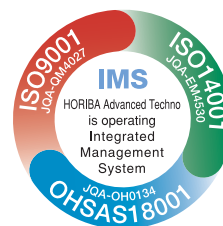
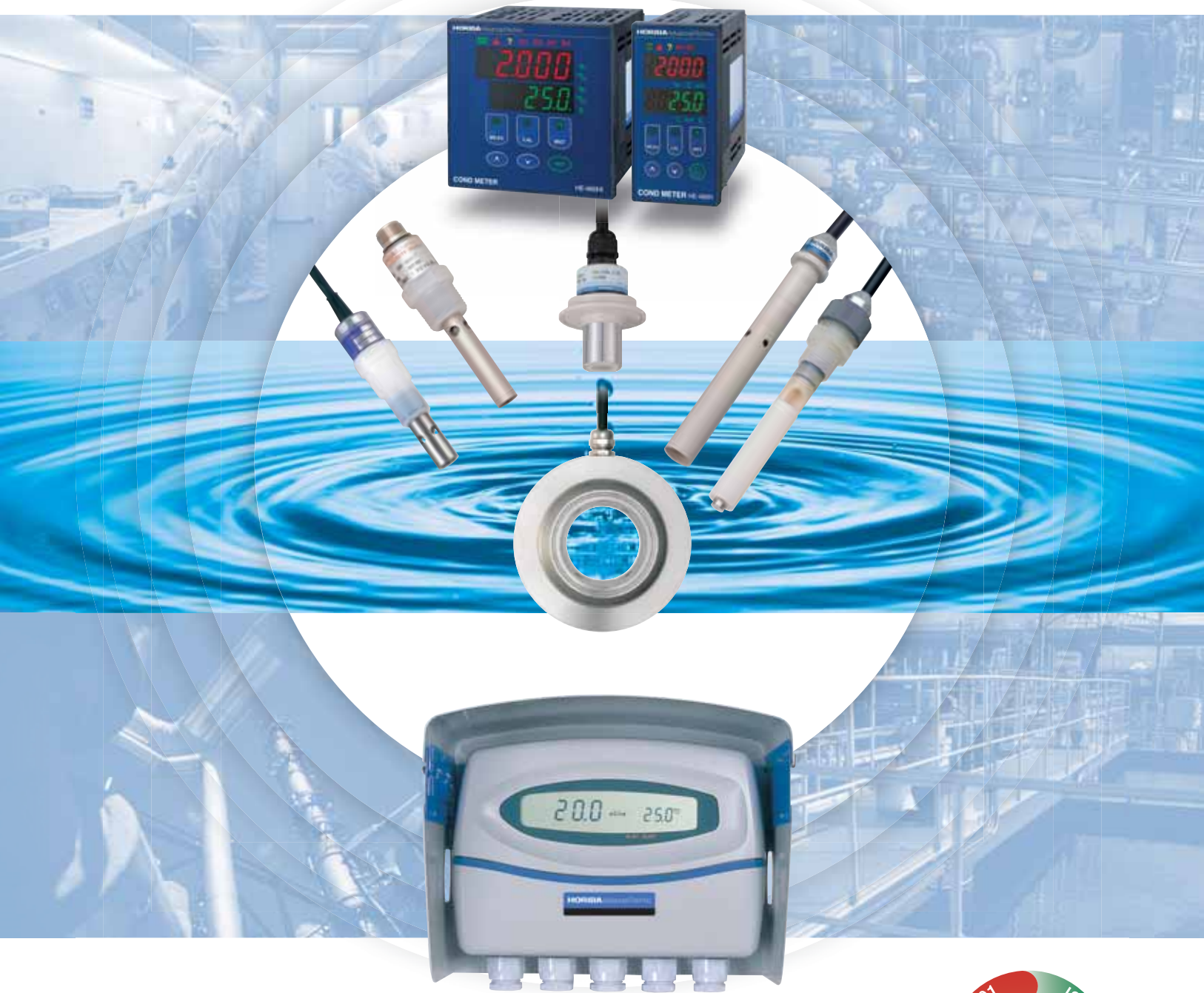


Industrial Conductivity/Resistivity Meter



Industrial Conductivity Meter and Resistivity Meter Lineups

The industrial-technology and

Measurement principle

Resistivity

2-electrode conductivity

Conductivity (SI unit)	0.01 $\mu\text{S/cm}$ (1 $\mu\text{S/m}$)	0.1 $\mu\text{S/cm}$ (10 $\mu\text{S/m}$)	1 $\mu\text{S/cm}$ (100 $\mu\text{S/m}$)	10 $\mu\text{S/cm}$ (1000 $\mu\text{S/m}$)
	100 $\text{M}\Omega\cdot\text{cm}$	10 $\text{M}\Omega\cdot\text{cm}$	1 $\text{M}\Omega\cdot\text{cm}$	100 $\text{K}\Omega\cdot\text{cm}$
Sample examples	Ultra pure water	Pure water Water for Injection	Distilled water Sterilized purified water, purified water	Rain water

Resistivity meter

Conductivity meter (low concentration type)

Pure water
Ultra pure water

Industrial water

Distilling plants

2-channel resistivity meter
HE-960RW

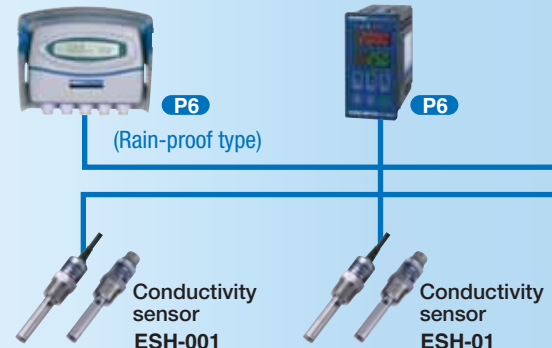
Resistivity meter
HE-480R



Measurement range: 0-100.0 $\text{M}\Omega\cdot\text{cm}$

Conductivity meter
CE-200C

Conductivity meter (low concentration type)
HE-480C



Measurement range: 0-20 $\mu\text{S/cm}$

Measurement range: 0-200 $\mu\text{S/cm}$

* When used in conjunction with the CE-200C, measurement ranges expand to 10 $\mu\text{S/cm}$

Pharmaceutical processes

Food and beverage processes

Sanitary conductivity meter (low concentration type)

HE-960CW



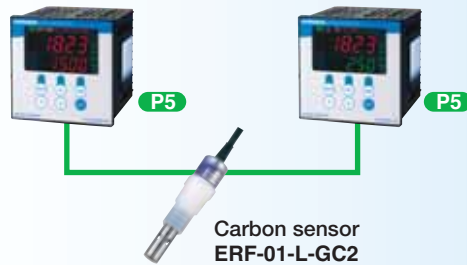
Flow-through sensor
FS-01 Series

Measurement range: 0-2000 $\mu\text{S/cm}$

Semiconductor cleaning processes

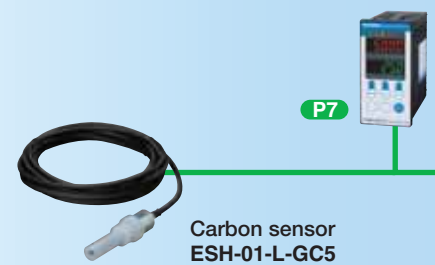
Carbon sensor resistivity meter
HE-960RW-GC

HE-960R-GC



Measurement range: 0-100.0 $\text{M}\Omega\cdot\text{cm}$

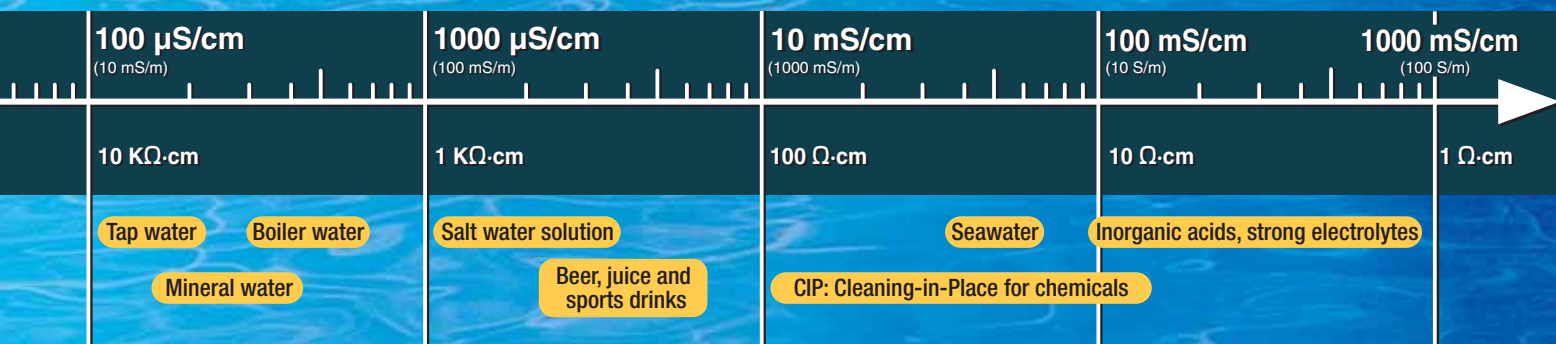
Carbon sensor conductivity meter
HE-480C-GC



Measurement range: 0-200 $\mu\text{S/cm}$

grade conductivity meters and resistivity meters made by Horiba Advanced Techno are highly reliable products that pledge the high accuracy and high stability of creative sensing a wealth of experience in diverse fields. Horiba Advanced Techno meets user needs with rich lineups for each and every type of application.

4-electrode conductivity



Conductivity meter (high concentration type)

2-channel conductivity meter HE-960CW



P7



Conductivity sensor
ESH-1

Measurement range: 0-2000 μ S/cm

(ESH-001), 100 μ S/cm (ESH-01) and 1000 μ S/cm (ESH-1).

Conductivity meter (high concentration type)

CEH-200



P8

(Rain-proof type)

HE-480H



P8

HE-960HS



For details regarding this product, please contact us directly.

4-electrode conductivity sensor
FES-125F
FES-126F

Measurement range: 0-500 mS/cm

* When used in conjunction with the CEH-200, measurement range expands to 20 mS/cm.

Sanitary conductivity meter (wide range type)

HE-960HI



P9



Flow-through sensor
FES-300 Series



Insertion type sensor
FES-200 Series

Measurement range: 0-500 mS/cm



Insertion type sensor
ESH-01-C-S-SN-1.5S

Measurement range: 0-200 μ S/cm

(low concentration type)

Carbon sensor
ESH-1-L-GC9

Measurement range: 0-2000 μ S/cm

Carbon sensor conductivity meter (wide range type)

HE-960HC



P9



Flow type carbon sensor
FES-510 Series

Measurement range: 0-1000 mS/cm

Resistivity Meter

Resistivity meters

2-channel resistivity meter

HE-960RW

2 ch

Panel mount
DIN96



- High-quality resistivity meter
- 2-channel simultaneous measurement
- Employs highly accurate, high-stability temperature measurement circuits
- Built-in RS-485 communications output

Model	HE-960RW
Measurement method	Electrode type (2-electrode method)
Sensor input	2-channel (cell constant: 0.01/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Resistivity: 0 to 2.00, 0 to 20.00 MΩ·cm 0 to 20.0, 0 to 200.0 kΩ·m (Without temperature compensation, resistivity can be measured in 100.0 MΩ·cm and 1000 kΩ·m ranges.) Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)
Reproducibility	±0.1% FS (equivalent input)
Linearity	±0.5% FS (equivalent input)
Transmission output	No. of outputs: 2; 4 to 20 mA DC/0 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω
Contact output	No. of outputs: 4 (R1, R2, R3, and R4) Contact type: Relay contacts R1 to R3: SPST (1a); R4: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance. (R1 and R2, and R3 and R4 are for common use, respectively.)
Communication function	RS-485 I/O
Calibration function	Resistivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Temperature compensation	Temperature compensation for impurities in ultra-pure water (Temperature characteristics of impurities are user-selectable.) ●Based on the temperature characteristics of NaCl (reference temperature: 5 to 95°C) ●Based on the user-defined temperature coefficient (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C)
Power requirements	100 to 240 V AC ±10%, maximum 15 VA
Conforming standards	CE marking, FCC regulations
Compatible sensors	ERF-001 series resistivity sensor (cell constant: 0.01/cm)

Resistivity meter

HE-480R

1 ch

Panel mount
SLIM48



- Measures ultra pure water at a high degree of accuracy
- Implements advanced temperature compensation
- Allows for setting of the reference temperature to any value

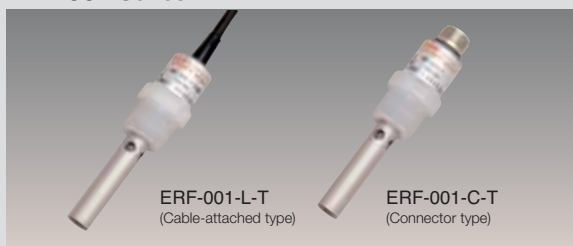
Model	HE-480R
Measurement method	Electrode type (2-electrode method)
Sensor input	1-channel (cell constant: 0.01/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Resistivity: 0 to 0.200, 0 to 2.00, 0 to 20.00 MΩ·cm 0 to 2.00, 0 to 20.0, 0 to 200.0 kΩ·m (Without temperature compensation, resistivity can be measured in 100.0 MΩ·cm and 1000 kΩ·m ranges.) Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)
Reproducibility	±0.5% FS (equivalent input)
Linearity	±0.5% FS (equivalent input)
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω
Contact output	No. of outputs: 2 (R1 and R2) Contact type: Relay contact SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance.
Calibration function	Resistivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Temperature compensation	●Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C) ●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C)
Power requirements	100 to 240 V AC ±10%, maximum 10 VA
Conforming standards	CE marking, FCC regulations
Compatible sensors	ERF-001 series resistivity sensor (cell constant: 0.01/cm)

For ultra-pure water

Resistivity sensor

Responds to minute changes in the measurement water temperature

Threaded type
ERF-001 Series



ERF-001-L-T
(Cable-attached type)

ERF-001-C-T
(Connector type)

Model	ERF-001
Cell constant	Approx. 0.01/cm
Wetted material	Electrode: Titanium Body: PVDF Packing: FKM
Pressure of fluid being measured	0 to 0.5 MPa
Temperature of fluid being measured	0 to 80°C
Installation	Threaded type; Thread diameter: R (PT) 3/4
Cable length	Cable-attached type: 10 m, Y terminal (standard); limit cable extensions to a max. 50 m Connector type: 10 m (CK-10M), 20 m (CK-20M), 30 m (CK-30M)
Holder to be combined	Flow type holder EFA-30, EFA-30P, EFA-30S
Compatible converter	HE-480R, HE-960RW

For ordering, refer to the model code chart on page 14.

Accessories

Connector cable
CK-10M/20M/30M



This cable is for connecting a connector type sensor to the indication converter.

Flow type holder
EFA-30 Series



EFA-30
(PVC)



EFA-30P
(PVDF)



EFA-30S
(SUS-316)

Model	EFA-30	EFA-30P	EFA-30S
Liquid end materials	PVC	PVDF	SUS316
Liquid pressure range	0 to 0.1 MPa	0 to 0.1 MPa	0 to 0.5 MPa
Liquid temperature range	0 to 50°C	0 to 100°C	0 to 100°C
Liquid flow rate	0 to 10 L/min		
Connected pipe diameter	Inlet: Rc (PT) 1/2, Outlet: Rc (PT) 1/2		

For ordering, refer to the model code chart on page 15.

Carbon sensor resistivity meters

2-channel resistivity meter

HE-960RW-GC

For semiconductor wet cleaning

2 ch

Panel mount
DIN96



- Carbon sensor compatible
- 2-channel simultaneous measurement
- High speed response
- Built-in array of temperature compensation functions
- 24 V DC power supply

RoHS
COMPLIANT

Model	HE-960RW-GC
Measurement method	Electrode type (2-electrode method)
Sensor input	2-channel (cell constant: 0.1/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Resistivity: 0 to 2.00, 0 to 20.00 MΩ·cm 0 to 20.0, 0 to 200.0 kΩ·m (Without temperature compensation, resistivity can be measured in 100.0 MΩ·cm and 1000 kΩ·m ranges.) Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)
Reproducibility	±0.5% FS (equivalent input)
Linearity	±0.5% FS (equivalent input)
Transmission output	No. of outputs: 2; 4 to 20 mA DC/0 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω
Contact output	No. of outputs: 4 (R1, R2, R3, and R4) Contact type: Relay contacts R1 to R3: SPST (1a); R4: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance. (R1 and R2, and R3 and R4 are for common use, respectively.)
Communication function	RS-485 I/O
Calibration function	Resistivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Temperature compensation	Temperature compensation for impurities in ultra-pure water (Temperature characteristics of impurities are user-selectable.) ●Based on the temperature characteristics of NaCl (reference temperature: 5 to 95°C) ●Based on the user-defined temperature coefficient (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C)
Power requirements	24 V DC, maximum 10 W
Conforming standards	CE marking, FCC regulations
Compatible sensors	ERF-01 carbon resistivity sensor (cell constant: 0.1/cm)

Carbon sensor resistivity meter

HE-960R-GC

For semiconductor wet cleaning

1 ch

Panel mount
DIN96



- Carbon sensor compatible
- High speed response
- Allows for setting of the reference temperature to any value
- 24 V DC power supply

RoHS
COMPLIANT

Model	HE-960R-GC
Measurement method	Electrode type (2-electrode method)
Sensor input	1-channel (cell constant: 0.1/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Resistivity: 0 to 0.200, 0 to 2.00, 0 to 20.00 MΩ·cm 0 to 2.00, 0 to 20.0, 0 to 200.0 kΩ·m (Without temperature compensation, resistivity can be measured in 100.0 MΩ·cm and 1000 kΩ·m ranges.) Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)
Reproducibility	±0.5% FS (equivalent input)
Linearity	±0.5% FS (equivalent input)
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω
Contact output	No. of outputs: 2 (R1 and R2) Contact type: Relay contact SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance.
Calibration function	Resistivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Temperature compensation	●Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C) ●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C)
Power requirements	24 V DC, maximum 5 W
Conforming standards	CE marking, FCC regulations
Compatible sensors	ERF-01 carbon resistivity sensor (cell constant: 0.1/cm)

World's first chemical-resistant glass carbon sensor!

●Excellent chemical resistance

Leads are made of 100% carbon and therefore exhibit excellent chemical resistance against all types of cleaning fluids such as hydrogen fluoride and hydrogen peroxide.

●Metallic contamination-free

There is no need to worry about the metallic contamination that was unavoidable with metal leads of the past. The carbon surface has been specially treated to minimize particle runoff.

●High speed response

Due to the special treatment of the carbon surface, response from chemicals and ultrapure water is the same as earlier models.

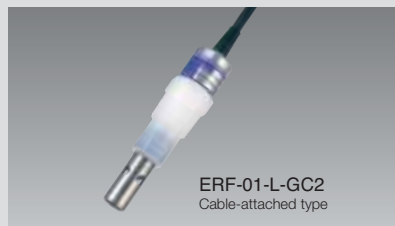
For semiconductor wet cleaning

Carbon resistivity sensor

Applicable to single-batch cleaning systems

Glass carbon sensor offers superior resistance to chemicals

Threaded type ERF-01-L-GC2



ERF-01-L-GC2
Cable-attached type

Model	ERF-01-L-GC2	
Cell constant	Approx. 0.1/cm	
Wetted material	Electrode	Glass carbon
	Body	PFA
	Packing	Kalrez®
Pressure of fluid being measured	0 to 0.05 MPa	
Temperature of fluid being measured	0 to 80°C	
Installation	Threaded type; Thread diameter: R (PT) 3/4	
Cable length	10 m, Y terminal (standard)	
Holder to be combined	Flow type holder EFA-30P, EFA-30F	
Compatible converter	HE-960R-GC, HE-960RW-GC	

For ordering, refer to the model code chart on page 14.

■ Accessories

Flow type holder EFA-30 Series



EFA-30P
(PVDF)

Model	EFA-30P	EFA-30F
Liquid end materials	PVDF	PFA
Liquid pressure range	0 to 0.1 MPa	
Liquid temperature range	0 to 100°C	
Liquid flow rate	0 to 10 L/min	
Connected pipe diameter	Inlet: Rc (PT) 1/2, Outlet: Rc (PT) 1/2	

*For flow type holder, use EFA-30P(PVDF) or EFA-30F(PFA) respectively.

For ordering, refer to the model code chart on page 15.

Conductivity Meter (low concentration type)

Conductivity meters (2-electrode type)

Conductivity meter (rain-proof type)

CE-200C

- 1 ch
- Rain-proof type
- Low concentration type



- Perfect for continuous measurement of ultra-pure water.
- Automatic determination of sensor integrity
- Built-in temperature characteristics for each type of solution
- Large custom LCD
- Simultaneous display of measured values and parameter settings

Model	CE-200C			
Measurement method	Electrode type (2-electrode method)			
Sensor input	1-channel (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			
Temperature sensor	Resistance thermometer: 1000 Ω/0°C			
Measurement range	Cell constant (/cm)	0.01	0.1	1.0
	Conductivity (μS/cm)	1.00	10.0	100.0
		2.00	20.0	200
		5.00	50.0	500
		10.00	100.0	1000
Temperature: 0 to 100°C (measurement only)				
Reproducibility	±0.5% FS			
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; (Transmission output of temperature is not attached.) Maximum load resistance: 500 Ω			
Contact output	No. of outputs: 2 Contact type: Relay contact SPDT (1c) Contact rating: 250 V AC 3 A (resistance load) Contact function: Upper/lower limit operation (ON/OFF control)			
Calibration function	Conductivity: Depends upon the cell constant setting Temperature: One-point calibration at a known temperature			
Temperature compensation	● Ultra-pure water (limited to 1.00 μS/cm at a cell constant of 0.01) ● NaCl (when the cell constant is 0.01, 0.1, or 1.0) ● 0 to ±5%/°C (custom setting possible)			
Power requirements	100 to 115 V AC or 200 to 240 V AC (as ordered), 7 VA (max.)			
Structure	Outdoor installation: JIS C0920; Protection level: 3 (rain-proof) Installation method: 50 A pole or wall attachment			
Compatible sensors	ESH series conductivity sensor (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			

Conductivity meter (low concentration type)

HE-480C

- 1 ch
- Panel mount SLIM48
- Low concentration type

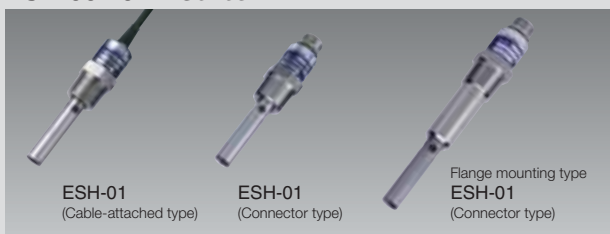


- Ideal for continuous measurement of pure water and boiler water
- High precision temperature compensation
- Automatic determination of sensor integrity
- Supports a variety of temperature compensation

Model	HE-480C			
Measurement method	Electrode type (2-electrode method)			
Sensor input	1-channel (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			
Temperature sensor	Resistance thermometer: 1000 Ω/0°C			
Measurement range	Cell constant (/cm)	0.01	0.1	1.0
	Conductivity (μS/cm)	2.000/20.00	20.00/200.0	200.0/2000
		(mS/m)	0.2000/2.000	2.000/20.00
	TDS conversion (mg/L)	2.00/20.0	20.0/200	200/2000
	Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)			
Reproducibility	±0.5% FS (TDS: ±1.5% FS)			
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω			
Contact output	No. of outputs: 2 (R1 and R2) Contact type: Relay contact SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), USP determination, error alarm, and maintenance.			
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer TDS: Conversion using user-set coefficient (0.30 to 1.00)			
Temperature compensation	● Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C) ● Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C) ● Temperature characteristics of NaCl			
Power requirements	100 to 240 V AC ±10%, maximum 10 VA			
Conforming standards	CE marking, FCC regulations			
Compatible sensors	ESH and FS series conductivity sensor (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			

General-purpose 2-electrode method conductivity sensor

Threaded type ESH-001-01-1 Series



Model	ESH-001	ESH-01	ESH-1
Cell constant	Approx. 0.01/cm	Approx. 0.1/cm	Approx. 1.0/cm
Wetted material	Electrode	SUS-316 or Titanium	
	Body	PVDF	
	Packing	FKM	
Pressure of fluid being measured	0 to 0.5 MPa		
Temperature of fluid being measured	0 to 100°C		
Installation	Threaded type; Thread diameter: R (PT) 3/4		
Cable length	Cable-attached type: 10 m, Y terminal (standard); limit cable extensions to a max. 100 m Connector type: 10 m (CK-10M), 20 m (CK-20M), 30 m (CK-30M)		
Holder to be combined	Flow type holder EFA-30, EFA-30P, EFA-30S		
Compatible converter	CE-200C, HE-480C, HE-960CW		

For ordering, refer to the model code chart on page 15.

Accessories

Relay box CK-20EC



Sensor extension cable C-5C



Used for connecting the converter and the relay box.

Connector cable CK-10M/20M/30M



This cable is for connecting a connector type sensor to the indication converter.

Flow type holder EFA-30 Series



EFA-30 (PVC)
EFA-30S (SUS-316)

Model	EFA-30	EFA-30P	EFA-30S
Liquid end materials	PVC	PVDF	SUS316
Liquid pressure range	0 to 0.1 MPa	0 to 0.1 MPa	0 to 0.5 MPa
Liquid temperature range	0 to 50°C	0 to 100°C	0 to 100°C
Liquid flow rate	0 to 10 L/min		
Connected pipe diameter	Inlet: Rc (PT) 1/2, Outlet: Rc (PT) 1/2		

For ordering, refer to the model code chart on page 15.

Sanitary conductivity (2-electrode type)

2-channel conductivity meter (low concentration type)

HE-960CW

2 ch

Panel mount
DIN96

Low concentration
type



- High grade type suited for monitoring of medical water quality
- 2-channel simultaneous measurement and simultaneous output
- Built-in USP<645> water quality evaluation function
- Built-in RS-485 communication output

Model	HE-960CW			
Measurement method	Electrode type (2-electrode method)			
Sensor input	2-channel (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			
Temperature sensor	Resistance thermometer: 1000 Ω/0°C			
Measurement range	Cell constant (1/cm)	0.01	0.1	1.0
	Conductivity (μS/cm)	2.000/20.00	2.000/20.00/200.0/2000*	200.0/2000
	(mS/m)	0.2000/2.000	0.2000/2.000/20.00/200.0*	20.00/200.0
	*Only applicable for FS-01 series sanitary sensors.			
	Temperature: 0 to 100°C (1- or 2-digit selectable, whole numbers only)			
Reproducibility	±0.5% FS (TDS: ±1.5% FS)			
Transmission output	No. of outputs: 4; 4 to 20 mA DC, 0 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω			
Contact output	No. of outputs: 4 (R1, R2, R3, and R4) Contact type: Relay contacts R1 to R3: SPST (1a); R4: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), UPS determination, error alarm, and maintenance. (R1 and R2, and R3 and R4 are for common use, respectively.)			
Communication function	RS-485 I/O			
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer			
Temperature compensation	<ul style="list-style-type: none"> ●Based on the temperature characteristics of NaCl (reference temperature: 5 to 95°C) ●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C) (Temperature compensation for pure water automatically engages in the pure water range.) 			
Power requirements	100 to 240 V AC ±10%, maximum 15 VA			
Conforming standards	CE marking, FCC regulations			
Compatible sensors	ESH and FS series conductivity sensor (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			

Carbon sensor conductivity meter (2-electrode type)

Carbon sensor conductivity meter (low concentration type)

HE-480C-GC

For semiconductor wet cleaning

1 ch

Panel mount
SLIM48

Low concentration
type



- Carbon sensor compatible
- Wide measurement range
- Simultaneous display of measured values and parameter settings
- Built-in array of temperature compensation functions

RoHS
COMPLIANT

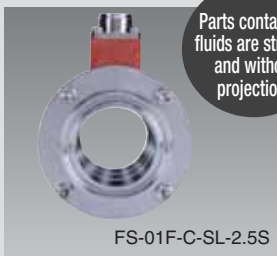
Model	HE-480C-GC			
Measurement method	Electrode type (2-electrode method)			
Sensor input	1-channel (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)			
Temperature sensor	Resistance thermometer: 1000 Ω/0°C			
Measurement range	Cell constant (1/cm)	0.01	0.1	1.0
	Conductivity (μS/cm)	2.000/20.00	20.00/200.0	200.0/2000
	(mS/m)	0.2000/2.000	2.000/20.00	20.00/200.0
	TDS conversion (mg/L)	2.00/20.0	20.0/200	200/2000
	When used in conjunction with the ESH-1-L-GC9, if the sensor is operated with temperature compensation unset or at a temperature of 30°C or below, measurement is possible over a range of up to a maximum of 9999 μS/cm and 999.9 mS/m.			
Reproducibility	±0.5% FS (TDS: ±1.5% FS)			
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω			
Contact output	No. of outputs: 2 (R1 and R2) Contact type: Relay contact SPST (1a) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), USP determination, error alarm, and maintenance.			
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer TDS: Conversion using user-set coefficient (0.30 to 1.00)			
Temperature compensation	<ul style="list-style-type: none"> ●Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C) ●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C) ●Temperature characteristics of NaCl 			
Power requirements	100 to 240 V AC ±10%, maximum 10 VA			
Conforming standards	CE marking, FCC regulations			
Compatible sensors	ESH carbon conductivity sensor (cell constant: 0.1/cm, 1.0/cm)			

For pharmaceutical / food processing

Sanitary conductivity sensor

Pharmaceutical / food processing type conductivity sensor for applications that demand high sanitary levels. Can also be used with Steam-In-Place cleaning.

Flow-through sensor
FS-01 Series



FS-01F-C-SL-2.5S

Parts contacting fluids are straight and without projections.

Insertion type sensor
ESH-01-C-S-SN



ESH-01-C-S-SN-1.5S

Model	FS-01 (flow-through type)	ESH-01-C-S-SN (insert type)
Cell constant	Approx. 0.1/cm	
Wetted material	SUS316L*, PTFE, FKM (Compliant with MHLW Bulletin No. 20 and 85)	SUS316L*, PEEK, FKM
Protective structure	IP67 equivalent	
Pressure of fluid being measured	0 to 1 MPa	
Temperature of fluid being measured	0 to 100°C	
Steam sterilization	140°C/0.6 MPa within 60 minutes	
Connection aperture (ferrule)	15A, 1S, 1.5S, 2S, 2.5S	1.5S
Cable length	10m (CK-10M), 20m (CK-20M), 30m (CK-30M)	
Compatible converter	HE-960CW	

* Cannot be used with fluids (hydrochloric acid, diluted sulfuric acid, seawater, etc.) that chemically react with electrode (SUS316L).

For ordering, refer to the model code chart on page 15.

For semiconductor wet cleaning

Carbon conductivity sensor

Electrodes made of highly chemical resistant glass carbon which allows for measurement in a wide range of chemicals used in semiconductor washing and other processes.

Threaded type
ESH-01-L-GC5



ESH-01-L-GC5-Y-10M

Threaded type
ESH-1-L-GC9



ESH-1-L-GC9-Y-10M

Model	ESH-01-L-GC5	ESH-1-L-GC9
Cell constant	Approx. 0.1/cm	Approx. 0.7/cm
Wetted material	Electrode	Glass carbon
	Body	PFA
	Packing	Kalrez®
Pressure of fluid being measured	0 to 0.5 MPa	
Temperature of fluid being measured	0 to 80°C	
Installation	Threaded type; Thread diameter: R (PT) 3/4	
Cable length	10 m, Y terminal (standard); limit cable extensions to a max. 100 m	
Holder to be combined	Flow type holder EFA-30P, EFA-30F	
Compatible converter	HE-480C-GC	

For ordering, refer to the model code chart on page 15.

Conductivity Meter (high concentration type)

Conductivity meters (4-electrode type)

Conductivity meter (rain-proof type)

CEH-200

1 ch

Rain-proof type



- Employs five AC electrode sensors
- Automatic determination of sensor integrity
- Can continuously measure salinity and temperature of seawater
- Large custom LCD

Model	CEH-200
Measurement method	Electrode type (4-electrode method)
Sensor input	1-channel (cell constant: 1.0/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Conductivity: 1.00/2.00/5.00/10.0/20.0 mS/cm 1000/2000/5000 μS/cm Salinity: 0 to 4.0% (operating temperature: 0 to 40°C) (Selectable with function setting switch) Temperature: 0 to 100°C (measurement only)
Reproducibility	±0.5% FS (within ±1.0%FS at 1000 μS/cm)
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type (Transmission output of temperature is not attached.); maximum load resistance 500 Ω
Contact output	No. of outputs: 2 Contact type: Relay contact SPDT (1c) Contact rating: 250 V AC 3 A (resistance load) Contact function: Upper/lower limit operation (ON/OFF control)
Calibration function	Conductivity, salinity: Depends upon the cell constant setting Temperature: One-point calibration at a known temperature
Temperature compensation	●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C) ●Temperature characteristics of NaCl
Power requirements	100 to 115 V AC or 200 to 240 V AC (as ordered), 7 VA (max.)
Structure	Outdoor installation: JIS C0920; Protection level: 3 (rain-proof) Installation method: 50 A pole or wall attachment
Compatible sensors	FES series conductivity sensor (cell constant: 1.0/cm)

Conductivity meter (high concentration type)

HE-480H

1 ch

Panel mount SLIM48

High concentration type



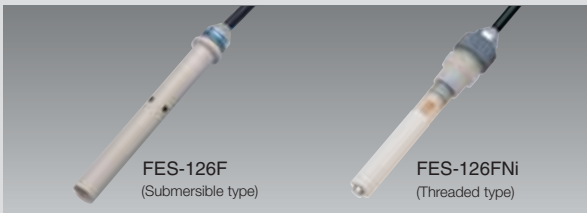
- Wide range measurement possible to 500 mS/cm*
- Equipped with a seawater salinity and NaCl salinity conversion function
- Supports a variety of temperature compensation
- Automatic determination of sensor integrity

*1: For measurements over 200 mS/cm, wide range type HE-960HS model is recommended. Contact the sales for details.

Model	HE-480H
Measurement method	Electrode type (4-electrode method)
Sensor input	1-channel (cell constant: 1.0/cm)
Temperature sensor	Resistance thermometer: 1000 Ω/0°C
Measurement range	Conductivity (mS/cm) 0.00 to 20.00 0.0 to 200.0 0.0 to 500.0 (S/m) 0.000 to 2.000 0.00 to 20.00 0.00 to 50.00
	* Measurement in the 200.0 mS/cm and 20.00 S/m ranges is possible up to a custom temperature coefficient setting of ±3.5%/°C at a reference temperature of 25°C. * Measurement in the 500.0 mS/cm and 50.00 S/m ranges is possible without temperature compensation. *1
	Seawater salinity conversion: 0.00 to 4.00% NaCl salinity conversion: 0.0 to 20.0% Temperature: 0 to 100°C (The number of decimals displayed can be selected between none, 1, and 2.)
Reproducibility	±0.5% FS (±1.0% for salinity conversion and the 500 mS/cm range)
Transmission output	No. of outputs: 1; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω
Contact output	No. of outputs: 2 (R1 and R2) Contact type: Relay contact SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance.
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Temperature compensation	●Based on the reference temperature and temperature coefficient user-defined (reference temperature: 5 to 95°C; temperature coefficient: ±5%/°C) ●Temperature characteristics of NaCl
Power requirements	100 to 240 V AC ±10%, maximum 10 VA
Conforming standards	CE marking, FCC regulations
Compatible sensors	FES series conductivity sensor (cell constant: 1.0/cm)

General-purpose 4-electrode method conductivity sensor

Submersible type/Threaded type
FES-100 Series



Model	FES-125F	FES-126F	FES-126FNi (for TMAH)
Cell constant	Approx. 0.1/cm		
Wetted material	Electrode	Titanium	Titanium
	Body	PVC	PPS
	Packing	FKM	FKM
		EPDM	
Pressure of fluid being measured	0 to 0.5 MPa	0 to 0.5 MPa	0 to 0.5 MPa
Temperature of fluid being measured	0 to 50°C	0 to 120°C *1	0 to 120°C
Cable length	10 m, Y terminal (standard); Use the CT-20EC relay box for further extension. Maximum extension length: 50 m		
Installation	1. Submersible type 2. Threaded type Use the thread adapter EA-20.	1. Submersible type 2. Threaded type Use the thread adapter EA-40.	Threaded type Thread diameter: R (PT) 3/4
Holder to be combined	Flow type holder: EF-20, EF-20P, EF-20S		Flow type holder: EF-20P
Compatible converter	CEH-200, HE-480H, HE-960HS		HE-960TM (for TMAH)

*1. Submersible types can only be used between 0 and 50°C

For ordering, refer to the model code chart on page 15.

Accessories

Relay box CT-20EC



Sensor extension cable C-7E



Used for connecting the converter and the relay box.

Connector cable SK-10M/20M/30M



This cable is for connecting a connector type sensor to the indication converter.

Flow type holder EF-20 Series



Model	EF-20	EF-20P	EF-20S
Liquid end materials	PVC	PVDF	SUS 316
Liquid pressure range	0 to 50°C	0 to 100°C	0 to 100°C
Liquid temperature range	0 to 0.1 MPa	0 to 0.1 MPa	0 to 0.5 MPa
Liquid flow rate	0 to 10 L/min		
Connected pipe diameter	Inlet: Rc (PT) 1/2, Outlet: Rc (PT) 1/2		

For ordering, refer to the model code chart on page 15.

Sanitary conductivity meter (4-electrode type)

Sanitary conductivity meter (wide range type) For pharmaceutical / food processing

HE-960HI

For Cleaning-in-Place (CIP) terminal management

- 1 ch
- Panel mount DIN96
- Wide range type

- Measures the full range up to 500 mS/cm
- Automatic display range switching
- Equipped with nitric acid(HNO₃), phosphoric acid(H₃PO₄), and sodium hydroxide (NaOH) concentration automatic conversion function
- Built-in RS-485 communications output



Model	HE-960HI		
Measurement method	Electrode type (4-electrode method)		
Sensor input	1-channel (cell constant: 0.1/cm)		
Temperature sensor	Resistance thermometer: 1000 Ω/0°C		
Measurement range	Conductivity: 0 to 200 mS/cm (Conductivity measurement range prior to temperature compensation: 0 to 500 mS/cm) Temperature: 0 to 100°C		
Concentration conversion	NaOH: 0 to 5%, HNO ₃ : 0 to 5%, H ₃ PO ₄ : 0 to 5% (using internal program) Custom 1: 0 to 100%, Custom 2: 0 to 100% (user-customizable conversion formula)		
Reproducibility	±0.5% FS (within ±1.0%FS at 500 mS/cm ranges)		
Transmission output	No. of outputs: 4; 4 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω		
Contact output	No. of outputs: 5 (R1, R2, R3, R4, and RF) Contact type: Relay contacts R1 to R4: SPST (1a); RF: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance. (R1 and R2-R3, and R4 and RF are for common use, respectively.)		
Contact Input	No. of inputs: 2 Contact function: Interchangeable transmission output range, External input for holding		
Communications function	RS-485 I/O		
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer		
Temperature compensation	● Based on the reference temperature and temperature coefficient user-defined (reference temperature: 25°C; temperature coefficient: 0 to 5%/°C) ● Based on the temperature characteristics of NaCl (reference temperature: 25°C)		
Power requirements	100 to 240 V AC ±10%, maximum 20 VA		
Conforming standards	CE marking, FCC regulations		
Compatible sensors	FES-300 and FES-200 series conductivity sensor (cell constant: 0.1/cm)		

Carbon sensor conductivity meter (4-electrode type)

Carbon sensor conductivity meter (wide range type)

HE-960HC

For semiconductor wet cleaning

- 1 ch
- Panel mount DIN96
- Wide range type

- Carbon sensor compatible
- Measures the full range up to 1000 mS/cm
- Automatic display range switching
- Equipped with the chemical concentration conversion function
- Built-in RS-485 communications output

RoHS
COMPLIANT



Model	HE-960HC		
Measurement method	Electrode type (4-electrode method)		
Sensor input	1-channel (cell constant: 0.1/cm)		
Temperature sensor	Resistance thermometer: 1000 Ω/0°C		
Measurement range	Conductivity: 0 to 1000 mS/cm (Conductivity measurement range prior to temperature compensation) Temperature: 20 to 150°C		
Concentration conversion	Custom 1: 0 to 100%, Custom 2: 0 to 100% (user-customizable conversion formula)		
Reproducibility	0 to 20.00 mS/cm 20.0 to 200.0 mS/cm 200 to 1000 mS/cm	Within ±0.5%FS Within ±1.0%FS	(equivalent input)
Transmission output	No. of outputs: 4; 4 to 20 mA DC/0 to 20 mA DC; I/O insulation type; maximum load resistance 900 Ω		
Contact output	No. of outputs: 5 (R1, R2, R3, R4, and RF) Contact type: Relay contacts R1 to R4: SPST (1a); RF: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance. (R1 and R2-R3, and R4 and RF are for common use, respectively.)		
Contact Input	No. of input: 1 Contact function: Transmission output for holding		
Communications function	RS-485 I/O		
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer		
Temperature compensation	● Based on the reference temperature and temperature coefficient user-defined (reference temperature: 25°C; temperature coefficient: 0 to 3%/°C)		
Power requirements	100 to 240 V AC ±10%, maximum 20 VA		
Conforming standards	CE marking, FCC regulations		
Compatible sensors	FES-510 carbon conductivity sensor (cell constant: 1.0/cm)		

For pharmaceutical / food processing

Sanitary conductivity sensor

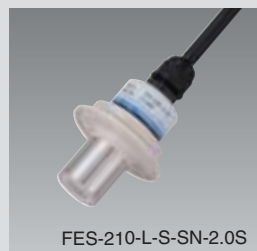
Pharmaceutical / food processing type conductivity sensor for applications that demand high sanitary levels Can also be used with Steam-In-Place cleaning

Flow-through sensor
FES-300 Series



FES-310-L-S-SN-3.0S

Insertion type sensor
FES-200 Series



FES-210-L-S-SN-2.0S

Parts contacting fluids are straight and without projections.

Model	FES-310 (flow-through type)	FES-210, 220, 230, 240 (insert type)
Cell constant	Approx. 0.1/cm	
Wetted material	SUS316L*, PPS, FKM (Compliant with MHLW Bulletin No. 20 and 85)	
Protective structure	IP67 equivalent	
Pressure of fluid being measured	0 to 1 MPa	
Temperature of fluid being measured	0 to 110°C	
Steam sterilization	140°C/0.6 MPa within 60 minutes	
Connection aperture (ferrule)	1.5S, 2.0S, 2.5S, 3.0S, 4.0S, 4.5S	1.5S, 2.0S, VARIVENT® valve, Socket attachment type
Cable length	Cable-attached type: 10 m, Y terminal (standard); limit cable extensions to a max. 50 m Connector type: 10 m (SK-10M), 20 m (SK-20M), 30 m (SK-30M)	
Compatible converter	HE-960HI	

* Cannot be used with fluids (hydrochloric acid, diluted sulfuric acid, seawater, etc.) that chemically react with electrode (SUS316L).

For ordering, refer to the model code chart on page 15.

For semiconductor wet cleaning

Carbon conductivity sensor

Electrodes made of highly chemical resistant glass carbon which allows for measurement in a wide range of chemicals used in semiconductor washing and other processes.

Flow type carbon sensor
FES-510 Series



FES-510-3/4

Model	FES-510	
Cell constant	Approx. 1.0/cm	
Wetted material	Electrode	Glass carbon
	Body	PFA
	Packing	Kalrez®
Pressure of fluid being measured	0 to 0.5 MPa (Within 5 to 50)	
Temperature of fluid being measured	5 to 100°C	
Liquid flow rate	0 to 2 L/min (1/4 in), 0 to 8 L/min (3/8 in) 0 to 10 L/min (1/2 in), 0 to 15 L/min (3/4 in) 0 to 25 L/min (1 in)	
Cable length	Cable-attached type: 10 m, ring terminal (standard); limit cable extensions to a max. 50 m	
Compatible converter	HE-960HC	

For ordering, refer to the model code chart on page 15.

External Dimensions

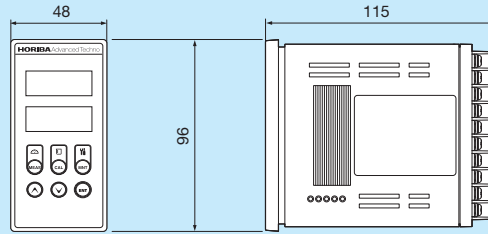
(Unit: mm)

■ Indication converter

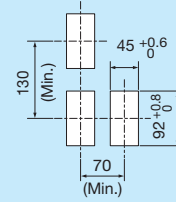
Resistivity meter / Conductivity meter

● Panel mount type

48 Series

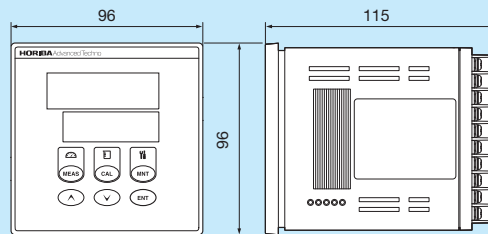


Panel cutting dimensions

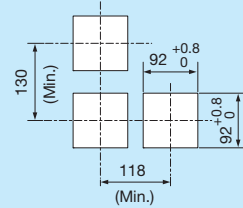


● Panel mount type

96 Series



Panel cutting dimensions



● Rain-proof type

200 Series

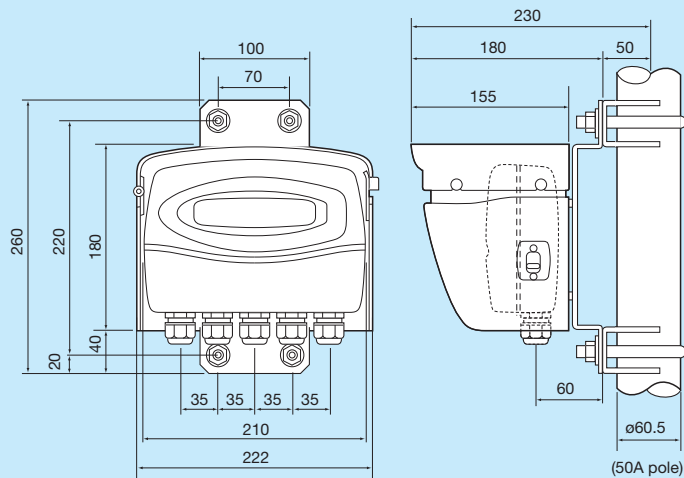
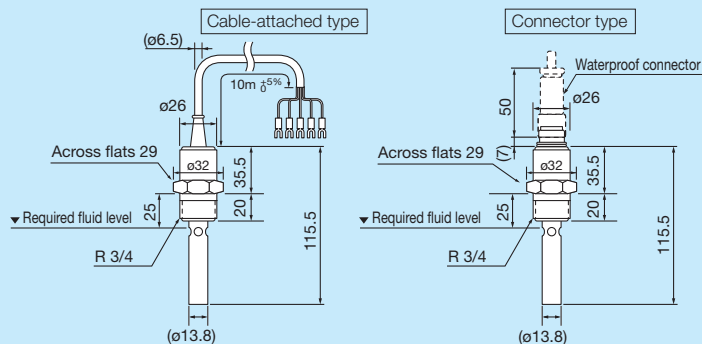


Diagram shown here is an example of a pole attachment.
Wall installation also available.

■ Sensor

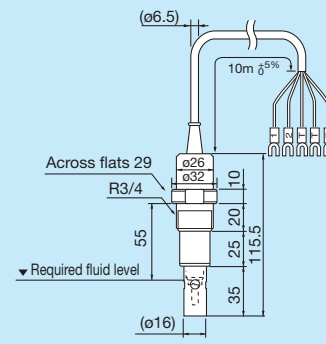
● Resistivity sensor

ERF-001 Series



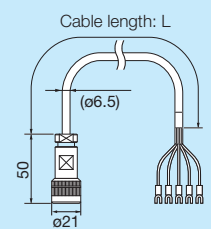
● Carbon resistivity sensor

ERF-01-L-GC2



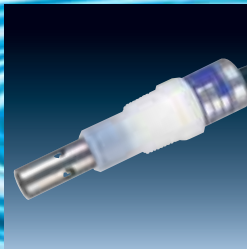
● Connector cable

CK-□M



Model	Cable length
CK-Y10M	10 m $\pm 5\%$
CK-Y20M	20 m $\pm 5\%$
CK-Y30M	30 m $\pm 5\%$

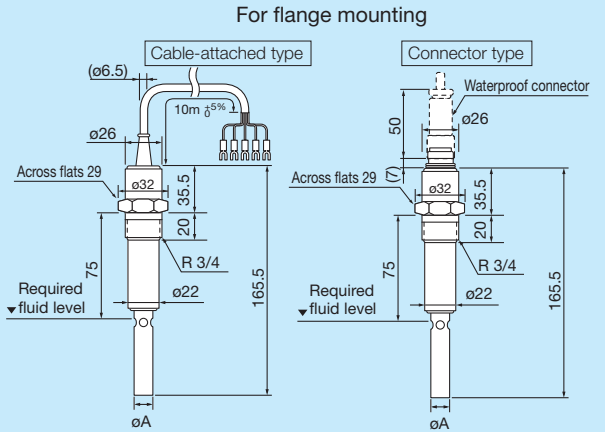
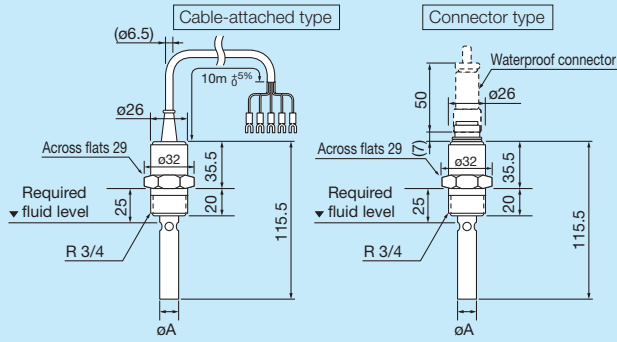
Selection Guide & External Dimensions



●2-electrode conductivity sensor

(Unit: mm)

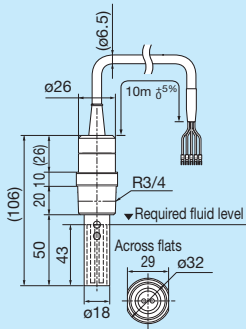
ERF-001 Series



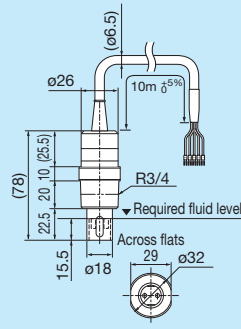
Model	øA
ESH-1	16
ESH-01	13.8
ESH-001	13.8

●2-electrode carbon conductivity sensor

ESH-01-L-GC5

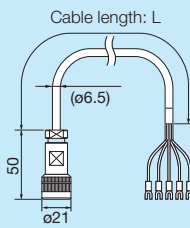


ESH-1-L-GC9



●Connector cable

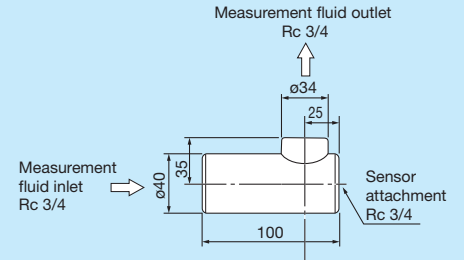
CK-□M



Model	Cable length
CK-Y10M	10 m ±5%
CK-Y20M	20 m ±5%
CK-Y30M	30 m ±5%

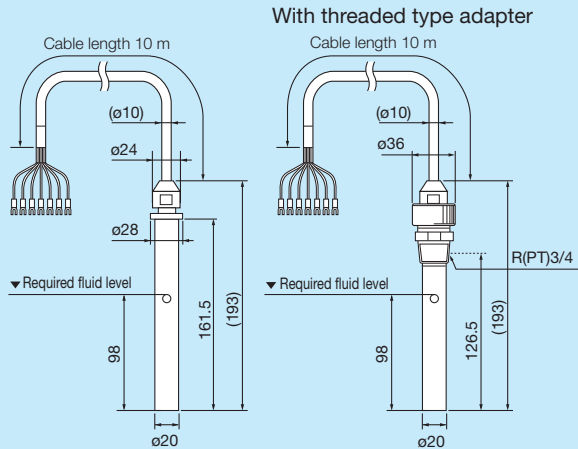
●Flow type holder

EFA-30 Series



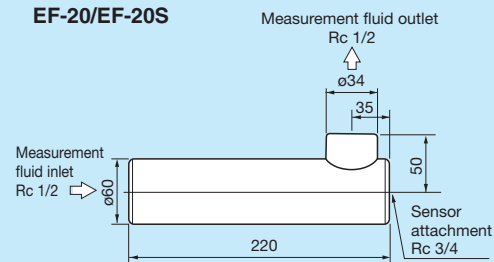
●4-electrode conductivity sensor

FES-125F/FES-126F

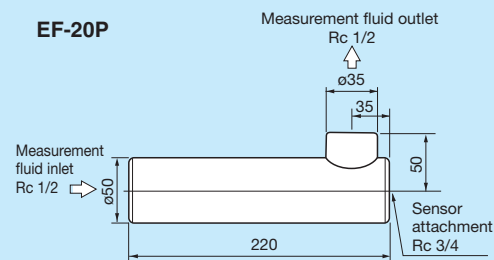


●Flow type holder

EF-20/EF-20S

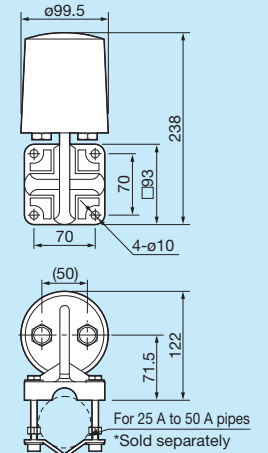


EF-20P



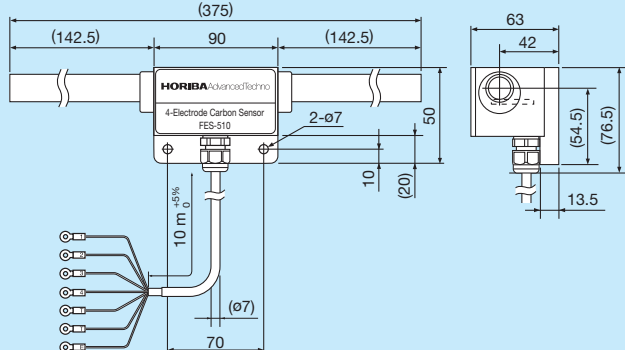
●Relay box

CT-20EC

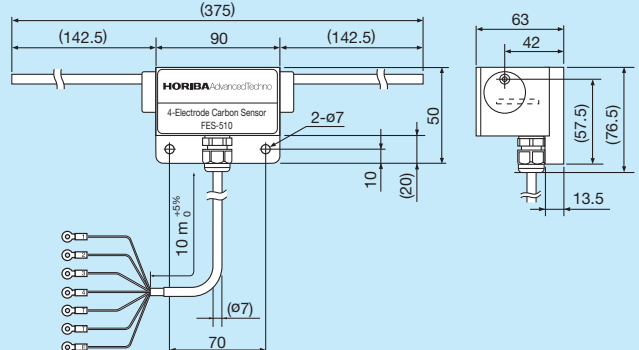


●4-electrode carbon conductivity sensor

FES-510-3/4

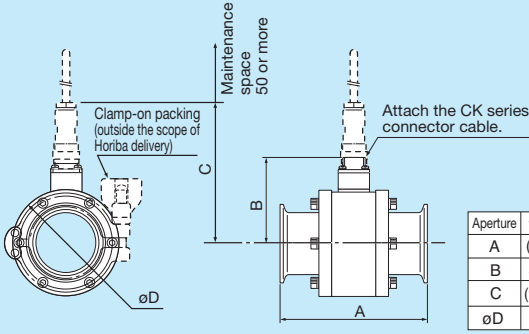


FES-510-1/2



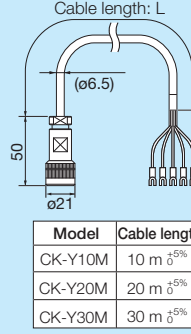
●2-electrode sanitary conductivity sensor

■Flow-through sensor
FS-01 Series



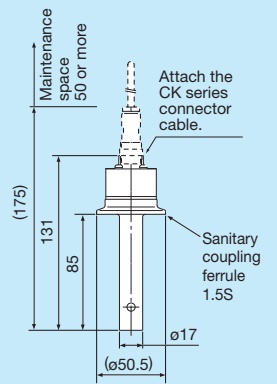
Aperture	15A	1.0S	1.5S	2.0S	2.5S
A	(120)	(120)	(120)	(120)	(140)
B	55.5	59	64.5	70	82.5
C	(99.5)	(103)	(108.5)	(114)	(126.5)
øD	55	65	75	85	110

■Connector cable
CK-□M



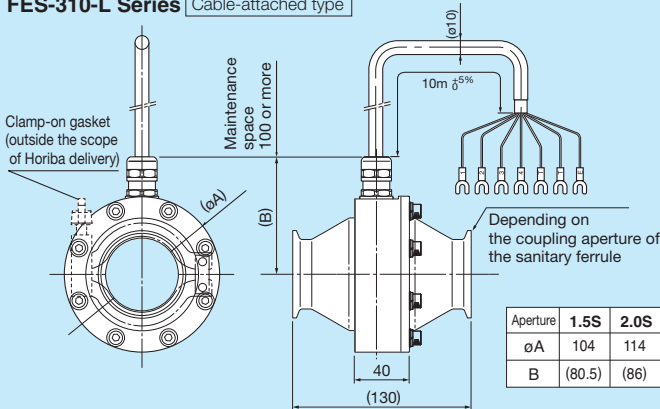
Model	Cable length
CK-Y10M	10 m ø ^{5%}
CK-Y20M	20 m ø ^{5%}
CK-Y30M	30 m ø ^{5%}

■Insertion type sensor
ESH-01-C-S-SN-1.5S



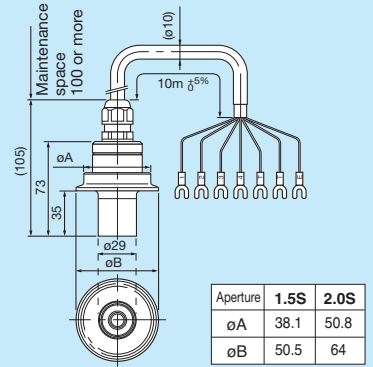
●4-electrode sanitary conductivity sensor

■Flow-through sensor
FES-310-L Series [Cable-attached type]



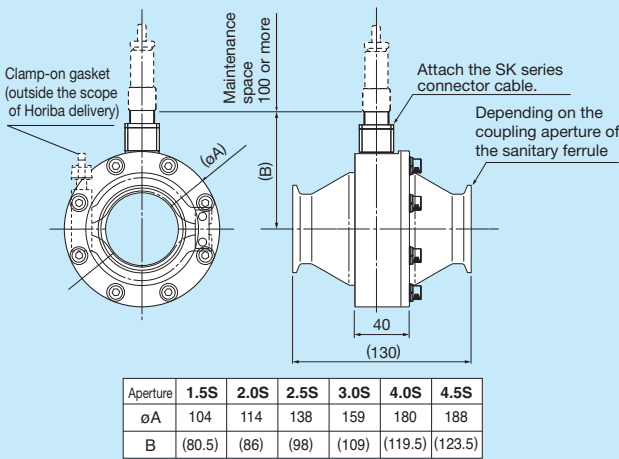
Aperture	1.5S	2.0S	2.5S	3.0S	4.0S	4.5S
øA	104	114	138	159	180	188
B	(80.5)	(86)	(98)	(109)	(119.5)	(123.5)

■Insertion type sensor
FES-210/220-L Series [Cable-attached type]



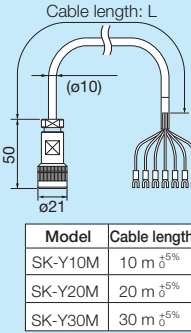
Aperture	1.5S	2.0S
øA	38.1	50.8
øB	50.5	64

■Flow-through sensor
FES-310-C Series [Connector type]



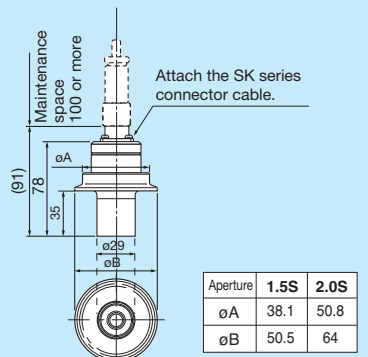
Aperture	1.5S	2.0S	2.5S	3.0S	4.0S	4.5S
øA	104	114	138	159	180	188
B	(80.5)	(86)	(98)	(109)	(119.5)	(123.5)

■Connector cable
SK-□M



Model	Cable length
SK-Y10M	10 m ø ^{5%}
SK-Y20M	20 m ø ^{5%}
SK-Y30M	30 m ø ^{5%}

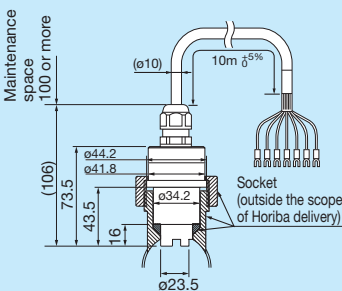
■Insertion type sensor
FES-210/220-C Series [Connector type]



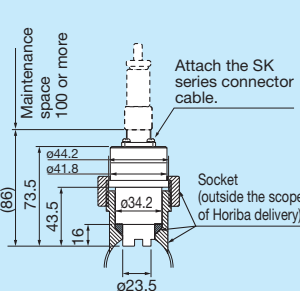
Aperture	1.5S	2.0S
øA	38.1	50.8
øB	50.5	64

■Socket insertion type

FES-240-L [Cable-attached type]

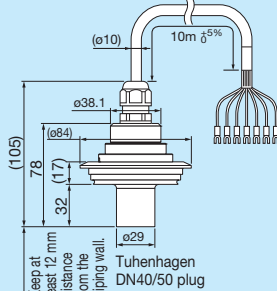


FES-240-C [Connector type]

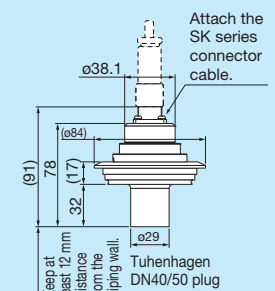


■VARIVENT® valve type

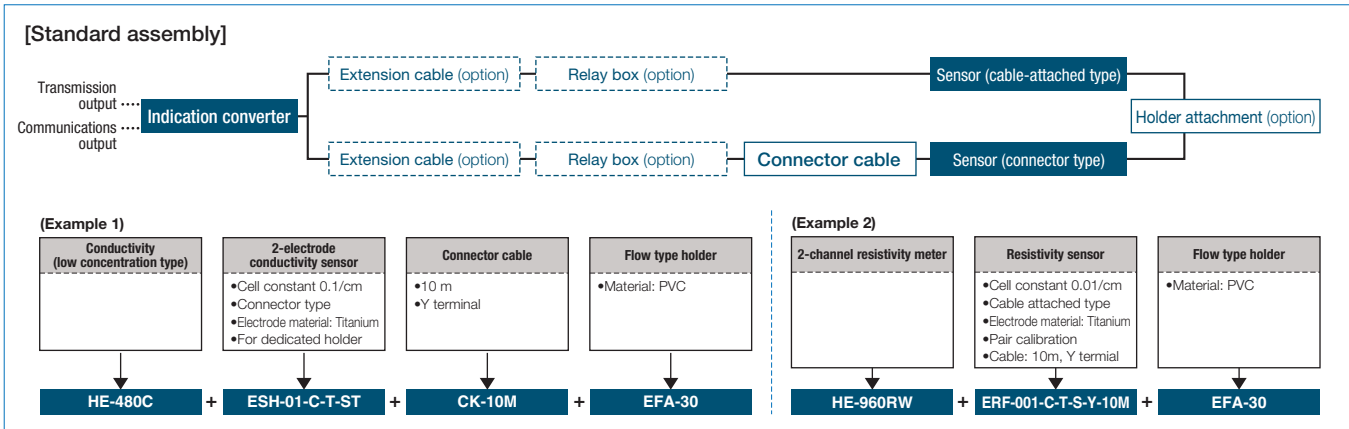
FES-230-L [Cable-attached type]



FES-230-C [Connector type]



Industrial Selection Guide for Conductivity Meter/Resistivity Meter



Conductivity/Resistivity indication converter

	Model	Product name			
Resistivity meter	■ HE-960RW	2-channel resistivity meter	2 ch	Panel mount DIN96	
	■ HE-480R	Resistivity meter	1 ch	Panel mount SLIM48	
	■ HE-960RW-GC	2-channel resistivity meter	2 ch	Panel mount DIN96	RoHS COMPLIANT
	■ HE-960R-GC	Carbon sensor resistivity meter	1 ch	Panel mount DIN96	RoHS COMPLIANT
Conductivity meter (2-electrode method)	■ CE-200C	Conductivity meter (rain-proof type)	1 ch	Rain-proof type	Low concentration type
	■ HE-480C	Conductivity meter (low concentration type)	1 ch	Panel mount SLIM48	Low concentration type
	■ HE-960CW	2 channel conductivity meter (low concentration type)	2 ch	Panel mount DIN96	Low concentration type
	■ HE-480C-GC	Carbon sensor conductivity meter (low concentration type)	1 ch	Panel mount SLIM48	Low concentration type
Conductivity meter (4-electrode method)	■ CEH-200	Conductivity meter (rain-proof type)	1 ch	Rain-proof type	
	■ HE-480H	Conductivity meter (high concentration type)	1 ch	Panel mount SLIM48	High concentration type
	■ HE-960HS	Conductivity meter (wide range type)	1 ch	Panel mount DIN96	Wide range type
	■ HE-960HI	Sanitary conductivity meter (wide range type)	1 ch	Panel mount DIN96	Wide range type
	■ HE-960HC	Carbon sensor conductivity meter (wide range type)	1 ch	Panel mount DIN96	Wide range type

Resistivity sensor ERF series

■ Resistivity sensor (For ultra-pure water)

ERF-001 Series (Compatible converters: HE-960RW, HE-480R)

Model	Cell constant	Connection	Electrode material	Temperature testing	Terminal type	Cable length	Specifications
ERF							Resistivity sensor
	-001						Cell constant 0.1/cm
		-L					Cable-attached type
		-C					Connector type*3
			-T				Titanium*4
				-N			No temperature testing (standard)
				-R			With 0°C temperature testing (option)
				(-S)			With pair calibration*1
					-Y		Y terminal (standard)
					-O		Ring terminal (option)
					N/A		When the connector type sensor is selected
						-10	10 m (standard)
						-XX	Designated cable length (option) *2
						N/A	When the connector type sensor is selected

■ Carbon resistivity sensor (For semi-conductor and FPD manufacturing)

ERF-01 Series (Compatible converters: HE-960RW-GC, HE-960R-GC)

Model	Cell constant	Connection	Material	Temperature testing	Terminal type	Cable length	Specifications
ERF							Resistivity sensor
	-01						Cell constant 0.1/cm
		-L					Cable-attached type
			-GC2				Electrode: Glass carbon; Body: PFA*5
				-N			No temperature testing (standard)
				-R			With 0°C temperature testing (option)
					-Y		Y terminal (standard)
					-O		Ring terminal (option)
						-10	10 m (standard)
						-XX	Designated cable length (option) *2

*1 The sensor and converter are calibrated together before shipping. Contact your sales representative separately.
Calibration accuracy (HE-960RW+ERF-001 sensor)

Resistivity	Within ±0.01 MΩ·cm	Against reference device/
Temperature	Within ±0.02°C	At same temperature

*2 Limit cable extensions to a max. 50 m. (Relay boxes cannot be used.)
 *3 A connector cable (CK-10M/20M/30M, etc.) is separately required for connector type sensors.
 *4 Use a flow type holder (EFA-30/30P/30S) sold separately, if needed.
 *5 Use a flow type holder (EFA-31P/31F) sold separately, if needed.

2-electrode conductivity sensor ESH, FS series

2-electrode conductivity sensor (General-purpose)

(Compatible converters: CE-200C, HE-480C, HE-960CW)

Model	Cell constant	Connection	Electrode material	Cell length	Terminal type	Cable length	Specifications
ESH							Conductivity sensor (2-electrode method)
	-1						Cell constant 1.0/cm
	-01						Cell constant 0.1/cm
	-001						Cell constant 0.01/cm
		-L					Cable-attached type
		-C					Connector type*2
			-S				SUS-316
			-T				Titanium
				-ST			For flow type holder*3
				-LG			For flange mounting
					-Y		Y terminal (standard)
					-O		Ring terminal (option)
					N/A		When the connector type sensor is selected
						-10	10 m (standard)
						-XX	Designed cable length (option)*1
						N/A	When the connector type sensor is selected

Carbon conductivity sensor (For semi-conductors and FPD manufacturing)

(Compatible converter: HE-480C-GC)

Model	Cell constant	Connection	Material	Cell length	Terminal type	Cable length	Specifications
ESH							Conductivity sensor (2-electrode method)
	-01						Cell constant 0.1/cm
		-L					Cable-attached type
			-GC5				Electrode: glass carbon, Body: PFA
			-GC6				Electrode: glass carbon, Body: PP
				N/A			*4
					-Y		Y terminal (standard)
					-O		Ring terminal (option)
						-10M	10 m (standard)
						-XX	Designed cable length (option)*1
	-1						Cell constant: 1/cm
		-L					Cable-attached type
			-GC9				Electrode: glass carbon, Body: PFA
				N/A			*4
					-Y		Y terminal (standard)
					-O		Ring terminal (option)
						-10M	10 m (standard)
						-XX	Designed cable length (option)*1

4-electrode conductivity sensor FES series

4-electrode conductivity sensor (General-purpose)

FES-100 Series (Compatible converter: CEH-200, HE-480H, HE-960HS)

Model	Connection	Electrode material	Connection	Specifications
FES				4-electrode conductivity sensor
	-125F			Submersible type (Body: PVC)
	-126F			Submersible type (Body: PPS)
			N/A	Cable-attached type*1
		N/A		Electrode: Titanium; Packing: FKM (standard)
		-Ni		Electrode: Nickel; Packing: EPDM (option)
			N/A	Threaded type adaptor required separately*4

Sanitary conductivity sensor (For food and pharmaceutical manufacturing)

FES-200/300 Series (Compatible converter: HE-960HI)

[Insertion type]

Model	Connection	Electrode material	Structure	Size	Specifications
FES					4-electrode conductivity sensor
	-210				Insertion type (Ferrule attachment material: resin)
	-220				Insertion type (Ferrule attachment material: SUS)
		-L			Cable-attached type*1
		-C			Connector type*2
			-S		SUS316L, PPS, FKM
			-SN		Sanitary type (Structure: IP67 equivalent)
				-1.5S	IFD/ISO 1.5S ferrule
				-2.0S	IFD/ISO 2.0S ferrule

[Custom insertion type]

Model	Connection	Electrode material	Structure	Size	Specifications
FES					4-electrode conductivity sensor
	-230				Insertion type (VARIVENT® valve attachment)
		-L			Cable-attached type*1
		-C			Connector type*2
			-S		SS316L, PPS, FKM
				-DN50	VARIVENT® valve
	-240				Insertion type (Socket attachment)
		-L			Cable-attached type
		-C			Connector type
					Socket attachment type

*1 For cable extensions, use relay box CT-20EC and limit extension to a max. of 50 m.

*2 Separate connector cable (SK-10M etc.) required for connector type sensors.

*3 Use a flow type holder (EFA-30/30P/30S) sold separately, if needed.

*4 Separate threaded type adaptors EA-20 (for FES-125 sensors) and EA-40 (for FES-126 sensors) required.

Sanitary conductivity sensor (For food and pharmaceutical manufacturing)

[Insertion type] (Compatible converters: HE-480C, HE-960CW)

Model	Cell constant	Connection	Material	Structure	Size	Specifications
ESH						Conductivity sensor (2-electrode method)
	-01					Cell constant: 0.1/cm
						Connector type*2
			-S			Electrode: SUS 316L, Electrode insulation: PEEK
				-SN		Sanitary type (Structure: compliant with IP67)
					-1.5S	IFD/ISO 1.5S ferrule

[Flow-through type] (Compatible converters: HE-480C, HE-960CW)

Model	Cell constant	Connection	Material	Size	Specifications
FS					Conductivity sensor (2-electrode method)
	-01F				Cell constant: 0.1/cm
					Connector type*2
					Electrode: SUS 316, Electrode insulation: PEEK
				-SL	
				-15A	IFD/ISO 15 ferrule
				-1S	IFD/ISO 1S ferrule
				-1.5S	IFD/ISO 1.5S ferrule
				-2S	IFD/ISO 2S ferrule
				-2.5S	IFD/ISO 2.5S ferrule

Accessories

Flow type holder (For resistivity sensors and 2-electrode conductivity sensors)

EFA-30 Series (Compatible sensors: ERF, ESH Series)

Model	Cell constant	Connection	Specifications	Model	Product name
EFA			Flow type holder	CT-20EC	Relay box
	-30		For 2-electrode method	C-5C	Exclusive-use extension cable (for 2-electrode conductivity sensors)
		N/A	PVC	CK-5M	Connector cable 5 m (for 2-electrode conductivity sensors)
		-P	PVDF	CK-10M	Connector cable 10 m (for 2-electrode conductivity sensors)
		-S	SUS-316	CK-20M	Connector cable 20 m (for 2-electrode conductivity sensors)
		F	PFA	CK-30M	Connector cable 30 m (for 2-electrode conductivity sensors)
			Made by order		

*1 Limit cable extensions to max. 100 m. Relay box usage is recommended for cable extensions exceeding 30 m.

*2 Separate connector cable (CK-10M/20M/30M etc.) required for connector type sensors.

*3 Use a flow type holder (EFA-30/30P/30S) sold separately, if needed.

*4 Use a flow type holder (EFA-31P/31F) sold separately, if needed.

Carbon conductivity sensor (For semi-conductor and FPD manufacturing)

FES-510 Series (Compatible converter: HE-960HC)

[Flow type]

Model	Size	Specifications
FES		4-electrode conductivity sensor
	-510	In-line flow type
		Piping size: 1/4 in. (standard)
		Piping size: 3/8 in. (substandard)
		Piping size: 1/2 in. (substandard)
		Piping size: 3/4 in. (standard)
		Piping size: 1 in. (substandard)
	-6_4	Piping size: ø6/ø4 mm
	-10_8	Piping size: ø10/ø8 mm
		Made by order

[Flow-through type]

Model	Connection	Electrode material	Structure	Size	Specifications
FES					4-electrode conductivity sensor
	-310				In-line flow-through type
		-L			Cable-attached type*1
		-C			Connector type*2
			-S		SUS316L, PPS, FKM
				-SN	Sanitary type (Structure: IP67 equivalent)
				-1.5S	IFD/ISO 1.5S ferrule
				-2.0S	IFD/ISO 2.0S ferrule
				-2.5S	IFD/ISO 2.5S ferrule
				-3.0S	IFD/ISO 3.0S ferrule
				-4.0S	IFD/ISO 4.0S ferrule
				-4.5S	IFD/ISO 4.5S ferrule

Accessories

Flow type holder (For 4-electrode conductivity sensor)

EF-20 Series (Compatible sensor: FES Series)

Model	Cell constant	Connection	Specifications	Model	Product name
EF			Flow type holder	CT-20EC	Relay box
	-20		For 4-electrode method	C-7E	Exclusive-use extension cable (for 4-electrode conductivity sensors)
		N/A	PVC	SK-10M	Connector cable 10 m (for 4-electrode conductivity sensors)
		-P	PVDF		
		-S	SUS-316		

Threaded type adaptor

Model	Product name
EA-20	Threaded type adaptor (for FES-125 sensor); Material: PVC
EA-40	Threaded type adaptor (for FES-126 sensor); Material: PVDF

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