HORIBA
Semiconductor

Beyond Water with You

CE marking compliant

Flat Carbon Sensor Conductivity meter

HE-960LF / FS-09F-1/2

Perfect for Slurry concentration control

It is effective to keep the dilution of Slurry constant.
Maintaining an appropriate conductivity value contributes to process stability in the wafer polishing process.
Even highly viscous sample liquids such as CMP Slurry can be measured without problems because they use a sensor structure that reduces the risk of the sample liquid sticking to the electrodes.
In addition, the sensor is made of a wetted material with excellent chemical resistance, which meets the cleanliness requirements of semiconductor processes.
In addition to the above, it can also be used for introduction at the semiconductor process development stage and conductivity control of special chemicals.

Key features

High accuracy / High stability

- Measurement range : 0 to 2,000 µS/cm , 0 to 10,000 µS/cm
- Repeatability : ± 0.5% F/S , ± 1.0% F/S

Metal contamination free

Since special carbon is used for the electrode material, there is no need to worry about metal contamination elution.

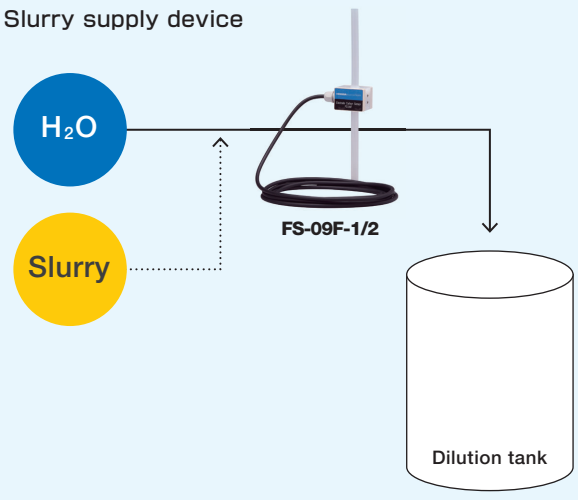
Equipped with concentration conversion function

Two types of concentration conversion are possible by inputting the relationship between the chemical concentration and conductivity and the temperature characteristics.
It is especially suitable for dilution control of low-concentration chemicals.

Space saving

The degree of freedom in installation layout is improved by downsizing from our conventional conductivity sensor.

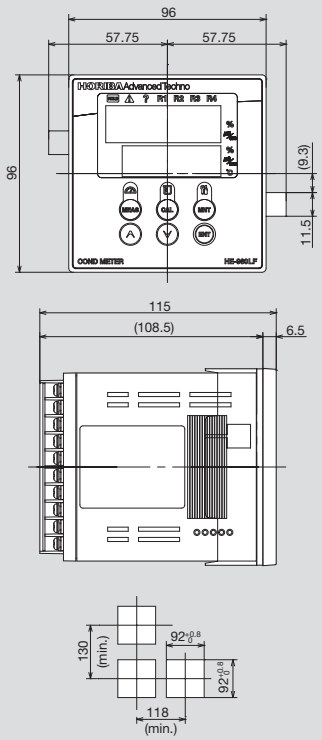
Example of installation



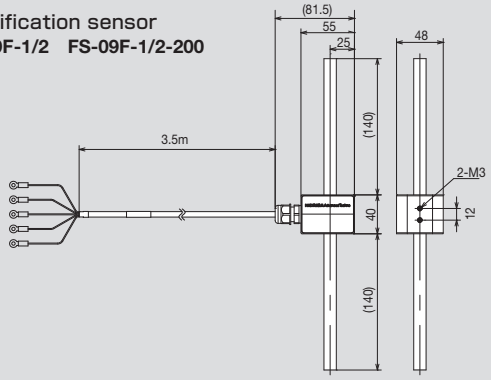
仕様
■Specification conveter

Product name		Conductivity meter		
Model		HE-960LF		
Measurement method		Electrode type (2-electrode method)		
Temperature specifications sensor		Platinum resistance 1000Ω/℃		
Measurement range	Cell constant	0.1/cm	1.0/cm	
	Conductivity	0.00 to 20.00μS/cm	0.0 to 200.0μS/cm	
		0.0 to 200.0μS/cm	0 to 2000μS/cm	
		0 to 1000μS/cm	0 to 10000μS/cm	
		＊Measuring range of raw conductivity Switched with setting change		
	Temperature	0 to 100℃ Actual temperature measuring range depend on the performance of the sensor connected.		
Concentration conversion	Option 1,2	0 to 10.000% Conversion formula is defined by user (temperature compensation and concentration conversion)		
Repeatability	Cell constant	0.1/cm	1.0/cm	
	Conductivity	0.00 to 20.00μS/cm range	0.0 to 200.0μS/cm range	Within ±0.5% full scale
		0.0 to 200.0μS/cm range	0 to 2000μS/cm range	
		0 to 1000μS/cm range	0 to 10000μS/cm range	Within ±1.0% full scale
	Temperature	±0.5℃		
	Condition	Equivalent input		
Linearity	Cell constant	0.1/cm	1.0/cm	
	Conductivity	0.00 to 20.00μS/cm range	0.0 to 200.0μS/cm range	Within ±0.5% full scale
		0.0 to 200.0μS/cm range	0 to 2000μS/cm range	
		0 to 1000μS/cm range	0 to 10000μS/cm range	Within ±1.0% full scale
	Temperature	±0.5℃		
	Condition	Equivalent input		
Transmission output		Number of output:4 DC4 to 20mA / 0 to 20mA input/output isolated type Maximum load resistance : 900Ω Transmission output range : Free setting within measuring range (Negative terminals of each transmission output channel are connected inside and thus have the same electrical potential.)		
Contact output		Number of relay:5 ALARM contact R1,R2,R3 and R4 Contact type relay : Relay contact, SPST (1a) Contact rating:240 V AC,1 A or 30 V DC, 1 A(resistance load) Contact function Upper or lower ON/OFF alarm each measurement items. Contact action Closed when status is in the event. Opened when any erroneous status is normal or power is down. R1,R2 and R3 share a common terminal. Self diagnosis contact RF Contact type : relay contact , SPDT (1c) Contact rating:240 V AC,1 A or 30 V DC, 1 A(resistance load) C-NO contact action : Closed when status is normal. Opened when any erroneous status is detected or power is down. R4 and RF share a common terminal.		
Contact input		Number of input:1		
		Contact type:open collector. No-voltage contact		
		Function : Hold command		
Communication output		RS-485 communication		
Self-check		Sensor diagnosis (Short-circuit and disconnection of the temperature sensor). Converter error		
Temperature compensation of conductivity		● Arbitrary temperature coefficient entry (reference temperature : 25℃, temperature coefficient : 0%/℃ to 5%/℃) ● Arbitrary temperature compensation formula entry (reference temperature : 25℃, formula is defined by user) ● No temperature compensation is performed.		
Temperature compensation range		0 to 100℃ The temperature compensation under 0℃ and over 100℃ is expanded by a function		
Ambient temperature		5 to 45℃		
Relative humidity		−25 to 65℃		
Power supply		Rated voltage 24 V DC, 10W (max.)		
Structure		Indoor-use panel installation type Panel case : ABS, terminal : PBT Panel : IP65 dust and water proof structure		
Conforming standards		CE Marking	EMC Directive : EN61326-2-3	
		FCC Rule	FCC Part15	
Mass		Approx. 550g		
External dimensions		96 (W) × 96 (H) × 115 (D) mm Case depth : approx. 105mm (when panel-mounted)		
Compatible sensors		FS-09F-1/2		

Dimensions (mm)



■Specification sensor
FS-09F-1/2　FS-09F-1/2-200



■Specification sensor

Model	FS-09F-1/2	FS-09F-1/2-200
Wetted material	Glass carbon, PFA. Kalrez® 6375	
pipe size	1/2 inch	
Flow rate	0L/min to 10 Keep enough flow rate to measure latest sample.	
Sample pressure	0 to 0.3MPa (Temperature : 20 to 30 degree℃)	
Sample temperature	20～30 degree℃ If the difference between the ambient temperature and the sample liquid temperature is 5 degree℃, a measurement error of about 1 degree℃ will occur.	
Cable length	Approx. 3.5m	

IMS

The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001.
We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

Please read the operation manual before using this product to assure safe and proper handling of the product.

HORIBA Advanced Techno
Head Office
2 Miyanohigashi-cho, Kisshoin, Minami-ku, Kyoto, 601-8551, Japan
Phone: (81) 75-321-7184　Fax: (81) 75-321-7291
http://www.horiba-adt.jp

HORIBA
Group Head Office
2 Miyanohigashi-cho, Kisshoin, Minami-ku, Kyoto, 601-8510, Japan
Phone: (81) 75-313-8121　Fax: (81) 75-321-5725
http://www.horiba.com

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