User's Manual

Notice of Alterations

Models 436101/436102/436103/436104/436106

μR10000 Recorder

Please make the following alterations to the User's Manual IM 04P01B01-01E.

Function Upgrades and Versions

The following functions have been added to the μR10000 Recorder.

Firmware Version	Added Functions
1.21	Calibration correction (/CC1 option), 24 V DC/AC power supply (/P1 option), and German and French language support.
1.31	Customized Menu, and Header printout (/BT1 option)

Page ii **Please note the addition of "Recorder's Version and Functions Described in this Manual"**

Version	Suffix Code	Added or Modified Functions
1.21	-2	German and French can be used.
	/CC1	Calibration correction
1.31	-	Customized Menu
	/BT1	Header printout

Page v **Please note the addition of "MODEL and SUFFIX Code" (Underlined).**

Suffix Code	-2	English / German / French & deg F / DST
Optional Code	/CC1	Calibration correction
	/BT1	Header printout
	/P1	24-VDC/AC power supply

Page 4-11 **Please note changes to 4.3, "Menu Structure, Settings, and List of Default Values." (Underlined)**

Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
Language > Lang	-	English/German/French/Japanese	English

Page 5-2 **Correct the selections of the "/N3 Option."**

<Incorrect> Cu10 <Correct> Cu9

Page 7-14 **Please note the addition of the explanation to section 7.8, "Setting the Periodic Printout Interval and the Type of Measured Values to Be Printed." (Underlined)**

Interval

Select the interval from 10, 12, 15, 20, 30 minutes, 1, 2, 3, 4, 6, 8, 12, and 24 hours. However, printout might not take place at the specified interval depending on the chart speed and items printed.

Page 7-22 **Please note changes to the explanation in section 7.14, "Changing the Display/Recording Language." (Underlined)**

Lang(Language)

English (E): Uses the English alphabet, numbers, and symbols for display and printout.

German (G)*: Uses the German alphabet, numbers, and symbols for display and printout.

French (F)*: Uses the French alphabet, numbers, and symbols for display and printout.

Japanese (J): Uses the English alphabet, katakana, numbers, and symbols for display and printout.

*: The displays for the "Customized menu" and "Header printout (/BT1 option)" are in English. Also, the English alphabet, numbers, and symbols are used for printouts.

Please note the addition of "Customized Menu."

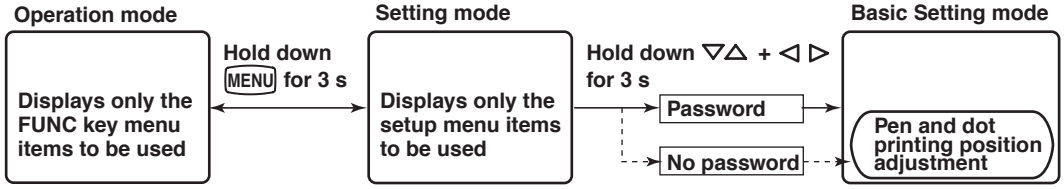
- **Page 1-30 Please note the following addition to section 1.9, "Other Functions."**

  Customize Menu

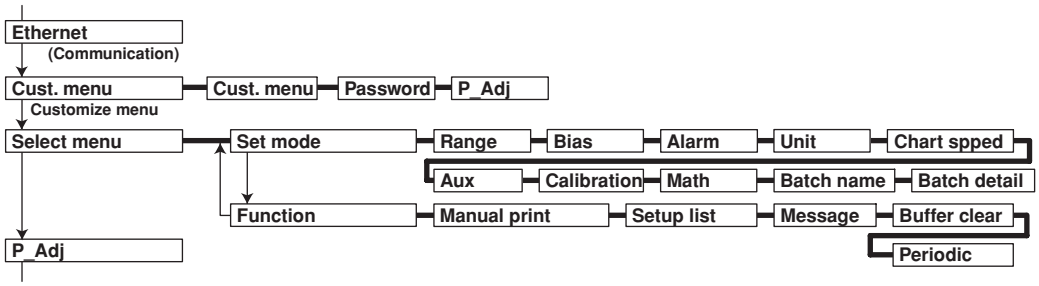
  The menu can be customized to display only the menus that you use.

  - Display only the items that you use on the FUNC key menu.
  - Display only the items that you use on the Setting mode menu.
  - Lock Basic Setting mode (use a password to enter the mode).

    The pen position adjustment (pen model) and dot printing position adjustment (dot model) can be set so that they can be used without the password.



- **Page 4-8 Please note the addition to section 4.3, "Menu Structure of Basic Setting Mode."**



- **Page 4-12 Please note the addition to section 4.3, "Menu Structure, Settings, and List of Default Values in Basic Setting Mode." (Underlined)**

Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
Cust. menu > Cust. menu	-	Not/Use	Not
Cust. menu > Password	-	Numbers and spaces within 4 digits	Blank
Cust. menu > P_Adj	-	On/Off	Off
Select menu > Set mode > Range	-	On/Off	On
Select menu > Set mode > Bias	-	On/Off	On
Select menu > Set mode > Alarm	-	On/Off	On
Select menu > Set mode > Unit	-	On/Off	On
Select menu > Set mode > Chart speed	-	On/Off	On
Select menu > Set mode > Aux	-	On/Off	On
Select menu > Set mode > Calibration	-	On/Off	On
Select menu > Set mode > Math	-	On/Off	On
Select menu > Set mode > Batch name	-	On/Off	On
Select menu > Set mode > Batch detail	-	On/Off	On
Select menu > Function > Manual print	-	On/Off	On
Select menu > Function > Setup list	-	On/Off	On
Select menu > Function > Message	-	On/Off	On
Select menu > Function > Buffer clear	-	On/Off	On
Select menu > Function > Periodic	-	On/Off	On

- **Page 4-16 Please note the addition of "Other functions." (Underlined)**

Item	Description
Key lock	
Customized Menu	• FUNC key display menu selection Use Select menu > Function in the Basic Setting mode to turn menus On (display) or Off (hide). • Setting mode display menu selection Use Select menu > Set mode in Basic Setting mode to turn menus On (display) or Off (hide). • Customized menu execution Use Cust. menu in Basic Setting mode and select Use or Not.

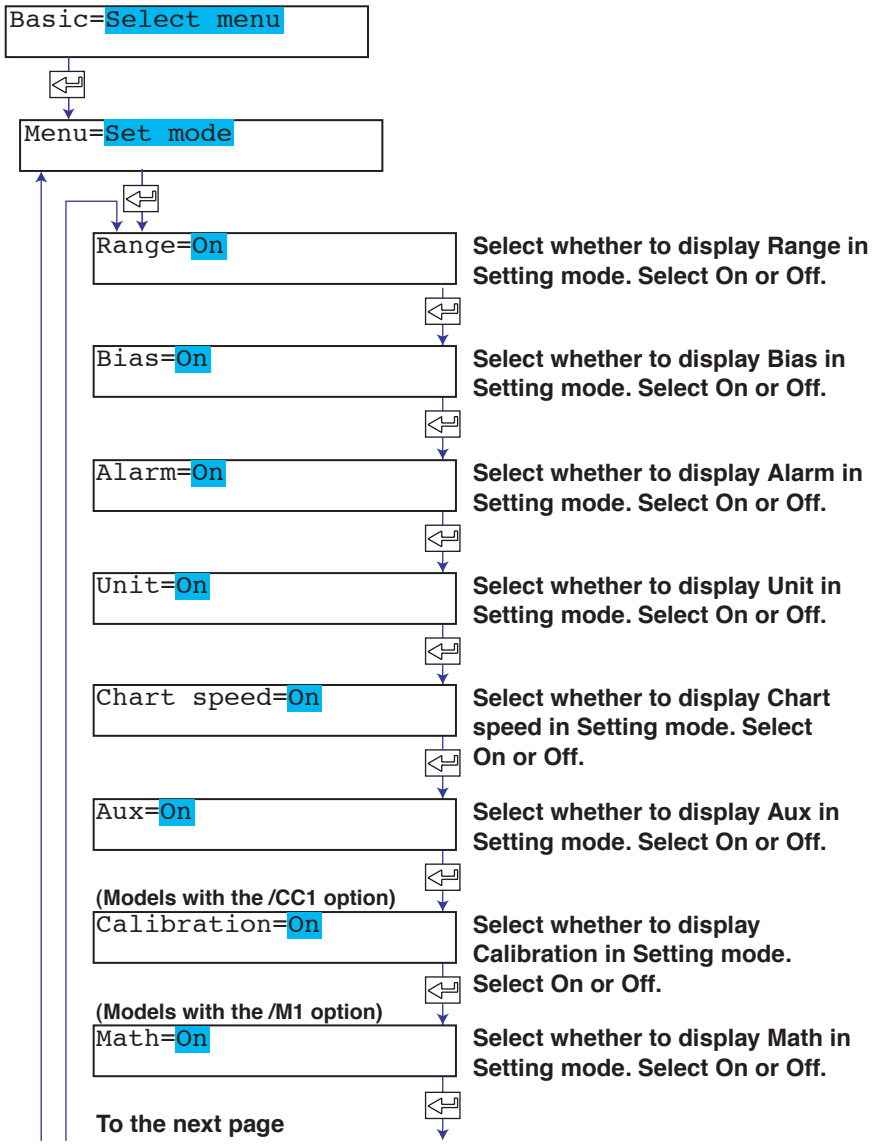
- **Please note the addition of sections 7.21, 7.22, and 7.23 to chapter 7.**

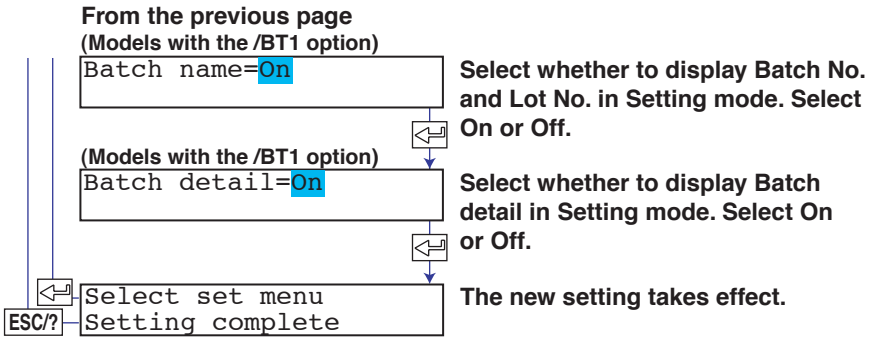
7.21 Selecting to Show/Hide Setting Mode Menus

Select the menu for showing/hiding the Setting mode menus.
Basic Setting mode cannot be entered when recording is in progress or when computation is in progress on models with the computation function (/M1 option).

Procedure

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Hold down the ▽△ and ◁ ▷ keys simultaneously for 3 seconds to enter Basic Setting mode.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Select menu** and then press the ↵ key.
4. Press the ↵ key with **Set mode** shown on the screen.
5. Set each item and press the ↵ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
6. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ↵ key.
   If you are done, press the **ESC** key.





Applying the Changes and Returning to Operation Mode

Press the ▽△ key or **SHIFT** + ▽△ key to select **End** and then press the ⏎ key. Press the ▽△ key to select **Store** and then press the ⏎ key. The changes are applied, and the screen returns to Operation mode. If you select **Abort** and press the ⏎ key, the changes are discarded, and the screen returns to Operation mode. Press the **ESC** key to return to the **Basic=** screen.

Explanation

On: Display the menu in Setting mode.
Off: Do not display the menu in Setting mode when Customized Menu is enabled.

<Reference>

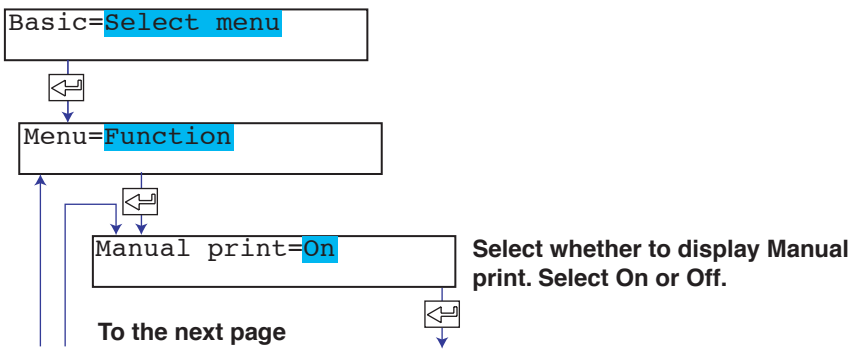
Enabling the Customized Menu: Section 7.23 (page 6 of this manual)

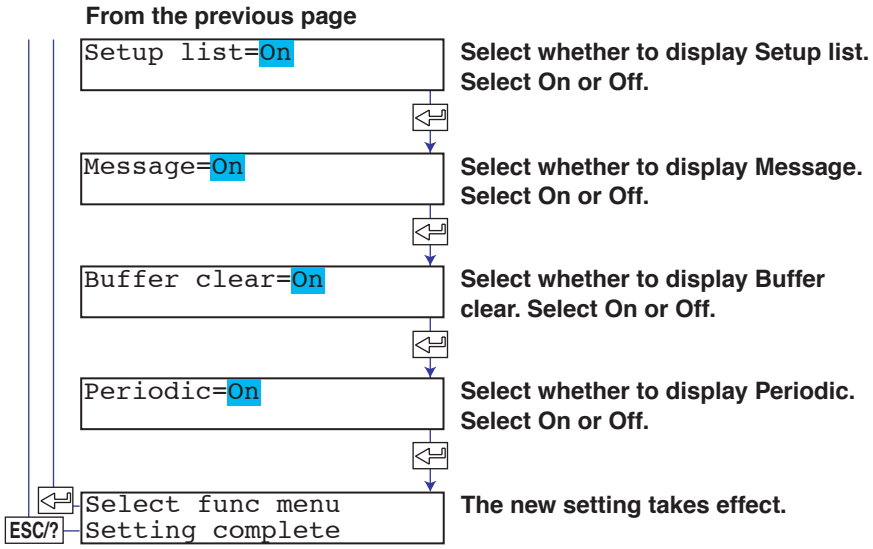
7.22 Selecting to Show/Hide the FUNC Key Menus

Select the menu for showing/hiding the FUNC key menus.
Basic Setting mode cannot be entered when recording is in progress or when computation is in progress on models with the computation function (/M1 option).

Procedure

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Hold down the ▽△ and ◁ ▷ keys simultaneously for 3 seconds to enter Basic Setting mode.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Select menu** and then press the ⏎ key.
4. Press the ⏎ key with **Function** shown on the screen.
5. Set each item and press the ⏎ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
6. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ⏎ key.
   If you are done, press the **ESC** key.





Applying the Changes and Returning to Operation Mode

Press the ▽△ key or **SHIFT** + ▽△ key to select **End** and then press the ◁┘ key. Press the ▽△ key to select **Store** and then press the ◁┘ key. The changes are applied, and the screen returns to Operation mode. If you select **Abort** and press the ◁┘ key, the changes are discarded, and the screen returns to Operation mode. Press the **ESC** key to return to the **Basic=** screen.

Explanation

On: Display operation menus using the FUNC key.
Off: Do not display the operation menu using FUNC keys when Customized Menu is enabled.

<Reference>

Enabling the Customized Menu: Section 7.23 (page 6 of this manual)

7.23 Enabling/Disabling the Customized Menu

When the Customized Menu is enabled, the following changes can be made.

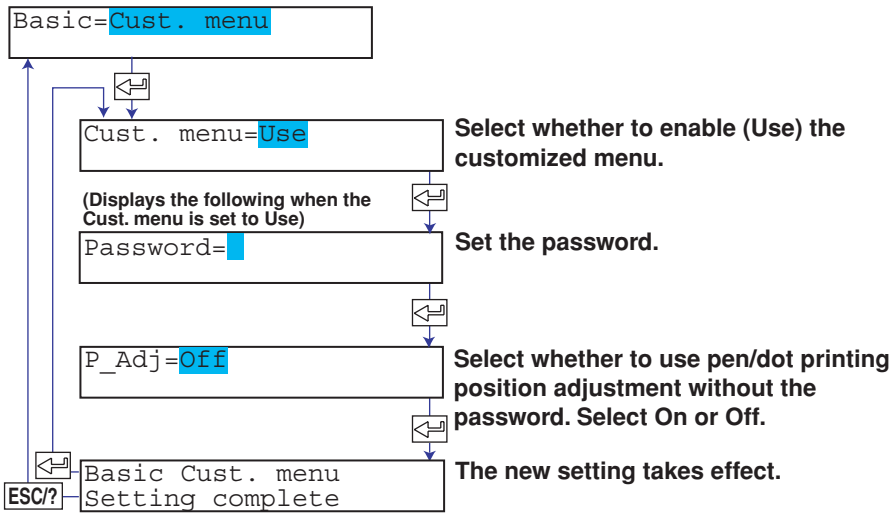
- Hide specified menu items from the FUNC key menu.
- Hide specified Setting mode menu items.
- Lock Basic Setting mode.

Basic Setting mode cannot be entered when recording is in progress or when computation is in progress on models with the computation function (/M1 option).

Procedure

Enabling the Customized Menu

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Hold down the ▽△ and ◁ ▷ keys simultaneously for 3 seconds to enter Basic Setting mode.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Cust. menu** and then press the ↵ key.
4. Set each item and press the ↵ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
5. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ↵ key.
   If you are done, press the **ESC** key.

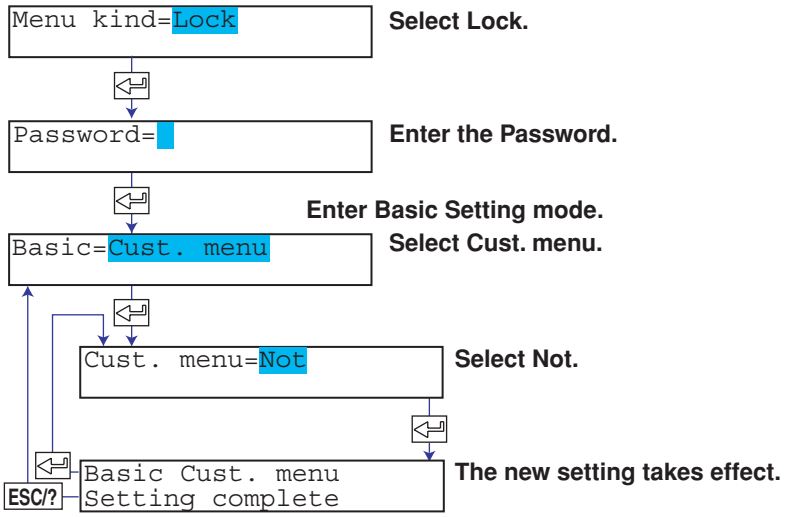


Applying the Changes and Returning to Operation Mode

Press the ▽△ key or **SHIFT** + ▽△ key to select **End** and then press the ↵ key. Press the ▽△ key to select **Store** and then press the ↵ key. The changes are applied, and the screen returns to Operation mode. If you select **Abort** and press the ↵ key, the changes are discarded, and the screen returns to Operation mode. Press the **ESC** key to return to the **Basic=** screen.

Disabling the Customized Menu

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Hold down the ▽△ and ◁ ▷ keys simultaneously for 3 seconds to enter Basic Setting mode.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Lock** and then press the ↵ key.
4. Set each item and press the ↵ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
5. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ↵ key.
   If you are done, press the **ESC** key.



Applying the Changes and Returning to Operation Mode

Press the ▽△ key or **SHIFT** + ▽△ key to select **End** and then press the ↵ key. Press the ▽△ key to select **Store** and then press the ↵ key. The changes are applied, and the screen returns to Operation mode. If you select **Abort** and press the ↵ key, the changes are discarded, and the screen returns to Operation mode. Press the **ESC** key to return to the **Basic=** screen.

Explanation

Cust. menu (Customized Menu)

Use: Displays only the desired Setting mode and FUNC key menus, and locks Basic Setting mode.

Not: Displays all Setting mode and FUNC key menus, and releases the Basic Setting mode lock.

Password

The password required to release the customized menu or to enter Basic Setting mode. Set a password of four digits or fewer, using numbers and spaces.

Note

Changing the Settings without Disabling the Basic Setting Mode Lock

The settings in Basic Setting mode can be changed without disabling the customized menu.

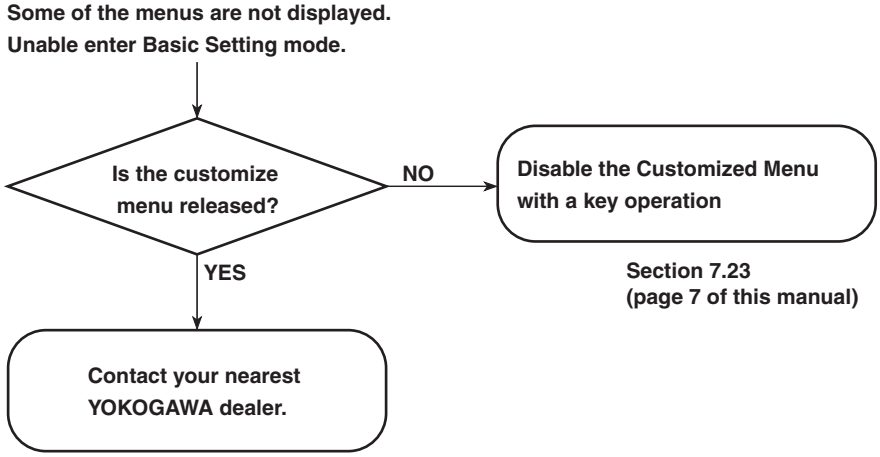
Procedure

1. Enter a password in the same manner as the procedure for "Disabling the Customized Menu," press the ◁⏎ key, and enter Basic Setting mode.
2. Change settings in the usual manner.
3. The instrument returns to Operation mode with Customized Menu still enabled.

<Reference>

Selecting to Show/Hide the FUNC Key Menus: Section 7.22 (page 4 of this manual)
Selecting to Show/Hide Setting Mode Menus: Section 7.21 (page 3 of this manual)
Adjusting the Pen Position/Dot Printing Position: Sections 11.5 and 11.6

Page 10-6 Please note the following addition to 10.2 "Troubleshooting Flow Charts."



Please note the following additions to:
Page 11-6 11.5, "Adjusting the Pen Position (Pen Model)" and
Page 11-7 11.6, "Adjusting the Dot Printing Position (Dot Model)"

Note

When the Customized Menu is enabled, the operation is different.

- **When "P_Adj" in the Customized Menu is On**
  1. Perform steps 1-4 of "Adjusting the Pen/Dot (Printing) Position."
  2. When the instrument enters Basic Setting mode, "Menu kind" appears. Select "Free" then press a ◁⏎ key.
  3. Perform the steps starting with step 5 of "Adjusting the Pen/Dot (Printing) Position."
- **When "P_Adj" in the Customized Menu is Off**
  See "Disabling the Customized Menu" or "Changing the Settings without Disabling the Basic Setting Mode Lock."

<Reference>

Enabling/Disabling the Customized Menu: Section 7.23 (page 6 of this manual)
Changing the Settings without Disabling the Basic Setting Mode Lock: Section 7.23 (page 8 of this manual)

Add the calibration correction function.

Performing Calibration Correction (/CC1 option)

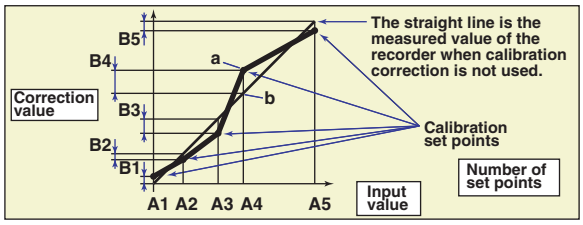
The measuring input signal is corrected using specified segments, and the result is used as a measured value.

Number of Set Points

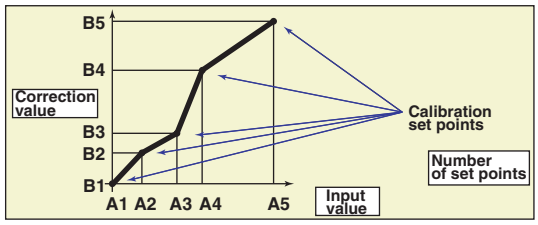
You can select the number of points that make up the segments (including the start and end points) in the range of 2 to 16.

Correction values are set using revise values or absolute values.

Using revise values



Using absolute values



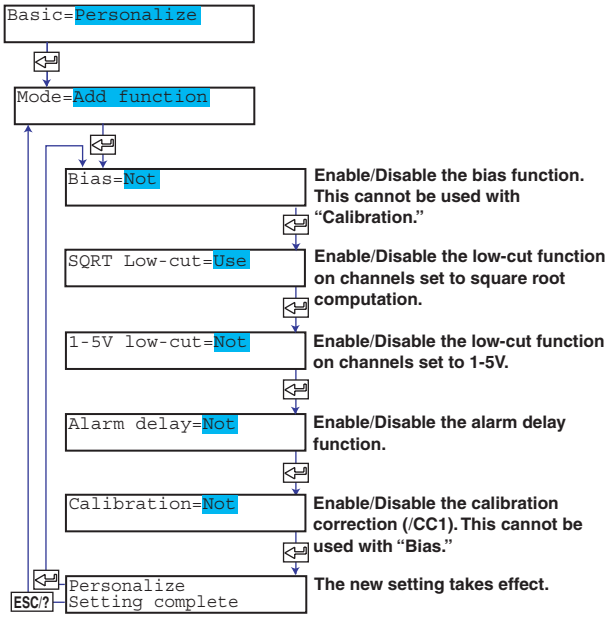
Corrected value (B4) of the fourth set point = a – b

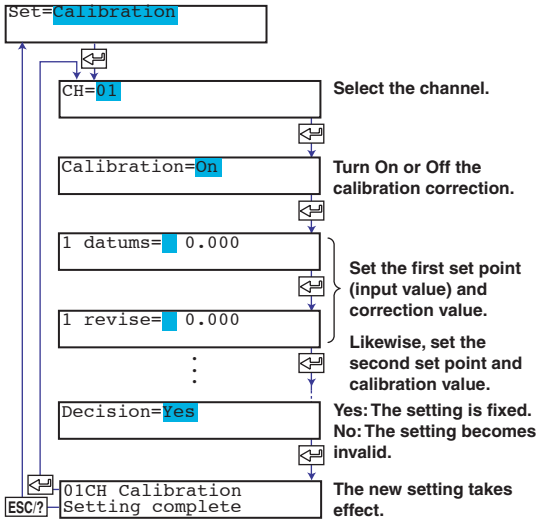
Example of the Input Va

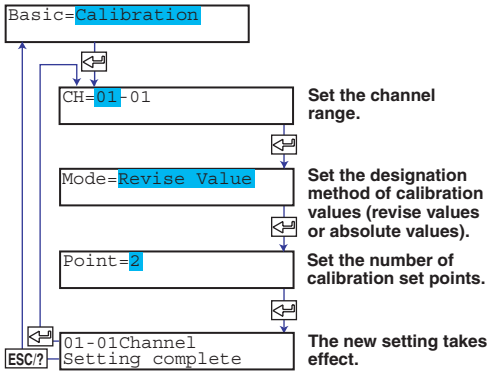
Input Value	Corrected Value	Revise Value	Absolute Value
9.8 °C	10.0 °C	0.2 °C	10.0 °C
90.5 °C	90.0 °C	–0.5 °C	90.0 °C

Procedure

Enable calibration correction in basic setting mode. Set the calibration correction mode and the number of set points. Turn calibration correction ON in setting mode, and enter the correction values.







Description

Setting Conditions of Input Values and Correction Values

A1 < A2 ≤ A3 ≤ ... ≤ A16

- Setting range of input values and correction values when using revise value:

  (A1 + B1) < (A2 + B2) < (A3 + B3) < ... < (A16 + B16)

  The sum of the input value and set point (A + B) is within the measurable range of the range type.*
- Setting range of correction values when using absolute value:

  B1 < B2 < B3 < ... < B16

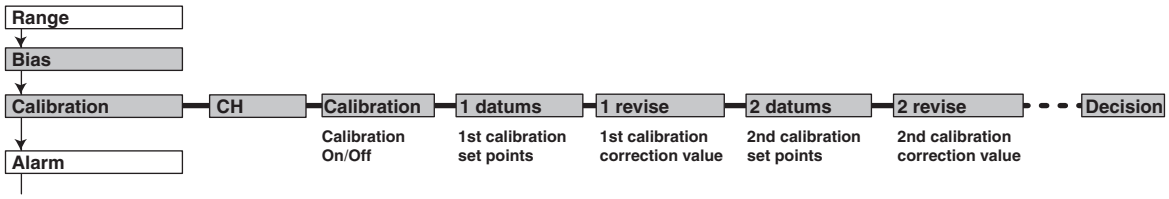
  Set point B is within the measurable range of the range type.*

* Within the scaling range: –5% to 105% or –20000 to 30000 (the decimal position is the same as the setting for the scale value)

Note

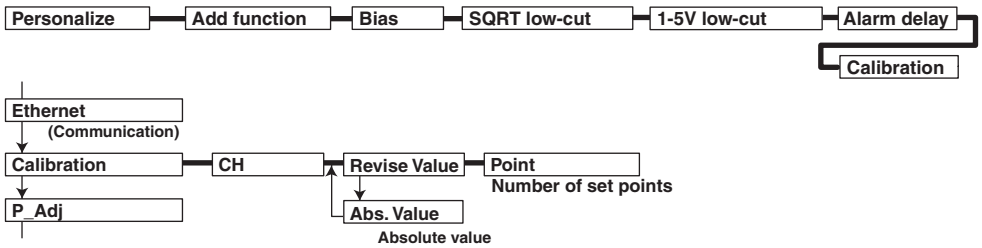
- When using the calibration correction function, set the span and scale so that the left end is 0% and the right end is 100%.
- Calibration correction cannot be set on ON/OFF input (DI), delta computation, and square root computation channels. In addition, calibration correction cannot be used on all channels if the bias function is enabled.
- When the mode or range type is changed, calibration correction is turned OFF. In linear scaling (including 1-5V), calibration correction is turned OFF if the voltage (temperature) span, scaling span, or decimal position is changed.

- **Page 4-7 Add the calibration correction function in the menu setting of the Setting mode.**



- Input bias and calibration cannot be used simultaneously.
- Calibration correction can be used when the /CC1 option is installed.

- **Page 4-8 Add calibration correction in the menu structure of Basic Setting mode.**



- **Page 10-1 Add the setting errors.**

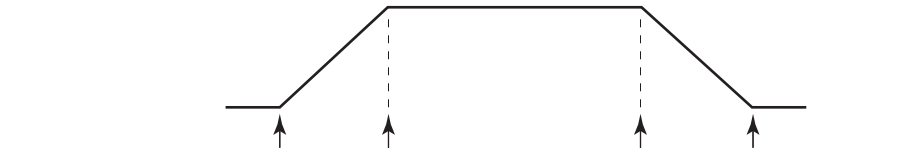
39	The bias and the calibration cannot be used simultaneously.	–
40	Datume value (1 >= 2)	Set the measured value of the first point less than that of the second point in the calibration correction.
41	Datume value (n-1 > n)	Set the measured value of the n–1th point less than or equal to that of the nth point in the calibration correction.
42	Revise value (n-1 >= n)	Set the correction value of the n–1th point less than that of the nth point in the calibration correction.

Please note the addition of Header printout (/BT1 option).

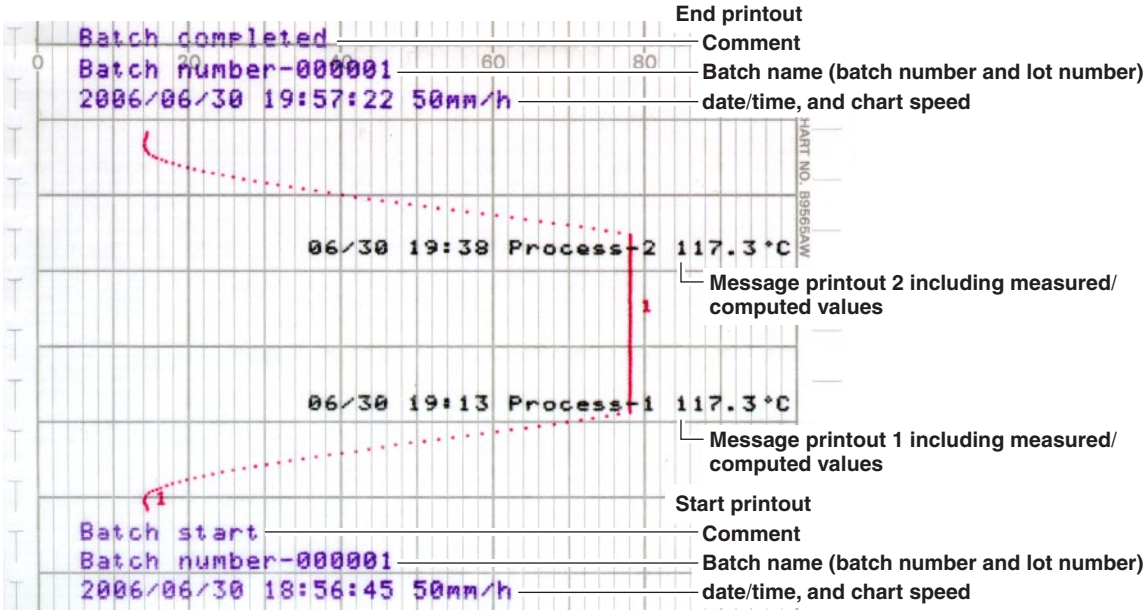
- **Page 1-21 1.4, "Recording"**

Header Printout (/BT1 Option)

When recording is started, the Start printout is performed, and recording starts. During analog recording, you can print out messages (up to 5) that include measured/computed values. When recording is stopped, End printout is performed.



- **Example Printout (Dot Model)**



Start Printout and End printout

You can set "Start printout" and "Start printout 2" for the printout when recording starts. Also, you can set "End printout" and "End printout 2" for the printout when recording stops.

Printout/Operation	Description	Notes
Comment	Prints 32 characters x 5 lines or less.	
Batch name		Can be displayed in the main display.
Batch number	Prints up to 26 characters.	
Lot number	Prints a number from 4-digits or 6-digits.	You can automatically increment by 1 when recording stops.
Date/time	The date format prints out according to the date printout/display format.	Date and time cannot be turned On/Off independently.
Chart speed	Prints the current chart paper feed speed.	
Chart paper feed	Feeds the chart paper 50 mm or less before Start printout. Feeds the chart paper 50 mm or less after End printout.	Steps of 1 mm Steps of 1 mm
Ejection of pen offset compensating data	You can record the portion of the data that remains after recording stops. Also, when recording the remaining portion of the data, you can change the chart speed to 450 mm/h (fixed).	When pen offset compensating is On (pen model).

You can select whether to print out the batch name, date/time, and chart speed. By default, the printout is enabled.

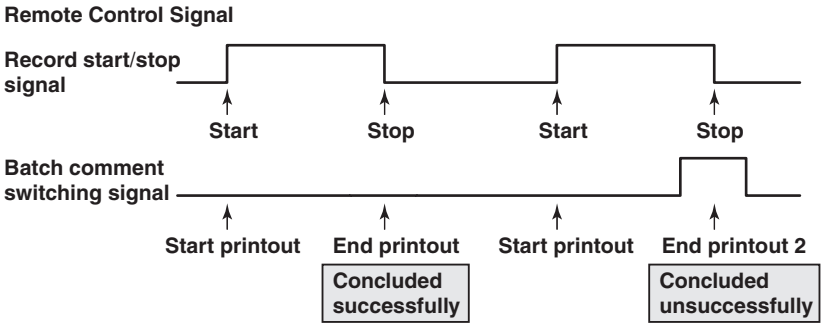
- **Switching between Start Printout and Start printout 2, and between End printout and End printout 2**

  With the remote control function (/R1 option), you can change the items that are printed out.

  For example, when a process ends successfully, End printout is performed and the lot number is updated. If the process fails, you can have End printout 2 be carried out and the lot number remain not updated.

  Depending on the status of the "batch comment switching signal," the following switches occur when the "record start/stop signal" switches:

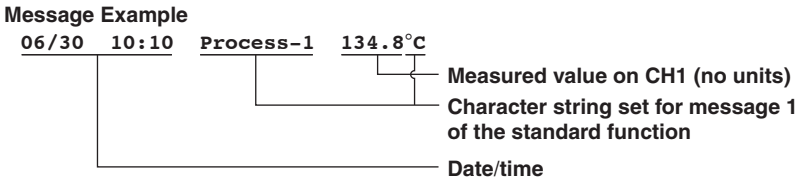
Record start/Stop Signal Status		Batch Comment Switching Signal Status	
		Level: 0 (Open)	Level: 1 (Closed)
Upon start	Edge (rising)	Start printout	Start printout 2
Upon stop	Edge (falling)	End printout	End printout 2



Message Printout Including Measured/Computed Values

Following the specified message format, the date/time, message strings of the standard function (5 strings of up to 16 characters), and measured/computed instantaneous values are printed out together.

- Up to 5 messages of 35 characters can be entered.
- Messages are printed out in the order in which they are set.
- The specified number of characters specified for standard function messages is used, then if a subsequent character string has been set, it is used next. Also, it can only be used once for the message format.



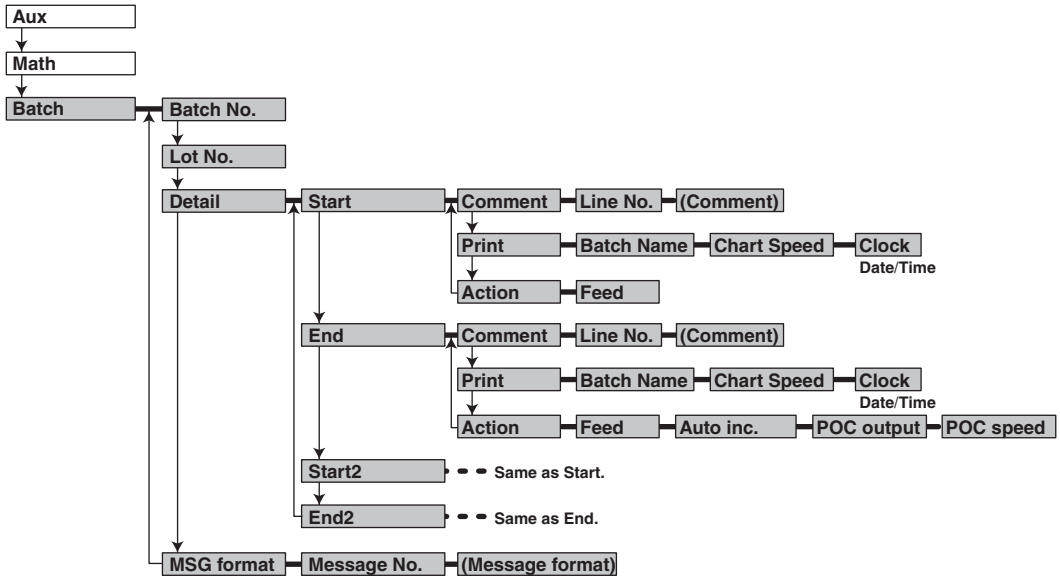
- **Page 1-22 Please note the addition to "Displayed Information." (Underlined)**

  There are 22 or 23 (/BT1 option) display types available. Also ...

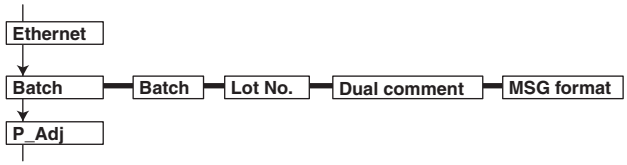
- **Page 1-22 Please note the addition to "Display Types." (Underlined)**
  - System display
  - Batch name (/BT1 option)

- **Page 1-29 Please note the addition to "Assignable Functions." (Underlined)**
  - **Computation Reset**
  - **Priority to Remote Recording**
    - Remote input signal: Edge (rising/start or falling/stop)
    - Starts/stops recording.
    - When started with a remote signal (on a remote signal rise), stop per key operation or communication is disabled.
  - **Switching batch comment**
    - Remote input signal: Level
    - Switches between Start printout and Start printout 2, and between End printout and End printout 2 depending on the status of the batch comment switching signal when recording is started/stopped remotely.
    - When starting/stopping by key operation, performs Start printout and End printout.

- **Page 4-7 Please note the addition of Batch to "Menu Structure of Setting Mode."**



- **Page 4-8 Please note the addition of Batch to "Menu Structure of Basic Setting Mode."**



Page 4-10 Please note the addition of header printout to "Setup Items in Setting Mode and Their Default Values" in section 4.3.

Header Printout (/BT1 option)

Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
*Batch > Batch No	-	26 characters or less	Blank
*Batch > Lot No.	-	0-9999 or 0-999999	0
*Batch > Detail > Start > Comment > Line No.	-	1/2/3/4/5	1
*Batch > Detail > Start > Comment > Line No. > Comment	-	32 characters or less	Blank
*Batch > Detail > Start > Print > Batch Name	-	On/Off	On
*Batch > Detail > Start > Print > Chart Speed	-	On/Off	On
*Batch > Detail > Start > Print > Clock	-	On/Off	On
*Batch > Detail > Start > Action > Feed	-	0 to 50 mm	0 mm
*Batch > Detail > End > Comment > Line No.	-	1/2/3/4/5	1
*Batch > Detail > End > Comment > Line No. > Comment	-	32 characters or less	Blank
*Batch > Detail > End > Print > Batch Name	-	On/Off	On
*Batch > Detail > End > Print > Chart Speed	-	On/Off	On
*Batch > Detail > End > Print > Clock	-	On/Off	On
*Batch > Detail > End > Action > Feed	-	0 to 50 mm	0 mm
*Batch > Detail > End > Action > Auto inc.	-	On/Off	On
*Batch > Detail > End > Action > POC output	Pen Model	On/Off	Off
*Batch > Detail > End > Action > POC speed	Pen Model	C.Speed/450 mm h	C.Speed
*Batch > Detail > Start2 ... Same as Start			
*Batch > Detail > End2 ... Same as End			
*Batch > MSG format > Message No.	-	1/2/3/4/5	1
*Batch > MSG format > Message No. > (MSG format)	-	35 characters or less	H:M L16

- **Pages 4-11 and 4-12 Please note the addition of the underlined text and header printout to "Setup Items in Basic Setting Mode and Their Default Values" in section 4.3.**

Remote control function (/R1 option)

Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
Remote > Remote No.	-	1/2/3/4/5	1
Remote > Remote No. > No.	-	Record On Off /Chart speed/Time adjust/ Math start stop (/M1)/Math reset (/M1)/ Manual print/Alarm ACK/Message1/Message2/ Message3/Message4/Message5/ Priority R_RCD (/BT1)/ BatchCMT switch (/BT1)/None	Record On/Off
		/M1, /BT1: option	

Header Printout (/BT1 option)

Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
Batch > Batch	-	Not/Use	Not
Batch > Lot No.	-	4/6/Not	4
Batch > Dual comment	-	Not/Use	Not
Batch > MSG format	-	Not/Use	Not

- **Page 4-17 Please note the addition of the underlined text and header printout to section 4.4, "Function Setup Guide."**

Remote control function (/R1 option)

Item	Description
Remote control function (/R1 option)	• Switching between Start printout and Start printout 2, and between End printout and End printout 2 (/BT1 option) If "BatchCMT switch" is assigned, enable Batch > Dual comment in Basic Setting mode. Set Batch > Detail > Start 2 and End 2 in Setting mode.

Header Printout (/BT1 option)

Item	Description
Setting Start printout/ End printout	Use Batch in Basic Setting mode, and select a Lot No. from 4 or 6 digits. Use Batch > Batch No. in Setting mode to set the batch number. Use Batch > Lot No. in Setting mode to set the lot number. Use Batch > Detail > Start, End, Start 2, and End 2 in Setting mode to set the various comments, printout On/Off, and chart paper feed amount for each. Also, in End and End 2, enter the settings for lot number update and ejection of pen offset compensating data (Pen model).
Switching between Start printout and Start printout 2, and between End printout and End printout 2 (/R1 option)	• Switching settings Assign "BatchCMT switch" to the remote control input terminal. Use Batch > Dual comment in Basic Setting mode and select Use. Set Batch > Detail > Start 2 and End 2 in Setting mode. • Executing the switch The switch occurs according to the status of the "BatchCMT switch" signal when "Record On/Off" or "Priority R_RCD" signal assigned to the remote control input terminal rises or falls.
Printout of messages including measured/computed values	• Setting message strings Use Aux > Message in Setting mode to enter the message to print out. • Setting the message format Use Batch > MSG format in Basic Setting mode and select Use. Set the message format in Setting mode under Batch > MSG format > Message No. • Executing message printout Execute the message printout by choosing FUNC key > Message in Operation mode.

- **Please note the addition of section 6.14 to chapter 6.**

6.14 Setting Up Start Printout and End printout (/BT1 Option)

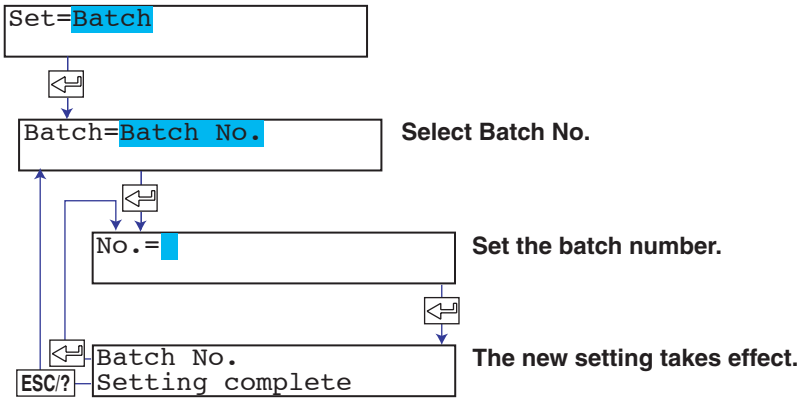
Enter settings for Start printout/Start printout 2 when starting recording, and for End printout/End printout 2 when stopping recording.

Before entering settings, enable “Start printout and End printout” in Basic Setting mode (see section 7.24 on page 21 of this manual).

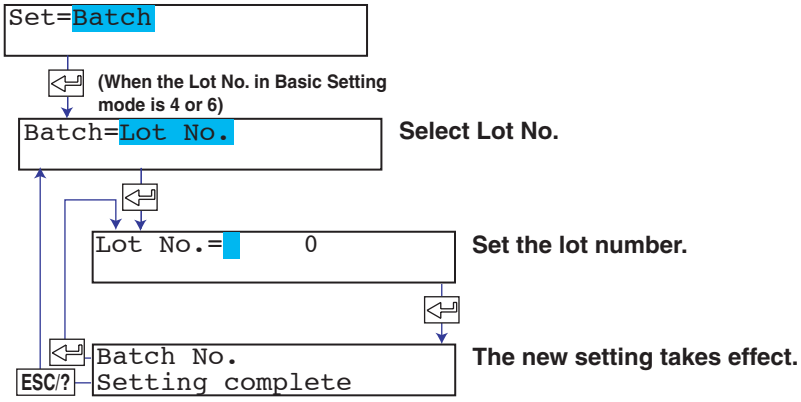
Procedure

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Press the ▽△ key or **SHIFT** + ▽△ key to select **Batch** and then press the ⏎ key.
3. Set each item and press the ⏎ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
4. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ⏎ key.
   If you are done, press the **ESC** key.
5. Hold down the MENU key for 3 seconds to return to Operation mode.

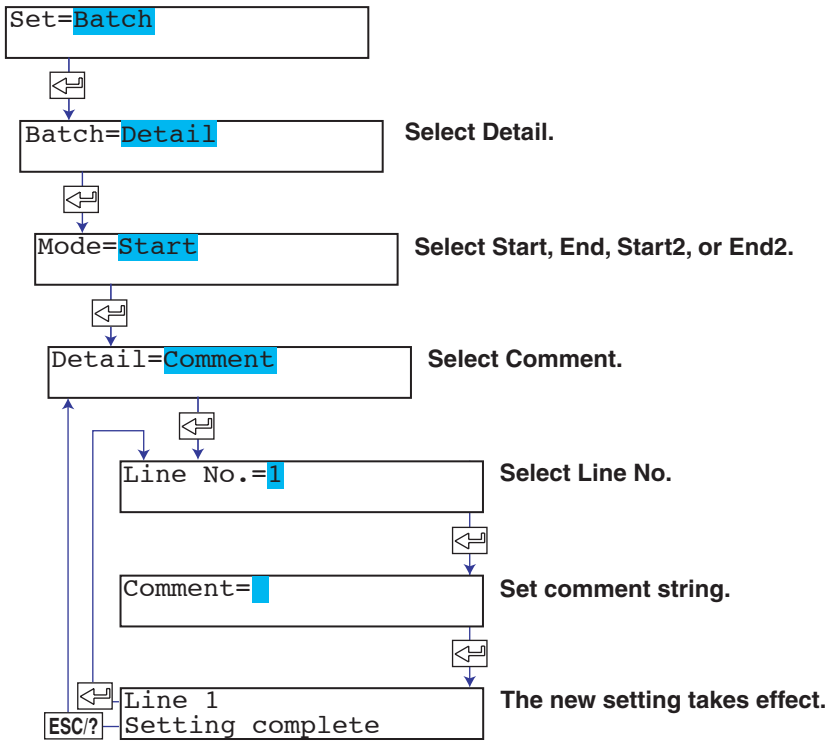
Setting the Batch Number



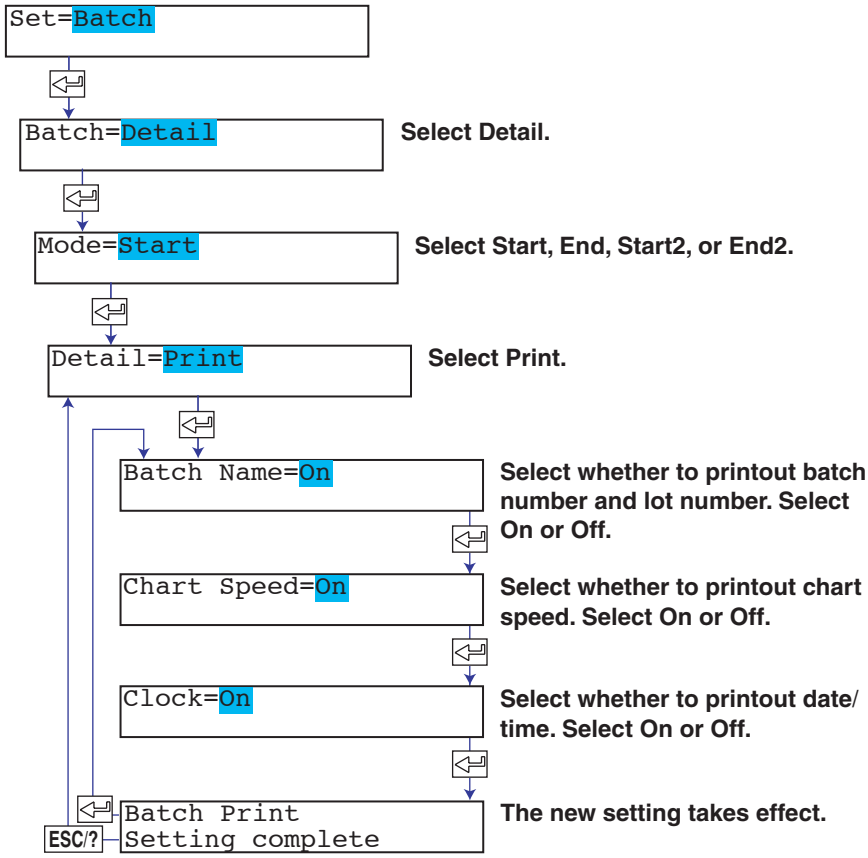
Setting the Lot Number



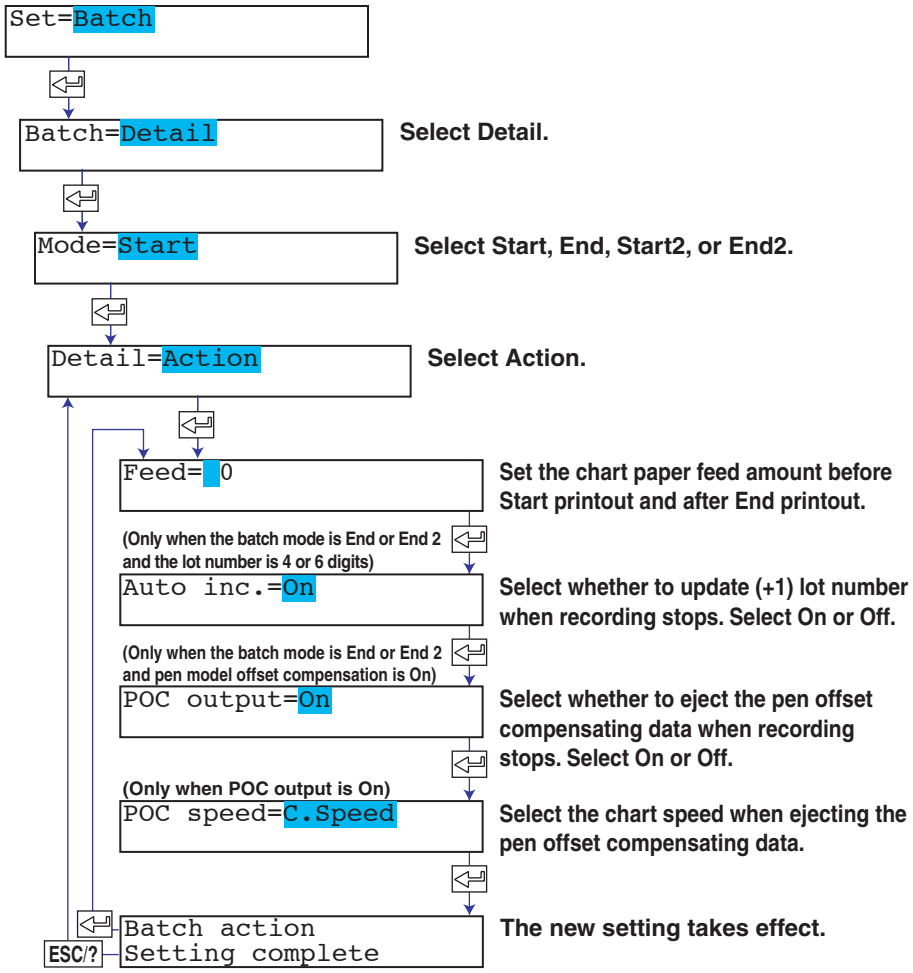
Setting Comments



Selecting Printout On/Off for the Batch Name, Chart Speed, and Date/Time.



Setting the Feed Amount, Lot Number Update, and Ejection of Pen Offset Compensating Data



Explanation

Batch No.

You can enter up to 26 characters.

The following are the characters that can be used.

Alphabet, numbers, symbols (%, #, °, @, +, –, *, /, (,), μ, Ω, ^{2}, ^{3}, .), and space

Lot No.

Enter using a 4 or 6 digit number. Select which number of digits to use (4 or 6) under “Lot No.” in Basic Setting mode.

Mode

Select Start, End, Start 2, or End 2. Start 2 and End 2 become available when you enable “Dual comment” in Basic Setting mode.

Line No.

1 to 5 lines can be printed out.

Comment

You can enter up to 62 characters.

The following are the characters that can be used.

Alphabet, numbers, symbols (%, #, °, @, +, –, *, /, (,), μ, Ω, ^{2}, ^{3}, .), and space

Feed
The available setting range is 0 to 50 mm.

POC output
You can eject the portion that is not recorded when recording stops with the pen offset compensating recording function.

POC speed
Select the chart speed when ejecting the portion that was not recorded.
Chart speed: Feeds at the specified chart speed.
450mm/h: Fixed to feed at 450 mm/h.

Note

The following operations are performed when using the header printout function (/BT1 option).

- **When the power is interrupted and is reintroduced, recording always stops. End printout/End printout 2 is not performed.**
- **When recording stop detection is performed (option /F1), recording and printout stop.**
  When chart paper is inserted, the instrument operates as follows.
  - When detected during Start printout and recording: Recording starts after Start printout.
  - When detected during End printout: When stopped, End printout/End printout 2 is not performed.
- Until Start printout/Start printout 2 and End printout/End printout 2 finishes, the instrument cannot transition to the next operation.
- When recording is started, the alarm and message printout information stored in the buffer prior to recording stop is cleared.

- **Please note the addition of section 6.15 to chapter 6.**

6.15 Setting the Message Format (/BT1 Option)

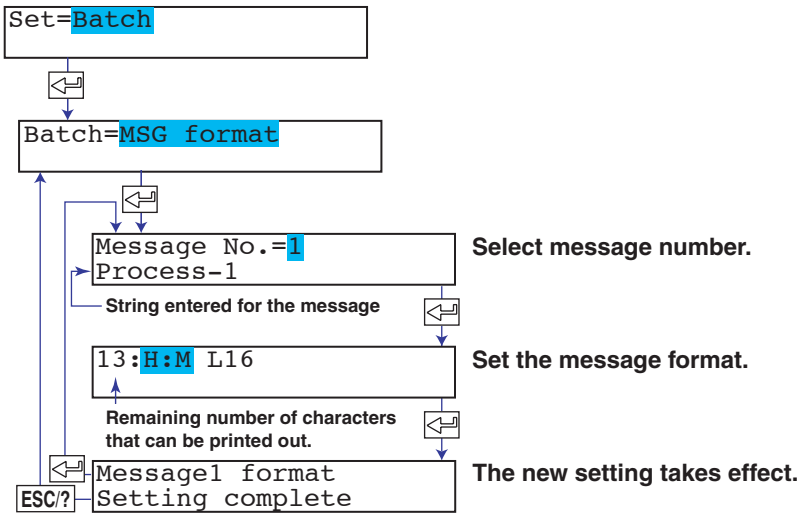
In the 5 message printouts, up to 35 characters can be printed out including the date/time and measured/computed values.

- Under Message format, you can specify the printout contents of date/time, message string, measured/computed values, and the order of these.
- Messages including measured/computed values can be printed out even when Start printout or End printout is disabled.
- For entering message strings, see section 6.8.
- Before entering settings, enable MSG format in Basic Setting mode (see section 7.24 on page 21 of this manual).

Procedure

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Press the ▽△ key or **SHIFT** + ▽△ key to select **Batch** and then press the ⏎ key.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **MSG format** and then press the ⏎ key.
4. Set each item and press the ⏎ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
5. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ⏎ key.
   If you are done, press the **ESC** key.
6. Hold down the MENU key for 3 seconds to return to Operation mode.

Entering message format



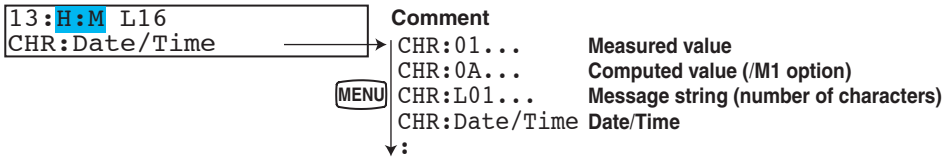
Explanation

Message No.

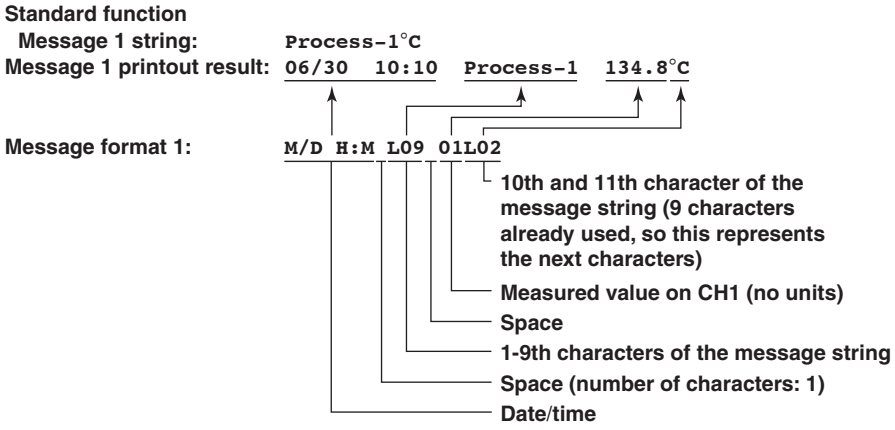
Select from 1 to 5.

MSG format

Choose a message format. Measured and computed values, message strings, and date/time can be set arbitrarily.



Example: Based on the message 1 string of the standard function, you can set a combination with message format 1 and print it out as message 1 including measured/computed values.



- **Date/Time Format and Number of Characters Used**

H:M	(Hour:Minute)	5 characters
H:M:S	(Hour:Minute:Second)	8 characters
M/D H:M	(Month/Day Hour:Minute)	11 characters
M/D H:M:S	(Month/Day Hour:Minute:Second)	14 characters
D/M H:M	(Day/Month Hour:Minute)	11 characters
D/M H:M:S	(Day/Month Hour:Minute:Second)	14 characters
D.M H:M	(Day.Month Hour:Minute)	11 characters
D.M H:M:S	(Day.Month Hour:Minute:Second)	14 characters
M.D H:M	(Month.Day Hour:Minute)	12 characters
M.D H:M:S	(Month.Day Hour:Minute:Second)	15 characters
Y/M/D H:M:S	(Year/Month/Day Hour:Minute:Second)	19 characters
M/D/Y H:M:S	(Month/Day/Year Hour:Minute:Second)	19 characters
D/M/Y H:M:S	(Day/Month/Year Hour:Minute:Second)	19 characters
D.M.Y H:M:S	(Day.Month.Year Hour:Minute:Second)	19 characters
M.D.Y H:M:S	(Month.Day.Year Hour:Minute:Second)	20 characters

- **Format of Measured Values and Computed Values, and Number of Characters Used**
  - The format for measured values is 01, 02, ...06 (depending on the model). No units are added. 7 characters are used.
  - The format for computed (/M1 option) values is: 0A, 0B, 0C, 0D, 0E, 0F, 0G, 0J, 0K, 0M, 0N, and 0P (depending on the model). No units are added. 9 characters are used.

- **Character String Format**
  The format for message strings is L01 (1 character), L02 (2 characters), ... L16 (16 characters).
  In the example on the previous page, L09 indicates “Process-1” and L02 indicates “°C .”

- **Page 7-29** **Please note the addition of the underlined text to the explanation in section 7.18, “Assigning Functions to the Remote Control Input Terminals (/R1 Option).”**

Math reset: Resets the computed result of the computation function (/M1 option).
Priority R–RCD: Starts/stops recording. When starting remotely, you cannot stop using key operation or communication (/BT1 option).
BatchCMT switch: Start printout/Start printout 2 and End printout/End printout 2 switches according to the status of the “BatchCMT switch” signal during the rising or falling of the “Record On/Off” or “Priority R–RCD” signal (/BT1 option).
None: No function is assigned.

Note

When you select “Priority R–RCD” and start recording remotely, you cannot stop recording using key operation or communications.

- **Please note the addition of section 7.24 to chapter 7.**

7.24 Enabling Start Printout, End printout, and Message Format (/BT1 Option)

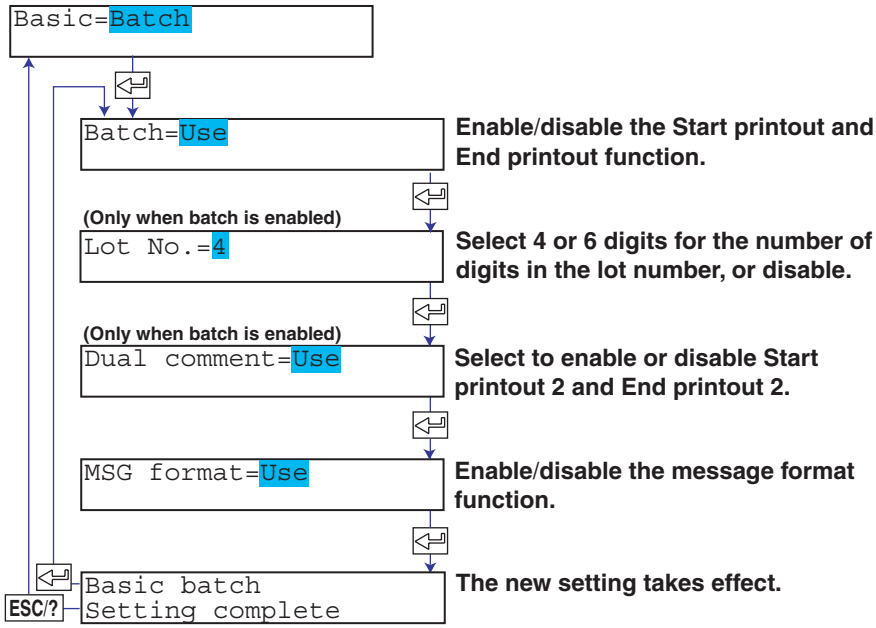
This section explains the details of enabling/disabling the Start printout, End printout, and Message format.

Basic Setting mode cannot be entered when recording is in progress or when computation is in progress on models with the computation function (/M1 option).

Procedure

Changing the Settings

1. Hold down the MENU key for 3 seconds to enter Setting mode.
2. Hold down the ▽△ and ◁ ▷ keys simultaneously for 3 seconds to enter Basic Setting mode.
3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Batch** and then press the ↵ key.
4. Set each item and press the ↵ key.
   Use the ▽△ key or **SHIFT** + ▽△ key to select values.
   For the procedure on how to enter values or characters, see section 4.2.
   If you press the **ESC** key in the middle of the operation, the settings entered up to then are cancelled, and the display returns to a higher level menu.
5. When the **Setting complete** screen appears, do either of the following:
   To correct the setting the ↵ key.
   If you are done, press the **ESC** key.



Applying the Changes and Returning to Operation Mode

Press the ▽△ key or **SHIFT** + ▽△ key to select **End** and then press the ↵ key. Press the ▽△ key to select **Store** and then press the ↵ key. The changes are applied, and the screen returns to Operation mode. If you select **Abort** and press the ↵ key, the changes are discarded, and the screen returns to Operation mode. Press the **ESC** key to return to the **Basic=** screen.

Explanation

Batch

Use: When starting/stopping recording, performs Start printout and End printout. You can now set up “Lot No.,” “Dual comment,” and, in Setting mode, “Batch.”
Not: Do not perform Start printout/End printout.

Lot No.

Batch name = Batch No. (character string) and Lot No. (number)
4: Prints out a 4-digit lot number. You can now set this under “Lot No.” in Setting mode.
6: Prints out a 6-digit lot number. You can now set this under “Lot No.” in Setting mode.
Not: Does not perform printout or display of the lot number.

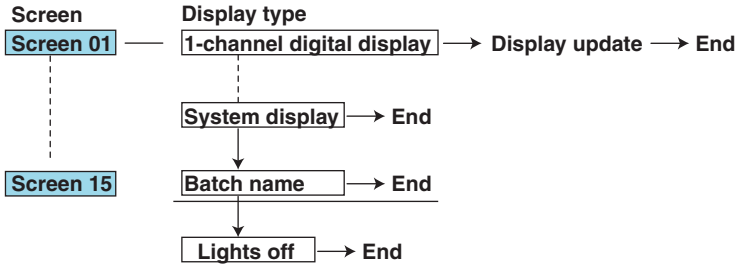
Dual comment

Use: You can now select Start printout 2 and End printout 2 in Setting mode’s Mode.
Not: There are no Start printout 2 and End printout 2 choices in Setting mode’s Mode.

MSG Format

Use: You can now set the MSG format in Setting mode.
Not: The MSG format item is not displayed in Setting mode.

- **Page 8-2 Please note the addition of Batch name to the display menu of data display setting menu. (Underlined)**



- **Page 10-1 Please note the addition to “Setting Errors.”**

Code	Message	Explanation/Countermeasures
15	Too many characters for printout.	Too many characters in the message printout including measured/computed values.
16	Too many characters for message.	Cannot enter a setting that exceeds the message string (16 characters).
170	This action is invalid during priority remote record.	Recording stop via communications or key operation cannot be accepted under the current settings. Perform the Stop using the remote control function.
171	This action is invalid during batch.	Cannot enter Basic Setting mode during header printout (until End printout is finished).

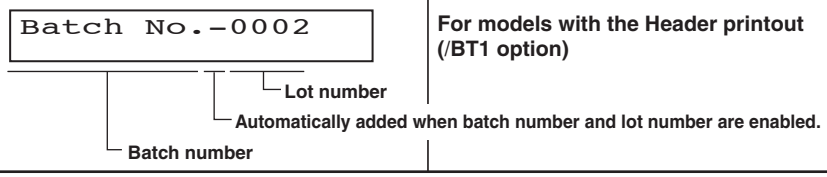
- **Page 12-7 Please note the addition to “Display Type.” (Underlined)**

Item	Specifications
Display information	
Display type	: System display <u>Batch name</u> Lights off

- **Page 12-9 Please note the addition to "Display type specifications." (Underlined)**

Item	Specifications
System display	
Batch name display	Batch name = batch number (up to 26 characters) and lot number (4 or 6 digit number, or none)

- **Page 12-11 Please note the addition to the specification display example and explanation. (between Status display and Lights off)**

Name	Display Example	Description
Batch name display		**For models with the Header printout (/BT1 option)**

- **Page 12-16 Please note the addition of the underlined text and Header printout to "Specifications of Optional Functions."**

Remote Control 5 Points (/R1)

Item	Specifications
Operation	: • Reset computation (/M1 option) (trigger) • Priority to remote Recording (/BT1 option) (edge) • Batch comment switching (/BT1 option) (level)

Header Printout (/BT1)

Item	Specifications
Printout function	When recording starts or stops, prints out the batch name, comment, date/time, and chart speed. Messages can also be printed out including measured/computed values.
Printed items	
Recording start/recording end printouts	Batch name: Batch number (up to 26 characters) and lot number (4 or 6 digit number, or Off) Comment (up to 32 characters x 5 lines) Chart speed Date/time: Year, month, date, time, minute, second (date format depends on the date printout/display format) Printout On/Off selection: Batch name, chart speed, and date/time
Message printouts	In the 5 message formats, measured/computed values, strings (up to 16 characters), and date/time can be arbitrarily combined and printed out (up to 35 characters total).

Add the 24-VDC/AC power supply function (/P1 option).

- **Page 1-6 "Integration Time of the A/D Converter"**
  - If Auto is selected, the recorder detects the power supply frequency and automatically selects 16.7 ms or 20 ms. Fixed to 20 ms on /P1 models that use the 24 VDC power supply.

- **Pages 2-13 and 2-14 "2.5 Power Supply Wiring"**

WARNING

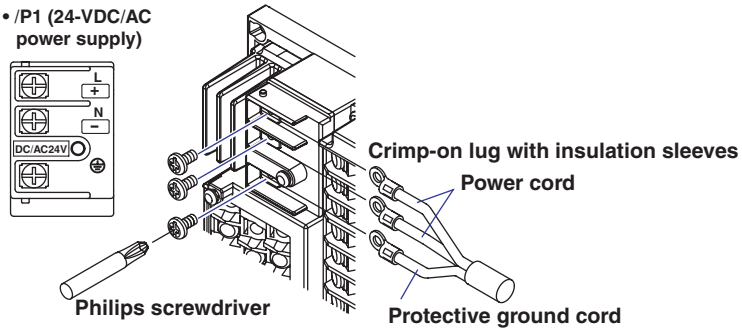
- Make sure to provide a power switch (double-pole type) on the power supply line in order to separate the recorder from the main power supply. Put an indication on this switch as the breaker on the power supply line for the recorder and indications of ON and OFF.
  Switch specifications
  Rated power current: 3 A or more (/P1 option)
  Rated rush current: 70 A or more (/P1 option)
  Complies with IEC 60947-1, 3.
- Connect a fuse in the power supply line.
  Between 4 A and 15 A (/P1 option)
  Use a fuse approved by CSA (for the use in North America) or VDE (for the use in Europe).

Use a power supply that meets the following specifications:

Item	Specifications (/P1 Option)
Rated supply voltage	24 VDC/AC
Allowable power supply voltage range	21.6 to 26.4 VDC/AC
Rated power supply frequency	50/60 Hz (for AC)
Allowable power supply frequency range	50/60 Hz ± 2% (for AC)
Maximum power consumption	25 VA (for DC), 35 VA (for AC)

Wiring Procedure

• /P1 (24-VDC/AC power supply)



- **Page 12-16**

24-VDC/AC Power Supply Operation (/P1)

Item	Specifications			
Rated supply voltage	24 VDC/AC			
Allowable power supply voltage range	21.6 to 26.4 VDC/AC			
Withstand voltage	1000 VAC at 50/60 Hz for one minute (between the power terminal and the ground terminal)			
Rated power supply frequency	50/60 Hz (for AC operation)			
Allowable power supply frequency range	50 Hz ± 2% or 60 Hz ± 2% (for AC operation)			
Effects of power supply voltage fluctuation	The fluctuation in the measured values is within ±1 digit and that in the recording is within ±0.1% in the recording span for the 21.6 to 26.4 VAC/DC range.			
Effects of power supply frequency fluctuation	The fluctuation in the measured values and recording is ±(0.1% of rdg + 1 digit) at the rated frequency ±2 Hz.			
Rated power	35 VA (for DC operation) or 45 VA (for AC operation)			
Power consumption	**Model**	**24 VDC**	**24 VAC**	**Maximum**
	1 to 4 pen models	Approx. 7 VA*	Approx. 13 VA*	Approx. 35 VA
	6 dot model	Approx. 8 VA*	Approx. 13 VA*	Approx. 35 VA
	* When balanced			