on [CALIBRATION 2/2].
   ▷ The digital linearization screen is displayed.

Carry out compensation

2. Tap [LINEARIZATION COMPENSATION 1].
   ▷ The [LINEARIZATION COMPENSATION 1] screen is displayed.



3. Place a weight with mass equal to the value for the point to be compensated on the weighing part (load cell).
4. Enter the mass of the weight.

Note:

Refer to Chapter 5.5 for more information.

5. Tap [OK]
   ▷ Compensation point 1 is corrected, and the digital linearization screen is displayed.

6. Repeat steps 1 to 4 to perform corrections for compensation points 2 and 3.

Note:

- Set [LINEARIZATION COMPENSATION 2] and [LINEARIZATION COMPENSATION 3] for compensation points 2 and 3, respectively.
- To delete compensation values, tap [LINEARIZATION CLEAR], [VALID] and [OK]. This deletes the compensation values of all points.

6.4.4 Pitch confirmation/registration

After zero calibration, place an arbitrary load on the weighing part (load cell) and register the output A/D count value as a pitch point. Up to six pitch points can be registered.

Normally weighing performance is verified by placing loads in stages up to the span point after calibration. [PITCH CONFIRMATION SET] facilitates simultaneous calibration and verification. [PITCH CONFIRMATION SET] is useful if the mass of the weighed object is large.

Note:

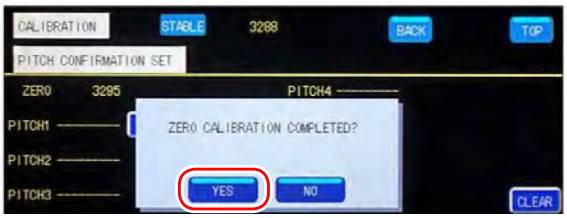
[PITCH CONFIRMATION SET] should be performed after [ZERO ADJUSTMENT] and before [SPAN ADJUSTMENT].

6.4.4.1 Pitch registration

Place an arbitrary load on the weighing part (load cell) and register the output A/D count as a pitch point. For the last pitch point, place a load equal to that of the SPAN point to register it as the SPAN.

Display the[PITCH CONFIRMATION SET] screen

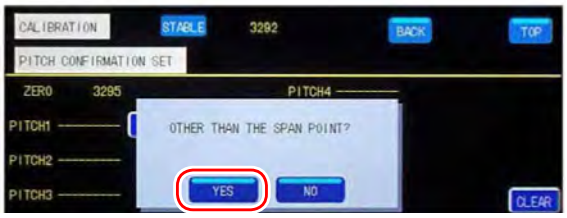
1. Tap [PITCH CONFIRMATION SET] on [CALIBRATION 1/2].
   ▷ [ZERO CALIBRATION COMPLETED?] is displayed.



2. Tap [YES].
   ▷ The[PITCH CONFIRMATION SET] screen is displayed.

Register pitch points

3. Place the load to register for the pitch point on the weighing part (load cell).
   Wait until the [STABLE] lamp is lit on the [PITCH CONFIRMATION SET] screen.
4. Tap [READ] for the number of the pitch to register.
   ▷ [OTHER THAN THE SPAN POINT?] is displayed.

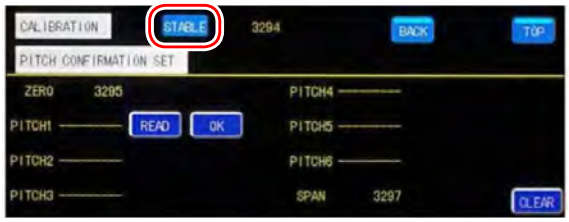


5. Tap [YES].
   ▷ The pitch point is registered, and the A/D count of the load appears.

6. Confirm that the displayed A/D count is correct, then tap [OK].
   ▷ The A/D count of the selected pitch point is confirmed.

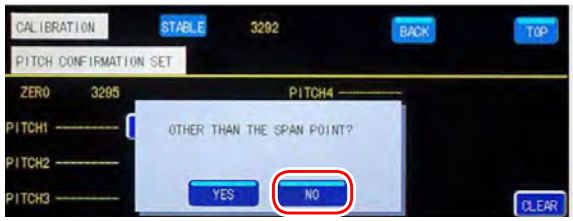
> **Note:**
>
> To register more than one pitch point, repeat step 2.

Register the SPAN point



7. Place a load with the same mass as that of the SPAN point on the weighing device.
   Wait until the [STABLE] lamp is lit on the [PITCH CONFIRMATION SET] screen.

8. Tap [READ] for the number of the last pitch point.
   ▷ [OTHER THAN THE SPAN POINT?] is displayed.



9. Tap [NO].
   ▷ The A/D count of the SPAN appears.

10. Confirm that the displayed A/D count corresponds to the SPAN, then tap [OK].
    ▷ The SPAN is registered.

11. Tap [BACK].
    ▷ The display returns to [CALIBRATION 1/2].

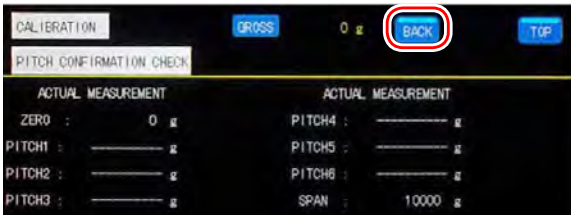
6.4.4.2 Confirm the pitch points

Confirm the A/D count for each registered pitch point.

Display the pitch confirmation screen

1. Tap [PITCH CONFIRMATION] on [CALIBRATION 1/2].
    ▷ The pitch confirmation screen is displayed.

Confirm [ACTUAL MEASUREMENT]



2. Confirm [ACTUAL MEASUREMENT] for the registered pitches.
3. Tap [BACK].
    ▷ The display returns to [CALIBRATION 1/2].

6.4.5 Gravitational acceleration correction

If the CSD-912 calibration location and point of use are remote, SPAN errors occur due to differing gravitational acceleration. Gravitational acceleration correction corrects SPAN errors across two different locations with different gravitational acceleration.

The following two methods can be used for gravitational acceleration correction.

- By specifying [DISTRICT No.]

  Specify [DISTRICT No.] for the calibration location and the point of use to correct SPAN errors.

- By entering numerical values for gravitational acceleration

  Enter the gravitational acceleration values for the calibration location and the point of use to correct SPAN errors.

6.4.5.1 Specify [DISTRICT No.]

Specify [DISTRICT No.] for the calibration location and the point of use to correct SPAN errors.

Select the compensation method by specifying [DISTRICT No.]

1. Tap [ADJ. GRAV. ACCELERATION] on [CALIBRATION 2/2].
   ▷ The [ADJ. GRAV. ACCELERATION] setting screen is displayed.

2. Tap [DISTRICT No.]
3. Tap [OK]
   ▷ [ADJ. GRAV. ACCELERATION] by specifying [DISTRICT No.] is selected, and [CALIBRATION 2/2] is displayed.

Specify [DISTRICT No.] for the calibration location

4. Tap [CALIB. PLACE No.] on [CALIBRATION 2/2].
   ▷ The [DISTRICT No.] setting screen for the calibration location is displayed.

5. Refer to the "Table of gravitational acceleration correction" in Chapter 6.4.5.2 to confirm the calibration location district number.

   Permissible range: 1 to 16 – Default: 10

Note:

Refer to Chapter 5.5 for more information.

6. Tap [OK]
   ▷ The district number of the calibration location is set, and [CALIBRATION 2/2] is displayed.
7. Confirm the calibration location district number.

   Setting is complete if the district number entered appears under [CALIB. PLACE No.].

Enter the gravitational acceleration value for the point of use

8. Tap [OPERATION PLACE No.] on [CALIBRATION 2/2].
   ▷ The [DISTRICT No.] setting screen for the point of use is displayed.

9. Refer to the "Table of gravitational acceleration correction" in Chapter 6.4.5.2 for the [DISTRICT No.] at the point of use.

   Permissible range: 1 to 16 – Default: 10

Note:

Refer to Chapter 5.5 for more information.

10. Tap [OK]
    ▷ [DISTRICT No.] for the point of use is set, and [CALIBRATION 2/2] is displayed.
11. Confirm [DISTRICT No.] for the point of use.

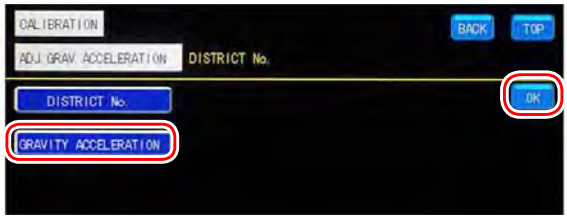
    Setting is complete if the [DISTRICT No.] appears under [OPERATION PLACE No.].

6.4.5.2 Enter numerical values for gravitational acceleration

Enter gravitational acceleration values for the calibration location and the point of use to correct span errors.

Select the compensation method by entering gravitational acceleration values

1. Tap [ADJ. GRAV. ACCELERATION] on [CALIBRATION 2/2].
   ▷ The [ADJ. GRAV. ACCELERATION] setting screen is displayed.



2. Tap [GRAVITY ACCELERATION].
3. Tap [OK]
   ▷ [ADJ. GRAV. ACCELERATION] is selected by entering gravitational acceleration values, and [CALIBRATION 2/2] is displayed.

Enter the gravitational acceleration value for the calibration location

4. Tap [CALIB. PLACE G. A.] on [CALIBRATION 2/2].
   ▷ The gravitational acceleration value setting screen for the calibration location is displayed.

5. Refer to the "Table of gravitational acceleration compensation" for the gravitational acceleration value for the calibration location.

   Permissible range: 9.000 to 9.999 – Default: 9.797

Note:

Refer to Chapter 5.5 for more information.

6. Tap [OK]
   ▷ The gravitational acceleration value for the calibration location is set, and [CALIBRATION 2/2] is displayed.

7. Confirm the gravitational acceleration value for the calibration location.

   Setting is complete if the gravitational acceleration value entered appears under [CALIB. PLACE G. A.].

   Enter the gravitational acceleration value for the point of use

8. Tap [OPERATION PLACE G. A.] on [CALIBRATION 2/2].
   ▷ The gravitational acceleration value setting screen for the calibration location is displayed.

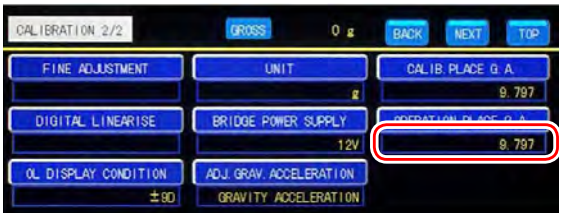
9. Refer to the "Table of gravitational acceleration compensation" for the gravitational acceleration value at the point of use.

   Permissible range: 9.000 to 9.999 – Default: 9.797

Note:

Refer to Chapter 5.5 for more information.

10. Tap [OK].
    ▷ The gravitational acceleration value for the point of use is set, and [CALIBRATION 2/2] is displayed.



11. Confirm the gravitational acceleration value at the point of use.

    Setting is complete if the gravitational acceleration value entered appears under [OPERATION PLACE G. A.].

Table of gravitational acceleration correction

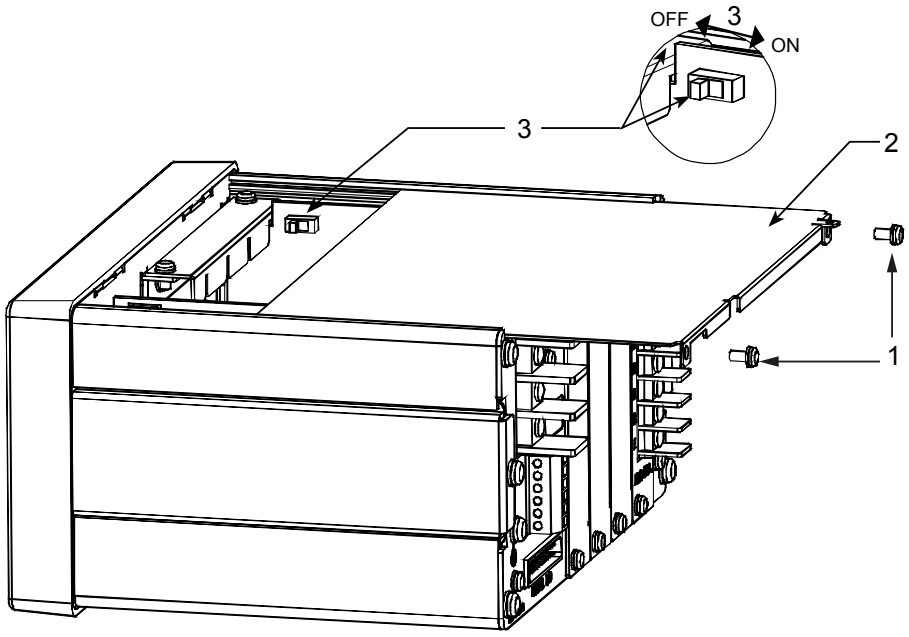
District	District No.	Gravity acceleration
Kushiro, Kitami, Abashiri, Rumoi, Wakkanai, Monbetsu, Nemuro, Souya Branch Administrate, Rumoi Branch Administrate, Abashiri Branch Administrate, Nemuro Branch Administrate, Kushiro Branch Administrate	1	9.806
Sapporo, Otaru, Asahikawa, Yubari, Iwamizawa, Bibai, Ashibetsu, Ebetsu, Akabira, Shibetsu, Furano, Nayoro, Mikasa, Chitose, Takikawa, Sunagawa, Utashinai, Fukagawa, Eniwa, Ishikari Branch Administrate,Shiribeshi Branch Administrate, Kamikawa Branch Administrate, Sorachi Branch Administrate	2	9.805
Hakodate, Muroran, Obihiro, Tomakomai, Noboribetsu, Date, Oshima Branch Administrate, Hiyama Branch Administrate, Iburi Branch Administrate, Hidaka Branch Administrate, Tokachi Branch Administrate	3	9.804
Aomori Pref.	4	9.803
Iwate Pref. Akita Pref.	5	9.802
Miyagi Pref. Yamagata Pref.	6	9.801
Fukushima Pref. Ibaraki Pref. Niigata Pref.	7	9.800
Tochigi Pref. Toyama Pref. Ishikawa Pref.	8	9.799
Gunma Pref. Saitama Pref. Chiba Pref. Tokyo (excluding Hachijo Branch Administrate and Ogasawara Branch Administrate), Fukui Pref. Kyoto Pref. Tottori Pref. Shimane Pref.	9	9.798
Kanagawa Pref. Yamanashi Pref. Nagano Pref. Gifu Pref. Shizuoka Pref. Aichi Pref. Mie Pref. Wakayama Pref. Shiga Pref. Osaka Pref. Hyogo Pref. Nara Pref. Okayama Pref. Hiroshima Pref. Yamaguchi Pref. Tokushima Pref. Kagawa Pref.	10	9.797
Tokyo (Hachijo Branch Administrate), Ehime Pref. Kochi Pref. Fukuoka Pref. Saga Pref. Nagasaki Pref. Oita Pref.	11	9.796
Kumamoto Pref. Miyazaki Pref.	12	9.795
Kagoshima Pref. (excluding Nase and Oshima)	13	9.794
Tokyo (Ogasawara Branch Administrate)	14	9.793
Kagoshima Pref. (Nase and Oshima)	15	9.792
Okinawa Pref.	16	9.791

Note:

For details of gravitational acceleration, refer to "Chronological Scientific Tables" or the gravity data browsing service on the website of the Geospatial Information Authority of Japan, etc.

6.4.6 CAL-switch

Lock calibration settings to protect them from changes. Use the CAL switch to lock the calibration settings.



1. Remove the (two) fixing screws (1) of the upper cover (2).
2. Slide the upper cover (2) toward the rear panel to remove it.
3. Switch the CAL switch (3) ON.

   To release the lock, switch the CAL switch OFF.

Note:

The following functions cannot be changed when calibration is locked.

[CALIBRATION]:

[ZERO ADJUSTMENT], [SPAN ADJUSTMENT], [WEIGHING CAPACITY], [DIVISION] (minimum scale), [ZERO POINT mV/V], [SPAN POINT mV/V], [DECIMAL POINT], [UNIT], [BRIDGE POWER SUPPLY], [OL DISPLAY CONDITION], [ADJ. GRAV. ACCELERATION], [CALIB. PLACE No.], [OPERATION PLACE No.], [CALIB. PLACE G. A.], [OPERATION PLACE G. A.], [FINE ADJUSTMENT], [DIGITAL LINEARIZATION], [PITCH CONFIRMATION SET], [PITCH CONFIRMATION] (see Chapter 6.3, 6.4, 9.1)

Basic function settings:

[A/D SAMPLING RATE], [OPERATION OF ZERO], [RANGE OF ZERO], [TARGET OF ZERO TRACKING], [ZERO TRACKING TIME], [ZERO TRACKING BAND], [OPERATION OF TARE], [RANGE OF TARE], [ZERO AT POWER ON], [ZERO CLR. AT POWER ON], [TARE AT POWER ON], [TARE CLR. AT POWER ON], [OPERATION OF STABILITY], ["JIS B 7611-2: 2009" SET] (see Chapter 7.10, 7.11, 9.2)

7 Weighing

This chapter describes weighing in each mode, operations during weighing and settings related to weighing.

7.1 Weighing mode

CSD-912 has the following three weighing modes to cater to intended use.

- Simple mode ([SIMPLE COMPARATIVE])
- Sequential mode ([SEQUENTIAL MODE])
- 4-step check mode ([4 STEP COMPARATOR])

In simple mode, weighing results are identified by status display lamps. Connected external devices, including host computers and sequencers, enable complex control (such as gate control and monitoring of weighing time).

In sequential mode, CSD-912 independently controls a series of weighing operations from the start to the end of weighing. Various controls, including combinations of multiple weighed objects and nozzle pulling ascent/descent, are available.

In 4-step check mode, weighed objects are classified into groups according to weight.

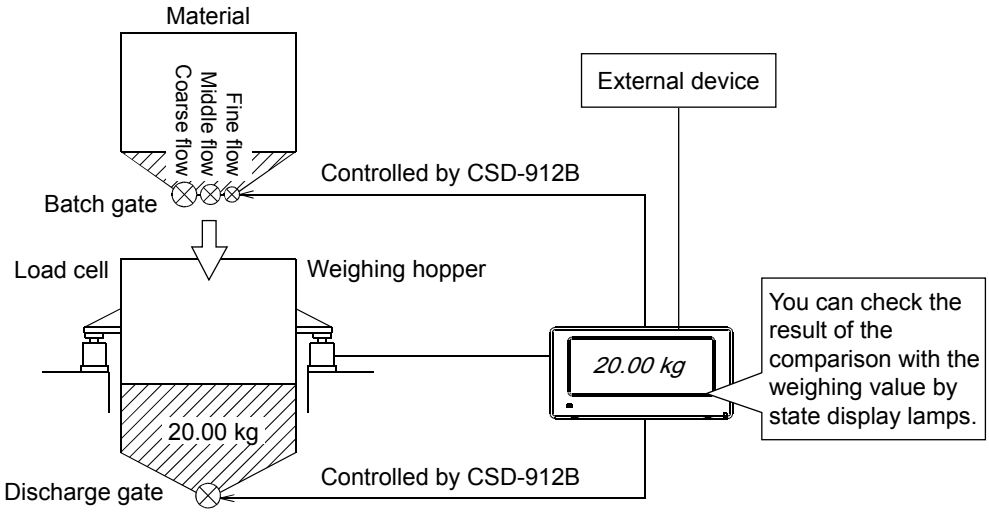
Features of each mode are described below.

7.1.1 Simple mode

In simple mode, CSD-912 constantly compares setting values with actual weight values for each weighed object.

Such comparison results as "The weighed object is insufficient." and "The weighed object satisfies the target quantity." can be confirmed using status display lamps.

External devices need to be connected to control gate open/close, monitoring of weighing time, etc.



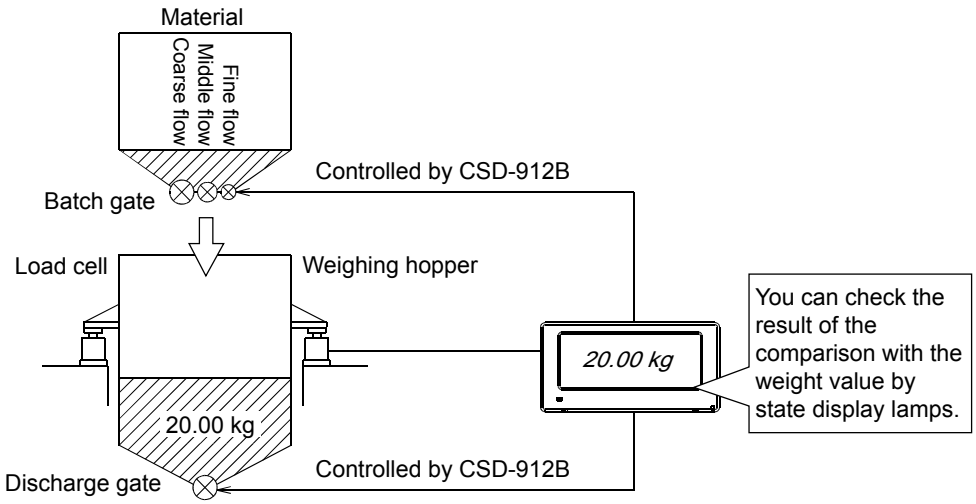
The above diagram shows weighing hopper input weighed in simple mode.

The weighing target depends on the [CONTROL MODE] settings (see Chapter 7.2.2).

7.1.2 Sequential mode

In sequential mode, CSD-912 controls a series of weighing operations, including gate open/close and waiting for weighing value calming. When weighing starts, the gate opens

to feed/discharge the target object and closes according to the increase/decrease in the weighed object. CSD-912 indicates weighing results using status display lamps.



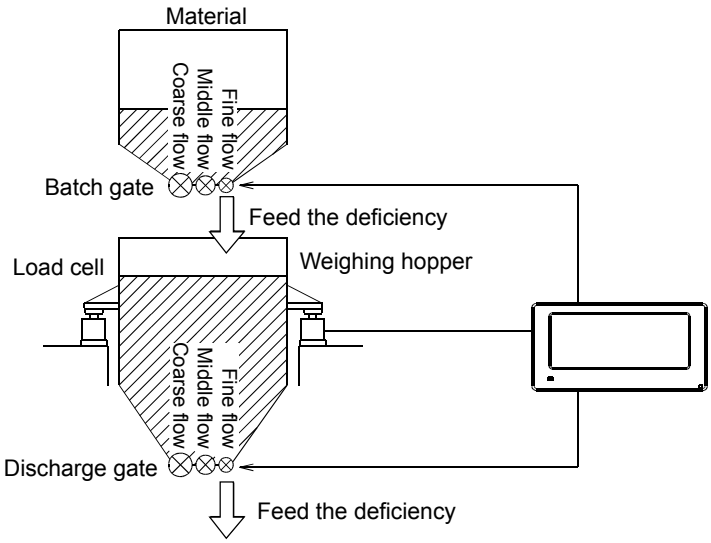
The above diagram shows weighing hopper input weighed in sequential mode. The weighing target depends on the [CONTROL MODE] settings (see chapter 7.2.2).

Enter required settings in advance in [WEIGHING OPERATION] and [SEQUENCE CONTROL] to enable the following controls:

- Supplementary flow/discharge
- Initial flow
- Nozzle control
- Recipe

7.1.2.1 Supplementary flow/discharge

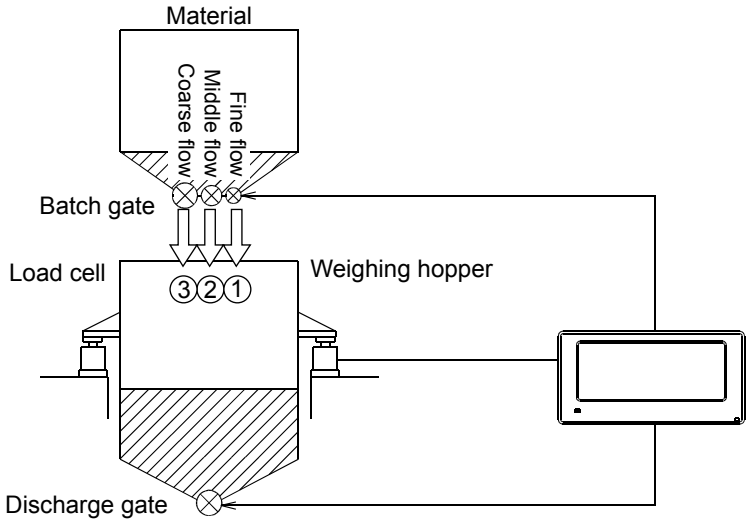
If the volume of the flow/discharge object for weighing is insufficient, the deficiency is automatically supplied.



7.1.2.2 Initial flow

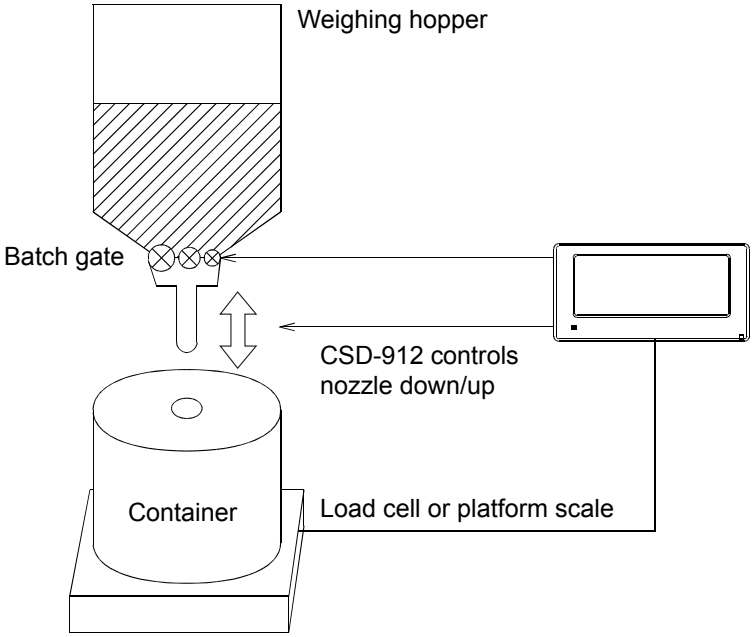
Use initial flow to weigh objects that may scatter on flow from all gates from the start.

Coarse flow, middle flow and fine flow start synchronously in normal sequential mode. If powder or liquid is fed from all the gates at once, it may scatter and spill due to impact with the weighing hopper. To prevent such dispersion, materials are fed sequentially in initial flow mode: fine flow → middle flow →coarse flow.



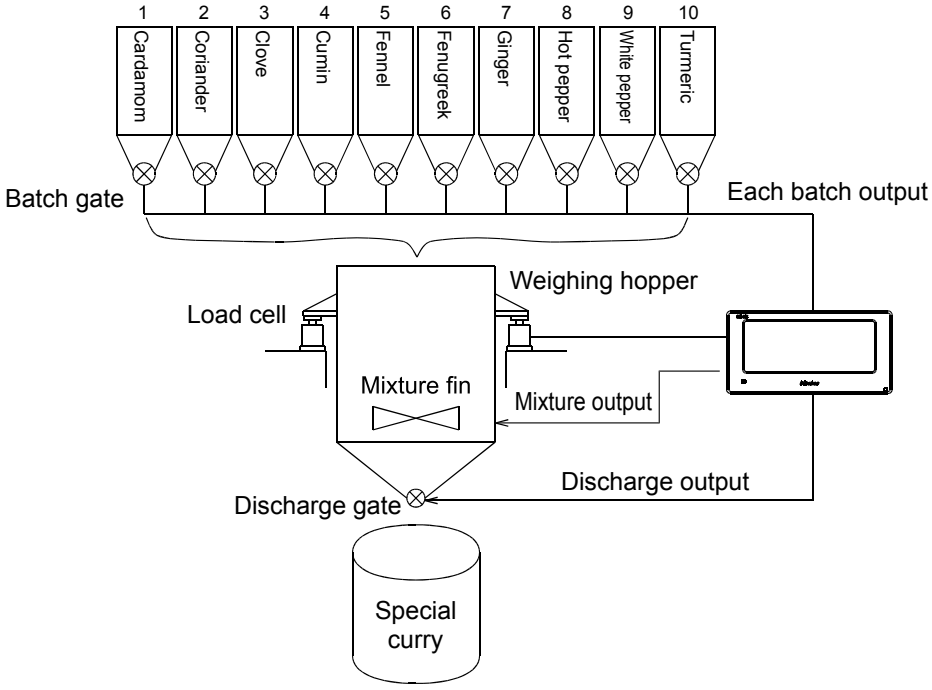
7.1.2.3 Nozzle control

CSD-912 controls nozzle ascension/decension while filling a container with the weighing target using a weighing hopper with a nozzle.



7.1.2.4 Recipe

In recipe mode, more than one brand is fed to a single weighing hopper. Up to ten brands can be combined. Combined brands can be discharged individually or after mixing.



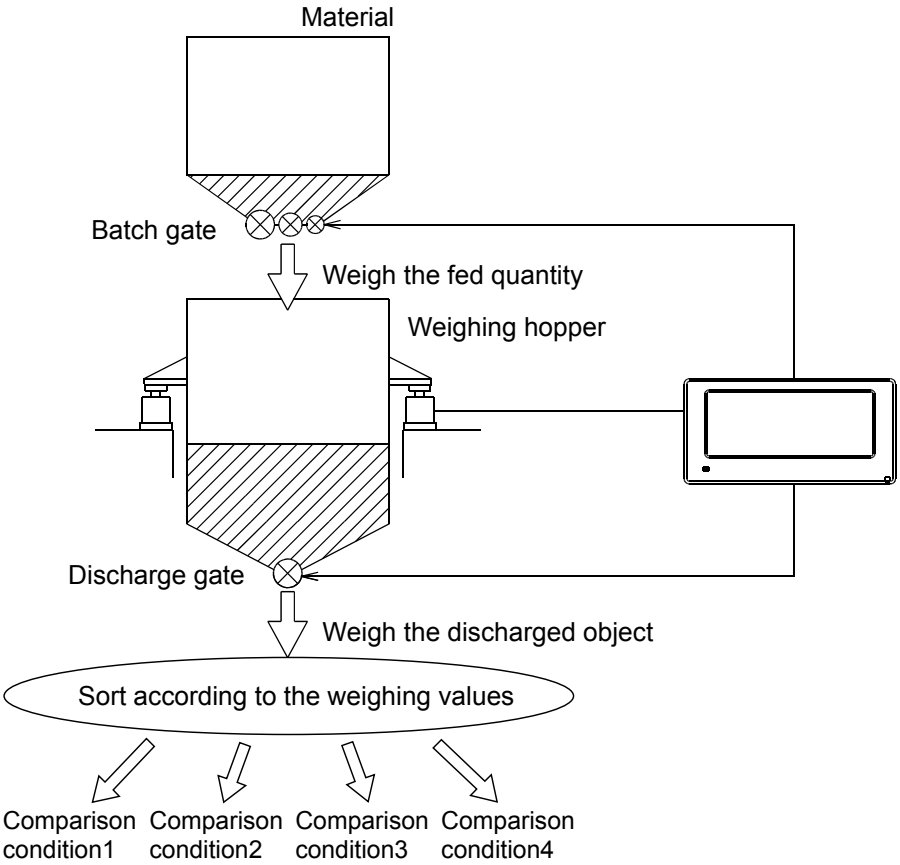
7.1.3 4-steps check mode

4-steps check mode compares preset conditions and weight values. The weighed data is classified according to comparison results. Up to four conditions can be set.

Example: Comparison condition 1 = 100 g or less; Comparison condition 2 = 200 g or less; Comparison condition 3 = 201 g or more.

A weighing value of 110 g corresponds to Comparison condition 2.

A weighing value of 220 g corresponds to Comparison condition 3.



7.2 Preparation for weighing

Set the following items prior to taking weights with theCSD-912.

- [WEIGHING MODE] (see Chapter 7.2.1)
- Switch between weighing of flow objects and weighing of discharge objects ([CONTROL MODE]) (see Chapter 7.2.2)
- [BRAND] (see Chapter 7.2.3)

7.2.1 Weighing mode settings

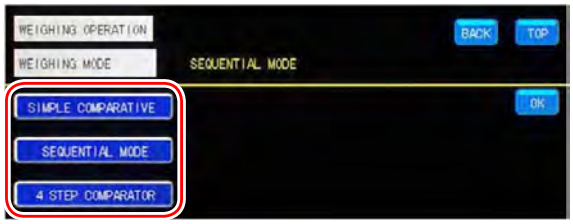
Set weighing mode according to weighing systems and measured objects.

Display the [WEIGHING MODE] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [WEIGHING MODE]
   ▷ The [WEIGHING MODE] setting screen is displayed.

Set [WEIGHING MODE]



3. Select [WEIGHING MODE]

   [SIMPLE COMPARATIVE]

   Set the weighing mode to simple comparative mode

   [SEQUENTIAL MODE]

   Set the weighing mode to sequential mode

   [4 STEP COMPARATOR]

   Set the weighing mode to 4-steps check mode

Note:

Refer to Chapter 7.1 for more information.

---

4. Tap [OK]
   ▷ [WEIGHING MODE] is set, and [WEIGHING OPERATION 1/2] is displayed.

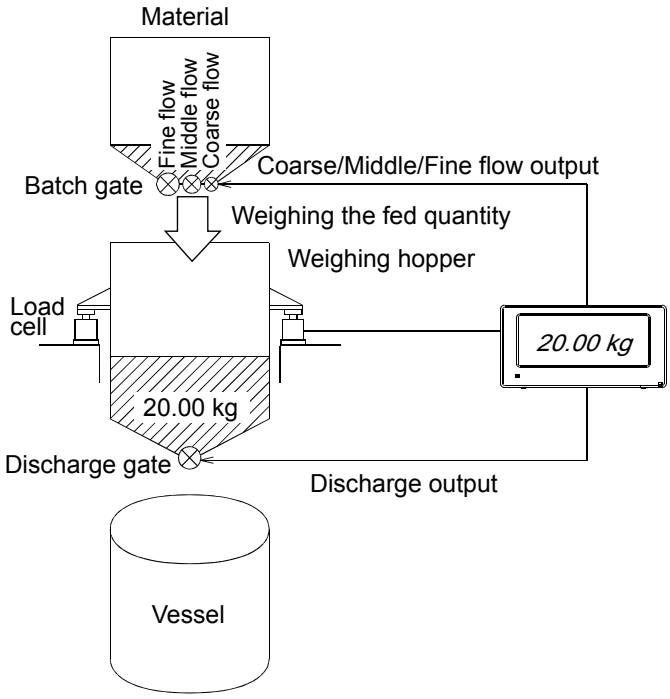
Confirm settings

5. Confirm [WEIGHING MODE]

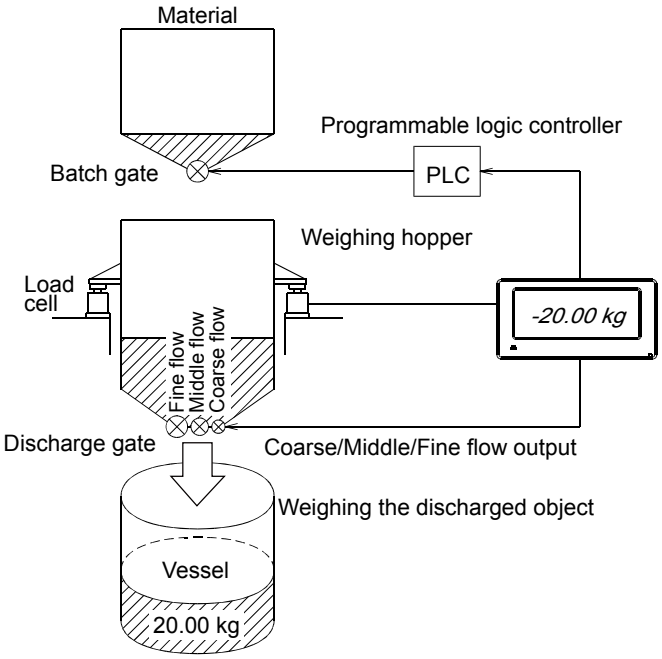
   The setting is complete if the item set in step 2 appears under [WEIGHING MODE].

7.2.2 Control mode settings

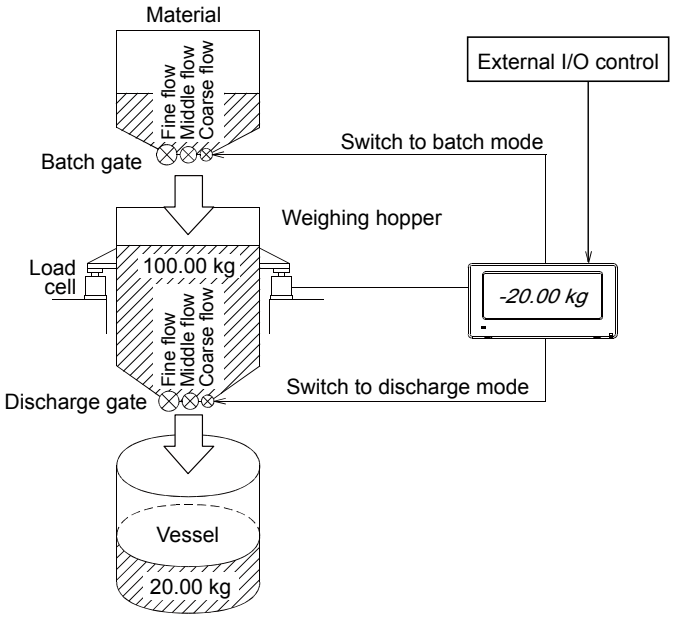
[CONTROL MODE] determines which object to measure: the object fed to the weighing hopper ([INFLOW MODE]) or the object discharged from the hopper ([DISCHARGE MODE]). Switch between [INFLOW MODE]/[DISCHARGE MODE] using external output control. Enter settings according to the weighing system.



[BATCH MODE]



[DISCHARGE MODE]



[EXTERNAL]

Note:

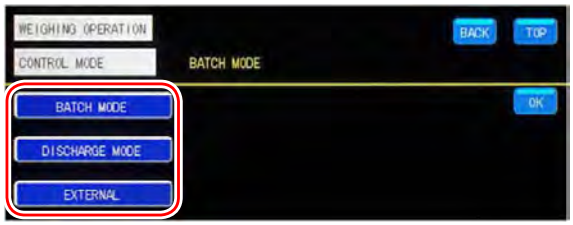
- In [DISCHARGE MODE], use external sequencers, etc., to control the supply of the measured object to the weighing hopper.
- If [WEIGHING MODE] is [4 STEP COMPARATOR], don't set [CONTROL MODE].

Display the [CONTROL MODE] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [CONTROL MODE]
   ▷ The [CONTROL MODE] setting screen is displayed.

Set [CONTROL MODE]



3. Select [CONTROL MODE]

   [INFLOW MODE]

   Measure the object fed to the weighing hopper

   [DISCHARGE MODE]

   Measure the object discharged from the weighing hopper

   [EXTERNAL]

   Switch between [INFLOW MODE] and [DISCHARGE MODE] using external input output control.

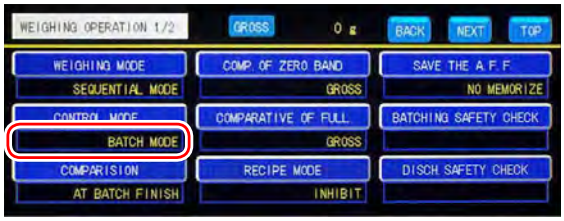
Note:

Refer to Chaper 11.3.2 for more information.

---

4. Tap [OK]
   ▷ [CONTROL MODE] is set, and [WEIGHING OPERATION 1/2] is displayed.

Confirm settings



5. Confirm [CONTROL MODE]

   The setting is complete if the item set in step 2 appears under [CONTROL MODE].

7.2.3 Product settings

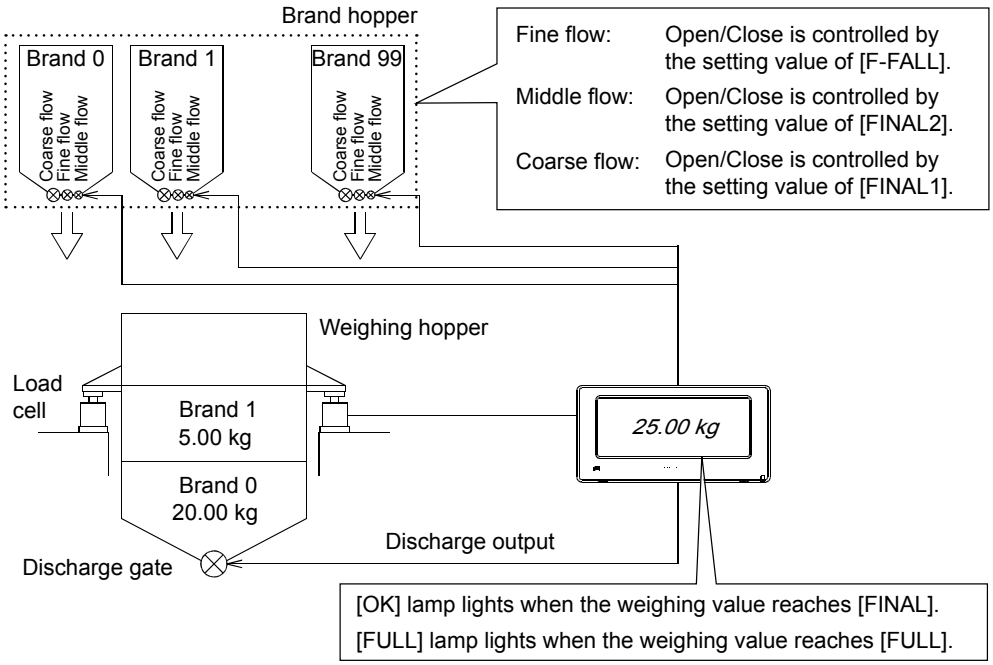
CSD-912 manages weighed objects as [BRAND].

Set the following items for each product in "brand" settings.

Item	Condition
BRAND Hopper No.	Required
FINAL	Required
F-FALL	Required
PRELIMINARY1	Required
PRELIMINARY2	Required
OVER	Required
UNDER	Required
ZERO BAND	Required
FULL	Required
A. F.F. COMPENSATION	Set to use automatic freefall compensation
SUPPLEMENTARY FLOW TIME	Set to use supplementary inflow/discharge
JUDGE. AFTER S-FLOW WAIT	Set to use supplementary inflow/discharge
ACCUM. VALUE	–
ACCUM. TIMES	–
PRESET TARE	Set to use preset tare
INITIAL FULL FLOW	Set to use initial flow
INITIAL MEDIUM FLOW	Set to use initial flow

Note:

Enter the settings according to weighing systems and weighed objects for items other than those marked "Required".



Note:

- Set brand settings precisely because CSD-912 controls weighing operations by comparing setting values of brand settings with actual weighing values.
- Do not set brands for weighing in 4-step check mode.
- Set up to 100 brands.

Display the [BRAND CODE] screen

1. Tap [BRAND CODE] on [MENU 1/2]
   ▷ [BRAND CODE 1/2] is displayed

Select the number of the brand to be set

2. Tap [↑] and [↓] to select the number

   Select a vacant number to set a new brand

To change the current brand setting, select the number of the brand to change.

Set [NAME]

3. Tap [NAME]

   ▷ The character input screen is displayed.

4. Enter [NAME]

Note:

Refer to Chapter 5.6 for more information.

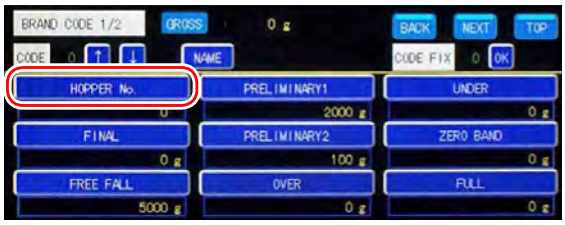
---

5. Tap [OK]

   ▷ [NAME] is set, and [BRAND CODE 1/2] is displayed.

Set the number of the brand hopper

Set the number of the brand hopper that contains the measured object.



6. Tap [HOPPER No.]

   ▷ The [HOPPER No.] setting screen is displayed.

7. Enter [HOPPER No.]

   Permissible range: 0 to 99; Default: 0

Note:

Refer to Chapter 5.5 for more information.

8. Tap [OK]
   ▷ [HOPPER No.] is set, and [BRAND CODE 1/2] is displayed.

Set [FINAL]

[FINAL] is the quantity to be measured. When a weighing value reaches [FINAL], the [OK] lamp lights.

9. Tap [FINAL]
   ▷ The [FINAL] setting screen is displayed.

10. Enter [FINAL]

Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

11. 3 Tap [OK]
    ▷ [FINAL] is set, and [BRAND CODE 1/2] is displayed.

Set [F-FALL]

[F-FALL] is the standard value to control open/close for the dribble flow gate of the brand hopper. Set [SIMPLE COMPARATIVE] and the dribble flow gate opens when the weighing value reaches "[FINAL]-[F-FALL]." Set [SEQUENTIAL MODE] and the dribble flow gate closes when the weighing value reaches "[FINAL]-[F-FALL]."

12. Tap [F-FALL]

▷ The [F-FALL] setting screen is displayed.

13. Enter the [F-FALL] value

Permissible range: -99 999 to 999 999; Default: 0

Note:

- Refer to Chapter 5.5 for more information.
- If the setting value of [PRELIM1] is equal to or less than [F-FALL] and the setting value is not 0, the sequence error [SQ. ERR 3] is displayed at the start of measurement. Change the [F-FALL] and [PRELIM1] settings to avoid this.

---

14. Tap [OK]

▷ [F-FALL] is set, and [BRAND CODE 1/2] is displayed.

Set [PRELIM1]

[PRELIM1] is the standard value to control open/close of the middle flow gate of the brand hopper. Set [SIMPLE COMPARATIVE] and the middle flow gate opens when the weighing value reaches "[FINAL] - [PRELIM1]." Set [SEQUENTIAL MODE] and the middle flow gate closes when the weighing value reaches "[FINAL] - [PRELIM1]."

15. Tap [PRELIM1]

▷ The [PRELIM1] setting screen is displayed.

16. Enter the [PRELIM1] value

Permissible range: 0 to 999 999; Default: 0

Note:

- Refer to Chapter 5.5 for more information.
- If the setting value of [PRELIM1] is 0 and the setting value of [PRELIM2] is not 0, sequence error [SQ. ERR 3] is displayed at the start of measurement. Change the settings of [PRELIM1] and [PRELIM2] to avoid this.

17. Tap [OK]
    ▷ [PRELIM1] is set, and [BRAND CODE 1/2] is displayed.

Set [PRELIM2]

[PRELIM2] is the standard value to control open/close of the full flow gate of the brand hopper. Set [SIMPLE COMPARATIVE] and the full flow gate opens when the weighing value reaches "[FINAL] - [PRELIM2]." Set [SEQUENTIAL MODE] and the full flow gate closes when the weighing value reaches "[FINAL] - [PRELIM2]."

18. Tap [PRELIM2]
    ▷ The [PRELIM2] setting screen is displayed.

19. Enter the [PRELIM2] value

Permissible range: 0 to 999 999; Default: 0

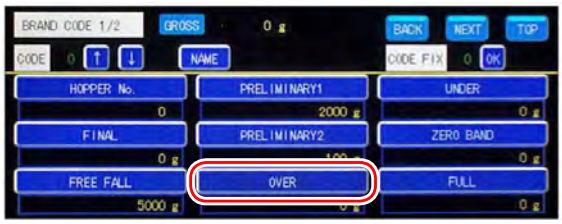
Note:

- Refer to Chapter 5.5 for more information.
- If the setting value of [PRELIM2] is equal to or less than [PRELIM1] and the setting value of [PRELIM2] is not 0, the sequence error [SQ. ERR 3] is displayed at the start of measurement. Change the settings of [PRELIM1] and [PRELIM2] to avoid this.

20. Tap [OK]
    ▷ [PRELIM2] is set, and [BRAND CODE 1/2] is displayed.

Set [OVER]

[OVER] is the quantity in excess of the quantity to measure ([FINAL]). When a weighing value reaches "[FINAL]+[OVER]," the [OVER] lamp lights.



21. Tap [OVER]

    ▷ The [OVER] setting screen is displayed.

22. Enter the [OVER] value

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

---

23. 3 Tap [OK]

    ▷ [OVER] is set, and [BRAND CODE 1/2] is displayed.

Set [UNDER]

[UNDER] is the deficiency in the quantity to measure ([FINAL]). When the weighing value falls below "[FINAL] - [UNDER]," the [UNDER] lamp lights.

24. Tap [UNDER]

    ▷ The [UNDER] setting screen is displayed.

25. Enter the [UNDER] value

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

26. Tap [OK]
    ▷ [UNDER] is set, and [BRAND CODE 1/2] is displayed.

Set the [ZERO BAND]value

[ZERO BAND] is the quantity for which CSD-912 judges the weighing value as 0. If the weighing value falls below the value of [ZERO BAND], the [ZERO BAND] lamp lights.

Note:

To change the judgment target of [ZERO BAND], refer to Chapter 7.11.2.

27. Tap [ZERO BAND]
    ▷ The [ZERO BAND] setting screen is displayed.

28. Enter the [ZERO BAND] value

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

29. Tap [OK]
    ▷ [ZERO BAND] is set, and [BRAND CODE 1/2] is displayed.

Set [FULL]

[FULL] is the quantity for which CSD-912 judges the weighing value as full. When the weighing value exceeds [FULL], the [FULL] lamp lights.

Note:

To change judgement target of full, refer to Chapter 7.11.3.

30. Tap [FULL]
    ▷ The [FULL] setting screen is displayed.

31. Enter the [FULL] value

    Refer to Chapter 5.5 for more information.

32. Tap [OK]
    ▷ [FULL] is set, and [BRAND CODE 1/2] is displayed.

Set [A.F. F. COMPENSATION]

Set the standard value for automatic freefall compensation Automatic free fall compensation is executed when "weighing value - [FINAL]" falls below [A.F. F. COMPENSATION].

Note:

Refer to Chapter 7.4.4 for more information.

33. Tap [NEXT]
    ▷ [BRAND CODE 2/2] is displayed

34. Tap [A.F. F. COMPENSATION]
    ▷ The [A.F. F. COMPENSATION] setting screen is displayed.

35. Enter the value of [A.F. F. COMPENSATION]

    Permissible range: 0 to 999 999; Default: 0

Note:

- Setting 0 disables automatic free fall compensation.
- Refer to Chapter 5.5 for more information.

---

36. Tap [OK]

    ▷ [A. F.F. COMPENSATION] is set, and [BRAND CODE 2/2] is displayed.

Set the [SUPPLEMENTARY FLOW TIME]

Set the time to automatically feed/discharge the measured object in small quantities if the inflow/discharge measured object is insufficient.

Note:

Refer to Chapter 7.5 for more information.

37. Tap [SUPPLEMENTARY FLOW TIME]

    ▷ The [SUPPLEMENTARY FLOW TIME] setting screen is displayed.

38. Set the time of supplementary inflow/discharge

    Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

---

39. Tap [OK]
    ▷ The supplementary inflow/discharge time is set, and [BRAND CODE 2/2] is displayed.

Set waiting time after supplementary flow

Set the time to wait until CSD-912 judges whether the weighing value exceeds "[FINAL] - [UNDER]" after supplementary inflow/discharge

Note:

Refer to Chapter 7.5 for more information.

40. Tap [JUDGE. AFTER S-FLOW WAIT]
    ▷ The [JUDGE. AFTER S-FLOW WAIT] setting screen is displayed.

41. Enter the waiting time for judgment after supplementary inflow/discharge

    Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

42. Tap [OK]
    ▷ The waiting time for judgment after supplementary inflow/discharge is set, and [BRAND CODE 2/2] is displayed.

Confirm/Delete [ACCUM. VALUE]

To check past [ACCUM. VALUE] measurements or to delete [ACCUM. VALUE] for a brand that has been measured,

Note:

Refer to Chapter 7.11.10.

43. Confirm the accumulation value displayed under [ACCUM. VALUE]
    ▷ The accumulation value screen is displayed.

Note:

- To delete [ACCUM. VALUE], tap [ACCUM. VALUE] to display the numerical value input screen, then tap [AC] → [OK].
- Deleting [ACCUM. VALUE] also deletes [ACCUM. TIMES].

Confirm/Delete [ACCUM. TIMES]

To check [ACCUM. TIMES] of past measurements or to delete [ACCUM. TIMES] of an already set brand,

Note:

Refer to Chapter 7.11.10.

44. Confirm the accumulation value displayed under [ACCUM. TIMES]

Note:

- To delete [ACCUM. VALUE], tap [ACCUM. VALUE] to display the numerical value input screen, then tap [AC] → [OK].
- Deleting [ACCUM. VALUE] also deletes [ACCUM. VALUE].

Set [PRESET TARE]

Set the value for a preset tare

Note:

Refer to Chapter 7.11.4 for more information.

45. Tap [PRESET TARE]
    ▷ The [PRESET TARE] setting screen is displayed.

46. Enter the [PRESET TARE]

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

---

47. Tap [OK]
    ▷ [PRESET TARE] is set, and [BRAND CODE 2/2] is displayed.

Set [INITIAL FULL FLOW]

Set the standard value to open the coarse flow gate of the brand hopper in initial flow mode. The coarse flow gate opens when the input of the weighed object reaches the standard value.

Note:

Refer to Chapter 7.6 for more information.

48. Tap [INITIAL FULL FLOW]
    ▷ The [INITIAL FULL FLOW] setting screen is displayed.

49. Enter the value to start coarse flow

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

50. Tap [OK]

    ▷ [INITIAL FULL FLOW] is set, and [BRAND CODE 2/2] is displayed.

Set [INITIAL MEDIUM FLOW]

Set the standard value to open the middle flow gate of the brand hopper in initial flow mode. The middle flow gate opens when the input of the weighed object reaches the standard value.

Note:

Refer to Chapter 7.6 for more information.

51. Tap [INITIAL MEDIUM FLOW]

    ▷ The [INITIAL MEDIUM FLOW] setting screen is displayed.

52. Enter the value to start [M. FLOW]

    Permissible range: 0 to 999 999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

53. Tap [OK]

▷ [INITIAL MEDIUM FLOW] is set, and [BRAND CODE 2/2] is displayed.

Confirm settings

54. Confirm the settings

Confirm that the brand number, [NAME] and each item have been set

Tap [NEXT] to switch pages

Set [BRAND]

55. Tap [OK]

▷ The [BRAND] that is set becomes the weighing target.

Note:

To make an already set brand the weighing target, tap [↑][↓] to switch [BRAND] on the [BRAND CODE] screen, then tap [OK].

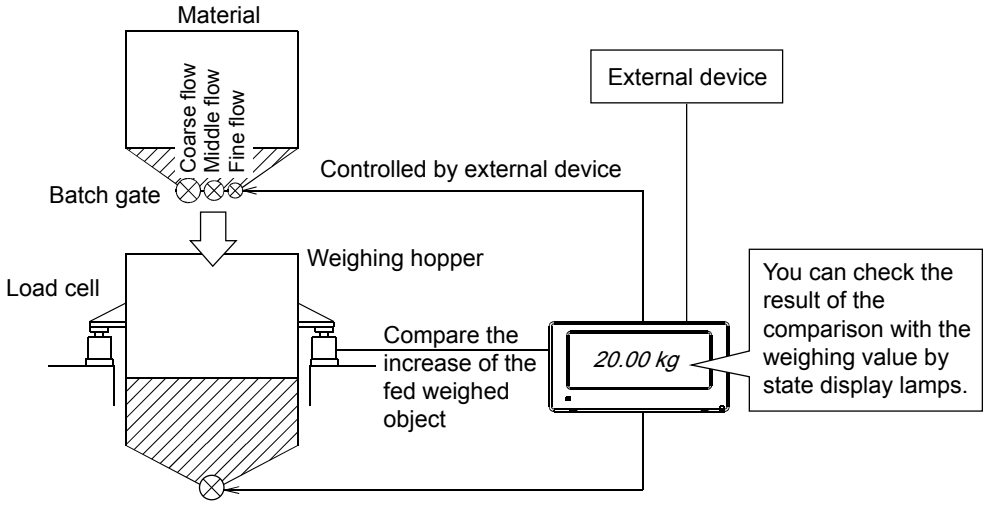
7.3 Weighing in simple mode

CSD-912 compares the values of [BRAND CODE] with the actual weighing value to identify comparison results using status display lamps. Simple mode is categorized into two groups according to the [CONTROL MODE] settings.

CONTROL MODE	WEIGHING MODE	Contents
INFLOW MODE	Simple flow mode	CSD-912 always compares [BRAND CODE] values with the increase in the weighed object to identify comparison results using status display lamps.
DISCHARGE MODE	Simple discharge mode	CSD-912 always compares the values of [BRAND CODE] with the decrease in the weighed object to identify comparison results using status display lamps.

7.3.1 Weighing in simple flow mode

CSD-912 always compares [BRAND CODE] values with the increase in the weighed object fed to the weighing hopper to identify comparison results using status display lamps.



The flow of weighing in simple flow mode is described below.

Weighing start	
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND]	The [ZERO BAND] lamp lights.
⇩	
Inflow [NET]* ≥ [FINAL] - [PRELIMINARY2]	The [F. FLOW] lamp lights, and coarse flow starts.
⇩	
Inflow [NET]* ≥ [FINAL] - [PRELIMINARY1]	The [M. FLOW] lamp lights, and middle flow starts.
⇩	
Inflow [NET]* ≥ [FINAL] - [F-FALL]	The [D. FLOW] lamp lights, and fine flow starts.
⇩	
Weighing is complete, and judgment of weighing values can be executed.	The [FINISH] lamp lights.

Status display lamps light according to judgment results.

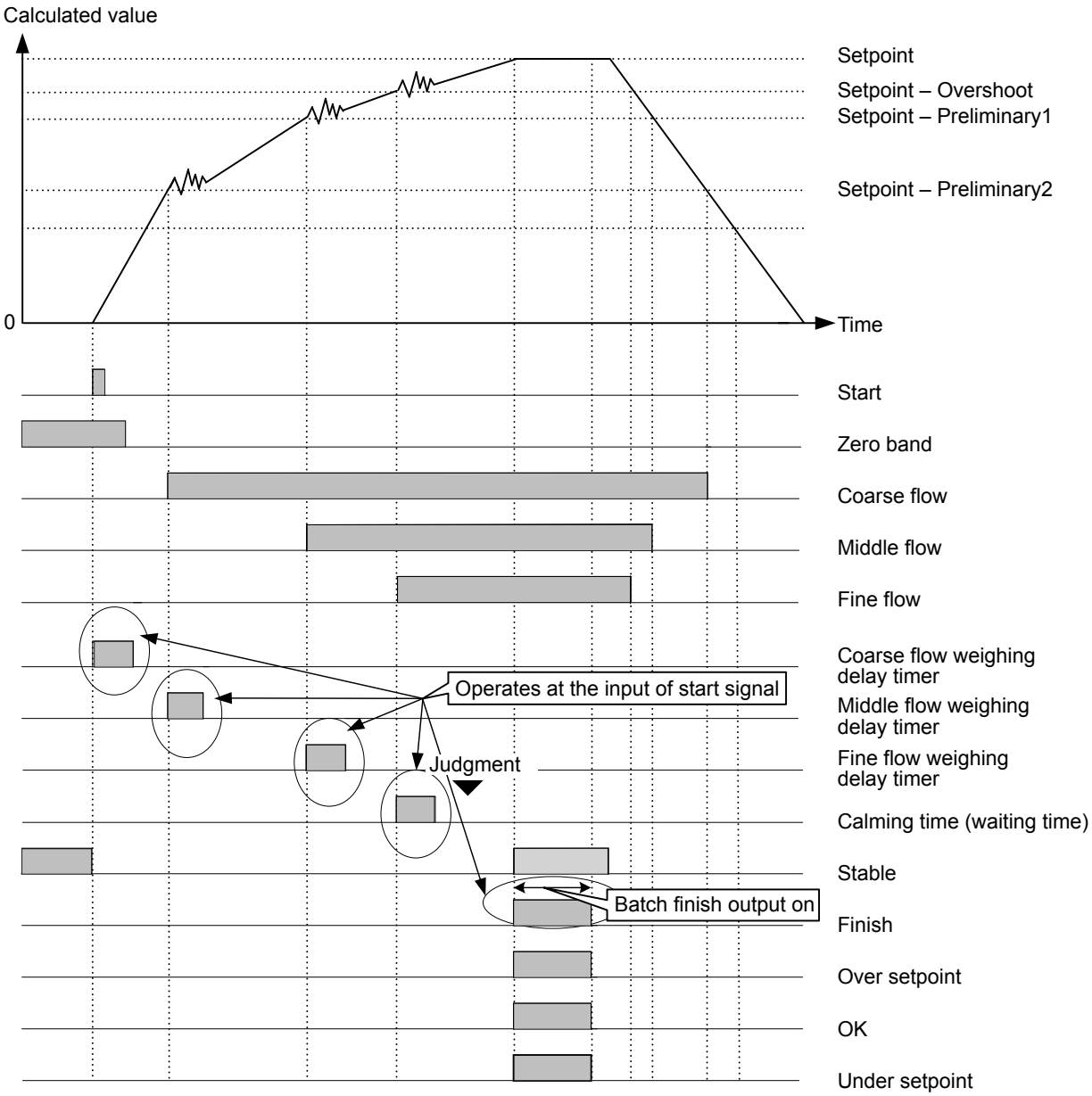
- Flow [NET]* < [FINAL] - [UNDER]: The [UNDER] lamp lights.
- Flow [NET]* > [FINAL] + [OVER]: The [OVER] lamp lights.
- [FINAL] - [UNDER] ≤ flow [NET]* ≤ [FINAL] + [OVER]: The [OK] lamp lights.
- Flow [GROSS] or [NET]* > [FULL]: The [FULL] lamp lights.

*[NET]: The load excluding the weight of the container

Note:

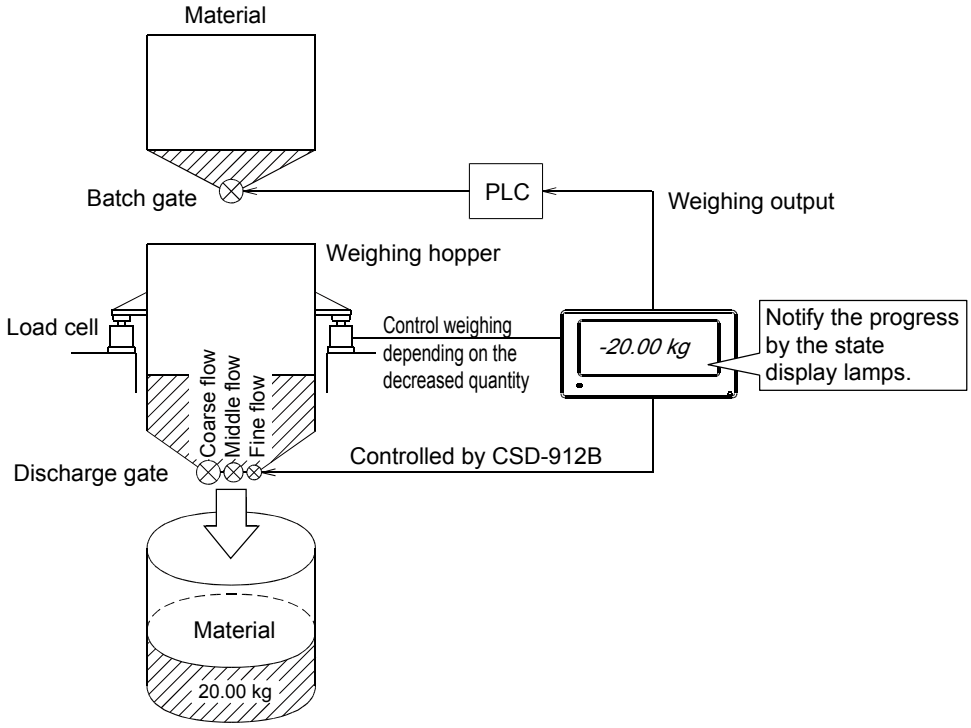
- If [PRELIM2] is set to 0 in [BRAND CODE], coarse flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], middle flow is not executed.
- To change the comparative target for [ZERO BAND] and [FULL], refer to Chapter 7.9.1.4 and 7.9.1.5 for more information.
- If start signals are not used, state display lamps light according to weighing status.

The following chart shows the flow of weighing in simple flow mode.



7.3.2 Weighing in simple discharge mode

CSD-912 compares [BRAND CODE] values with the decrease in the weighed object discharged from the weighing hopper to identify comparison results using status display lamps.



The flow of weighing in simple discharge mode is described below.

Weighing start	
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND]	The [ZERO BAND] lamp lights.
⇩	
Flow [NET]* ≥ [FINAL] - [PRELIMINARY2]	The [F. FLOW] lamp lights, and coarse flow starts.
⇩	
Flow [NET]* ≥ [FINAL] - [PRELIMINARY1]	The [M. FLOW] lamp lights, and middle flow starts.
⇩	
Flow [NET]* ≥ [FINAL] - [F-FALL]	The [D. FLOW] lamp lights, and fine flow starts.
⇩	
Weighing is complete, and judgment of weighing values can be executed.	The [FINISH] lamp lights.

Status display lamps light according to judgment results.

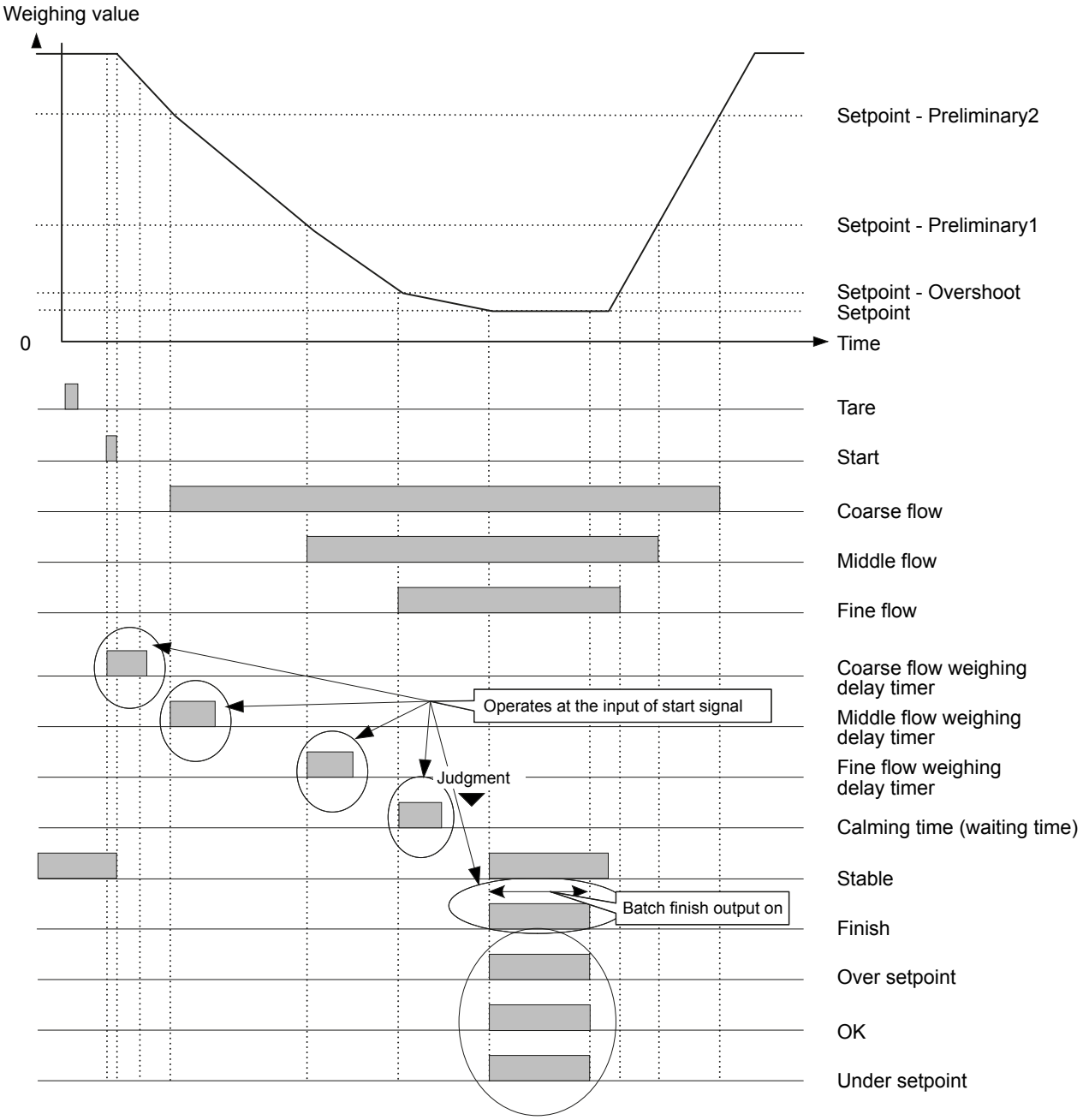
- Discharge [NET]* < [FINAL] - [UNDER] The [UNDER] lamp lights.
- Discharge [NET]* > [FINAL] + [OVER]: The [OVER] lamp lights.
- [FINAL] - [UNDER] ≤ discharge [NET]* ≤ [FINAL] + [OVER]: The [OK] lamp lights.
- Discharge [GROSS] or [NET]* >* > setting value of [FULL]: The [FULL] lamp lights.

*[NET]: The load excluding the weight of the container

Note:

- If [PRELIM2] is set to 0 in [BRAND CODE], full flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], medium flow is not executed.
- To change the comparative target for [ZERO BAND] and [FULL], refer to Chapter 7.9.1.4 and 7.9.1.5 for more information.
- If start signals are not used, status display lamps light according to weighing status.

The following chart shows the flow of weighing in simple discharge mode.



7.4 Weighing in sequential mode

In sequential mode, CSD-912 controls a series of weighing operations to indicate weighing status using status display lamps. Sequential mode is categorized into two groups according to the [CONTROL MODE] settings.

CONTROL MODE	WEIGHING MODE	Contents
INFLOW MODE	Sequential flow mode	CSD-912 controls weighing operations based on the increase in the weighed object to indicate weighing status using status display lamps.
DISCHARGE MODE	Sequential discharge mode	CSD-912 controls weighing operations based on the decrease in the weighed object to indicate weighing status using status display lamps.

Enter the settings for necessary control operations prior to weighing in sequential mode.

Setting specific control operations enables the following functions.

- **Automatic overshoot correction**

  [F-FLL] for the next weighing is automatically calculated using the actual [F-FLL] from past weighing to correct weighing values.

- **Safety input**

  Weighing automatically stops in the event of malfunction, for example, weighing hopper collapse or discharged weighed object container filling failure.

7.4.1 Settings prior to weighing

Set functions to control weighing in advance to take weighings in sequential mode. After switching [WEIGHING MODE] to [SEQUENTIAL MODE], enter the settings to control weighing on the sequence control screen. Tap [SEQUENCE CONTROL] on [MENU 1/2] to display the sequence control screen

Legend

1	Tap [SEQUENCE CONTROL]
2	The [SEQUENCE CONTROL] screen is displayed.

Note:

The sequence control screen consists of three pages. Refer to Chapter 5.4 for more information.

7.4.1.1 Operation settings at batch start

Enter settings to prevent flow start due to a sequence error if the weight value is equal to or less than the setting value of [ZERO BAND] when inflow start signals are input. Also, enter settings to determine whether to execute tare weight cancellation automatically when inflow start signals are input ([AUTOMATIC TARE]).

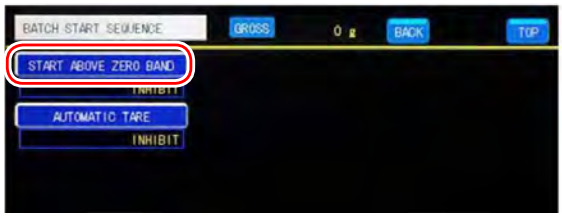
Note:

Refer to Chapter 7.10.2 for more information.

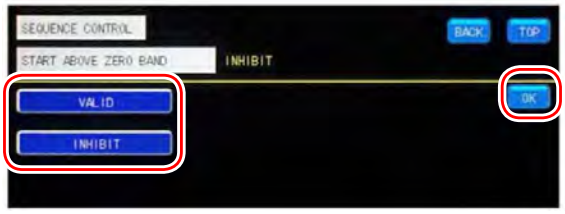
Display the inflow start operation settings screen

1. Tap [INFLOW START SEQUENCE] on [SEQUENCE CONTROL 1/3]
   ▷ The inflow start operation settings screen is displayed.

Set [START ABOVE ZERO BAND]



2. Tap [START ABOVE ZERO BAND]
   ▷ The [START ABOVE ZERO BAND] setting screen is displayed.

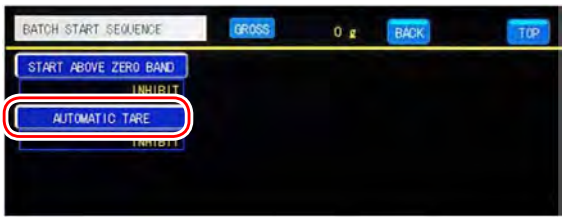


3. Tap [VALID]/[INHIBIT]

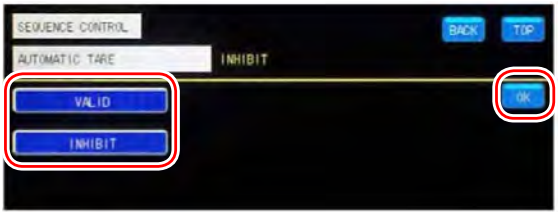
Default: [INHIBIT]

4. Tap [OK]
   ▷ [START ABOVE ZERO BAND] is set, and the inflow start operation settings screen is displayed.

Set [AUTOMATIC TARE]



5. Tap [AUTOMATIC TARE]
   ▷ The [AUTOMATIC TARE] setting screen is displayed.



6. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

7. Tap [OK]
   ▷ [AUTOMATIC TARE] is set, and the inflow start operation settings screen is displayed.

7.4.1.2 Inflow start waiting time settings

Set the waiting time from the input of inflow start signals to the inflow start for weighed objects.

Display the inflow start waiting time setting screen

1. Tap [INFLOW START DELAY TIMER] on [SEQUENCE CONTROL 2/3]
   ▷ The inflow start waiting time setting screen is displayed.

Set the waiting time until inflow start

2. Enter the waiting time until inflow start

   Permissible range: 0 to 9.999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ The waiting time until inflow start is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the waiting time until inflow start

   The setting is complete if the value set in step 2 appears under [INFLOW START DELAY TIMER].

7.4.1.3 Settings of tare operation after the waiting time until inflow start

Set whether to automatically execute tare weight cancellation after the waiting time until inflow start

---

Note:

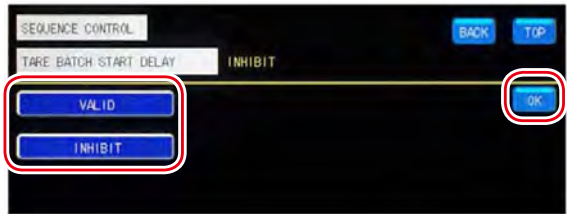
Refer to Chapter 7.10.2 for more information.

Display the setting screen for tare operation after the waiting time until batch start

1. Tap [TARE INFLOW START DELAY] on [SEQUENCE CONTROL 2/3]

   ▷ The setting screen for tare operation after the waiting time until inflow start is displayed.

Enter tare operation after the waiting time until inflow start



2. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

3. Tap [OK]

   ▷ Tare operation after the waiting time until inflow start is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm tare operation after the waiting time until inflow start.

   The setting is complete if the value set in step 2 appears under [TARE INFLOW START DELAY].

7.4.1.4 [F-FLOW COMP. STOP TIMER] settings

Set the time to prohibit comparison at the start of weighing between [FINAL] - [PRELIM2] for [BRAND CODE] and the weight value

Display the [F-FLOW COMP. STOP TIMER] setting screen

1. Tap [F-FLOW COMP. STOP TIMER] on [SEQUENCE CONTROL 2/3]

   ▷ The [F-FLOW COMP. STOP TIMER] setting screen is displayed.

Set [F-FLOW COMP. STOP TIMER]

2. Enter [F-FLOW COMP. STOP TIMER]

Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

3. 2. Tap [OK]

▷ [F-FLOW COMP. STOP TIMER] is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the value of [F-FLOW COMP. STOP TIMER]

The setting is complete if the value set in step 2 appears under [F-FLOW COMP. STOP TIMER].

7.4.1.5 [M-FLOW COMP. STOP TIMER] settings

Set the time to prohibit comparison at the end of coarse flow between [FINAL] - [PRELIM1] for [BRAND CODE] and the weight value

Display the [M-FLOW COMP. STOP TIMER] setting screen

1. Tap [M-FLOW COMP. STOP TIMER] on [SEQUENCE CONTROL 2/3]

▷ The [M-FLOW COMP. STOP TIMER] setting screen is displayed.

Set[M-FLOW COMP. STOP TIMER]setting screen

2. Enter[M-FLOW COMP. STOP TIMER]

Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

3. Tap [OK]
   ▷ [M-FLOW COMP. STOP TIMER] is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the value of [M-FLOW COMP. STOP TIMER]

   The setting is complete if the value set in step 2 appears under [M-FLOW COMP. STOP TIMER].

7.4.1.6 [D-FLOW COMP. STOP TIMER] settings

Set the time to prohibit comparison at the end of middle flow between [FINAL] - [F-FALL] for [BRAND CODE] and the weighing value

Display the [D-FLOW COMP. STOP TIMER]

1. Tap [D-FLOW COMP. STOP TIMER] on [SEQUENCE CONTROL 2/3]
   ▷ The [D-FLOW COMP. STOP TIMER] setting screen is displayed.

Set [D-FLOW COMP. STOP TIMER]

2. Enter [D-FLOW COMP. STOP TIMER]

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]
   ▷ [D-FLOW COMP. STOP TIMER] is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the value of [D-FLOW COMP. STOP TIMER]

   The setting is complete if the value set in step 2 appears under [D-FLOW COMP. STOP TIMER].

7.4.1.7 [WAITING TIME FOR JUDG.] settings

Set the waiting time from the end of fine flow to increased/decreased quantity judgment.

Display the [WAITING TIME FOR JUDG.] setting screen

1. Tap [WAITING TIME FOR JUDG.] on [SEQUENCE CONTROL 2/3]

   ▷ The [WAITING TIME FOR JUDG.] setting screen is displayed.

Set [WAITING TIME FOR JUDG.]

2. Enter [WAITING TIME FOR JUDG.]

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ [WAITING TIME FOR JUDG.] is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the value of [WAITING TIME FOR JUDG.]

   The setting is complete if the value set in step 2 appears under [WAITING TIME FOR JUDG.].

7.4.1.8 Settings for [JUDGE CONDITION] on completion of weighing

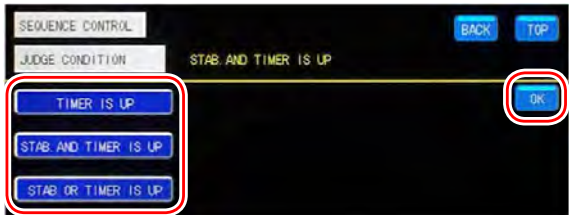
Set the condition to judge weighing as [OK], [OVER], [UNDER], etc., on completion of weighing.

Display the [JUDGE CONDITION] setting screen

1. Tap [JUDGE CONDITION] on [SEQUENCE CONTROL 1/3]

   ▷ The [JUDGE CONDITION] setting screen is displayed.

Set [JUDGE CONDITION]



2. Select [JUDGE CONDITION]

   [TIMER IS UP]

   Judge when [TIMER IS UP] elapses

   [STAB. AND TIMER IS UP]

   Judge when [TIMER IS UP] elapses and the weight value stabilizes

   [STAB. OR TIMER IS UP]

   Judge when [TIMER IS UP] elapses or the weight value stabilizes

   Default: [STAB. AND TIMER IS UP]

Note:

Refer to Chapter 7.11.5 for more information about the conditions of stability.

3. Tap [OK]
   ▷ [JUDGE CONDITION] is set, and [SEQUENCE CONTROL 1/3] is displayed.

Confirm settings

4. Confirm [JUDGE CONDITION]

   The setting is complete if the value set in step 2 appears under [JUDGE CONDITION].

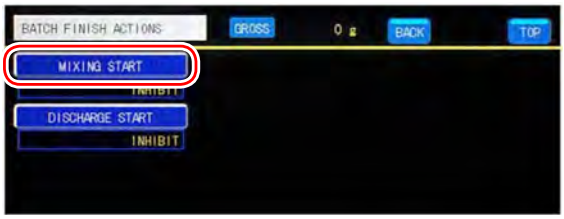
7.4.1.9 [INFLOW FINISH ACTIONS]settings

Set whether to mix the weighed objects ([MIXING START]) and whether to discharge the weighed objects ([DISCHARGE START]) on completion of weighing

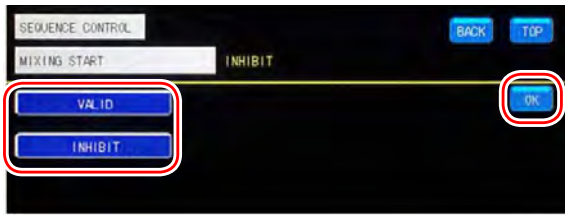
Display the [INFLOW FINISH ACTIONS] setting screen

1. Tap [INFLOW FINISH ACTIONS] on [SEQUENCE CONTROL 1/3]
   ▷ The [INFLOW FINISH ACTIONS] setting screen is displayed.

Set mixing operation on completion of weighing



2. Tap [MIXING START]
   ▷ The setting screen for mixing operation is displayed.



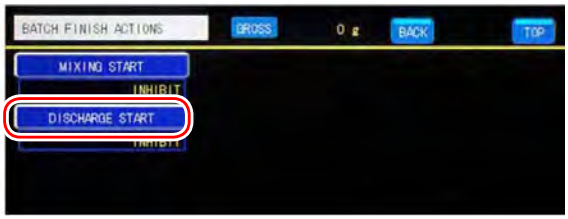
3. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

4. Tap [OK]

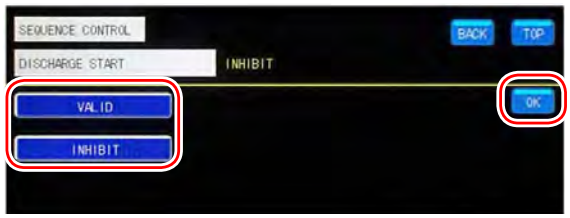
▷ The mixing operation at weighing completion is set, and the [INFLOW FINISH ACTIONS] setting screen is displayed.

Set discharge operation on completion of weighing



5. Tap [DISCHARGE START]

▷ The discharge operation setting screen is displayed.



6. Tap [VALID]/[INHIBIT]

Default: [INHIBIT]

7. Tap [OK]

▷ The discharge operation at weighing completion is set, and the [INFLOW FINISH ACTIONS] setting screen is displayed.

Note:

If [MIXING START] and [DISCHARGE START] are set to [VALID], the weighed objects are mixed then discharged.

7.4.1.10 [INFLOW FINISH OUTPUT ON] settings

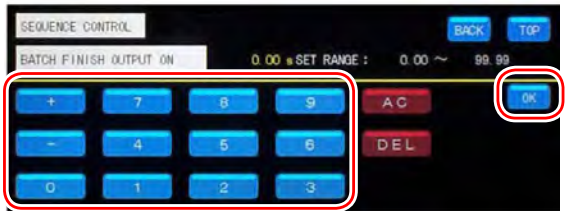
Set the output time for inflow finish signals

Display the [INFLOW FINISH OUTPUT ON] setting screen

1. Tap [INFLOW FINISH OUTPUT ON] on [SEQUENCE CONTROL 3/3]

▷ The [INFLOW FINISH OUTPUT ON] setting screen is displayed.

Set the inflow finish signal output time



2. Enter the inflow finish signal output time
   ▷ Permissible range: 0.00 to 99.99; Default: 0.00

> **Note:**
>
> Refer to Chapter 5.5 for more information.

3. Tap [OK]
   ▷ The output time of inflow finish signals is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

4. Confirm the inflow finish signal output time
   ▷ The setting is complete if the value set in the step 2 appears under [INFLOW FINISH OUTPUT ON].

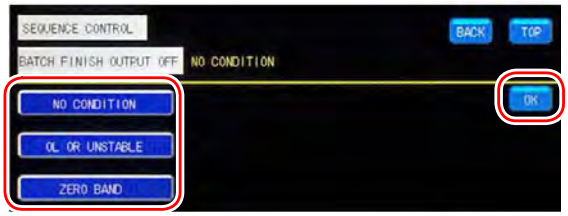
7.4.1.11 [INFLOW FINISH OUTPUT OFF] settings

Set the condition to turn off the output for inflow finish signals

Display the screen to set the condition to turn off inflow finish signal output

1. Tap [INFLOW FINISH OUTPUT OFF] on [SEQUENCE CONTROL 2/3]
   ▷ The screen to set the condition to turn off inflow finish signal output is displayed.

Set the condition to turn off inflow finish signal output



2. Select the condition to turn off inflow finish signal output

   [NO CONDITION]

   Turns off inflow finish signal output when the set [INFLOW FINISH OUTPUT ON] time elapses or signals to start next measurement are input

   [OL OR UNSTABLE]

   Turns off inflow finish signal output when [OL] or [-OL] is displayed on the weighing screen or the weighing value destabilizes

   [ZERO BAND]

   Turns off inflow finish signal output when the weighing value is equal to or less than [ZERO BAND] for [BRAND CODE]

   Default: [NO CONDITION]

Note:

Refer to Chapter 7.11.5 for more information about the conditions of stability.

---

3. Tap [OK]

   ▷ The condition to turn off the inflow finish signal output is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the condition to turn off the inflow finish signal output

   The setting is complete if the item set in step 2 appears under [INFLOW FINISH OUTPUT OFF].

7.4.1.12 [INFLOW MONITORING TIMER] settings

Set the timer to monitor the time between start signal input and finish signal output. [SQ. ERR 4] is displayed if the weighing lasts longer than the monitoring timer settings.

Note:

- Weighing time is monitored if [CONTROL MODE] is [INFLOW MODE]. Refer to Chapter 7.4.2 for more information.
- Refer to Chapter 13.2.3 for more information.

Display the [INFLOW MONITORING TIMER] setting screen

1. Tap [INFLOW MONITORING TIMER] on [SEQUENCE CONTROL 2/3]
   ▷ The [INFLOW MONITORING TIMER] setting screen is displayed.

Set the timer to monitor weighing time

2. Enter the monitoring timer value

   Permissible range: 0 to 9.999; Default: 0

Note:

- Set [0] to disable weighing time monitoring
- Refer to Chapter 5.5 for more information.

3. Tap [OK]
   ▷ The monitoring timer is set, and [SEQUENCE CONTROL 2/3] is displayed.

Confirm settings

4. Confirm the monitoring timer value
   ▷ The setting is complete if the value set in step 2 appears under [INFLOW MONITORING TIMER].

7.4.1.13 [DISCH. MONI. TIMER] settings

Set the timer to monitor the time between start and completion of weighed object discharge. [SQ. ERR 5] is displayed if the discharge time is longer than the monitoring timer settings.

Note:

- Discharge time is monitored if [CONTROL MODE] is [DISCHARGE MODE].

  Refer to Chapter 7.4.3 for more information.
- Refer to Chapter 13.2.3 for more information.

Display the [DISCH. MONI. TIMER] setting screen

1. Tap [DISCH. MONI. TIMER] on [SEQUENCE CONTROL 3/3]
   ▷ The [DISCH. MONI. TIMER] setting screen is displayed.

Set the timer to monitor discharge time

2. Enter the monitoring timer value

   Permissible range: 0 to 9.999; Default: 0

   Note:

   - Set [0] to disable discharge time monitoring
   - Refer to Chapter 5.5 for more information.

3. Tap [OK]
   ▷ The monitoring timer is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

4. Confirm the monitoring timer value

   The setting is complete if the value set in step 2 appears under [DISCH. MONI. TIMER].

7.4.1.14 Waiting time settings for discharge gate closure

Set the waiting time from when the remaining quantity of the weighed object in the weighing hopper reaches [ZERO BAND] until the weighing hopper gate closes.

Display the setting screen for waiting time until gate closure

1. Tap [DCHG-GATE CLOSE DELAY] on [SEQUENCE CONTROL 3/3]

   ▷ The setting screen for waiting time until gate closure is displayed.

Set the waiting time until gate closure

2. Enter the waiting time until gate closure

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ The waiting time until gate closure is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

4. Confirm the waiting time until gate closure

   The setting is complete if the value set in step 2 appears under [DCHG-GATE CLOSE DELAY].

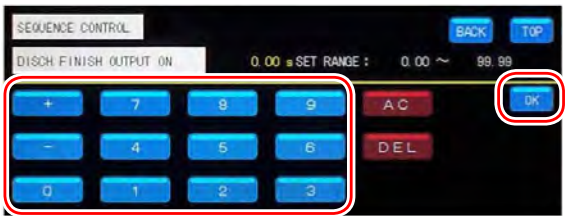
7.4.1.15 [DISCH. FINISH OUTPUT ON] settings

Set the output time for discharge finish signals

Display the [DISCH. FINISH OUTPUT ON] setting screen

1. Tap [DISCH. FINISH OUTPUT ON] on [SEQUENCE CONTROL 3/3]
   ▷ The [DISCH. FINISH OUTPUT ON] setting screen is displayed.

Set the output time for discharge finish signals



2. Enter the output time for discharge finish signals

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]
   ▷ The output time of discharge finish signals is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

4. Confirm the output time for discharge finish signals

   The setting is complete if the value set in step 2 appears under [DISCH. FINISH OUTPUT ON].

7.4.1.16 [DISCH. FINISH ACTIONS] settings

Set whether to execute tare weight cancellation clear and whether to mix the weighed objects on completion of weighing.

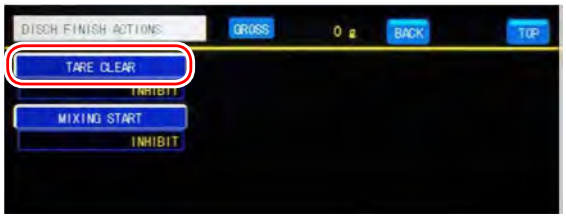
Note:

Refer to Chapter 7.10.2 for more information.

Display the [DISCH. FINISH ACTIONS] setting screen

1. Tap [DISCH. FINISH ACTIONS] on [SEQUENCE CONTROL 1/3]
   ▷ The [DISCH. FINISH ACTIONS] setting screen is displayed.

Set the [TARE CLEAR] operation on discharge completion



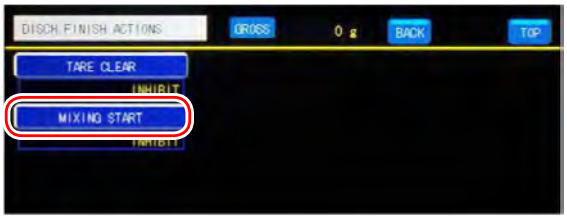
2. Tap [TARE CLEAR]
   ▷ The [TARE CLEAR] setting screen is displayed.

3. Tap [VALID]/[INHIBIT]

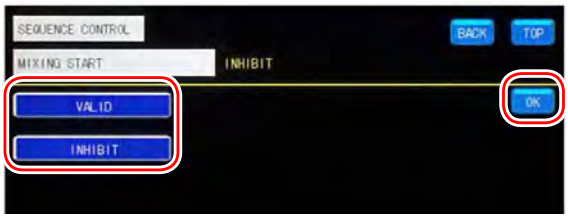
   Default: [INHIBIT]

4. Tap [OK]
   ▷ [TARE CLEAR] at discharge completion is set, and the [DISCH. FINISH ACTIONS] setting screen is displayed.

Set mixing operation on completion of discharge



5. Tap [MIXING START]
   ▷ The setting screen for mixing operation is displayed.



6. Tap [VALID]/[INHIBIT]

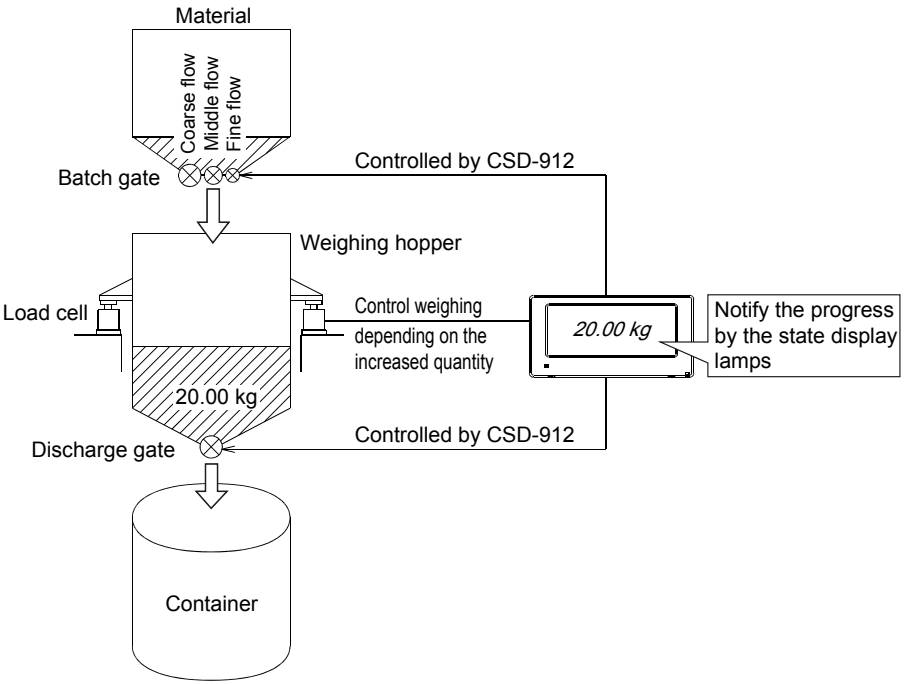
   Default: [INHIBIT]

7. Tap [OK]
   ▷ Mixing operation at discharge completion is set, and the [DISCH. FINISH ACTIONS] setting screen is displayed.

7.4.2 Weighing in sequential inflow (batch) mode

CSD-912 controls weighing operations based on the increase in the weighed object fed to the weighing hopper.

Discharge to the weighing hopper can also be controlled. Status display lamps indicate weighing progress.


Material
Coarse flow
Middle flow
Fine flow
Batch gate
Controlled by CSD-912
Weighing hopper
Load cell
Control weighing
depending on the
increased quantity
20.00 kg
Notify the progress
by the state display
lamps
20.00 kg
Controlled by CSD-912
Discharge gate
Container

The flow of weighing in initial flow mode is described below.

Weighing start	The [F. FLOW], [M. FLOW] and [D. FLOW] lamps light. Coarse flow, middle flow and fine flow start
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND]	The [ZERO BAND] lamp lights.
⇩	
Inflow [NET]* ≥ [FINAL] - [PRELIMINARY2]	The [F. FLOW] lamp turns off, and coarse flow stops.
⇩	
Inflow [NET]* ≥ [FINAL] - [PRELIMINARY1]	The [M. FLOW] lamp turns off, and middle flow stops.
⇩	
Inflow [NET]* ≥ [FINAL] - [F-FALL]	The [D. FLOW] lamp turns off, and fine flow stops.
⇩	
Weighing is complete, and judgment of weighing values can be executed.	The [FINISH] lamp lights.

Status display lamps light according to judgment results.

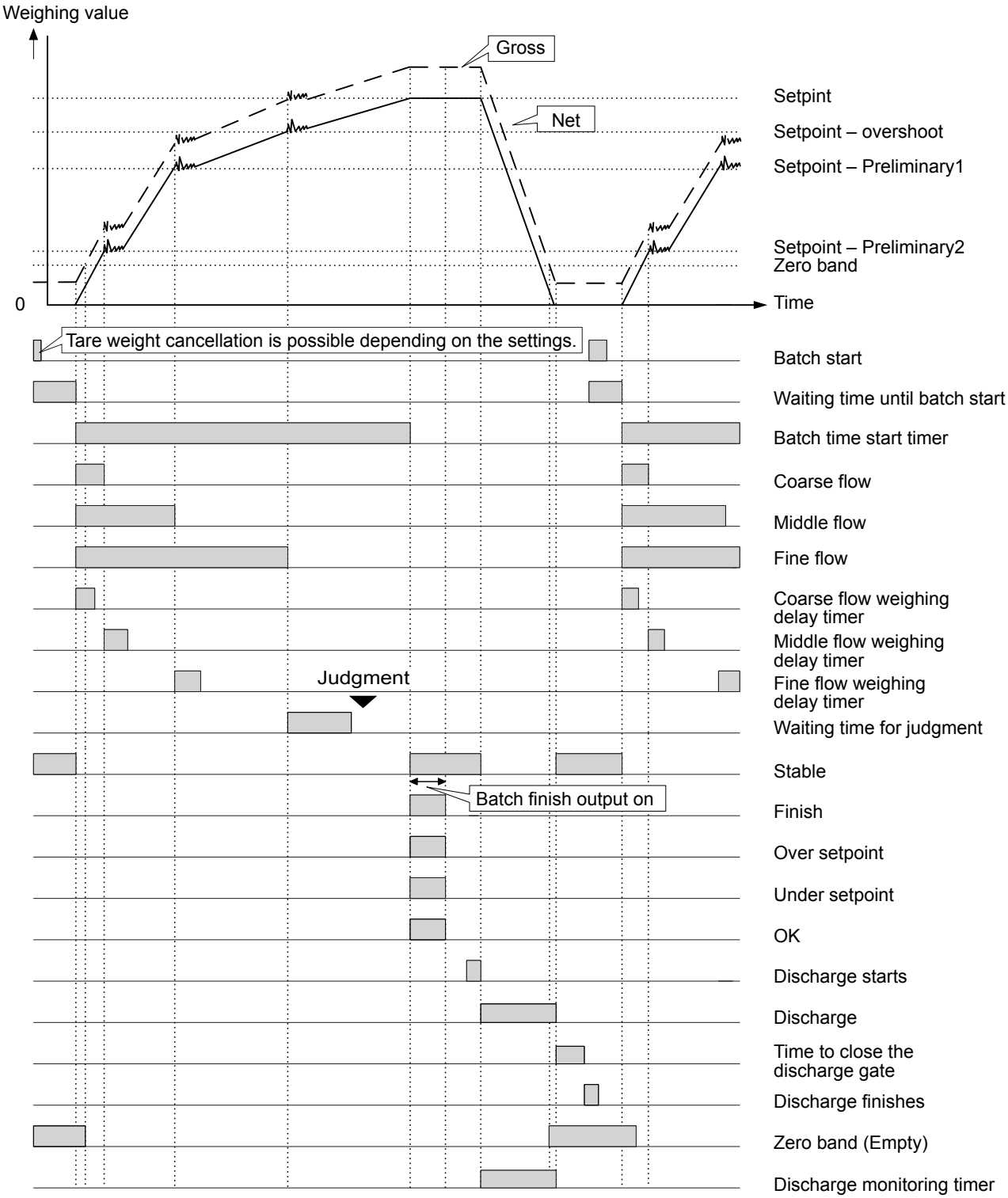
- Inflow [NET]* < [FINAL] - [UNDER]: The [UNDER] lamp lights.
- Inflow [NET]* > [FINAL] + [OVER]: The [OVER] lamp lights.
- [FINAL] - [UNDER] ≤ inflow [NET]* ≤ [FINAL] + [OVER]: The [OK] lamp lights.
- Inflow [GROSS] or [NET]* > [FULL]: The [FULL] lamp lights.

⇩	
Discharge starts.	The weighing hopper discharge gate opens.
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND]	The weighing hopper discharge gate closes.
⇩	
Discharge finishes.	*[NET]: The load excluding the weight of the container

Note:

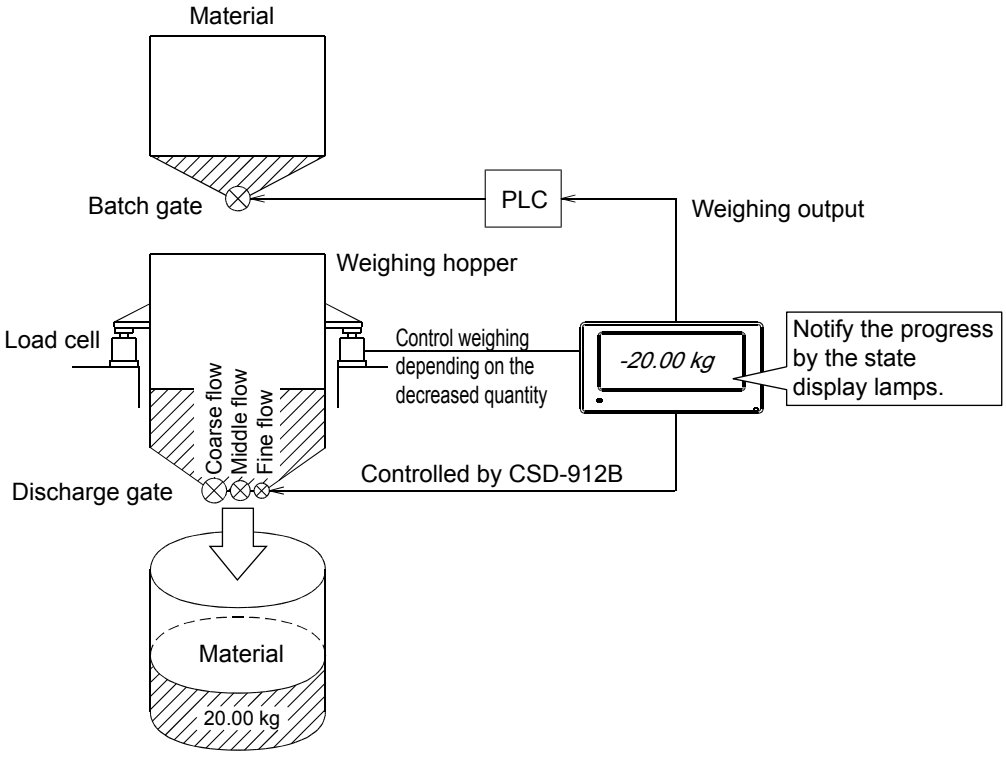
- Once coarse flow, middle flow or fine flow stops, inflow does not start until the next weighing.
- If [PRELIM2] is set to 0 in [BRAND CODE], coarse flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], middle flow is not executed.
- To change the comparative target for [ZERO BAND] and [FULL], refer to Chapter 7.9.1.4 and 7.9.1.5 for more information.

The following chart shows the flow of measurement in sequential inflow mode.



7.4.3 Weighing in sequential discharge mode

CSD-912 controls weighing operations based on the decrease in the weighed object discharged from the weighing hopper. Status display lamps indicate weighing progress.



Note:

Control the inflow of the weighed object to the weighing hopper while monitoring full signals from CSD-912 using such external devices as a programmable logic controller (PLC).

The flow of weighing in sequential discharge mode is described below.

Weighing start	The [F. FLOW], [M. FLOW] and [D. FLOW] lamps light. Coarse flow, middle flow and fine flow start
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND]	The [ZERO BAND] lamp lights.
⇩	
Discharge [NET]* ≥ [FINAL] - [PRELIMINARY2]	The [F. FLOW] lamp turns off, and coarse flow stops.
⇩	
Discharge [NET]* ≥ [FINAL] - [PRELIMINARY1]	The [M. FLOW] lamp turns off, and middle flow stops.
⇩	
Discharge [NET]* ≥ [FINAL] - [F-FALL]	The [D. FLOW] lamp turns off, and fine flow stops.
⇩	
Weighing is complete, and judgment of weighing values can be executed.	The [FINISH] lamp lights.

Status display lamps light according to judgment results.

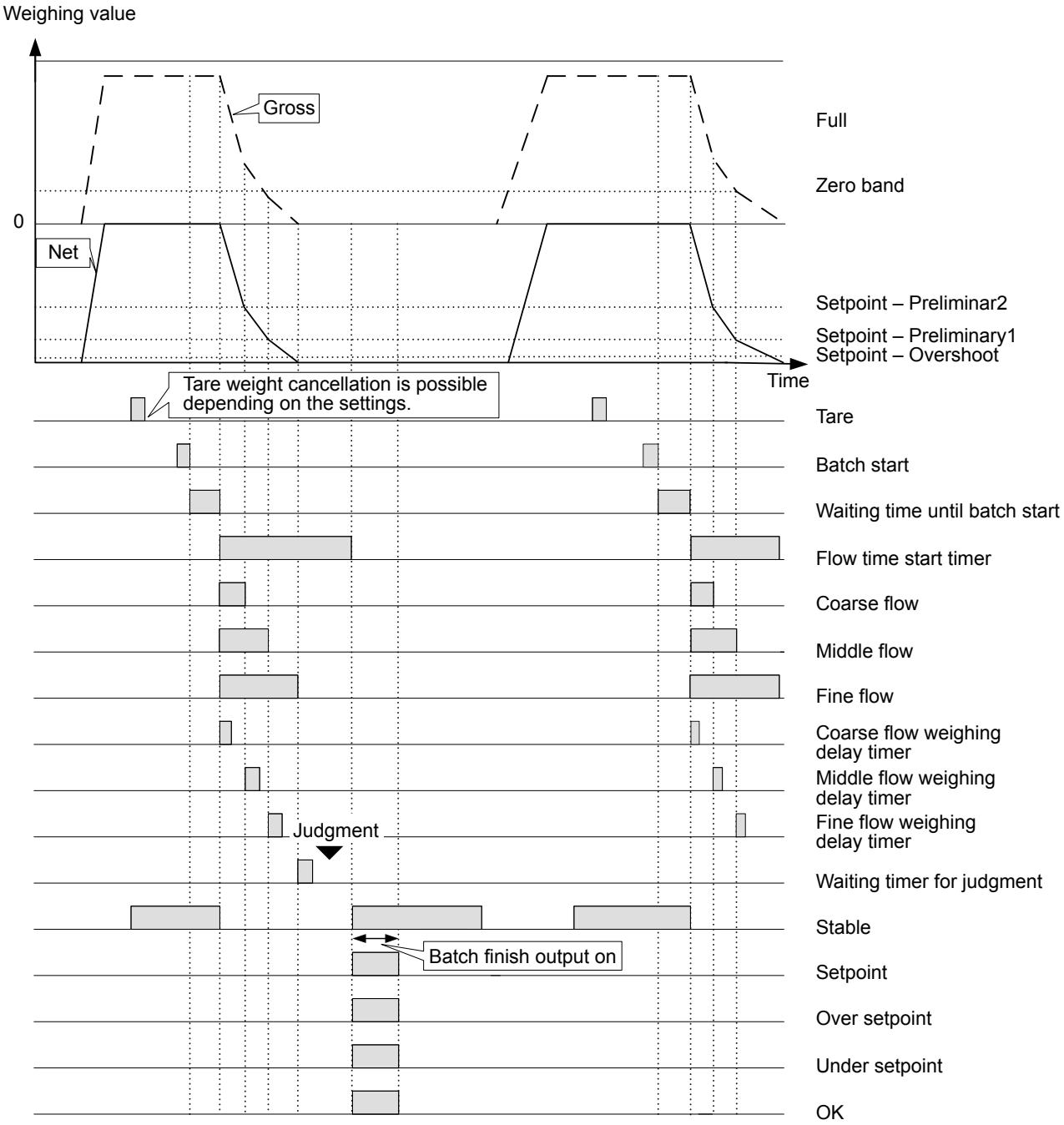
- Discharge [NET]* < [FINAL] - [UNDER] The [UNDER] lamp lights.
- Discharge [NET]* > [FINAL] + [OVER]: The [OVER] lamp lights.
- [FINAL] - [UNDER] ≤ discharge [NET]* ≤ [FINAL] + [OVER]: The [OK] lamp lights.
- Discharge [GROSS] or [NET]* > [FULL]: The [FULL] lamp lights.

*[NET]: The load excluding the weight of the container

Note:

- Once coarse flow, middle flow or fine flow stops, discharge does not start until the next weighing.
- If [PRELIM2] is set to 0 in [BRAND CODE], coarse flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], middle flow is not executed.
- To change the comparative target for [ZERO BAND] and [FULL], refer to Chapter 7.9.1.4 and 7.9.1.5 for more information.

The following chart shows the flow of weighing in sequential discharge mode.



7.4.4 Automatic overshoot correction

[F-FLL] for the next weighing is automatically calculated using the actual [F-FLL] from past weighings to correct weight values. To use automatic overshoot correction, set the following items after entering the normal settings for[SEQUENTIAL MODE] (refer to Chapter 7.4.1).

- [A. F.F. COMPENSATION]
- Saving automatic overshoot correction
- [A. F.F. COMPENSATION] for [BRAND CODE]

Note:

Refer to Chapter 7.2.3 for more information on[BRAND CODE].

7.4.4.1 [A. F.F. COMPENSATION] settings

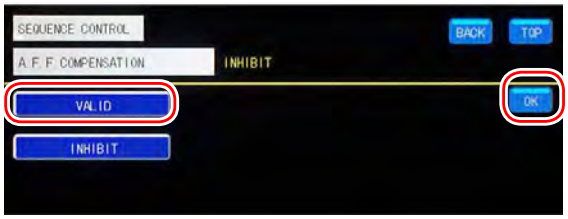
To use automatic overshoot correction, enable [A.F. F. COMPENSATION].

Display the [A.F. F. COMPENSATION] setting screen

1. Tap [SEQUENCE CONTROL] on [MENU 1/2]
   ▷ [SEQUENCE CONTROL 1/3] is displayed.

2. Tap [A.F. F. COMPENSATION] on [SEQUENCE CONTROL 2/3]
   ▷ The [A.F. F. COMPENSATION] setting screen is displayed.

Enable [A.F. F. COMPENSATION]setting screen



3. Tap [VALID]

   Default: [INHIBIT]

4. Tap [OK]
   ▷ [A. F.F. COMPENSATION] is set to [VALID], and [SEQUENCE CONTROL 2/3] is displayed.

Note:

Setting [INHIBIT] disables automatic overshoot correction.

Confirm settings

5. Confirm the [A.F. F. COMPENSATION] settings

   The setting is complete if the item set in step 2 appears under [A.F. F. COMPENSATION].

7.4.4.2 Automatic overshoot correction save settings

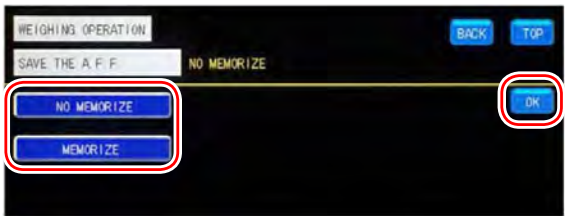
Set whether to save automatic overshoot correction settings executed for the previous brand when switching brands.

Display the automatic overshoot correction save setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [SAVE THE A.F. F.]
   ▷ The automatic overshoot correction save setting screen is displayed.

Set the automatic overshoot correction save settings

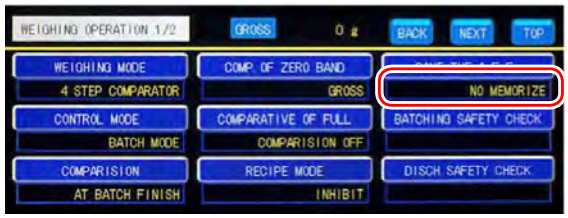


3. Tap [NO MEMORIZE]/[MEMORIZE]

   Default: [NO MEMORIZE]

4. Tap [OK]
   ▷ The automatic overshoot correction save settings are set, and [WEIGHING OPERATION 1/2] is displayed.

Confirm settings



5. Confirm the automatic overshoot correction save settings

   The setting is complete if the item set in the step 2 appears under [SAVE THE A. F. F.].

7.4.4.3 Automatic overshoot correction operation

To take a weighing in sequential mode with automatic overshoot correction set to [VALID], the average value of the actual overshoots from the latest fourweighings are automatically used as correction values for the current weight value.

Note:

- Automatic overshoot correction is not executed if weight value - setting value of [FINAL] exceeds the [A.F. F. COMPENSATION].
- Automatic overshoot correction is not executed if [A.F. F. COMPENSATION] for [BRAND CODE] is set to 0.
- Automatic overshoot correction values are held even if CSD-912 is off.

7.4.5 Safety check input

Weighing automatically stops in the event of malfunction, for example, weighing hopper collapse or discharged weighed object container filling failure.

To use safety check input, set the following items after entering the normal settings for [SEQUENTIAL MODE] (refer to Chapter 7.4.1).

- [I/O INPUT1] to [I/O INPUT1] (allocation of safety check input to external control inputs)
- [INFLOW SAFETY CHECK]
- [DISCH. SAFETY CHECK]
- [RECIPE SAFETY CHECK]
- [MIXING SAFETY CHECK]
- Safety check condition for general sequence

7.4.5.1 Allocation of safety check input to external control inputs

To use safety check input, allocate safety check input to external control inputs, such as a the safety check switch and safety check sensor. Allocate the safety check input function to the corresponding I/O external control input. Allocate up to eight safety check inputs.

Display the [I/O] screen

1. Tap [I/O] on [MENU 1/2]
   ▷ [I/O SETTING 1/6] is displayed.

Allocate the safety check input function to the I/O input

2. Tap [I/O INPUT1] on [I/O SETTING 2/6]
   ▷ A list of functions that can be allocated to [I/O INPUT1] is displayed.

3. Tap one from [SAFETY INPUT1] to [SAFETY INPUT8] on I/O setting screen 4/6.
4. Tap [OK]
   ▷ The safety check input function is allocated to [I/O INPUT1], and [I/O SETTING 2/6] is displayed.

> **Note:**
>
> Repeat steps 1 to 3 to allocate the safety check input function to another I/O input.

Confirm settings

5. Confirm the I/O input settings.

   The setting is complete if the item set in the step 2 appears under [I/O INPUT1] to [I/O INPUT8].

7.4.5.2 [INFLOW SAFETY CHECK] settings

Set the safety check input for inflow of the weighed object.

Display the [INFLOW SAFETY CHECK] setting screen

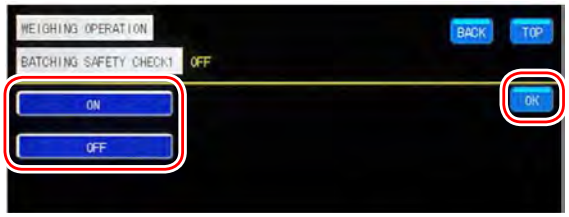
1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [INFLOW SAFETY CHECK]
   ▷ The [INFLOW SAFETY CHECK] setting screen is displayed.

Set the safety check input for inflow

3. Tap one from [SAFETY CHECK1] to [SAFETY CHECK8]

   Select the safety check input for inflow The [INFLOW SAFETY CHECK] setting screen is displayed.



4. Tap [ON]/[OFF]
5. Tap [OK]
   ▷ The safety check input for batching of the weighed object is set, and the [INFLOW SAFETY CHECK] setting screen is displayed.

> **Note:**
>
> Repeat steps 1 to 3 to use another safety check input during discharge.

Confirm settings

6. Confirm [INFLOW SAFETY CHECK]

   The setting is complete if the item set in the step 2 appears under [SAFETY CHECK1] to [SAFETY CHECK8].

7.4.5.3 [DISCH. SAFETY CHECK] settings

Set the safety check input for recipe for the weighed object.

Display the [DISCH. SAFETY CHECK] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]

   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [DISCH. SAFETY CHECK]

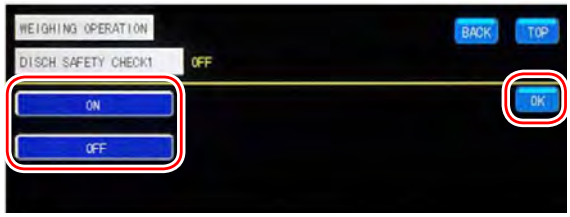
   ▷ The [DISCH. SAFETY CHECK] setting screen is displayed.

Set the safety check input for discharge

3. Tap one from [SAFETY CHECK1] to [SAFETY CHECK8]

   Select the safety check input for discharge

   ▷ The [DISCH. SAFETY CHECK] setting screen is displayed.



4. Tap [ON]/[OFF]
5. Tap [OK]
   ▷ The safety check input for discharge of the weighed object is set, and the [DISCH. SAFETY CHECK] setting screen is displayed.

> **Note:**
>
> Repeat steps 1 to 3 to use another safety check input during discharge.

Confirm settings

6. Confirm [DISCH. SAFETY CHECK]

   The setting is complete if the item set in the step 2 appears under [SAFETY CHECK1] to [SAFETY CHECK8].

7.4.5.4 [RECIPE SAFETY CHECK] settings

Set the safety check input for recipe for the weighed object.

Display the [RECIPE SAFETY CHECK] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

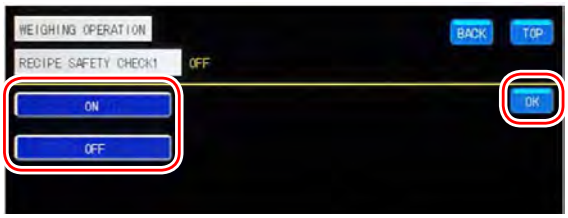
2. Tap [RECIPE SAFETY CHECK] on [WEIGHING OPERATION 2/2]
   ▷ The [RECIPE SAFETY CHECK] setting screen is displayed.

Set the safety check input for recipe

3. Tap one from [SAFETY CHECK1] to [SAFETY CHECK8]

   Select the safety check input for recipe.

   ▷ The recipe safety check setting screen is displayed.



4. Tap [ON]/[OFF]
5. Tap [OK]

   ▷ The safety check input for recipe of the weighed object is set, and the [RECIPE SAFETY CHECK] setting screen is displayed.

> **Note:**
>
> Repeat steps 1 to 3 to use another safety check input during recipe.

Confirm settings

6. Confirm [RECIPE SAFETY CHECK]

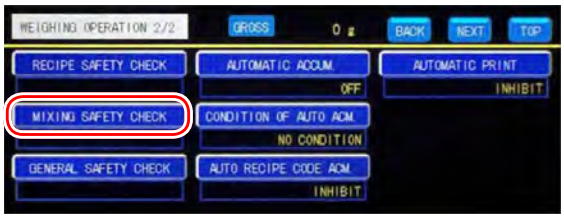
   The setting is complete if the item set in the step 2 appears under [SAFETY CHECK1] to [SAFETY CHECK8].

7.4.5.5 [MIXING SAFETY CHECK] settings

Set the safety check input for mixing for the weighed object.

Display the [MIXING SAFETY CHECK] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.



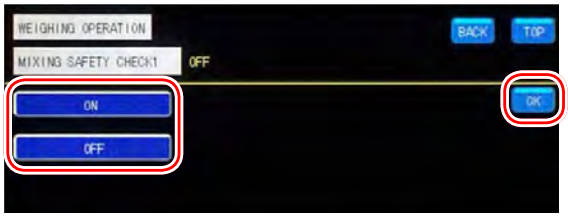
2. Tap [MIXING SAFETY CHECK] on [WEIGHING OPERATION 2/2]
   ▷ The [MIXING SAFETY CHECK] setting screen is displayed.

Set the safety check input for mixing

3. Tap one from[SAFETY CHECK1] to [SAFETY CHECK8]

   Select the safety check input for mixing.

   ▷ The mixing safety check setting screen is displayed.



4. Tap [ON]/[OFF]
5. Tap [OK]
   ▷ The safety check input for mixing of the weighed object is set, and the [MIXING SAFETY CHECK] setting screen is displayed.

> **Note:**
>
> Repeat steps 1 to 3 to use another safety check input during mixing.

Confirm settings

6. Confirm [MIXING SAFETY CHECK]

The setting is complete if the item set in the step 2 appears under [SAFETY CHECK1] to [SAFETY CHECK8].

7.4.5.6 General sequence safety check condition settings

Set the safety check input for weighing in [SEQUENTIAL MODE]

Display the general sequential mode safety check condition setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

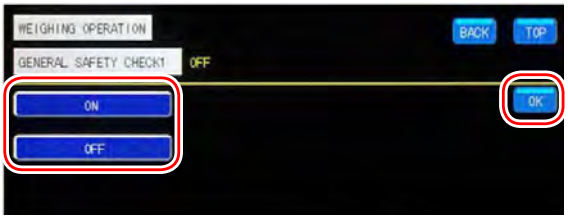
2. Tap [GENERAL SAFETY CHECK] on [WEIGHING OPERATION 2/2]
   ▷ The general sequential mode safety check condition setting screen is displayed.

Set the safety check input for general sequential modes

3. Tap one from [SAFETY CHECK1] to [SAFETY CHECK8]

   Select the safety check input for general sequential modes

   ▷ The general sequential mode safety check setting screen is displayed.



4. Tap [ON]/[OFF]
5. Tap [OK]
   ▷ The safety check input for the general sequential mode is set, and the general sequential mode safety check condition setting screen is displayed.

Note:

Repeat steps 1 to 3 to use another safety check input for general sequential mode.

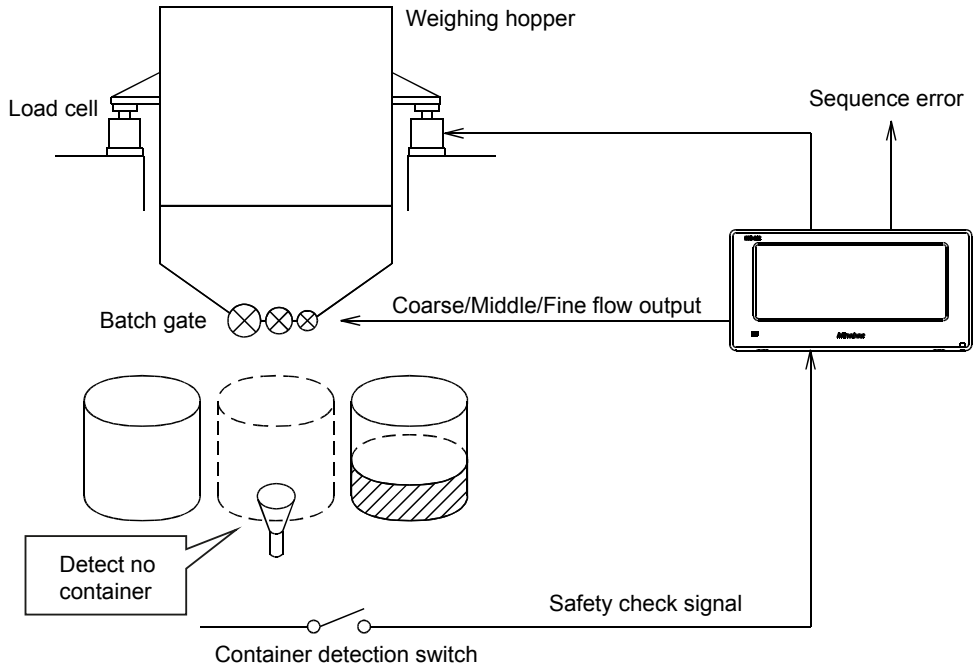
Confirm settings

6. Confirm the general sequential mode safety check condition

   The setting is complete if the item set in the step 2 appears under [SAFETY CHECK1] to [SAFETY CHECK8].

7.4.5.7 Safety check input operation

If a failure occurs during weighing in sequence mode, safety check signals are input from such external control inputs as a safety check switch and a safety check sensor, which causes a sequence error and weighing automatically stops.



7.5 Weighing in supplementary flow/discharge mode

If the volume of the inflow/discharge object for weighing is insufficient, the deficiency is automatically supplied.

If [CONTROL MODE] is [INFLOW MODE], a small amount is fed to the weighing hopper.

If [CONTROL MODE] is [DISCHARGE MODE], a small amount is discharged from the weighing hopper.

Before taking a weighing, enter the necessary settings for weighing in supplementary flow/discharge mode.

7.5.1 Settings prior to measurement

To take measurements in supplementary inflow/discharge mode, set the following items after entering the normal [SEQUENTIAL MODE] settings (refer to Chapter 7.4.1).

- [MAXTIME OF COMPENSATION]
- [COMPARISON FLOW EVAL]
- [SUPPLEMENTARY FLOW TIME] and [JUDGE. AFTER S-FLOW WAIT] of [BRAND CODE]

Set [MAXTIME OF COMPENSATION] and [COMPARISON FLOW EVAL] on the sequence control screen. Tap [SQUENCE CONTROL] on [MENU 1/2] to display the sequence control screen.

1	[MAXTIME OF COMPENSATION]
2	[COMPARISON FLOW EVAL]

Set the [SUPPLEMENTARY FLOW TIME] and the waiting time after [BRAND CODE] supplementary flow on the [BRAND CODE] screen. Tap [BRAND CODE] on [MENU 1/2] to display the [BRAND CODE] screen.

Refer to Chapter 7.2.3 for more information on[BRAND CODE].

3	[SUPPLEMENTARY]
4	[JUDGE. AFTER S-FLOW WAIT]

7.5.1.1 [MAXTIME OF COMPENSATION] settings

Set the maximum number of times of supplementary inflow/discharge

Set the maximum number of times of supplementary inflow/discharge

1. Enter the maximum number of times of supplementary inflow/discharge.

   Permissible range: 0 to 255; Default: 0

Note:

- Set 0 to invalidate supplementary flow/discharge.
- Refer to Chapter 5.5 for more information.

---

2. Tap [OK]

   ▷ The maximum number of times of supplementary inflow/discharge is set, and [SEQUENCE CONTROL 1/3] is displayed.

Confirm settings

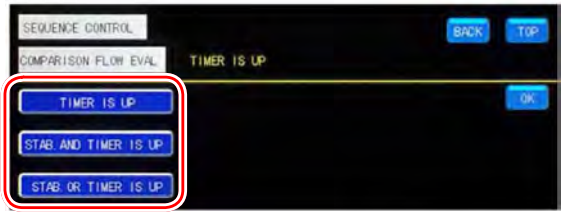
3. Confirm the maximum number of times of supplementary inflow/discharge.

   The setting is complete if the value set in step 1 appears under [MAXTIME OF COMPENSATION].

7.5.1.2 [COMPARISON FLOW EVAL] settings

Set the conditions to judge the weight value of the inflow/discharge object after supplementary inflow/discharge

Set [JUDGE CONDITION] after supplementary inflow/discharge



1. Select [JUDGE CONDITION] after supplementary inflow/discharge

   [TIMER IS UP]

   Judge when the time set in [JUDGE. AFTER S-FLOW WAIT] under [BRAND CODE] elapses.

[STAB. AND TIMER IS UP]

Judge when the time set in [JUDGE. AFTER S-FLOW WAIT] under [BRAND CODE] elapses and the weighing value stabilizes

[STAB. OR TIMER IS UP]

Judge when the time set in [JUDGE. AFTER S-FLOW WAIT] under [BRAND CODE] elapses or the weighing value stabilizes

Default: [STAB. AND TIMER IS UP]

Note:

Refer to Chapter 7.11.5 for more information about the conditions of stability.

2. Tap [OK]
   ▷ [JUDGE CONDITION] after supplementary inflow/ discharge is set, and [SEQUENCE CONTROL 1/3] is displayed.

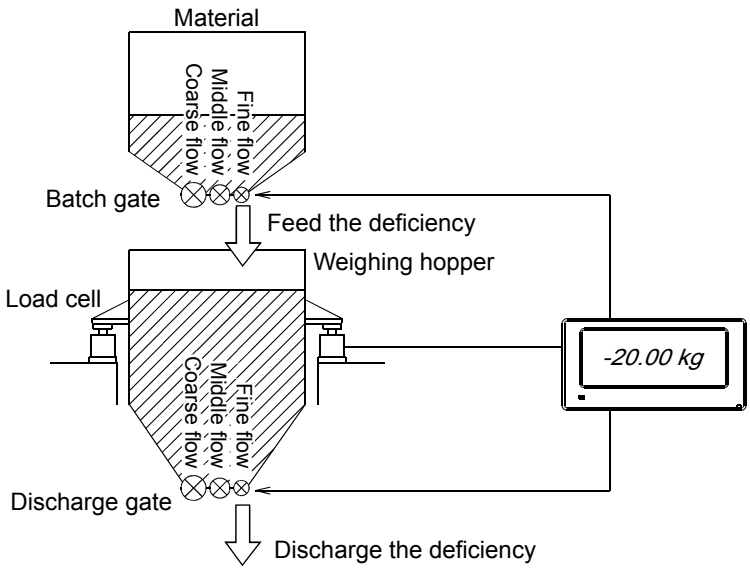
Confirm settings

3. Confirm [JUDGE CONDITION] after supplementary inflow/discharge

   The setting is complete if the item set in step 1 appears under [COMPARISON FLOW EVAL].

7.5.2 Weighing

If the volume of the inflow/discharge object for measurement to/from the weighing hopper is insufficient, the deficiency is automatically fed/discharged.



Measurement in supplementary flow/discharge mode is described below.

Weighing start	The [F. FLOW], [M. FLOW] and [D. FLOW] lamps light. Coarse flow, middle flow and fine flow start
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND] setting value	The [ZERO BAND] lamp lights.
⇩	
Inflow/discharge [NET]* ≥ [FINAL] setting value - [PRELIMINARY2]setting value	The [F. FLOW] lamp turns off, and coarse flow stops.
⇩	
Inflow/discharge [NET]* ≥ [FINAL] setting value - [PRELIMINARY1]setting value	The [M. FLOW] lamp turns off, and middle flow stops.
⇩	
Inflow/discharge [NET]* ≥ [FINAL] setting value - [F-FALL]setting value	The [D. FLOW] lamp turns off, and fine flow stops.

Supplementary inflow/discharge is executed according to the conditions set before weighing.

- Supplementary inflow/discharge is executed up to the number of times set in [MAXTIME OF COMPENSATION]. Supplementary inflow/discharge stops when the deficiency has been completely compensated by inflow/discharge within the set number of times.
- If the volume is still insufficient after supplementary inflow/discharge up to the number of times set in [MAXTIME OF COMPENSATION], [SQ. ERR2] is displayed on the weight display.

⇩	
Weighing is complete, and judgment of weight values can be executed.	The [FINISH] lamp lights.

Corresponding state display lamps light according to judgment results.

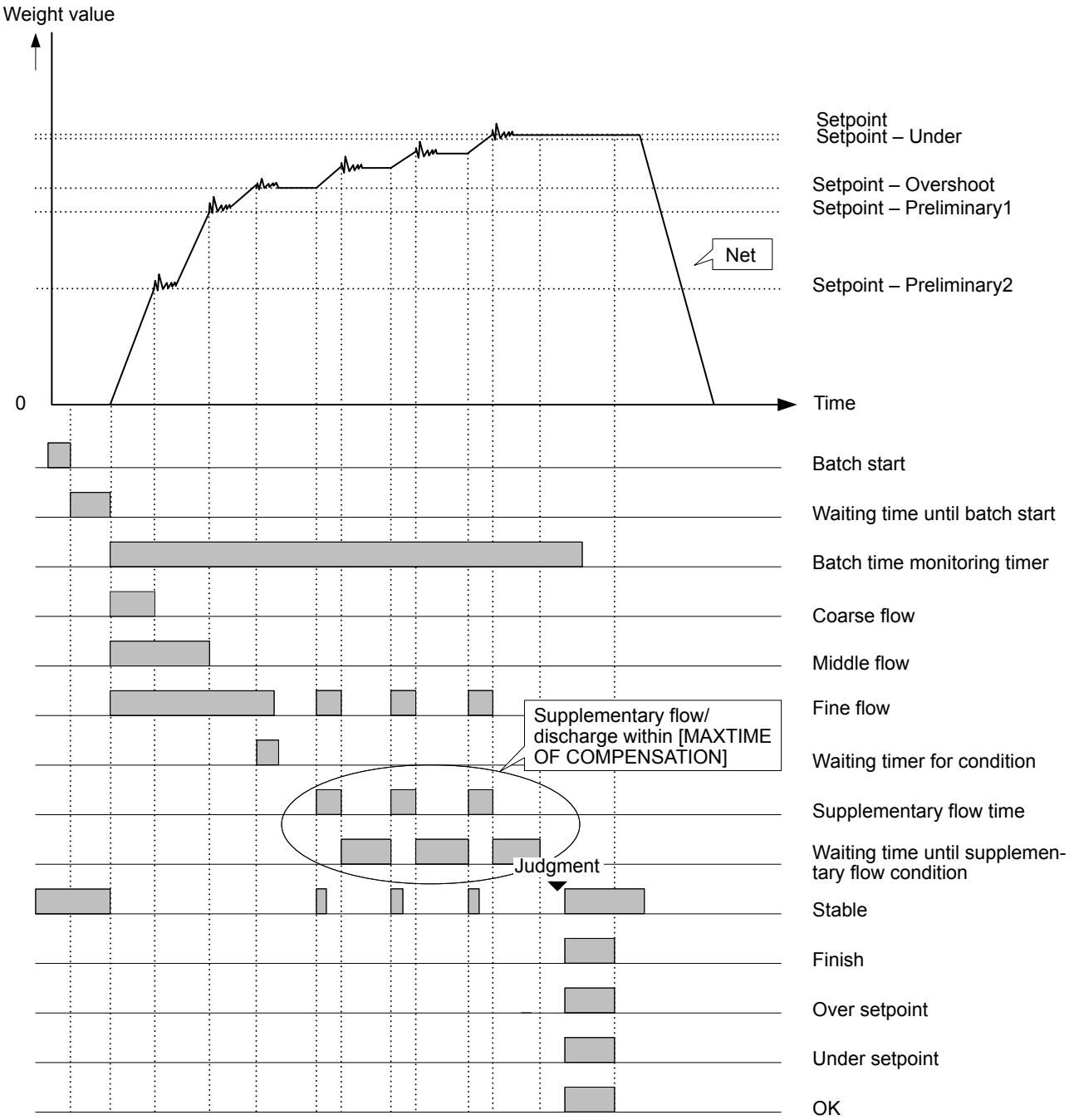
- Inflow/discharge [NET]* < [FINAL] setting value - [UNDER] setting value The [UNDER] lamp lights.
- Inflow/discharge [NET]* > [FINAL] setting value + [OVER] setting value: The [OVER] lamp lights.
- [FINAL] setting value - [UNDER] setting value ≤ inflow/discharge [NET]* ≤ [FINAL]setting value + [OVER] setting value: The [OK] lamp lights.
- Inflow/discharge [GROSS] or [NET]* > [FULL] setting value: The [FULL] lamp lights.

*[NET]: The load excluding the weight of the container

Note:

- Once coarse flow, middle flow or fine flow stops, inflow/discharge does not start until the next weighing.
- If [PRELIM2] is set to 0 in [BRAND CODE], coarse flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], middle flow is not executed.
- Change the comparative target [ZERO BAND] and [FULL]: Refer to Chapter 7.11.2 and 7.11.3 for more information.

Weighing in supplementary inflow/discharge mode is shown in the chart below.



7.6 Weighing in initial flow mode

Use initial flow to weigh objects that may scatter on inflow from all gates from the start. Coarse flow, middle flow and fine flow start synchronously in normal sequential mode. If powder or liquid is fed from all the gates at once, it may scatter and spill due to impact with the weighing hopper. To prevent such dispersion, materials are fed sequentially in initial flow mode: fine flow → middle flow →coarse flow.

Before taking a weight, enter the necessary settings for weighing in initial flow mode.

Note:

Initial flow mode is available only if [CONTROL MODE] is [INFLOW MODE].

7.6.1 Brand settings

To take weighings in initial flow mode, set the following items after entering the normal settings of [SEQUENTIAL MODE] (refer to Chapter 7.4.1).

- [INITIAL FULL FLOW] of [BRAND CODE]
- [INITIAL MEDIUM FLOW] of [BRAND CODE]

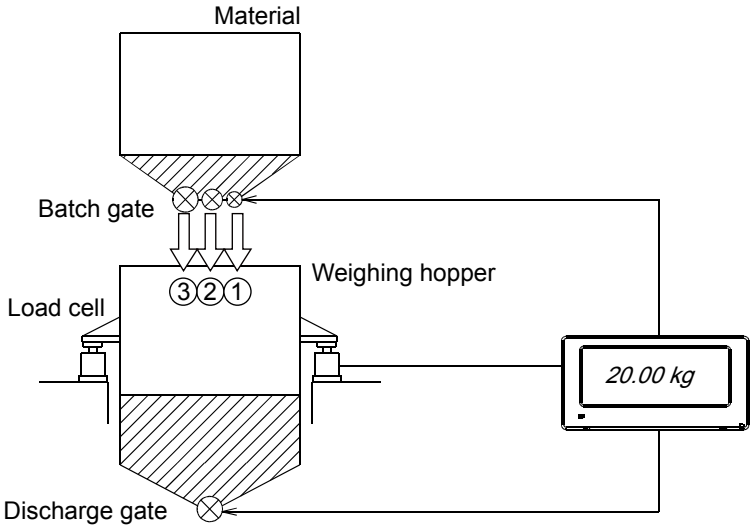
Set [INITIAL FULL FLOW] and [INITIAL MEDIUM FLOW] on the [BRAND CODE] screen. Tap [BRAND CODE] on [MENU 1/2] to display the [BRAND CODE] screen.

Refer to Chapter 7.2.3 for more information on [BRAND CODE].

1	[INITIAL FULL FLOW]
2	[INITIAL MEDIUM FLOW]

7.6.2 Weighing

When weighing starts, the object to be weighed is fed sequentially: fine flow → middle flow →coarse flow.



The flow of weighing in initial flow mode is described below.

Weighing start	The [D. FLOW] lamp lights, and fine flow starts.
⇩	
[GROSS] or [NET]* ≤ [ZERO BAND] setting value	The [ZERO BAND] lamp lights.
⇩	
Inflow [NET]* ≤ [INITIAL MEDIUM FLOW] setting value	The [M. FLOW] lamp lights, and middle flow starts.
⇩	
Inflow [NET]* ≤ [INITIAL FULL FLOW] setting value	The [F. FLOW] lamp lights, and coarse flow starts.
⇩	
Inflow [NET]* ≥ [FINAL] setting value - [PRELIMINARY2]setting value	The [F. FLOW] lamp turns off, and coarse flow stops.
⇩	
Inflow [NET]* ≥ [FINAL] setting value - [PRELIMINARY1]setting value	The [M. FLOW] lamp turns off, and middle flow stops.
⇩	
Inflow [NET]* ≥ [FINAL] setting value - [F-FALL]setting value	The [D. FLOW] lamp turns off, and fine flow stops.
⇩	
Weighing is complete, and judgment of weighing values can be executed.	The [FINISH] lamp lights.

Corresponding state display lamps light according to judgment results.

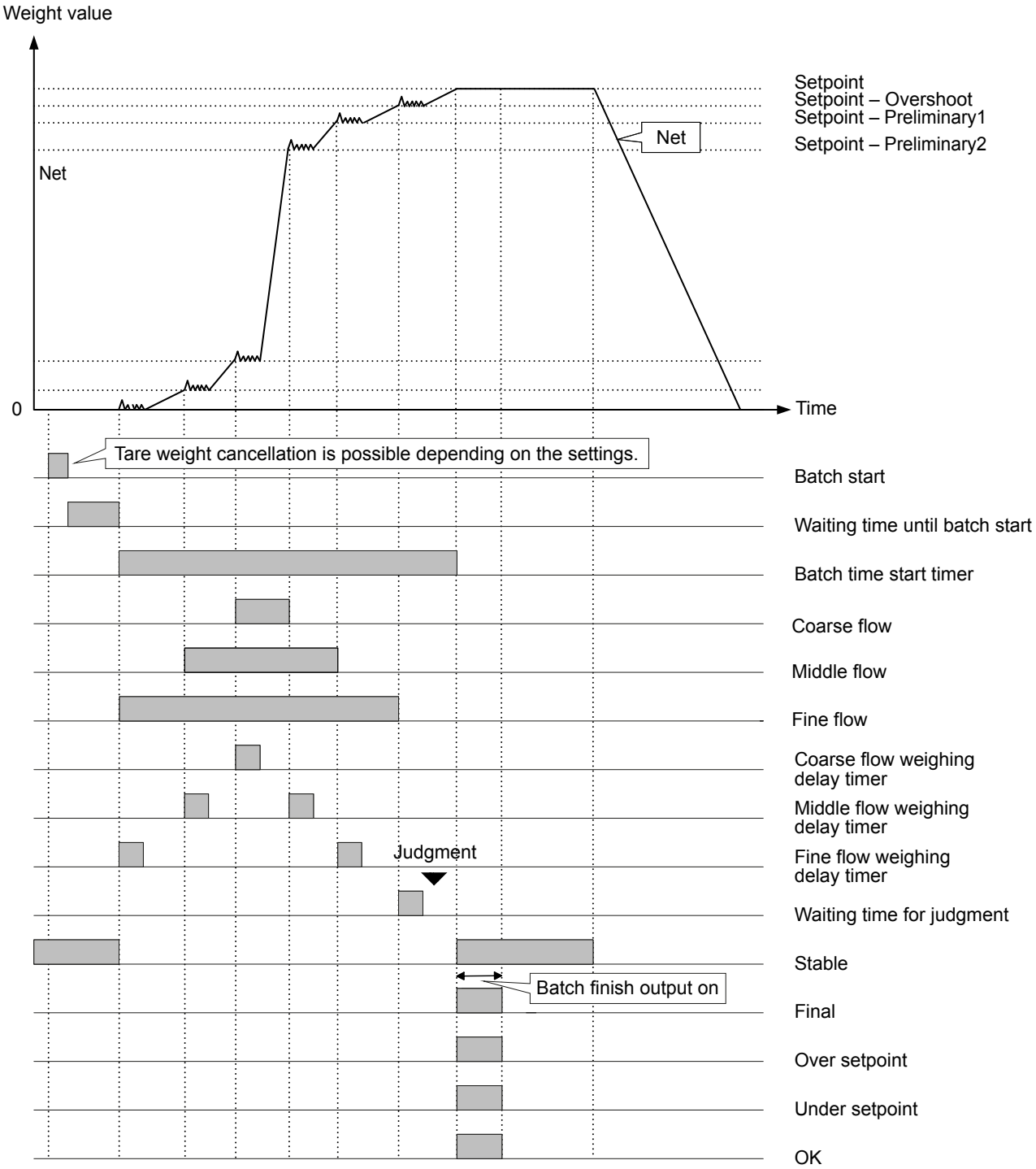
- Inflow [NET]* < [FINAL] setting value - [UNDER] setting value: The [UNDER] lamp lights.
- Inflow [NET]* > [FINAL] setting value + [OVER] setting value: The [OVER] lamp lights.
- [FINAL] setting value - [UNDER] setting value ≤ inflow [NET]* ≤ [FINAL] setting value + [OVER] setting value: The [OK] lamp lights.
- Inflow [GROSS] or [NET]* > [FULL] setting value: The [FULL] lamp lights.

  *[NET]: The load excluding the weight of the container

Note:

- Once coarse flow, middle flow or fine flow stops, inflow does not start until the next weighing.
- If [PRELIM2] is set to 0 in [BRAND CODE], coarse flow is not executed.
- If [PRELIM1] is set to 0 in [BRAND CODE], middle flow is not executed.
- To change the comparative target for the [ZERO BAND] and [FULL] values, refer to Chapter 7.11.2 and 7.11.3 for more information.

The following chart shows the flow of weighing in initial control mode.



7.7 Weighing in nozzle control mode

CSD-912 controls nozzle ascension/decension while filling a container with the weighing target using a weighing hopper with a nozzle.

Before taking a weight, enter the necessary settings for weighing in nozzle control mode.

Note:

Nozzle control mode is available only if [CONTROL MODE] is [INFLOW MODE].

7.7.1 Settings prior to weighing

To take weighings in nozzle control mode, set the following items after entering the normal settings of [SEQUENTIAL MODE] (refer to Chapter 7.4.1).

- [NOZZLE OPERATION]
- [INFLOW START DELAY TIMER] (waiting time for nozzle descent)

Set [NOZZLE OPERATION] and [INFLOW START DELAY TIMER] on the sequence control screen Tap [SQUENCE CONTROL] on [MENU 1/2] to display the sequence control screen.

1	[NOZZLE OPERATION]
2	Waiting time for nozzle descent

Note:

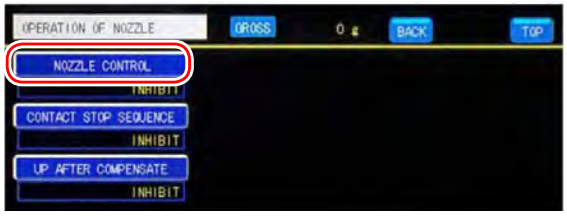
[INFLOW START DELAY TIMER] is the waiting time setting for nozzle descent in nozzle control mode.

7.7.1.1 [OPERATION OF NOZZLE] settings

Set the following items related to nozzle operation

- Whether to start weighing in nozzle control mode
- Whether to stop the weighing when the nozzle touches the container
- Whether to prevent the nozzle from descending at input judgment in supplementary flow mode

Set [NOZZLE CONTROL]



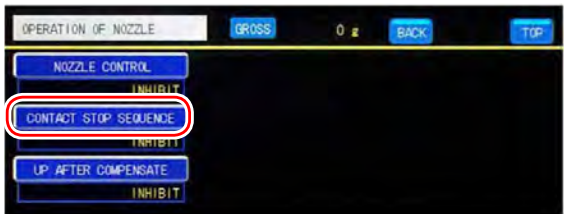
1. Tap [NOZZLE CONTROL]
   ▷ The [NOZZLE CONTROL] setting screen is displayed.

2. Tap [VALID]/[INHIBIT]

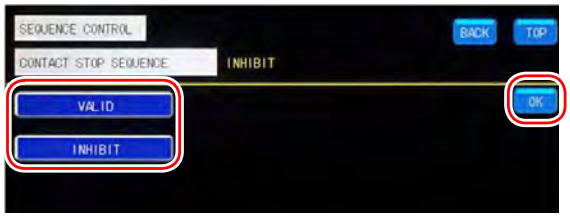
   Set [VALID] and the nozzle descends at weighing start and ascends at fine flow end.

   Default: [INHIBIT]

Set nozzle contact protection



3. Tap [CONTACT STOP SEQUENCE]
   ▷ The [CONTACT STOP SEQUENCE] setting screen is displayed.



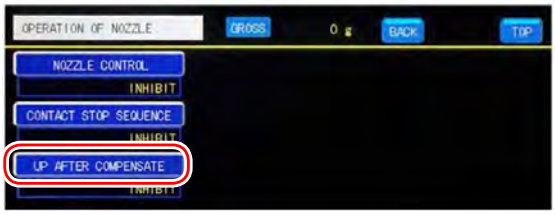
4. Tap [VALID]/[INHIBIT]

   Set [VALID] to stop weighing when the descending nozzle touches the container and the weighing value exceeds the setting value of [ZERO BAND]

   Default: [INHIBIT]

5. Tap [OK]
   ▷ [CONTACT STOP SEQUENCE] is set, and the [OPERATION OF NOZZLE] screen is displayed.

Set the nozzle ascent at supplementary flow judgment



6. Tap [UP AFTER COMPENSATION]
   ▷ The nozzle ascent setting screen at supplementary flow judgment is displayed.

7. Tap [VALID]/[INHIBIT]

   Set [VALID] to prevent nozzle descent during input judgment in supplementary flow mode.

   Default: [INHIBIT]

Note:

Refer to Chapter 7.5 for more information.

8. Tap [OK]
   ▷ The nozzle ascent at supplementary flow judgment is set, and the [OPERATION OF NOZZLE] delete screen is displayed.

7.7.1.2 Setting the [INFLOW START DELAY TIMER] (waiting time for nozzle descent)

Set the waiting time from the start of weighing to nozzle descent.

Set the waiting time for nozzle descent

1. Enter the waiting time until nozzle descent

   Permissible range: 0 to 9.999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

2. Tap [OK]

▷ The waiting time from start of weighing to nozzle descent is set, and [SEQUENCE CONTROL 2/3] is displayed.

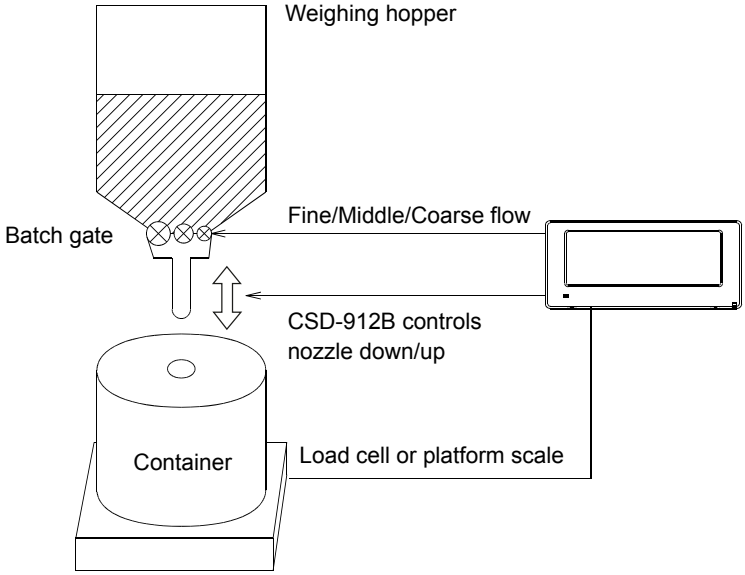
Confirm settings

3. Confirm the waiting time for nozzle descent

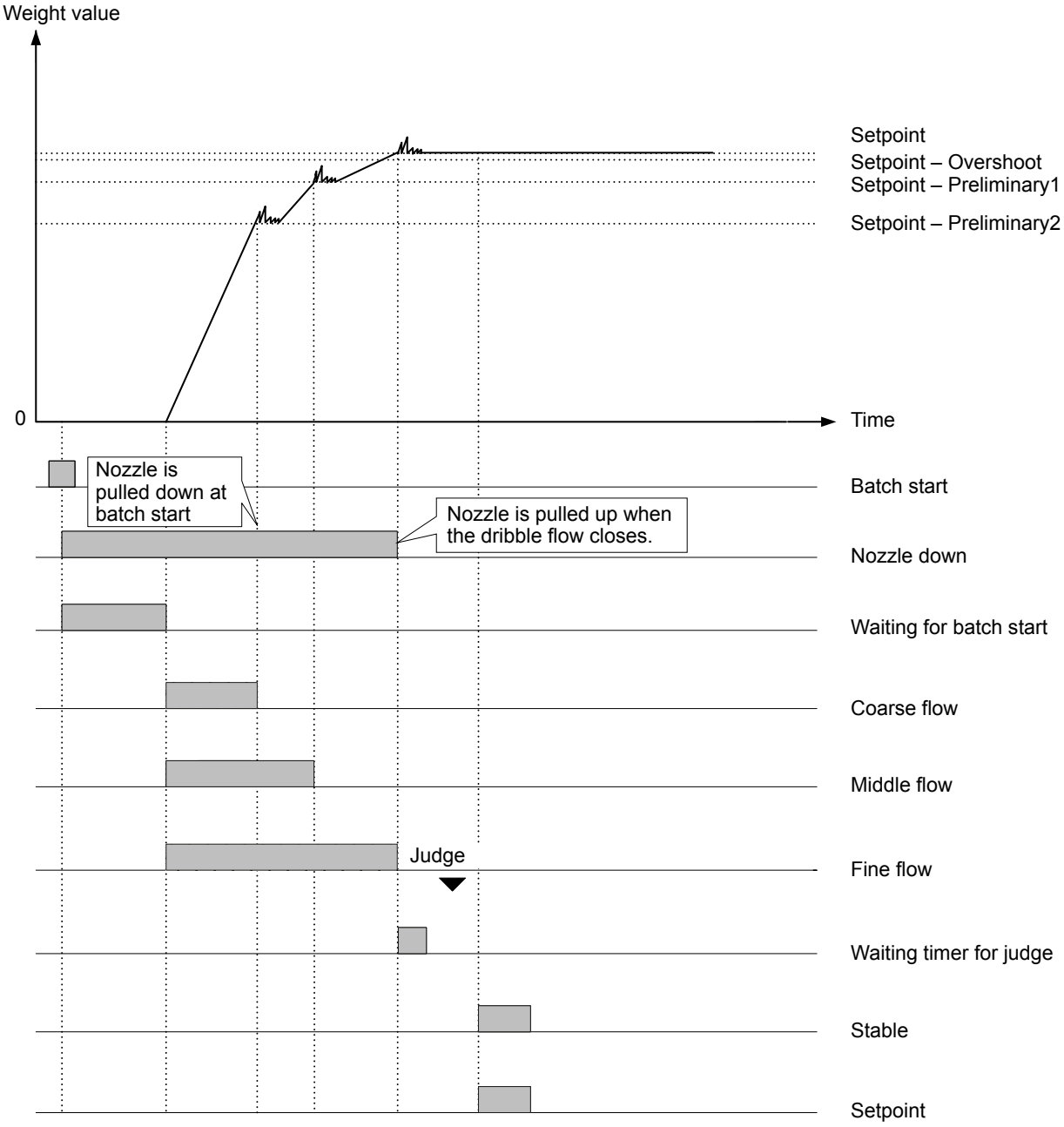
   The setting is complete if the value set in step 1 appears under [INFLOW START DELAY TIMER].

7.7.2 Weighing

CSD-912 controls nozzle ascension/decension while filling a container with the weighing target.



The following chart shows the flow of weighing-+ in nozzle control mode.



7.8 Weighing in recipe mode

In recipe mode, more than one brand is fed to a single weighing hopper. Up to ten brands can be combined.

Before taking a weight, enter the necessary settings for weighing in recipe mode.

7.8.1 Settings prior to weighing

To take weighings in recipe mode, set the following items after entering the normal settings of [SEQUENTIAL MODE] (refer to Chapter 7.4.1).

- [RECIPE MODE]
- Recipe contents

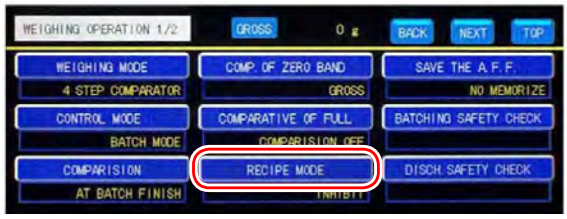
- [RECIPE START ACTIONS]
- [RECIPE FINISH ACTIONS]
- [RECIPE FINISH OUTPUT ON]
- [AUTO RECIPE CODE ACM.] (automatic accumulation)

7.8.1.1 [RECIPE MODE] settings

Set weighing operation in recipe mode

Display the [RECIPE MODE] setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.



2. Tap [RECIPE MODE]
   ▷ The [RECIPE MODE] setting screen is displayed.

Set[RECIPE MODE]

3. Select [RECIPE MODE]

   [INHIBIT]

   No weighing in recipe mode

   [AUTO. RECIPE MODE]

   The set brands are automatically combined.

   [SEMI-AUTO. RECIPE MODE]

   Inflow signals are input for each brand

   Default: [INHIBIT]

4. Tap [OK]
   ▷ [RECIPE MODE] is set, and [WEIGHING OPERATION 1/2] is displayed.

Confirm settings

5. Confirm [RECIPE MODE]

   The setting is complete if the item set in step 2 appears under [RECIPE MODE].

7.8.1.2 Setting the recipe contents

Set the recipe number, recipe name, combination of brands, etc.

Note:

- Set up to 100 recipe contents
- Set recipe brands in advance, refer to Chapter 7.2.3 for more information.

Display the [RECIPE CODE] screen

1. Tap [RECIPE CODE] on [MENU 1/2]

   ▷ The [RECIPE CODE] screen is displayed.

Select the recipe number

2. Tap [↑][↓] to select the recipe number

   Select a vacant number to set a new recipe brand. To change the current recipe brand setting, select the number of the brand to change.

Set [NAME]

3. Tap [NAME]
   ▷ The character input screen is displayed.

4. Enter [NAME]

Note:

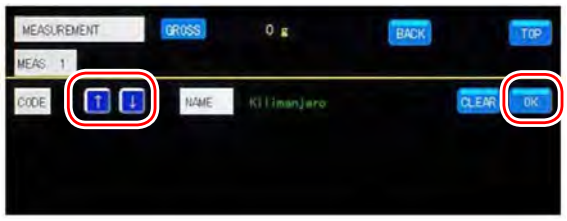
Refer to Chapter 5.5 for more information.

---

5. Tap [OK]
   ▷ [NAME] is set, and [RECIPE CODE 1/2] is displayed.

Set recipe brands

6. Tap [MEASUREMENT 1] on [RECIPE CODE 1/2]
   ▷ The brand selection screen is displayed.



7. Tap [↑][↓] to select the brand number
8. Tap [OK]
   ▷ The brand is set, and [RECIPE CODE 1/2] is displayed.
9. Set brands in Weighing 2 to 10 according to the number of the recipe brands to be combined.

Note:

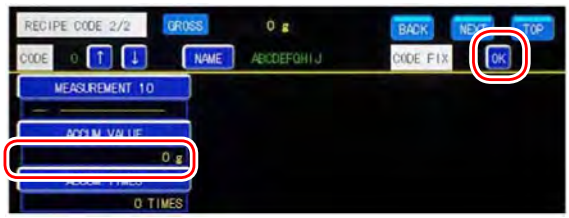
Set brands in the order they are actually fed for recipe.

Confirm/Delete [ACCUM. VALUE]

To check past [ACCUM. VALUE] measurements or to delete [ACCUM. VALUE] for a brand that has been measured,

Note:

Refer to Chapter 7.11.10.



10. Confirm the accumulation value displayed under [ACCUM. VALUE] on [RECIPE CODE 2/2]

Note:

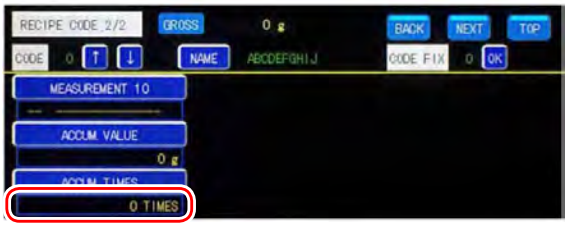
- To delete [ACCUM. VALUE], tap [ACCUM. VALUE] to display the numerical value input screen, then tap [AC] → [OK]
- Deleting [ACCUM. VALUE] also deletes [ACCUM. TIMES].

Confirm/Delete [ACCUM. TIMES]

To check past [ACCUM. TIMES] of past weighings or to delete [ACCUM. TIMES] of an already set brand.

Note:

Refer to Chapter 7.11.10.

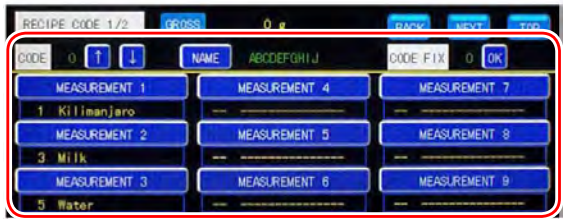


11. Confirm the accumulation times displayed under [ACCUM. TIMES] on [RECIPE CODE 2/2].

Note:

- To delete [ACCUM. TIMES], tap [ACCUM. TIMES] to display the numerical value input screen, then tap [AC] → [OK] in sequence.
- Deleting [ACCUM. TIMES] also deletes [ACCUM. VALUE].

Confirm settings



12. Confirm the settings

    Confirm that the brand number, [NAME] and recipe brands to be combined have been set

Set the recipe contents

13. Tap [OK]

    ▷ The recipe contents are set, and the recipe becomes the weighing target in recipe mode.

Note:

To make already set recipe contents the weighing target, tap [↑][↓] to switch recipe numbers on the [RECIPE CODE] screen, then tap [OK].

7.8.1.3 [RECIPE START ACTIONS] settings

Set whether to execute zero set at the start of weighing in recipe mode.

Note:

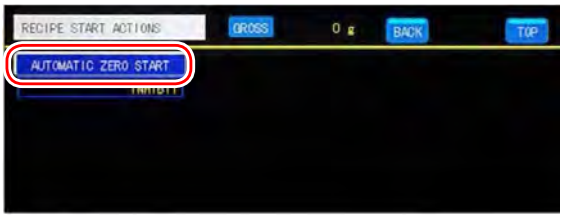
Refer to Chapter 7.10.1 for more information.

Display the[RECIPE START ACTIONS]setting screen

1. Tap [SEQUENCE CONTROL] on [MENU 1/2].

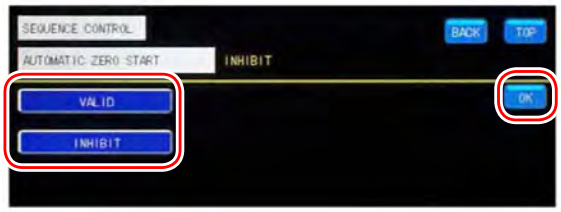
    ▷ [SEQUENCE CONTROL 1/3] is displayed.

2. Tap [RECIPE START ACTIONS].
   ▷ The [RECIPE START ACTIONS] setting screen is displayed.



3. Tap [AUTOMATIC ZERO START].
   ▷ The [OPERATION OF ZERO] setting screen is displayed.

   Set [OPERATION OF ZERO] at recipe start



4. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

5. Tap [OK]
   ▷ [OPERATION OF ZERO] at recipe start is set, and the [RECIPE START ACTIONS] setting screen is displayed.

7.8.1.4 [RECIPE FINISH ACTIONS] settings

Set whether to execute each of the following operations on completion of weighing in recipe mode.

- Tare weight cancellation clear on completion of recipe ([TARE CLEAR])
- Mixture on completion of recipe ([MIXING ST.])
- Discharge on completion of recipe ([DISCHARGE START])

Note:

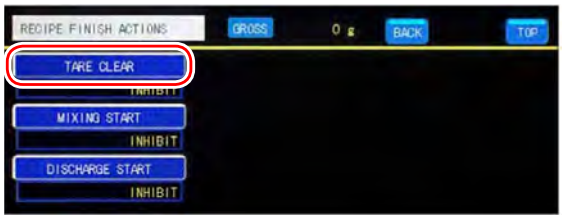
Refer to Chapter 7.10.2 for more information.

Display the [RECIPE FINISH ACTIONS] setting screen

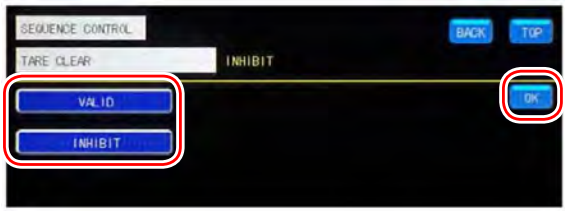
1. Tap [SEQUENCE CONTROL] on [MENU 1/2]
   ▷ [SEQUENCE CONTROL 1/3] is displayed.

2. Tap [RECIPE FINISH ACTIONS]
   ▷ The [RECIPE FINISH ACTIONS] setting screen is displayed.

Set the [TARE CLEAR] operation on recipe completion



3. Tap [TARE CLEAR]
   ▷ The [TARE CLEAR] setting screen is displayed.

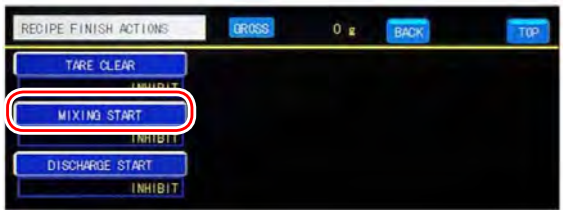


4. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

5. Tap [OK]
   ▷ [TARE CLEAR] at recipe completion is set, and the [RECIPE FINISH ACTIONS] setting screen is displayed.

Set mixing operation on completion of recipe



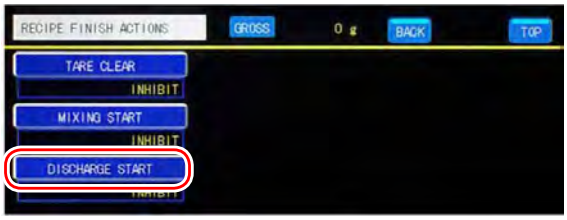
6. Tap [MIXING START]
   ▷ The setting screen for mixing operation is displayed.

7. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

8. Tap [OK]
   ▷ The mixing operation at recipe completion is set, and the [RECIPE FINISH ACTIONS] setting screen is displayed.

Set discharge operation on completion of recipe



9. Tap [DISCHARGE START]
   ▷ The discharge operation setting screen is displayed.

10. Tap [VALID]/[INHIBIT]

    Default: [INHIBIT]

11. Tap [OK]
    ▷ The discharge operation at recipe completion is set, and the [RECIPE FINISH ACTIONS] setting screen is displayed.

Note:

If [MIXING START] and [DISCHARGE START] are set to [VALID], mixing is executed then discharge is executed on completion of recipe.

7.8.1.5 [RECIPE FINISH OUTPUT ON] settings

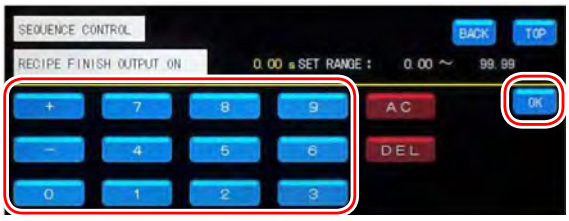
Set the output time for recipe finish signals

Display the [RECIPE FINISH OUTPUT ON] setting screen

1. Tap [SEQUENCE CONTROL] on [MENU 1/2]
   ▷ [SEQUENCE CONTROL 1/3] is displayed.

2. Tap [RECIPE FINISH OUTPUT ON] on [SEQUENCE CONTROL 3/3]
   ▷ The [RECIPE FINISH OUTPUT ON] setting screen is displayed.

Set the output time for recipe finish signals



3. Enter the output time for recipe finish signals

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

Refer to Chapter 5.5 for more information.

4. Tap [OK]
   ▷ The output time of recipe finish signals is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

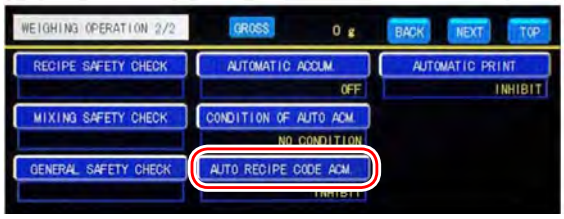
5. Confirm the output time for recipe finish signals
   ▷ The setting is complete if the value set in the step 2 appears under [RECIPE FINISH OUTPUT ON].

7.8.1.6 [AUTO RECIPE CODE ACM.] (automatic accumulation) settings

Set whether to accumulate load values automatically during weighing in recipe mode.

Display the automatic accumulation setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.



2. Tap [AUTO RECIPE CODE ACM.] on [WEIGHING OPERATION 2/2]
   ▷ The automatic accumulation setting screen is displayed.

Set automatic accumulation

3. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

4. Tap [OK]
   ▷ Automatic accumulation is set, and [WEIGHING OPERATION 2/2] is displayed.

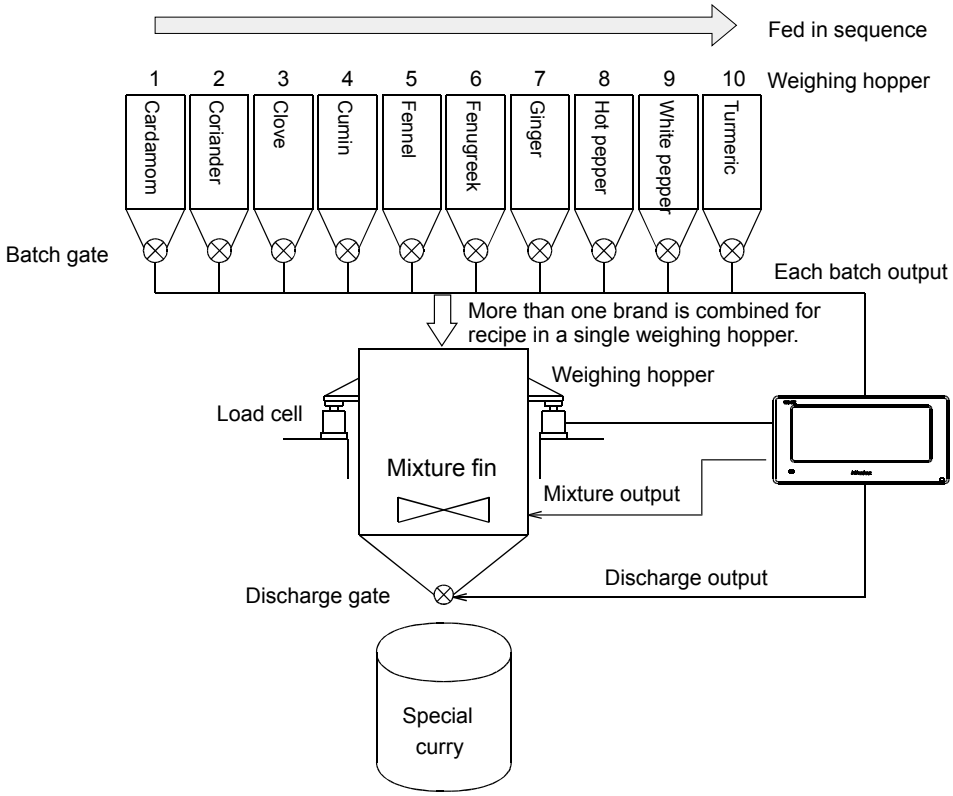
Confirm settings

5. Confirm the automatic accumulation settings

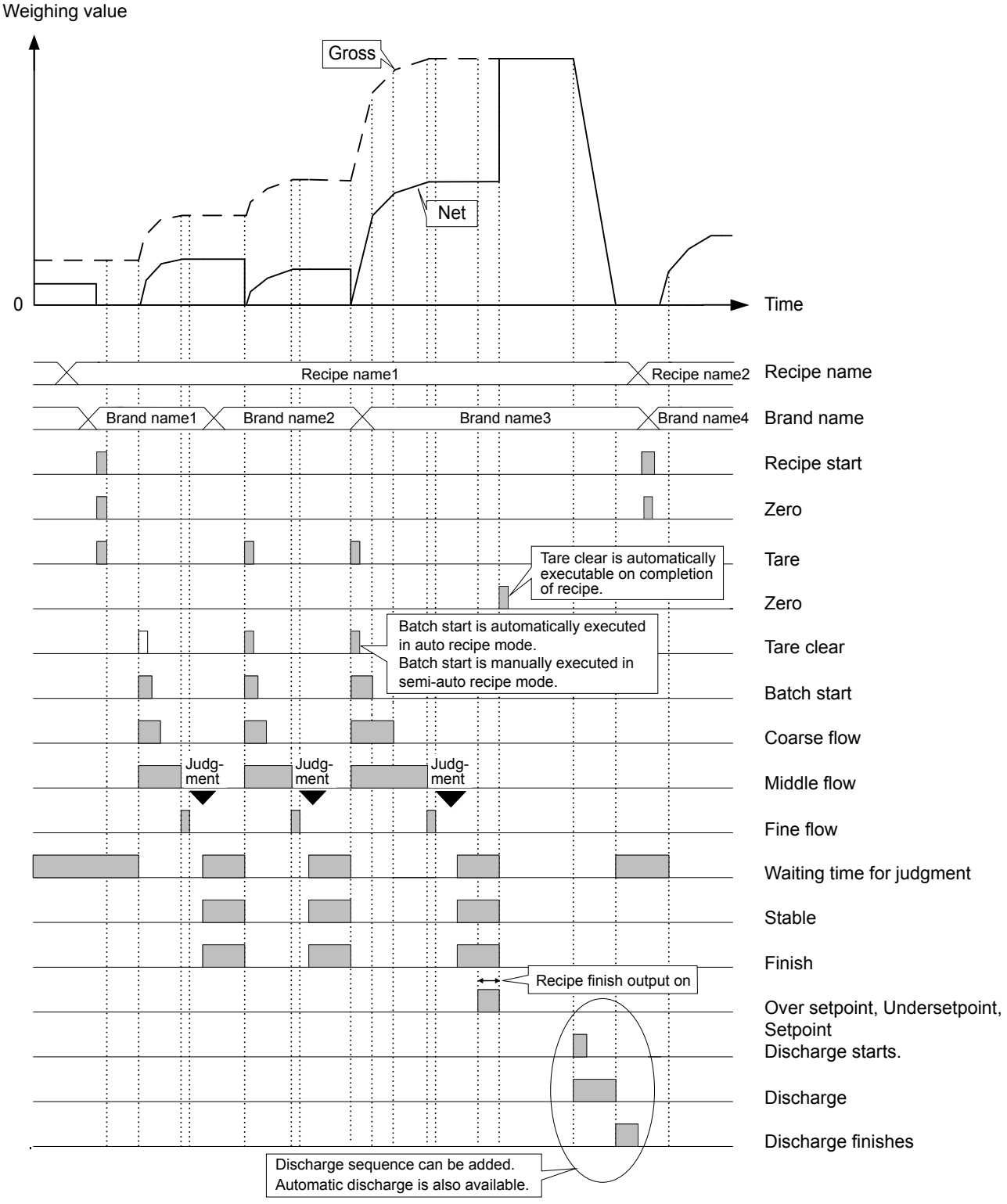
   The setting is complete if the item set in step 2 appears under [AUTO RECIPE CODE ACM.].

7.8.2 Weighing

When weighing starts, brands are fed to a single weighing hopper in the order specified in the recipe contents settings.



The following chart shows the flow of weighing in recipe mode.



7.8.3 Mixing the weighed objects

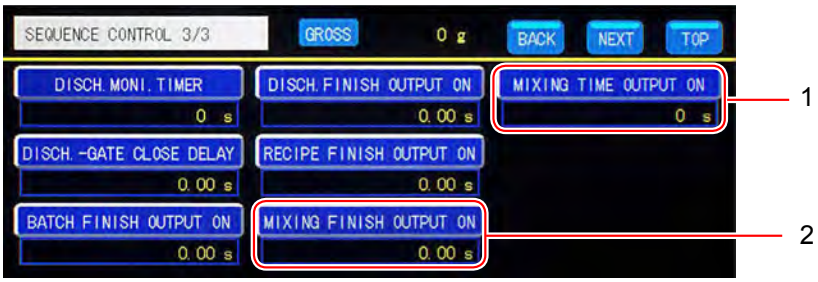
Brands combined in recipe mode can be mixed by running [MIXTURE FIN.] in the weighing hopper. To mix combined weighed objects, set the following items in addition to recipe mode settings.

- [INFLOW FINISH ACTIONS] settings (Set [MIXING START] to [VALID])

- [DISCH. FINISH ACTIONS] settings (Set [MIXING START] to [VALID])
- [RECIPE FINISH ACTIONS] settings (Set [MIXING START] to [VALID])
- [MIXING TIME OUTPUT ON]
- [MIXING FINISH OUTPUT ON]

Set items on the sequence control screen Tap [SEQUENCE CONTROL] on [MENU 1/2] to display the sequence control screen

1	[INFLOW FINISH ACTIONS]
2	[RECIPE FINISH ACTIONS]
3	[DISCH. FINISH ACTIONS]



1	[MIXING TIME OUTPUT ON]
2	[MIXING FINISH OUTPUT ON]

7.8.3.1 [MIXING TIME OUTPUT ON] settings

Setting the output time for mixing signals

Set an output time for mixing signals

1. Enter the mixing signals output time

   Permissible range: 0 to 9.999; Default: 0

Note:

- Set 0 to invalidate MIXING
- Refer to Chapter 5.5 for more information.

2. Tap [OK]
   ▷ The output time of mixing signals is set, and [SEQUENCE CONTROL 3/3] is displayed.

Confirm settings

3. Confirm the mixing signals output time

   The setting is complete if the value set in step 1 appears under [MIXING TIME OUTPUT ON].

7.8.3.2 [MIXING FINISH OUTPUT ON] settings

Set the output time for mixing finish signals.

Setting the output time for mixing finish signals

1. Enter the output time for mixing finish signals

   Permissible range: 0.00 to 99.99; Default: 0.00

Note:

- Set 0.00 to invalidate MIXING
- Refer to Chapter 5.5 for more information.

2. Tap [OK]
   ▷ The output time of mixing finish signals is set, and [SEQUENCE CONTROL 3/3] is displayed.

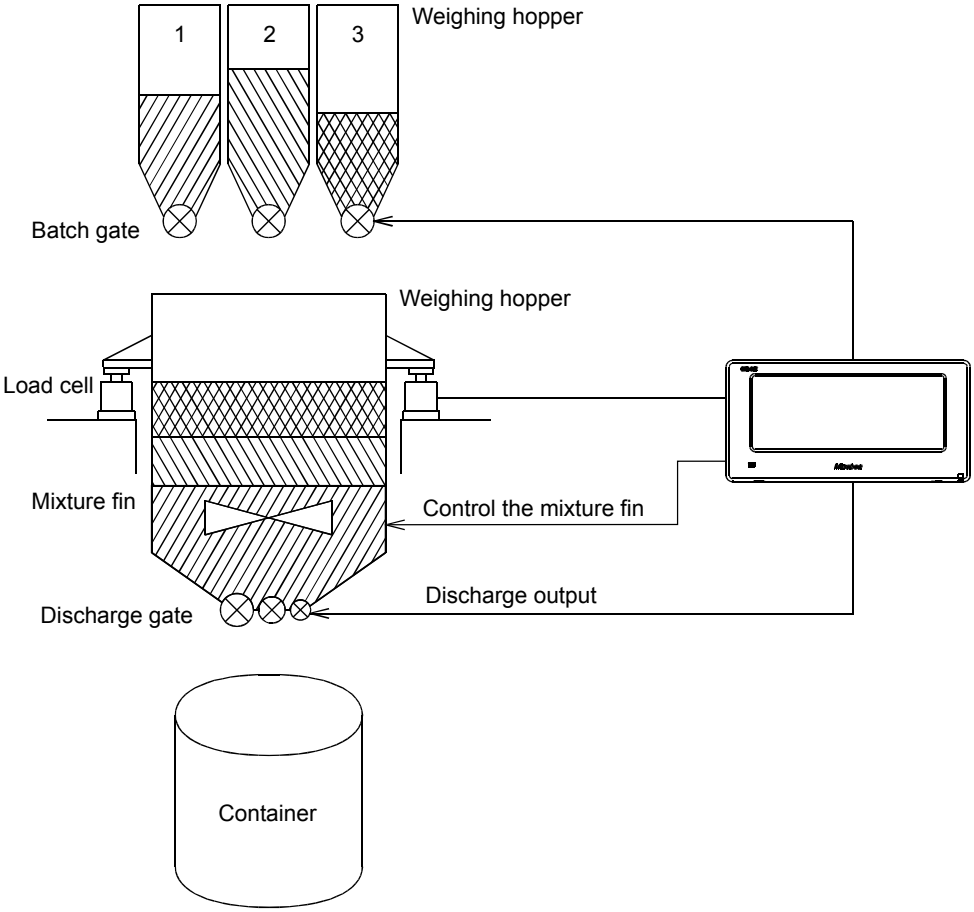
Confirm settings

3. Confirm the mixing finish output time

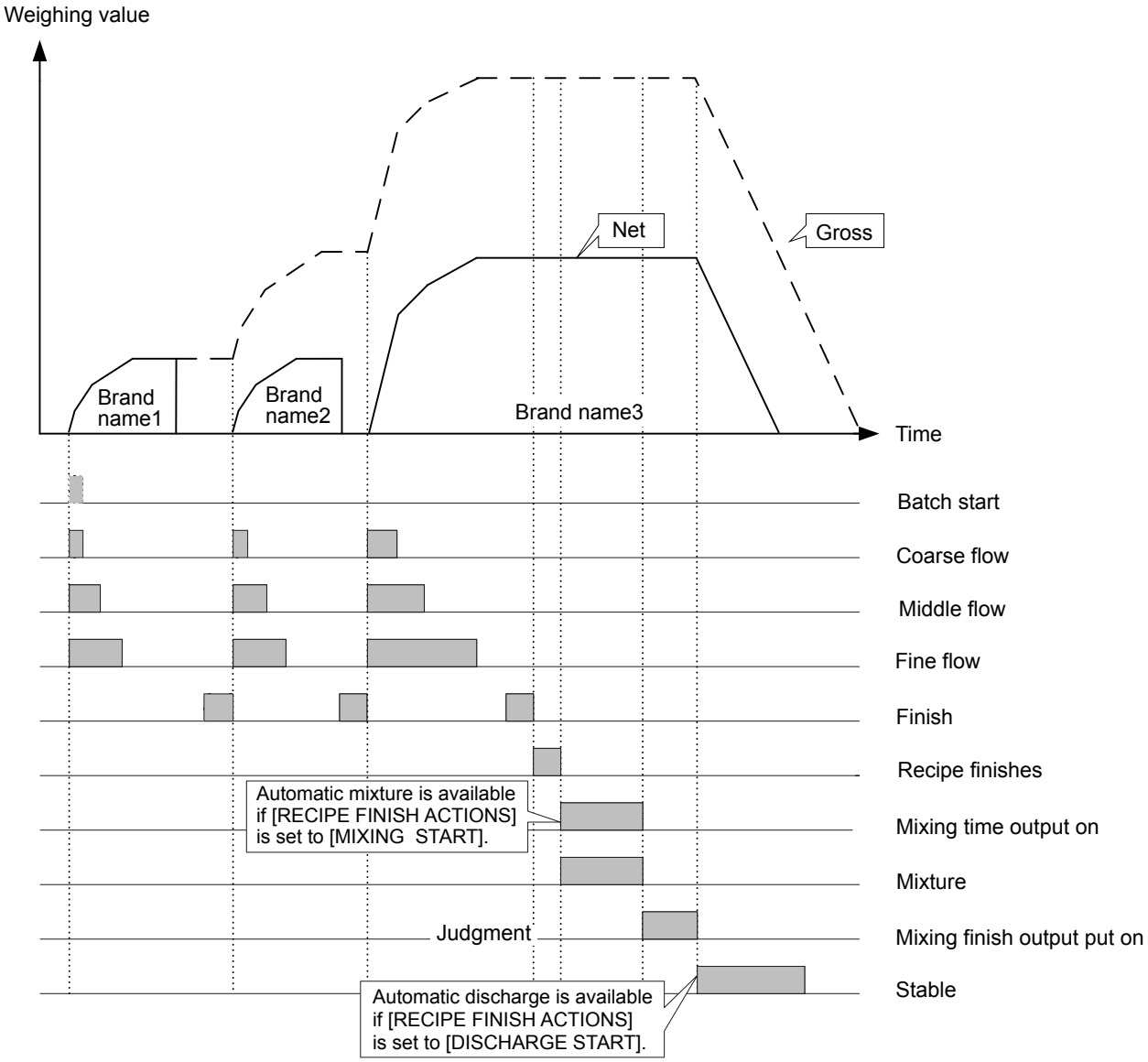
   The setting is complete if the value set in step 1 appears under [MIXING FINISH OUTPUT ON].

7.8.3.3 Mixture

The combined brands are mixed by running [MIXTURE FIN] in the weighing hopper.



The following chart shows MIXTURE flow.



7.9 Weighing in 4-step check mode

4-step check mode compares preset conditions and weight values; the weighed data is classified according to comparison results.

Weighed data is classified into up to four groups by registration conditions.

7.9.1 Settings prior to weighing

Set conditions in advance to take weighings in 4 step-check mode. Switch from [WEIGHING MODE] to [4 STEP COMPARATOR] then enter the settings on the comparator setting screen. Tap [4 STEP COMPARATOR SETTING] on [MENU 1/2] to display the comparator setting screen.

1	Tap [4 STEP COMPARATOR SETTING].
2	The comparator setting screen is displayed.

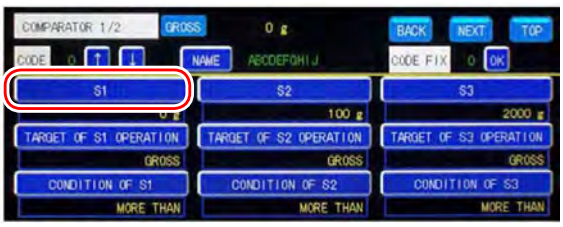
Note:

- If [WEIGHING MODE] is not set to [4 STEP COMPARATOR], [4 STEP COMPARATOR SETTING] is not displayed on the menu screen. Refer to Chapter 7.2.1 for more information about [WEIGHING MODE].
- The comparator setting screen consists of two pages. Refer to Chapter 5.4 for more information.

7.9.1.1 Setting comparison values

Set a comparison values for up to four conditions

Display comparison value setting screen for Condition 1



1. Tap [S1] on [COMPARATOR 1/2]
   ▷ The comparison value setting screen for Condition 1 is displayed.

Set the comparison value

2. Enter the comparison value

   Permissible range: -999.999 to 999.999; Default: 0

Note:

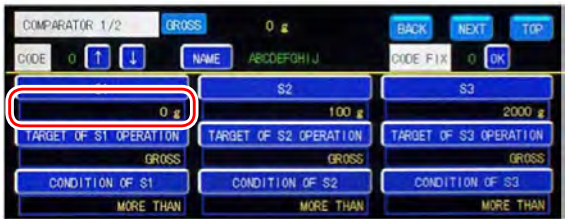
Refer to Chapter 5.4 for more information.

---

3. Tap [OK]

   ▷ The comparison value for Condition 1 is set, and [COMPARATOR 1/2] is displayed.

Confirm settings



4. Confirm the comparison values

   The setting is complete if the value set in step 2 appears under [S1].

Note:

Set comparison values for Condition 2 to Condition 4 by tapping [S2] to [S4] and repeating the same procedure.

7.9.1.2 Setting the comparative target

Set gross weight or net weight as the comparative target

Display the comparative target setting screen for Condition 1

1. Tap [TARGET OF S1 OPERATION] on [COMPARATOR 1/2]

   ▷ The comparative target setting screen for Condition 1 is displayed.

Set the comparative target

2. Select the comparative target

   [GROSS]

   Set gross weight as the comparative target

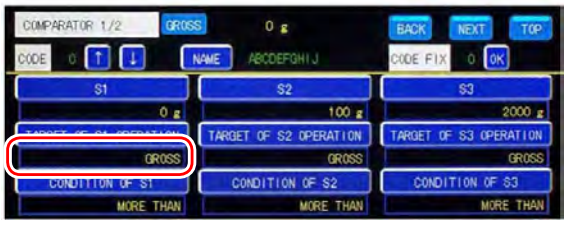
   [NET]

   Set net weight as the comparative target

3. Tap [OK]

   ▷ The comparison target for Condition 1 is set, and [COMPARATOR 1/2] is displayed.

Confirm settings



4. Confirm the comparative target

   The setting is complete if the item set in step 2 appears under [TARGET OF S1 OPERATION].

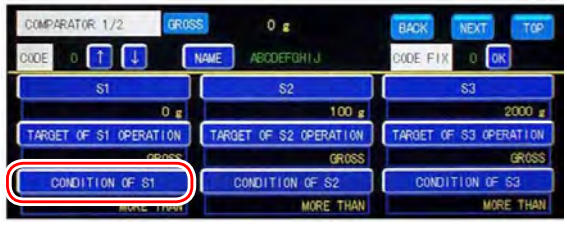
Note:

Set comparative targets for Condition 2 to Condition 4 by tapping [TARGET OF S2 OPERATION] to [TARGET OF S4 OPERATION]and repeating the same procedure.

7.9.1.3 Setting the comparison condition

Set "≥" or "≤" as the comparison value setting.

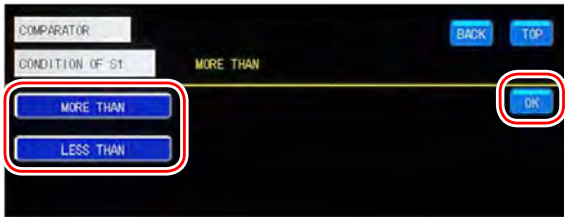
Display the comparison condition setting screen for Condition 1



1. Tap [CONDITION OF S1] on [COMPARATOR 1/2]

   ▷ The comparison condition setting screen for Condition 1 is displayed.

Set the comparison condition



2. Select the comparison condition

   [MORE THAN]

   The condition is met if the weighing value is equal to or greater than the comparison value.

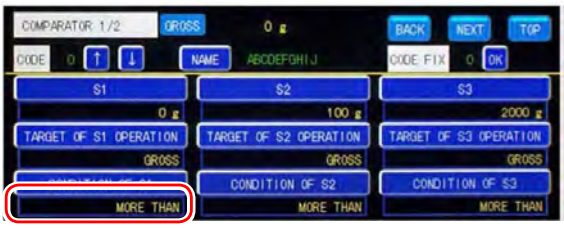
   [LESS THAN]

   The condition is met if the weighing value is equal to or less than the comparison value.

3. Tap [OK]

   ▷ The comparison condition for Condition 1 is set, and [COMPARATOR 1/2] is displayed.

Confirm settings



4. Confirm the comparison condition

   The setting is complete if the item set in step 2 appears under [CONDITION OF S1].

Note:

Set comparison conditions for Condition 2 to Condition 4 by tapping [CONDITION OF S2] to [CONDITION OF S4] and repeating the same procedure.

7.9.1.4 [ZERO BAND] (Empty) settings

Set the value to determine the weight value as 0. Enter the settings as required.

Display the [ZERO BAND]setting screen

1. Tap [ZERO BAND] on [COMPARATOR 2/2]

   ▷ The [ZERO BAND] setting screen is displayed.

Set the [ZERO BAND]value

2. Enter the [ZERO BAND]value

   Permissible range: 0 to 999.999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

---

3. Tap [OK]

   ▷ The [ZERO BAND] value is set, and [COMPARATOR 2/2] is displayed.

Confirm settings

4. Confirm the [ZERO BAND] value

   The setting is complete if the value set in step 2 appears under [ZERO BAND].

7.9.1.5 [FULL] value settings

Set the value to determine the weight value as full. Enter the settings as required.

Display the [FULL]value setting screen

1. Tap [FULL] on [COMPARATOR 2/2]

   ▷ The[FULL] value setting screen is displayed.

Set the [FULL]value

2. Enter the [FULL]value

   Permissible range: 0 to 999.999; Default: 0

Note:

Refer to Chapter 5.5 for more information.

3. Tap [OK]

   ▷ The [FULL] value is set, and [COMPARATOR 2/2] is displayed.

Confirm settings

4. Confirm the [FULL]value

   The setting is complete if the value set in step 2 appears under [FULL].

7.9.1.6 Confirming/Deleting the [ACCUM. VALUE]

If a measurement has been taken in 4-step comparator mode, check [ACCUM. VALUE] of the past measurement. [ACCUM. VALUE]can also be deleted.

Note:

Refer to Chapter 7.11.10 for more information.

Confirm [ACCUM. VALUE]

▶ Confirm the accumulation value displayed under [ACCUM. VALUE] on [COMPARATOR 2/2]

Note:

- To delete [ACCUM. VALUE], tap [ACCUM. VALUE] to display the numerical value input screen, then tap [AC] → [OK].
- Deleting [ACCUM. VALUE] also deletes [ACCUM. TIMES].

7.9.1.7 Confirming/Deleting [ACCUM. TIMES]

If a weighing has been taken in 4-step check mode, check [ACCUM. TIMES] of the past weighing. [ACCUM. TIMES] can also be deleted.

Note:

Refer to Chapter 7.11.10 for more information.

Confirm [ACCUM. TIMES]

▶ Confirm the accumulation times displayed under [ACCUM. TIMES] on [COMPARATOR 2/2]

Note:

- To delete [ACCUM. TIMES], tap [ACCUM. TIMES] to display the numerical value input screen, then tap [AC] → [OK] in sequence.
- Deleting [ACCUM. TIMES] also deletes [ACCUM. VALUE].

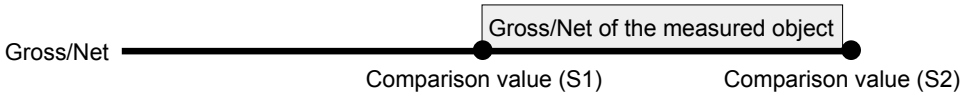
7.9.2 Weighing

When weighing starts, set conditions (S1 to S4) are compared with weight values. The lamps of satisfied conditions light.

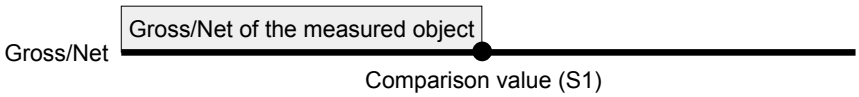
1. The lamp of the satisfied condition lights.

Example: The [S1] lamp lights on the weight display.

- If the comparison condition is set to [MORE THAN], the gross weight or the net weight of the weighed object is equal to or more than the comparison value set to [S1] and is less than the comparison value set to [S2].



- If the comparison condition is set to [LESS THAN], the gross weight or the net weight of the weighed object is equal to or less than the comparison value set to [S1].



7.10 Operations during weighing

The following CSD-912 operations are available during weighing. These functions can be accessed as required.

Function name	Contents	see Chapter
Zero set (register the zero point)	Registers the current load value as the zero point and set the load value display to 0	7.10.1
Tare weight cancel-lation	Displays the net weight (load value excluding the weight of the container) in the load value display on the weight display	7.10.2
Switch between standard and simple display	Switches between the standard display and the simple display on the weight display	7.10.3
Key lock	Locks the keys on the weight display to prevent them from being operated.	7.10.4

7.10.1 Zero set (register the zero point)

The current weight value is registered as the zero point, and the weight value display is set to 0.

Set the following items to use zero set.

- [OPERATION OF ZERO] condition
- [RANGE OF ZERO]

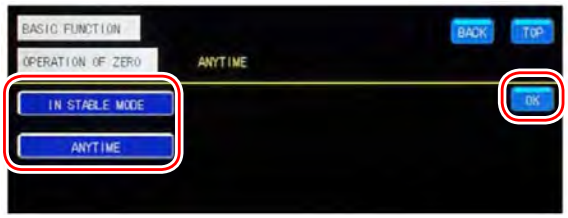
Set the operation condition and the effective range on the [BASIC FUNCTION] screen Tap [BASIC FUNCTION] on [MENU 1/2] to display the [BASIC FUNCTION] screen.

1	[OPERATION OF ZERO] condition
2	[RANGE OF ZERO]

7.10.1.1 [OPERATION OF ZERO] condition settings

Set the operation condition for zero set

Set the operation condition



1. Select the operation condition for zero set

   [IN STABLE MODE]

   Zero set can only be carried out when the [STABLE] lamp is lit on the weight display.

   [ANY TIME]

   Zero set can be executed at any time.

   Default: [ANY TIME]

2. Tap [OK]

   ▷ The zero set operation condition is set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the operation condition for zero set

   The setting is complete if the item set in step 1 appears under [OPERATION OF ZERO].

Note:

The zero set operation condition applies to the zero tracking operation condition. Refer to Chapter 9.2.2.

7.10.1.2 [RANGE OF ZERO] settings

Set the ratio of effective range of zero set to the maximum load (Max).

Set the effective range

1. Enter the percentage of effective range to the maximum load (Max).

   Permissible range: 0 to 30; Default: 5

Note:

- Set 0 to disable zero set
- Refer to Chapter 5.5 for more information.

2. Tap [OK]
   ▷ The effective range of zero set his set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the effective range for zero set

   The setting is complete if the value set in step 1 appears under [RANGE OF ZERO].

7.10.1.3 Zero set

Tap the [ZERO] key on the weight display to execute zero set when [GROSS] is set as the load value display and is within the set effective range of zero set When zero set is executed, the current load value is registered as the zero point, and the load value display is set to 0.

Note:

- Tap the [ZERO] key with [GROSS] out of the effective range and "Z. ERR ZERO" error is displayed. Tap the [ERROR RESET] key to release the error.
- When tare weight cancellation or preset tare is being executed, clear the tare weight cancellation or the preset tare prior to executing zero set. Refer to Chapter 7.10.2 and 7.11.4 for more information.

7.10.2 Tare weight cancellation

Switch the load value display to net weight (load value excluding the weight of the container) on the weight display.

Set the following items to cancel tare weight.

- [OPERATION OF TARE]
- [RANGE OF TARE]

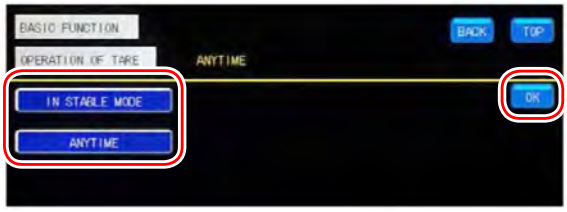
Set operation conditions and operation range on the [BASIC FUNCTION] screen. Tap [BASIC FUNCTION] on [MENU 1/2] to display the [BASIC FUNCTION] screen.

1	[RANGE OF TARE]
2	[OPERATION OF TARE]

7.10.2.1 [OPERATION OF TARE] settings

Set the tare weight cancellation operation condition

Set the operation condition



1. Select tare weight cancellation operation condition

   [IN STABLE MODE]

   Tare weight cancellation can only be carried out when the [STABLE] lamp is lit on the weighing screen.

   [ANY TIME]

   Tare weight cancellation can be executed at any time.

   Default: [ANY TIME]

2. Tap [OK]

   ▷ The tare weight cancellation operation condition is set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the tare weight cancellation operation condition.

   The setting is complete if the item set in step 1 appears under [OPERATION OF TARE].

7.10.2.2 [RANGE OF TARE] settings

Set the tare weight cancellation operation range

Set an operation range

1. Select the tare weight cancellation operation range

   [0 < GROSS ≤ MAX.WEIGHT]

   Tare weight cancellation can be carried out if "GROSS" is more than 0 and ≤ "WEIGHING CAPACITY".

   [GROSS ≤ | MAX.WEIGHT |]

   Tare weight cancellation can be carried out if "GROSS" is within "MAX.WEIGHT" to "WEIGHING CAPACITY".

   Default: [GROSS ≤ | MAX.WEIGHT |]

2. Tap [OK]

   ▷ The tare weight cancellation operation range is set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the tare weight cancellation operation range

   The setting is complete if the item set in step 1 appears under [RANGE OF TARE].

7.10.2.3 Tare weight cancellation

If the load value display is within the set operation range, tap the [TARE] key to cancel tare weight.

When tare weight cancellation is executed, the [TARE] lamp lights, the display switches to net weight and the load value display is set to 0.

Note:

- To cancel tare weight cancellation, tap the [TARE] key when [GROSS] is 0.

  The [TARE] lamp is off, and the display switches to gross weight.

- Tap the [TARE] key when the load value is out of the operation range and "Z. ERR A/Z" error is displayed. Tap the [ERROR RESET] key to release the error.

7.10.3 Switching between standard and the simple displays

Switches between the standard display and the simple display on the weight display. The simple display does not show brand information, state display and keys at the bottom of the weight display.

1 – Not displayed

7.10.3.1 Weighing screen display settings

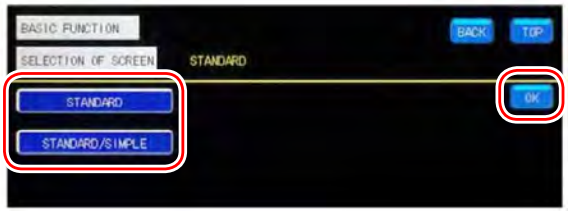
Set whether switching to the simple display is enabled

Display the weighing screen settings screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [SELECTION OF SCREEN] on [BASIC FUNCTION 4/4]
   ▷ [SELECTION OF SCREEN] is displayed.

Set a weighing screen display



3. Select the weighing screen display

   [STANDARD]

   Switching to simple display is disabled.

[STANDARD/SIMPLE]

Switching between the standard display and the simple display is enabled.

Default: [STANDARD]

4. Tap [OK]

   ▷ The weighing screen display is set, and [BASIC FUNCTION 4/4] is displayed.

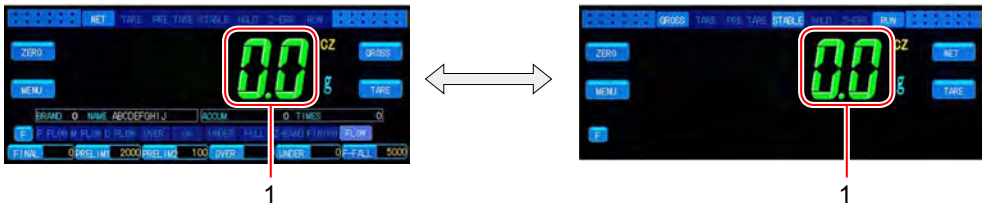
Confirm settings

5. Confirm the weighing screen display settings

   The setting is complete if the item set in step 2 appears under [SELECTION OF SCREEN].

7.10.3.2 Switching display

Press load display on the weighing screen for about three seconds to switch the display between standard and simple display.



1 – Press for about three seconds

Note:

Release the key lock temporarily to switch the weighing screen display when key lock is enabled. Refer to Chapter 7.10.4 for more information.

7.10.4 Key lock

Lock keys on Weight display to prevent them from being operated.

The following keys can be locked.

- [ZERO] key
- [GROSS/NET] key
- [TARE] key
- [BRAND CODE] key ([FINAL] key, [PRELIMINARY1] key, [PRELIMINARY2] key, [OVER] key, [UNDER] key, [F-FALL] key)
- [F] key
- [MENU] key
- [CALIBRATION] key

7.10.4.1 Key lock settings

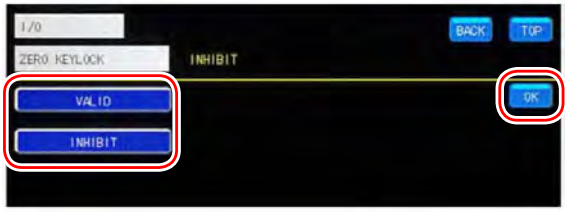
Enter the settings for each key to lock

Display the [I/O] screen

1. Tap [I/O] on [MENU 1/2]
   ▷ [I/O SETTING 1/6] is displayed.

Set key lock

2. Tap the key to be locked on [I/O SETTING 6/6]
   ▷ Key lock screen is displayed.



3. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

4. Tap [OK]
   ▷ Key lock is set, and [I/O SETTING 6/6] is displayed.

> **Note:**
>
> To lock another key, repeat steps 1. to 3.

Confirm settings

5. Confirm the key lock settings

The setting is complete if the item set in step 2 appears under each key.

Note:

Tap a locked key and a buzzer sounds to warn that key operation is disabled.

7.10.4.2 Temporary key lock release

Press within a red frame for more than three seconds and a recognition buzzer sounds to indicate that the key lock is released for three seconds. Key operation is enabled while the key lock is released.

1 – Press for more three seconds

7.11 Weighing-related settings

Set functions according to types of weighed objects and weighing systems

Basic settings

The following settings effect all weighing modes. Be sure to enter settings prior to weighing.

Function name	Contents	see Chapter
Comparison signal operation settings	Set the timing for comparing setting values of [BRAND CODE] with the weighing value	7.11.1
Comparison operation settings for [ZERO BAND] "Empty"	Set the target to compare the [ZERO BAND] of [BRAND CODE] settings	7.11.2
"Full" comparison operation	Set the target to compare the [FULL] of [BRAND CODE] settings.	7.11.3
Stability detection settings	Set the condition to judge the weighing value as stable	7.11.5

Optional settings

Enter the settings as required

Function name	Contents	see Chapter
Preset tare settings	Set whether to subtract the setting value of [PRE.TARE] of [BRAND CODE] from [GROSS] for display	7.11.4
Zero operation settings at power-on	Set whether the load value is 0 when CSD-912 is on	7.11.6
Tare weight cancellation settings at power-on	Set whether to execute tare weighing cancellation when CSD-912 is on	7.11.7
Hold settings	Set the condition and target to hold display for load values and weighing states	7.11.8
Net weight sign inversion settings	Set whether to invert the sign of net gross weights between plus and minus	7.11.9
Load value accumulation settings	Set whether to accumulate load values every time measurement is made	7.11.10
"JIS B 7611-2: 2009" inflow settings	Change the setting values for functions of CSD-912 to values that comply with "JIS B 7611-2: 2009"	7.11.11
Automatic print settings	Set whether the printer connected to CSD-912 automatically prints data	7.11.12

7.11.1 Comparison signal operation settings

Set the timing for comparing setting values of [BRAND CODE] with the weight value

Display the comparison signal operation setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [COMPARISION]
   ▷ The [COMPARISION] setting screen is displayed.

Set the comparison operation condition

3. Select the comparison operation condition

   [ANY TIME]

   Sets the timing for comparing setting values for [BRAND CODE] with the weight value.

   [IN STABLE MODE]

   Compares the settings of [BRAND CODE] with the weighing value when the weight value stabilizes.

   [AT INFLOW FINISH]

   Compares the settings of [BRAND CODE] with the weighing value when weighing finish signals are output.

   [HOLD AT INFLOW FINISH]

   Compares the settings of [BRAND CODE] with the weighing value when weighing finish signals are output and holds the judgement result.

   When weighing finish signals are canceled, judgment result hold is also canceled.

   Default: [AT INFLOW FINISH]

4. Tap [OK]

   ▷ The comparison operation condition is set, and [WEIGHING OPERATION 1/2] is displayed.

   Confirm settings

5. Confirm the comparison signal operation condition

   The setting is complete if the item set in the step 2 appears under [COMPARISION].

7.11.2 [ZERO BAND] comparative target settings

Set the target to compare [ZERO BAND] (zero range) for [BRAND CODE] settings

Display the [ZERO BAND] comparative target setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]
   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [COMP. OF ZERO BAND]
   ▷ The zero band comparative target setting screen is displayed.

Set the comparative target

3. Select the comparative target

   [GROSS]

   Compare [ZERO BAND] for [BRAND CODE] with the gross weight. The [ZERO BAND] lamp lights if [GROSS] ≤ [ZERO BAND].

   [NET]

   Compare [ZERO BAND] for [BRAND CODE] with the net weight. The [ZERO BAND] lamp lights if [NET] ≤ [ZERO BAND].

   [COMPARISION OFF]

   Does not compare with [ZERO BAND] for [BRAND CODE].

   [|GROSS|]

   Compare [ZERO BAND] for [BRAND CODE] with the gross weight. The [ZERO BAND] lamp lights if [|GROSS|] ≤ [ZERO BAND].

   [|NET|]

   Compare [ZERO BAND] for [BRAND CODE] with the net weight. The [ZERO BAND] lamp lights if [|NET|] ≤ [ZERO BAND].

   Default: [GROSS]

4. Tap [OK]
   ▷ The comparative target is set, and [WEIGHING OPERATION 1/2] is displayed.

Confirm settings

5. Confirm the comparative target of [ZERO BAND]

   The setting is complete if the item set in step 2 appears under [COMP. OF ZERO BAND].

7.11.3 [Full] comparative target settings

Set the target to compare the [FULL] of [BRAND CODE] settings.

Display the [FULL] comparative target setting screen

1. Tap [WEIGHING OPERATION] on [MENU 1/2]

   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [COMPARATIVE OF FULL]

   ▷ The [COMPARATIVE OF FULL] setting screen is displayed.

Set the comparative target

3. Select the comparative target

   [GROSS]

   Compare [FULL] of [BRAND CODE] with gross weight. The [FULL] lamp lights if "[GROSS] ≥ [FULL]".

[NET]

Compare [FULL] of [BRAND CODE] with net weight. The [FULL] lamp lights if "[NET] ≥ [FULL]".

[COMPARISION OFF]

Does not compare with [FULL] of [BRAND CODE]

[|GROSS|]

Compare [FULL] of [BRAND CODE] with gross weight. The [FULL] lamp lights if [|GROSS|] ≥ [FULL].

[|NET|]

Compare [FULL] of [BRAND CODE] with net weight. The [FULL] lamp lights if [|NET|] ≥ [FULL].

Default: [GROSS]

4. Tap [OK]
   ▷ The comparative target is set, and [WEIGHING OPERATION 1/2] is displayed.

Confirm settings

5. Confirm the comparative target of [FULL].

   The setting is complete if the item set in step 2 appears under [COMPARATIVE OF FULL].

7.11.4 Preset tare settings

Enter the settings to display the value calculated by subtracting [PRESETTARE] for [BRAND CODE] from the actual weight value as the gross load value

Set the following items to use preset tare.

- [OPERATION OF PRE. TARE]
- [PRESET TARE = 0 CHOICE] (uses the last tare weight)
- [PRESET TARE] for [BRAND CODE]

Sets [OPERATION OF PRE. TARE] and uses the last tare weight on the [BASIC FUNCTION] screen. Tap BASIC FUNCTION on [MENU 1/2] to display the [BASIC FUNCTION] screen.

1	[OPERATION OF PRE. TARE]
2	Uses of the last tare weight

Set [PRESET TARE] for [BRAND CODE] on the [BRAND CODE] screen. Tap [BRAND CODE] on [MENU 1/2] to display the [BRAND CODE] screen.

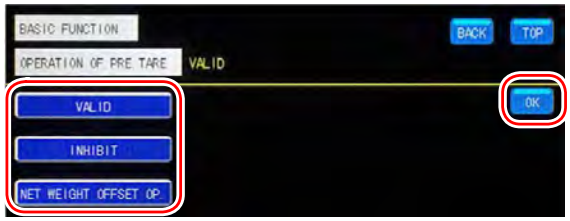
Refer to Chapter 7.2.3 for more information on [BRAND CODE]

1 – Preset tare weight

7.11.4.1 [OPERATION OF PRE. TARE] settings

Set whether to execute preset tare

Set preset tare operation



1. Select the preset tare operation

   [VALID]

   Executes preset tare at weighing.

   [INHIBIT]

   Does not executes preset tare at weighing.

   [NET WEIGHT OFFSET OP.]

   Set the net weight offset value. The value calculated by subtracting the net weight offset value from [GROSS] is displayed as the gross load value.

   Default: [ACTIVE]

Note:

Net weight offset is not executed if tare weight cancellation has already been executed. Tare weight cancellation takes priority over net weight value offset.

2. Tap [OK]
   ▷ Preset tare operation is set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the preset tare operation

   The setting is complete if the item set in step 1 appears under [OPERATION OF PRE. TARE].

7.11.4.2 [PRESET TARE=0 CHOICE] settings (using the last tare weight)

Set whether to use the preset tare or to clear the value when switching brands from one with [PRESET TARE] to one without [PRESET TARE] when [OPERATION OF PRE. TARE] is set to [VALID]

Set whether to use the last tare weight

1. Select whether to use the last tare weight

   [THE LAST TARE IS USED]

   Use the preset tare weight from before switching brands

   [TARE CLEAR]

   Clear the preset tare before switching brands

   Default: [TARE CLEAR]

2. Tap [OK]
   ▷ Use of the last tare weight is set, and [BASIC FUNCTION 2/4] is displayed.

Confirm settings

3. Confirm the setting to use the last tare weight

   The setting is complete if the item set in step 2 appears under [PRESET TARE = 0 CHOICE].

Note:

- If tare weight cancellation is attempted while preset tare is being executed, preset tare is cancelled and weight cancellation is executed. Tare weight cancellation and preset tare cannot be used synchronously.
- Tare weight cancellation is cleared if zero set is executed while gross weights are displayed. If [OPERATION OF PRE. TARE] is set to [NET WEIGHT OFFSET OP.], net weight offset value is not cleared.

7.11.5 Stability detection settings

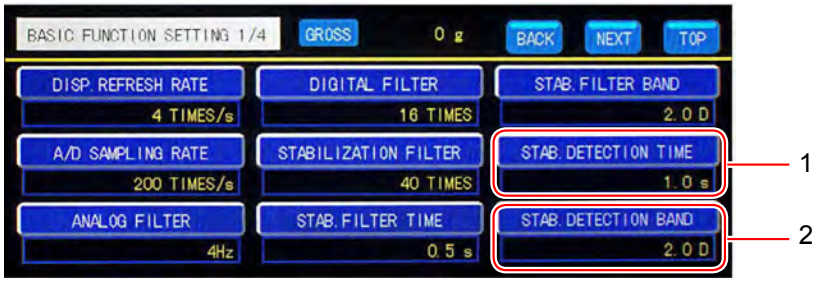
Set the condition to judge the weight value as stable

The [STABLE] lamp lights when the weight value stabilizes Confirm the stability of weighing values using such external devices as a host computer and an external control input/output.

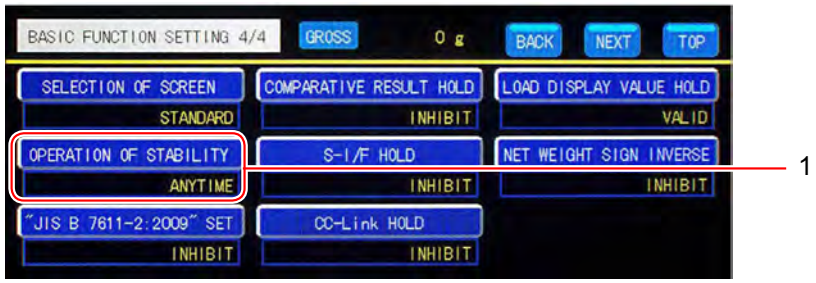
Set the following items to execute stability detection

- [STAB. DETECTIONBAND]
- [STAB. DETECTION TIME]
- [OPERATION OF STABILITY]

Set [STAB. DETECTION BAND], [STAB. DETECTION TIME] and [OPERATION OF STABILITY] on the [BASIC FUNCTION] screen Tap [BASIC FUNCTION] on [MENU 1/2] to display the [BASIC FUNCTION] screen.



1	[STAB. DETECTION TIME]
2	[STAB. DETECTION BAND]



1 – [OPERATION OF STABILITY]

7.11.5.1 [STAB. DETECTION BAND] settings

Set the data width coefficient to start detecting whether the weight value is stable. When weight value fluctuation falls within the range of "the set coefficient of the data width × [DIVISION]," weight value stabilization detection starts. For example, if the detection band is 4.0 and [DIVISION] is 2, stability detection data width is 8.0. Stability detection starts when weight value fluctuation falls within 8.0.

Set [STAB. DETECTION BAND]

1. Enter [STAB. DETECTION BAND]

   Unit: D

   Permissible range: 0.0 to 99.9; Default: 2.0

Note:

- Setting 0.0 does not execute stability detection.
- Refer to Chapter 5.5 for more information.

---

2. Tap [OK]

   ▷ [STAB. DETECTION BAND] is set, and [BASIC FUNCTION 1/4] is displayed.

Confirm settings

3. Confirm the detection band coefficient value

   The setting is complete if the value set in step 1 appears under [STAB. DETECTION BAND].

7.11.5.2 [STAB. DETECTION TIME] settings

Set the time to judge the weight value as stable. The weight value is judged as stable when a set detection time elapses after weight value fluctuation falls within the stability detection band (detection band coefficient × [DIVISION]).

Set [STAB. DETECTION TIME]

1. Enter [STAB. DETECTION TIME]

   Unit: 0.1 sec.

   Permissible range: 0.0 to 9.9; Default: 1.0

Note:

- Setting 0.0 does not execute stability detection.
- Refer to Chapter 5.5 for more information.

---

2. Tap [OK]

   ▷ [STAB. DETECTION TIME] is set, and [BASIC FUNCTION 1/4] is displayed.

Confirm settings

3. Confirm the value of [STAB. DETECTION TIME]

   The setting is complete if the value set in step 1 appears under [STAB. DETECTION TIME].

7.11.5.3 [OPERATION OF STABILITY] settings

Set the stability detection operation condition

Set [OPERATION OF STABILITY]

1. Select [OPERATION OF STABILITY]

   [ANY TIME]

   Always execute stability detection

   [WEIGHING SCREEN ONLY]

   Execute stability detection only when the weight display is displayed

Default: [ANY TIME]

Note:

- To comply with Japanese Industrial Standards (JIS), select [WEIGHING SCREEN ONLY].
- CSD-912 also complies with JIS if ["JIS B 7611-2: 2009" SET] is set to [VALID]. Refer to Chapter 7.11.11 inflow settings for more information.

2. Tap [OK]
   ▷ [OPERATION OF STABILITY] is set, and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

3. Confirm [OPERATION OF STABILITY]

   The setting is complete if the item set in step 1 appears under [OPERATION OF STABILITY].

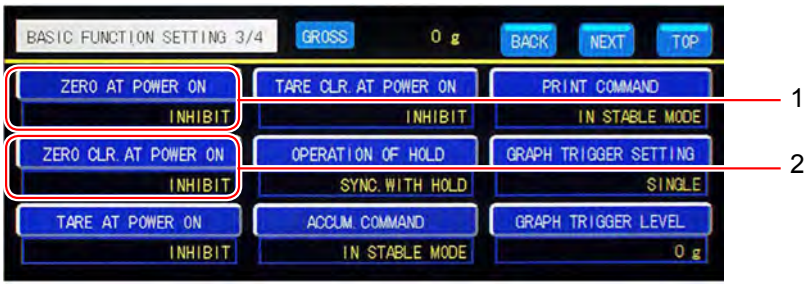
7.11.6 Zero settings at power-on

Enter the settings to display 0 as the gross load value on the weighing screen when CSD-912 is turned on. Also, enter the settings to clear the correction values for zero set or zero tracking when CSD-912 is turned on.

Set the following items to execute the zero display and to clear correction values.

- [ZERO AT POWER ON] (zero display at power-on)
- [ZERO CLR. AT POWER ON] (clearing correction values at power-on)

Set the zero display and clearing correction values at power-on on the [BASIC FUNCTION] screen. Tap [BASIC FUNCTION] on [MENU 1/2] to display the BASIC FUNCTION screen.



1	Zero display at power-on
2	Clears correction values at power-on

7.11.6.1 [ZERO AT POWER ON] settings

Set whether to make the load value 0 on the weight display at power-on if the weight value is stable and within ±10% of [WEIGHING CAPACITY]

Set zero display at power-on

1. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

2. Tap [OK]

   ▷ Zero display at power-on is set, and [BASIC FUNCTION 3/4] is displayed.

Confirm settings

3. Confirm the zero display at power-on settings

   The setting is complete if the item set in step 1 appears under [ZERO AT POWER ON].

Note:

- Executing zero display at power-on clears tare weight cancellation, preset tare, zero set and zero tracking data.
- Even if zero display at power-on is set to [VALID], the load value display is not set to 0 in the following cases.

  The weighing value is not stable: [-888888] is displayed.

  The weighing value is outwith ±10% of [WEIGHING CAPACITY]: [- --- ---] is displayed.

7.11.6.2 [ZERO CLR. AT POWER ON] settings

Set whether to clear correction values processed by zero set or zero tracking and to restore the weight value before correction

Set clearing correction values at power-on

1. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

2. Tap [OK]

   ▷ Clearing correction values at power-on is set, and [BASIC FUNCTION 3/4] is displayed.

Confirm settings

3. Confirm the settings for clearing correction values at power-on

   The setting is complete if the item set in step 1 appears under [TARE CLR. AT POWER ON].

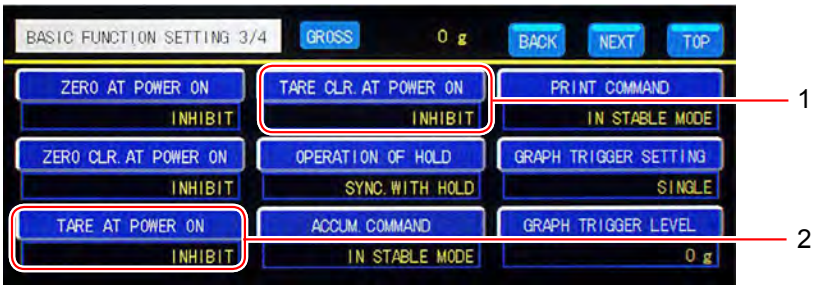
7.11.7 Tare weight cancellation settings at power-on

Enter the settings to execute tare weight cancellation and clear tare when CSD-912 is turned on

Set the following items to execute tare weight cancellation and clear tare at power-on.

- [TARE AT POWER ON] (tare weight cancellation at power-on)
- [TARE CLR. AT POWER ON] (clearing the tare weight at power-on)

Set tare weight cancellation and clear tare at power-on on the [BASIC FUNCTION] screen. Tap [BASIC FUNCTION] on [MENU 1/2] to display the [BASIC FUNCTION] screen.



1	Clears correction tare weight at power-on
2	Tare weight cancellation at power-on

7.11.7.1 [TARE AT POWER ON] settings

Set whether to execute tare weight cancellation when CSD-912 is turned on.

Set tare weight cancellation at power-on

1. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

2. Tap [OK]

   ▷ Tare weight cancellation at power-on is set, and [BASIC FUNCTION 3/4] is displayed.

Confirm settings

3. Confirm the settings for tare weight cancellation at power-on.

   The setting is complete if the item set in step 1 appears under [TARE AT POWER ON].

7.11.7.2 [TARE CLR. AT POWER ON] settings

Set whether to clear tare when CSD-912 is turned on.

Set whether to clear tare at power-on

1. Tap [VALID]/[INHIBIT].

   Default: [INHIBIT]

2. Tap [OK]

   ▷ Tare clear at power-on is set, and [BASIC FUNCTION 3/4] is displayed.

Confirm settings

3. Confirm the tare clear at power-on settings.

   The setting is completed if the item set in step 1 appears under [TARE CLR. AT POWER ON].

7.11.8 Hold settings

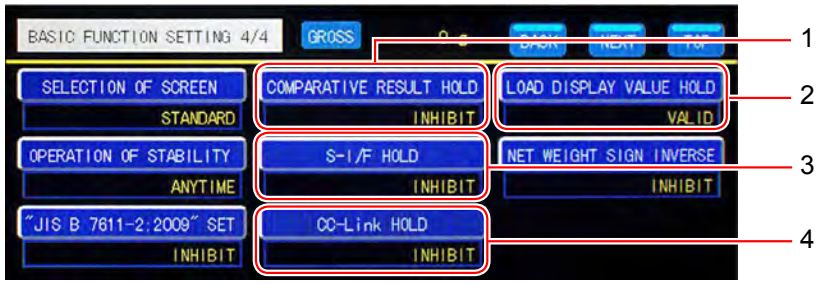
Enter the settings to hold the load display, setting comparison results for [BRAND CODE], weight values and the data output from external devices.

Set the following items to hold the load display, comparison results and output data.

- [OPERATION OF HOLD]
- [LOAD DISPLAY VALUE HOLD]
- [COMPARATIVE RESULT HOLD]
- [S-I/F HOLD]
- [CC-Link HOLD]

Enter hold settings on the [BASIC FUNCTION] screen. Tap [BASIC FUNCTION] on [MENU 1/2] to display the [BASIC FUNCTION] screen.

1 – Operation condition of hold



1	Holding comparison results
2	Holding load display
3	[S-I/F HOLD]
4	[CC-Link HOLD]

7.11.8.1 [OPERATION OF HOLD] settings

Set the condition to hold the load display, setting comparison results for [BRAND CODE], weighing values and the data output from external devices.

Set the operation condition for hold

1. Select the operation condition for hold.

   [SYNC. WITH HOLD]

   Holds when hold signals are input.

   [SYNC. WITH INFLOW FIN.]

   Holds when weighing finishes.

   [SYNC. WITH RECIPE FIN.]

   Holds when recipe finishes.

   Default: [SYNC. WITH HOLD]

2. Tap [OK].

   ▷ The operation condition for hold is set, and [BASIC FUNCTION 3/4] is displayed.

Confirm settings

3. Confirm the operation condition for hold.

   The setting is complete if the item set in step 1 appears under [OPERATION OF HOLD].

7.11.8.2 [LOAD DISPLAY VALUE HOLD] settings

Set whether to hold the load value display for the weight display if the operation condition is met

Set whether to hold the load value display

1. Tap [VALID]/[INHIBIT]

Default: [INHIBIT]

2. Tap [OK]
   ▷ Load value display hold is set, and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

3. Confirm the settings for load value display hold

   The setting is complete if the item set in step 1 appears under [LOAD DISPLAY VALUE HOLD].

Note:

Even while the load display value is held, [OL] is displayed if overload occurs, and [OVF] is displayed if excessive input to the A/D converter occurs.

7.11.8.3 [COMPARATIVE RESULT HOLD] settings

Set whether to hold comparison results for the [BRAND CODE] settings and weight values if the operation condition is met

The following are held as comparison results.

- Simple mode and sequential mode

  [F. FLOW], [M. FLOW], [D. FLOW], [OVER], [OK], [UNDER.] [FULL], [ZERO BAND]

- 4-step check mode

  S1, S2, S3, S4, [FULL,][ZERO BAND]

Set holding comparison results

1. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

2. Tap [OK]
   ▷ Holding comparison results are set, and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

3. Confirm the holding comparison results settings

   The setting is complete if the item set in step 1 appears under [COMPARATIVE RESULT HOLD].

Note:

If comparison results are held, the following items are also held.

Weighing status display I/O output, and status data for the standard RS-485, RS-232C, RS-422/485, CCLink and PROFIBUS

7.11.8.4 [S-I/F HOLD] settings

Set whether to hold the output data of S-I/F (2-pin method serial interface) if the operation condition is met.

Set whether to hold the output data of S-I/F

1. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

2. Tap [OK]

   ▷ Output data S-I/F hold is set, and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

3. Confirm the settings for output data S-I/F hold.

   The setting is complete if the item set in step 1 appears under [S-I/F HOLD].

Note:

Even while the output data S-I/F is held, [OL] is displayed if overload occurs, and [OVF] is displayed if excessive input to the A/D converter occurs.

7.11.9 Net weight sign inversion settings

Invert the sign of the net weight values displayed on the weight display for CSD-912 and external devices is from + to - or from - to +

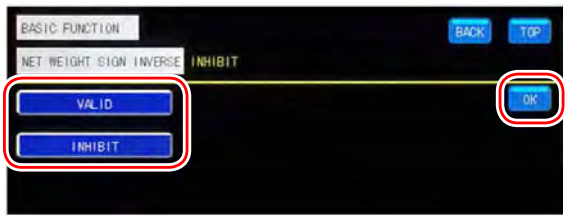
Enter the settings to assign negative net weight values as positive values for weighing in simple discharge mode and sequential discharge mode.

Display the net weight sign inversion setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [NET WEIGHT SIGN INVERSE] on [BASIC FUNCTION 4/4]
   ▷ The [NET WEIGHT SIGN INVERSE] screen is displayed.

Set inversion of the net weight sign



3. Tap [VALID]/[INHIBIT]

   Default: [INHIBIT]

4. Tap [OK]
   ▷ The net weight sign is set, and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

5. Confirm the net weight inversion setting

   The setting is complete if the item set in the step 2 appears under [NET WEIGHT SIGN INVERSE].

7.11.10 Load value accumulation settings

Set whether to accumulate load values every time weighing is made.

The following two methods can be used for accumulation.

- **Brand accumulation**

  Load values are accumulated for each brand set in brand settings

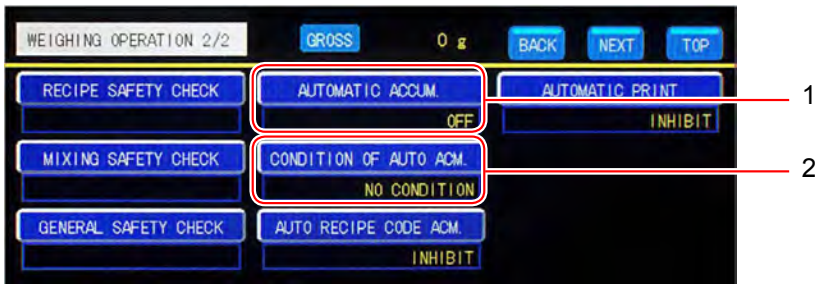
- **Recipe accumulation**

  Load values are accumulated for each recipe setting set in recipe mode.

Set the following items to execute load value accumulation.

- [AUTOMATIC ACCUM.] (automatic accumulation)
- [CONDITION OF AUTO ACM.] (condition of automatic accumulation)

Set the automatic accumulation operation and the automatic accumulation condition on the [WEIGHING OPERATION] screen. Tap [WEIGHING OPERATION] on the menu screen to display the [WEIGHING OPERATION] screen.

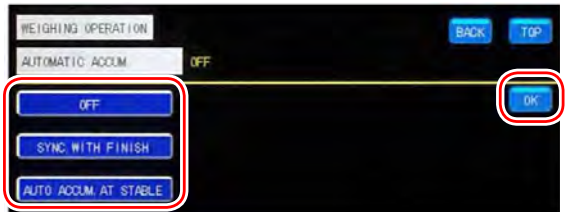


1	Automatic accumulation operation
2	Automatic accumulation condition

7.11.10.1 Automatic accumulation operation settings

Set whether to automatically accumulate load values

Set the automatic accumulation operation



1. Select the automatic accumulation operation

   [OFF]

   Does not accumulate load values.

   [SYNC. WITH FINISH]

   Accumulates load values when weighing finishes.

   [AUTO ACCUM. AT STABLE]

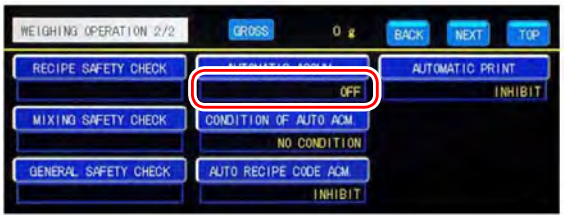
   Accumulates load values when the [STABLE] lamp is lit on the weight display.

   Default: [OFF].

2. Tap [OK].

   ▷ Automatic accumulation operation is set, and [WEIGHING OPERATION 2/2] is displayed.

Confirm settings



3. Confirm the automatic accumulation operation.

   The setting is complete if the item set in step 1 appears under [AUTOMATIC ACCUM.].

7.11.10.2 [CONDITION OF AUTO ACM.] settings

Set the condition to automatically accumulate load values.

Set the condition for automatic accumulation

1. Select the condition for automatic accumulation.

   [IN OK MODE]

   Accumulates load values only when the [STABLE] lamp is lit on the weight display.

   [NO CONDITION]

   Accumulates unlimited load values.

Default: [NO CONDITION]

2. Tap [OK]
   ▷ The automatic accumulation condition is set, and [WEIGHING OPERATION 2/2] is displayed.

Confirm settings

3. Confirm the automatic accumulation condition.

   The setting is complete if the item set in step 1 appears under [CONDITION OF AUTO ACM.].

Note:

- [AUTO RECIPE CODE ACM.] must also be set to execute accumulation for recipe settings. Refer to Chapter 7.8.1 [AUTO RECIPE CODE ACM.] for more information.
- Confirm and clear accumulation values on the [BRAND CODE] screen and [RECIPE CODE] screen. Refer to Chapter 7.2.3 and 7.8.1 for more information.

7.11.11 "JIS B 7611-2: 2009" inflow settings

Change all settings for the following functions to the values that comply with "JIS B 7611-2: 2009" simultaneously.

Function	Setting	Remarks
A/D SAMPLING RATE	200 TIMES/s	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [200 TIMES/s] or less, the value remains unchanged.
ANALOG FILTER	4 Hz	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [4Hz] or less, the value remains unchanged.
DIGITAL FILTER	16	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [16] or more, the value remains unchanged.
STABILIZATION FILTER	40	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [40] or more, the value remains unchanged.
STAB. FILTER TIME	0.5	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [0.5] or less, the value remains unchanged.

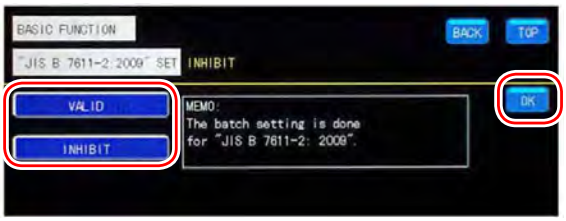
Function	Setting	Remarks
STAB. FILTER BAND	2.0	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [2.0] or more, the value remains unchanged.
STAB. DETECTION TIME	1.0	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [1.0] or more, the value remains unchanged.
STAB. DETECTION BAND	2.0	If the value that was set before ["JIS B 7611-2: 2009" SET] set to [VALID] is [2.0] or less, the value remains unchanged.
RANGE OF ZERO	2%	-
ZERO TRACKING BAND	0.0	-
ZERO TRACKING TIME	0.0	-
OPERATION OF TARE	IN STABLE MODE	-
RANGE OF TARE	0 < GROSS s; WEIGHING CAPACITY	-
PRINT COMMAND	IN STABLE MODE	-
OPERATION OF STABILITY	WEIGHING SCREEN ONLY	-
OL DISPLAY CONDITION	-20 D to 9 D	-
NET WEIGHT SIGN INVERSE	INHIBIT	-

Display "JIS B 7611-2: 2009" inflow settings screen

1. Tap [BASIC FUNCTION] on [MENU 1/2].
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap ["JIS B 7611-2: 2009" SET] on [BASIC FUNCTION 4/4].
   ▷ ["JIS B 7611-2: 2009" SET] screen is displayed.

Set "JIS B 7611-2: 2009" inflow settings screen.



3. Tap [VALID]/[INHIBIT].

   Default: [INHIBIT]

4. Tap [OK].

   ▷ All function values are set to comply with "JIS B 7611-2: 2009," and [BASIC FUNCTION 4/4] is displayed.

Confirm settings

5. Confirm "JIS B 7611-2: 2009" inflow settings.

   The setting is complete if the item set in step 2 appears under ["JIS B 7611-2: 2009" SET].

7.11.12 Automatic print settings

Set whether the printer connected to CSD-912 automatically prints data when the [ZERO BAND] lamp is off and the [STABLE] lamp is lit on the weight display.

Display the automatic print setting screen

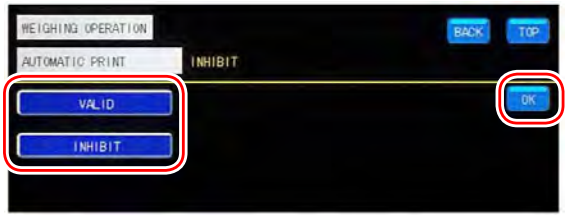
1. Tap [WEIGHING OPERATION] on [MENU 1/2].

   ▷ [WEIGHING OPERATION 1/2] is displayed.

2. Tap [AUTOMATIC PRINT] on [WEIGHING OPERATION 2/2].

   ▷ The [AUTOMATIC PRINT] screen is displayed.

Set automatic print



3. Tap [VALID]/[INHIBIT].

   Default: [INHIBIT]

4. Tap [OK].

   ▷ Automatic print is set, and [WEIGHING OPERATION 2/2] is displayed.

Confirm settings

5. Confirm the automatic print settings.

   The setting is complete if the item set in step 2 appears under [AUTOMATIC PRINT].

8 Graphical display

This chapter describes graphical display for weight values.

8.1 Graphical display description

CSD-912 can execute weighing operation and graphically display weighing values. Graphs show the change of weight values, which facilitates immediate recognition of weighing status and operational failures.

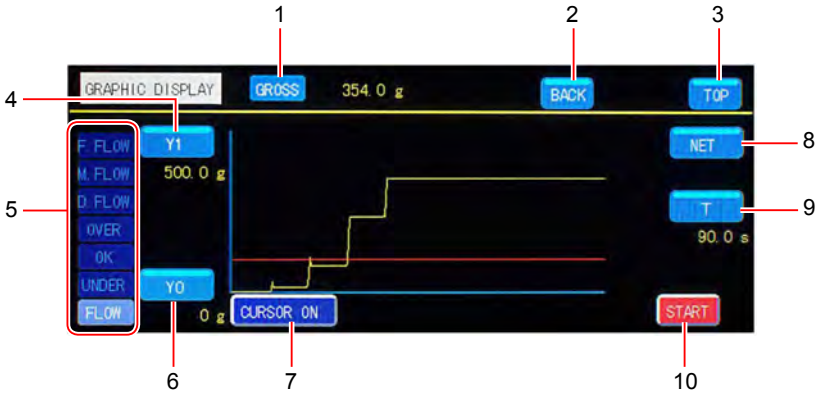
A cursor can be used to check weighing values during a specified period after completion of graphical display weighing.

Note:

Refer to Chapter 8.2.

8.1.1 Checking the transition of weighing values (CURSOR OFF)

When the duration is not specified, the graphical display is as shown below.



1	[GROSS]/[NET] display [GROSS]: Indicates that the weight value displayed in the graph is a gross weight [NET]: Indicates that the weight value displayed in the graph is a net weight. Use the [GROSS]/[NET] key to switch displays.
2	[BACK] key: Returns to the previous display
3	[TOP] key: Returns to the weighing screen
4	[Y1] key: Sets an upper weight limit for the graphical display. The current upper limit is displayed in yellow under the key.
5	Weight status display: A lamp is lit to indicate the weighing status.
6	[Y0] key: Sets an lower weighing limit for the graphical display. The current lower limit is displayed in yellow under the key.

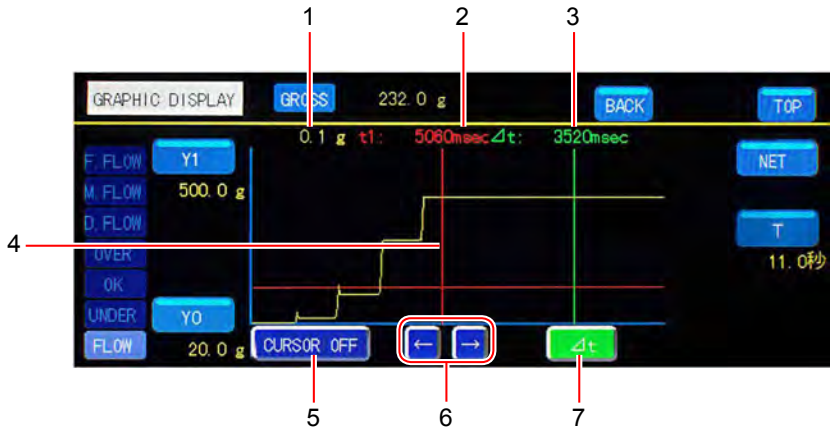
7	[CURSOR ON] key: Enables cursor display **Note:** - The cursor can be displayed after weighing is complete. - For more information about the display when [CURSOR ON] is selected, refer to Chapter 8.1.2.
8	[GROSS]/[NET] key: Switches between gross and net weight displays. Press [GROSS] to switch to gross weight display. Press [NET] to switch to net weight display.
9	[T] key: Sets the weighing time during which the graph is displayed. The current weighing time is displayed in yellow under the key.
10	[START]/[STOP] key: Starts/stops weighing operation. **Note:** When the cursor is displayed, the [START/STOP] key is not displayed.

8.1.2 Checking the weight value over a specified period (CURSOR ON)

The cursor, displayed after completion of weighing, allows checking of the weight value over a specified period. When [CURSOR ON] is selected, the graphical display is as shown below.

Note:

For non-cursor-related items, refer to Chapter 8.1.1.



1	Using the cursor to read weight values: Specifies the weight value indicated by the cursor. When the ⊿t cursor (light green) is OFF, the weight value indicated by the t1 cursor (red) is displayed. When the ⊿t cursor (light green) is ON, the weight value indicated by the ⊿t cursor (light yellow) is displayed.
2	t1 time: Indicates the duration from start of weighing to the time indicated by the t1 cursor.
3	⊿t time: Indicates the duration between the t1 cursor and the ⊿t cursor.
4	t1 cursor: Displayed in red.
5	[CURSOR OFF] key: Disables cursor display.
6	[←] [→] keys: Move the cursor. When the ⊿t cursor (light green) is OFF, the t1 cursor (red) moves. When the ⊿t cursor (light green) is ON, the ⊿t cursor (light green) moves. **Note:** Pressing and holding the keys moves the keys more rapidly.
7	[⊿t] key: Switches the ⊿t cursor display (light green) between ON and OFF. When the ⊿t cursor (light green) is ON: - The ⊿t cursor (light green) can be moved. - The weighing value indicated by the ⊿t cursor is displayed. When the ⊿t cursor (light green) is OFF: - The t1 cursor (red) can be moved. - The weighing value indicated by the t1 cursor is displayed.

8.2 Graphical display

The screen switches to graphical display mode, and the display ranges of the vertical axis (weight value) and the horizontal axis (weighing time) are set.

Display the graph

1. Tap [GRAPHIC DISPLAY] on [MENU 1/2]

▷ The graph screen is displayed.

Set a lower weighing limit

2. Tap [Y0]

▷ The lower limit setting screen is displayed.

3. Input the lower weighing limit

Range: -999 999 to 999 998

Note:

Refer to Chapter 5.5 for more information.

---

4. Tap [OK]

▷ The lower weighing limit is set, and the graph screen is displayed.

Note:

If the currently set lower limit is higher than the current upper limit set using the [Y1] key, a value obtained by subtracting 1 from the upper limit value is set as the lower limit.

Set the upper weighing limit

5. 1. Tap [Y1]

▷ The upper limit setting screen is displayed.

6. Input the upper weighing limit

   Range: -999 998 to 999 999

Note:

Refer to Chapter 5.5 for more information.

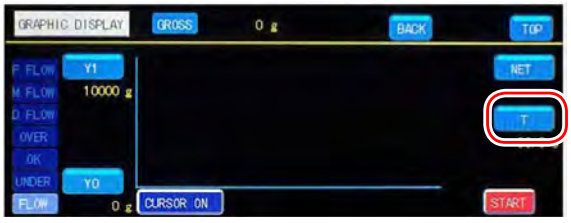
7. Tap [OK]

   ▷ The upper weighing limit is set, and the graph screen is displayed.

Note:

If the currently set upper limit is lower than the current lower limit set by using the [Y0] key, a value obtained by adding 1 to the lower limit value is set as the upper limit.

Set a weighing time



8. Tap [T]

   ▷ The time setting screen is displayed.

9. Input the weighing time

   Range: 0.1 to 99.9

Note:

Refer to Chapter 5.5 for more information.

10. Tap [OK]

    ▷ The weighing time is set, and the graph screen is displayed.

8.3 Graphical display settings

Set graphical-display-related functions if necessary.

Function name	Description	see Chapter
Drawing condition setting	Sets the condition that starts graphical drawing	8.3.1
Trigger level setting	Sets the level (reference value) that starts/stops graphical drawing	8.3.2

8.3.1 Setting the drawing condition

Sets the condition that starts graphical drawing.

Display the drawing condition setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [GRAPH TRIGGER SETTING] on [BASIC FUNCTION 3/4]
   ▷ The graph trigger setting screen is displayed.

Set a graphical drawing condition

3. Select the graphical drawing condition

   [SINGLE]

   Press the [START] key to start graphical drawing Drawing is executed once for the duration set using the [T] key.

[START+LEVEL↑]

Press the [START] key to start level detection Graphical drawing starts if the weighing value exceeds the current level. Drawing is executed once for the duration set using the [T] key.

[START+LEVEL↑↓]

Press the [START] key to start level detection Graphical drawing starts when the weight value passes the current trigger level (ascending or descending). Drawing is executed once for the duration set using the [T] key.

[LEVEL↑]

Graphical drawing starts if the weight value exceeds the current trigger level. Drawing is executed once for the duration set using the [T] key.

[LEVEL↑↓]

Graphical drawing starts when the weight value passes the current trigger level (ascending or descending). Drawing is executed once for the duration set using the [T] key.

[INFLOW START LINKED]

Inputting an inflow start linked signal from external equipment starts graphical drawing. Drawing is executed once for the duration set using the [T] key.

[RECIPE START LINKED]

Inputting an recipe start linked signal from external equipment starts graphical drawing. Drawing is executed once for the duration set using the [T] key.

Initial value: SINGLE

Note:

Refer to Chapter 8.3.2.

---

4. Tap [OK].
   ▷ The graphical drawing condition is set, and [BASIC FUNCTION 3/4] is displayed.

Check setting

5. Check the drawing condition setting.

   The setting is complete if the item set in step 2 appears under [GRAPH TRIGGER SETTING].

8.3.2 Trigger level setting

Sets the level (reference value) that starts/stops graphical drawing

Display the trigger level setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [GRAPH TRIGGER level] on [BASIC FUNCTION 3/4]
   ▷ The graph trigger level screen is displayed.

Set a trigger level

3. Input the trigger level

   Range: -999 999 to 999 999

   Initial value: 0

4. Tap [OK].
   ▷ The trigger level is set, and [BASIC FUNCTION 3/4] is displayed.

Check setting

5. Check the trigger level setting.

   The setting is complete if the value set in step 2 appears under [GRAPH TRIGGER LEVEL].

9 Various settings

This chapter describes various CSD-912 function settings.

9.1 Screen-display-related settings

Set graphical-display-related functions as required

Function name	Content	see Chapter
Display rate setting	Sets how many times the load value display is updated per second	9.1.1
Decimal point position setting	Sets the load display decimal point position	9.1.2
OL display condition setting	Sets the condition to display [OL] (overload status) and [-OL] (unstable status)	9.1.3
Unit setting	Sets the load display units	9.1.4
Backlight off time setting	Sets the CSD-912 idle duration until the display backlight turns off	9.1.5

9.1.1 Display rate setting

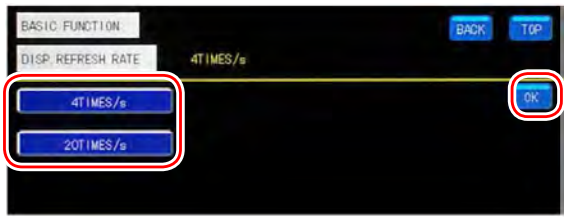
Sets how many times the load value display is updated per second.

Display the display rate setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2].
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [DISP. REFRESH RATE].
   ▷ The display rate setting screen is displayed.

Set the display rate



3. Select the display rate.

   4 TIMES/s: Updates the load value display 4 times per second

   20 TIMES/s: Updates the load value display 20 times per second

   Initial value: 4 TIMES/s

4. Tap [OK]

   ▷ The display rate is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting

5. Check the display rate.

   The setting is complete if the item set in step 2 appears under [DISP. REFRESH RATE].

9.1.2 Decimal point position setting

Sets the load display decimal point position.

Display the decimal point position setting screen

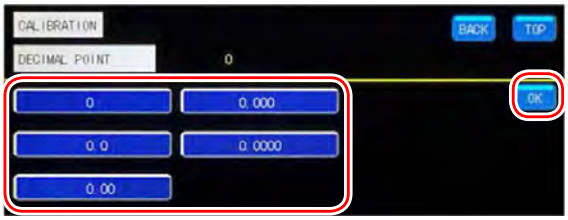
1. Tap [CALIBRATION] on [MENU 1/2].

   ▷ [CALIBRATION 1/2] is displayed.

2. Tap [DECIMAL POINT].

   ▷ The decimal point position setting screen is displayed.

Set the decimal point position



3. Select the decimal point position.

   Items: 0, 0.0, 0.00, 0.000, 0.0000

   Initial value: 0

4. Tap [OK].

   ▷ The decimal point position is set, and [CALIBRATION 1/2] is displayed.

Check setting

5. Check the decimal point position.

   The setting is complete if the item set in step 2 appears under [DECIMAL POINT].

9.1.3 OL display condition setting

Sets the condition to display [OL] (overload status) and [-OL] (unstable status).

Display the OL display condition setting screen

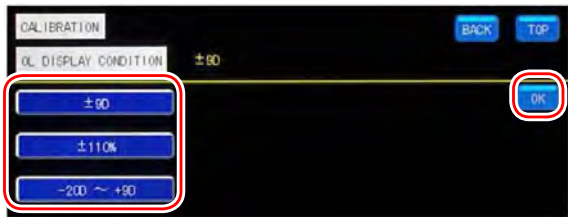
1. Tap [CALIBRATION] on [MENU 1/2].

   ▷ [CALIBRATION 1/2] is displayed.

2. Tap [OL DISPLAY CONDITION] on [CALIBRATION 2/2].

   ▷ The OL display condition setting screen is displayed.

Set the OL display condition



3. Select the OL display condition.

   [±9D]

   [OL] is displayed if the weight value exceeds "(maximum load) + (9 division)". If the weight value is less than "- (maximum load) - (9 division)", [-OL] is displayed.

   [±110%]

   [OL] is displayed if the weight value exceeds "(maximum load) x 110%" [-OL] is displayed if the weight value is less than "- (maximum load) x 110%".

   [-20D ~ +9D]

   [OL] is displayed if the weight value exceeds "(maximum load) + (9 division)" [-OL] is displayed if the weight value is less than -20 division.

   Initial value: +9 D

4. Tap [OK]

   ▷ The OL display condition is set, and [CALIBRATION 2/2] is displayed.

Check setting

5. Check the OL display condition.

   The setting is complete if the item set in step 2 appears under [OL DISPLAY CONDITION].

9.1.4 Unit setting

Sets the load display units.

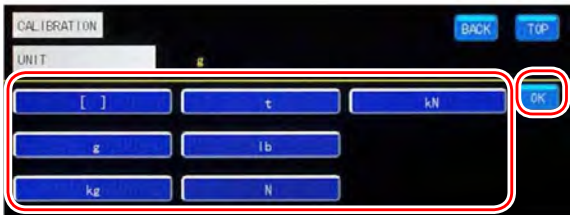
Display the unit setting screen

1. Tap [CALIBRATION] on [MENU 1/2].

   ▷ [CALIBRATION 1/2] is displayed.

2. Tap [UNIT] on [CALIBRATION 2/2].
   ▷ The unit setting screen is displayed.

Set the units



3. Select the units.

   Items: NONE, g, kg, t, lb, N, kN

   Initial value: NONE

4. Tap [OK].
   ▷ The unit s are set, and [CALIBRATION 2/2] is displayed.

Check setting

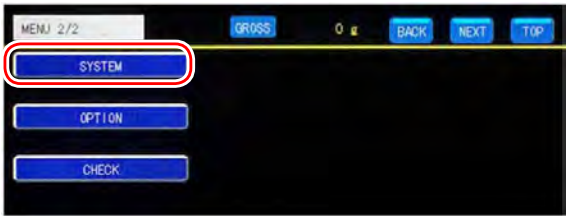
5. Check the units.

   The setting is complete if the item set in step 2 appears under [UNIT].

9.1.5 Backlight off time setting

Sets the CSD-912 idle duration until the display backlight turns off.

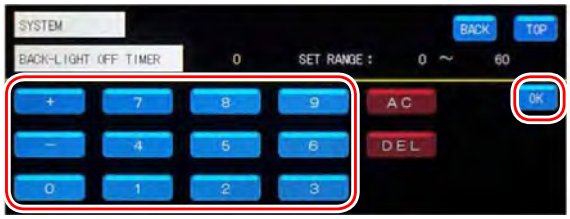
Display the backlight off time setting screen



1. Tap [SYSTEM] on [MENU 2/2].
   ▷ [SYSTEM] is displayed.

2. Tap [BACK-LIGHT OFF TIMER].
   ▷ The backlight off time setting screen is displayed.

Set the backlight off time



3. Input the length of time before the backlight turns off.

   Unit: 1 minute

   Range: 0 to 60

   Initial value: 0

Note:

- Set to 0 to disable backlight off
- Refer to Chapter 5.5 for more information.

---

4. Tap [OK].
   ▷ The backlight off time is set, and [SYSTEM] is displayed.

Check setting

5. Check the backlight off time.

   The setting is complete if the value set in step 2 appears under [BACK-LIGHT OFF TIMER].

9.2 Correction-related settings

Set correction-related functions as required.

Function name	Content	see Chapter
A/D sampling rate setting	Sets how many times A/D sampling is executed per second	9.2.1
Zero tracking setting	Corrects a gradual zero-point drift to stabilize the zero point	9.2.2

9.2.1 A/D sampling rate setting

Sets how many times A/D sampling is executed per second

Display the A/D sampling rate setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [A/D SAMPLING RATE]
   ▷ The A/D sampling rate setting screen is displayed.

Set the A/D sampling rate

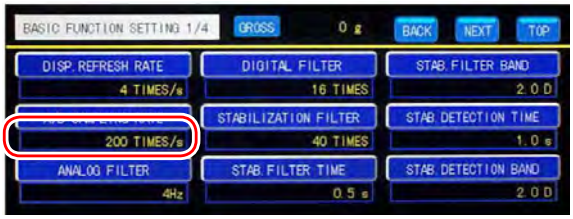
3. Select the A/D sampling rate

   Items: 10 TIMES/s, 20 TIMES/s, 50 TIMES/s, 100 TIMES/s, 200 TIMES/s, 1,000 TIMES/s

   Initial value: 200 TIMES/s

4. Tap [OK]
   ▷ The A/D sampling rate is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting



5. Check the A/D sampling rate

   The setting is complete if the item set in step 2 appears under [A/D SAMPLING RATE].

9.2.2 Zero tracking setting

Corrects a gradual zero-point drift to stabilize the zero point

Set the following items to execute zero tracking.

- Zero tracking target
- Zero tracking data width coefficient
- Zero tracking time

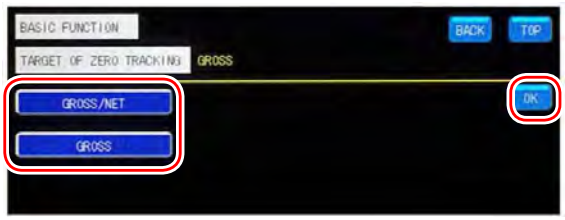
Set the above items on the basic function setting screen. Tap [BASIC FUNCTION] on [MENU 1/2] to display the basic function setting screen.

1	Zero tracking time
2	Zero tracking data width coefficient
3	Zero tracking target

9.2.2.1 Zero tracking target setting

Set a target for zero tracking

Set the zero tracking target



1. Select the zero tracking target

   [GROSS/NET]

   Select to make both gross and net weights the zero tracking target

[GROSS]

Select to make gross weight the zero tracking target

Initial value: GROSS

2. Tap [OK]

▷ The zero tracking target is set, and [BASIC FUNCTION 2/4] is displayed.

Check setting

3. Check the zero tracking target

The setting is complete if the item set in step 1 appears under [TARGET OF ZERO TRACKING].

9.2.2.2 Zero tracking data width coefficient setting

Set the data width coefficient to execute zero tracking Zero tracking is executed if weighing value variation is within set data width coefficient x division.

For example, if the data width coefficient is 5.0 and the division is 5, the zero tracking data width is 25.0, and zero tracking is executed when weighing variation is within 25.0.

Set the zero tracking data width coefficient

1. Input the zero tracking data width coefficient

Unit: d

Range: 0.0 to 9.9

Initial value: 0.0

Note:

- Set to 0.0 to disable zero tracking
- Refer to Chapter 5.5 for more information.

2. Tap [OK]

▷ The zero tracking data width coefficient is set, and [BASIC FUNCTION 2/4] is displayed.

Check setting

3. Check the zero tracking data width coefficient

   The setting is complete if the value set in step 1 appears under [ZERO TRACKING BAND].

9.2.2.3 Zero tracking time setting

Set the length of time before zero tracking is executed

Set the zero tracking time

1. Input the zero tracking time

   Unit: 0.1 second

   Range: 0.0 to 9.9

   Initial value: 0.0

Note:

- Set to 0.0 to disable zero tracking
- Refer to Chapter 5.5 for more information.

---

2. Tap [OK]

   ▷ The zero tracking time is set, and [BASIC FUNCTION 2/4] is displayed.

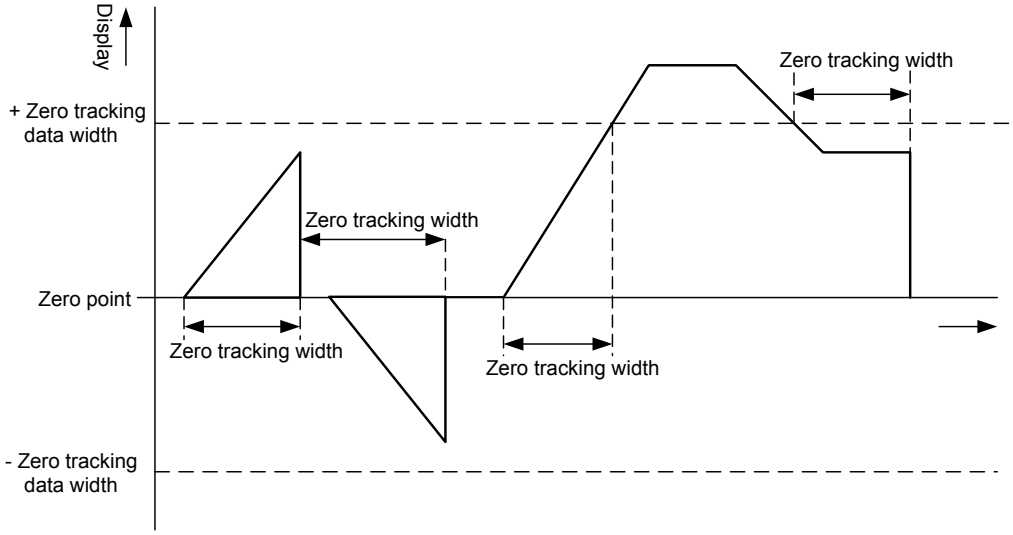
Check setting

3. Check the zero tracking time

   The setting is complete if the value set in step 1 appears under [ZERO TRACKING TIME].

9.2.2.4 Zero tracking execution

Zero tracking is executed when the weighing value variation set as a target in [TARGET OF ZERO TRACKING] stays within the data width set in [ZERO TRACKING BAND] for more than the length of time set in [ZERO TRACKING TIME].



- Do not execute zero tracking when the weighing value is fluctuating around the zero point.
- Even if the weighing value variation is outwith the zero tracking data width range, zero tracking can be executed when the variation dampens due to the digital filter (see Chapter 9.3 and 9.3.3)
- Zero tracking is not executed if zero compensation is executed by zero setting (see Chapter 9.2.2)

9.3 Settings related to noise reduction (filter)

Set functions related to noise reduction (filter)

Function name	Content	see Chapter
Analog filter setting	Controls input signal noise	9.3.1
Digital filter setting	Sets a moving average frequency to stabilize the A/D converted data	9.3.2
Stabilization filter setting	Filters data that has been stabilized with the digital filter to provide further stabilization	9.3.3

9.3.1 Analog filter setting

Controls input signal noise.

Display the analog filter setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [ANALOG FILTER]
   ▷ The analog filter setting screen is displayed.

Set the frequency

3. Select the frequency

   Items: 2 Hz, 4 Hz, 6 Hz, 8 Hz, 10 Hz, 100 Hz

   Initial value: 4 Hz

4. Tap [OK]
   ▷ The frequency is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting

5. Check the analog filter setting

   The setting is complete if the item set in step 2 appears under [ANALOG FILTER].

9.3.2 Digital filter setting

Sets a moving average frequency to stabilize A/D converted data.

Display the digital filter setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2]
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [DIGITAL FILTER]
   ▷ The digital filter setting screen is displayed.

Set the moving average frequency

3. Input the moving average frequency

   Range: 1 to 256

   Initial value: 16

Note:

- A lower moving average frequency decreases noise durability and increases response speed. A higher moving average frequency increases noise durability and decreases response time.
- Refer to Chapter 5.5 for more information.

---

4. Tap [OK]
   ▷ The moving average frequency is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting

5. Check the digital filter setting

   The setting is complete if the value set in step 2 appears under [DIGITAL FILTER].

9.3.3 Stabilization filter setting

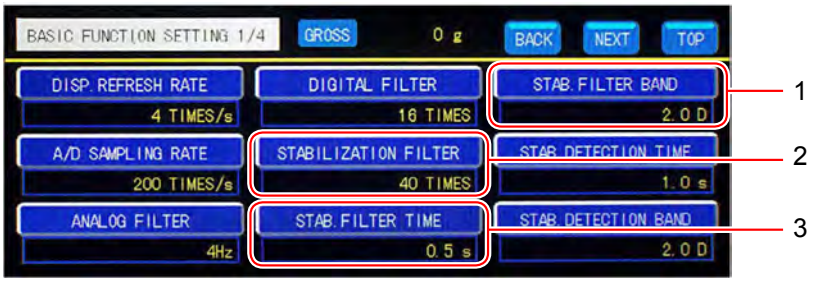
If the weighing value variation stays within a set data width for more than a set time, a moving average process for the stabilization filter is executed on data that has been stabilized with the digital filter to further stabilize the data.

Data is more stable if the weighing value variation is smaller. This is because the moving average process is executed only within a range that satisfies the operation conditions. When the weighing value variation is large, the stabilization filter is not applied, so weighing prioritizes response speed.

Set the items below to apply a stabilization filter.

- Stabilization filter (moving average frequency setting)
- Stabilization filter data width coefficient
- Stabilization filter time width

Set the above items on the basic function setting screen. Tap [BASIC FUNCTION] on [MENU 1/2]to display the basic function setting screen.



1	Stabilization filter data width coefficient
2	Moving average frequency setting
3	Stabilization filter time width

9.3.3.1 Stabilization filter setting (moving average frequency setting)

Set the moving average frequency for the stabilization filter

Set the moving average frequency

1. Input the moving average frequency

   Range: 1 to 256

   Initial value: 40

2. Tap [OK]

   ▷ The moving average frequency is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting

3. Check the moving average frequency setting

   The setting is complete if the value set in step 1 appears under [STABILIZATION FILTER].

9.3.3.2 Stabilization filter data width coefficient setting

Set the data width coefficient to apply the stabilization filter. Measurement of the time before the stabilization filter is applied starts to be measured when the weighing value variation is within a set data width coefficient x division.

For example, if the data width coefficient is 2.0 and the division is 1, the stabilization filter data width is 2.0, and time measurement would start when weighing value variation is within 2.0.

Set the stabilization filter data width coefficient

1. Input the stabilization filter data width coefficient

   Unit: D

   Range: 0.0 to 99.9

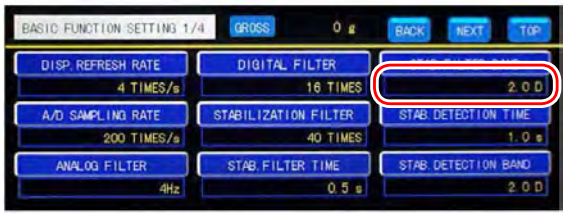
   Initial value: 2.0

Note:

- Set to 0.0 to disable the stabilization filter.
- Refer to Chapter 5.5 for more information.

2. Tap [OK]
   ▷ The stabilization filter data width coefficient is set, and [BASIC FUNCTION 1/4] is displayed.

Check setting



3. Check the stabilization filter data width coefficient

   The setting is complete if the value set in step 1 appears under [STAB. FILTER BAND].

9.3.3.3 Stabilization filter time width setting

Set the time until the stabilization filter is applied

1. Set the stabilization filter time width

   Unit: 0.1 second

   Range: 0.0 to 9.9

   Initial value: 0.5

Note:

- Set to 0.0 to disable the stabilization filter.
- Refer to Chapter 5.5 for more information.

2. Tap [OK]
   ▷ The stabilization filter time width is set, and [BASIC FUNCTION 1/4] is displayed.

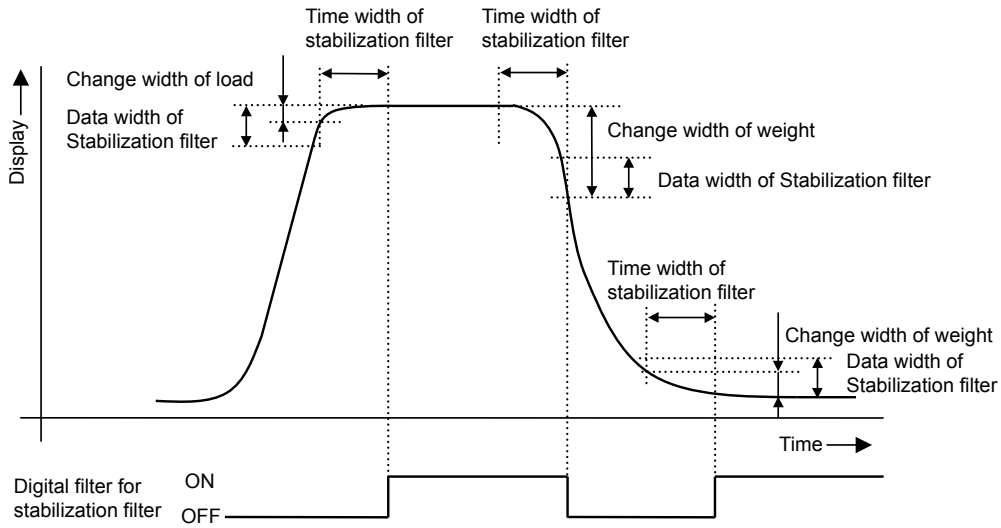
Check setting

3. Check the stabilization filter time width

   The setting is complete if the value set in step 1 appears under [STAB. FILTER TIME].

9.3.3.4 Stabilization filter execution

If the weighing value variation stays within the data width set in [STAB. FILTER BAND] for longer than the time set in [STAB. FILTER TIME], a moving average process is executed the number of times set in [STABILIZATION FILTER]to further stabilize data stabilized with the digital filter.



9.4 Function-key-related settings

Assign functions to function keys. Press the [F] key on the weighing screen to display the function keys, facilitating direct assignment of functions listed on-screen.

1	Tap the [F] key
2	The function keys are displayed.
3	Tap the required function key.

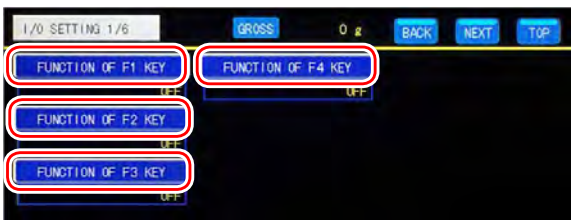
9.4.1 Function key settings

Assign functions to function keys

Display the function key setting screen

1. Tap [I/O] on [MENU 1/2]
   ▷ [I/O SETTING 1/6] is displayed.

Set functions



2. Tap the required function key
   ▷ The function key function selection screen is displayed.

3. Select a function to assign to the function key

Note:

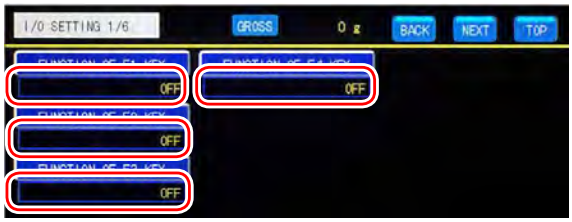
Refer to Chapter 9.4.2 for more information.

4. Tap [OK]
   ▷ The function is assigned, and [I/O SETTING 1/6] is displayed.

Note:

Repeat the steps above to assign a function to another function key.

Check setting



5. Check the function key settings

   The setting is complete if the item set in step 2 appears under its corresponding function key.

9.4.2 Setting function list

Functions that can be assigned to function keys are listed below.

Function name	Content
OFF	Assign no functions to function keys
PRINT	Prints data on a printer connected to theCSD-912
ZERO CLEAR	Returns the weighing value display to the status before zero setting (see Chapter 7.10.1) and 9.2.2)
TARE CLEAR	Returns the weighing value display to the status before tare weight cancellation (see Chapter 7.10.2)
INFLOW START	Starts inflow operation
RECIPE START	Starts recipe operation

Function name	Content
DISCHARGE START	Starts discharge operation
MIXING START	Starts mixing operation
PAUSE	Pauses weighing operation
RESTART	Releases paused weighing operation
FORCED INFLOW FINISH	Force-finishes weighing operation
FORCED RECIPE FINISH	Force-finishes recipe operation
FORCED DISCH. FINISH	Force-finishes discharge operation
ACCUM. COMMAND	Accumulates a load value
FOMER ACM. DATA CLR.	Clears the previously accumulated load value
M. F.F. COMPENSATION	Calculates the average value of the last four actual freefalls as a compensation value to apply to the current weighing value
ERROR RESET	Releases an error Refer to Chapter 13.2.2 and 13.2.3
CLR ACM. OF BRAND	Clears the accumulation value and the accumulation times of the currently selected brand
CLR ACM. OF RECIPE	Clears the accumulation value and the accumulation times of the currently selected recipe code
CLR ACM. OF ALL BRAND	Clears the accumulation value and the accumulation times of all brands
CLR ACM. OF ALL RECIPE	Clears the accumulation value and the accumulation times of all recipe codes
HOLD	Toggles the hold setting between ON and OFF Refer to Chapter 7.11.8.

9.5 Setting initialization

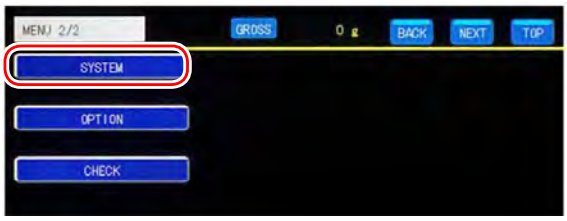
Initialize the settings forCSD-912 as required.

Function name	Content	see Chapter
Comparative-setting-related memory initialization	Initializes brand codes, recipe codes and 4-step comparator settings	9.5.1
Operational-setting-related memory initialization	Initializes basic function settings, I/O settings, weighing operation settings, sequence control settings, standard communication settings and option settings	9.5.2

9.5.1 Comparative-setting-related memory initialization

Initializes brand codes, recipe codes and 4-step check settings

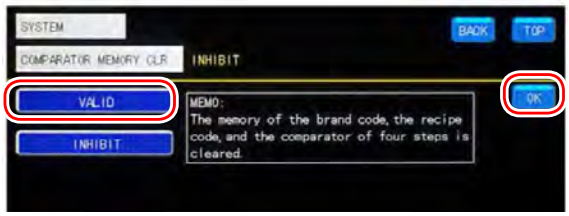
Display the comparative-setting-related memory initialization screen



1. Tap [SYSTEM] on [MENU 2/2]
   ▷ [SYSTEM] is displayed.

2. Tap [COMPARATOR MEMORY CLR.]
   ▷ The comparative-setting-related memory initialization screen is displayed.

Initialize the comparative-setting-related memory



3. Tap [VALID]

   Initial value: INHIBIT

4. Tap [OK]
   ▷ Brand codes, recipe codes and 4-step check settings are initialized, and [SYSTEM] is displayed.

9.5.2 Operational-setting-related memory initialization

Initializes basic function settings, I/O settings, weighing operation settings, sequence control settings, standard communication settings and option settings

Display the operational-setting-related memory initialization screen

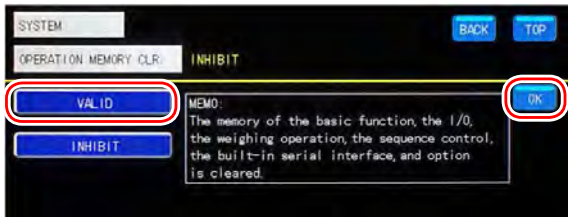
1. Tap [SYSTEM] on [MENU 2/2]

▷ [SYSTEM] is displayed.

2. Tap [OPERATION MEMORY CLR.]

▷ The operational-setting-related memory initialization screen is displayed.

Initialize the operational-setting-related memory



3. Tap [VALID]

Initial value: INHIBIT

4. Tap [OK]

▷ Basic function settings, I/O settings, weighing operation settings, sequence control settings, standard communication settings and option settings are initialized, and [SYSTEM] is displayed.

Note:

Calibration-related basic function settings are not initialized if calibration is locked. Refer to Chapter 6.4.6 for more information.

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10 Data management

This chapter describes data managed by CSD-912.

10.1 Data types

Part of CSD-912 setting data and calibration data is recorded in the RAM or EEPROM and retained, even if the CSD-912power is turned OFF.

- RAM

  This memory can rapidly read and write data. It is backed up by a battery.

- EEPROM

  This is a nonvolatile memory.

Note:

- Battery life is approximately 10 years at a room temperature of 20°C. If the screen displays bAtL [BATL], the battery needs replacing. Contact the Company in this case.
- The EEPROM allows data writing approximately 1,000,000 times.

The content and storage location of each data type are shown below.

Data type	Intrinsic data settings	Storage	Remarks
Zero set data	OPERATION OF ZERO, RANGE OF ZERO	RAM	–
Zero tracking data	TARGET OF ZERO TRACKING, ZERO TRACKING TIME, ZERO TRACKING BAND	RAM	–
Tare weight cancellation data	OPERATION OF TARE, RANGE OF TARE	RAM	–
Brand setting data	NAME, HOPPER No. , FINAL, FREE-FALL, PRELIMINARY1, PRELIMINARY2, OVER, UNDER, ZERO BAND, FULL, A. F. F. COMPENSATION, SUPPLEMENTARY FLOW TIME, JUDGE. AFTER S-FLOW WAIT, ACCUM. VALUE, ACCUM. TIMES, PRESET TARE, INITIAL FULL FLOW, INITIAL MEDIUM FLOW	RAM	The storage location can be changed to the internal flash ROM (except accumulation value data and accumulation times data).
Recipe setting data	NAME, MEAS. 1, MEAS. 2, MEAS. 3, MEAS. 4, MEAS. 5, MEAS. 6, MEAS. 7, MEAS. 8, MEAS. 9, MEAS. 10, ACCUM. VALUE, ACCUM. TIMES	RAM	The storage location can be changed to the internal flash ROM (except accumulation value data and accumulation times data).

Data type	Intrinsic data settings	Storage	Remarks
4-step check mode setting data	NAME, S1, S2, S3, S4, ZERO BAND, FULL, TARGET OF S1 OPERATION, TARGET OF S2 OPERATION, TARGET OF S3 OPERATION, TARGET OF S4 OPERATION, CONDITION OF S1, CONDITION OF S2, CONDITION OF S3, CONDITION OF S4	RAM	The storage location can be changed to the internal flash ROM.
Calibration data	BRIDGE POWER SUPPLY, DIVISION, WEIGHING CAPACITY, ZERO ADJUSTMENT, SPAN ADJUSTMENT, ZERO/SPAN ADJUSTMENT	EEPROM	–
Calibration-related data	PITCH CONFIRMATION SET, DIGITAL LINEARIZATION, DECIMAL POINT, OL DISPLAY CONDITION, UNIT, ADJ. GRAV. ACCELERATION	EEPROM	–

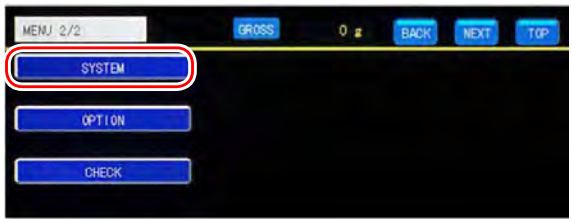
Note:

Refer to Chapter 10.2 for more information about changing storage locations.

10.2 Data storage location setting

Brand setting data, recipe setting data, 4-step check mode setting data can be stored either in RAM or flash ROM.

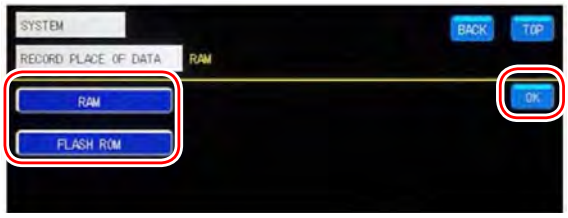
Display the data storage location setting screen



1. Tap [SYSTEM] on [MENU 2/2]
   ▷ [SYSTEM] is displayed.

2. Tap [RECORD PLACE OF DATA]
   ▷ The data storage location setting screen is displayed.

Set the data storage location



3. Select a data storage location

   RAM: Stores data in RAM

   Flash ROM: Stores data in flash ROM

   Initial value: RAM

4. Tap [OK]

   ▷ The data storage location is set, and [SYSTEM] is displayed.

Check setting

5. Check the data storage location

   The setting is complete if the item set in step 2 appears under [RECORD PLACE OF DATA].

Note:

Accumulation value data and accumulation times data are stored only in the RAM.

11 External equipment

This chapter describes how to wire and set external equipment.

11.1 Standard RS-485 interface

11.1.1 Specifications

Specifications for the standard RS-485 interface are given below.

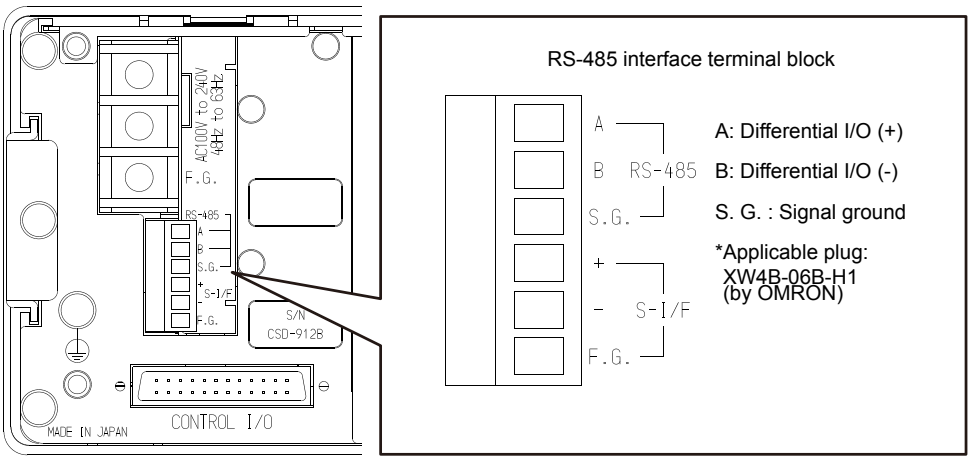
Specification	Description
Transmission method	Half duplex
Synchronous system	Start-stop synchronization
Baud rate	Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps
Data bit length	Can be selected from 7 bit and 8 bit
Parity bit	Can be selected from No parity, Even parity and Odd parity
Stop bit	Can be selected from 1 bit and 2 bit
Terminator	Can be selected from CR+LF and CR
Transmission data	ASCII code
Cable length	Approx. 1 km
Address number	Can be selected from 0 to 31
Number of units that can be connected	Up to 32 (1 unit for stream mode)

Note:

- Standard RS-485 communication and Modbus communication cannot be linked with optional RS-232C communication, RS-422 communication or RS-485 communication.
- Refer to Chapter 14.5.

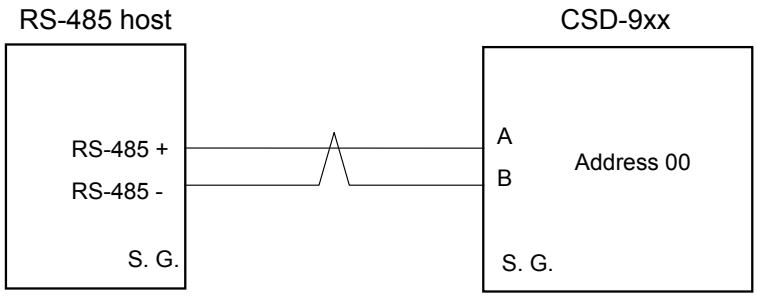
11.1.2 Standard RS-485 interface wiring

The standard RS-485 interface is wired to +, - and S.G. of the RS-485 interface terminal block, which is located at the back of the CSD-912.



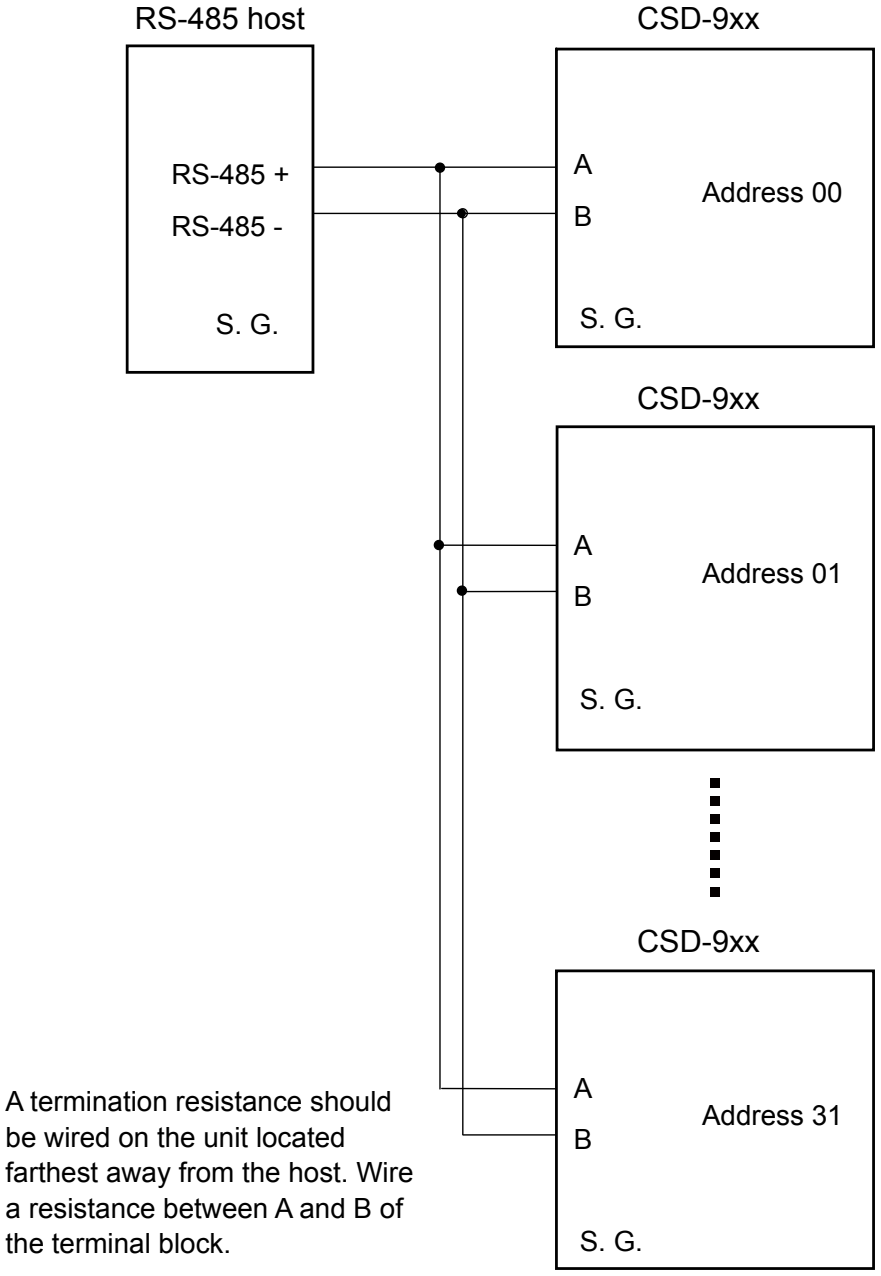
11.1.2.1 Connecting CSD-912

Connect CSD-912 to the standard RS-485 interface as shown below.



11.1.2.2 Connecting multiple CSD-912s

Connect multiple CSD-912s to the standard RS-485 interface as shown below.



A termination resistance should be wired on the unit located farthest away from the host. Wire a resistance between A and B of the terminal block.

Note:

- The end of each cable should be stripped 7 mm.
- The terminal block terminal screw tightening torque is 0.6 Nm.
- The wiring cables should be AWG 28 to AWG 16.
- Use twisted pair cables
- The S.G. of the standard RS-485 interface and the common terminal of the internal circuit are shared.
- The S.G. terminal should be wired according to the communication status between CSD-912 and the opposite unit.
- An S.G. terminal may not be provided, depending of the host equipment, such as a PC and or sequencer.
- Connect a shielded cable wire to the F.G. terminal of the RS-485 interface terminal block to ensure the CSD-912 conforms to CE and JIS standards.
- The polarity of signals on the host side, such as a PC or a sequencer, may be reversed.

11.1.3 Communication settings

The following items must be set according to the specifications of the RS-485 interface.

- Operation mode
- Baud rate
- Data bit length
- Parity
- Stop bit
- Terminator
- Decimal point display
- Address
- Data delay time
- Stream mode target output

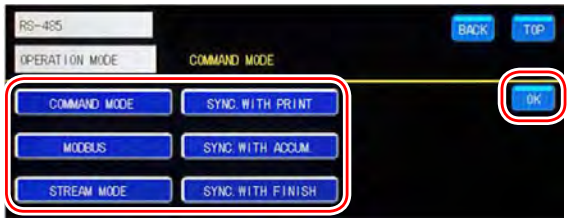
The communication settings of the RS-485 interface are set on the RS-485 communication setting screen. To display the RS-485 communication setting screen, tap [BUILT-IN SERIAL I/F] on [MENU 1/2], then tap [RS-485] on standard communication screen 1/1.

1	Tap [BUILT-IN SERIAL I/F]
2	Standard communication setting screen 1/1 is displayed.
3	Tap [RS-485]
4	The RS-485 communication setting screen is displayed.

11.1.3.1 Setting the operation mode

Sets the operation mode for the standard RS-485 interface.

Set an operation mode



1. Select the operation mode.

[COMMAND MODE]

When command data in a particular format is sent from the host, such as a PC or a sequencer, to CSD-912, data corresponding to the sent command data is returned from CSD-912 to the host.

[MODBUS]

Modbus communication

[STREAM MODE]

Continuously outputs the latest data that has been set as an output target

[SYNC. WITH PRINT]

Outputs data that has been set as an output target synchronized with a print command from external control input

[SYNC. WITH ACCUM.]

Outputs data that has been set as an output target synchronized with an accumulation signal

[SYNC. WITH FINISH]

Outputs data that has been set as an output target synchronized with a finish signal

Initial value: COMMAND MODE

Note:

- Selecting [STREAM MODE] continuously outputs data at a prescribed interval. Control from the host is disabled. [Are you sure you want to select it?] appears. To select stream mode, tap [YES]
- Refer to Chapter 11.1.4.
- Refer to Chapter 11.1.3.10.

---

2. Tap [OK]
   ▷ Operation mode is set, and [RS485 1/2] is displayed.

Check setting

3. Check the operation mode setting.

   The setting is complete if the item set in step 1 appears under [OPERATION MODE].

11.1.3.2 Setting the baud rate

Sets the baud rate for the standard RS-485 interface.

Set a baud rate

1. Select the baud rate.

   Items: 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps, 38 400 bps

   Initial value: 9 600 bps

2. Tap [OK]

   ▷ The baud rate is set, and [RS485 1/2] is displayed.

Check setting

3. Check the baud rate setting.

   The setting is complete if the item set in step 1 appears under [BAUD RATE].

11.1.3.3 Setting the data bit length

Sets the data bit length for the standard RS-485 interface.

Set a data bit length

1. Select the data bit length.

   Items: 7 bit, 8 bit

   Initial value: 8 bit

2. Tap [OK].

   ▷ The data bit length is set, and [RS485 1/2] is displayed.

Check setting

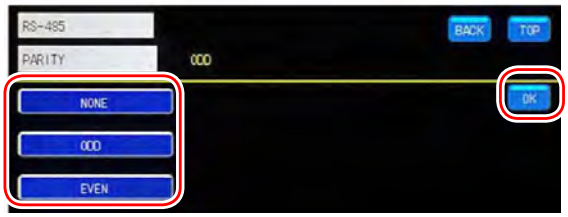
3. Check the data bit length setting.

   The setting is complete if the item set in step 1 appears under [DATA BIT LENGTH].

11.1.3.4 Setting the parity

Sets the parity bit for the standard RS-485 interface.

Set a parity bit



1. Select the parity bit.

   Items: NONE, ODD, EVEN

   Initial value: ODD

2. Tap [OK].

   ▷ The parity bit is set, and [RS485 1/2] is displayed.

Check setting

3. Check the parity bit setting.

   The setting is complete if the item set in step 1 appears under [PARITY].

11.1.3.5 Setting the stop bit

Sets the stop bit for the standard RS-485 interface.

Set a stop bit

1. Select the stop bit.

   Items: 1 bit, 2 bit

   Initial value: 1 bit

2. Tap [OK].

   ▷ The stop bit is set, and [RS485 1/2] is displayed.

Check setting

3. Check the stop bit setting.

   The setting is complete if the item set in step 1 appears under [STOP BITS].

11.1.3.6 Setting the terminator

Sets the terminator for the standard RS-485 interface.

Set a terminator

1. Select the terminator.

   Items: CR, CR+LF

   Initial value: CR+LF

2. Tap [OK].

   ▷ The terminator is set, and [RS485 1/2] is displayed.

Check setting

3. Check the terminator setting.

   The setting is complete if the item set in step 1 appears under [TERMINATOR].

11.1.3.7 Decimal point addition setting

Sets whether a decimal point is added to output data.

Set whether or not a decimal point is added

1. Tap [NONE]/[EXISTING]

   Initial value: NONE

2. Tap [OK].

   ▷ Addition/omission of a decimal point is set, and [RS485 1/2] is displayed.

Check setting

3. Check the decimal point addition setting.

   The setting is complete if the item set in step 1 appears under [ADD THE DECIMAL POINT].

11.1.3.8 Setting the communication address

Sets the communication address number.

Set an address number

1. Input the address number.

   Range: 0 to 31

   Initial value: 0

Note:

Refer to Chapter 5.5 for more information.

---

2. Tap [OK].

   ▷ The address number is set, and [RS485 1/2] is displayed.

Check setting

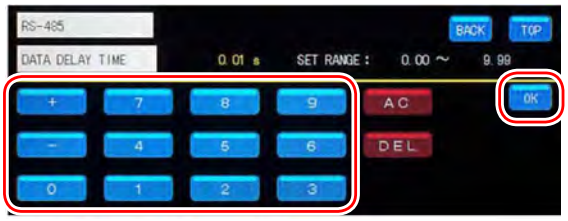
3. Check the address number.

   The setting is complete if the item set in step 1 appears under [ADDRESS].

11.1.3.9 Setting the delay time

Sets the data delay time for communication with RS-485 Data return from CSD-912 is delayed when the sending terminal on the host side, such as a PC or a sequencer, has low impedance on completion of host-side transmission.

Set a delay time



1. Input the delay time.

   Range: 0.00 to 9.99

   Initial value: 0.01

Note:

Refer to Chapter 5.5 for more information.

---

2. Tap [OK].

   ▷ The delay time is set, and [RS485 1/2] is displayed.

Check setting

3. Check the delay time.

   The setting is complete if the item set in step 1 appears under [DATA DELAY TIME].

11.1.3.10 Setting the output target for stream mode

Sets the data to be output when the operation mode is stream mode.

Set an output target for stream mode

1. Select the output target for stream mode.

   Items: LOAD DISPLAY, GROSS, NET, LOAD DISP. WITH STATUS

   Initial value: LOAD DISPLAY

Note:

The target that has been set is also output when [SYNC. WITH PRINT], [SYNC. WITH ACCUM.] or [SYNC. WITH FINISH] is selected as operation mode.

2. Tap [OK].
   ▷ The output target for stream mode is set, and [RS485 2/2] is displayed.

Check setting

3. Check the output target setting for stream mode.

   The setting is complete if the item set in step 1 appears under [TARGET OF STREAM].

11.1.4 ModBus communication

ModBus communication is a serial interface that uses standard RS-485 communications.

Data communication with CSD-912 is handled by memory that is mapped as shown in the table below, eliminating the need to create communication protocol programs. To use ModBus communication, set each item on the RS-485 communication setting screen.

Function	Setting
Operation mode	ModBus
Baud rate	Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps
Data bit length	8 bit
Parity bit	Selectable from NONE, EVEN and ODD
Stop bit	Can be selected from 1 bit and 2 bit
Address number	Can be selected from 0 to 31 Note that 0 is a broadcast address.
RS-485 data delay time	0.10 seconds or more

Note:

- For more information about the RS-485 communication setting, refer to Chapter 11.1.3.
- Neither [ADD THE DECIMAL POINT] nor [TERMINATOR] needs to be set as they do not effect ModBus communication.
- Standard RS-485 communication and ModBus communication cannot be linked with optional RS-232C communication, RS-422 communication or RS-485 communication.
- Set a delay time of 5 ms or more for the host side, which can be a PC or a sequencer.
- For more information about memory operation, refer to Chapter 14.4.

ModBus is a registered trademark of Modicon, Inc.

11.2 2-pin method serial interface

11.2.1 Specifications

Specifications for the 2-pin method serial interface are given below.

Specification	Description
Baud rate	600 bps
Data bit length	8 bit
Parity bit	Odd
Stop bit	1 bit
Start bit	1 bit
Transmission data	Binary code (BCD)

11.2.2 Data format

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
INTERVAL	F1	F2	F3	LEN	FUN1	FUN2	ST1	ST2	OVR	ERR	G1	G2	G3	N1	N2	N3	T1	T2	T3	BCC

1.	INTERVAL	A space (MARK SIGNAL) of 15 bits (25 ms) or more
2.	F1 to F3	0FFH code
3.	LEN	11H code
4.	FUN1	Print command
5.	FUN2	00H code
6.	ST1	Status
7.	ST2	00H code
8.	OVR	00H code
9.	ERR	Status
10.	G1 to G3	Gross weight data
11.	N1 to N3	Net weight data
12.	T1 to T3	TARE data
13.	BCC	Operation result from LEN to N3

1) FUN1

7	6	5	4	3	2	1	0

Automatic print bit

2) ST1

7	6	5	4	3	2	1	0

SET for gross display

SET for net display

3) ST2

7	6	5	4	3	2	1	0

SET when PRESET TARE is valid

4) GROSS data/NET data/TARE data

G1/N1/T1 G2/N2/T2 G3/N3/T3

DP	10^4	10^3	10^2	10^1	10^0

Load data/BCD data

7	6	4	5

Sign (SET when negative)

Decimal point

7	6	Decimal point
0	0	None
0	1	10^1
1	0	10^2
1	1	10^3

*1 Automatic print bit (FUN1: bit 0): The automatic print bit can be used as a trigger on the 2-pin method serial interface receiving-side equipment. The default is normally 0.

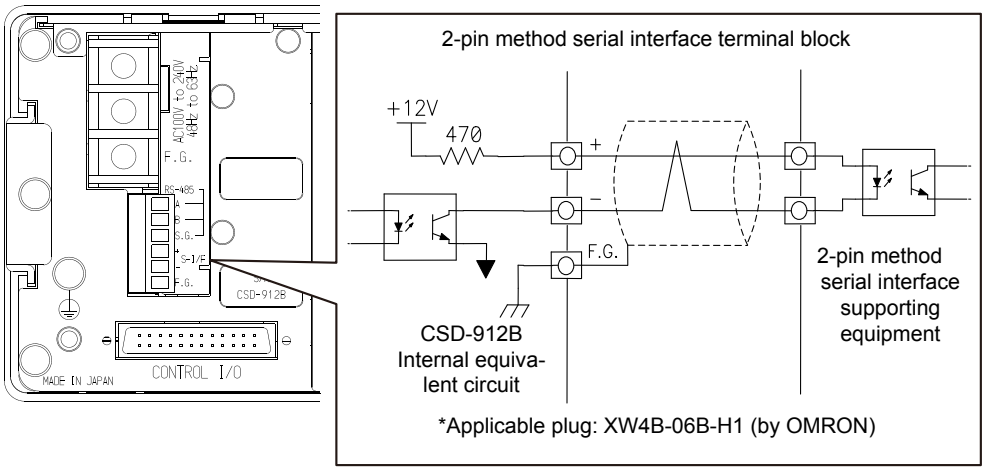
*2 Display bit (ST1: bit 7, bit 6) Bit 7: Set 1 when CSD-912 is displaying gross weight. Bit 6: Set 1 when CSD-912 is displaying net weight.

Note:

- Serial data is output only during weighing.
- Set the maximum number of display digits to 6 stops, the data output for the 2-pin method serial interface. To use the 2-pin method serial interface, set the maximum number of display digits to 5 or less.

11.2.3 2-pin method serial interface wiring

The 2-pin method serial interface is wired to +, - and F.G. of the RS-485 interface terminal block, which is located at the back of the CSD-912.



Note:

- The end of each cable should be stripped 7 mm.
- The terminal block terminal screw tightening torque is 0.6 N·m.
- The wiring cables should be AWG 28 to AWG 16.
- Where possible, use cables with 2-wire shielded cable wires. Wire the shield to the F.G. terminal. When 2-wire shielded cable wires are not used, twist the cables. When 2-wire shielded cable wires are used, the cable length should be 100 m or less. When not used, the cable length should be 20 m or less.
- External control input and the common terminal of the 2-pin method serial interface circuit are shared.
- Connect a shielded cable wire to each F.G. terminal of the RS-485 interface terminal block and the 2-pin method serial interface terminal block to ensure the CSD-912 conforms to CE and JIS standards.
- The 2-wire method serial interface supports printer M252B (UNIPULSE Corporation) and other equipment.
- Up to three 2-wire method serial interface supported devices can be wired in parallel (maximum output current: approx. 20 mA DC).

11.2.4 Output operation

The operation mode for the 2-pin method serial interface communication is stream mode. Such data as gross and net weight is continuously output at a prescribed interval.

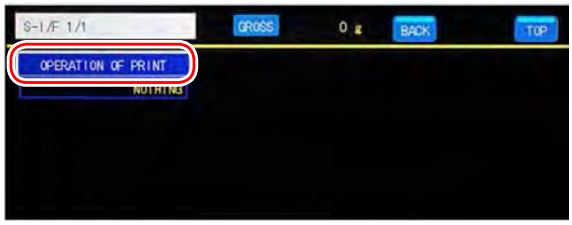
11.2.5 Setting the print operation

Set the signal with which to synchronize by setting 1 as the output format FUN1 automatic print bit for transmission.

Display the print operation setting screen

1. Tap [BUILT-IN SERIAL I/F] on [MENU 1/2]
   ▷ The standard communication setting screen 1/1 is displayed.

2. Tap [S-I/F]
   ▷ The serial interface setting screen 1/1 is displayed.



3. Tap [OPERATION OF PRINT]
   ▷ The print operation setting screen is displayed.

Set a print operation

4. Select the print operation

[NONE]

Not synchronized with signals from external control I/O, etc.

[SYNC. WITH PRINT]

Sets 1 as the output format FUN1 automatic print bit for transmission when a print command is input from external control I/O, etc.

[SYNC. WITH ACCUM.]

Sets 1 as the output format FUN1 automatic print bit for transmission when the accumulation command is input from external control I/O or when automatic accumulation is executed.

[SYNC. WITH FINISH]

Sets 1 as the output format FUN1 automatic print bit for transmission when the complete signal is output.

Initial value: NONE

5. Tap [OK]

   ▷ The print operation is set, and serial interface setting screen 1/1 is displayed.

Check setting

6. Check the print operation setting

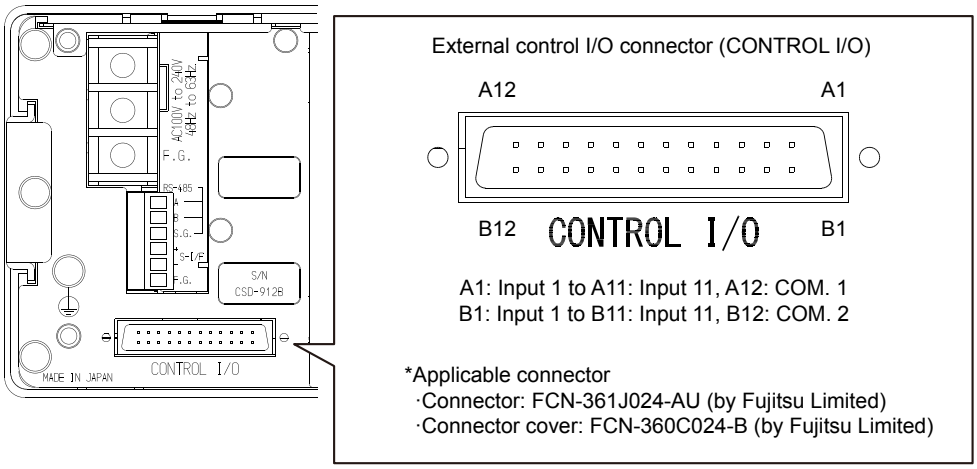
   The setting is complete if the item set in step 2 appears under [OPERATION OF PRINT].

11.3 External control I/O

11.3.1 External control I/O wiring

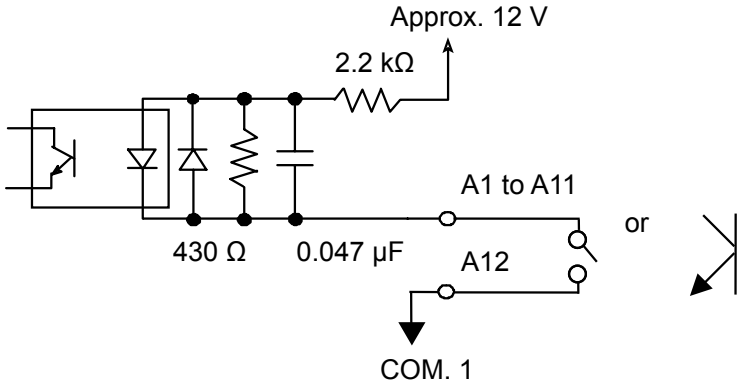
External control I/O is connected to the external control I/O connector (CONTROL I/O), which is located at the back of theCSD-912.

The upper side from A1 to A12 is for input signals. The lower side from B1 to B12 is for output signals.



11.3.1.1 External control input wiring

External control input is executed by short-circuiting each input and COM. 1 using a contact or an open collector after wiring the connector.

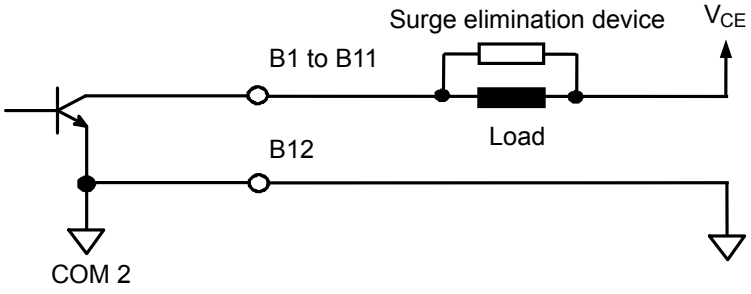


Note:

External control input and the common terminal of the 2-pin method serial interface circuit are shared.

11.3.1.2 External control output wiring

The external control output is an open collector output.



Note:

- The common terminal of the external control output is insulated from the other common terminals.
- Attach a surge elimination device suitable for the load to protect the external control output.

11.3.2 External control I/O settings

The following items must be set according to the specifications of the external control I/O.

- CONTROL I/O connector input
- CONTROL I/O connector output
- CONTROL I/O connector output logic
- I/O inflow setting
- Print command acceptance conditions
- Accumulation command acceptance conditions

11.3.2.1 [CONTROL I/O] connector input settings

Functions are assigned to external control inputs[I/O INPUT1] to [I/O INPUT11].
Functions that can be assigned are listed below:

Function name	Description
OFF	Assigns no functions
GROSS/NET	Switches the load value display between gross/net weights
ZERO	Zero setting (refer to Chapter 7.10.1)
ZERO CLEAR	Returns the load value display to status before zero setting or zero tracking
TARE	Tare weight cancellation (refer to Chapter 7.10.2)
TARE CLEAR	Returns the load value display to status before tare weight cancellation
INFLOW START	Inputs the inflow start signal
RECIPE START	Inputs the recipe start signal
DISCHARGE START	Inputs the discharge start signal
MIXING START	Inputs the mixing start signal
M. F.F. COMPENSATION	Manual overshoot correction
ACCUM. COMMAND	Inputs the accumulation signal
FOMER ACM. DATA CLR.	Cancels previous accumulated data
BATCH/DISCHARGE	Switches the control mode between batch and discharge modes (refer to Chapter 7.2.1)
CODE NO. 1, CODE NO. 2, CODE NO. 4, CODE NO. 8, CODE NO. 10, CODE NO. 20, CODE NO. 40, CODE NO. 80	Switches between brand/recipe codes for weighing by input
PAUSE	Temporarily stops weighing operation
RESTART	Restarts weighing operation after temporary stoppage
CLR ACM. OF BRAND	Clears the accumulation value and the accumulation times of a currently selected brand
CLR ACM. OF ALL BRAND	Clears the accumulation value and the accumulation times of all brands
CLR ACM. OF RECIPE	Clears the accumulation value and the accumulation times of a currently selected recipe
CLR ACM. OF ALL RECIPE	Clears the accumulation value and the accumulation times of all recipes

Function name	Description
SAFETY INPUT1, SAFETY INPUT2, SAFETY INPUT3, SAFETY INPUT4, SAFETY INPUT5, SAFETY INPUT6, SAFETY INPUT7, SAFETY INPUT8	Inputs the safety confirmation signal (refer to Chapter 7.4.5)
FORCED INFLOW FINISH	Forcibly completes weighing operation
FORCED RECIPE FINISH	Forcibly completes recipe operation
FORCED DISCH. FINISH	Forcibly completes discharge operation
MANUAL FULL FLOW	Outputs the full flow signal during a set period
MANUAL MEDIUM FLOW	Outputs the medium flow signal during a set period
MANUAL DRIBBLE FLOW	Outputs the dribble flow signal during a set period
MANUAL DISCHARGE	Outputs the discharge signal during a set period
MANUAL MIXING	Outputs the mixing signal during a set period
ERROR RESET	Releases an error
PRINT COMMAND	Outputs the print command
HOLD	Inputs the hold signal (refer to Chapter 7.11.8)
IN. FOR SIMILAR OUT.	Outputs the input similarity outgoing signal during a set period Be sure to set external control output[IN. SIMILARTY OUT.]prior to use

Note:

- The following pulse input items are valid at a pulse width of 50 ms or more.

  OFF, GROSS/NET, ZERO, ZERO CLEAR, TARE, TARE CLEAR, INFLOW START, RECIPE START, DISCHARGE START, MIXING START, M.F. F. COMPENSATION, ACCUM. COMMAND, FORMER ACM. DATA CLR., PAUSE, RESTART, CLR ACM. OF BRAND, CLR ACM. OF ALL BRAND, CLR ACM. OF RECIPE, CLR ACM. OF ALL RECIPE, FORCED INFLOW FINISH, FORCED RECIPE FINISH, FORCED DISCH. FINISH, ERROR RESET, PRINT COMMAND

- The following level input items are valid during input of a short circuit of 50 ms or more.

  FLOW/DISCH, CODE NO. 1, CODE NO. 2, CODE NO. 4, CODE NO. 8, CODE NO. 10, CODE NO. 20, CODE NO. 40, CODE NO. 80, SAFETY INPUT1, SAFETY INPUT2, SAFETY INPUT3, SAFETY INPUT4, SAFETY INPUT5, SAFETY INPUT6, SAFETY INPUT7, SAFETY INPUT8, MANUAL FULL FLOW, MANUAL MEDIUM FLOW, MANUAL DRIBBLE FLOW, MANUAL DISCHARGE, HOLD, IN. FOR SIMILAR OUT.

Display the I/O input setting screen

1. Tap [I/O] on [MENU 1/2].
   ▷ [I/O SETTING 1/6] is displayed.

2. Tap the required I/O input key on [I/O SETTING 2/6] or [I/O SETTING 3/6].
   ▷ The I/O input setting screen is displayed.

Set an I/O input function

3. Select a function to assign to I/O input.

   Initial value: OFF

4. Tap [OK].
   ▷ The function is assigned, and [I/O SETTING 2/6] or [I/O SETTING 3/6] is displayed.

Check setting

5. Check the I/O input setting.

   The setting is complete if the item set in step 2 appears under each I/O input key.

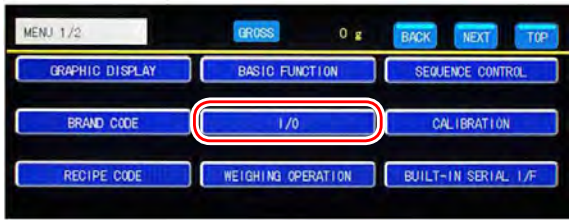
11.3.2.2 [CONTROL I/O] connector output settings

Functions are assigned to external control outputs [I/O OUTPUT1] to [I/O OUTPUT11]
Functions that can be assigned are listed below:

Function name	Description
OFF	Assigns no functions
STABLE	Output when the weight value is stable.
ZERO BAND	Output when the weight value is around zero.
FULL	Output when the weight value is full.
F. FLOW/S1	Output in simple mode or sequential mode when coarse flow is executed. Output in 4-step check mode when S1 conditions are satisfied.
M. FLOW/S2	Output in simple mode or sequential mode when middle flow is executed. Output in 4-step check mode when S2 conditions are satisfied.
D. FLOW/S3	Output in simple mode or sequential mode when fine flow is executed. Output in 4-step check mode when S3 conditions are satisfied.
OVER/S4	Output in simple mode or sequential mode when a weight value is excessive. Output in 4-step check mode when S4 conditions are satisfied.
OK	Output when a weigt value is not problematic.
UNDER	Output when a weight value is insufficient.
MIXING	Output when mixing operation is executed.
DISCHARGE (GATE OPEN)	Output when discharge operation is executed.
INFLOW FINISH	Output when weighing operation is complete.
RECIPE FINISH	Output when recipe operation is complete.
DISCHARGE FINISH	Output when discharge operation is complete.
MIXING FINISH	Output when mixing operation is complete.
NOZZLE DOWN (INSERT)	Output when the nozzle is lowering.
DURING MEASUREMENT	Output during weighing operation.
WEIGHING SEQ. ERROR	Output when a sequence error occurs.
ERROR	Output when an error occurs. Targeted errors are [ERROR], [ZERO ERROR] and [SEQUENCE ERROR] (refer to Chapter 13.2).
CAP. EXCEEDED ERROR	Output when OL (overload) conditions are satisfied.
DURING TARE	Output during tare weight cancellation (refer to Chapter 7.10.2)
CENTER OF ZERO	Output in center zero status
GROSS DISPLAY	Output when the load value display is gross weight.

Function name	Description
NET DISPLAY	Output when the load value display is net weight.
DURING HOLD	Output during holding operation (refer to Chapter 7.11.8)
HOPPER1 to 20	Controls the batch gauge installed at each brand hopper when multiple hoppers are used; Up to 20 brand hoppers can be controlled. Example: - Set [HOPPER No.] for each brand (refer to Chapter 7.2.3). - Set an I/O output that corresponds to each set hopper number. - Prepare an external relais, etc. to control hopper number outputs and signal outputs, such as coarse flow, middle flow, fine flow, discharge, etc., by AND operation to control the batch gate installed at each hopper.
HOPPER1 to 10 FULL FLOW	Outputs a signal, such as coarse flow, middle flow, or fine flow, to a hopper number that has been directly set without AND control. Up to 10 brand hoppers can be controlled.
HOPPER1 to 10 MEDIUM FLOW	
HOPPER1 to 10 DRIBBLE FLOW	
IN. SIMILARITY OUT.	Outputs an input signal for similarity output when external control input is received. Be sure to set external control input [IN. FOR·SIMILAR OUT.] prior to use.

Display the I/O output setting screen



1. Tap [I/O] on [MENU 1/2].
   ▷ [I/O SETTING 1/6] is displayed.

2. Tap the required I/O output key on [I/O SETTING 4/6] or [I/O SETTING 5/6]
   ▷ The I/O output setting screen is displayed.

Set an I/O output function

3. Select a function to assign to I/O output.

   Initial value: OFF

4. Tap [OK].

   ▷ The function is assigned, and [I/O SETTING 4/6] or [I/O SETTING 5/6] is displayed.

Check setting

5. Check the I/O output setting.

   The setting is complete if the item set in step 2 appears under each I/O output key.

11.3.2.3 [CONTROL I/O] connector output logic setting

Set the output logic to[NEGATIVE LOGIC] or [POSITIVE LOGIC] for each I/O output.

Display the I/O output logic setting screen

1. Tap [I/O] on [MENU 1/2].

   ▷ [I/O SETTING 1/6] is displayed.

2. Tap [I/O OUTPUT LOGIC] on [I/O SETTING 5/6].

   ▷ The I/O output logic setting screen is displayed.

Set an output logic for the I/O output

3. Switch between the two output logics for each I/O output key.

   Tap [Pos.] (positive logic) or [Neg.] (negative logic) for the required I/O output key.

   Press to toggle between [Pos.] and [Neg.]

4. Tap [OK].

   ▷ The I/O output logic is set, and [I/O SETTING 5/6] is displayed.

11.3.2.4 I/O flow setting

Configure suitable I/O input/output flow settings for the CSD-912.
The setting items are given below.

I/O input	Description	I/O output	Description
I/O INPUT1	ZERO	I/O OUTPUT1	OK
I/O INPUT2	TARE	I/O OUTPUT2	F. FLOW/S1
I/O INPUT3	TARE CLEAR	I/O OUTPUT3	M. FLOW/S2
I/O INPUT4	BATCH/DISCHARGE	I/O OUTPUT4	D. FLOW/S3
I/O INPUT5	INFLOW START	I/O OUTPUT5	OVER/S4
I/O INPUT6	FORCED INFLOW FINISH	I/O OUTPUT6	UNDER
I/O INPUT7	CODE NO. 1	I/O OUTPUT7	ERROR
I/O INPUT8	CODE NO. 2	I/O OUTPUT8	STABLE
I/O INPUT9	CODE NO. 4	I/O OUTPUT9	ZERO BAND
I/O INPUT10	CODE NO. 8	I/O OUTPUT10	INFLOW FINISH
I/O INPUT11	HOLD		

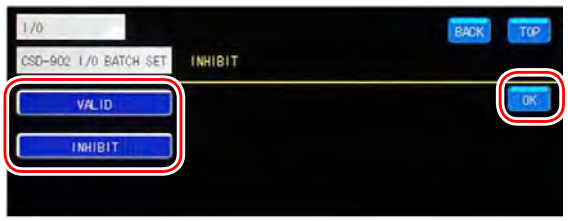
Display the I/O input/output flow setting screen

1. Tap [I/O] on [MENU 1/2].

   ▷ [I/O SETTING 1/6] is displayed.

2. Tap [CSD-902 I/O INFLOW SET] on [I/O SETTING 6/6].
   ▷ The I/O input/output flow setting screen is displayed.

Set the flow I/O input/output



3. Tap [VALID]/[INHIBIT].

   Initial value: INHIBIT

4. Tap [OK].
   ▷ Inflow I/O input/output settings are configuredCSD-912, and [I/O SETTING 6/6] is displayed.

Check setting

5. Check the I/O input/output flow setting.

   The setting is complete if the item set in step 2 appears under [CSD-902 I/O BATCH SET].

11.3.2.5 Setting a print command acceptance condition

Sets an acceptance condition applicable when a print command is input from external control I/O, etc.

Display the print command acceptance condition setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2].
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [PRINT COMMAND] on [BASIC FUNCTION 3/4].
   ▷ The print command acceptance condition setting screen is displayed.

   Set the print command acceptance condition

3. Select a print command acceptance condition

   [IN STABLE MODE].

   Accepts print commands only when the [STABLE] lamp on the weighing screen is lit.

   [ANY TIME]

   Always accepts print commands Initial value: IN STABLE MODE

4. Tap [OK]
   ▷ The print command acceptance condition is set, and [BASIC FUNCTION 3/4] is displayed.

   Check setting

5. Check the print command acceptance condition.

   The setting is complete if the item set in step 2 appears under [PRINT COMMAND].

11.3.2.6 Setting an accumulation command acceptance condition

Sets an acceptance condition applicable when an accumulation command is input from external control I/O, etc.

Display the accumulation command acceptance condition setting screen

1. Tap [BASIC FUNCTION] on [MENU 1/2].
   ▷ [BASIC FUNCTION 1/4] is displayed.

2. Tap [ACCUM. COMMAND] on [BASIC FUNCTION 3/4].
   ▷ The accumulation command acceptance condition setting screen is displayed.

   Set the accumulation command acceptance condition

3. Select an accumulation command acceptance condition

   [IN STABLE MODE]

   Accepts accumulation commands only when the [STABLE] lamp on the weighing screen is lit.

   [ANY TIME]

   Always accepts accumulation commands. Initial value: IN STABLE MODE

4. Tap [OK]
   ▷ The accumulation command acceptance condition is set, and [BASIC FUNCTION 3/4] is displayed.

   Check setting

5. Check the accumulation command acceptance condition.

   The setting is complete if the item set in step 2 appears under [ACCUM. COMMAND].

11.4 Analog output

11.4.1 Analog output specifications

The analog output specifications are as follows.

11.4.1.1 Current output (model: CSD-912-P07)

Specification	Description
Output	4 mA DC to 20 mA DC
Load characteristics	510 Ω or less
Non linearity	Within 0.02 % F.S.
Resolution	1/12 000 or more
Overload range	[OL] displays at approx. 21.6 mA DC. [-OL] displays at approx. 2.4 mA DC.
Output rate	Synchronized with A/D sampling

11.4.1.2 Voltage output (model: CSD-912-P25)

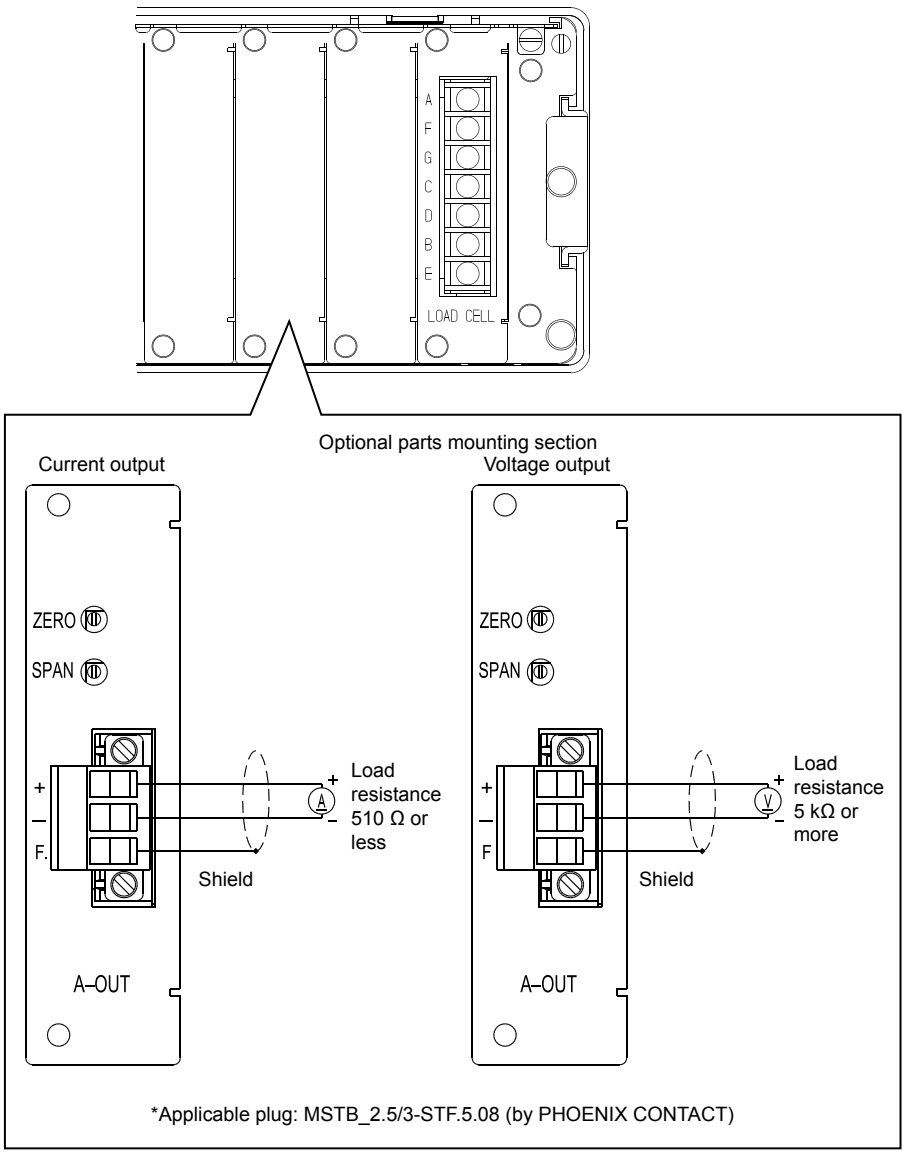
Specification	Description
Output	0 V DC to 10 V DC
Load characteristics	5 kΩ or more
Non-linearity	Within 0.02 % F.S.
Resolution	1/12 000 or more
Overload range	[OL] displays at approx. 11 V. [-OL] displays at approx. -1 V.
Output rate	Synchronized with A/D sampling

Note:

Analog output may fluctuate after the power is turned on. Leave the analog output for approx. one hour after turning the power on to allow it to stabilize before use.

11.4.2 Analog output wiring

The analog output is wired to the optional parts mounting section, which is located at the back of the CSD-912.



Note:

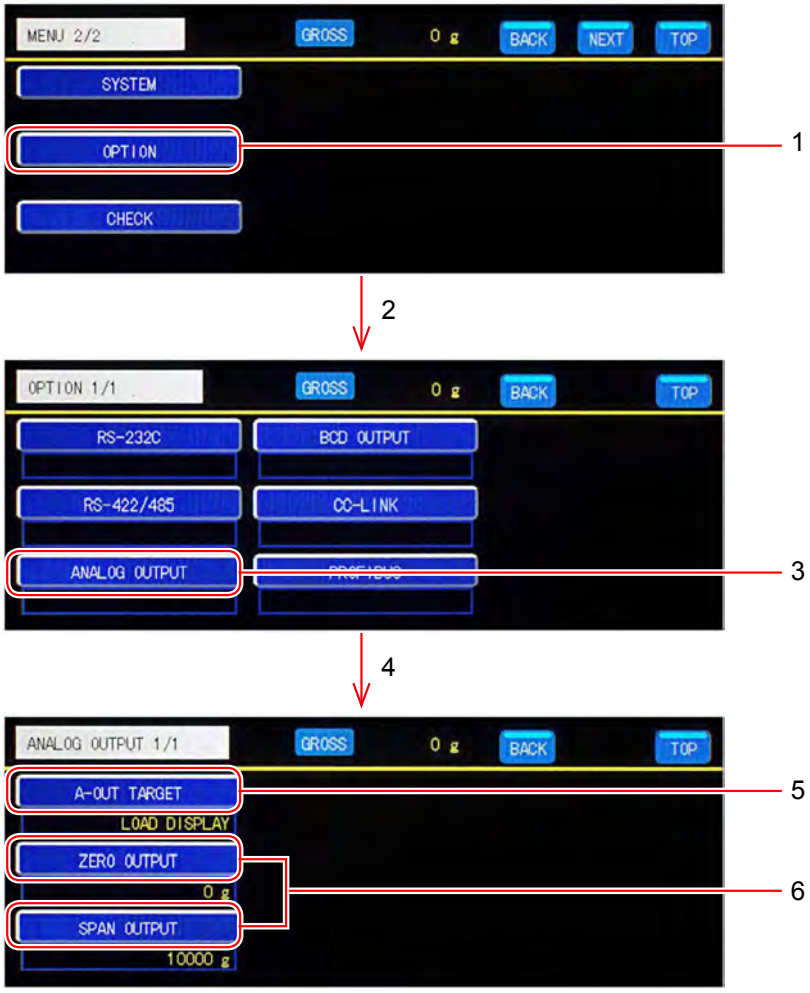
- The end of each cable should be stripped 7 mm.
- The terminal block terminal screw tightening torque is 0.6 N·m.
- The wiring cables should be AWG 8 to AWG 12.
- Use cables with shielded cable wires. Wire the shield to the F. G. terminal.
- The optional parts mounting section is insulated from the internal circuit by a photocoupler.

11.4.3 Analog output settings

The following items must be set according to the specifications of the analog output.

- Output target
- ZERO output, SPAN output (scaling)

The analog output settings are set on the analog output setting screen. To display the analog output setting screen, tap [OPTION] on [MENU 2/2], then tap [ANALOG OUTPUT] on the option setting screen 1/1.

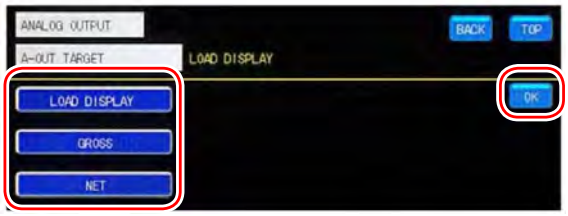


1	Tap [OPTION]
2	The option setting screen is displayed.
3	Tap [ANALOG OUTPUT]
4	The analog output setting screen is displayed.
5	Output target
6	Scaling

11.4.3.1 Setting the output target

Set the analog output target

Set the output target



1. Select an output target

   Items: LOAD DISPLAY, GROSS, NET

   Initial value: LOAD DISPLAY

2. Tap [OK]

   ▷ The output target is set, and analog output setting screen 1/1 is displayed.

Check setting

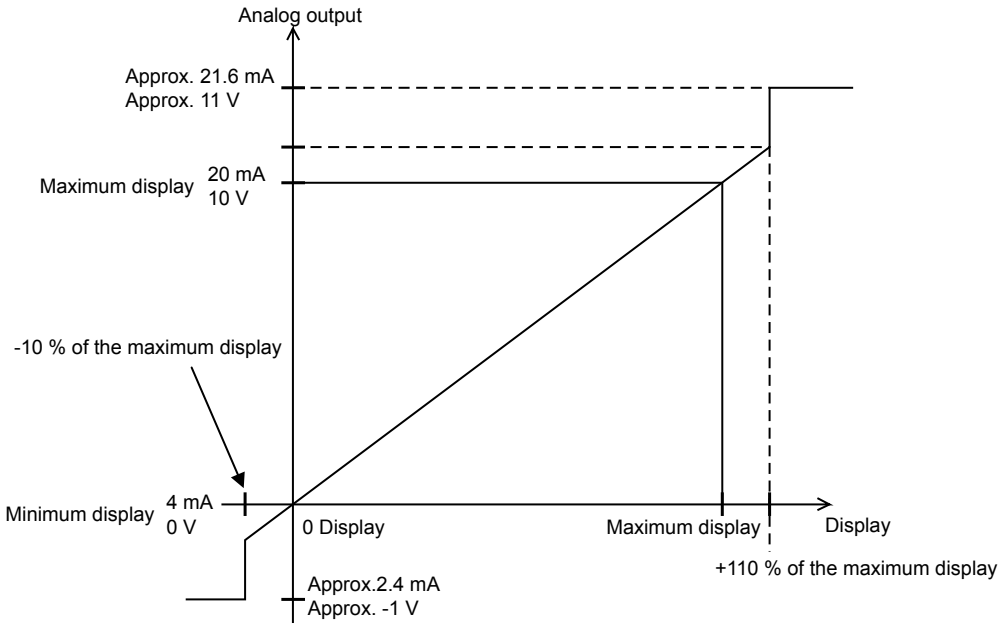
3. Check the output target setting.

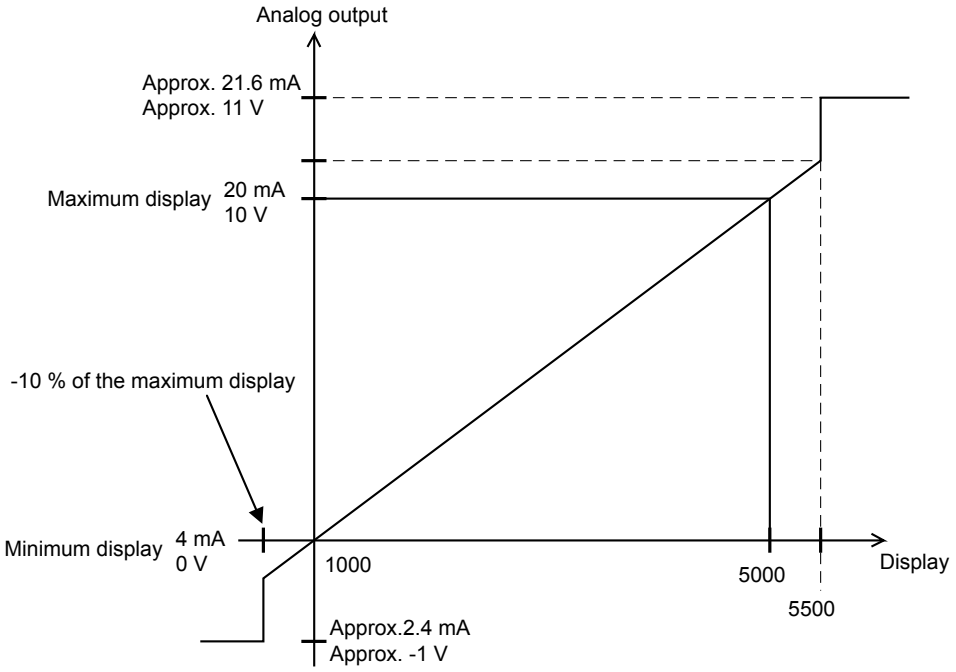
   The setting is complete if the item set in step 1 appears under [BCD- OUT TARGET].

11.4.3.2 Setting the scaling

The minimum value (ZERO output) and the maximum value (SPAN output) of analog output scaling can be set.

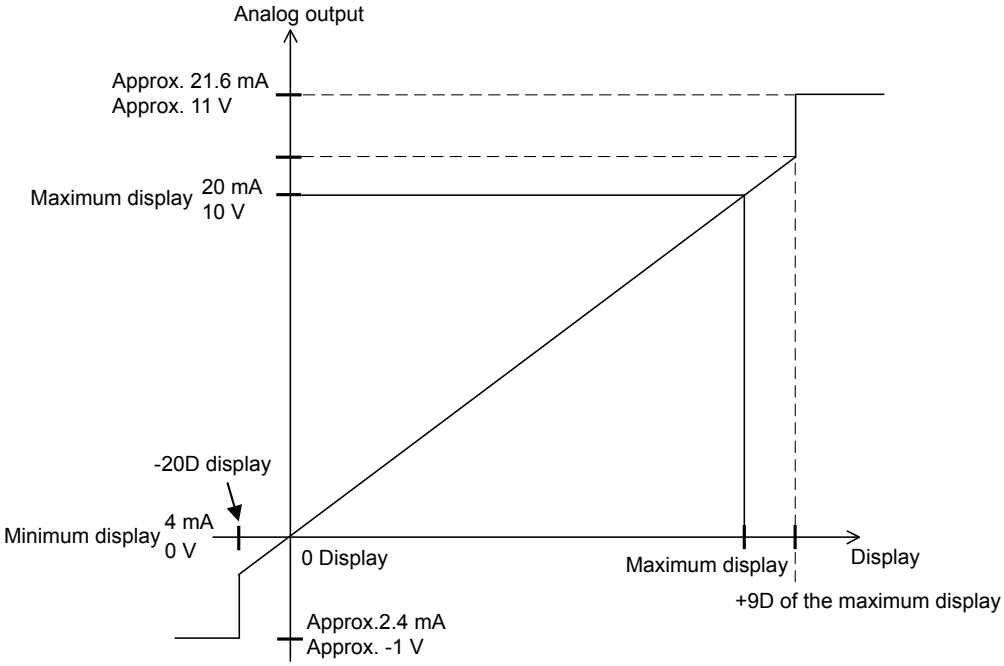
For example, suppose ZERO output is set to 1 000 and SPAN output to 5 000. The analog output scaling is as shown below:



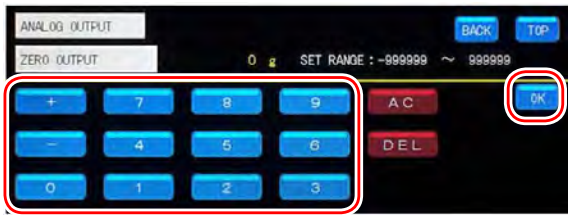


In order that the CSD-912 conforms to JIS standards, set ["JIS B 7611-2: 2009" SET] to [VALID] (refer to Chapter 7.11.11). If this is set to [VALID], the OL display condition is [-20D ~ 9D].

In this case, the analog output scaling is as shown below:



Set a minimum value in [ZERO OUTPUT]



1. Input the scaling minimum value

   Range: -999 999 to 999 999

   Initial value: 0

2. Tap [OK]

   ▷ The scaling minimum value is set, and the analog output setting screen 1/1 is displayed.

Set a maximum value in [SPAN OUTPUT]

3. Input the scaling maximum value

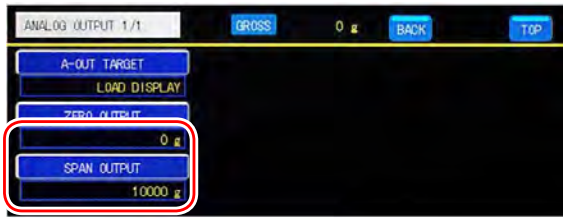
Range: -999 999 to 999 999

Initial value: 10 000

4. Tap [OK]

   ▷ The scaling maximum value is set, and the analog output setting screen 1/1 is displayed.

Check setting



5. Check the scaling setting

   The setting is complete if the values set in steps 1 and 2 appear under [ZERO OUTPUT] and [SPAN OUTPUT], respectively.

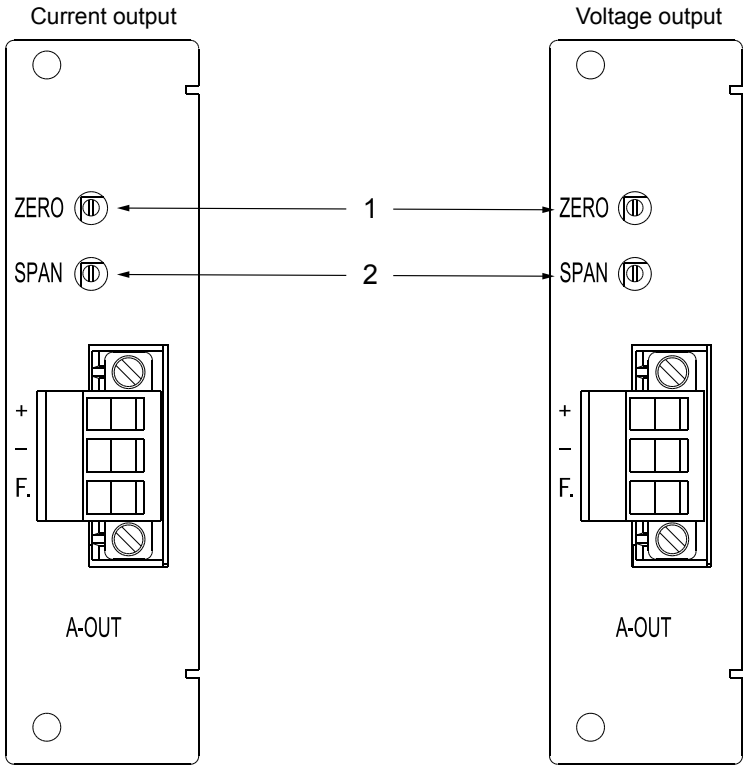
Note:

- Make sure that the setting of [SPAN OUTPUT] does not exceed the setting of [WEIGHING CAPACITY] (refer to Chapter 6.3.3), which is set during calibration setting.
- Make sure that the value of [ZERO OUTPUT] is smaller than the value of [SPAN OUTPUT].
- When the current output and the voltage output are used simultaneously, the scaling and output target are the same.

11.4.4 Analog output fine adjustment

After setting the analog output scaling, carry out fine adjustment of the zero trimmer and the span trimmer using a microdriver.

The fine adjustment range is approx. ±1% of the full scale.



1	ZERO fine adjustment trimmer
2	SPAN fine adjustment trimmer

Note:

Fine adjustment can be carried out separately to scaling of current output and voltage output.

11.5 BCD output

11.5.1 Specifications (model CSD-912-P15)

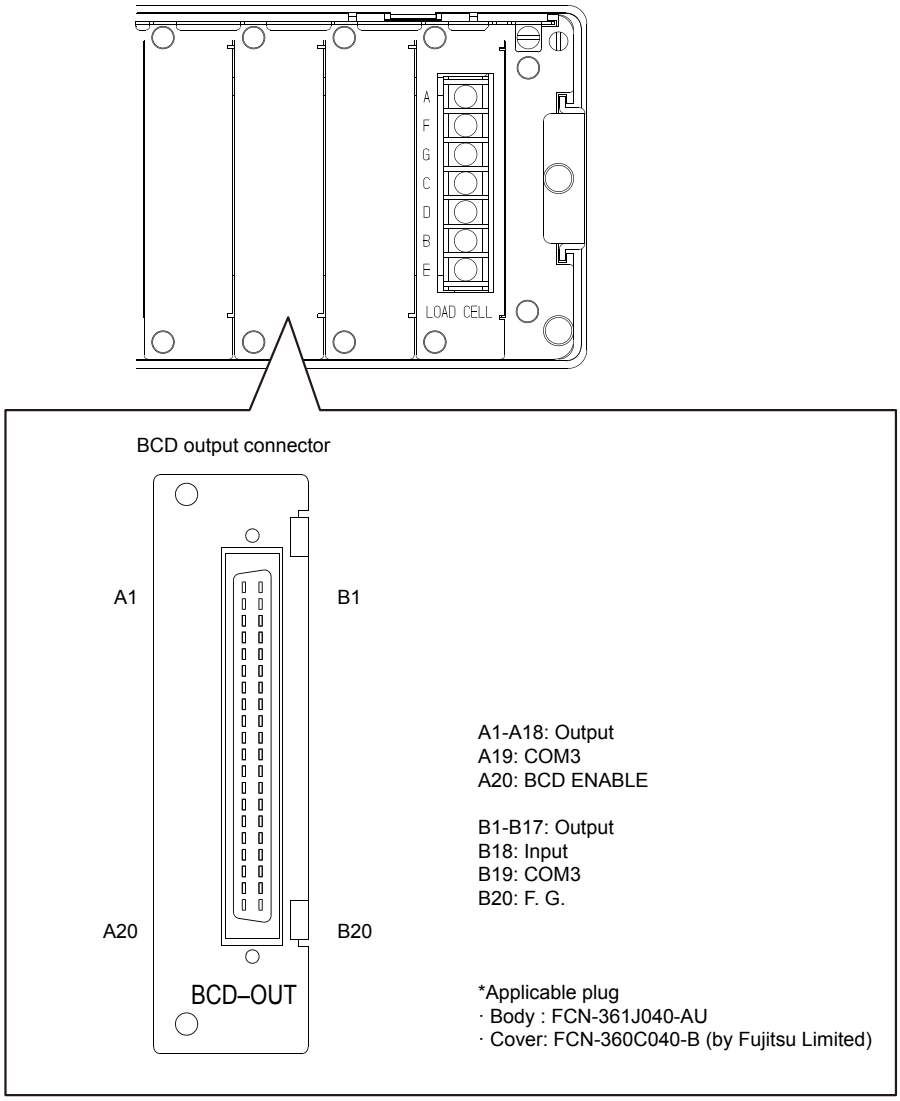
The BCD output specifications are given below.

Specification	I/O	Description
BCD data	Output	8-digit parallel output
POL. (polarity)	Output	ON for negative polarity output; OFF for positive polarity output
P.C. (print command)	Output	ON for a certain length of time after BCD output is converted.
ERROR (error)	Output	ON when an error occurs For error descriptions, refer to Chapter 13.2.1 and 13.2.3.
OVER (overload)	Output	ON synchronized with the OL display (overload)

Specification	I/O	Description
Decimal point 10^1, decimal point 10^2, decimal point 10^3, decimal point 10^4	Output	ON synchronized with the decimal point display setting
STABLE	Output	ON when stability is detected.
GROSS	Output	ON when the BCD output is gross weight.
HOLD (hold)	Input	BCD output hold
BCD-ENABLE	Input	Forcibly converts BCD-related output to high impedance.
Number of pieces that can be installed	–	Up to 2 pieces (When two pieces are installed, the output of the second one is the same as the first one.)

11.5.2 BCD output wiring

The BCD output is wired to the optional parts mounting section, which is located at the back of the CSD-912.



Note:

Connect a shielded cable wire to the BCD output terminal block F.G. terminal to ensure the CSD-912 conforms to CE and JIS standards.

11.5.3 Pin assignment of the BCD output

The pin assignment of the BCD output varies with the output target setting.

Note:

Refer to Chapter 11.5.6.

When [LOAD DISPLAY], [GROSS], [NET] or [TARE] is set as the output target:

Pin	Output	Pin	Output description
A1	1×10^0	B1	2×10^0
A2	4×10^0	B2	8×10^0
A3	1×10^1	B3	2×10^1
A4	4×10^1	B4	8×10^1
A5	1×10^2	B5	2×10^2
A6	4×10^2	B6	8×10^2
A7	1×10^3	B7	2×10^3
A8	4×10^3	B8	8×10^3
A9	1×10^4	B9	2×10^4
A10	4×10^4	B10	8×10^4
A11	1×10^5	B11	2×10^5
A12	4×10^5	B12	8×10^5
A13	ERROR	B13	N. C.
A14	STABLE	B14	GROSS
A15	Decimal point 10^1	B15	Decimal point 10^2
A16	Decimal point 10^3	B16	Decimal point 10^4
A17	OVER	B17	POL.
A18	P. C.	B18	HOLD
A19	COM 3	B19	COM. 3
A20	BCD-ENABLE	B20	F. G.

When [ACCUM. VALUE] or [TIMES] is set as the output target

Pin	Output	Pin	Output
A1	1×10^0	B1	2×10^0
A2	4×10^0	B2	8×10^0
A3	1×10^1	B3	2×10^1
A4	4×10^1	B4	8×10^1
A5	1×10^2	B5	2×10^2
A6	4×10^2	B6	8×10^2
A7	1×10^3	B7	2×10^3
A8	4×10^3	B8	8×10^3
A9	1×10^4	B9	2×10^4

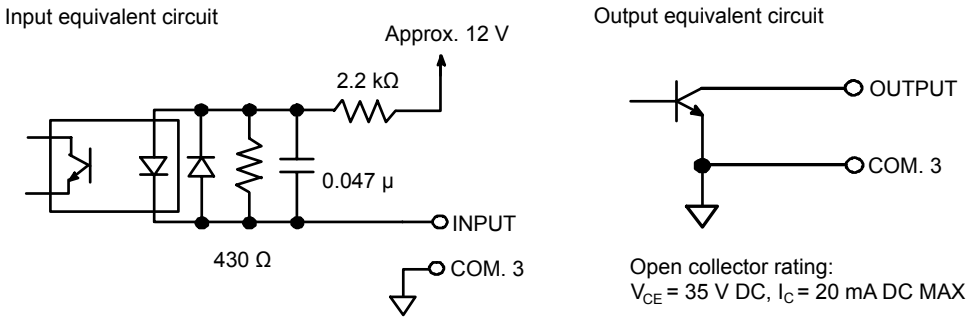
Pin	Output	Pin	Output
A10	4×10^4	B10	8×10^4
A11	1×10^5	B11	2×10^5
A12	4×10^5	B12	8×10^5
A13	1×10^6	B13	2×10^6
A14	4×10^6	B14	8×10^6
A15	1 x 107	B15	2×10^7
A16	4×10^7	B16	8×10^7
A17	OVER	B17	POL.
A18	P. C.	B18	HOLD
A19	COM 3	B19	COM. 3
A20	BCD-ENABLE	B20	F. G.

Note:

- Output is executed only during weighing.
- Do not wire N. C. pins.
- The optional parts mounting section is insulated from the internal circuit by a optocoupler.

11.5.4 I/O equivalent circuits

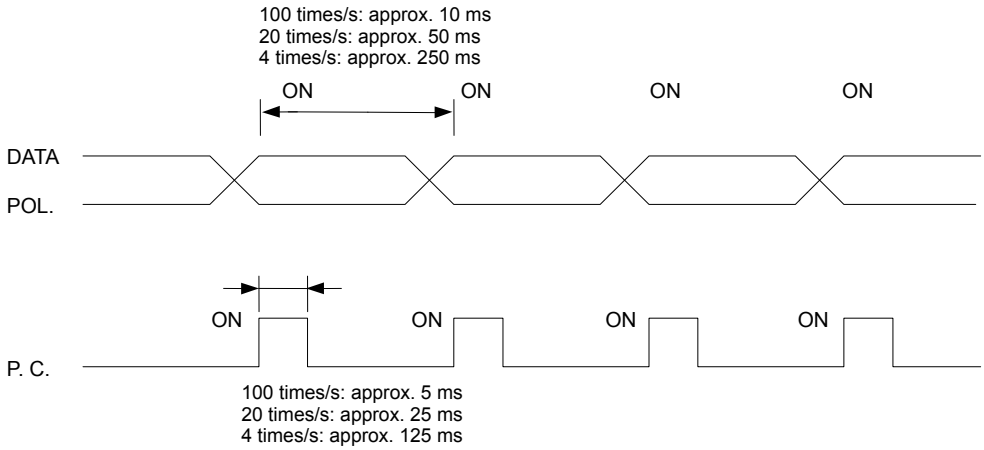
The I/O equivalent circuits for the BCD output are given below.



11.5.5 Timing chart

The following chart shows the BCD output timing.

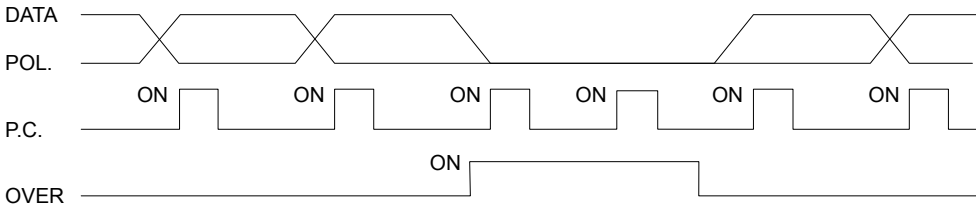
Example 1: Normal



Note:

When P.C., DATA and POL. are all output, the output transistor switch turns ON (negative logic).

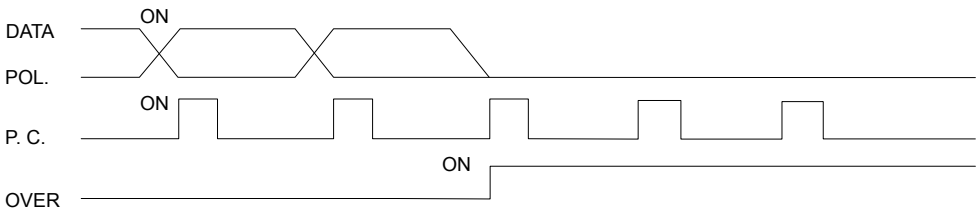
Example 2: Data overload status



Note:

- In data overload status, the output transistor of the OVER signal turns ON (negative logic).
- In this case, all DATA output transistors turn OFF (positive logic).
- POL. is OFF (positive logic) in positive overload status and ON (negative logic) in negative overload status.

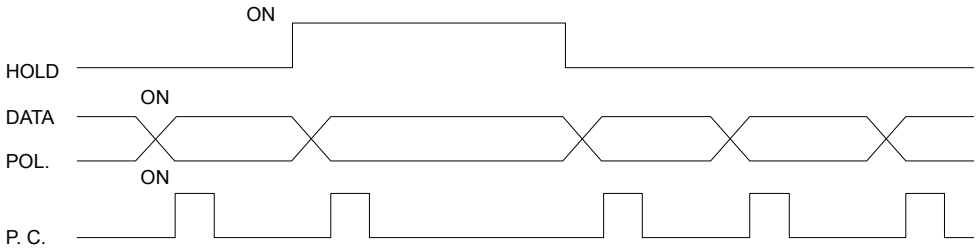
Example 3: When an error occurs



Note:

- When an error occurs, the ERROR signal output transistor turns ON (negative logic).
- In this case, all DATA and POL. output transistors turn OFF (positive logic).

Example 4: When the HOLD signal is input



Note:

- When the HOLD signal is input, the P.C. output transistor turns OFF (positive logic) after one-shot operation.
- In this case, operation is executed after a bridge of 50 ms or more.
- When two BCD outputs are installed, both outputs are synchronized with the HOLD signal of one of the two outputs.

11.5.6 BCD output settings

The following items must be set according to the specifications of the BCD output.

- Operation mode
- Output target
- BCD output logic
- POL. (polarity) logic
- Error FAG logic
- Print command logic (LOGIC OF P. C.)
- Print command width (WIDTH OF P. C.)
- BCD output times

The BCD output settings are set on the BCD output setting screen. To display the BCD output setting screen, tap [OPTION] on [MENU 2/2], and then tap [BCD OUTPUT] on option setting screen 1/1.

1	Tap [OPTION]
2	The option setting screen is displayed.
3	Tap [BCD OUTPUT]
4	The BCD output setting screen is displayed.

Note:

To set [OPERATION MODE], follow the same procedure as in Chapter 11.1.3 on the BCD output setting screen. (Items: STREAM MODE, SYNC. WITH PRINT, SYNC. WITH ACCUM. , SYNC. WITH FINISH; Initial value: STREAM MODE)

11.5.6.1 Setting the BCD output target

Set the BCD output target

Set a BCD output target

1. Select the output target

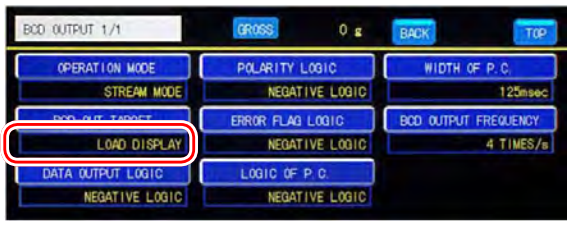
   Items: LOAD DISPLAY, GROSS, NET, TARE, BRAND ACCUM. VALUE, BRAND ACCUM. COUNT, RECIPE ACCUM. VALUE, RECIPE ACCUM. COUNT

   Initial value: LOAD DISPLAY

2. Tap [OK].

   ▷ The output target is set, and BCD output setting screen 1/1 is displayed.

Check setting



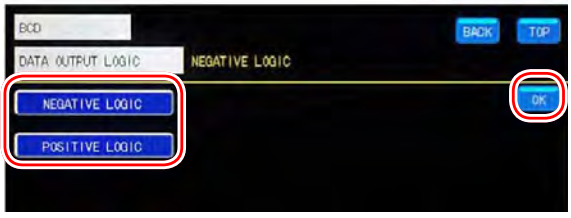
3. Check the output target setting.

   The setting is complete if the item set in step 1 appears under [BCD- OUT TARGET].

11.5.6.2 Setting the BCD output logic

Set the BCD data output logic

Set the BCD output logic



1. Select a BCD output logic

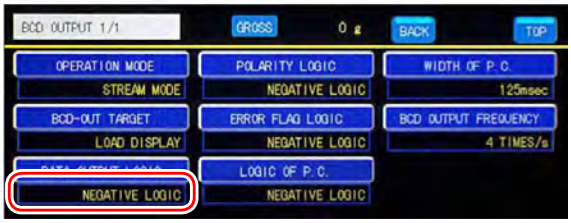
   Items: NEGATIVE LOGIC, POSITIVE LOGIC

   Initial value: NEGATIVE LOGIC

2. Tap [OK]

   ▷ The BCD output logic is set, and BCD output setting screen 1/1 is displayed.

Check setting



3. Check the BCD output logic setting

   The setting is complete if the item set in step 1 appears under [DATA OUTPUT LOGIC].

Note:

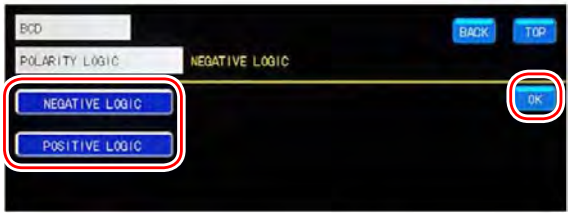
The BCD output logic setting determines the output status, as shown below.

Setting the BCD output logic	Output data	Transistor status	Pin to COM level when an external voltage is applied
Negative logic	Yes	ON	L
	None	OFF	H
Positive logic	Yes	OFF	H
	None	ON	L

11.5.6.3 POL. (polarity) logic setting

Set the POL. (polarity) output logic

Set the POL (polarity) logic



1. Select a POL. (polarity) logic

   Items: NEGATIVE LOGIC, POSITIVE LOGIC

   Initial value: NEGATIVE LOGIC

2. Tap [OK]

   ▷ The POL. (polarity) logic is set, and BCD output setting screen 1/1 is displayed.

Check setting

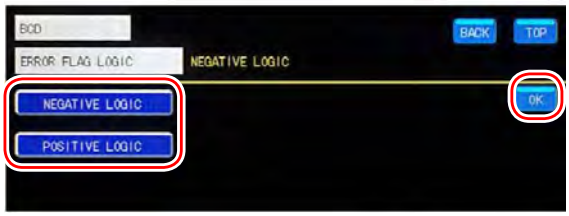
3. Check the POL. (polarity) logic setting

   The setting is complete if the item set in step 1 appears under [POLARITY LOGIC].

11.5.6.4 Error flag logic setting

Set the error output logic

Set the error flag output logic



1. Select an error flag logic

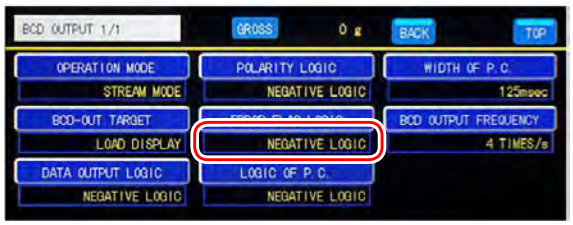
   Items: NEGATIVE LOGIC, POSITIVE LOGIC

   Initial value: NEGATIVE LOGIC

2. Tap [OK]

   ▷ The error flag output logic is set, and BCD output setting screen 1/1 is displayed.

Check setting



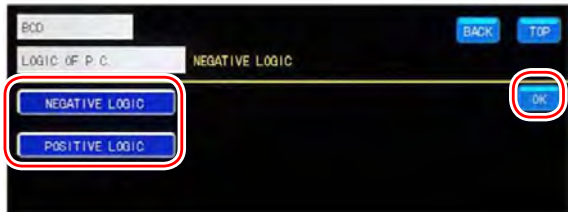
3. Check the error flag output logic setting

   The setting is complete if the item set in step 1 appears under [ERROR FLAG LOGIC].

11.5.6.5 Print command logic setting

Set the P.C. (print command) output logic

Set the P.C. logic



1. Select a P.C. logic

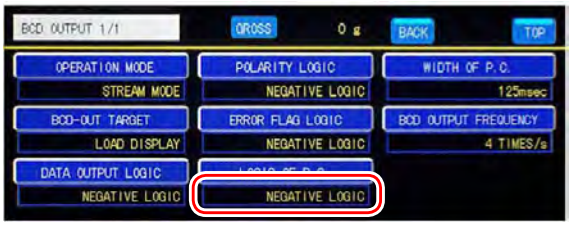
   Items: NEGATIVE LOGIC, POSITIVE LOGIC

   Initial value: NEGATIVE LOGIC

2. Tap [OK]

   ▷ The P.C. logic is set, and BCD output setting screen 1/1 is displayed.

Check setting



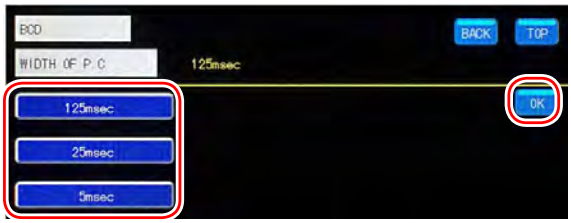
3. Check P.C. logic setting

   The setting is complete if the item set in step 1 appears under [LOGIC OF P.C.].

11.5.6.6 Print command width setting

Set the P.C. (print command) output data width

Set the P.C. width



1. Select a P.C. width

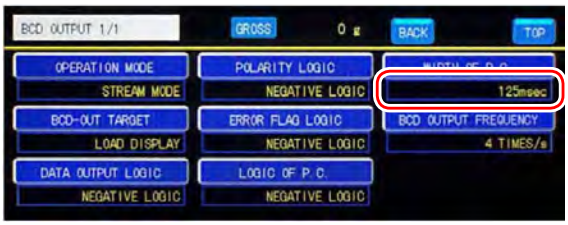
   Items: 125 ms, 25 ms, 5 ms

   Initial value: 125 ms

2. Tap [OK]

   ▷ The P.C. width is set, and BCD output setting screen 1/1 is displayed.

Check setting



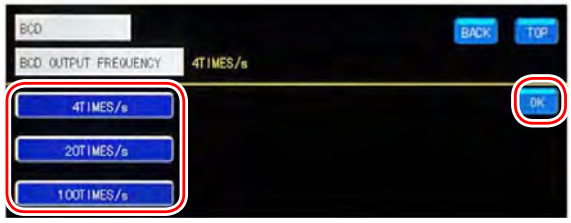
3. Check P.C. width setting

   The setting is complete if the item set in step 1 appears under [WIDTH OF P.C.].

11.5.6.7 BCD output times setting

Set the number of BCD output times

Set the number of BCD output times



1. Select a BCD output times value

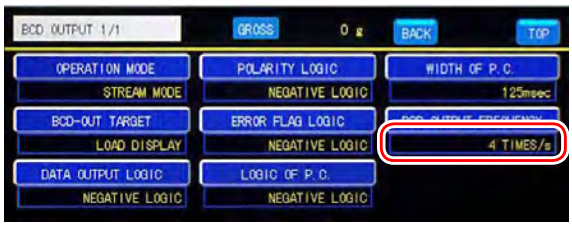
   Items: 4 TIMES/s, 20 TIMES/s, 100 TIMES/s

   Initial value: 4 times/s

2. Tap [OK]

   ▷ The number of BCD output times is set, and BCD output setting screen 1/1 is displayed.

Check setting



3. Check the BCD output times setting

   The setting is complete if the item set in step 1 appears under [BCD OUTPUT FREQUENCY].

11.6 RS-232C interface

11.6.1 Specifications (model: CSD-912-P74)

Specifications for the RS-232C interface are given below.

Specification	Description
Transmission method	Half duplex
Synchronous system	Start-stop synchronization
Baud rate	Can be selected from 1 200 bps; 2 400 bps; 4 800 bps; 9 600 bps; 19 200 bps and 38 400 bps
Data bit length	Can be selected from 7 bit and 8 bit
Parity bit	Can be selected from No parity, Even parity and Odd parity
Stop bit	Can be selected from 1 bit and 2 bit
Terminator	Can be selected from CR+LF and CR
Transmission data	ASCII code
Cable length	15 m or less
I/O monitor	LED (TXD, RXD)

Note:

- Standard RS-485 communication and Modbus communication cannot be linked with optional RS-232C communication, RS-422 communication or RS-485 communication.
- Refer to Chapter 14.5.

11.6.2 Pin assignment of the RS-232C interface

Pin assignment of the RS-232C interface is given below.

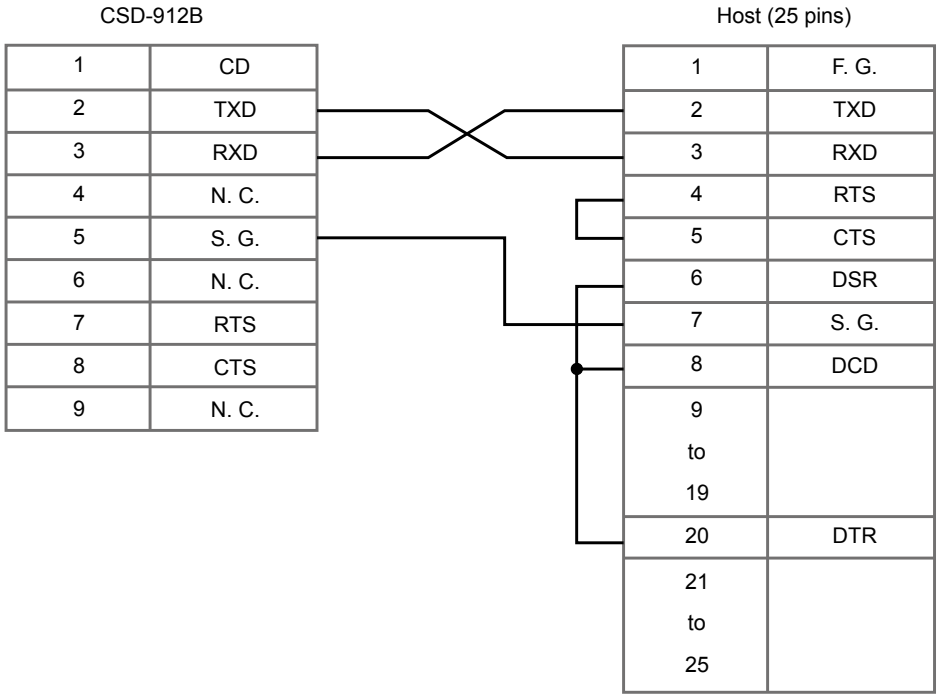
Pin number	Signal name
1	CD
2	TXD
3	RXD
4	N. C.
5	S. G.
6	N. C.
7	RTS
8	CTS
9	N. C.

Plug: DE-9S-NR (JAE) or equivalent (not included)

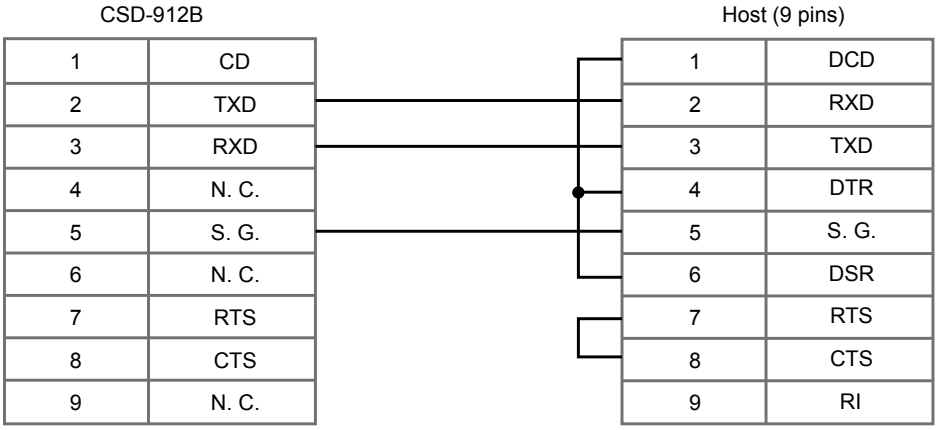
Note:

- The RS-232C interface connector uses inch screw threads for plug fitting fixing base screws.
- Do not connect with N.C. pin.
- The optional parts mounting section is insulated from the internal circuit by a optocoupler.
- Use cables with shielded cable wires and connectors with metal shells so that the shields come in direct contact with the connector metal shell to ensure the CSD-912 conforms to CE and JIS standards.

Wiring example 1:



Wiring example 2:



11.6.3 Communication settings

The following items must be set according to the specifications of the RS-232C interface.

Item	Description	Selection (initial value)
Operation mode	Sets the operation mode for the RS-232C interface	COMMAND MODE, STREAM MODE, SYNC. WITH PRINT, SYNC. WITH ACCUM. , SYNC. WITH FINISH (initial value: COMMAND MODE)
Stream/print target	Sets data to be output in stream mode in synchronization with the print signal.	LOAD DISPLAY, GROSS, NET, LOAD DISP. WITH STATUS (initial value: LOAD DISPLAY)

Item	Description	Selection (initial value)
Baud rate	Sets the baud rate for the RS-232C interface	1,200 bps, 2,400 bps, 4,800 bps, 9,600 bps, 19,200 bps, 38,400 bps (initial value: 9,600 bps)
Data bit length	Sets the data bit length for the RS-232C interface	7 bit, 8 bit (initial value: 7 bit)
Parity	Sets the parity bit for the RS-232C interface	NONE, ODD, EVEN (initial value: ODD)
Stop bit	Sets the stop bit for the RS-232C interface.	1 bit, 2 bit (initial value: 1 bit)
Terminator	Sets the terminator for the standard RS-485 interface	CR, CR+LF (initial value: CR+LF)
Add decimal point	Sets whether a decimal point is added to output data	NONE, EXISTING (initial value: NONE)

The communication settings of the RS-232C interface are set on the RS-232C communication setting screen. To display the RS-232C communication setting screen, tap [OPTION] on [MENU 2/2], and then tap [RS-232C] on option setting screen 1/1.

1	Tap [OPTION]
2	The option setting screen is displayed.
3	Tap [RS-232C]
4	The RS-232C communication setting screen is displayed.

Note:

- For settings other than [TARGET OF STREAM/PRINT], follow the same procedures as described in Chapter 11.1.3 on the RS-232C communication setting screen.
- Communication with the RS-232C interface is executed only during weighing. An error command is returned if communication is attempted other than during weighing.
- CSD-912 does not control the communication flow.
- CTS/RTS signal is not used.
- Xon/Xoff flow control is not executed.
- Communication operation is an interactive mode.

11.6.3.1 Setting the stream/print output target

Sets data to be output in stream mode in synchronization with the print signal.

Set an output target

1. Select the output target

   Items: LOAD DISPLAY, GROSS, NET, LOAD DISP. WITH STATUS

   Initial value: LOAD DISPLAY

2. Tap [OK]

   ▷ The output target is set, and RS-232C communication setting screen 1/1 is displayed.

Check setting

3. Check the output target setting

The setting is complete if the item set in step 1 appears under [TARGET OF STREAM/ PRINT].

11.7 RS-422/485 interface

11.7.1 Specifications (model: CSD-912-P76)

Specifications for the RS-422/485 interface are given below.

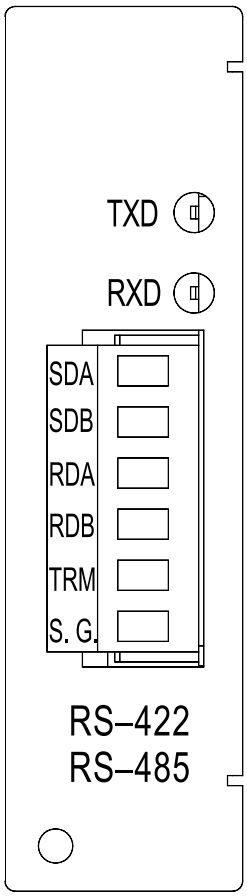
Specification	Description
Transmission method	Half duplex
Synchronous system	Start-stop synchronization
Baud rate	Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps
Data bit length	Can be selected from 7 bit and 8 bit
Parity bit	Can be selected from [NO PARITY], [EVEN PARITY] and [ODD PARITY]
Stop bit	Can be selected from 1 bit and 2 bit
Terminator	Can be selected from CR+LF and CR
Transmission data	ASCII code
Cable length	Approx. 1 km
Address number	Can be selected from 0 to 31
Number of units that can be connected	Up to 32 (10 units for RS-422; 1 unit for stream mode)
Termination resistance	Built-in (Can be selected on the terminal block wiring screen)
I/O monitor	LED
RS-422/485 switching	Can be switched on the RS-422/RS-485 screen

Note:

- Standard RS-485 communication and Modbus communication cannot be linked with optional RS-232C communication, RS-422 communication or RS-485 communication.
- Refer to Chapter 14.5.

11.7.2 Pin assignment of the 422/485 interface

Pin assignment of the 422/485 interface is given below.



SDA: Differential output (+)

SDB: Differential output (-)

RDA: Differential input (+)

RDB: Differential input (-)

TRM: Termination resistance

S. G. : Signal ground

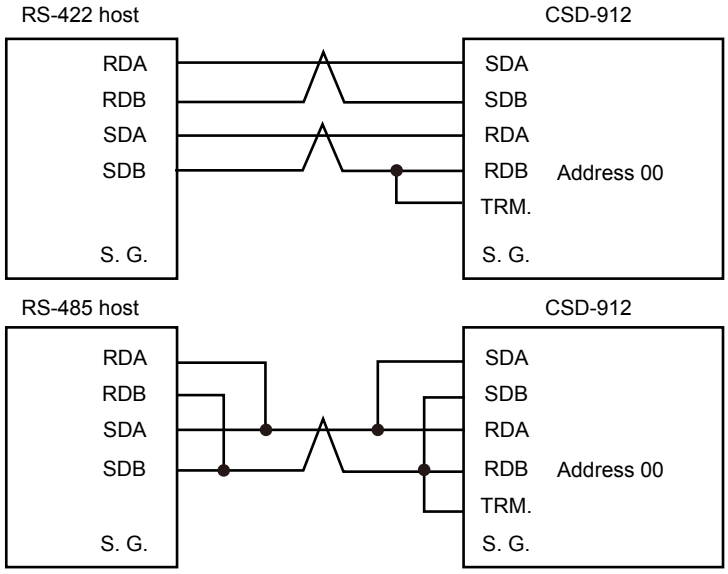
*Applicable plug: XW4B-06C1-H1 (by OMRON)

Note:

- On the unit located farthest from the host, such as a PC or a sequencer, short-circuit the TRM and RDB terminals and wire the internal termination resistance.
- The end of each cable should be stripped 7 mm.
- The terminal block terminal screw tightening torque is 0.6 N·m.
- The wiring cables should be AWG 28 to AWG 16.
- Use twisted pair cables
- The optional parts mounting section is insulated from the internal circuit by a optocoupler.
- The RS-422/485 interface, BCD output and the common terminal of the RS-232C interface are shared.
- Connect the cable to the CSD-912 power supply terminal block F.G. terminal to ensure CSD-912 conforms to CE and JIS standards.

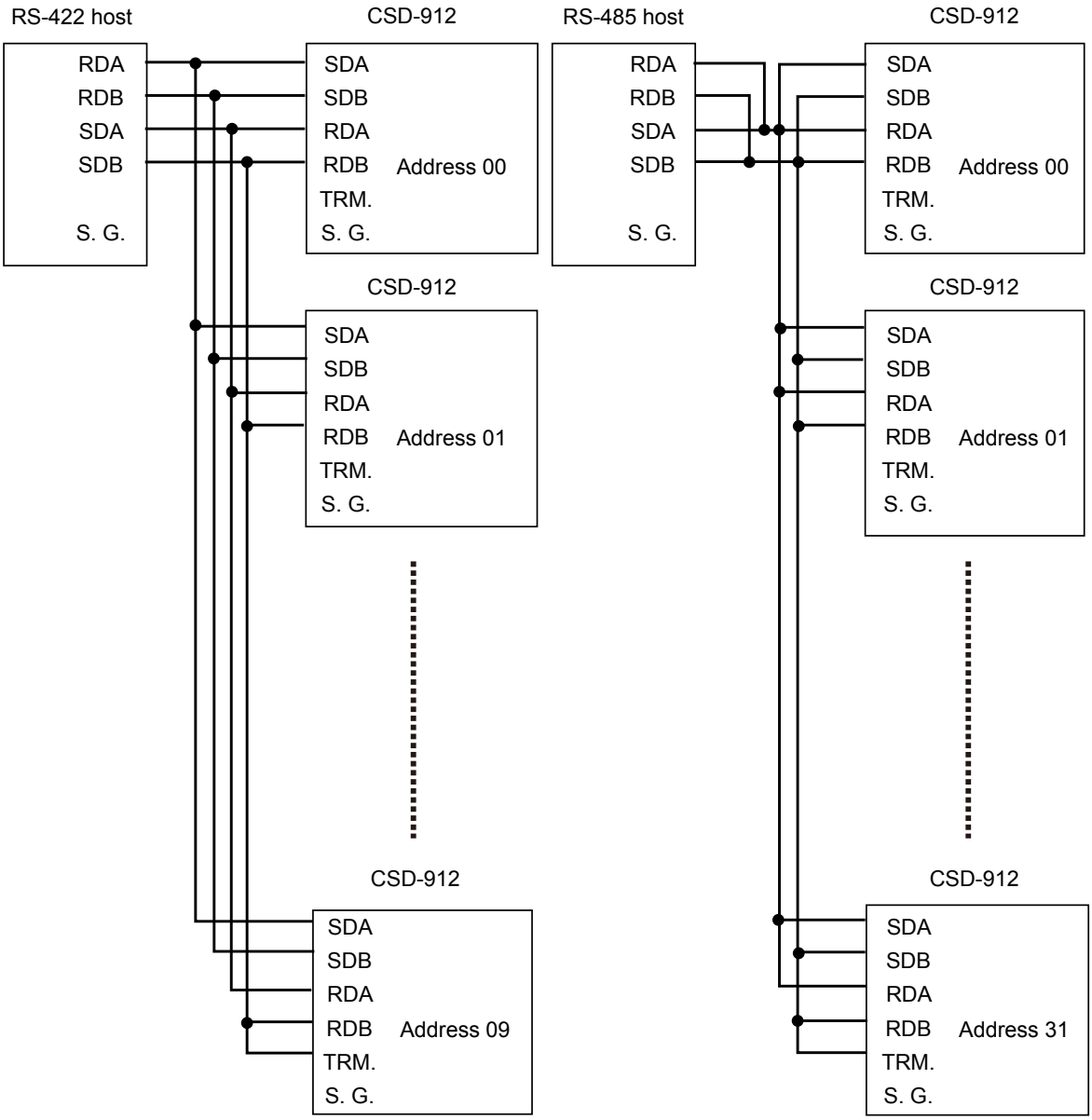
11.7.2.1 Connecting with CSD-912

The procedure to connect the CSD-912 with the RS-422/485 interface is given below.



11.7.2.2 Connecting multiple CSD-912s

The procedure to connect multiple CSD-912s with an RS-422/485 interface is given below.



On the unit located farthest away from the host, TRM and RDB should be short-circuited, and a termination resistance wired.

Note:

- The S. G. terminal should be wired according to the communication status between CSD-912 and host equipment, such as a PC or a sequencer.
- The S.G. terminal may not be provided, depending on the RS-422/485 interface.
- The polarity of signals on the host side, such as a PC or a sequencer, may be reversed depending on the equipment.

11.7.3 Communication settings

The following items must be set according to the specifications of the RS-422/485 interface.

Item	Description	Selection (initial value)
Baud rate	Sets the baud rate for the RS-422/485 interface	1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps, 38 400 bps (initial value: 9 600 bps)
Data bit length	Sets the data bit length for the RS-422/485 interface	7 bit, 8 bit (initial value: 7 bit)
Parity	Sets the parity bit for the RS-422/485 interface	NONE, ODD, EVEN (initial value: ODD)
Stop bit	Sets the stop bit for the RS-422/485 interface	1 bit, 2 bit (initial value: 1 bit)
Terminator	Sets the terminator for the RS-422/485 interface	CR, CR+LF (initial value: CR+LF)
Add decimal point	Sets whether a decimal point is added to output data	NONE, EXISTING (initial value: NONE)
Address	Sets the communication address number	0 to 31 (initial value: 0
RS-422/RS-485	Switches the communication method between RS-422 and RS-485	RS-422, RS-485 (initial value: RS-422)
Data delay time	Sets the data delay time for communication with RS-485 Data return from CSD-912 is delayed when the sending terminal on the host side, such as a PC or a sequencer, has low impedance on completion of host-side transmission.	0.00 to 9.99 (initial value: 0.01)
Operation mode	Sets the operation mode for the RS-422/485 interface	COMMAND MODE, STREAM MODE (initial value: COMMAND MODE)
Stream target	Sets the data to be output when the operation mode is stream mode	LOAD DISPLAY, GROSS, NET, LOAD DISP. WITH STATUS (initial value: LOAD DISPLAY)

The communication settings of the RS-422/485 interface are set on the RS-422/485 communication setting screen. To display the RS-422/485 communication setting screen, tap [OPTION] on [MENU 2/2], and then tap [RS-422/485] on option setting screen 1/1.

1	Tap [OPTION]
2	The option setting screen is displayed.
3	Tap [RS-422/485]
4	The RS-422/485 communication setting screen is displayed.

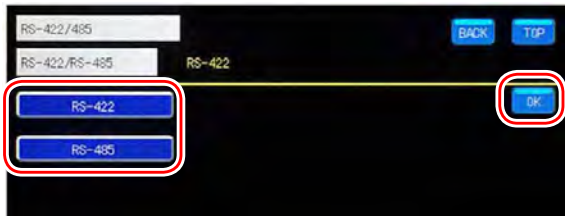
Note:

- For settings other than RS-422/RS-485, follow the procedures in Chapter 11.1.3 on the RS-422/485 communication setting screen.
- Communication with the RS-422/485 interface is executed only during weighing. An error command is returned if communication is attempted other than during weighing.
- CSD-912 does not control the communication flow.
- CTS/RTS signal is not used.
- X flow control is not executed.
- Communication operation is an interactive mode.

11.7.3.1 RS-422/RS-485

Switches the communication method between RS-422 and RS-485

Switch the communication method



1. Tap [RS-422]/[RS-485]

   Initial value: RS-422

2. Tap [OK]

   ▷ The communication method switches, and RS-422/485 communication setting screen 1/2 is displayed.

Check setting

3. Check the communication method

   The setting is complete if the item set in step 1 appears under [RS-422/RS-485].

12 Maintenance

This chapter describes maintenance of the CSD-912.

12.1 Lifetime of used parts

The life for the each used in CSD-912 is as follows:

Name of Part	Application	Estimated life
EEPROM	Setting data record	Writing approx. 1 000 000 times
Electrolytic capacitor	Smoothing switching power supply	Approx. 10 years Based on continuous operation in an air-conditioned environment
Liquid crystal display	Backlighting	After approx. 50 000 hours of use, the surface brightness decreases to approx. 50% of its initial value Based on use at a room temperature of 25°C
Battery	Backing up RAM	Approx. 10 years Based on storage at a room temperature of 20°C

Note:

- Note that data is not recorded if the number of writings exceeds the life of EEPROM.
- The lifespan of parts depends on the use and environmental conditions.

12.2 Operation check

The device can check operation and register maintenance information for the equipment listed below.

Item	Check contents	see Chapter
ROM version	Checks the CSD-912 model number and MAINCARD/ CPUCARD ROM version.	12.2.1
Display	Checks the color display, line display and touch panel operation of the CSD-912 display	12.2.2
Monitor mode	Checks the load applied to the load cell	12.2.3
External control I/O	Checks whether the external control I/O is operating properly	12.2.4
BCD output	Checks whether the BCD output is operating properly	12.2.5
Analog output	Checks whether the analog output is operating properly	12.2.6

Item	Check contents	see Chapter
Maintenance date	Registers the date of maintenance	12.2.7
Maintenance number	Registers a maintenance number	12.2.8

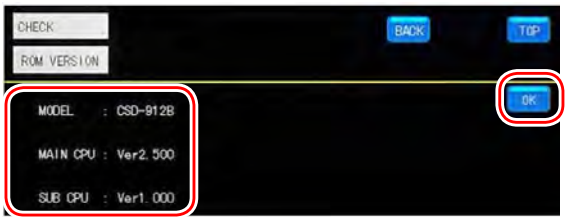
Operation check is carried out on the operation check screen. To display the operation check screen, tap [CHECK] on [MENU 2/2].

1	Tap [CHECK]
2	The operation check screen is displayed.

12.2.1 Checking the ROM version

Check optional units connected to CSD-912 and the software version, etc., of the main CPU

Check the ROM version



1. Check the version of ROM used

   MODEL: Indicates external units connected to CSD-912 Each external unit is indicated by a number as shown below.

   - Analog current output: 07
   - Analog voltage output: 25
   - BCD output: 15

- ProfiBus: 70
- CC-Link: 73
- RS-232C: 74
- RS-422/485: 76

Example: When the analog current output and the BCD output are connected to CSD-912 CSD-912B-07-15

MAIN CPU: Indicates the software version of the main CPU

Example: Ver.2.400

SUB CPU: Indicates the software version of the sub CPU

Example: Ver.1.000

2. Tap [OK]
   ▷ Operation check screen 1/1 is displayed.

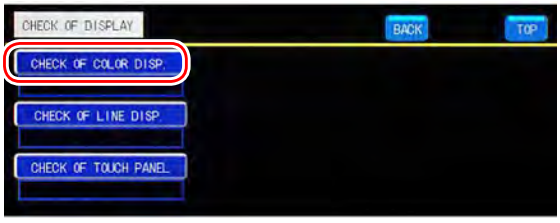
12.2.2 Display check

Check the color display, line display and touch panel operation of the display

12.2.2.1 [CHECK OF COLOR DISP.] checking the color display

Check whether the display color is displayed properly.

Display the color display check screen



1. Tap [CHECK OF COLOR DISP.]
   ▷ The color display check screen is displayed.

Check the color displayed on the screen

2. Check the color.

   Check that the display color switches sequentially through white, black, red, green and blue.

   ▷ After color switching is complete, operation check screen 1/1 is displayed.

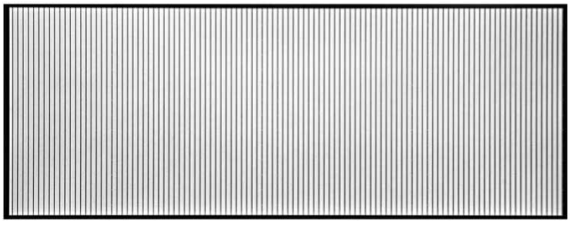
12.2.2.2 Checking the line display

Check whether lines are displayed properly on the display screen.

Display the line display check screen

1. Tap [CHECK OF LINE DISP.]
   ▷ The line display check screen is displayed.

Check the lines displayed on the screen



2. Check the lines.

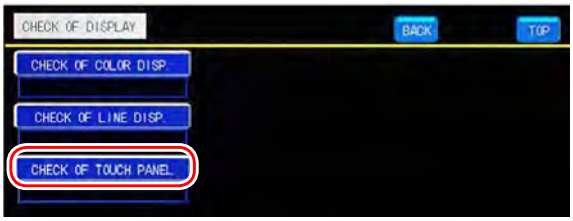
   Check that vertical and horizontal lines are displayed sequentially.

   ▷ After line display is complete, operation check screen 1/1 is displayed.

12.2.2.3 Checking the touch panel

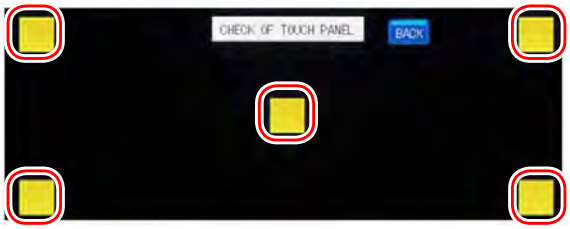
Check whether the touch panel is operating properly.

Display the touch panel check screen



1. Tap [CHECK OF TOUCH PANEL].
   ▷ The touch panel check screen is displayed.

Check the touch panel operation



2. Tap the switches located at the upper left, upper right, center, lower left, and lower right of the screen.

   Make sure that the switches turn yellow when tapped. This indicates that the touch panel is operating properly.

3. Tap [BACK]

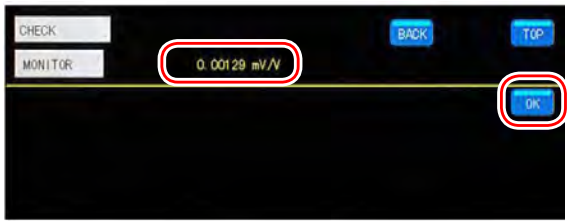
▷ Operation check screen 1/1 is displayed.

12.2.3 Monitor mode

Check the load applied to the strain gauge transducer The load is converted to mV/V for display.

Place a known weight on the load cell.

Check the load



1. Check the load on the load cell.
   ▷ Check the load applied to the strain gauge transducer is displayed properly.
2. Tap [OK].
   ▷ Operation check screen 1/1 is displayed.

Note:

- Load display accuracy is approx. 0.5 %. (Note that this is just for reference.)
- The load display range is approx. -3.1 mV/V to 3.1 mV/V.

12.2.4 External control I/O check

Checks whether the external control I/O connected to CSD-912 is operating properly

Check the external control I/O operation

1. Check the external control input operation.

   Input an appropriate value to check that the corresponding display switches [ON] on the external control input connected to device.

2. Check the external control output operation.

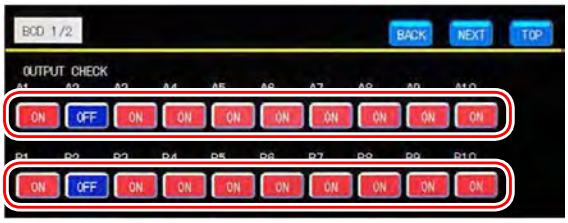
   Tap [OUT1] to [OUT11] to switch between ON/OFF and confirm that all corresponding external control outputs are operating.

3. Tap [BACK].
   ▷ Operation check screen 1/1 is displayed.

12.2.5 BCD output check

Checks whether the BCD output connected to CSD-912 is operating properly.

BCD output operation check



1. Check the BCD output operation.

   Tap [A1] to [A17] and [B1] to [B17] to switch between ON/OFF and confirm that all corresponding BCD outputs are operating.

2. Check the BCD input operation.

   Input can be checked when B18 is ON on the BCD output.

3. Tap [BACK].

   ▷ Operation check screen 1/1 is displayed.

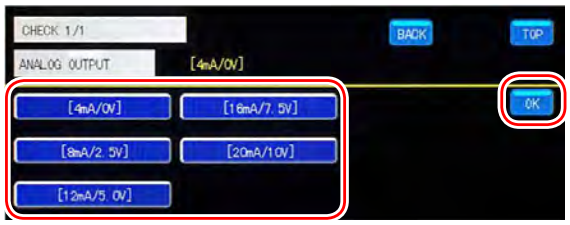
Note:

If two BCD output boards are installed, both units operate in the same way.

12.2.6 Analog output check

Checks whether the analog output connected to CSD-912 is operating properly.

Analog output operation check



1. Check the analog output operation.

   Tap [4mA/0V], [8mA/2.5V], [12mA/5.0VF], [16mA/7.5V] or [20mA/10V] to check that the analog output is operating.

2. Tap [OK].

   ▷ Operation check screen 1/1 is displayed.

12.2.7 Registering a maintenance date

Registers the date of maintenance.

Register a maintenance date

1. Input the maintenance date (YY. MM. DD).

   Range: 00.00.00 to 99.99.99 (initial value: 00.00.00)

Note:

Refer to Chapter 5.5 for more information.

---

2. Tap [OK].

   ▷ The maintenance date is registered, and operation check screen 1/1 is displayed.

Check registration

3. Check the maintenance date.

   The setting is complete if the value set in step 1 appears under [MAINTENANCE DATA]. If so, registration is complete.

12.2.8 Registering a maintenance number

A maintenance number can be optionally registered.

Register a maintenance number

1. Input the maintenance number.

   Range: 0 to 99 999 (initial value: 0)

Note:

Refer to Chapter 5.5 for more information.

---

2. Tap [OK].

▷ The maintenance number is registered, and operation check screen 1/1 is displayed.

Check registration

3. Check the maintenance number.

   Make sure that the value set in Step 1) above is displayed under [MAINTENANCE No.] If so, registration is complete.

12.3 Replacing the fuse

If the fuse of CSD-912 blows, remove the top cover to replace it.

⚠ WARNING

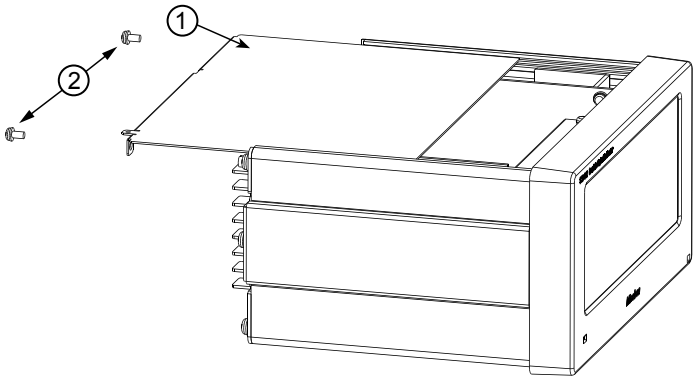
Damage from overheating.

The use of repaired fuses and bypassing the fuse holder is prohibited.

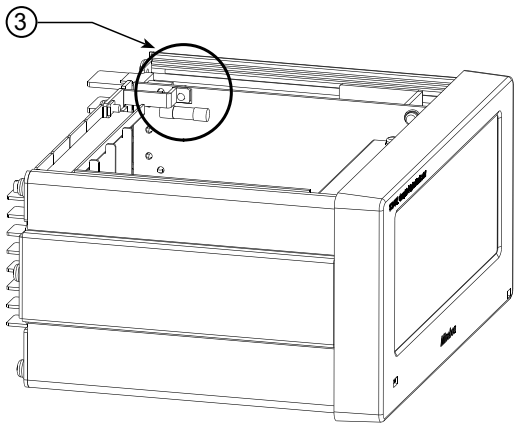
Incorrect fuse installation or inappropriate fuse capacity will result in malfunction.

- ▶ Before replacing the fuse, be sure to turn OFF the power to CSD-912.
- ▶ Only the time lag Fuse (2.5A) is permissible.

1. Turn off the power supply to the unit



2. Remove the top cover fixing screws ②.
3. Slide the top cover ① toward the back of the unit to remove the top cover.



4. Replace the fuse ③ (Time-lag fuse 2.5 A) that is attached to the board.
5. Attach the top cover.
6. Attach the top cover fixing screws ②.

13 Troubleshooting

This chapter describes corrective measures to be taken in the event of abnormal operation or if an error message is displayed.

When abnormal point(s) is/are found during the operation of the instrument, check by the following procedures.

Moreover, when you cannot find applicable item or solve the symptom of trouble even after you have taken some measures, contact with Minebea Intec.

13.1 Problems and corrective measures

Refer to this section to take corrective measures if the following operational abnormalities occur while using the CSD-912.

Contact the Minebea Intec if the problem is not covered or persists even after taking corrective measures.

Item	Content	see Chapter
LED screen display	Corrective measures in the event of problems related to the screen display or touch panel operation when using CSD-912	13.1.1
Weighing operation	Corrective measures in the event of problems related to weighing using CSD-912	13.1.2
Standard RS-485 interface	Corrective measures in the event of problems related to standard RS-485 interface communication	13.1.3
2-pin method serial interface	Corrective measures in the event of problems related to 2-pin method serial interface communication and print operation	13.1.4
External control I/O	Corrective measures in the event of problems related to communication and operation of the external control I/O	13.1.5
Analog output	Corrective measures in the event of problems related to analog output	13.1.6
BCD output	Corrective measures in the event of problems related to communication and BCD output	13.1.7
RS-232C interface	Corrective measures in the event of problems related to communication with the optional RS-232C interface	13.1.8
RS-422 interface	Corrective measures in the event of problems related to communication with the optional RS-422 interface.	13.1.9
RS-485 interface	Corrective measures in the event of problems related to communication with the optional RS-485 interface.	13.1.10

13.1.1 LED screen display

Error	Cause	Action
The POWER LED does not light.	The supply power voltage exceeds the permissible range.	Check that the supply power voltage is within 100 V AC to 240 V AC (permissible range: 85 V AC to 264 V AC)

Error	Cause	Action
	The power cable is connected incorrectly.	Connect the power cable correctly (refer to Chapter 4.3)
	The fuse has blown.	Replace the fuse (refer to Chapter 12.3)
The display is blank.	The supply power voltage exceeds the permissible range.	Check that the supply power voltage is within 100 V AC to 240 V AC (permissible range: 85 V AC to 264 V AC)
	The power cable is connected incorrectly.	Connect the power cable correctly (refer to Chapter 4.3)
	Backlight off time is set.	Touch the display to activate the backlight (refer to Chapter 9.1.5)
	The fuse has blown.	Replace the fuse (refer to Chapter 12.3)
The touch panel does not respond.	-	Contact the Minebea Intec with detailed information.
[OL] (overload status) or [-OL] (unstable status) is displayed or the load value display is unstable.	The load cell is faulty.	Use another load cell (refer to Chapter 4.2)
	The load cell is connected incorrectly.	Connect the load cell correctly (refer to Chapter 4.2)
	The load cell signal line is broken.	Check the wiring status of the load cell (refer to Chapter 4.2)
	Input from the load cell is outwith ±3.1 mV/V.	Check the input from the load cell (refer to Chapter 12.2.3)
	Calibration is incorrect.	Recalibrate (refer to Chapter 6.3)
	The voltage between A and C onCSD-912 is unstable.	Follow the procedure below: **1.** Short-circuit between A and F and between G and C with the strain gauge transducer disconnected. **2.** Measure the voltage between A and C to check that the voltage between A and C is stable at the excitation voltage setting value
The keys do not respond when tapped.	Key lock is set.	Release the key lock (refer to Chapter 7.10.4)

13.1.2 Weighing operation

Error	Cause	Action
Weighing cannot be executed correctly.	Brand is set incorrectly.	Set the brand correctly (refer to Chapter 7.2.3)
	Recipe is set incorrectly.	Set recipe correctly (refer to Chapter 7.8.1)
Weighing cannot be executed by the intended operation.	The functions required for individual weighing modes are set incorrectly.	Set the functions required for each weighing mode correctly.

13.1.3 Standard RS-485 interface

Error	Cause	Action
Signals are not transmitted.	The standard RS-485 interface is connected incorrectly.	Connect the standard RS-485 interface correctly (refer to Chapter 11.1.2)
	The address number is set incorrectly.	Set the address number correctly (refer to Chapter 11.1.3)
	The communication protocol is set incorrectly.	Set the communication protocol according to the specifications of the host (refer to Chapter 11.1.3)
	Command data is set incorrectly.	Set command data correctly (refer to Chapter 14.5.1)
Communication cannot be controlled.	The communication flow is controlled by the host.	Set the communication flow so it is no controlled on the host side
The host responds too quickly.	The interval from command reception to transmission is 1 ms or less.	Set the interval from command reception to transmission to 1 ms or more on the host side.
The host does not respond.	The set data delay time for CSD-912 is too short.	Set the RS-485 interface data delay time to a higher value (refer to Chapter 11.1.3)

13.1.4 2-pin method serial interface

Error	Cause	Action
Signals are not transmitted.	The 2-pin method serial interface is connected incorrectly.	Connect the 2-pin method serial interface correctly (refer to Chapter 11.2.3)
	The communication protocol is set incorrectly.	Set the communication protocol correctly for the data format (refer to Chapter 11.2.2)
Print cannot be executed.	Print signal operation is set incorrectly.	Set the print signal operation correctly (refer to Chapter 11.2.5)

13.1.5 External control I/O

Error	Cause	Action
Signals are not transmitted.	The external control I/O is connected incorrectly.	Connect the external control I/O correctly (refer to Chapter 11.3.1)
	The external control I/O is assigned incorrectly.	Assign the external control I/O correctly on theCSD-912 (refer to Chapter 11.3.2)
The external control I/O operates incorrectly.	The pulse input width is 50 ms or less.	Set the pulse input width of the external control input to 50 ms or more
	The level input width is 50 ms or less.	Set the level input width of the external control input to 50 ms or more
	The external control output logic is inappropriate.	Switch to a logic appropriate for the external control output on the CSD-912 (refer to Chapter 11.3.2)

13.1.6 Analog output

Error	Cause	Action
Signals are not transmitted.	The analog output is incorrectly wired.	Connect the analog output correctly (refer to Chapter 11.4.2)
	The voltage output load resistance is inappropriate for specifications.	Set the load resistance for analog output as shown below. - Voltage output load resistance: 5 kΩ or more - Current output load resistance: 510 Ω or less
The analog output operates incorrectly.	The functions related to CSD-912 analog output are incorrectly set.	Set the functions related to CSD-912 analog output correctly (refer to Chapter 11.4.3)

13.1.7 BCD output

Error	Cause	Action
Signals are not transmitted.	The BCD output is incorrectly wired.	Connect the BCD output to external equipment correctly (refer to Chapter 11.5.3)
Output is not BCD output.	Functions related to CSD-912 BCD output are not set according to the external equipment specifications.	Set the functions related to CSD-912 BCD output according to external equipment specifications (refer to Chapter 11.5.6)
Intended values are not output.	The BCD output is incorrectly set.	Set the BCD output target correctly (refer to Chapter 11.5.6)
BCD output does not change.	BCD output is set to hold.	Disable BCD output hold

13.1.8 RS-232C interface

Error	Cause	Action
Signals are not transmitted.	The RS-232C interface is connected incorrectly.	Connect the RS-232C interface to external equipment correctly (refer to Chapter 11.6.2)
	The communication protocol is set incorrectly.	Set the communication protocol according to the specifications of the host (refer to Chapter 11.6.3)
	Command data is set incorrectly.	Set command data correctly (refer to Chapter 14.5.1)
Communication cannot be controlled.	The communication flow is controlled by the host.	Set the communication flow so it is no controlled on the host side
Intended values are not output in stream mode.	The stream mode output target is set incorrectly.	Set the stream mode output target correctly for stream mode (refer to Chapter 11.6.3)

13.1.9 RS-422 interface

Error	Cause	Action
Signals are not transmitted.	The RS-422 interface is connected incorrectly.	Connect the RS-422 interface to external equipment correctly (refer to Chapter 11.7.2)
	The address number is set incorrectly.	Set the address number correctly (refer to Chapter 11.7.3)
	The communication protocol is set incorrectly.	Set the communication protocol according to the specifications of the host (refer to Chapter 11.7.3)
	Command data is set incorrectly.	Set command data correctly (refer to Chapter 14.5.1)
Communication cannot be controlled.	The communication flow is controlled by the host.	Set the communication flow so it is no controlled on the host side
The RS-422 interface cannot be used.	The RS-422/RS-485 interface is switched incorrectly.	Switch the RS-422/RS-485 interface correctly (refer to Chapter 11.7.3)

13.1.10 RS-485 interface

Error	Cause	Action
Signals are not transmitted.	The RS-485 interface is connected incorrectly.	Connect the RS-485 interface to external equipment correctly (refer to Chapter 11.7.2)
	The address number is set incorrectly.	Set the address number correctly (refer to Chapter 11.7.3)
	The communication protocol is set incorrectly.	Set the communication protocol according to the specifications of the host (refer to Chapter 11.7.3)
	Command data is set incorrectly.	Set command data correctly (refer to Chapter 14.5.1)
Communication cannot be controlled.	The communication flow is controlled by the host.	Set the communication flow so it is no controlled on the host side
The RS-485 interface cannot be used.	The RS-422/RS-485 interface is switched incorrectly.	Switch the RS-422/RS-485 interface correctly (refer to Chapter 11.7.3)
The host responds too quickly.	The interval from command reception to transmission is 1 ms or less.	Set the interval from command reception to transmission to 1 ms or more on the host side.
The host does not respond.	The set data delay time for CSD-912 is too short.	Set the RS-485 interface data delay time to a higher value (refer to Chapter 11.7.3)

13.2 Error display and buzzer sound

If an error occurs, detailed information about the error is displayed. Pressing any key during key lock also activates an alarm buzzer.

13.2.1 Error display

Error display	Cause	Action
bAtL	The battery is low.	Contact Minebea Intec
Er-2	The display flashes for approx. 2 seconds and: - A value outwith the setting range is set during calibration.	Set a value within the setting range (refer to Chapter 6.3)
Er-3	An A/D conversion error occurs.	Contact Minebea Intec
Er-b	Backup data is corrupted.	Contact Minebea Intec
Er-E	EEPROM writing error occurs.	Contact Minebea Intec
Er-r	EEPROM reading error occurs.	Contact Minebea Intec
rE-L	The display flashes for approx. 2 seconds during calibration: - Load cell output is 2.5 mV/V or less; and - Load cell output exceeds the zero adjustment range on the negative side.	If calibration is executed by reading weighing values, check: - The load is not faulty. - The load cell is connected correctly and there are no disconnected wires (refer to Chapter 4.2). - The load applied to theCSD-912 input (mV/V) neither excessive nor insufficient. If calibration is executed by inputting output voltage values, input a value within the permissible range.
rE-H	The display flashes for approx. 2 seconds when during calibration and the load cell output and input are: - 2.5 mV/V or more, and - outwith the zero calibration range on the positive side.	
SP-L	The display flashes for approx. 2 seconds when during calibration and the load cell output and input are: - less than 0 mV/V, and - outwith the span adjustment range.	

Error display	Cause	Action
SP-H	The display flashes for approx. 2 seconds when during calibration and the load cell output and input are: - more than 3.1 mV/V, and - outwith the SPAN calibration range.	
Ln-L	The display flashes for approx. 2 seconds and: - The load cell output is low during compensation by digital linearization.	- Check that the weight mass is appropriate - Execute zero calibration and span calibration again (refer to Chapter 6.3.4 and 6.3.5)
Ln-H	The display flashes for approx. 2 seconds and: - the load cell output is high during compensation.	
-------	The weighing value is outwith ±10% of maximum load (Max) when [ZERO AT POWER ON] is set.	- Change the weighing capacity setting (refer to Chapter 6.3.3) - Change the weighing target
8888888	The weighing value is not stable when [ZERO AT POWER ON] is set.	- Check that the operating environment for CSD-912 is appropriate. - Check that the load cell is connected correctly (refer to Chapter 4.2) - Check the stability detection condition setting (refer to Chapter 7.11.5)
-oL	Displayed load value exceeds: - "- (maximum load) - (9d)"; or - "(maximum load) x 110%".	Increase the weighing capacity setting (refer to Chapter 6.3.3)
-oL	The displayed load value exceeds: - "- (maximum load) - (9d)"; - "(maximum load) x -110%"; or - -20d	Decrease the weighing capacity setting (refer to Chapter 6.3.3)
-oUF	The A/D transducer input is positive overload.	Increase the maximum load (Max) setting (refer to Chapter 6.3.3)
--oUF	The A/D transducer input is negative overload.	Decrease the maximum load (Max) setting (refer to Chapter 6.3.3)
The accumulation value and the accumulation times are displayed in red.	The accumulation value and the accumulation times exceed the display range.	Delete the accumulation value and the accumulation times (refer to Chapter 7.2.3, 7.8.1 and 7.9.1)

13.2.2 Zero error display

Error code	Cause	Action
Z. ERR ZERO	The zero setting is outwith the permissible range.	Check that the zero set range is set appropriately (refer to Chapter 7.10.1)
Z. ERR A/Z	Tare weight cancellation was executed outwith the tare weight cancellation operational range.	Execute tare weight cancellation within tare weight cancellation operational range (refer to Chapter 7.10.2)

Note:

To release a zero error, tap [ERROR RESET] on the upper left of the screen.

13.2.3 Sequence error display

Error code	Error No.	Cause	Action
SQ. ERR 0	1	A forced temporary stoppage has occurred due to inputting a temporary stop while weighing.	Check the cause of the temporary stoppage and restart
SQ. ERR 1	2	Safety check conditions are not satisfied.	Check the safety check input setting (refer to Chapter 7.4.5)
SQ. ERR 2	3	Capacity is insufficient, even after executing supplementary flow/discharge.	Change the time and maximum times of supplementary flow and restart (refer to Chapter 7.2.3 and 7.5.1)
SQ. ERR 3	4	The values of settings are contradictory.	Check the settings and resolve the contradiction (refer to Chapter 7.2.3)
SQ. ERR 4	5	Flow time exceeds the time limit.	Check the inflow gate for obstructions
SQ. ERR 5	6	Discharge time exceeds the time limit.	Check the discharge gate for obstructions
SQ. ERR 6	7	The gross weight is less than the final weighing value in discharge mode.	Add material to the brand hopper
SQ. ERR 7	8	The net weight is greater than "final value - freefall value" at the start of weighing.	Empty the container
SQ. ERR 8	9	The nozzle has made contact with the container during weighing in nozzle control mode.	Check the nozzle position

Error code	Error No.	Cause	Action
SQ. ERR 9	10	The container is not positioned on the weighing device at the start of weighing with [START ABOVE ZERO BAND] set to [VALID].	Place the container on the weighing part (load cell).

Note:

To release a sequence error, tap [ERROR RESET] on the upper left of the screen.

13.2.4 Error alarm buzzer

When key lock is active, pressing any key on the weighing screen sounds a buzzer twice.

Note:

Refer to Chapter 7.10.4 for more information.

14 Appendix

This chapter provides supplementary information about CSD-912, such as menu lists, customer service, and data communication formats.

14.1 Menu list

The transition from the weighing screen to each setting item is shown below.

WEIGHING	
├ **MENU 1/2**	Menu screen 1/2
│ ├ **GRAPHIC DISPLAY**	see Chapter 5.4
│ ├ **BRAND CODE**	To brand code screen
│ ├ **RECIPE CODE**	To recipe code screen
│ ├ **BASIC FUNCTION**	To basic function screen
│ ├ **I/O**	To I/O screen
│ ├ **WEIGHING OPERATION**	To weighing operation screen
│ ├ **SEQUENCE CONTROL**	To sequence control screen
│ ├ **CALIBRATION**	To calibration screen
│ ├ **BUILT-IN SERIAL I/F**	To built-in serial I/F screen
├ **MENU 2/2**	Menu screen 2/2
│ ├ **SYSTEM**	To system screen
│ ├ **OPTIONS**	To option screen
│ ├ **CHECK**	To check screen

14.1.1 BRAND CODES

WEIGHING	
├ **MENU 1/2**	Menu screen 1/2
│ ├ **BRAND CODE**	Brand code screen

BRAND CODE	
├ **BRAND CODE 1/2**	Brand code screen 1/2
│ ├ **HOPPER NO.**	see Chapter 7.2.3
│ ├ **FINAL**	see Chapter 7.2.3
│ ├ **FREEFALL**	see Chapter 7.2.3
│ ├ **PRELIMINARY 1**	see Chapter 7.2.3
│ ├ **PRELIMINARY 2**	see Chapter 7.2.3
│ ├ **OVER**	see Chapter 7.2.3
│ ├ **UNDER**	see Chapter 7.2.3
│ ├ **ZERO BAND**	see Chapter 7.2.3
│ ├ **FULL**	see Chapter 7.2.3
├ **BRAND CODE 2/2**	Brand code screen 2/2
│ ├ **AUTOMATIC FREEFALL COMPENSATION**	see Chapter 7.2.3
│ ├ **SUPPLEMENTARY FLOW TIME**	see Chapter 7.2.3
│ ├ **WAITING TIME FOR JUDGMENT AFTER S. FLOW**	see Chapter 7.2.3
│ ├ **ACCUMULATION VALUE**	see Chapter 7.2.3
│ ├ **ACCUMULATION TIMES**	see Chapter 7.2.3
│ ├ **PRESET TARE WEIGHT VALUE**	see Chapter 7.2.3
│ ├ **INITIAL FULL FLOW**	see Chapter 7.2.3
│ ├ **INITIAL MEDIUM FLOW**	see Chapter 7.2.3

14.1.2 RECIPE CODES

WEIGHING

MENU 1/2	Menu screen 1/2
RECIPE CODES	Recipe code screen

RECIPE CODES

RECIPE CODE 1/2	Recipe code screen 1/2
MEASUREMENT 1	see Chapter 7.8.1.2
MEASUREMENT 2	see Chapter 7.8.1.2
MEASUREMENT 3	see Chapter 7.8.1.2
MEASUREMENT 4	see Chapter 7.8.1.2
MEASUREMENT 5	see Chapter 7.8.1.2
MEASUREMENT 6	see Chapter 7.8.1.2
MEASUREMENT 7	see Chapter 7.8.1.2
MEASUREMENT 8	see Chapter 7.8.1.2
MEASUREMENT 9	see Chapter 7.8.1.2
RECIPE CODE 2/2	Recipe code screen 2/2
MEASUREMENT 10	see Chapter 7.8.1.2
ACCUMULATION VALUE	see Chapter 7.8.1.2
ACCUMULATION TIMES	see Chapter 7.8.1.2

14.1.3 BASIC FUNCTIONS

WEIGHING

MENU 1/2	Menu screen 1/2
BASIC FUNCTION	Basic function setting

BASIC FUNCTION

BASIC FUNCTION 1/4	Basic function screen 1/4
DISPLAY REFRESH RATE	see Chapter 9.1.1
A/D SAMPLING RATE	see Chapter 9.2.1
ANALOG FILTER	see Chapter 9.3.1
DIGITAL FILTER	see Chapter 9.3.2
STABILIZATION FILTER	see Chapter 9.3.3
TIME WIDTH OF STABILIZATION FILTER	see Chapter 9.3.3.3
BAND WIDTH OF STABILIZATION FILTER	see Chapter 9.3.3.2
STABILITY DETECTION TIME	see Chapter 7.11.5.2
STABILITY DETECTION BAND WIDTH	see Chapter 7.11.5.1
BASIC FUNCTION 2/4	Basic function screen 2/4
OPERATION OF ZERO	see Chapter 7.10.1.1
RANGE OF ZERO	see Chapter 7.10.1.2
TARGET OF ZERO TRACKING	see Chapter 9.2.2.1
ZERO TRACKING TIME	see Chapter 9.2.2.3
ZERO TRACKING BAND	see Chapter 9.2.2.2
OPERATION OF TARE	see Chapter 7.10.2.1
RANGE OF TARE	see Chapter 7.10.2.2
OPERATION OF PRESET TARE	see Chapter 7.11.4.1
PRESET TARE = 0 CHOICE	see Chapter 7.11.4.2

BASIC FUNCTION 3/4	Basic function screen 3/4
ZERO AT POWER ON	see Chapter 7.11.6.1
ZERO CLEAR AT POWER ON	see Chapter 7.11.6.2
TARE AT POWER ON	see Chapter 7.11.7.1
TARE CLEAR AT POWER ON	see Chapter 7.11.7.2
OPERATION OF HOLD	see Chapter 7.11.8.1
PRINT COMMAND	see Chapter 11.3.2.5
ACCUMULATION COMMAND	see Chapter 11.3.2.6
GRAPH TRIGGER SETTING	see Chapter 8.3.2
GRAPH TRIGGER LEVEL	see Chapter 8.3.1
BASIC FUNCTION 4/4	Basic function screen 4/4
CHANGEOVER OF THE WEIGHING SCREEN	see Chapter 7.10.3.1
SET MODE OF STABILITY DETECTION	see Chapter 7.11.5
BATCH SETTING FOR "JIS B 7611-2: 2009"	see Chapter 7.11.11
HOLD OF COMPARATIVE RESULT	see Chapter 7.11.8.3
HOLD OF S-I/F	see Chapter 7.11.8.4
HOLD OF LOAD DISPLAY VALUE	see Chapter 7.11.8.2
NET WEIGHT SIGN INVERSION	see Chapter 7.11.9

14.1.4 I/Os

WEIGHING

MENU 1/2	Menu screen 1/2
I/O	I/O screen

I/O

I/O SETTING 1/6	I/O setting screen 1/6
F1 KEY FUNCTION	see Chapter 9.4.1
F2 KEY FUNCTION	see Chapter 9.4.1
F3 KEY FUNCTION	see Chapter 9.4.1
F4 KEY FUNCTION	see Chapter 9.4.1
I/O SETTING 2/6	I/O setting screen 2/6
I/O INPUT FROM 1 TO 9	see Chapter 11.3.2.1
I/O SETTING 3/6	I/O setting screen 3/6
I/O INPUT FROM 10 TO 11	see Chapter 11.3.2.1
I/O SETTING 4/6	I/O setting screen 4/6
I/O OUTPUT FROM 1 TO 9	see Chapter 11.3.2.2
I/O SETTING 5/6	I/O setting screen 5/6
I/O OUTPUT FROM 10 TO 11	see Chapter 11.3.2.2
I/O OUTPUT LOGIC	see Chapter 11.3.2.3
I/O SETTING 6/6	I/O setting screen 6/6
ZERO KEY LOCK	see Chapter 7.10.4
GROSS/NET KEY LOCK	see Chapter 7.10.4.1
TARE WEIGHT KEY LOCK	see Chapter 7.10.4.1
BRAND SETTING KEY LOCK	see Chapter 7.10.4.1
F KEY LOCK	see Chapter 7.10.4.1
MENU KEY LOCK	see Chapter 7.10.4.1

- **CALIBRATION KEY LOCK** — see Chapter 7.10.4.1
- **CSD-902 I/O INFLOW SETTING** — see Chapter 11.3.2.3

14.1.5 WEIGHING OPERATIONS

WEIGHING

- **MENU 1/2** — Menu screen 1/2
  - **WEIGHING OPERATION** — Weighing operation screen

WEIGHING OPERATION

- **WEIGHING OPERATION SETTING 1/2** — Weighing operation setting screen 1/2
  - **WEIGHING MODE** — see Chapter 7.1
  - **CONTROL MODE** — see Chapter 7.2.2
  - **COMPARISON SIGNAL OPERATION** — see Chapter 7.11.1
  - **COMPARATIVE OPERATION OF ZERO BAND** — see Chapter 7.11.2
  - **COMPARATIVE OPERATION OF FULL** — see Chapter 7.11.3
  - **RECIPE MODE** — see Chapter 7.8.1
  - **SAVE THE AUTOMATIC FREEFALL VALUE** — see Chapter 7.4.4.1
  - **INFLOW SAFETY CHECK** — see Chapter 7.4.5.2
  - **DISCHARGE SAFETY CHECK** — see Chapter 7.4.5.3
- **WEIGHING OPERATION SETTING 2/2** — Weighing operation setting screen 2/2
  - **RECIPE SAFETY CHECK** — see Chapter 7.4.5.4
  - **MIXING SAFETY CHECK** — see Chapter 7.4.5.5
  - **GENERAL SAFETY CHECK** — see Chapter 7.4.5.6
  - **AUTOMATIC ACCUMULATION** — see Chapter 7.11.10.1
  - **CONDITION OF AUTOMATIC ACCUMULATION** — see Chapter 7.11.10.2
  - **AUTOMATIC RECIPE CODE ACCUMULATION** — see Chapter 7.8.1.6
  - **AUTOMATIC PRINT** — see Chapter 7.11.12

14.1.6 SEQUENCE CONTROL

WEIGHING

- **MENU 1/2** — Menu screen 1/2
  - **SEQUENCE CONTROL** — Sequence control screen

SEQUENCE CONTROL

- **SEQUENCE CONTROL SETTING 1/3** — Sequence control setting screen 1/3
  - **INFLOW START SEQUENCE** — see Chapter 7.4.1
  - **OPERATION OF NOZZLE** — see Chapter 7.7.1.1
  - **JUDGE CONDITION** — see Chapter 7.4.1.8
  - **INFLOW FINISH ACTION** — see Chapter 7.4.1.9
  - **DISCHARGE FINISH ACTION** — see Chapter 7.4.1.16
  - **RECIPE START ACTION** — see Chapter 7.8.1.3
  - **RECIPE FINISH ACTION** — see Chapter 7.8.1.4
  - **MAXIMUM TIME OF COMPENSATION** — see Chapter 7.5.1.1

COMPENSATION FLOW EVALUATION	see Chapter 7.5.1.2
SEQUENCE CONTROL SETTING 2/3	Sequence control setting screen 2/3
AUTOMATIC FREEFALL COMPENSATION	see Chapter 7.4.4.1
INFLOW FINISH OUTPUT OFF	see Chapter 7.4.1.11
TARE INFLOW START DELAY	see Chapter 7.4.1.3
INFLOW MONITORING TIMER	see Chapter 7.4.1.12
INFLOW START DELAY TIMER	see Chapter 7.4.1.1
FULL FLOW COMPARISON STOP TIMER	see Chapter 7.4.1.4
MEDIUM FLOW COMPARISON STOP TIMER	see Chapter 7.4.1.5
DRIBBLE FLOW COMPARISON STOP TIMER	see Chapter 7.4.1.4
WAITING TIME FOR JUDGEMENT	see Chapter 7.4.1.7
SEQUENCE CONTROL SETTING 3/3	Sequence control setting screen 3/3
DISCHARGE MONITORING TIMER	see Chapter 7.4.1.13
DISCHARGE GATE CLOSE DELAY	see Chapter 7.4.1.14
INFLOW FINISH OUTPUT ON	see Chapter 7.4.1.10
DISCHARGE FINISH OUTPUT ON	see Chapter 7.4.1.15
RECIPE FINISH OUTPUT ON	see Chapter 7.8.1.5
MIXING FINISH OUTPUT ON	see Chapter 7.8.3.2
MIXING TIME OUTPUT ON	see Chapter 7.8.3.1

14.1.7 CALIBRATION

WEIGHING

MENU 1/2	Menu screen 1/2
CALIBRATION	Calibration screen

CALIBRATION

CALIBRATION 1/2	Calibration screen 1/2
DIVISION	see Chapter 6.3.2
WEIGHING CAPACITY	see Chapter 6.3.3
ZERO ADJUSTMENT	see Chapter 6.3.4
ZERO POINT MV/V	see Chapter 6.3.4.2
SPAN ADJUSTMENT	see Chapter 6.3.5
SPAN POINT MV/V	see Chapter 6.3.5.2
PITCH CONFIRMATION	see Chapter 6.4.4.2
PITCH CONFIRMATION SET	see Chapter 6.4.4.1
DECIMAL POINT	see Chapter 9.1.2
CALIBRATION 2/2	Calibration screen 2/2
FINE ADJUSTMENT	see Chapter 6.4
DIGITAL LINEARIZATION	see Chapter 6.4.3
BRIDGE POWER SUPPLY	see Chapter 6.3.1
OL DISPLAY CONDITION	see Chapter 9.1.3
UNIT	see Chapter 9.1.4

ADJUSTMENT OF GRAVITY ACCELERATION	see Chapter 6.4.5
CALIBRATION/USING DISTRICT NUMBER	see Chapter 6.4.5.1
CALIBRATION/USING GRAVITY ACCELERATION	see Chapter 6.4.5.2

14.1.8 BUILT-IN SERIAL I/F

WEIGHING

MENU 1/2	Menu screen 1/2
BUILT-IN SERIAL I/F	Built-in serial I/F screen

BUILT-IN SERIAL I/F

BUILT-IN SERIAL I/F 1/1	Built-in serial I/F screen 1/1
RS-485	see Chapter 11.1.3
SERIAL INTERFACE	see Chapter 11.2.5

14.1.9 SYSTEM

WEIGHING

MENU 2/2	Menu screen 2/2
SYSTEM	System screen

SYSTEM

SYSTEM 1/1	System screen 1/1
BACKLIGHT OFF TIME	see Chapter 9.1.5
RECORD PLACE OF DATA	see Chapter 10.2
COMPARATOR MEMORY CLEAR	see Chapter 9.5.1
OPERATIONAL MEMORY CLEAR	see Chapter 9.5.2

14.1.10 OPTIONS

WEIGHING

MENU 2/2	Menu screen 2/2
OPTION	Option screen

OPTION

OPTIONAL 1/1	Option screen 1/1
RS-232C INTERFACE	see Chapter 11.6.3
RS-422/485 INTERFACE	see Chapter 11.7.3
ANALOG OUTPUT	see Chapter 11.4.1
BCD OUTPUT	see Chapter 11.5.1
PROFIBUS INTERFACE	See separate publication.

14.1.11 CHECKS

WEIGHING

MENU 2/2	Menu screen 2/2
CHECK	Check screen

CHECK

CHECK 1/1	Check screen 1/1
ROM VERSION	see Chapter 12.2.1
DISPLAY CHECK	see Chapter 12.2.2
I/O CHECK	see Chapter 12.2.4
MONITOR	see Chapter 12.2.3
BCD	see Chapter 12.2.5
ANALOG OUTPUT	see Chapter 12.2.6
MAINTENANCE DATE	see Chapter 12.2.7
MAINTENANCE NO.	see Chapter 12.2.8

14.2 Customer service

Warranty

The device warranty period is one year from the date of delivery.

Consult Minebea Intec sales office or point of purchase for repairs or customer service during the warranty period.

Repair

Before requesting a repair, check once again that all of the wiring/settings/adjustments are correct.

In particular, check the load cell for disconnected and/or broken wires. If the problem persists, contact Minebea Intec sales office or point of purchase to request repair service.

14.3 Specifications

14.3.1 Analog specifications

Bridge power supply		12 V DC ±0.3 V DC, 140 mA (switchable between 3 V DC and 6 V DC), with remote sensing
Applicable load cell		Up to 4 load cells (for 350 Ω) can be connected in parallel.
Input sensitivity		0.3 µV/d or more (d = minimum scale interval)
Input range		-3.1 mV/V to 3.1 mV/V
Zero setting range		±2.5 mV/V
Non-linearity		0.01 % F.S.
Temperature influence	Zero	±0.1 µV/°C (calibrated at an input sensitivity of 0.3 µV/d or more)
	Sensitivity	±0.0008 µV/°C (calibrated at an input sensitivity of 0.3 µV/d or more)
Input noise		±0.2 µVp-p or less (at the default setting for analog filter, digital filter, stabilization filter and A/D sampling rate)
Analog filter		Approx. 4 Hz (can be changed to 2 Hz, 6 Hz, 8 Hz, 10 Hz or 100 Hz)
A/D sampling rate		200 times/s (can be switched to 1 000 times/s, 100 times/s, 50 times/ s, 20 times/s or 10 times/s)
A/D internal resolution		24 bit

14.3.2 Display specifications

Display	Display	6.2-inch HVGA transmissive color TFT LCD
	Number of dots	640 dots x 240 dots
	Dot pitch	0.077 mm x 0.231 mm
Backlight	Brightness	Approx. 130 cd/m^2 (typically)
	Life	The surface brightness drops to 50 % of the initial value at approx. 40 000 h (typically) at 25 %.
Load display	Display range	-999 999 to 999 999
	Display increment	1 (can be changed to 2, 5, 10, 20 or 50)
	Display style	7-segment method (character height: 22 mm)
	Overload displays	[-OL] for negative overload, [OL] for positive overload
	AD value overload display	[-OVF] for negative overload, [OVF] for positive overload
Status display		GROSS, NET, PRE. TARE, TARE, STABLE, HOLD, RUN, Z-ERR, CZ, F. FLOW/S1, M. FLOW/S2, D. FLOW/S3, OVER/ S4, OK, UNDER, FULL, ZERO BAND, FINISH, FLOW/DISCH., S-COMP/SEQ. /4-COMP/ MEAS.
Display refresh rate		4 times/s (can be changed to 20 times/s)
Decimal point display		Can be switched between no display, 10^1, 10^2, 10^3 and 10^4
Unit display		Can be switched between none, g, kg, t, lb, N and kN.
Setting value display		Final (6 digits), Preliminary-1 (6 digits), Preliminary-2 (6 digits), Over (6 digits), Under (6 digits), Freefall (6 digits)
Brand display		Code No.: 00 to 99, Brand name: Up to 15 characters
Accumulation display		Accumulation value: -9 999 999 999 to 9 999 999 999; Accumulation times: 0 to 999 999
Graphic display		The weighing status is displayed as a waveform.

14.3.3 Interfaces

External control input	Any 11 functions can be selected from the following: OFF, GROSS/NET WEIGHT, ZERO, ZERO CLEAR, TARE WEIGHT, TARE WEIGHT CLEAR, INFLOW START, RECIPE START, DISCHARGE START, MIXING START, M.F. F. COMPENSATION, ACCUM. COMMAND, FORMER ACM. DATA CLR., PAUSE, RESTART, CLR ACM. OF BRAND, CLR ACM. OF ALL BRAND, CLR ACM. OF RECIPE, CLR ACM. OF ALL RECIPE, FORCED INFLOW FINISH, FORCED RECIPE FINISH, FORCED DISCH. FINISH, ERROR RESET, PRINT COMMAND The above pulse input items are valid when the pulse width is 50 ms or more. INFLOW/DISCHARGE, CODE NO. 1, CODE NO. 2, CODE NO. 4, CODE NO. 8, CODE NO. 10, CODE NO. 20, CODE NO. 40, CODE NO. 80, SAFETY INPUT1, SAFETY INPUT2, SAFETY INPUT3, SAFETY INPUT4, SAFETY INPUT5, SAFETY INPUT6, SAFETY INPUT7, SAFETY INPUT8, MANUAL FULL (Coarse) FLOW, MANUAL MEDIUM (Middle) FLOW, MANUAL DRIBBLE (Fine) FLOW, MANUAL DISCHARGE, HOLD, IN. FOR SIMILAR OUT. The above level input items are valid at a bridge input of 50 ms or more.
External control output	Any 11 functions can be selected from the following: OFF, STABLE, ZERO BAND, FULL, F. (Coarse) FLOW, M. (Middle) FLOW, D. (Fine) FLOW, OVER, OK, UNDER, MIXING, DISCHARGE (GATE OPEN), INFLOW FINISH, RECIPE FINISH, DISCHARGE FINISH, MIXING FINISH, NOZZLE DOWN, MEAS., WEIGHING SEQ. ERROR, CAP. EXCEEDED ERROR, ERROR DURING TARE WEIGHT, CENTER OF ZERO, GROSS WEIGHT DISPLAY, NET WEIGHT DISPLAY DURING HOLD, HOPPER1, HOPPER2, HOPPER3, HOPPER4, HOPPER5, HOPPER6, HOPPER7, HOPPER8, HOPPER9, HOPPER10, HOPPER11, HOPPER12, HOPPER13, HOP PER14, HOPPER15, HOPPER16, HOPPER17, HOPPER18, HOPPER19, HOPPER20, HOPPER1 FULL (Coarse) FLOW, HOPPER1 MEDIUM (Middle) FLOW, HOPPER1 DRIBBLE (Fine) FLOW, HOPPER2 FULL (Coarse) FLOW, HOPPER2 MEDIUM (Middle) FLOW, HOPPER2 DRIBBLE (Fine) FLOW, HOPPER3 FULL (Coarse) FLOW, HOPPER3 MEDIUM (Middle) FLOW, HOPPER3 DRIBBLE (Fine) FLOW, HOPPER4 FULL (Coarse) FLOW, HOPPER4 MEDIUM (Middle) FLOW, HOPPER4 DRIBBLE (Fine) FLOW, HOPPER5 FULL (Coarse) FLOW, HOPPER5 MEDIUM (Middle) FLOW, HOPPER5 DRIBBLE (Fine) FLOW, HOPPER6 FULL (Coarse) FLOW, HOPPER6 MEDIUM (Middle) FLOW, HOPPER6 DRIBBLE (Fine) FLOW, HOPPER7 FULL (Coarse) FLOW, HOPPER7 MEDIUM (Middle) FLOW, HOPPER7 DRIBBLE (Fine) FLOW, HOPPER8 FULL (Coarse) FLOW, HOPPER8 MEDIUM (Middle) FLOW, HOPPER8 DRIBBLE (Fine) FLOW, HOPPER9 FULL (Coarse) FLOW, HOPPER9 MEDIUM (Middle) FLOW, HOPPER9 DRIBBLE (Fine) FLOW, HOPPER10 FULL (Coarse) FLOW, HOPPER10 MEDIUM (Middle) FLOW, HOPPER10 DRIBBLE (Fine) FLOW, IN. FOR SIMILAR OUT.
2-pin method serial interface	Baud rate: 600 bps; Data bit length: 8 bit; Parity bit: Odd; Stop bit: 1 bit; Start bit: 1 bit; Transmission data: Binary code (BCD) Insulated from the internal circuit by a optocoupler The common terminal is shared with the external control input.

Standard RS-485 interface	Baud rate: Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps Data bit length: Can be selected from 7 bit and 8 bit Parity bit: Can be selected from NONE, EVEN and ODD Stop bit: Can be selected from 1 bit and 2 bit Terminator: Can be selected from CR+LF and CR Transmission method: Half duplex Synchronous system: Start-stop synchronization Address: Any number from 0 to 31 can be selected. Transmission data: ASCII code; Length of cable: Approx. 1 km Number of pieces that can be connected: Up to 32 pieces Termination resistance: External Data transmission mode: Can be selected from command and Modbus The common terminal is shared with the internal circuit.
BCD output (optional)	Output BCD data: 8-digit parallel output POL. (polarity): ON for negative polarity output, OFF for positive polarity output P.C. (print command): ON for a certain length of time after BCD output is converted Decimal point: ON synchronized with the decimal point display setting ERROR (error): ON when an error occurs OVER (overload): ON synchronized with the OL display (overload) STABLE: ON when stability is detected GROSS WEIGHT: ON when the BCD output is gross weight Applies when the open collector output is VCE = 35 V DC, IC = 40 mA DC MAX The output is not updated, except in weighing mode. Input HOLD (hold): BCD output hold BCD-ENABLE: Forced OFF of BCD-related output (high impedance) The above level input items are valid at a bridge input of 100 ms or more.
RS-232C (optional)	Baud rate: Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps Data bit length: Can be selected from 7 bit and 8 bit Parity bit: Can be selected from NONE, EVEN and ODD Stop bit: Can be selected from 1 bit and 2 bit Terminator: Can be selected from CR+LF and CR Transmission method: Half duplex Synchronous system: Start-stop synchronization Transmission data: ASCII code

RS-422/485 (optional)	Baud rate: Can be selected from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps Data bit length: Can be selected from 7 bit and 8 bit Parity bit: Can be selected from NONE, EVEN and ODD Stop bit: Can be selected from 1 bit and 2 bit Terminator: Can be selected from CR+LF and CR Transmission method: Half duplex Synchronous system: Start-stop synchronization Address: Any number from 0 to 31 can be selected. Transmission data: ASCII code; Length of cable: Approx. 1 km Number of pieces that can be connected: Up to 32 pieces (10 pieces for RS-422) Termination resistance: Built-in (Can be selected on the terminal block wiring screen) I/O monitor with LEDs, RS-422/485 switching
Current output (optional)	Output: 4 mA DC to 20 mA DC; Load resistance: 510 Ω or less Resolution: Approx. 1/12 000 or more; Non-linearity: Within 0.02 % F.S. Overload range: [–OL] display at approx. 2.4 mA DC, [OL] display at approx. 21.6 mA DC Output times: Synchronized with A/D sampling Insulated from the internal circuit by a optocoupler Temperature influence Zero point: ±0.005 % F.S./°C Sensitivity: ±0.005 % F.S./°C
Voltage output (optional)	Output: 0 mA DC to 10 mA DC; Load resistance: 5 kΩ or more Resolution: Approx. 1/12 000 or more; Non-linearity: Within 0.02 % F.S. Overload range: [–OL] display at approx. –1 V, [OL] display at approx. 11 V Output times: Synchronized with A/D sampling Insulated from the internal circuit by a photocoupler Temperature influence Zero point: ±0.015 % F.S./°C Sensitivity: ±0.015 % F.S./°C

14.3.4 General specifications

Operating temperature range	Temperature	0°C to 40°C
	Humidity	85 % RH or lower (non-condensing)
Storage temperature range		-20°C to 60°C
Power supply	Power supply voltage	100 V AC to 240 V AC (Permissible variation: 85 V AC to 264 V AC)
	Power supply frequency	50/60 Hz
	Power consumption	Approx. 20 VA (No options at 100 V AC); Approx. 25 VA at maximum (Options installed at 100 V AC)
External dimensions (W × H × D)		96 mm × 192 mm × 132 mm (Excludes protrusion parts.)

Weight	Approx. 1.6 kg (without options)

14.3.5 Standard shipping specifications

Bridge power supply	12 V DC
SPAN calibration	10 000 display at 0.3 mV/V input
Scale interval	1

14.3.6 Accessories

Operating instructions	1 piece
Time-lag fuse (2.5 A)	1 piece
External control input plug	1 piece (Connector: FCN-361JO24-AU; Connector cover: FCN-360C024-B)
Standard communication connector	1 piece (Plug: XW4B-06B1-H1)
Bridge for A-F and C-G	2 pieces
Panel mounting gasket	1 piece
BCD output plug	1 piece (only included if the optional BCD output is installed)
Instruction manual for the optional Profi-Bus	1 copy (only included if the optional ProfiBus interface is installed)

14.4 ModBus communication memory operation mapping

ModBus communication is a serial interface that uses standard RS-485 communications. It facilitates communication with equipment that supports ModBus communication, without the need for programs.

ModBus is a registered trademark of Modicon, Inc.

Data communication with CSD-912 is handled by memory that is mapped as shown in the table below, eliminating the need to create communication protocol programs. Standard RS-485 is used as communication hardware.

To use ModBus communication, set the items in Chapter 11.1.4 as shown below:

Item	Setting value
Operation mode (OPERATION MODE)	ModBus
Baud rate (BAUD RATE)	Selectable from 1 200 bps, 2 400 bps, 4 800 bps, 9 600 bps, 19 200 bps and 38 400 bps
Data bit length (DATA BIT LENGTH)	8 bit
Parity bit (PARITY)	Selectable from NONE, EVEN and ODD
Stop bit (STOP BITS)	Selectable from 1 bit and 2 bit

Item	Setting value
Address (ADDRESS)	Any number from 0 to 31 can be selected. Note that 0 is a broadcast address.

Note:

- Standard RS-485 communication and ModBus communication cannot be linked with optional RS-232C communication, RS-422 communication or RS-485 communication.
- Neither [ADD THE DECIMAL POINT] nor [TERMINATOR] needs to be set as they do not effect ModBus communication.
- Set the RS-485 data delay time to [0.10] s or more.
- Set a delay time of 5 ms or more for the host side, which can be a PC or a sequencer.

Output coil (Bit read/write Reference No. 0)

Address	Data name	Address	Data name
1	ZERO	13	Not used
2	ZEROCLEAR	14	PAUSE
3	TARE	15	RESTART
4	TARE CLR.	16	FORCED INFLOW FINISH
5	INFLOW START	17	FORCED RECIPEFINISH
6	RECIPE START	18	FORCED DISCH. FINISH
7	DISCHARGE START	19	ERROR RESET
8	MIXING START	20	CHANGE OF HOLD/RELEASE
9	M. F.F. COMPENSATION	21	PRINT COMMAND
10	ACCUM. COMMAND	22	GROSS/NET CHANGEOVER
11	FOMER ACM. DATA CLR.	23	CLR ACM. OF ALL BRAND
12	Not used	24	CLR ACM. OF ALL RECIPE

Input status (Bit read Reference 1)

Address	Data name	Address	Data name
17	STABLE	4913 to 4928	ACCUM status of BRAND code No. 19
18	ZERO BAND	5169 to 5184	ACCUM status of BRAND code No. 20
19	FULL	5425 to 5440	ACCUM status of BRAND code No. 21

Address	Data name	Address	Data name
20	F. FLOW	5681 to 5696	ACCUM status of BRAND code No. 22
21	M. FLOW	5937 to 5952	ACCUM status of BRAND code No. 23
22	D. FLOW	6193 to 6208	ACCUM status of BRAND code No. 24
23	OVER	6449 to 6464	ACCUM status of BRAND code No. 25
24	OK	6705 to 6720	ACCUM status of BRAND code No. 26
25	UNDER	6961 to 6976	ACCUM status of BRAND code No. 27
26	Not used	7217 to 7232	ACCUM status of BRAND code No. 28
27	Not used	7473 to 7488	ACCUM status of BRAND code No. 29
28	MIXING	7729 to 7744	ACCUM status of BRAND code No. 30
29	DISCH.	7985 to 8000	ACCUM status of BRAND code No. 31
30	INFLOW FINISH	8241 to 8256	ACCUM status of BRAND code No. 32
31	RECIPEFINISH	8497 to 8512	ACCUM status of BRAND code No. 33
32	DISCHARGE FINISH	8753 to 8768	ACCUM status of BRAND code No. 34
33	MIXING FINISH	9009 to 9024	ACCUM status of BRAND code No. 35
34	NOZZLEDOWN	9265 to 9280	ACCUM status of BRAND code No. 36
35	Not used	9521 to 9536	ACCUM status of BRAND code No. 37
36	DURING WEIGHING SEQ	9777 to 9792	ACCUM status of BRAND code No. 38
37	Not used	10033 to 10048	ACCUM status of BRAND code No. 39
38	WEIGHING SEQ. ERROR	10289 to 10304	ACCUM status of BRAND code No. 40
39	CAP. EXCEEDED ERROR	10545 to 10560	ACCUM status of BRAND code No. 41

Address	Data name	Address	Data name
40	ZERO ERROR	10801 to 10816	ACCUM status of BRAND code No. 42
41	ERROR	11057 to 11072	ACCUM status of BRAND code No. 43
42	Not used	11313 to 11328	ACCUM status of BRAND code No. 44
43	DURING TARE	11569 to 11584	ACCUM status of BRAND code No. 45
44	PRESET TARE	11825 to 11840	ACCUM status of BRAND code No. 46
45	CENTER OF ZERO	12081 to 12096	ACCUM status of BRAND code No. 47
46	GROSS DISPLAY	12337 to 12352	ACCUM status of BRAND code No. 48
47	NET DISPLAY	12593 to 12608	ACCUM status of BRAND code No. 49
48	DURING HOLD	12849 to 12864	ACCUM status of BRAND code No. 50
49 to 64	ACCUM status of BRAND code No. 0	13105 to 13120	ACCUM status of BRAND code No. 51
49	ACCUM error	13361 to 13376	ACCUM status of BRAND code No. 52
50 to 64	Not used	13617 to 13632	ACCUM status of BRAND code No. 53
305 to 320	ACCUM status of BRAND code No. 1	13873 to 13888	ACCUM status of BRAND code No. 54
561 to 576	ACCUM status of BRAND code No. 2	14129 to 14144	ACCUM status of BRAND code No. 55
817 to 832	ACCUM status of BRAND code No. 3	14385 to 14400	ACCUM status of BRAND code No. 56
1073 to 1088	ACCUM status of BRAND code No. 4	14641 to 14656	ACCUM status of BRAND code No. 57
1329 to 1344	ACCUM status of BRAND code No. 5	14897 to 14912	ACCUM status of BRAND code No. 58
1585 to 1600	ACCUM status of BRAND code No. 6	15153 to 15168	ACCUM status of BRAND code No. 59
1841 to 1856	ACCUM status of BRAND code No. 7	15409 to 15424	ACCUM status of BRAND code No. 60
2097 to 2112	ACCUM status of BRAND code No. 8	15665 to 15680	ACCUM status of BRAND code No. 61

Address	Data name	Address	Data name
2353 to 2368	ACCUM status of BRAND code No. 9	15921 to 15936	ACCUM status of BRAND code No. 62
2609 to 2624	ACCUM status of BRAND code No. 10	16177 to 16192	ACCUM status of BRAND code No. 63
2865 to 2880	ACCUM status of BRAND code No. 11	16433 to 16448	ACCUM status of BRAND code No. 64
3121 to 3136	ACCUM status of BRAND code No. 12	16689 to 16704	ACCUM status of BRAND code No. 65
3377 to 3392	ACCUM status of BRAND code No. 13	16945 to 16960	ACCUM status of BRAND code No. 66
3633 to 3648	ACCUM status of BRAND code No. 14	17201 to 17216	ACCUM status of BRAND code No. 67
3889 to 3904	ACCUM status of BRAND code No. 15	17457 to 17472	ACCUM status of BRAND code No. 68
4145 to 4160	ACCUM status of BRAND code No. 16	17713 to 17728	ACCUM status of BRAND code No. 69
4401 to 4416	ACCUM status of BRAND code No. 17	17969 to 17984	ACCUM status of BRAND code No. 70
4657 to 4672	ACCUM status of BRAND code No. 18	18225 to 18240	ACCUM status of BRAND code No. 71
18481 to 18496	ACCUM status of BRAND code No. 72	31537 to 31552	ACCUM status of RECIPE code No. 23
18737 to 18752	ACCUM status of BRAND code No. 73	31793 to 31808	ACCUM status of RECIPE code No. 24
18993 to 19008	ACCUM status of BRAND code No. 74	32049 to 32064	ACCUM status of RECIPE code No. 25
19249 to 19264	ACCUM status of BRAND code No. 75	32305 to 32320	ACCUM status of RECIPE code No. 26
19505 to 19520	ACCUM status of BRAND code No. 76	32561 to 32576	ACCUM status of RECIPE code No. 27
19761 to 19776	ACCUM status of BRAND code No. 77	32817 to 32832	ACCUM status of RECIPE code No. 28
20017 to 20032	ACCUM status of BRAND code No. 78	33073 to 33088	ACCUM status of RECIPE code No. 29
20273 to 20288	ACCUM status of BRAND code No. 79	33329 to 33344	ACCUM status of RECIPE code No. 30
20529 to 20544	ACCUM status of BRAND code No. 80	33585 to 33600	ACCUM status of RECIPE code No. 31
20785 to 20800	ACCUM status of BRAND code No. 81	33841 to 33856	ACCUM status of RECIPE code No. 32

Address	Data name	Address	Data name
21041 to 21056	ACCUM status of BRAND code No. 82	34097 to 34112	ACCUM status of RECIPE code No. 33
21297 to 21312	ACCUM status of BRAND code No. 83	34353 to 34368	ACCUM status of RECIPE code No. 34
21553 to 21568	ACCUM status of BRAND code No. 84	34609 to 34624	ACCUM status of RECIPE code No. 35
21809 to 21824	ACCUM status of BRAND code No. 85	34865 to 34880	ACCUM status of RECIPE code No. 36
22065 to 22080	ACCUM status of BRAND code No. 86	35121 to 35136	ACCUM status of RECIPE code No. 37
22321 to 22336	ACCUM status of BRAND code No. 87	35377 to 35392	ACCUM status of RECIPE code No. 38
22577 to 22592	ACCUM status of BRAND code No. 88	35633 to 35648	ACCUM status of RECIPE code No. 39
22833 to 22848	ACCUM status of BRAND code No. 89	35889 to 35904	ACCUM status of RECIPE code No. 40
23089 to 23104	ACCUM status of BRAND code No. 90	36145 to 36160	ACCUM status of RECIPE code No. 41
23345 to 23360	ACCUM status of BRAND code No. 91	36401 to 36416	ACCUM status of RECIPE code No. 42
23601 to 23616	ACCUM status of BRAND code No. 92	36657 to 36672	ACCUM status of RECIPE code No. 43
23857 to 23872	ACCUM status of BRAND code No. 93	36913 to 36928	ACCUM status of RECIPE code No. 44
24113 to 24128	ACCUM status of BRAND code No. 94	37169 to 37184	ACCUM status of RECIPE code No. 45
24369 to 24384	ACCUM status of BRAND code No. 95	37425 to 37440	ACCUM status of RECIPE code No. 46
24625 to 24640	ACCUM status of BRAND code No. 96	37681 to 37696	ACCUM status of RECIPE code No. 47
24881 to 24896	ACCUM status of BRAND code No. 97	37937 to 37952	ACCUM status of RECIPE code No. 48
25137 to 25152	ACCUM status of BRAND code No. 98	38193 to 38208	ACCUM status of RECIPE code No. 49
25393 to 25408	ACCUM status of BRAND code No. 99	38449 to 38464	ACCUM status of RECIPE code No. 50
25649 to 25664	ACCUM status of RECIPE code No. 0	38705 to 38720	ACCUM status of RECIPE code No. 51
25649	ACCUM error	38961 to 38976	ACCUM status of RECIPE code No. 52

Address	Data name	Address	Data name
25650 to 25664	Not used	39217 to 39232	ACCUM status of RECIPE code No. 53
25905 to 25920	ACCUM status of RECIPE code No. 1	39473 to 39488	ACCUM status of RECIPE code No. 54
26161 to 26176	ACCUM status of RECIPE code No. 2	39729 to 39744	ACCUM status of RECIPE code No. 55
26417 to 26432	ACCUM status of RECIPE code No. 3	39985 to 40000	ACCUM status of RECIPE code No. 56
26673 to 26688	ACCUM status of RECIPE code No. 4	40241 to 40256	ACCUM status of RECIPE code No. 57
26929 to 26944	ACCUM status of RECIPE code No. 5	40497 to 40512	ACCUM status of RECIPE code No. 58
27185 to 27200	ACCUM status of RECIPE code No. 6	40753 to 40768	ACCUM status of RECIPE code No. 59
27441 to 27456	ACCUM status of RECIPE code No. 7	41009 to 41024	ACCUM status of RECIPE code No. 60
27697 to 27712	ACCUM status of RECIPE code No. 8	41265 to 41280	ACCUM status of RECIPE code No. 61
27953 to 27968	ACCUM status of RECIPE code No. 9	41521 to 41536	ACCUM status of RECIPE code No. 62
28209 to 28224	ACCUM status of RECIPE code No. 10	41777 to 41792	ACCUM status of RECIPE code No. 63
28465 to 28480	ACCUM status of RECIPE code No. 11	42033 to 42048	ACCUM status of RECIPE code No. 64
28721 to 28736	ACCUM status of RECIPE code No. 12	42289 to 42304	ACCUM status of RECIPE code No. 65
28977 to 28992	ACCUM status of RECIPE code No. 13	42545 to 42560	ACCUM status of RECIPE code No. 66
29233 to 29248	ACCUM status of RECIPE code No. 14	42801 to 42816	ACCUM status of RECIPE code No. 67
29489 to 29504	ACCUM status of RECIPE code No. 15	43057 to 43072	ACCUM status of RECIPE code No. 68
29745 to 29760	ACCUM status of RECIPE code No. 16	43313 to 43328	ACCUM status of RECIPE code No. 69
30001 to 30016	ACCUM status of RECIPE code No. 17	43569 to 43584	ACCUM status of RECIPE code No. 70
30257 to 30272	ACCUM status of RECIPE code No. 18	43825 to 43840	ACCUM status of RECIPE code No. 71
30513 to 30528	ACCUM status of RECIPE code No. 19	44081 to 44096	ACCUM status of RECIPE code No. 72

Address	Data name	Address	Data name
30769 to 30784	ACCUM status of RECIPE code No. 20	44337 to 44352	ACCUM status of RECIPE code No. 73
31025 to 31040	ACCUM status of RECIPE code No. 21	44593 to 44608	ACCUM status of RECIPE code No. 74
31281 to 31296	ACCUM status of RECIPE code No. 22	44849 to 44864	ACCUM status of RECIPE code No. 75
45105 to 45120	ACCUM status of RECIPE code No. 76	48177 to 48192	ACCUM status of RECIPE code No. 88
45361 to 45376	ACCUM status of RECIPE code No. 77	48433 to 48448	ACCUM status of RECIPE code No. 89
45617 to 45632	ACCUM status of RECIPE code No. 78	48689 to 48704	ACCUM status of RECIPE code No. 90
45873 to 45888	ACCUM status of RECIPE code No. 79	48945 to 48960	ACCUM status of RECIPE code No. 91
46129 to 46144	ACCUM status of RECIPE code No. 80	49201 to 49216	ACCUM status of RECIPE code No. 92
46385 to 46400	ACCUM status of RECIPE code No. 81	49457 to 49472	ACCUM status of RECIPE code No. 93
46641 to 46656	ACCUM status of RECIPE code No. 82	49713 to 49728	ACCUM status of RECIPE code No. 94
46897 to 46912	ACCUM status of RECIPE code No. 83	49969 to 49984	ACCUM status of RECIPE code No. 95
47153 to 47168	ACCUM status of RECIPE code No. 84	50225 to 50240	ACCUM status of RECIPE code No. 96
47409 to 47424	ACCUM status of RECIPE code No. 85	50481 to 50496	ACCUM status of RECIPE code No. 97
47665 to 47680	ACCUM status of RECIPE code No. 86	50737 to 50752	ACCUM status of RECIPE code No. 98
47921 to 47936	ACCUM status of RECIPE code No. 87	50993 to 51008	ACCUM status of RECIPE code No. 99

Input register (Word read Reference 3)

Address	Data name	Address	Data name
1	Decimal point position (1: None, 2: 0.0, 3: 0.00, 4: 0.000)	5665 to 5680	ACCUM data of BRAND code No. 22
2	Unit (0: None, 1: g, 2: kg, 3: t, 4: lb)	5921 to 5936	ACCUM data of BRAND code No. 23
3	Tare weight	6177 to 6192	ACCUM data of BRAND code No. 24
5	Gross weight	6433 to 6448	ACCUM data of BRAND code No. 25

Address	Data name	Address	Data name
7	Net weight	6689 to 6704	ACCUM data of BRAND code No. 26
9	BRAND code No. in use	6945 to 6960	ACCUM data of BRAND code No. 27
10	RECIPE code No. in use	7201 to 7216	ACCUM data of BRAND code No. 28
11	BRAND hopper No. in use	7457 to 7472	ACCUM data of BRAND code No. 29
12	Sequence error No. (Refer to Chapter 13.2.3.)	7713 to 7728	ACCUM data of BRAND code No. 30
13	CAP. EXCEEDED ERROR	7969 to 7984	ACCUM data of BRAND code No. 31
14	ZERO ERROR	8225 to 8240	ACCUM data of BRAND code No. 32
15	ERROR	8481 to 8496	ACCUM data of BRAND code No. 33
16	Not used	8737 to 8752	ACCUM data of BRAND code No. 34
33 to 48	ACCUM data of BRAND code No. 0	8993 to 9008	ACCUM data of BRAND code No. 35
33	ACCUM weight (8 digits)	9249 to 9264	ACCUM data of BRAND code No. 36
35	ACCUM times	9505 to 9520	ACCUM data of BRAND code No. 37
37	ACCUM weight (10 digits in the lower four bytes)	9761 to 9776	ACCUM data of BRAND code No. 38
39	ACCUM weight (10 digits in the upper four bytes)	10017 to 10032	ACCUM data of BRAND code No. 39
289 to 304	ACCUM data of BRAND code No. 1	10273 to 10288	ACCUM data of BRAND code No. 40
545 to 560	ACCUM data of BRAND code No. 2	10529 to 10544	ACCUM data of BRAND code No. 41
801 to 816	ACCUM data of BRAND code No. 3	10785 to 10800	ACCUM data of BRAND code No. 42
1057 to 1072	ACCUM data of BRAND code No. 4	11041 to 11056	ACCUM data of BRAND code No. 43
1313 to 1328	ACCUM data of BRAND code No. 5	11297 to 11312	ACCUM data of BRAND code No. 44
1569 to 1584	ACCUM data of BRAND code No. 6	11553 to 11568	ACCUM data of BRAND code No. 45

Address	Data name	Address	Data name
1825 to 1840	ACCUM data of BRAND code No. 7	11809 to 11824	ACCUM data of BRAND code No. 46
2081 to 2096	ACCUM data of BRAND code No. 8	12065 to 12080	ACCUM data of BRAND code No. 47
2337 to 2352	ACCUM data of BRAND code No. 9	12321 to 12336	ACCUM data of BRAND code No. 48
2593 to 2608	ACCUM data of BRAND code No. 10	12577 to 12592	ACCUM data of BRAND code No. 49
2849 to 2864	ACCUM data of BRAND code No. 11	12833 to 12848	ACCUM data of BRAND code No. 50
3105 to 3120	ACCUM data of BRAND code No. 12	13089 to 13104	ACCUM data of BRAND code No. 51
3361 to 3376	ACCUM data of BRAND code No. 13	13345 to 13360	ACCUM data of BRAND code No. 52
3617 to 3632	ACCUM data of BRAND code No. 14	13601 to 13616	ACCUM data of BRAND code No. 53
3873 to 3888	ACCUM data of BRAND code No. 15	13857 to 13872	ACCUM data of BRAND code No. 54
4129 to 4144	ACCUM data of BRAND code No. 16	14113 to 14128	ACCUM data of BRAND code No. 55
4385 to 4400	ACCUM data of BRAND code No. 17	14369 to 14384	ACCUM data of BRAND code No. 56
4641 to 4656	ACCUM data of BRAND code No. 18	14625 to 14640	ACCUM data of BRAND code No. 57
4897 to 4912	ACCUM data of BRAND code No. 19	14881 to 14896	ACCUM data of BRAND code No. 58
5153 to 5168	ACCUM data of BRAND code No. 20	15137 to 15152	ACCUM data of BRAND code No. 59
5409 to 5424	ACCUM data of BRAND code No. 21	15393 to 15408	ACCUM data of BRAND code No. 60
15649 to 15664	ACCUM data of BRAND code No. 61	28705 to 28720	ACCUM data of RECIPE code No. 12
15905 to 15920	ACCUM data of BRAND code No. 62	28961 to 28976	ACCUM data of RECIPE code No. 13
16161 to 16176	ACCUM data of BRAND code No. 63	29217 to 29232	ACCUM data of RECIPE code No. 14
16417 to 16432	ACCUM data of BRAND code No. 64	29473 to 29488	ACCUM data of RECIPE code No. 15
16673 to 16688	ACCUM data of BRAND code No. 65	29729 to 29744	ACCUM data of RECIPE code No. 16

Address	Data name	Address	Data name
16929 to 16944	ACCUM data of BRAND code No. 66	29985 to 30000	ACCUM data of RECIPE code No. 17
17185 to 17200	ACCUM data of BRAND code No. 67	30241 to 30256	ACCUM data of RECIPE code No. 18
17441 to 17456	ACCUM data of BRAND code No. 68	30497 to 30512	ACCUM data of RECIPE code No. 19
17697 to 17712	ACCUM data of BRAND code No. 69	30753 to 30768	ACCUM data of RECIPE code No. 20
17953 to 17968	ACCUM data of BRAND code No. 70	31009 to 31024	ACCUM data of RECIPE code No. 21
18209 to 18224	ACCUM data of BRAND code No. 71	31265 to 31280	ACCUM data of RECIPE code No. 22
18465 to 18480	ACCUM data of BRAND code No. 72	31521 to 31536	ACCUM data of RECIPE code No. 23
18721 to 18736	ACCUM data of BRAND code No. 73	31777 to 31792	ACCUM data of RECIPE code No. 24
18977 to 18992	ACCUM data of BRAND code No. 74	32033 to 32048	ACCUM data of RECIPE code No. 25
19233 to 19248	ACCUM data of BRAND code No. 75	32289 to 32304	ACCUM data of RECIPE code No. 26
19489 to 19504	ACCUM data of BRAND code No. 76	32545 to 32560	ACCUM data of RECIPE code No. 27
19745 to 19760	ACCUM data of BRAND code No. 77	32801 to 32816	ACCUM data of RECIPE code No. 28
20001 to 20016	ACCUM data of BRAND code No. 78	33057 to 33072	ACCUM data of RECIPE code No. 29
20257 to 20272	ACCUM data of BRAND code No. 79	33313 to 33328	ACCUM data of RECIPE code No. 30
20513 to 20528	ACCUM data of BRAND code No. 80	33569 to 33584	ACCUM data of RECIPE code No. 31
20769 to 20784	ACCUM data of BRAND code No. 81	33825 to 33840	ACCUM data of RECIPE code No. 32
21025 to 21040	ACCUM data of BRAND code No. 82	34081 to 34096	ACCUM data of RECIPE code No. 33
21281 to 21296	ACCUM data of BRAND code No. 83	34337 to 34352	ACCUM data of RECIPE code No. 34
21537 to 21552	ACCUM data of BRAND code No. 84	34593 to 34608	ACCUM data of RECIPE code No. 35
21793 to 21808	ACCUM data of BRAND code No. 85	34849 to 34864	ACCUM data of RECIPE code No. 36

Address	Data name	Address	Data name
22049 to 22064	ACCUM data of BRAND code No. 86	35105 to 35120	ACCUM data of RECIPE code No. 37
22305 to 22320	ACCUM data of BRAND code No. 87	35361 to 35376	ACCUM data of RECIPE code No. 38
22561 to 22576	ACCUM data of BRAND code No. 88	35617 to 35632	ACCUM data of RECIPE code No. 39
22817 to 22832	ACCUM data of BRAND code No. 89	35873 to 35888	ACCUM data of RECIPE code No. 40
23073 to 23088	ACCUM data of BRAND code No. 90	36129 to 36144	ACCUM data of RECIPE code No. 41
23329 to 23344	ACCUM data of BRAND code No. 91	36385 to 36400	ACCUM data of RECIPE code No. 42
23585 to 23600	ACCUM data of BRAND code No. 92	36641 to 36656	ACCUM data of RECIPE code No. 43
23841 to 23856	ACCUM data of BRAND code No. 93	36897 to 36912	ACCUM data of RECIPE code No. 44
24097 to 24112	ACCUM data of BRAND code No. 94	37153 to 37168	ACCUM data of RECIPE code No. 45
24353 to 24368	ACCUM data of BRAND code No. 95	37409 to 37424	ACCUM data of RECIPE code No. 46
24609 to 24624	ACCUM data of BRAND code No. 96	37665 to 37680	ACCUM data of RECIPE code No. 47
24865 to 24880	ACCUM data of BRAND code No. 97	37921 to 37936	ACCUM data of RECIPE code No. 48
25121 to 25136	ACCUM data of BRAND code No. 98	38177 to 38192	ACCUM data of RECIPE code No. 49
25377 to 25392	ACCUM data of BRAND code No. 99	38433 to 38448	ACCUM data of RECIPE code No. 50
25633 to 25648	ACCUM data of RECIPE code No. 0	38689 to 38704	ACCUM data of RECIPE code No. 51
25633	ACCUM weight (8 digits)	38945 to 38960	ACCUM data of RECIPE code No. 52
25635	ACCUM times	39201 to 39216	ACCUM data of RECIPE code No. 53
25637	ACCUM weight (10 digits in the lower four bytes)	39457 to 39472	ACCUM data of RECIPE code No. 54
25639	ACCUM weight (10 digits in the upper four bytes)	39713 to 39728	ACCUM data of RECIPE code No. 55
25889 to 25904	ACCUM data of RECIPE code No. 1	39969 to 39984	ACCUM data of RECIPE code No. 56

Address	Data name	Address	Data name
26145 to 26160	ACCUM data of RECIPE code No. 2	40225 to 40240	ACCUM data of RECIPE code No. 57
26401 to 26416	ACCUM data of RECIPE code No. 3	40481 to 40496	ACCUM data of RECIPE code No. 58
26657 to 26672	ACCUM data of RECIPE code No. 4	40737 to 40752	ACCUM data of RECIPE code No. 59
26913 to 26928	ACCUM data of RECIPE code No. 5	40993 to 41008	ACCUM data of RECIPE code No. 60
27169 to 27184	ACCUM data of RECIPE code No. 6	41249 to 41264	ACCUM data of RECIPE code No. 61
27425 to 27440	ACCUM data of RECIPE code No. 7	41505 to 41520	ACCUM data of RECIPE code No. 62
27681 to 27696	ACCUM data of RECIPE code No. 8	41761 to 41776	ACCUM data of RECIPE code No. 63
27937 to 27952	ACCUM data of RECIPE code No. 9	42017 to 42032	ACCUM data of RECIPE code No. 64
28193 to 28208	ACCUM data of RECIPE code No. 10	42273 to 42288	ACCUM data of RECIPE code No. 65
28449 to 28464	ACCUM data of RECIPE code No. 11	42529 to 42544	ACCUM data of RECIPE code No. 66
42785 to 42800	ACCUM data of RECIPE code No. 67	47137 to 47152	ACCUM data of RECIPE code No. 84
43041 to 43056	ACCUM data of RECIPE code No. 68	47393 to 47408	ACCUM data of RECIPE code No. 85
43297 to 43312	ACCUM data of RECIPE code No. 69	47649 to 47664	ACCUM data of RECIPE code No. 86
43553 to 43568	ACCUM data of RECIPE code No. 70	47905 to 47920	ACCUM data of RECIPE code No. 87
43809 to 43824	ACCUM data of RECIPE code No. 71	48161 to 48176	ACCUM data of RECIPE code No. 88
44065 to 44080	ACCUM data of RECIPE code No. 72	48417 to 48432	ACCUM data of RECIPE code No. 89
44321 to 44336	ACCUM data of RECIPE code No. 73	48673 to 48688	ACCUM data of RECIPE code No. 90
44577 to 44592	ACCUM data of RECIPE code No. 74	48929 to 48944	ACCUM data of RECIPE code No. 91
44833 to 44848	ACCUM data of RECIPE code No. 75	49185 to 49200	ACCUM data of RECIPE code No. 92
45089 to 45104	ACCUM data of RECIPE code No. 76	49441 to 49456	ACCUM data of RECIPE code No. 93

Address	Data name	Address	Data name
45345 to 45360	ACCUM data of RECIPE code No. 77	49697 to 49712	ACCUM data of RECIPE code No. 94
45601 to 45616	ACCUM data of RECIPE code No. 78	49953 to 49968	ACCUM data of RECIPE code No. 95
45857 to 45872	ACCUM data of RECIPE code No. 79	50209 to 50224	ACCUM data of RECIPE code No. 96
46113 to 46128	ACCUM data of RECIPE code No. 80	50465 to 50480	ACCUM data of RECIPE code No. 97
46369 to 46384	ACCUM data of RECIPE code No. 81	50721 to 50736	ACCUM data of RECIPE code No. 98
46625 to 46640	ACCUM data of RECIPE code No. 82	50977 to 50992	ACCUM data of RECIPE code No. 99
46881 to 46896	ACCUM data of RECIPE code No. 83		

Holding register (Word read/write Reference No. 4)

Address	Data name	Address	Data name
0	MEASUREMENT data of BRAND code No. 0	2817 to 2864	MEASUREMENT data of BRAND code No. 11
1	1st/2nd character of BRAND name (ASCII code)	3073 to 3120	MEASUREMENT data of BRAND code No. 12
2	3rd/4th character of BRAND name	3329 to 3376	MEASUREMENT data of BRAND code No. 13
3	5th/6th character of BRAND name	3585 to 3632	MEASUREMENT data of BRAND code No. 14
4	7th/8th character of BRAND name	3841 to 3888	MEASUREMENT data of BRAND code No. 15
5	9th/10th character of BRAND name	4097 to 4144	MEASUREMENT data of BRAND code No. 16
6	11th/12th character of BRAND name	4353 to 4400	MEASUREMENT data of BRAND code No. 17
7	13th/14th character of BRAND name	4609 to 4656	MEASUREMENT data of BRAND code No. 18
8	15th character of BRAND name	4865 to 4912	MEASUREMENT data of BRAND code No. 19
9	BRAND hopper	5121 to 5168	MEASUREMENT data of BRAND code No. 20
11	FINAL	5377 to 5424	MEASUREMENT data of BRAND code No. 21
13	FREE FALL	5633 to 5680	MEASUREMENT data of BRAND code No. 22

Address	Data name	Address	Data name
15	PRELIM1	5889 to 5936	MEASUREMENT data of BRAND code No. 23
17	PRELIM2	6145 to 6192	MEASUREMENT data of BRAND code No. 24
19	OVER	6401 to 6448	MEASUREMENT data of BRAND code No. 25
21	UNDER	6657 to 6704	MEASUREMENT data of BRAND code No. 26
23	ZERO BAND	6913 to 6960	MEASUREMENT data of BRAND code No. 27
25	FULL	7169 to 7216	MEASUREMENT data of BRAND code No. 28
27	TARE	7425 to 7472	MEASUREMENT data of BRAND code No. 29
29	SUPPLEMENTARY FLOW TIME	7681 to 7728	MEASUREMENT data of BRAND code No. 30
31	JUDGE. AFTER S-FLOW WAIT	7937 to 7984	MEASUREMENT data of BRAND code No. 31
33	A. F.F. COMPENSATION	8193 to 8240	MEASUREMENT data of BRAND code No. 32
35	INITIAL DRIBBLE FLOW	8449 to 8496	MEASUREMENT data of BRAND code No. 33
37	INITIAL MEDIUM FLOW	8705 to 8752	MEASUREMENT data of BRAND code No. 34
257 to 304	MEASUREMENT data of BRAND code No. 1	8961 to 9008	MEASUREMENT data of BRAND code No. 35
513 to 560	MEASUREMENT data of BRAND code No. 2	9217 to 9264	MEASUREMENT data of BRAND code No. 36
769 to 816	MEASUREMENT data of BRAND code No. 3	9473 to 9520	MEASUREMENT data of BRAND code No. 37
1025 to 1072	MEASUREMENT data of BRAND code No. 4	9729 to 9776	MEASUREMENT data of BRAND code No. 38
1281 to 1328	MEASUREMENT data of BRAND code No. 5	9985 to 10032	MEASUREMENT data of BRAND code No. 39
1537 to 1584	MEASUREMENT data of BRAND code No. 6	10241 to 10288	MEASUREMENT data of BRAND code No. 40
1793 to 1840	MEASUREMENT data of BRAND code No. 7	10497 to 10544	MEASUREMENT data of BRAND code No. 41
2049 to 2096	MEASUREMENT data of BRAND code No. 8	10753 to 10800	MEASUREMENT data of BRAND code No. 42

Address	Data name	Address	Data name
2305 to 2352	MEASUREMENT data of BRAND code No. 9	11009 to 11056	MEASUREMENT data of BRAND code No. 43
2561 to 2608	MEASUREMENT data of BRAND code No. 10	11265 to 11312	MEASUREMENT data of BRAND code No. 44
11521 to 11568	MEASUREMENT data of BRAND code No. 45	25345 to 25392	MEASUREMENT data of BRAND code No. 99
11777 to 11824	MEASUREMENT data of BRAND code No. 46	25601 to 25632	MEASUREMENT data of RECIPE code No. 0
12033 to 12080	MEASUREMENT data of BRAND code No. 47	25601	1st/2nd character of RECIPE name (ASCII code)
12289 to 12336	MEASUREMENT data of BRAND code No. 48	25602	3rd/4th character of RECIPE name
12545 to 12592	MEASUREMENT data of BRAND code No. 49	25603	5th/6th character of RECIPE name
12801 to 12848	MEASUREMENT data of BRAND code No. 50	25604	7th/8th character of RECIPE name
13057 to 13104	MEASUREMENT data of BRAND code No. 51	25605	9th/10th character of RECIPE name
13313 to 13360	MEASUREMENT data of BRAND code No. 52	25606	11th/12th character of RECIPE name
13569 to 13616	MEASUREMENT data of BRAND code No. 53	25607	13th/14th character of RECIPE name
13825 to 13872	MEASUREMENT data of BRAND code No. 54	25608	15th character of RECIPE name
14081 to 14128	MEASUREMENT data of BRAND code No. 55	25609	1st BRAND code
14337 to 14384	MEASUREMENT data of BRAND code No. 56	25610	2nd BRAND code
14593 to 14640	MEASUREMENT data of BRAND code No. 57	25611	3rd BRAND code
14849 to 14896	MEASUREMENT data of BRAND code No. 58	25612	4th BRAND code
15105 to 15152	MEASUREMENT data of BRAND code No. 59	25613	5th BRAND code
15361 to 15408	MEASUREMENT data of BRAND code No. 60	25614	6th BRAND code
15617 to 15632	MEASUREMENT data of BRAND code No. 61	25615	7th BRAND code
15873 to 15920	MEASUREMENT data of BRAND code No. 62	25616	8th BRAND code

Address	Data name	Address	Data name
16129 to 16176	MEASUREMENT data of BRAND code No. 63	25617	9th BRAND code
16385 to 16432	MEASUREMENT data of BRAND code No. 64	25618	10th BRAND code
16641 to 16688	MEASUREMENT data of BRAND code No. 65	25857 to 25888	MEASUREMENT data of RECIPE code No. 1
16897 to 16944	MEASUREMENT data of BRAND code No. 66	26113 to 26144	MEASUREMENT data of RECIPE code No. 2
17153 to 17200	MEASUREMENT data of BRAND code No. 67	26369 to 26400	MEASUREMENT data of RECIPE code No. 3
17409 to 17456	MEASUREMENT data of BRAND code No. 68	26625 to 26656	MEASUREMENT data of RECIPE code No. 4
17665 to 17712	MEASUREMENT data of BRAND code No. 69	26881 to 26912	MEASUREMENT data of RECIPE code No. 5
17921 to 17968	MEASUREMENT data of BRAND code No. 70	27137 to 27168	MEASUREMENT data of RECIPE code No. 6
18177 to 18192	MEASUREMENT data of BRAND code No. 71	27393 to 27424	MEASUREMENT data of RECIPE code No. 7
18433 to 18480	MEASUREMENT data of BRAND code No. 72	27649 to 27680	MEASUREMENT data of RECIPE code No. 8
18689 to 18736	MEASUREMENT data of BRAND code No. 73	27905 to 27936	MEASUREMENT data of RECIPE code No. 9
18945 to 18992	MEASUREMENT data of BRAND code No. 74	28161 to 28192	MEASUREMENT data of RECIPE code No. 10
19201 to 19248	MEASUREMENT data of BRAND code No. 75	28417 to 28448	MEASUREMENT data of RECIPE code No. 11
19457 to 19504	MEASUREMENT data of BRAND code No. 76	28673 to 28704	MEASUREMENT data of RECIPE code No. 12
19713 to 19760	MEASUREMENT data of BRAND code No. 77	28929 to 28960	MEASUREMENT data of RECIPE code No. 13
19969 to 20016	MEASUREMENT data of BRAND code No. 78	29185 to 29216	MEASUREMENT data of RECIPE code No. 14
20225 to 20272	MEASUREMENT data of BRAND code No. 79	29441 to 29472	MEASUREMENT data of RECIPE code No. 15
20481 to 20528	MEASUREMENT data of BRAND code No. 80	29697 to 29728	MEASUREMENT data of RECIPE code No. 16
20737 to 20752	MEASUREMENT data of BRAND code No. 81	29953 to 29984	MEASUREMENT data of RECIPE code No. 17
20993 to 21040	MEASUREMENT data of BRAND code No. 82	30209 to 30224	MEASUREMENT data of RECIPE code No. 18

Address	Data name	Address	Data name
21249 to 21296	MEASUREMENT data of BRAND code No. 83	30465 to 30496	MEASUREMENT data of RECIPE code No. 19
21505 to 21552	MEASUREMENT data of BRAND code No. 84	30721 to 30752	MEASUREMENT data of RECIPE code No. 20
21761 to 21808	MEASUREMENT data of BRAND code No. 85	30977 to 31008	MEASUREMENT data of RECIPE code No. 21
22017 to 22064	MEASUREMENT data of BRAND code No. 86	31233 to 31264	MEASUREMENT data of RECIPE code No. 22
22273 to 22320	MEASUREMENT data of BRAND code No. 87	31489 to 31520	MEASUREMENT data of RECIPE code No. 23
22529 to 22576	MEASUREMENT data of BRAND code No. 88	31745 to 31776	MEASUREMENT data of RECIPE code No. 24
22785 to 22832	MEASUREMENT data of BRAND code No. 89	32001 to 32032	MEASUREMENT data of RECIPE code No. 25
23041 to 23088	MEASUREMENT data of BRAND code No. 90	32257 to 32288	MEASUREMENT data of RECIPE code No. 26
23297 to 23312	MEASUREMENT data of BRAND code No. 91	32513 to 32544	MEASUREMENT data of RECIPE code No. 27
23553 to 23600	MEASUREMENT data of BRAND code No. 92	32769 to 32800	MEASUREMENT data of RECIPE code No. 28
23809 to 23856	MEASUREMENT data of BRAND code No. 93	33025 to 33056	MEASUREMENT data of RECIPE code No. 29
24065 to 24112	MEASUREMENT data of BRAND code No. 94	33281 to 33312	MEASUREMENT data of RECIPE code No. 30
24321 to 24368	MEASUREMENT data of BRAND code No. 95	33537 to 33568	MEASUREMENT data of RECIPE code No. 31
24577 to 24624	MEASUREMENT data of BRAND code No. 96	33793 to 33824	MEASUREMENT data of RECIPE code No. 32
24833 to 24880	MEASUREMENT data of BRAND code No. 97	34049 to 34080	MEASUREMENT data of RECIPE code No. 33
25089 to 25136	MEASUREMENT data of BRAND code No. 98	34305 to 34336	MEASUREMENT data of RECIPE code No. 34
34561 to 34592	MEASUREMENT data of RECIPE code No. 35	43265 to 43296	MEASUREMENT data of RECIPE code No. 69
34817 to 34848	MEASUREMENT data of RECIPE code No. 36	43521 to 43552	MEASUREMENT data of RECIPE code No. 70
35073 to 35104	MEASUREMENT data of RECIPE code No. 37	43777 to 43808	MEASUREMENT data of RECIPE code No. 71
35329 to 35360	MEASUREMENT data of RECIPE code No. 38	44033 to 44064	MEASUREMENT data of RECIPE code No. 72

Address	Data name	Address	Data name
35585 to 35616	MEASUREMENT data of RECIPE code No. 39	44289 to 44320	MEASUREMENT data of RECIPE code No. 73
35841 to 35872	MEASUREMENT data of RECIPE code No. 40	44545 to 44576	MEASUREMENT data of RECIPE code No. 74
36097 to 36128	MEASUREMENT data of RECIPE code No. 41	44801 to 44832	MEASUREMENT data of RECIPE code No. 75
36353 to 36384	MEASUREMENT data of RECIPE code No. 42	45057 to 45088	MEASUREMENT data of RECIPE code No. 76
36609 to 36640	MEASUREMENT data of RECIPE code No. 43	45313 to 45344	MEASUREMENT data of RECIPE code No. 77
36865 to 36896	MEASUREMENT data of RECIPE code No. 44	45569 to 45600	MEASUREMENT data of RECIPE code No. 78
37121 to 37152	MEASUREMENT data of RECIPE code No. 45	45825 to 45856	MEASUREMENT data of RECIPE code No. 79
37377 to 37408	MEASUREMENT data of RECIPE code No. 46	46081 to 46112	MEASUREMENT data of RECIPE code No. 80
37633 to 37664	MEASUREMENT data of RECIPE code No. 47	46337 to 46368	MEASUREMENT data of RECIPE code No. 81
37889 to 37920	MEASUREMENT data of RECIPE code No. 48	46593 to 46624	MEASUREMENT data of RECIPE code No. 82
38145 to 38176	MEASUREMENT data of RECIPE code No. 49	46849 to 46880	MEASUREMENT data of RECIPE code No. 83
38401 to 38432	MEASUREMENT data of RECIPE code No. 50	47105 to 47136	MEASUREMENT data of RECIPE code No. 84
38657 to 38688	MEASUREMENT data of RECIPE code No. 51	47361 to 47392	MEASUREMENT data of RECIPE code No. 85
38913 to 38944	MEASUREMENT data of RECIPE code No. 52	47617 to 47648	MEASUREMENT data of RECIPE code No. 86
39169 to 39200	MEASUREMENT data of RECIPE code No. 53	47873 to 47904	MEASUREMENT data of RECIPE code No. 87
39425 to 39456	MEASUREMENT data of RECIPE code No. 54	48129 to 48106	MEASUREMENT data of RECIPE code No. 88
39681 to 39712	MEASUREMENT data of RECIPE code No. 55	48385 to 48416	MEASUREMENT data of RECIPE code No. 89
39937 to 39968	MEASUREMENT data of RECIPE code No. 56	48641 to 48672	MEASUREMENT data of RECIPE code No. 90
40193 to 40224	MEASUREMENT data of RECIPE code No. 57	48897 to 48928	MEASUREMENT data of RECIPE code No. 91
40449 to 40480	MEASUREMENT data of RECIPE code No. 58	49153 to 49184	MEASUREMENT data of RECIPE code No. 92

Address	Data name	Address	Data name
40705 to 40736	MEASUREMENT data of RECIPE code No. 59	49409 to 49440	MEASUREMENT data of RECIPE code No. 93
40961 to 40992	MEASUREMENT data of RECIPE code No. 60	49665 to 49696	MEASUREMENT data of RECIPE code No. 94
41217 to 41248	MEASUREMENT data of RECIPE code No. 61	49921 to 49952	MEASUREMENT data of RECIPE code No. 95
41473 to 41504	MEASUREMENT data of RECIPE code No. 62	50177 to 50208	MEASUREMENT data of RECIPE code No. 96
41729 to 41760	MEASUREMENT data of RECIPE code No. 63	50433 to 50464	MEASUREMENT data of RECIPE code No. 97
41985 to 42016	MEASUREMENT data of RECIPE code No. 64	50689 to 50720	MEASUREMENT data of RECIPE code No. 98
42241 to 42272	MEASUREMENT data of RECIPE code No. 65	50945 to 50976	MEASUREMENT data of RECIPE code No. 99
42497 to 42528	MEASUREMENT data of RECIPE code No. 66	53249	BRAND code read
42753 to 42784	MEASUREMENT data of RECIPE code No. 67	53250	RECIPE code read
43009 to 43040	MEASUREMENT data of RECIPE code No. 68		

Basic function setting

Address	Data name	Setting
57345	DISP. REFRESH RATE	1: [4 TIMES/s], 2: [20 TIMES/s]
57347	A/D SAMPLING RATE	1: [10 TIMES/s], 2: [20 TIMES/s], 3: [50 TIMES/s], 4: [100 TIMES/s], 5: [200 TIMES/s], 6: [1,000 TIMES/s]
57349	ANALOG FILTER	1: [2 Hz], 2: [4 Hz], 3: [6 Hz], 4: [8 Hz], 5: [10 Hz], 6: [100 Hz]
57351	DIGITAL FILTER	1 to 256
57353	STABILIZATION FILTER	1 to 256
57355	STAB. FILTER TIME	0.0 s to 9.9 s
57357	STAB. FILTER BAND	0 to 99.9
57359	STAB. DETECTION TIME	0.0 s to 9.9 s
57361	STAB. DETECTION BAND	0 to 99.9
57363	OPERATION OF ZERO	1: [IN STABLE MODE], 2: [ANY TIME]
57365	RANGE OF ZERO	0% to 30%
57367	ZERO TRACKING TARGET	1: [GROSS/NET], 2: [GROSS]
57369	ZERO TRACKING TIME	0.0 s to 9.9 s
57371	ZERO TRACKING BAND	0.0 D to 9.9 D

Address	Data name	Setting
57373	OPERATION OF TARE	1: [IN STABLE MODE], 2: [ANY TIME]
57375	RANGE OF TARE	1: [0 < LOAD ≤ WEIGHING CAPACITY], 2: [LOAD ≤ WEIGHING CAPACITY]
57377	OPERATION OF PRE. TARE	1: [VALID], 2: [INHIBIT], 3: [NET WEIGHT OFFSET OP.]
57379	PRESET TARE=0 CHOICE	1: [THE LAST TARE IS USED], 2: [TARE CLEAR]
57381	ZERO AT POWER ON	1: [VALID], 2:[INHIBIT]
57383	ZERO CLR. AT POWER ON	1: [VALID], 2:[INHIBIT]
57385	TARE AT POWER ON	1: [VALID], 2:[INHIBIT]
57387	TARE CLR. AT POWER ON	1: [VALID], 2:[INHIBIT]
57389	HOLD OPERATION	1: [SYNC. WITHHOLD], 2: [SYNC. WITH INFLOW FIN.], 3: [SYNC. WITH RECIPE FIN.]
57391	ACCUM. COMMAND	1: [IN STABLE MODE], 2: [ANY TIME]
57393	PRINT COMMAND	1: [IN STABLE MODE], 2: [ANY TIME]
57395	GRAPH TRIGGER SETTING	1: [SINGLE], 2: [START+LEVEL↑], 3: [START+LEVEL↑↓], 4: [LEVEL↑], 5: [LEVEL↑↓], 6: [INFLOW START LINKED], 7: [RECIPE START LINKED]
57397	GRAPHIC TRIGGER LEVEL	-999,999 to 999,999
57399	SCREEN SELECTION	1: [STANDARD], 2: [STANDARD/SIMPLE]
57401	STABILITY OPERATION	1: [ANY TIME], 2: [WEIGHING SCREEN ONLY]
57403	"JIS B 7611-2: 2009" SET *Writing inhibited	1: [VALID], 2:[INHIBIT]
57405	COMPARATIVE RESULT HOLD	1: [VALID], 2:[INHIBIT]
57407	S-I/F HOLD	1: [VALID], 2:[INHIBIT]
57409	CC-Link HOLD	1: [VALID], 2:[INHIBIT]
57411	LOAD DISPLAY VALUE HOLD	1: [VALID], 2:[INHIBIT]
57413	NET WEIGHT SIGN INVERSE	1: [VALID], 2:[INHIBIT]
57415		

I/O setting

Address	Data name	Setting
57601		
57603	F1 key function	1: [OFF], 2: [PRINT], 3: [ZERO CLEAR], 4: [TARE CLEAR], 5: [INFLOW START], 6: [RECIPE START], 7: [DISCHARGE START], 8: [MIXING START], 9: [PAUSE], 10: [RESTART], 11: [FORCED INFLOW FINISH], 12: [FORCED RECIPE FINISH], 13: [FORCED DISCH. FINISH], 14: [ACCUM. COMMAND], 15: [CANCEL THE ACCUM.], 16: [M. F. F. COMPENSATION], 17: [ERROR RESET], 18: [CLR ACM. OF BRAND], 19: [CLR ACM. OF RECIPE], 20: [CLR ACM. OF ALL BRAND] 21: [CLR ACM. OF ALL RECIPE], 22: [HOLD]

Address	Data name	Setting
57605	F2 key function	
57607	F3 key function	
57609	F4 key function	
57611		
57613		
57615		
57617		
57619		
57621	I/O INPUT1	1:[OFF], 2: [GROSS/NET], 3: [ZERO], 4: [ZERO CLEAR], 5: [TARE], 6: [TARE CLEAR], 7: [INFLOW START], 8: [RECIPE START], 9: [DISCHARGE START], 10: [MIXING START], 11: [INFLOW/DISCHARGE], 12: [M. F. F. COMPENSATION], 13: [ACCUM. COMMAND], 14: [FOMER ACM. DATA CLR.], 15: [CODE NO. 1], 16: [CODE NO. 2], 17: [CODE NO. 4], 18: [CODE NO. 8], 19: [CODE NO. 10], 20: [CODE NO. 20], 21: [CODE NO. 40], 22: [CODE NO. 80], 23: [PAUSE], 24: [RESTART], 25: [CLR ACM. OF BRAND], 26: [CLR ACM. OF ALL BRAND], 27: [CLR ACM. OF RECIPE], 28:[CLR ACM. OF ALL RECIPE], 29: [SAFETY INPUT1], 30: [SAFETY INPUT2], 31: [SAFETY-INPUT3], 32: [SAFETY INPUT4], 33: [SAFETYINPUT5], 34: [SAFETY INPUT6], 35: [SAFETYINPUT7], 36: [SAFETY INPUT8], 37: [FORCED INFLOW FINISH], 38: [FORCED RECIPE FINISH], 39: [FORCED DISCH. FINISH], 40: [MANUAL FULL FLOW], 41: [MANUAL MEDIUM FLOW], 42: [MANUAL DRIBBLE FLOW], 43: [MANUAL DISCHARGE] 44: [MANUAL MIXING], 45: [ERROR RESET], 46: [PRINT COMMAND], 47: [HOLD], 48: [IN. FOR SIMILAR OUT.]
57623	I/O INPUT2	
57625	I/O INPUT3	
57627	I/O INPUT4	
57629	I/O INPUT5	
57631	I/O INPUT6	
57633	I/O INPUT7	
57635	I/O INPUT8	
57637	I/O INPUT9	
57639	I/O INPUT10	
57641	I/O INPUT11	
57643		
57645		
57647		
57649		
57651		

Address	Data name	Setting
57653		
57655		
57657		
57659		
57661	I/O OUTPUT1	1: [OFF], 2: [STABLE], 3: [ZERO BAND], 4: [FULL], 5: [F. FLOW], 6: [M. FLOW], 7: [D. FLOW], 8: [OVER], 9: [OK], 10: [UNDER], 11: [MIXING], 12: [DISCHARGE (GATE OPEN)], 13: [INFLOW FINISH], 14: [RECIPE FINISH] 15: [DISCHARGE FINISH], 16: [MIXING FINISH], 17: [NOZZLE DOWN (INSERT)] 18: [MEAS.], 19: [WEIGHING SEQ. ERROR], 20: [CAP. EXCEEDED ERROR] 21: [ERROR], 22: [DURING TARE], 23: [CENTER OF ZERO], 24: [GROSS DISPLAY], 25: [NET DISPLAY], 26: [DURING HOLD], 27: [HOPPER1], 28: [HOPPER2], 29: [HOPPER3], 30: [HOPPER4], 31: [HOPPER5], 32: [HOPPER6], 33: [HOPPER7], 34: [HOPPER8], 35: [HOPPER9], 36: [HOPPER10], 37: [HOPPER11], 38:[HOPPER12], 39: [HOPPER13], 40: [HOPPER14], 41: [HOPPER15], 42: [HOPPER16], 43: [HOPPER17], 44:[HOPPER18], 45: [HOPPER19], 46: [HOPPER20], 47: [HOPPER1 FULL FLOW], 48: [HOPPER1 MEDIUM FLOW], 49: [HOPPER1 DRIBBLE FLOW], 50: [HOPPER2 FULL FLOW], 51: [HOPPER2 MEDIUM FLOW], 52: [HOPPER2 DRIBBLE FLOW], 53: [HOPPER3 FULL FLOW], 54: [HOPPER3 MEDIUM FLOW], 55: [HOPPER3 DRIBBLE FLOW], 56: [HOPPER4 FULL FLOW], 57: [HOPPER4 MEDIUM FLOW], 58: [HOPPER4 DRIBBLE FLOW], 59: [HOPPER5 FULL FLOW], 60: [HOPPER5 MEDIUM FLOW], 61: [HOPPER5 DRIBBLE FLOW], 62: [HOPPER6 FULL FLOW], 63: [HOPPER6 MEDIUM FLOW], 64: [HOPPER6 DRIBBLE FLOW],
57663	I/O OUTPUT2	
57665	I/O OUTPUT3	
57667	I/O OUTPUT4	
57669	I/O OUTPUT5	
57671	I/O OUTPUT6	
57673	I/O OUTPUT7	
57675	I/O OUTPUT8	
57677	I/O OUTPUT9	
57679	I/O OUTPUT10	
57681	I/O OUTPUT11	
57683		
57685		
57687		
57689		
57691		

Address	Data name	Setting
57693		
57695		
57697		
57699		
57701	ZERO KEYLOCK	1: [VALID], 2: [INHIBIT]
57703	GROSS/NET KEYLOCK	1: [VALID], 2: [INHIBIT]
57705	TARE KEY LOCK	1: [VALID], 2: [INHIBIT]
57707	BRAND CODE KEYLOCK	1: [VALID], 2: [INHIBIT]
57709	F-KEYLOCK	1: [VALID], 2: [INHIBIT]
57711	MENU KEYLOCK	1: [VALID], 2: [INHIBIT]
57713	CALIBRATION KEY LOCK	1: [VALID], 2: [INHIBIT]
57715		
57717		
57719		
57721	I/O OUTPUT LOGIC 1 to 7	1: [NEGATIVE LOGIC], 2: [POSITIVE LOGIC] 10^0 digits: OUTPUT1 operation 10^1 digits: OUTPUT2 operation 10^2 digits: OUTPUT3 operation 10^3 digits: OUTPUT4 operation 10^4 digits: OUTPUT5 operation 10^5 digits: OUTPUT6 operation 10^6 digits: OUTPUT7 operation
57723	I/O OUTPUT LOGIC 8 to 11	1: [NEGATIVE LOGIC], 2: [POSITIVE LOGIC] 10^0 digits: OUTPUT8 operation 10^1 digits: OUTPUT9 operation 10^2 digits: OUTPUT10 operation 10^3 digits: OUTPUT11 operation
57725		
57727		
57729		
57731		
57733		
57735		
57737		
57739		
57741		
57743		

Weighing operation setting

Address	Data name	Setting
57857	WEIGHING MODE	1: [SIMPLE COMPARATIVE], 2: [SEQUENTIAL MODE], 3: [4 STEP COMPARATOR]
57859	CONTROL MODE	1: [INFLOW MODE], 2: [DISCHARGE MODE], 3: [EXTERNAL]
57861	COMPARISION	1: [ANY TIME], 2: [IN STABLE MODE], 3: [AT INFLOW FINISH], 4: [HOLD AT INFLOW FINISH]
57863	COMP. OF ZERO BAND	1: [GROSS], 2: [NET], 3: [COMPARISION OFF], 4: [|GROSS|], 5: [|NET|]
57865	FULL COMPARISON	1: [GROSS], 2: [NET], 3: [COMPARISION OFF], 4: [|GROSS|], 5: [|NET|]
57867	RECIPEMODE	1: [INHIBIT], 2: [SEMI-AUTO. RECIPEMODE], 3: [AUTO. RECIPEMODE]
57869	SAVE THE A. F. F.	1: [NO MEMORIZE], 2: [MEMORIZE]
57871		
57873		
57875		
57877	INFLOW SAFETY CHECK: SAFETY CHECK1	1: [ON], 2: [OFF]
57879	INFLOW SAFETY CHECK: SAFETY CHECK2	1: [ON], 2: [OFF]
57881	INFLOW SAFETY CHECK: SAFETY CHECK3	1: [ON], 2: [OFF]
57883	INFLOW SAFETY CHECK: SAFETY CHECK4	1: [ON], 2: [OFF]
57885	INFLOW SAFETY CHECK: SAFETY CHECK5	1: [ON], 2: [OFF]
57887	INFLOW SAFETY CHECK: SAFETY CHECK6	1: [ON], 2: [OFF]
57889	INFLOW SAFETY CHECK: SAFETY CHECK7	1: [ON], 2: [OFF]
57891	INFLOW SAFETY CHECK: SAFETY CHECK8	1: [ON], 2: [OFF]
57893		
57895		
57897	DISCH. SAFETY CHECK: SAFETY CHECK1	1: [ON], 2: [OFF]
57899	DISCH. SAFETY CHECK: SAFETY CHECK2	1: [ON], 2: [OFF]
57901	DISCH. SAFETY CHECK: SAFETY CHECK3	1: [ON], 2: [OFF]

Address	Data name	Setting
57903	DISCH. SAFETY CHECK: SAFETY CHECK4	1: [ON], 2: [OFF]
57905	DISCH. SAFETY CHECK: SAFETY CHECK5	1: [ON], 2: [OFF]
57907	DISCH. SAFETY CHECK: SAFETY CHECK6	1: [ON], 2: [OFF]
57909	DISCH. SAFETY CHECK: SAFETY CHECK7	1: [ON], 2: [OFF]
57911	DISCH. SAFETY CHECK: SAFETY CHECK8	1: [ON], 2: [OFF]
57913		
57915		
57917	RECIPE SAFETY CHECK: SAFETY CHECK1	1: [ON], 2: [OFF]
57919	RECIPE SAFETY CHECK: SAFETY CHECK2	1: [ON], 2: [OFF]
57921	RECIPE SAFETY CHECK: SAFETY CHECK3	1: [ON], 2: [OFF]
57923	RECIPE SAFETY CHECK: SAFETY CHECK4	1: [ON], 2: [OFF]
57925	RECIPE SAFETY CHECK: SAFETY CHECK5	1: [ON], 2: [OFF]
57927	RECIPE SAFETY CHECK: SAFETY CHECK6	1: [ON], 2: [OFF]
57929	RECIPE SAFETY CHECK: SAFETY CHECK7	1: [ON], 2: [OFF]
57931	RECIPE SAFETY CHECK: SAFETY CHECK8	1: [ON], 2: [OFF]
57933		
57935		
57937	MIXING SAFETY CHECK: SAFETY CHECK1	1: [ON], 2: [OFF]
57939	MIXING SAFETY CHECK: SAFETY CHECK2	1: [ON], 2: [OFF]
57941	MIXING SAFETY CHECK: SAFETY CHECK3	1: [ON], 2: [OFF]
57943	MIXING SAFETY CHECK: SAFETY CHECK4	1: [ON], 2: [OFF]
57945	MIXING SAFETY CHECK: SAFETY CHECK5	1: [ON], 2: [OFF]

Address	Data name	Setting
57947	MIXING SAFETY CHECK: SAFETY CHECK6	1: [ON], 2: [OFF]
57949	MIXING SAFETY CHECK: SAFETY CHECK7	1: [ON], 2: [OFF]
57951	MIXING SAFETY CHECK: SAFETY CHECK8	1: [ON], 2: [OFF]
57953		
57955		
57957	GENERAL SAFETY CHECK: SAFETY CHECK1	1: [ON], 2: [OFF]
57959	GENERAL SAFETY CHECK: SAFETY CHECK2	1: [ON], 2: [OFF]
57961	GENERAL SAFETY CHECK: SAFETY CHECK3	1: [ON], 2: [OFF]
57963	GENERAL SAFETY CHECK: SAFETY CHECK4	1: [ON], 2: [OFF]
57965	GENERAL SAFETY CHECK: SAFETY CHECK5	1: [ON], 2: [OFF]
57967	GENERAL SAFETY CHECK: SAFETY CHECK6	1: [ON], 2: [OFF]
57969	GENERAL SAFETY CHECK: SAFETY CHECK7	1: [ON], 2: [OFF]
57971	GENERAL SAFETY CHECK: SAFETY CHECK8	1: [ON], 2: [OFF]
57973		
57975		
57977	AUTOMATIC ACCUM.	1: [OFF], 2: [SYNC. WITH FINISH], 3: [AUTO ACCUM. AT STABLE]
57979	CONDITION OF AUTO ACM.	1: [OK], 2: [NO CONDITION]
57981	AUTO RECIPE CODE ACM.	1: [VALID], 2: [INHIBIT]
57983	AUTOMATIC PRINT	1: [VALID], 2: [INHIBIT]
57985		

Sequence control setting

Address	Data name	Setting
58113	Signal operation of INFLOW start: START ABOVE ZERO BAND	1: [VALID], 2: [INHIBIT]
58115	Signal operation of INFLOW start: AUTOMATIC TARE	1: [VALID], 2: [INHIBIT]

Address	Data name	Setting
58117	NOZZLE OPERATION: NOZZLE CONTROL	1: [VALID], 2: [INHIBIT]
58119	NOZZLE OPERATION: CONTACT STOP SEQUENCE	1: [VALID], 2: [INHIBIT]
58121	NOZZLE OPERATION: UP AFTER COMPENSATION	1: [VALID], 2: [INHIBIT]
58123	JUDGE CONDITION	1: [TIMER IS UP], 2: [STAB. AND TIMER IS UP], 3: [STAB. OR TIMER IS UP]
58125	INFLOW FINISH ACTIONS: RECI-PE START	1: [VALID], 2: [INHIBIT]
58127	INFLOW FINISH ACTIONS: DISCHARGE START	1: [VALID], 2: [INHIBIT]
58129	DISCH. FINISH ACTIONS: TARE CLEAR	1: [VALID], 2: [INHIBIT]
58131	DISCH. FINISH ACTIONS: MI-XING START	1: [VALID], 2: [INHIBIT]
58133	RECIPE START ACTIONS: AUTO-MATIC ZERO START	1: [VALID], 2 :[INHIBIT]
58135	RECIPE FINISH ACTIONS: TARE CLEAR	1: [VALID], 2: [INHIBIT]
58137	RECIPE FINISH ACTIONS: MI-XING START	1: [VALID], 2: [INHIBIT]
58139	RECIPE FINISH ACTIONS: DISCHARGE START	1: [VALID], 2: [INHIBIT]
58141	MAX TIME OF COMPENSATION	0 times to 255 times, OFF when set at 0
58143	COMPARISON FLOW EVAL	1: [TIMER IS UP], 2: [STAB. AND TIMER IS UP], 3: [STAB. OR TIMER IS UP]
58145	A. F.F. COMPENSATION	1: [VALID], 2: [INHIBIT]
58147	INFLOW FINISH OUTPUT OFF	1: [NO CONDITION], 2: [OL OR UNSTABLE], 3: [ZERO BAND]
58149		
58151		
58153	TARE INFLOW START DELAY	1: [VALID], 2: [INHIBIT]
58155	INFLOW MONITORING TIMER	0 s to 9,999 s
58157	INFLOW START DELAY TIMER	0 s to 9,999 s
58159	F-FLOW COMP. STOP TIMER	0.00 s to 99.99 s
58161	M-FLOW COMP. STOP TIMER	0.00 s to 99.99 s
58163	D-FLOW COMP. STOP TIMER	0.00 s to 99.99 s
58165	WAITING TIME FOR JUDGE.	0.00 s to 99.99 s
58167	DISCH. MONI. TIMER	0 s to 9,999 s 0: OFF

Address	Data name	Setting
58169	DCHG-GATE CLOSE DELAY	0.00 s to 99.99 s
58171	IINFLOW FINISH OUTPUT ON	0.00 s to 99.99 s
58173	DISCH. FINISH OUTPUT ON	0.00 s to 99.99 s
58175	RECIPE FINISH OUTPUT ON	0.00 s to 99.99 s
58177	MIXING FINISH OUTPUT ON	0.00 s to 99.99 s
58179	MIXING TIME OUTPUT ON	0 s to 9,999 s
58181		

Calibration

Address	Data name	Setting
58369	ZERO ADJUSTMENT	Executed by writing 1.
58371	SPAN ADJUSTMENT	1 to 999,999
58373	WEIGHING CAPACITY	1 to 999,999
58375	DIVISION (scale interval)	1: [1], 2: [2], 3: [5], 4: [10], 5: [20], 6: [50]
58377	ZERO POINT mV/V	-250,000 to 250,000 Unit: 0.00001 mV/V
58379	SPAN POINT mV/V	1 to 310,000 Unit: 0.00001 mV/V
58381		
58383		
58385		
58387		
58389	DECIMAL POINT	1: [0], 2: [0.0], 3: [0.00], 4: [0.000], 5: [0.0000]
58391	UNIT	1: [NONE], 2: [g], 3: [kg], 4: [t], 5: [lb], 6: [N], 7:[kN]
58393	BRIDGE POWER SUPPLY	1: [12V], 2: [6V], 3: [3V]
58395	OL DISPLAY CONDITION	1: [+9D], 2: [±110%], 3: [-20D to +9D]
58397		
58399		
58401		
58403		
58405		
58407		
58409	ADJ. GRAV. ACCELERATION	1: [DISTRICT No.], 2: [GRAVITY ACCELERATION]
58411	CALIB. PLACE No.	01 to 16
58413	OPERATION PLACE No.	01 to 16
58415	CALIB. PLACE G. A.	9.000 to 9.999
58417	OPERATION PLACE G. A.	9.000 to 9.999

Address	Data name	Setting
58419		
58421		
58423		
58425		

14.5 RS-232C/422/485 communication data formats

14.5.1 Command mode data formats

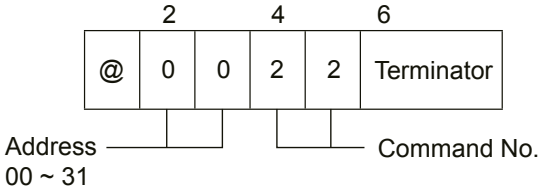
Note:

- The address is fixed to [00] for the application of RS-232C interface.
- Load data is entered from the right end.
- The minus sign ([-]) is entered for all negative values. The plus sign ([+]) is entered for all positive values.
- Zero suppression is applied to load data.
- In the case of overload, [OL] is displayed under load data.
- The blank parts are all spaces.
- A decimal point is added at a specified position if:
  - [ADD THE DECIMAL POINT] is set to [EXISTING], or
  - the decimal point position is specified on the calibration screen.

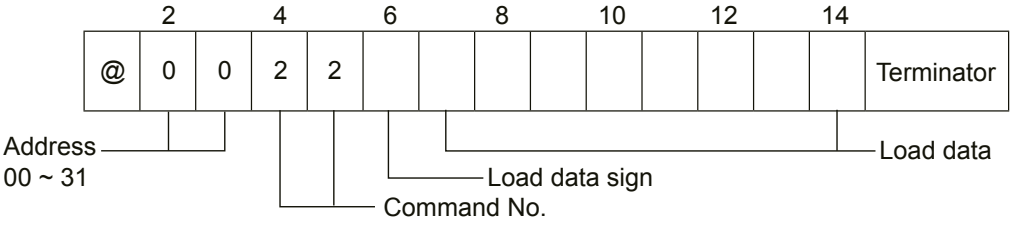
14.5.1.1 Reading out the load data (host → device)

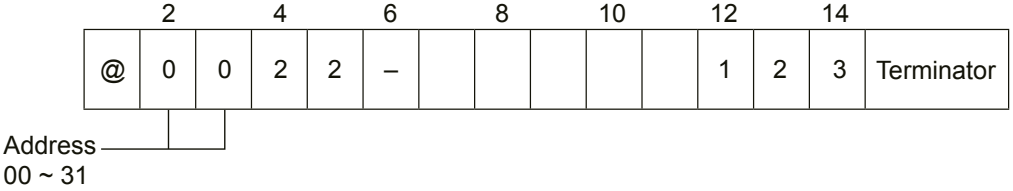
Command No.	Operation
20	Reading load data
21	Reading gross weight
22	Reading net weight
23	Reading tare weight
26	Reading load data with conditions

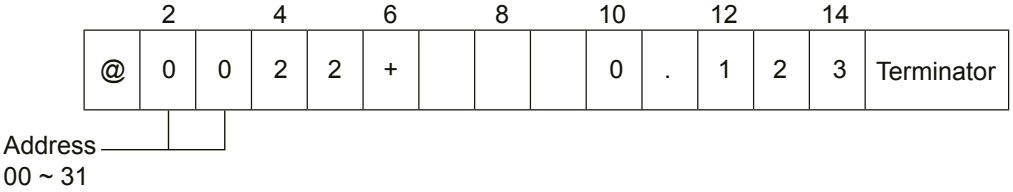
For command Nos. 20 to 23

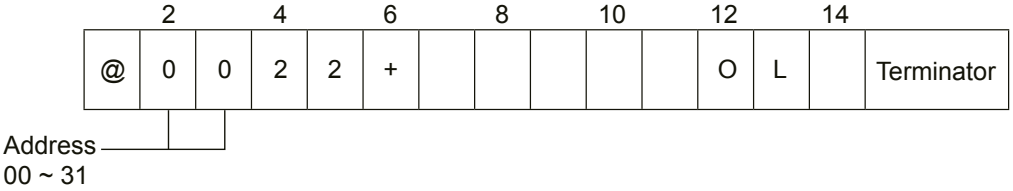


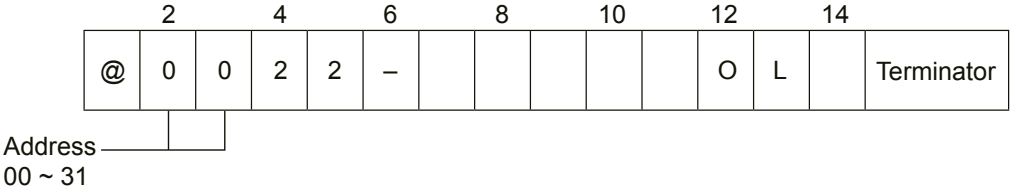
Return (device → Host)



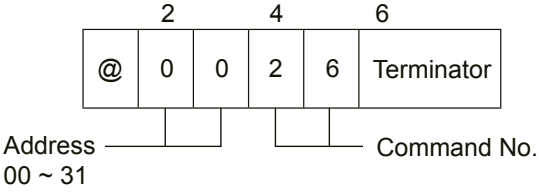




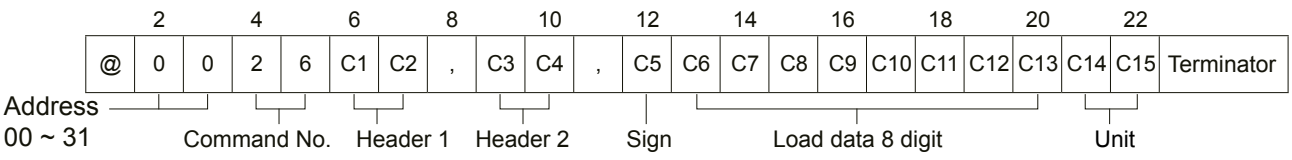




For command No. 26

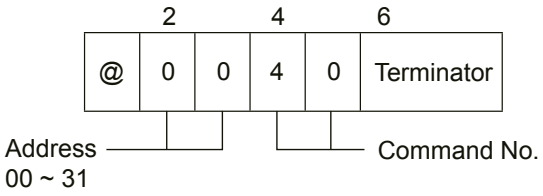


Return (device → Host)

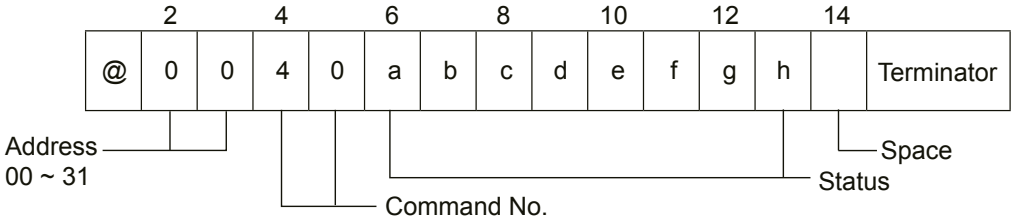


Header 1			Header 2			Sign		Load data (8 digits)								Unit		
C1	C2	Description	C3	C4	Description	C5	Description	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	Description
O	L	Overload	N	T	Net weight	+	Plus						1	2	3		g	Gram
S	T	Stable	G	S	Gross weight	-	Minus				0	.	1	2	3	k	g	Kilogram
U	S	Unstable											O	L			t	Ton
																l	b	Pound
																	N	Newton
																k	N	Kilonewton

14.5.1.2 Status read 1 (Host → device)

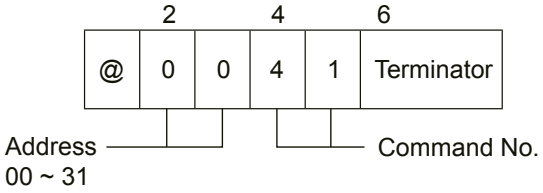


Return (device → Host)

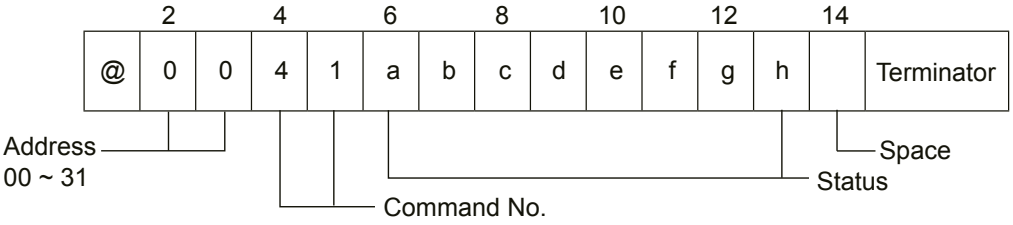


a: Gross weight	b: Net weight
c: Tare	d: Fixed rate
e: Stable	f: HOLD
g: Z-ERR	h: RUN
[1] = ON, [0] = OFF	

14.5.1.3 Status read 2 (Host → device)

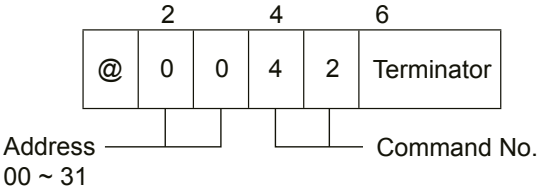


Return (device → Host)

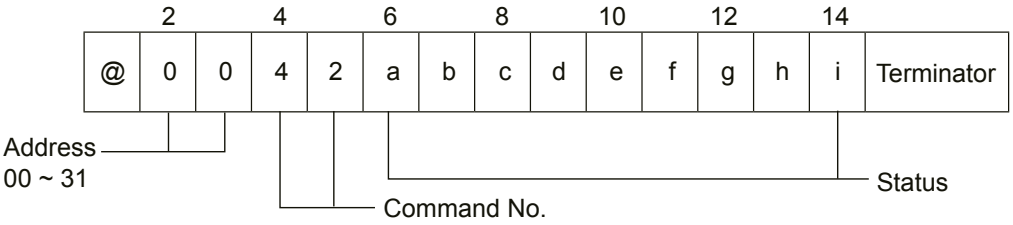


a: F. FLOW	b: M. FLOW
c: D. FLOW	d: PROPER
e: OK	f: UNDER
g: FULL	h: ZERO BAND
[1] = ON, [0] = OFF	

14.5.1.4 Status read 3 (Host → device)



Return (device → Host)

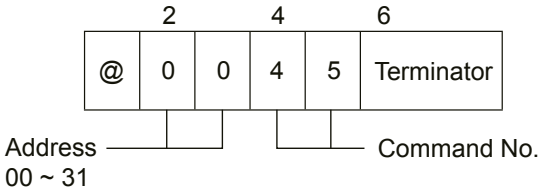


a: MIXING	b: DISCHARGE (GATE CLOSE)
c: INFLOW FINISH	d: RECIPE FINISH
e: DISCHARGE FINISH	f: MIXING FINISH
g: NOZZLE DOWN (INSERT) [1] = ON, [0] = OFF	h: DURING MEASUREMENT
i: WEIGHING SEQ. ERROR	i: WEIGHING SEQ. ERROR

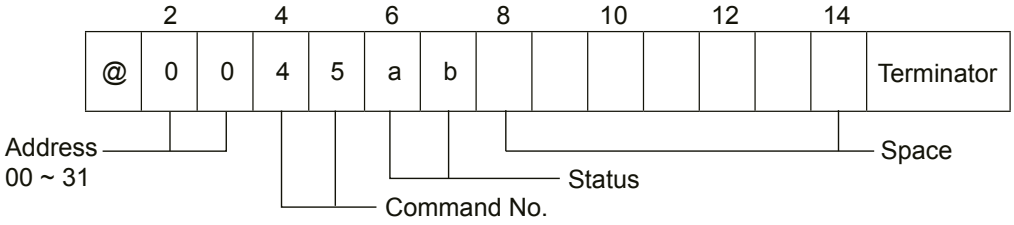
Any sequence error number 0 to 8 is set in [i].

For information about sequence errors, refer to Chapter 13.2.3.

14.5.1.5 Status read 4 (Host → device)

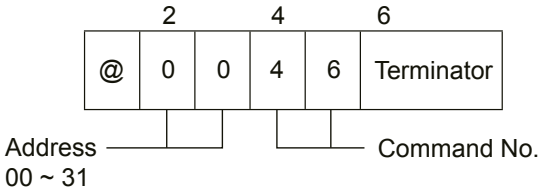


Return (device → Host)

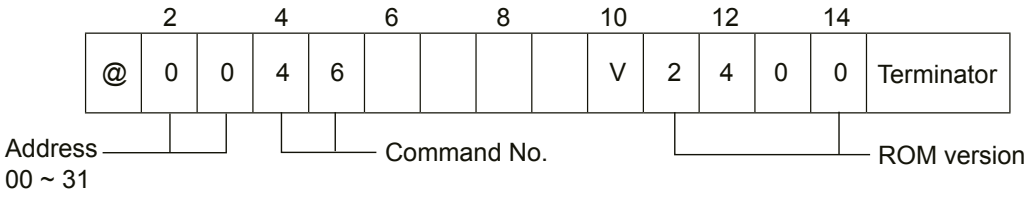


a: Calibration mode	[0] = DURING MEASUREMENT, [1] = DURING ZERO ADJUSTMENT,, [2] = DURING SPAN ADJUSTMENT
b: Calibration error	[0] = None [1] = Occurrence of ERROR

14.5.1.6 Reading out ROM Version (Host → device)



Return (device → Host)

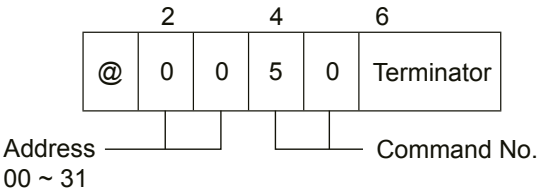


"V2400" indicates ROM version 2.400.

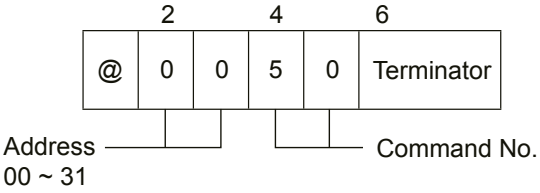
14.5.1.7 Status change (Host → device)

Command No.	Operation
50	GROSS
51	NET
52	ZERO SET
53	ZERO CLEAR

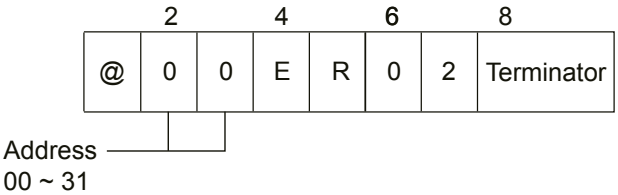
Command No.	Operation
54	TARE
55	TARE CLEAR
56	INFLOW START
57	RECIPE START
58	DISCHARGE START
59	MIXING START
5A	PAUSE
5B	RESTART
5C	ACCUM. COMMAND
5D	FOMER ACM. DATA CLR.
5E	BRAND CODE ACCUM CLR
5F	CLR ACM. OF ALL BRAND
5G	RECIPE CODE ACCUM CLR
5H	CLR ACM. OF ALL RECIPE
5I	ERROR RESET



Return under normal operation (device → Host)



Return under abnormal operation (device → Host)



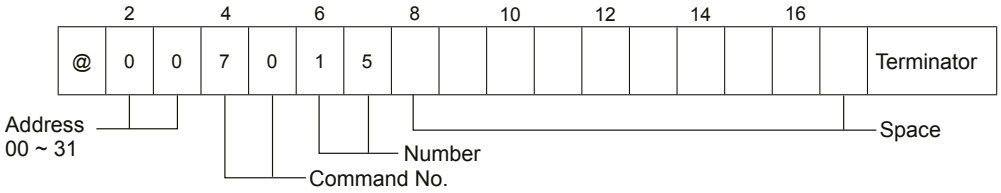
Note:

Error transmission conditions are as follows:

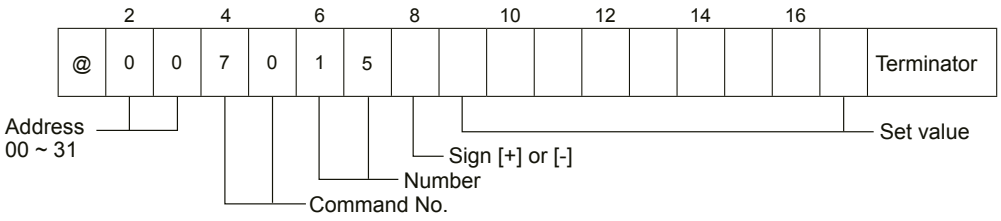
- When attempting to execute command No. 51 (net weight display), tare weight cancellation is not executed so switching to net weight display is not allowed.
- When attempting to execute command No. 52 (zero set), load value is outwith the effective zero set range so zero set is not allowed.
- When attempting to execute command 54 (tare weight cancellation), the message [±OL] is displayed and tare weight cancellation is not allowed.
- When attempting to execute command No. 5C (accumulation command), the accumulation value is overflowing so accumulation is not allowed.

14.5.1.8 Reading out set values (Host → device)

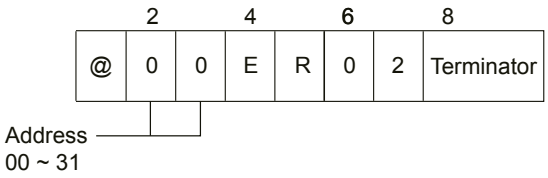
When the accumulation value is 8 digits or less



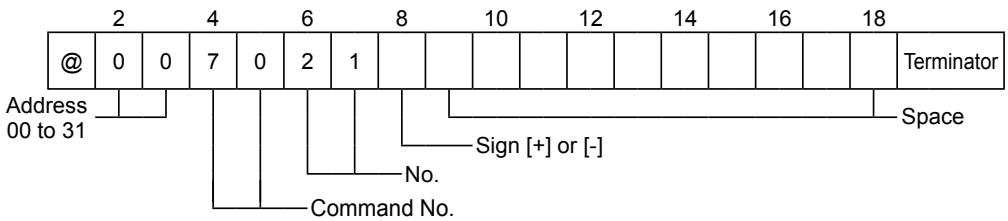
Return during normal operation (device → Host)



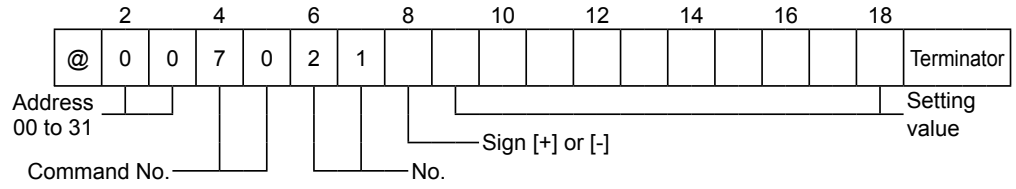
Return during abnormal operation (when corresponding numbers are missing). (device → Host)



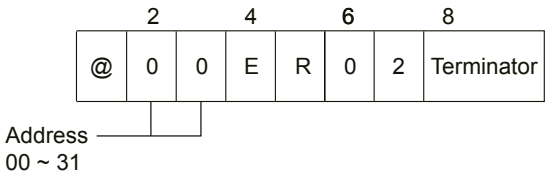
When the accumulation value is 10 digits



Return during normal operation (device → Host)



Return during abnormal operation (when corresponding numbers are missing). (device → Host)

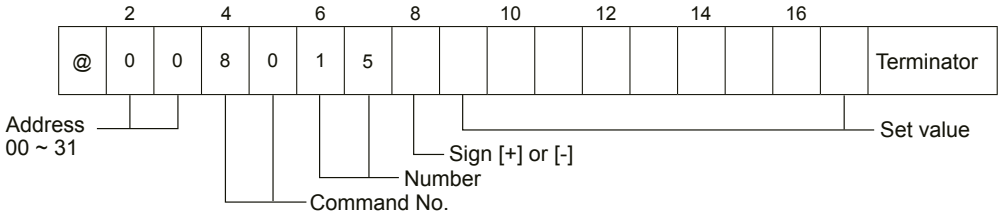


Note:

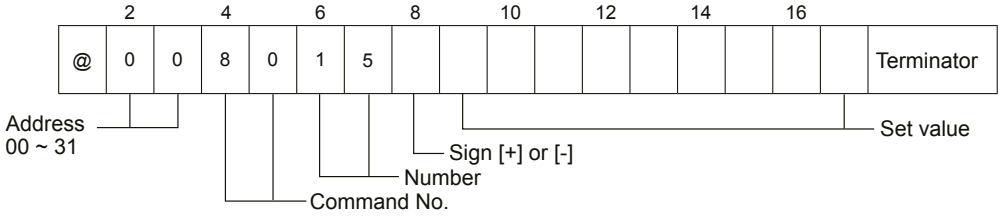
The setting value is an integer value without a decimal point in the units described in Chapter 14.5.1.12.

14.5.1.9 Writing set values (Host → device)

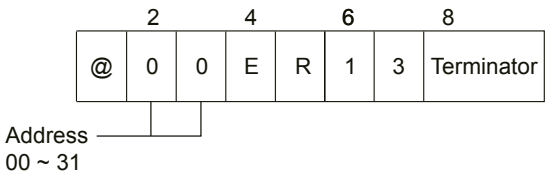
When the accumulation value is 8 digits



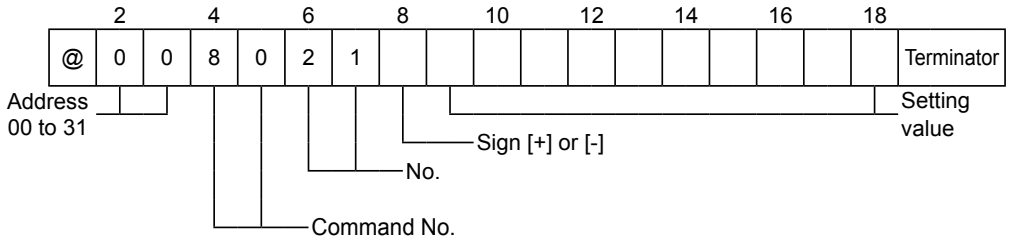
Return during normal operation (device → Host)



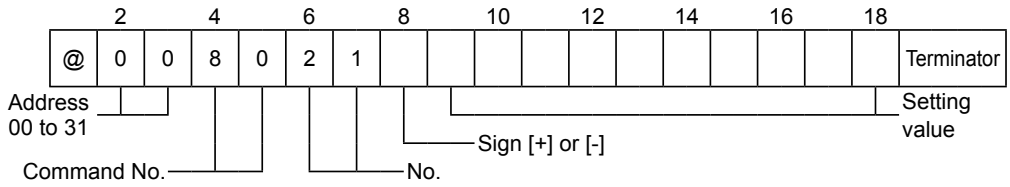
Return during abnormal operation (when corresponding numbers are missing). (device → Host)



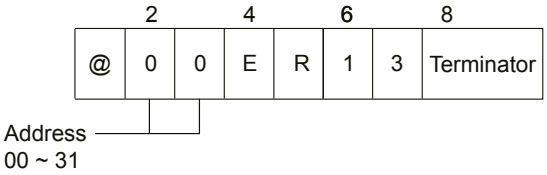
When the accumulation value is 10 digits



Return during normal operation (device → Host)



Return during abnormal operation (when corresponding numbers are missing). (device → Host)

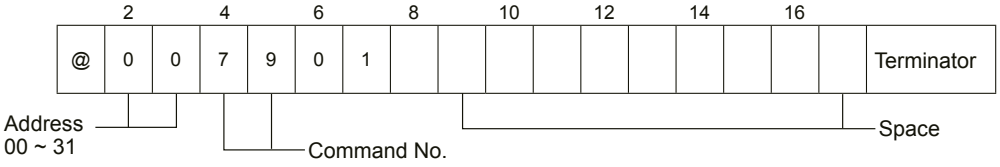


Note:

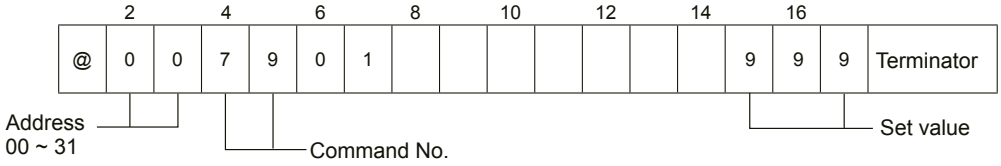
- The command number in writing is a number which is changed from [7*] to [8 *], see Chapter 14.5.1.12.
- The setting value is an integer value without a decimal point in the units described in Chapter 14.5.1.12.

14.5.1.10 Reading out graph display data

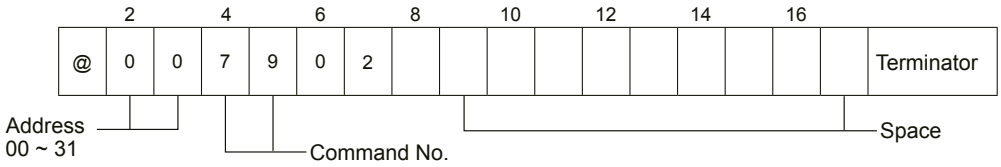
Reading weighing time



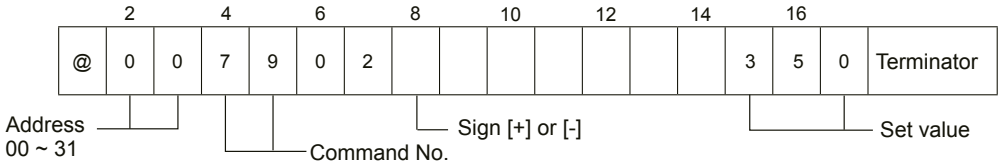
Return



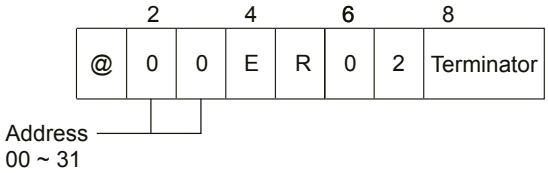
Number of weighing points



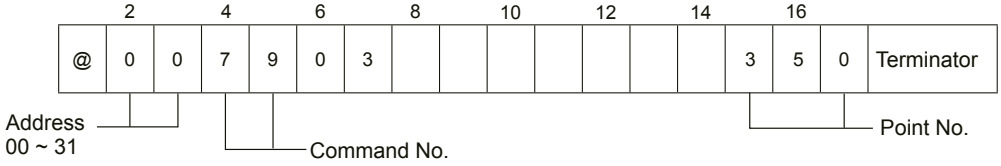
Return (device → Host)



Return during abnormal operation (device → Host)

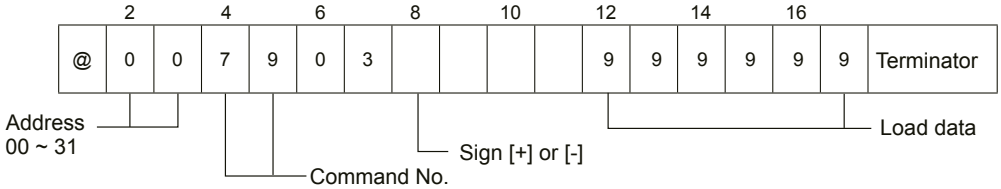


Reading weighing data at weighing points



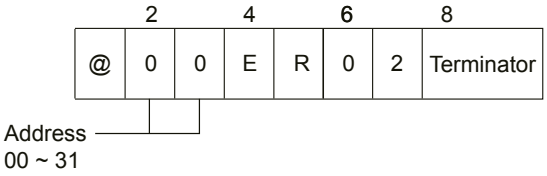
- Point No. range: 0 to 350
- No decimal point is added.

Return during normal operation (device → Host)

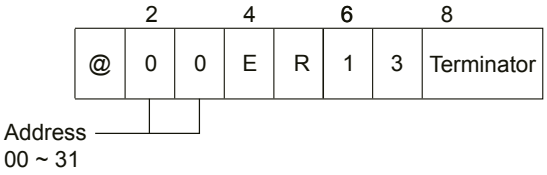


- Setting value range: -999 999 to 999 999
- The setting value is entered from the right for data transmission.
- No decimal point is added.

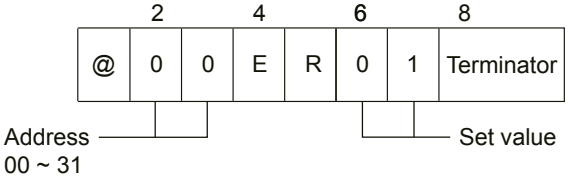
Return during abnormal operation (when read is executed during weighing) (device → Host)



Return during abnormal operation (when data at more weighing points than specified are read) (device → Host)



14.5.1.11 Error commands



Command No.	Name	Description
01	Unexecutable status error	Unconditionally replies when a command is received not during weighing (without determining a corresponding command)
02	Other instruction-related errors	When a zero-set error occurs
10	Parity error	Parity error
11	Framing error	Stop bit detection error
12	Overrun error	Read error
13	Data code error, data length error	When the portion that follows the command number disagrees with the conditions
14	No corresponding command	Process to be executed when the corresponding command number is missing

Note:

- An error command will not be returned if the address and the exit code (terminator) cannot be detected.
- If a communication error command is returned fromCSD-912, take action from the host side, such as via a PC or a sequencer.
- The setting value is set from the right.
- To read or write [NAME] and [NAME], use 15 characters in the command setting value portion.
- Error transmission conditions are as follows:

  (1) The scale interval value is different.

  (2) The setting value contains characters other than numerical values.

  (3) Any symbol other than "±" is set under sign.

14.5.1.12 Read command list

Item name	Command name	Command	No.	Return command setting value
BRAND setting	BRAND CODE	70	01	0 to 99
	NAME	70	02	Katakana, alphanumerical values (15 characters)
	BRAND Hopper No.	70	03	0 to 99
	FINAL	70	04	0 to 999 999
	FREE FALL	70	05	-99 999 to 999 999
	PRELIMINARY1	70	06	0 to 999 999
	PRELIMINARY2	70	07	0 to 999 999
	OVER	70	08	0 to 999 999
	UNDER	70	09	0 to 999 999
	ZERO BAND	70	10	0 to 999 999
	FULL	70	11	0 to 999 999
	A. F.F. COMPENSATION	70	12	-0 to 999 999, 0: A. F. F. COMPENSATION OFF
	SUPPLEMENTARY FLOW TIME	70	13	0.00 s to 99.99 s (Unit: 0.01 s)
	JUDGE. AFTER S-FLOW WAIT	70	14	0.00 s to 99.99 s (Unit: 0.01 s)
	BRAND ACCUM. VALUE (8 digits)	70	15	-99 999 999 to 99 999 999
	BRAND ACCUM. COUNT	70	16	0 to 999 999
	PRESET TARE	70	17	0 to 999 999
	INITIAL FULL FLOW	70	18	0 to 999 999

Item name	Command name	Command	No.	Return command setting value
	INITIAL MEDIUM FLOW	70	19	0 to 999 999
	VALID BRAND CODE	70	20	0 to 99
	BRAND ACCUM. VALUE (10 digits)	70	21	-9 999 999 999 to 9 999 999 999
RECIPE setting	RECIPE CODE	76	01	0 to 99
	NAME	76	02	Katakana, alphanumerical values (15 characters)
	MEAS. 1	76	03	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 2	76	04	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 3	76	05	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 4	76	06	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 5	76	07	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 6	76	08	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 7	76	09	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 8	76	10	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 9	76	11	Value from 0 to 99 when selected, -1 when not selected
	MEAS. 10	76	12	Value from 0 to 99 when selected, -1 when not selected
	RECIPE ACCUM. VALUE (8 digits)	76	13	-99 999 999 to 99 999 999
	RECIPE ACCUM. COUNT	76	14	0 to 999 999
	VALID RECIPE CODE	76	15	0 to 99
	RECIPE ACCUM. VALUE (10 digits)	76	16	-9 999 999 999 to 9 999 999 999
4 step check setting	BRAND CODE	70	01	0 to 99
	NAME	70	02	Katakana, alphanumerical values (15 characters)
	S1	70	04	-999 999 to 999 999
	S2	70	07	-999 999 to 999 999
	S3	70	06	-999 999 to 999 999
	S4	70	05	-999 999 to 999 999

Item name	Command name	Command	No.	Return command setting value
	ZERO BAND	70	10	0 to 999 999
	FULL	70	11	0 to 999 999
	BRAND ACCUM. VALUE (8 digits)	70	15	-99 999 999 to 99 999 999
	BRAND ACCUM. COUNT	70	16	0 to 999 999
	BRAND ACCUM. VALUE (10 digits)	70	21	-9 999 999 999 to 9 999 999 999
	TARGET OF S1 OPERATION	70	31	1: [GROSS], 2: [NET]
	TARGET OF S2 OPERATI-ON	70	32	1: [GROSS], 2: [NET]
	TARGET OF S3 OPERATI-ON	70	33	1: [GROSS], 2: [NET]
	TARGET OF S4 OPERATI-ON	70	34	1: [GROSS], 2: [NET]
	CONDITION OF S1	70	41	1: [MORE THAN], 2: [LESS THAN]
	CONDITION OF S2	70	42	1: [MORE THAN], 2: [LESS THAN]
	CONDITION OF S3	70	43	1: [MORE THAN], 2: [LESS THAN]
	CONDITION OF S4	70	44	1: [MORE THAN], 2: [LESS THAN]
Basic function setting	DISP. REFRESH RATE	71	01	1: [4 TIMES/s], 2: [20 TIMES/s]
	A/D SAMPLING RATE	71	02	1: [10 TIMES/s], 2: [20 TIMES/s], 3: [50 TIMES/s], 4: [100 TIMES/s], 5 [: 200 TIMES/s], 6: [1 000 TIMES/s]
	ANALOG FILTER	71	03	1: [2 Hz], 2: [4 Hz], 3: [6 Hz], 4: [8 Hz], 5: [10 Hz], 6: [100 Hz]
	DIGITAL FILTER	71	04	1 time to 256 times (Unit: times)
	STABILIZATION FILTER	71	05	1 time to 256 times (Unit: times)
	STAB. FILTER TIME	71	06	0.0 s to 9.9 s (Unit: 0.1 s)
	STAB. FILTER BAND	71	07	0.00 to 99.9 Unit: 0.1 d)
	STAB. DETECTION TIME	71	08	0.0 s to 9.9 s (Unit: 0.1 s)
	STAB. DETECTION BAND	71	09	0.00 to 99.9 Unit: 0.1 d)
	OPERATION OF ZERO	71	10	1: [IN STABLE MODE], 2: [ANY TIME]
	RANGE OF ZERO	71	11	0 % to 30 % (Unit: %)
	ZERO TRACKING TARGET	71	12	1: [GROSS/NET], 2: [GROSS]
	ZERO TRACKING TIME	71	13	0.0 s to 9.9 s (Unit: 0.1 s)
	ZERO TRACKING BAND	71	14	0.0 d to 9.9 d (Unit: 0.1 d)
	OPERATION OF TARE	71	15	1: [IN STABLE MODE], 2: [ANY TIME], 3: [NET WEIGHT OFFSET OP.]

Item name	Command name	Command	No.	Return command setting value
	RANGE OF TARE	71	16	1: [0 < LOAD ≤ WEIGHING CAPACITY], 2: [LOAD ≤ ?WEIGHING CAPACITY?]
	OPERATION OF PRE. TARE	71	17	1: [VALID], 2: [INHIBIT]
	Preset tare = 0 choice	71	18	1:[THE LAST TARE IS USED], 2: [TARE CLEAR]
	ZERO AT POWER ON	71	19	1: [VALID], 2: [INHIBIT]
	ZERO CLR. AT POWER ON	71	20	1: [VALID], 2: [INHIBIT]
	TARE AT POWER ON	71	21	1: [VALID], 2: [INHIBIT]
	TARE CLR. AT POWER ON	71	22	1: [VALID], 2: [INHIBIT]
	HOLD OPERATION	71	23	1: [SYNC. WITH HOLD], 2: [SYNC. WITH INFLOW FIN.], 3: [SYNC. WITH RECIPE FIN.]
	ACCUM. COMMAND	71	24	1: [IN STABLE MODE], 2: [ANY TIME]
	PRINT COMMAND	71	25	1: [IN STABLE MODE], 2: [ANY TIME]
	GRAPH TRIGGER SETTING	71	26	1: [SINGLE], 2: [START+LEVEL↑], 3: [START+LEVEL↑↓], 4: [LEVEL↑], 5: [LEVEL↑↓], 6: [INFLOW START LINKED], 7: [RECIPE START LINKED]
	GRAPHIC TRIGGER LEVEL	71	27	-999 999 to 999 999
	SCREEN SELECTION	71	28	1: [STANDARD], 2: [STANDARD/SIMPLE]
	STABILITY OPERATION	71	29	1: [ANY TIME], 2: [WEIGHING SCREEN ONLY]
	COMPARATIVE RESULT HOLD	71	31	1: [VALID], 2: [INHIBIT]
	S-I/F HOLD	71	32	1: [VALID], 2: [INHIBIT]
	CC-Link HOLD	71	33	1: [VALID], 2: [INHIBIT]
	LOAD DISPLAY VALUE HOLD	71	34	1: [VALID], 2: [INHIBIT]
	NET WEIGHT SIGN INVER-SE	71	35	1: [VALID], 2: [INHIBIT]

Note:

- To use commands for [NAME] and [NAME], input 15 characters under command setting value.
- For the write command, regard the command numbers 70 and 76 in the table as 80 and 86, respectively.
- For the write command, regard the command number 70 in the table as 80.
- For the write command, regard the command number 71 in the table as 81.

Item name		Command name	Command	No.
I/O setting	F1 to F4 keys	F1 key function	72	02
		F2 key function	72	03
		F3 key function	72	04
		F4 key function	72	05
		Return command setting value		
		1: [OFF], 2: [PRINT], 3: [ZERO CLEAR], 4: [TARE CLEAR], 5: [INFLOW START], 6: [RECIPE START], 7: [DISCHARGE START], 8: [MIXING START], 9: [PAUSE], 10: [RESTART], 11: [FORCED INFLOW FINISH], 12: [FORCED RECIPE FINISH], 13: [FORCED DISCH. FINISH], 14: [ACCUM. COMMAND], 15: [FOMER ACM. DATA CLR.], 16: [M. F. F. COMPENSATION], 17: [ERROR RESET], 18: [CLR ACM. OF BRAND], 19: [CLR ACM. OF RECIPE], 20: [CLR ACM. OF ALL BRAND], 21: [CLR ACM. OF ALL RECIPE], 22: [HOLD]		
	I/O input	**Command name**	**Command**	**No.**
		I/O INPUT1	72	11
		I/O INPUT2	72	12
		I/O INPUT3	72	13
		I/O INPUT4	72	14
		I/O INPUT5	72	15
		I/O INPUT6	72	16
		I/O INPUT7	72	17
		I/O INPUT8	72	18
		I/O INPUT9	72	19
		I/O INPUT10	72	20
		I/O INPUT11	72	21
		Return command setting value		
		1: [OFF], 2: [GROSS/NET], 3: [ZERO], 4: [ZERO CLEAR], 5: [TARE], 6: [TARE CLEAR], 7: [INFLOW START], 8: [RECIPE START], 9: [DISCHARGE START], 10: [MIXING START], 11: [INFLOW/DISCHARGE], 12: [M. F. F. COMPENSATION], 13: [ACCUM. COMMAND], 14: [FOMER ACM. DATA CLR.], 15: [CODE NO. 1], 16: [CODE NO. 2], 17: [CODE NO. 4], 18: [CODE NO. 8], 19: [CODE NO. 10], 20: [CODE NO.] 20, 21: [CODE NO. 40], 22: [CODE NO. 80], 23: [PAUSE], 24: [RESTART], 25: [CLR ACM. OF BRAND], 26: [CLR ACM. OF ALL BRAND], 27: [CLR ACM. OF RECIPE], 28: [CLR ACM. OF ALL RECIPE], 29: [SAFETY INPUT1], 30: [SAFETY INPUT2], 31: [SAFETY INPUT3], 32: [SAFETY INPUT4], 33: [SAFETY INPUT5], 34: [SAFETY INPUT6], 35: [SAFETY IN-PUT7], 36: [SAFETY INPUT8], 37: [FORCED INFLOW FINISH], 38: [FORCED RECIPE FINISH], 39: [FORCED DISCH. FINISH], 40: [MANUAL FULL FLOW], 41: [MANUAL MEDIUM FLOW], 42: [MANUAL DRIBBLE FLOW], 43: [MANUAL DISCHARGE] 44: [MANUAL MIXING], 45: [ERROR RESET], 46: [PRINT COMMAND], 47: [HOLD], 48: [IN. FOR SIMILAR OUT.]		
I/O setting	I/O output	I/O OUTPUT1	72	31

Item name	Command name	Command	No.
	I/O OUTPUT2	72	32
	I/O OUTPUT3	72	33
	I/O OUTPUT4	72	34
	I/O OUTPUT5	72	35
	I/O OUTPUT6	72	36
	I/O OUTPUT7	72	37
	I/O OUTPUT8	72	38
	I/O OUTPUT9	72	39
	I/O OUTPUT10	72	40
	I/O OUTPUT11	72	41
	Return command setting value		
	1: [OFF], 2: [STABLE], 3: [ZERO BAND], 4: [FULL], 5: [F. FLOW], 6: [M. FLOW], 7: [D. FLOW], 8: [OVER], 9: [OK], 10: [UNDER], 11: [MIXING], 12: [DISCHARGE (GATE OPEN)], 13: [INFLOW FINISH], 14: [RECIPE FINISH], 15: [DISCHARGE FINISH], 16: [MIXING FINISH], 17: [NOZZLE DOWN (INSERT)], 18: [MEAS.], 19: [WEIGHING SEQ. ERROR], 20: [CAP. EXCEEDED ERROR], 21: [ERROR], 22: [DURING TARE], 23: [CENTER OF ZERO], 24: [GROSS DISPLAY], 25: [NET DISPLAY], 26: [DURING HOLD], 27: [HOPPER1], 28: [HOPPER2], 29: [HOPPER3], 30: [HOPPER4], 31: [HOPPER5], 32: [HOPPER6], 33: [HOPPER7], 34: [HOPPER8], 35: [HOPPER9], 36: [HOPPER10], 37: [HOPPER11], 38: [HOPPER12], 39: [HOPPER13], 40: [HOPPER14], 41: [HOPPER15], 42: [HOPPER16], 43: [HOPPER17], 44: [HOPPER18], 45: [HOPPER19], 46: [HOPPER20], 47: [HOPPER1 FULL FLOW], 48: [HOPPER1 MEDIUM FLOW], 49: [HOPPER1 DRIBBLE FLOW], 50: [HOPPER2 FULL FLOW], 51: [HOPPER2 MEDIUM FLOW], 52: [HOPPER2 DRIBBLE FLOW], 53: [HOPPER3 FULL FLOW], 54: [HOPPER3 MEDIUM FLOW], 55: [HOPPER3 DRIBBLE FLOW], 56: [HOPPER4 FULL FLOW], 57: [HOPPER4 MEDIUM FLOW], 58: [HOPPER4 DRIBBLE FLOW], 59: [HOPPER5 FULL FLOW], 60: [HOPPER5 MEDIUM FLOW], 61: [HOPPER5 DRIBBLE FLOW], 62: [HOPPER6 FULL FLOW], 63: [HOPPER6 MEDIUM FLOW], 64: [HOPPER6 DRIBBLE FLOW], 65: [HOPPER7 FULL FLOW], 66: [HOPPER7 MEDIUM FLOW], 67: [HOPPER7 DRIBBLE FLOW], 68: [HOPPER8 FULL FLOW], 69: [HOPPER8 MEDIUM FLOW], 70: [HOPPER8 DRIBBLE FLOW], 71: [HOPPER9 FULL FLOW], 72: [HOPPER9 MEDIUM FLOW], 73: [HOPPER9 DRIBBLE FLOW], 74: [HOPPER10 FULL FLOW], 75: [HOPPER10 MEDIUM FLOW], 76: [HOPPER10 DRIBBLE FLOW], 77: [IN. SIMILARTY OUT.]		

Note:

- For the write command, regard the command number 72 in the table as 82.

Item name	Command name	Command	No.	Return command setting value
I/O setting	ZERO KEYLOCK	72	51	1: [VALID], 2: [INHIBIT]
	GROSS/NET KEYLOCK	72	52	1: [VALID], 2: [INHIBIT]

Item name	Command name	Command	No.	Return command setting value
	TARE KEY LOCK	72	53	1: [VALID], 2: [INHIBIT]
	BRAND CODE KEYLOCK	72	54	1: [VALID], 2: [INHIBIT]
	F-KEYLOCK	72	55	1: [VALID], 2: [INHIBIT]
	MENU KEYLOCK	72	56	1: [VALID], 2: [INHIBIT]
	CALIBRATION KEYLOCK	72	57	1: [VALID], 2: [INHIBIT]
	I/O OUTPUT LOGIC (output 1 to 7)	72	61	1: [NEGATIVE LOGIC], 2: [POSITIVE LOGIC] 10^0 digits: I/O output 1 operation 10^1 digits: I/O output 2 operation 10^3 digits: I/O output 3 operation 10^4 digits: I/O output 4 operation 10^5 digits: I/O output 5 operation 10^6 digits: I/O output 6 operation 10^7 digits: I/O output 7 operation
	I/O OUTPUT LOGIC (output 8 to 11)	72	62	1: [NEGATIVE LOGIC], 2: [POSITIVE LOGIC] 10^0 digits: I/O output 8 operation 10^1 digits: I/O output 9 operation 10^3 digits: I/O output 10 operation 10^4 digits: I/O output 11 operation
Weighing operation setting	WEIGHING MODE	73	01	1: [SIMPLE COMPARATIVE], 2: [SEQUENTIAL MODE], 3: [4 STEP COMPARATOR]
	CONTROL MODE	73	02	1: [INFLOW MODE], 2: [DISCHARGE MODE], 3: [EXTERNAL]
	COMPARISION (Operation of OVER, OK and UNDER)	73	03	1: [ANY TIME], 2: [IN STABLE MODE], 3: [AT INFLOW FINISH], 4: [HOLD AT INFLOW FINISH]
	COMP. OF ZERO BAND	73	04	1: [GROSS], 2: [NET], 3: [COMPARISION OFF], 4: [?GROSS?], 5: [?NET?]
	FULL COMPARISON	73	05	1: [GROSS], 2: [NET], 3: [COMPARISION OFF], 4: [?GROSS?], 5: [?NET?]
	RECIPE MODE	73	06	1: [INHIBIT], 2: [SEMI-AUTO. RECIPE MODE], 3: [AUTO. RECIPE MODE]
	SAVE THE A. F. F.	73	07	1: [NO MEMORIZE], 2: [MEMORIZE]
	INFLOW SAFETY CHECK			
	SAFETY CHECK1	73	11	1: [ON], 2: [OFF]
	SAFETY CHECK2	73	12	1: [ON], 2: [OFF]
	SAFETY CHECK3	73	13	1: [ON], 2: [OFF]
	SAFETY CHECK4	73	14	1: [ON], 2: [OFF]

Item name	Command name	Command	No.	Return command setting value
	SAFETY CHECK5	73	15	1: [ON], 2: [OFF]
	SAFETY CHECK6	73	16	1: [ON], 2: [OFF]
	SAFETY CHECK7	73	17	1: [ON], 2: [OFF]
	SAFETY CHECK8	73	18	1: [ON], 2: [OFF]
	DISCH. SAFETY CHECK			
	SAFETY CHECK1	73	21	1: [ON], 2: [OFF]
	SAFETY CHECK2	73	22	1: [ON], 2: [OFF]
	SAFETY CHECK3	73	23	1: [ON], 2: [OFF]
	SAFETY CHECK4	73	24	1: [ON], 2: [OFF]
	SAFETY CHECK5	73	25	1: [ON], 2: [OFF]
	SAFETY CHECK6	73	26	1: [ON], 2: [OFF]
	SAFETY CHECK7	73	27	1: [ON], 2: [OFF]
	SAFETY CHECK8	73	28	1: [ON], 2: [OFF]
	RECIPE SAFETY CHECK			
	SAFETY CHECK1	73	31	1: [ON], 2: [OFF]
	SAFETY CHECK2	73	32	1: [ON], 2: [OFF]
	SAFETY CHECK3	73	33	1: [ON], 2: [OFF]
	SAFETY CHECK4	73	34	1: [ON], 2: [OFF]
	SAFETY CHECK5	73	35	1: [ON], 2: [OFF]
	SAFETY CHECK6	73	36	1: [ON], 2: [OFF]
	SAFETY CHECK7	73	37	1: [ON], 2: [OFF]
	SAFETY CHECK8	73	38	1: [ON], 2: [OFF]
	MIXING SAFETY CHECK			
	SAFETY CHECK1	73	41	1: [ON], 2: [OFF]
	SAFETY CHECK2	73	42	1: [ON], 2: [OFF]
	SAFETY CHECK3	73	43	1: [ON], 2: [OFF]
	SAFETY CHECK4	73	44	1: [ON], 2: [OFF]
	SAFETY CHECK5	73	45	1: [ON], 2: [OFF]
	SAFETY CHECK6	73	46	1: [ON], 2: [OFF]
	SAFETY CHECK7	73	47	1: [ON], 2: [OFF]
	SAFETY CHECK8	73	48	1: [ON], 2: [OFF]
	GENERAL SAFETY CHECK			
	SAFETY CHECK1	73	51	1: [ON], 2: [OFF]
	SAFETY CHECK2	73	52	1: [ON], 2: [OFF]
	SAFETY CHECK3	73	53	1: [ON], 2: [OFF]

Item name	Command name	Command	No.	Return command setting value
	SAFETY CHECK4	73	54	1: [ON], 2: [OFF]
	SAFETY CHECK5	73	55	1: [ON], 2: [OFF]
	SAFETY CHECK6	73	56	1: [ON], 2: [OFF]
	SAFETY CHECK7	73	57	1: [ON], 2: [OFF]
	SAFETY CHECK8	73	58	1: [ON], 2: [OFF]
	AUTOMATIC ACCUM.	73	61	1: [OFF], 2: [SYNC. WITH FINISH], 3: [AUTO ACCUM. AT STABLE]
	CONDITION OF AUTO ACM.	73	62	1: [IN OK MODE], 2: [NO CONDITION]
	AUTO RECIPE CODE ACM.	73	63	1: [VALID], 2: [INHIBIT]
	AUTOMATIC PRINT	73	64	1: [VALID], 2: [INHIBIT]
Sequence control setting	Signal operation of IN-FLOW start			
	START ABOVE ZERO BAND	74	01	1: [VALID], 2: [INHIBIT]
	AUTOMATIC TARE	74	02	1: [VALID], 2: [INHIBIT]
	NOZZLE OPERATION			
	NOZZLE CONTROL	74	03	1: [VALID], 2: [INHIBIT]
	CONTACT STOP SEQUENCE	74	04	1: [VALID], 2: [INHIBIT]
	UP AFTER COMPENSATION	74	05	1: [VALID], 2: [INHIBIT]
	JUDGE CONDITION	74	06	1: [TIMER IS UP], 2: [STAB. AND TIMER IS UP], 3: [STAB. OR TIMER IS UP]
	Inflow finish action			
	MIXING START	74	07	1: [VALID], 2: [INHIBIT]
	DISCHARGE START	74	08	1: [VALID], 2: [INHIBIT]
	DISCH. FINISH ACTIONS			
	TARE CLEAR	74	09	1: [VALID], 2: [INHIBIT]
	MIXING START	74	10	1: [VALID], 2: [INHIBIT]
	RECIPE START ACTIONS			
	RECIPE START ACTIONS	74	11	1: [VALID], 2: [INHIBIT]
	RECIPE FINISH ACTIONS			
	TARE CLEAR	74	12	1: [VALID], 2: [INHIBIT]
	MIXING START	74	13	1: [VALID], 2: [INHIBIT]
	DISCHARGE START	74	14	1: [VALID], 2: [INHIBIT]

Item name	Command name	Command	No.	Return command setting value
	MAX TIME OF COMPENSATION	74	15	0 time to 255 times, 0: OFF (Unit: times)
	COMPARISON FLOW EVAL	74	16	1: [TIMER IS UP], 2: [STAB. AND TIMER IS UP], 3: [STAB. OR TIMER IS UP]
	A. F.F. COMPENSATION	74	17	1: [VALID], 2: [INHIBIT]
	INFLOW FINISH OUTPUT OFF	74	18	1:[NO CONDITION], 2: [OL OR UNSTABLE], 3: [ZERO BAND]
	TARE INFLOW START DELAY	74	21	1: [VALID], 2: [INHIBIT]
	INFLOW MONITORING TIMER	74	22	0 s to 9 999 s (Unit: s)
	INFLOW START DELAY TIMER	74	23	0 s to 9 999 s (Unit: s)
	F-FLOW COMP. STOP TIMER	74	24	0.00 s to 99.99 s (Unit: 0.01 s)
	M-FLOW COMP. STOP TIMER	74	25	0.00 s to 99.99 s (Unit: 0.01 s)
	D-FLOW COMP. STOP TIMER	74	26	0.00 s to 99.99 s (Unit: 0.01 s)
	WAITING TIME FOR JUDGE.	74	27	0.00 s to 99.99 s (Unit: 0.01 s)
	DISCH. MONI. TIMER	74	28	0 s to 9,999 s 0: OFF (Unit: s)
	DCHG-GATE CLOSE DELAY	74	29	0.00 s to 99.99 s (Unit: 0.01 s)
	IINFLOW FINISH OUTPUT ON	74	30	0.00 s to 99.99 s (Unit: 0.01 s)
	DISCH. FINISH OUTPUT ON	74	31	0.00 s to 99.99 s (Unit: 0.01 s)
	RECIPE FINISH OUTPUT ON	74	32	0.00 s to 99.99 s (Unit: 0.01 s)
	MIXING FINISH OUTPUT ON	74	33	0.00 s to 99.99 s (Unit: 0.01 s)
	MIXING TIME OUTPUT ON	74	34	0 s to 9 999 s (Unit: s)
Calibration	ZERO ADJUSTMENT	75	01	Non-enterable
	SPAN ADJUSTMENT	75	02	1 to 999 999
	WEIGHING CAPACITY	75	03	1 to 999 999
	DIVISION (scale interval)	75	05	1: [1], 2: [2], 3: [5], 4: [10], 5: [20], 6: [50]
	ZERO POINT mV/V (four decimal places)	75	06	-2.5000 mV/V to 2.5000 mV/V (Unit: 0.0001 mV/V)

Item name	Command name	Command	No.	Return command setting value
	SPAN POINT mV/V (four decimal places)	75	07	-0.0001 mV/V to 3.1000 mV/V (Unit: 0.0001 mV/V)
	DECIMAL POINT	75	11	1: [0], 2: [0.0], 3: [0.00], 4: [0.000], 5: [0.0000]
	Unit	75	12	1: [NONE], 2: [g], 3: [kg], 4: [t], 5: [lb], 6: [N], 7:[kN]
	BRIDGE POWER SUPPLY	75	13	1: [12V], 2: [6V], 3:[3V]
	OL DISPLAY CONDITION	75	14	1: [+9D], 2: [±110%], 3: [-20D to +9D]
	ADJ. GRAV. ACCELERATION	75	21	1: [DISTRICT No.], 2: [GRAVITY ACCELERATION]
	CALIB. PLACE No.	75	22	01 to 16
	OPERATION PLACE No.	75	23	01 to 16
	CALIB. PLACE G. A.	75	24	9.000 to 9.999 (Unit: 0.001 m/s^2)
	OPERATION PLACE G. A.	75	25	9.000 to 9.999 (Unit: 0.001 m/s^2)
	ZERO POINT mV/V (five decimal places)	75	26	-2.50000 mV/V to 2.50000 mV/V (Unit: 0.00001 mV/V)
	SPAN POINT mV/V (five decimal places)	75	27	-0.00001 mV/V to 3.10000 mV/V (Unit: 0.00001 mV/V)

Note:

- For the write command, regard the command number 72 in the table as 82.
- For the write command, regard the command number 73 in the table as 83.
- For the write command, regard the command number 74 in the table as 84.
- For the write command, regard the command number 75 in the table as 85.
- For the write command, regard the command number 76 in the table as 86.
- Set the span calibration value so that [WEIGHING CAPACITY] ≥ [SPAN ADJUSTMENT].
- The same commands can be used to install ≥ to a weighing system that currently uses ZERO POINT mV/V (four decimal places) (No. 06)/SPAN POINT mV/V (four decimal places) (No. 07). To make the correct settings when changing the commands, ZERO POINT mV/V (five decimal places) (No. 26)/SPAN POINT mV/V (five decimal places) (No. 27), be careful with the number of digits.

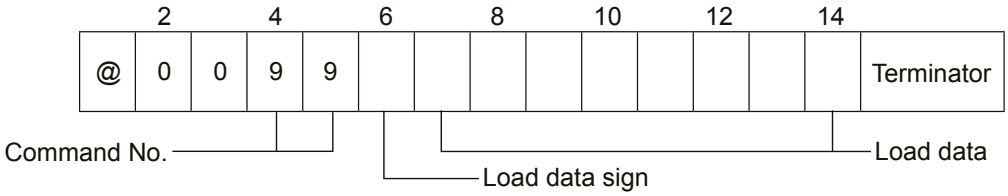
14.5.2 Data formats for (STREAM MODE), (SYNC. WITH PRINT), (SYNC. WITH ACCUM.), (SYNC. WITH FINISH)

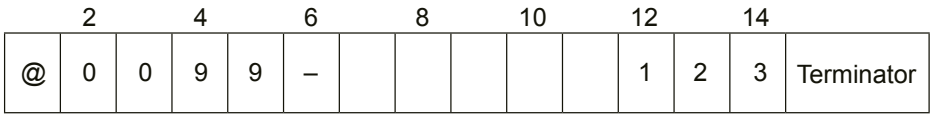
Note:

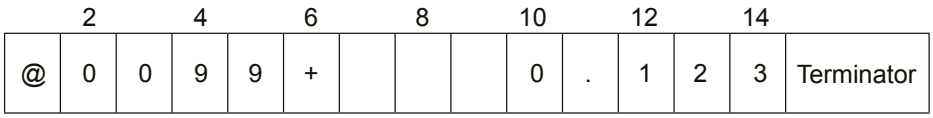
- Load data is entered from the right.
- [–] is entered for negative values and [+] for positive values.
- Zero suppression is applied to load data.
- A decimal point is added at a specified position if:
  - [ADD THE DECIMAL POINT] is set to [EXISTING], or
  - the decimal point position is specified on the calibration screen.
- In the case of overload, [OL] is displayed under load data.
- All blank squares are empty spaces.

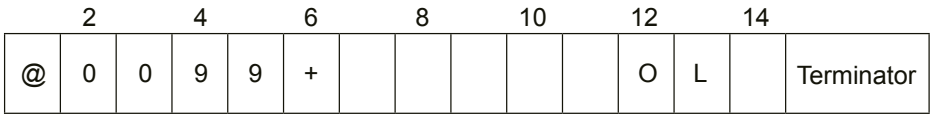
14.5.2.1 When (TARGET OF STREAM/PRINT) is set to (LOAD DISPLAY), (GROSS), or (NET)

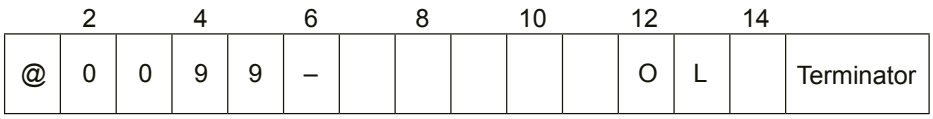
Return (device → Host)



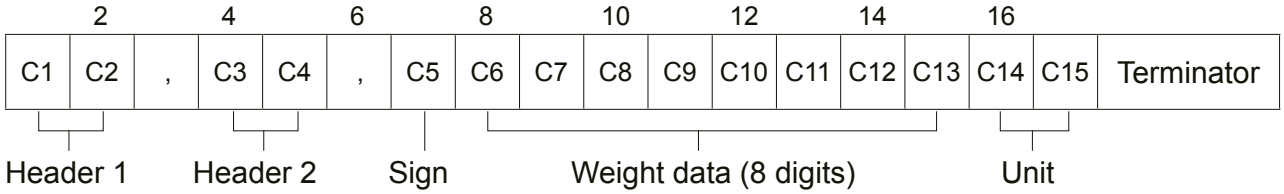








14.5.2.2 When (TARGET OF STREAM/PRINT) is set to (LOAD DISP. WITH STATE)



Header 1			Header 2			Sign		Load data (8 digits)								Unit		
C1	C2	Description	C3	C4	Description	C5	Description	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	Description
O	L	Overload	N	T	Net weight	+	Plus						1	2	3		g	Gram
S	T	Stable	G	S	Gross weight	-	Minus				0	.	1	2	3	k	g	Kilogram
U	S	Unstable											O	L			t	Ton
																l	b	Pound
																	N	Newton
																k	N	Kilonewton

Published by
Minebea Intec GmbH | Meiendorfer Strasse 205 A | 22145 Hamburg, Germany
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