User's Manual

Models 437101/437102/437103/437104/
437106/437112/437118/437124
µR20000 Recorder

Notice of Alterations

Please make the following alterations to the *User's Manual IM 04P02B01-01E* (see underlined text).

■ Page i "Foreword"

Thank you for purchasing the YOKOGWA µR20000 Recorder.
This manual describes the functions (excluding the communication functions), installation and wiring procedures, operating procedures, and lists the handling precautions of the µR20000 Recorder. To ensure correct use, please read this manual thoroughly before beginning operation.

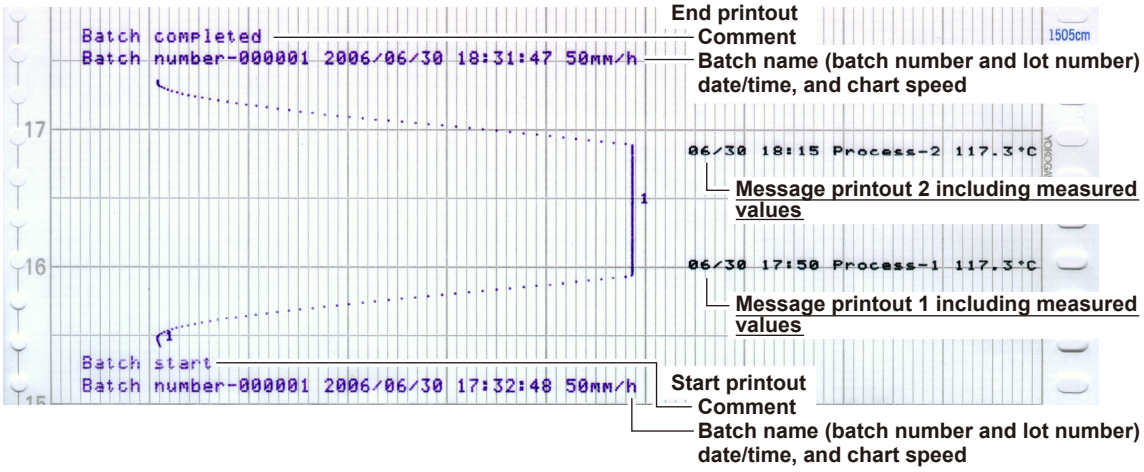
■ Page iv "Safety Precautions"

Please note the addition of the following.

CAUTION

This instrument is a Class A product. Operation of this instrument in a residential area may cause radio interference, in which case the user is required to take appropriate measures to correct the interference.

■ Page 1-22 "Header Printout (/BT1 Option)"



Start Printout and End printout

"Start printout" or "Start printout 2" prints out when recording starts. Also, "End printout" or "End printout 2" prints out when recording stops.

■ Page 1-22, 1-23, 6-19, 6-20, and 12-17

* Computed values can also be included on models with the /M1 option.

■ Page 1-23 "Switching between Start Printout and Start printout 2, and between End printout and End printout 2"

Recording 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

■ Page 1-37 “1.10 Function Setup Guide”

Other functions

Item	Description	Reference Section
Key lock	• Target keys and password Use **Keylock** in Basic Setting mode to set the keys to be key-locked and the password.	7.10
	• Enable the key lock Use **Func > Keylock** in Operation mode to turn key lock Use/Not.	3.13

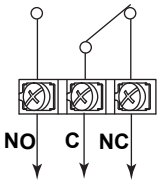
■ Page 2-11 “Wiring Procedure”

Please note that the terminal wiring diagram and input/output specifications have been changed as follows.

3. Replace the terminal cover and fasten it with screws.

   The proper torque for tightening the screws is 0.6 N•m.

Alarm output/FAIL output/chart end output



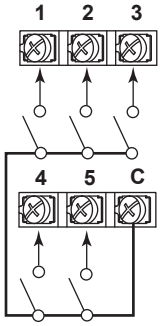
Output type: Relay connection
Contact rating: 250 VAC (50/60 Hz)/3 A, 250 VDC/0.1 A (for resistor load)
Dielectric strength: 1500 VAC at 50/60 Hz for one minute
(between output terminals and the ground terminal)

NO(Normally Opened), **C**(Common), **NC**(Normally Closed)
The alarm output terminals correspond to I01–I06, I11–I16, I21–I26, and I31–I36 in the alarm output relay settings.

Remote control input

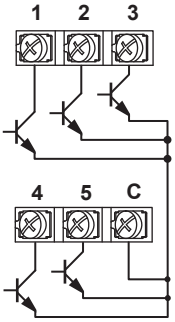
• Relay contact input (Voltage-free contact)

Contact closed at 200 Ω or less
Contact open at 100 kΩ or greater

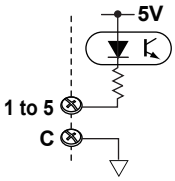


• Transistor input (Open collector)

ON voltage: 0.5 V or less (30 mADC)
Leakage current when turned OFF:
0.25 mA or less



Internal circuit



Input format:
Photocoupler isolation
Shared common (C)
Allowable input voltage:
5 VDC

Withstand voltage: 500 VDC for one minute (between input terminals and the ground terminal)

■ Page 3-11 “3.5 Starting/Stopping the Recording”

Please note the addition of the following.

Note

For models with the FAIL/chart end detection and output function (option code /F1), the chart feed will not start even when pressing the RCD key if the chart paper is empty or almost out. Insert new chart paper before pressing the RCD key.

■ Page 4-5, page 4-7 to 4-9, and page 4-11

Recorder version: 1.31

■ Page 4-11 “Header printout (/BT1 option)”

Batch (BT1 option)

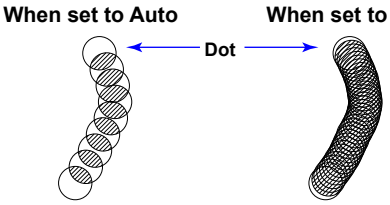
Setup Item	Pen/Dot	Selectable Range or Selections	Default Value
*Batch > Batch No	-	26 characters or less	Blank
*Batch > Lot No.	-	0000 to 9999 or 000000 to 999999	0000 or 000000

■ Page 6-1 “6.1 Setting the Trend Recording Interval (Dot Model)”

Please note that the underlined portion has been changed.

2. Press the ▽△ key or **SHIFT** + ▽△ key to select **Aux** and then press the ⏎ key.

Auto: The trend recording interval is set according to the chart speed so that the dots do not overlap many times.



The printing interval differs depending on the chart speed.

■ Page 6-10 “6.10 Setting the Alarm Delay Duration”

3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Alarm delay time** and then press the ⏎ key.

■ Page 6-13 “6.13 Performing Calibration Correction (/CC1 Option)”

2. Press the ▽△ key or **SHIFT** + ▽△ key to select **Calibration** and then press the ⏎ key.

■ Page 7-1 “7.1 Changing the Auxiliary Alarm Function”

3. Press the ⏎ key with **Alarm** shown on the screen.

■ Page 7-27 “7.17 Initializing the Settings”

This section explains the details of initializing the recorder settings to their factory default.
Be careful, because all settings except the date/time and the adjustment values of the pen/dot recording position and printer carriage position will be initialized.

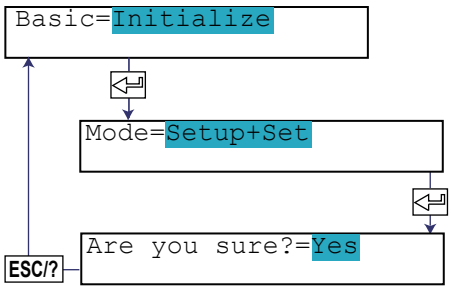
Procedure

5. To execute the initialization, press the ▽△ key to select **Yes** and then press the ⏎ key.

   The settings are initialized, and the recorder returns to Operation mode.

   To cancel the initialization, press the **ESC** key The screen returns to the **Basic=Initialize** screen.

   If you press the ▽△ key to select **No** and press then the ⏎ key, nothing happens.



Select the range to be initialized.

Select Yes and press ⏎ to execute initialization and return to Operation mode.

■ Page 7-37 “7.22 Enabling/Disabling the Customized Menu”

Note

Changing the Basic Setting Mode Settings without Disabling the Lock

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

Procedure

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■ Page 7-38 “7.23 Setting the Calibration Correction Function (/CC1 Option)”

3. Press the ▽△ key or **SHIFT** + ▽△ key to select **Calibration** and then press the ⏎ key.

■ Page 9-19 “9.11 Setting the Alarm Delay Duration”

4. Press the ▽△ key or **SHIFT** + ▽△ key to select **Alarm delay Time** and then press the ⏎ key.

■ Page 11-10 “11.7 Recommended Replacement Periods for Worn Parts”

Pen Model

Item	Replacement Period	Part Name	Part No.	Note	Quantity Used
Display	5 years*	DISPLAY ASSY	B8802CA	For pens 1 to 4	1
Pen servo	5 years	SERVO ASSY	B8802KE	Shared by all pens (excludes the pen arm ASSY)	1 to 4

■ Page 12-1 “12.1 Input Specifications”

Scan interval

Model \ Integration time of the A/D converter	20 ms/16.7 ms	100 ms
6 dot	1 s	2.5 s
12 dot	2.5 s	5 s
18 dot	2.5 s	10 s
24 dot	2.5 s	10 s

■ Page 12-2 “Input Computation (Standard Function)”

Please note the addition of the square root measurement range accuracy computation method.

Square root computation

Measurement range accuracy computation

A: Voltage measurement accuracy (digits)

B: Voltage span (digits)

C: Scaling span (digits, upper limit of scaling – lower limit of scaling)

Input Range	Computed Value Accuracy Equation (Digits) Rounded up to the decimal place	Recording Accuracy
0% or more, less than 1.5%*	0.1 × C + 2	Left value + 0.3% of recording span
1.5% or more, less than 6.25%	A / B × C × 5 + 2	Left value + 0.3% of recording span
6.25% or more, less than 25%	A / B × C × 2 + 2	Left value + 0.3% of recording span
25% or more, 100% or less	A / B × C + 2	Left value + 0.3% of recording span

* Also includes case when: (input voltage – lower limit of the specified voltage range) / used range × 20000 < 256. If the specified range is, for example, 1–5 V, the lower limit of the specified voltage range is 1.

■ Page 12-15 “Cu10, Cu25 RTD Input (/N1)”

Measurable Range : –200.0 to 300.0°C
–328.0 to 572.0°F

■ Page 12-16 “Portable Type (/H5x)”

Please note that the underlined portion has been changed.

Wight Add 1.7 kg to the weight given in General Specifications (see section 12.6, excluding the power cord)

■ Page 12-18 “Construction”

Weight 1-pen: approx. 7.8 kg, 2-pen: approx. 7.8 kg, 3-pen: approx. 7.9 kg, 4-pen: approx. 7.9 kg
6-dot: approx. 8.4 kg, 12-dot: approx. 8.6 kg, 18-dot: approx. 8.8 kg, 24-dot: approx. 9.0 kg

■ Page 12-20 “Standard Performance”

Measurement and recording accuracy

Input Type	Range Type	Measurement (Digital Display)	
		Measurement Accuracy	Highest Res
TC (excludes RJC accuracy)	E J T	±(0.15% of rdg + 0.5°C) except ±(0.15% of rdg + 0.7°C) for J: –200 to –100°C	0.1°C
	N	±(0.15 % of rdg + 0.7°C)	
	W	±(0.15 % of rdg + 1°C)	
	L U	±(0.15% of rdg + 0.5°C) except ±(0.15% of rdg + 0.7°C) for L: –200 to –100°C	