



**OpreX**<sup>™</sup>Data Acquisition

# μR10000 / μR20000

Industrial Recorders

Bulletin 04P02B01-01E

# **YOROGAWALINDUSTRIAL RECORDERS**

# The Information You Need: Easier to Acquire, Easier to Read Data redundancy (SD memory card support) offers safety and reliability µR20000 (4 pen model)

04	2000.	٩C
	***************************************	 

RECORD





- · Broad lineup
- Universal input



Computation types: Arithmetic, logic, relation and static computations Recording: Pen model: Assignable to any pen,

Dot model: Fully recordable

• Supports Ethernet or RS-422A/485 interfaces

• SD memory card support (option)



# NTELLIGENT INDUSTRIAL RECORDERS

# **Delivers** Confidence

The critical factor in continuous recording using industrial recorders is reliability. Leveraging the latest technology, Yokogawa brings you that reliability in a compact, lightweight unit that embodies all the breakthroughs and know-how that Yokogawa has cultivated over the years.

### Bringing You the Highest Reliability

### Servo Unit

The pen servo unit takes advantage of an ultra-small, rack-and-pinion stepping motor. The servo unit is smaller and consumes less power than previous models.

Splash-proof Front Door (conforms to DIN 40050-IP54) The front door meets DIN 40050-IP54 standards in panel-mount installations

Safety/EMC Standards Yokogawa's highly reliable industrial recorders support safety and EMC (electromagnetic compatibility) standards. And of course, the  $\mu$ R conforms to the European CE marking standard.



6 dot model



SD Memory Card \* With saving of measured data, printout of measured data (dot model only), and saving and loading of settings, µR recorders are ideal for ensuring redundancy. \* Option

### **Optional Terminals\***

Individual terminals are removable, making wiring and maintenance easy

Input Terminals\*

Ethernet (10Base-T) Data management possible via network.



(EMI testing LAB in Yokogawa)

### **High-Voltage Solid State** Scanners

High withstand voltage semiconductor relays have been adopted for scanners that switch the input signal. They enable high speed scanning of six dots per second, increase the life of the scanner, and reduce

### Use of ASICs

The recorders feature a high degree of functional integration through Yokogawa's renowned ASICs (application specific integrated circuits, or custom ICs). They allow for reduced power consumption, increased lifespan of components, and suppressing of heat emm

### Matching the Displayed Operation Screen to the Application

The user can switch between up to fifteen previously configured operation screens using the DISP key.



### Lightweight

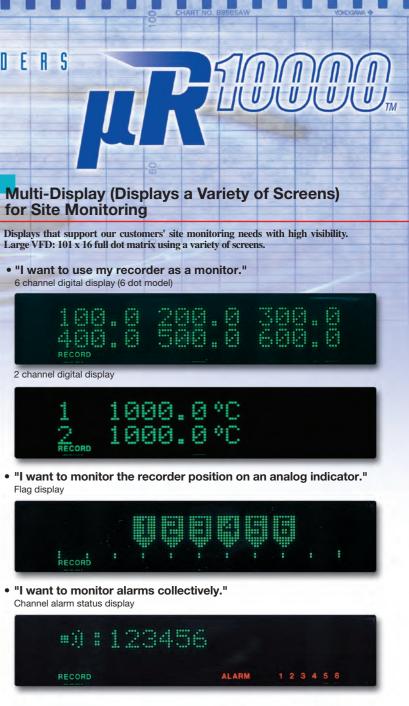
Innovative molding technology reduces the number of parts and lowers the weight of the unit. Higher efficiency and low heat emissions have also been achieved through a high degree of integration and a new type of servo unit

### Navigational Display Makes Setup a Snap

The instrument features a simple configuration, with Operation mode for normal use, and Setting mode for use during setup. In Operation mode, measured values, time, and alarms are updated, and lists are printed. In

Set							
RECORD	EYLOCK N	ATH CH		ALARM			1
	CHARACTER	$\nabla \Delta$	<b>V</b>	ESC/?	SHIFT	-	
RCD	MENU	DISP	•)) FUNC	<b>U</b> MENU	FEED	CH UP	

Uses a large, easy-to-view VFD 101 x 16 full dot matrix display. All settings are interactive, and supported by the navigational display, offering easier to read selections and superior ease of operation.



Setting mode, you can enter measuring ranges, alarm values, and other parameters. Also, Setting mode offers a navigational display that eases entry of settings.

Navigational display to support setting selections. (Example: Range Setting) **amo**rdine sp



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The pen servo unit takes advantage of an ultra-small, rack-and-pinion stepping motor. The servo unit is smaller and consumes less power than previous models.

> Splash-proof Front Door (conforms to DIN 40050-IP54) The front door meets DIN 40050-IP54 standards in panel-mount installations.

High-Voltage Solid State Scanners

High withstand voltage semiconductor relays have been adopted for scanners that switch the input signal. They enable high speed scanning of six dots per second or twelve to twenty-four dots in 2.5 seconds, increase the life of the scanner, and reduce noise.

### Use of ASICs

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### Safety/EMC Standards

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24 dot model

### Lightweight

S 1

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With saving of measured data, printout of measured data (dot model only), and saving and loading of settings, µR recorders are ideal for ensuring redundancy \* Option

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The user can switch between up to fifteen previously configured operation screens using the DISP key.



**Optional Terminals\*** \* Individual terminals are removable, making wiring and maintenance easy.

Input Terminals\*

### Ethernet (10Base-T) Data management possible via network.

# INTELLIGENT INDUSTRIAL RECORDERS

matrix using a variety of screens.



4 channel digital display



Flag display



 "I want to monitor alarms collectively." Channel alarm status display



### Navigational Display Makes Setup a Snap

The instrument features a simple configuration, with Operation mode for normal use, and Setting mode for use during setup. In Operation mode, measured values, time, and alarms are updated, and lists are printed. In Setting mode, you can enter

Navigational display to support setting selections (Example: Range Setting)



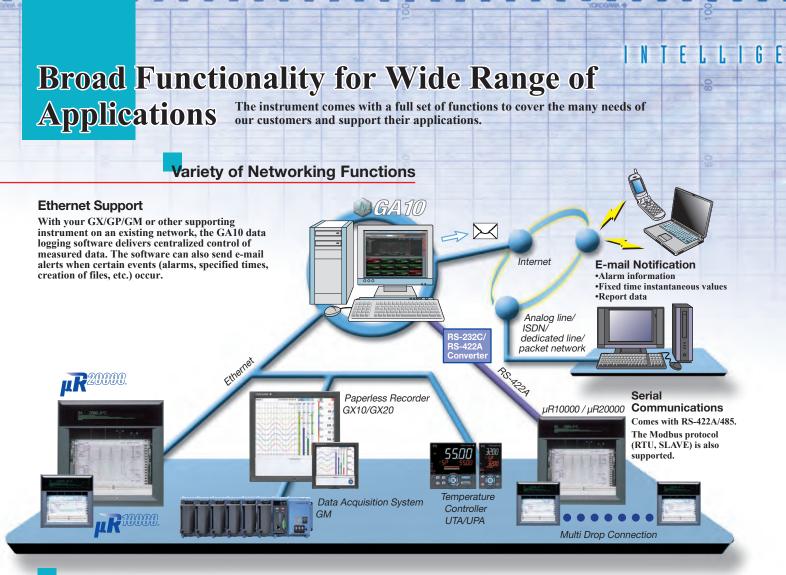
# Easier to Acquire, Easier to Use

Uses a large, easy-to-view VFD 181 x 16 full dot matrix display. All settings are interactive, and supported by the navigational display, offering easier to read selections and superior ease of operation.

R20000 Industrial Recorders



measuring ranges, alarm values, and other parameters. Also, Setting mode offers a navigational display that eases entry of settings.



### Application Software That Expands the Possibilities of the μR

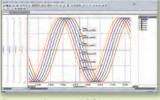
Universal Viewer (free download)



Data files saved on the SD memory card can be loaded and displayed. For specified data, you can also perform statistical computation over an area and export to ASCII, Excel, or other formats.

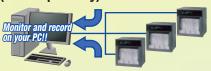
https://www.yokogawa.com/ns/

### **Displaying waveforms with the Viewer**





### Data Logging Software GA10 (sold separately)



With Ethernet or RS-422/485 (optional), the software can gather measured data from a variety of instruments including the  $\mu R$  series onto the PC. This gives you power over your data including the ability to monitor remotely from the office, record electronically on the PC, and centrally manage data from multiple  $\mu R$  units.

### Easy-to-read monitor screen



### Variety of functions

- Alarm sound - E-mail transmission - Add client monitoring PCs ...and more

\* For details, see the GA10 catalog, bulletin 04L65B01-01EN

## RXA10 Configuration Software (sold separately)

Entry and management of settings for measurement and calculation channels is easier than ever. Also, settings can be entered via communication interface.



7 µR10000/µR20000 Industrial Recorders

### INDUSTRIAL ECORDERS R

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8 Report printout \*

6 Alarm printouts (cleared)

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6 dot model

4 pen model

µR10000

108 HR

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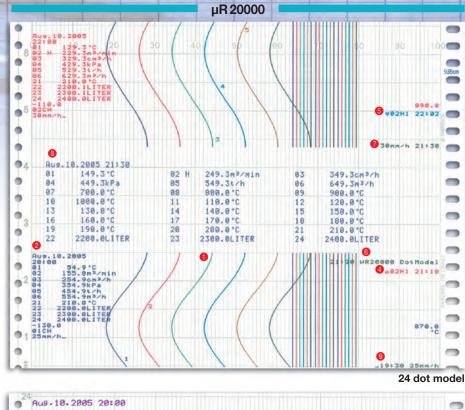
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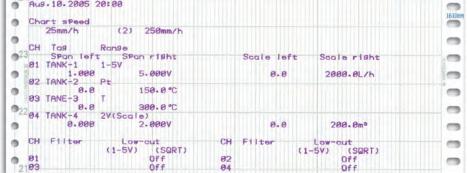
NO14

2CH GREEN

### A Wealth of Recording and Printing Functions

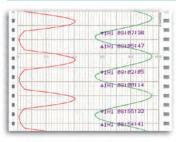
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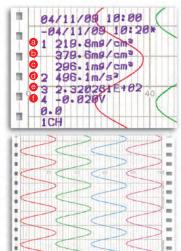
List printout

- Analog recording Periodic printouts\*
- 4 Alarm printouts (occurring)
- 6 Message printouts
- 8 Manual printout
- Ohart speed change printout () Chart start time printout
- \*: In Set mode, you can select periodic printout, report printout, or "None." Select from the following report printout contents: AVE (average) by channel only, MIN (minimum) only, MAX (maximum) only, MIN/MAX/AVE, SUM, or INST (instantaneous value).



### Partial expanded recording Any important portion within the full

scale can be expanded for recording.



### List printout

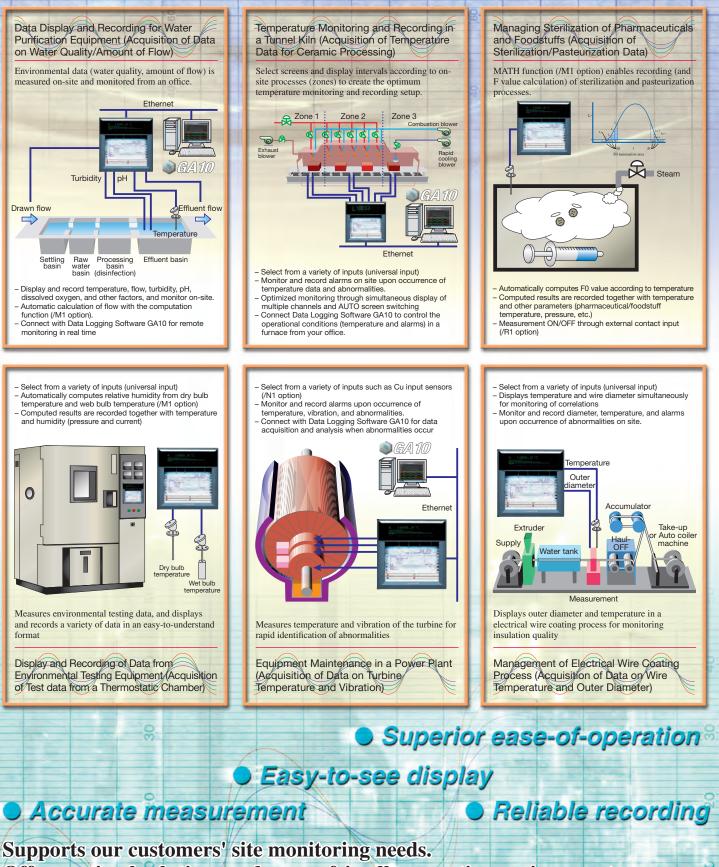


### Zone recording

Recording areas (zones) for each channel can be recorded separately.

# A Surprising Variety of Applications and Uses to Meet Every Customer's Needs.





Offers optimal solutions and a user-friendly operating environment.

9 /µR10000/µR20000 Industrial Recorders

## **Specifications**

### See the general specification (GS04P01B01-01E, GS04P02B01-01E) for the detailed specifications.

### Input

- Measurement Inputs
- $\mu$ R10000: 1, 2, 3, 4 (pen) and 6 (dot) points  $\mu$ R20000: 1, 2, 3, 4 (pen) and 6, 12, 18, 24 (dot) points
- Inputs

- $\label{eq:linear_line$
- DCA: Direct Current προτετου Measurement Interval Pen model--- 125 ms/channel Dot model---- μR1000: 1 s/6 dot or 2.5 s/6 dot μR20000: 1 s/6 dot, 2.5 s/12 to 24 dot or 2.5 s/6 dot, 5 s/12 dot, 10 s/18 to 24 dot
- Available on TC and 1-5 VDC range, ON/OFF selectable (per channel) 1-5V Burnout: less than 0.2V
- Filter Pen model:
  - Signal damping ON/OFF selectable (per channel), Time constant (2, 5, 10sec) Moving average ON/OFF selectable (per channel), Moving average cycle (2 to 16) Dot model:
- Standard Computation Differential computation, Linear scaling, Square root, Bias addition

### **Recording and Printing**

- Recoring Method
   Pen model: Disposable felt pens, Plotter pen, Dot model: 6 color wire dot
- Pen Offset Compensation: ON / OFF selectable (Pen model only)

### Effective Recording Width μR10000: 100 mm, μR20000: 180 mm

- Chart μR10000: Plain-paper Z-fold chart (16 m) μR20000: Plain-paper Z-fold chart (20 m)
- Recording Period
- Pen model: Continuous for each channel Dot model: µR10000; Max. 6 ch/10sec µR20000; Max. 6 ch/10 s, 7 to 12 ch/15 s. 13 to 18 ch/20 s, 19 to 24/30 s
- Chart Speed Pen model: 5 to 12000 mm/h (82 increments) Dot model: 1 to 1500 mm/h (1 mm step)
- Chart Speed Change speed 1, speed 2 change by remote control signals (option).
- Recording Colors
- pen1=red, pen2=green, pen3=blue, pen4=violet, plotter pen=purple µR10000 Pen model: Dot model:
  - ch1=purple, ch2=red, ch3=green, ch4=blue, ch5=brown, ch6=black (color can be assigned to any channel)
- $\label{eq:resolution} \begin{array}{l} \mu R2000 \\ \text{ch1}, 7, 13, 19 = \text{purple ch2}, 8, 14, 20 = \text{red ch3}, 9, 15, 21 = \text{green} \\ \text{ch4}, 10, 16, 22 = \text{blue ch5}, 11, 17, 23 = \text{brown ch6}, 12, 18, 24 = \text{black (color} \\ \text{can be assigned to any channel)} \end{array}$

### Recording Format

Zone recording, Partial expanded recording Channel number or TAG (Dot model only), Alarm, Periodic printout or Report printout, Message printout, Record start Analog recording: Digital printout: time, Chart speed printout, List printout, Manual printout, SET UP List printout

### Display

- **Display Method** μR10000: VFD (101×16 dot matrix), μR20000: VFD (181×16 dot matrix)
- Display Types
   Multiple displays
   Digital, bar, flag, D/DO display etc. can be displayed.
   15 display types can be selected from approx. 80 display types.
- Status Display

Recording in progress (RECORD), Shared alarm (ALARM), Channel No. display of coccuring algram (pen model: 1 2 3 4 or Dot model: µR10000; 1 to 6, µR20000; 1 to 24), Chart end display (CHART END) For the model with option (FAIL/chart end detection and output), Math (MATH), Key lock display (KEY LOCK)

- Setting Settings display by interactive mode. In setting, navigator method is used. Display updated interval can be selected from AUTO/MAN.
- Bar Gragh Display Measurment value: left/right (%) reference or center zero reference display (each channel selectable).
- Alarm: Alarm setting level display and flashing display of occuring alarm.
- Display Brightness Setting Display brightness level: 1 to 8

### Alarm

- Number of Levels: Up to 4 level for each channel.
- Alarm Type High and low limits, differential high and low limits, high and low rate-of-change limits and delay high and low Interval time of rate-of-change alarms: The measurement interval times 1 to 15

- Display
  Set value is indicated as a point on the bar gragh (only for bar gragh display)
  In case of an alarm:
   For digital display: Alarm type indicator
   Shared alarm display
  - - Alarm occuring channel No. is displayed
      For bar gragh display: Flashing point indicator

### Power supply

- Rated Power Voltage: 100-240 VAC (automatically selected)
- Power Voltage Range: 90-132 VAC, 180-264 VAC
- Rated Power Flequency: 50 Hz/60 Hz (sutomatically selected)
- Power Consumption

			(Approx.)
µR10000	100 VAC power source	240 VAC power source	Maximum
1 to 4 pen model	12 VA*	17 VA*	40 VA
6 dot model	13 VA*	18 VA*	40 VA
tin balance			· · · · · · · · · · · · · · · · · · ·

'In balance

			(Approx.)
µR20000	100 VAC power source	240 VAC power source	Maximum
1 to 4 pen model	17 VA*	25 VA*	55 VA
6 to 24 dot model	17 VA*	23 VA*	55 VA
*In balance			,

**General Specification** 

- Ambient Temperature and Humidity 0 to 50°C, 20 -80%RH (at 5 to 40°C)
- Memory Backup
- Litium battery to save settings parameters Approx. 10 years (at room temperature, for standard model)
- Settings Protection Function Password method
- Internal Light
- White LED
- Operation Position 0° Frontwards: Within 30° from horizontal

### **Optional Specification**

- Alarm Output Relay (/A1, /A2, /A3, /A4\*, /A5\*) Number of output: 2, 4, 6, 12\*, 14\* Relay contact rating: 250 VDC/0.1 A (resistance load), 250 VAC (50/60 Hz) /3 A \*only for µR20000
- ut/output Measument value output and setting parameter input/output Conforms to EIA-422A (RS-422A) and EIA-485 (RS-485) standard
- Clamped Input Terminal (/H2): Clamped input
- Non-glare Door Glass (/H3)
- Non-glare door glass for front doo
- Portable Type (/H5[]) Provides carrying handle and power code
- **Mathematical Function (/M1)** Number of computation channel: 8 channels (pen model), 12 channels ( $\mu$ R10000 dot model), 24 channels ( $\mu$ R20000 dot model) Arithmetic operation (+, –, ×, ÷), Square, Absolute, Common logarithm (y=log10x), Exponential (eX), Power (Xn), Relational operator (<, ≤, >, ≥, =, ÷), Logic (AND, OR, NOT, XOR) Statistical computation: Statistical type: MAX, MIN, AVE, SUM, MAX-MIN Comutation channel can be recorded
- Cu10, Cu25 RTD Input (/N1) Cu10, Cu25 RTD input Pt100 and JPt100 inputs can be used together.
- **3 Legs Isolated RTD Input (/N2)** A, B, b legs of RTD are isolated for dot model
- Expansion Inputs (/N3)
   Following input types can be supported besides standard inputs.
   TC: PR40-20, PLATINEL, NiNiMo, W/WRe26, Type N (AWG14), Kp vs Au7Fe RTD: Pt25, Pt50, Ni100 (SAMA), Ni100 (DIN), Ni120, J263\*B, Cu53, Cu100 \*Cu100 : α=0.00425 at 0°C
- 24V DC/AC Power Supply (/P1) Rated power supply: 24 V DC/AC Allowable power supply voltage range: 21.6 to 26.4 V DC/AC Rated power supply frequency: 50/60 Hz Remote Control(/R1)
- Below actions can be assigned to up to 5 points Recording start/stop, Chart speed change, Message printout start, Manual printout start, Alarm ACK, Time set, Math start/stop, Math reset etc.
- Calibration Correction (/CC1) Corrects the measurement value of each channel using segment linearizer approximation.
- Number of segment points: 2 to 16
- Header Printout (/BT1)
   Batch name, comment, time, chart speed are printed in record Start/Stop.
   /R1 option allows you to execute functions of /BT1 easily by a contact input.
- SD Memory Card (/EM1)
   SD memory cards can be used as external storage media. Measured data can be saved and replayed (dot model only), and setting parameters can be saved and loaded.

RS-422A/485 Communication Interface (/C3) Ethernet Communication Interface (/C7) Measurment value output and setting parameter input/output Transmission media:10 Base-T Protocol: TCP, IP, UDP, ICMP, ARP

### Model Codes

µR10000

Model Code	Suffix Code	Option Code	Description
436101			µR10000 1 pen recorder
436102			µR10000 2 pen recorder
436103			µR10000 3 pen recorder
436104			µR10000 4 pen recorder
436106			µR10000 6 dot recorder
Language	-2		English / German <sup>9</sup> / French <sup>9</sup> , degF & DST
Option		/A1	Alarm output relay (2 contacts) 1
		/A2	Alarm output relay (4 contacts) 1
		/A3	Alarm output relay (6 contacts) 1
		/BT1	Header printout
		/C3	RS-422A/485 communication interface 3
		/C7	Ethernet communication interface <sup>2</sup>
		/CC1	Calibration Correction
		/EM1	SD memory card <sup>3</sup>
		/H2	Clamped input terminal 4
		/H3	Non-glare door glass
		/H5[] <sup>8</sup>	Portable Type 7
		/M1	Mathematical function
		/N1	Cu10, Cu25 inputs
		/N2	3 legs Isolated RTD 4.5
		/N3	Expansion inputs <sup>6</sup>
		/P1	24V DC/AC Power Supply <sup>7</sup>
		/R1	Remote control (5 contacts)

 /R1
 Remote control (5 contacts)

 1: Only one of /A1, /A2, /A3 can be selected, 2: /C3 and /C7 can not be specified together. 3: /C3 and /EM1 can not be specified together. 4: /H2 and /H2 can not be specified together, 5: /A2 can be specified together, 6: /A2 can be specified together, 8: /H51 (D-Power cord UL, CSA stid, F-Power cord VDE stid, R-Power cord SA stid, J-Power cord BS stid, H-Power cord GB stid), 9: Available from firmware version R1.21

Model Code	Suffix Code	Option Code	Description
437101			µR20000 1 pen recorder
437102			µR20000 2 pen recorder
437103			µR20000 3 pen recorder
437104			µR20000 4 pen recorder
437106			µR20000 6 dot recorder
437112			µR20000 12 dot recorder
437118			µR20000 18 dot recorder
437124			µR20000 24 dot recorder
Language	-2		English/German 10 / French 10, degF & DST
Option		/A1	Alarm output relay (2 contacts) 1
		/A2	Alarm output relay (4 contacts) 1
		/A3	Alarm output relay (6 contacts) 1
		/A4	Alarm output relay (12 contacts) 1
		/A5	Alarm output relay (24 contacts) 1.2
		/BT1	Header printout
		/C3	RS-422A/485 communication interface <sup>3</sup>
		/C7	Ethernet communication interface <sup>3</sup>
		/CC1	Calibration Correction
		/EM1	SD memory card <sup>4</sup>
		/H2	Clamped input terminal 5
		/H3	Non-glare door glass
		/H5[] <sup>9</sup>	Portable Type 8
		/M1	Mathematical function
		/N1	Cu10, Cu25 inputs
		/N2	3 legs Isolated RTD 5,6
		/N3	Expansion inputs 7
		/P1	24V DC/AC Power Supply <sup>8</sup>
		/B1	Remote control (5 contacts)

Model Code	Description	OS
RXA10-01	RXA10 configuration software	Windows 8.1/10
RXA10-02	RXA10 configuration software (With interface unit)	Windows 8.1/10

-Notes on using the RXA10 Configuration Software> When the /EM1 recorder option is specified, the interface unit supplied with the RXA10 Configuration Software cannot be used. If you need to use the RXA10 Configuration Software, specify the /C7 recorder option (Ethernet communication interface) and also purchase the RXA10-01.

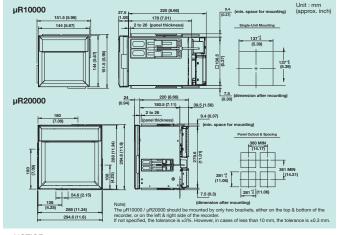
### Standard Accessories

Name	1 pen	2 pen	3 pen	4 pen	dot	
Z-fold chart	1	1	1	1	1	
6 color ribbon cassette	6 color ribbon cassette		-	-	-	1
Red		1	1	1	1	-
Disposable felt-pen	Green	-	1	1	1	-
cartridge	Blue	-	-	1	1	-
	Violet	-	-	-	1	-
Plotter pen Purple		1	1	1	1	-
SD memory card (1 GB, with the /EM1 option)		1	1	1	1	1
Mounting brackets	2	2	2	2	2	
Operation manual	1	1	1	1	1	

### Spares/Optional Accessories

Name			Model Code (Parts No.)	Specification		
Z-fold chart for p		R10000	B9565AW	10 (sales unit)		
Z-1010 Chart	for µ	R20000	B9573AN	TO (sales unit)		
6 color ribbon	for µ	R10000	B9901AX	4 (		
cassette	for µ	R20000	B9906JA	1 (sales unit)		
		Red	B9902AM	1 (sales unit, 3 piece/unit)		
Disposable felt	-pen	Green	B9902AN	1 (sales unit, 3 piece/unit)	1	
		Blue	B9902AP	1 (sales unit, 3 piece/unit)	<ul> <li>Disposable</li> <li>felt-pen, Plotter p</li> </ul>	
		Violet	B9902AQ	1 (sales unit, 3 piece/unit)	leit-peii, Fiottei pe	
Plotter pen Purple		B9902AR	1 (sales unit, 3 piece/unit)			
SD memory card (1GB)		iB)	773001	1 (sales unit)		
Mounting brackets		B9900BX	2 (sales unit)			
ou (for		screw	415920	250 Ω ±0.1%		
	inpu		415921	100 Ω ±0.1%		
	term	inal)	415922	10 Ω ±0.1%		
Shunt	(for o	clamped	438920	250 Ω ±0.1%		
resistor	inpu	t	438921	100 Ω ±0.1%	6 color ribbon	
resistor	term	inal)	438922	10 Ω ±0.1%	cassette	

### Dimensions



- NOTICE

Before operating the product, read the instruction manual thoroughly for proper and safe operation.
 If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.

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https://v	www.yokogawa.com/ns/	 
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