

Specifications

■ Transmitter

Product name	Residual Chlorine Meter			
Model	HR-480P			
Combined sensor	RA-10 or RA-20			
Measurement range	Residual Chlorine concentration	0.00 mg/L to 3.00 mg/L (Display range : 0.00 mg/L to 5.00 mg/L)		
	Temperature	0°C to 50°C (Display range : -10°C to 110°C)		
Display resolution	Residual Chlorine concentration	0.01 mg/L		
	Temperature	0.1°C		
Performance	Residual Chlorine concentration	Repeatability	Within ±0.05 mg/L (response for equivalent input)	
		Linearity	Within ±0.05 mg/L (response for equivalent input)	
	Temperature	Repeatability	Within ±0.5°C (response for equivalent input)	
		Linearity	Within ±0.5°C (response for equivalent input)	
Transmission output	Number of output	2 (The negative terminals for transmission outputs are internally connected at the same electric potential)		
	Output type	4 mA to 20 mA DC: input/output isolated type		
	Load resistance	Maximum: 900 Ω		
	Linearity	Within ±0.08 mA (output only)		
	Repeatability	Within ±0.02 mA (output only)		
	Output range	Output 1	Residual chlorine concentration: Free setting within a range between 0.00 mg/L and 5.00 mg/L	
		Output 2	Temperature: Free setting within a range between 0°C and 110°C	
Transmission hold	Transmission signal is held at the latest value or preset value.			
Contact output	Number of output	3		
	Output type	No-voltage contact output		
	Contact type	Relay contact; SPST (1a)		
	Output capacity	240 VAC 3 A, 30 VDC 3 A (resistance load)		
	Contact function	Selectable from upper limit alarm, lower limit alarm, ON/OFF control, and currently holding of transmission output. (The contact is closed during alarm operation, opened normally and while the power is down.)		
		Error alarm (Closed in the normal state, opened in the failure state or while the power is down.)		
Alarm setting range	<ul style="list-style-type: none"> • Setting range: 0mg/L to 3.00 mg/L • Control width : 0.02 mg/L to 0.20 mg/L(±0.01 to ±0.10 mg/L) • Delay time: 0 to 600 seconds 			
Contact input	Number of input	1		
	Contact type	No-voltage "a" contact for open collector		
	Conditions	ON resistance: 100 Ω max. Open voltage: 24 VDC Short-circuit current: 12 mA DC max		
	Contact function	Flow switch input for interlock (Open due to decreased flow)		
Temperature compensation	Applicable temperature element	Platinum resistor: 1 kΩ (0°C) (The temperature sensor is built into the electrochemical electrode.)		
	Temperature compensation range	0°C to 50°C		
	Temperature calibration	1 point calibration comparing to reference thermometer		
Cleaning capability	Cleaning configuration	Electrochemical Cleaning between Cathode and Electrochemical cleaning electrode		
	Settings	Cleaning period	Select from 1hour, 2hour, 4hour, 6hour, 8hour, 12hour, 1day, 2day, 3day, 4day, 5day, 6day, 7day	
		Cleaning time	5 to 600 seconds	
		Hold time	10 to 600 seconds	
	Timer accuracy	Within 2 minutes per month		

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Calibration	Calibration method	Zero calibration (Zero liquid calibration) SPAN calibration(Compare to measurement value of DPD method, Including zero electric calibration)		
	Additional capabilities	Automatic detection of calibration failure (Zero error) Calibration history (Elapsed days from the last calibration either zero or span. zero shift)		
Self-check	Calibration error	Zero error, Temperature calibration error		
	Temperature sensor diagnostic error	Temperature sensor short-circuit and temperature sensor disconnection		
	Meter error	CPU error, ADC error, and memory error		
Operating temperature range	-5°C to 45°C (without freeze)			
Operating humidity range	Relative humidity: 20% to 85% (without condensation)			
Storage temperature	-25°C to 65°C			
Power supply	Rated voltage	100 V to 240 VAC 50/60 Hz		
	Power consumption	15VA(max)		
Structure	Indoor-use panel installation type Panel case: ABS, Terminal: PBT Panel: IP65 dust and water proof structure			
Protective structure	Panel: IP65 (IEC60529, JIS C0920) Rear case: IP20, Terminal:IP00 Class II device (IEC61010-1) Pollution level 2 (IEC61010-1)			
Compatible standards	CE marking	Compatible standards	EMC Directive (2004/108/EC) EN61326-1:2006 Low-voltage Directive (2006/95/EC) EN61010-1:2001	
		EMC	Immunity	Industrial location
	Electrostatic discharge			IEC61000-4-2
	Electromagnetic field of radiated radio frequency			IEC61000-4-3
	Electric fast transient/burst			IEC61000-4-4
	Surge			IEC61000-4-5 (*1)
	Conducted interference induced by radio frequency			IEC61000-4-6
	Voltage dip, short-time power outage, and voltage change			IEC61000-4-11
	Emission			ClassA
		Radiated disturbance	CISPR 11 CLASS A	
		Noise terminal voltage	CISPR 11 CLASS A	
Low voltage	Contamination level 2			
FCC Rules	Part15 CLASS A			
External dimensions	48(W) mm x 96 (H) mm x 115 (D) mm Case depth: approx. 105 mm (when panel-mounted)			
Mass	Approx. 400 g			

Note 1: When the sensor cable, the transmission cable, or the contact input cable is extended by 30 m or more, the surge test under the EMC Directive for CE marking is not applied.

Note 2: An arrester (spark over voltage: 400 V) is implemented for transmission output, contact input, and communication. However, use a most suitable surge absorption element on the connection lines in accordance with the ambient environment, the situation of equipment installed, and the externally connected equipment.

Specifications

■ Sensor

Product name		Residual chlorine meter for polarographic type	
Model	Model	RA-10	RA-20
	Measuring method	Overflow type	Inline type
Measuring method		Polarography	
Measuring object		Free chlorine concentration in the sample water	
Measurement range		0.00mg/L to 3.00 mg/L	
Temperature compensation		Temperature compensation executed according to the measured temperature by the imbedded platinum temperature sensor	
Performance	Linearity	Within $\pm 5\%$ of the full scale	
	Repeatability	Within $\pm 3\%$ of the full scale	
	Response time	Within 60 seconds to 90 %	
	Zero drift	Within $\pm 1\%$ of the full scale per month	
	Span drift	Within $\pm 10\%$ of the full scale per month	
Sample condition	Temperature	0°C to 45°C (without freeze)	
	Flow rate	1.3L/min to 2.0L/min	0.6L/min to 1.0L/min (Constant *3) *4
	Pressure	Within 0.5MPa	
	pH	5.8pH to 8.6pH (Constant) *5	
	Electrical conductivity	More than 10mS/m *6	
Calibration	Zero calibration	Chlorine Zero Liquid	
	Span calibration	Span calibration(Comparing to the measurement value of DPD method, including zero electric calibration)	
Wetted part material		PVC , PPO , EPDM	
Electrode material		Au , AgCl , C	
Bead material		SiO ₂	
Filter material		Nylon	
Pipe arrangement	Sample inlet	PREFAB JOINT TS16A (ASHAHI)	
	Sample outlet	PREFAB JOINT TS16A (ASHAHI) *7	
Cleaning method		Physical polishing by glass bead , Electrochemical Cleaning *8	
Cable length		Standard : 2m Maximum extension : 40m	
Operating temperature range		0°C to 45°C *9	
Storage temperature		0°C to 45°C	
External dimensions		221(W)×278(H)×201(D) *10	221(W)×157(H)×201(D) *10
Mass		Approx. 2.3kg	Approx.1.8kg
Standard accessory		Cleaning bead, mesh filter, sanding paper, O ring(S30), O ring(P14), electrode exchange tool	

Note 3: Sample flow must be kept constant. This sensor is effected by flow rate.

Note 4: Keep the differential pressure across the constant flow valve within 0.05MPa and 0.7MPa. (Consult a constant flow valve specification)

Note 5: Sample pH must be kept constant value. This sensor is dependent on the pH which effects the dissociation of hypochlorous acid.

Note 6: The conductivity must be more than 10mS/m(100 μ S/cm).

Note 7: The sample outlet of the RA-10 must be atmospheric pressure.

Note 8: The concentration of metallic ion in the sample should be less than standard value of Water Supply Act in Japan

Note 9: The sensor should not be exposed to direct sunlight.

Note 10: Lugs are excluded.

■ Cathode specification

Product name	Cathode for the model RA-10/20
Model	RA-K
Electrode material	Au
Wetted part material	PPO, EPDM
Operating temperature	0°C to 45°C
Mass	Approx.1.8g

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■ Filter specification

Product name	Filter unit for Residual chlorine meter	
Model	RA-F	
Wetted part material	PVC、EPDM、PP、AS	
Operating temperature	0°C to 50°C (Without freeze)	
Pressure	0MPa to 0.5MPa	
Pipe arrangement	Inlet	PREFAB JOINT TS16A
	Outlet	PREFAB JOINT TS16A
Mass	Approx.3.0kg	

■ Flow switch specification

Product name	Flow switch for Residual chlorine meter (model:RA-10)	
Model	RA-FS10	
Setup flow	1.2L/min (Open due to decreased flow)	
Wetted part material	PVC、EPDM、PPO	
Operating temperature	0°C to 50°C (Without freeze)	
Pressure	0MPa to 0.5MPa	
Direction	Horizontal (Switch case must be kept upward.)	
Pipe arrangement	Inlet	PREFAB JOINT TS16A
	Outlet	PREFAB JOINT TS16A
Mass	Approx.0.17kg	

Product name	Flow switch for Residual chlorine meter (model:RA-20)	
Model	RA-FS20	
Setup flow	0.5L/min (Open due to decreased flow)	
Wetted part material	PVC、EPDM、PPO	
Operating temperature	0°C to 50°C (Without freeze)	
Pressure	0MPa to 0.5MPa	
Direction	Horizontal (Switch case must be kept upward.)	
Pipe arrangement	Inlet	PREFAB JOINT TS16A
	Outlet	PREFAB JOINT TS16A
Mass	約 0.17kg	

■ Flow meter specification

Product name	Flow meter for Residual chlorine meter (model:RA-20)	
Model	RA-FM	
Flow range	0.3mL/min to 3.0L/min	
Wetted part material	PVC、EPDM、PMMA	
Operating temperature	0°C to 50°C (Without freeze)	
Pressure	0MPa to 0.5MPa	
Pipe arrangement	Inlet	PREFAB JOINT TS16A
	Outlet	PREFAB JOINT TS16A
Mass	Approx.0.3kg	

■ Constant flow valve specification

Product name	Constant flow valve for Residual chlorine meter (model:RA-20)	
Model	RA-CFV	
Flow range	0.7L/min ±10%	
Margin control pressure	0.05MPa to 0.7MPa	
Wetted part material	PVC、EPDM、SUS304	
Operating temperature	5°C to 50°C	
Pressure	0.05MPa to 0.7MPa	
Pipe arrangement	Inlet	PREFAB JOINT TS16A
	Outlet	PREFAB JOINT TS16A
Mass	Approx. 0.3kg	