

For Low-Concentration Chemical solutions Control in the Semiconductor Cleaning Process

Low Concentration Type

HF/HCl/NH₃ Concentration Monitor

HF-960M

High Precision Measurement of Low-Concentration Hydrofluoric Acid, Hydrochloric Acid and Ammonia



CE marking compliant

Along with the evolution of 65 nm and 45 nm devices, the chemical solutions conventionally used in RCA cleaning are requiring greater and greater low-concentration control. The HF-960M uses sensors that offer outstanding corrosion resistance for high-precision, high-speed measurement of low concentrations of hydrofluoric acid, hydrochloric acid and ammonia, and is thus perfect for single-bath and wafer cleaning.



Features

● Precise measurement of low HF concentrations

The HF-960M provides highly precise measurement with ± 25 ppm reproducibility possible. It supports control in the semiconductor etching process where the need for ever more minute processing continues to advance. The 5000 ppm display is equivalent to 0.5%, with this ppm display responding to today's demands for lower and lower concentrations.

● 5 types of measurement available: HF, HCl & NH₃ concentrations, conductivity, and temperature

Temperature compensation measurement is carried out for HF, HCl & NH₃ concentrations based on the data for each temperature characteristic. The HF-960M can even be used as a conductivity meter for low-concentration dilution control of other chemical solutions as well.

● The analog output range can be arbitrarily set with to the concentration measuring range.

The analog output range can be specified between 0 and 200% of the measuring range. Thus, finer concentration values can be output.

● Diverse output

The HF-960M provides 7 output points. These include not only upper and lower concentration limits, but output on concentration meter errors, defective sample measurements, and more, for a truly diverse range of output.

● 3-channel transmission output

Three transmission output systems are built into the HF-960M, allowing the desired data to be assigned from among HF, HCl & NH₃ concentrations, conductivity, and temperature.

● Communication device ability (RS-485)

HF-960M is equipped with an RS-485 interface to allow you to check measurements and check/change the set points by communication.

● DC 24 V Power Source

● CE Marking compliant

 The HF-960M is also an environmentally-friendly product that uses lead-free solder for mounting chips on the PCB.

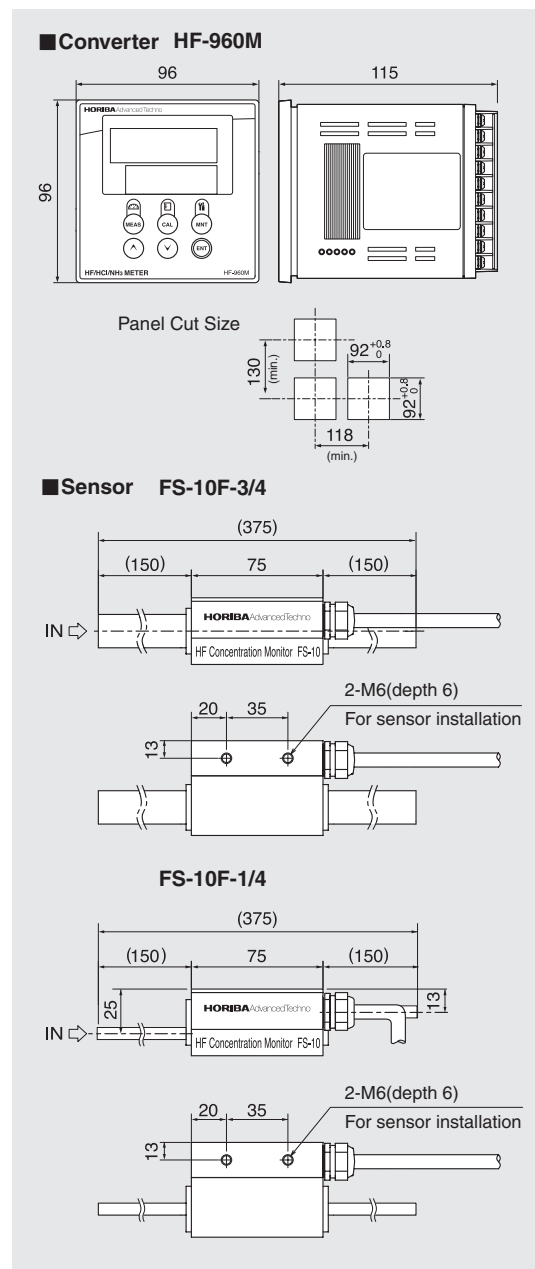
Specifications (Converter)

Model	HF-960M		
Measurement method	Cabon flow-through conductivity measurement and concentration conversion		
Cell constant	Approx. 4/cm		
Temperature sensor specifications	Platinum resistance 1000Ω/0°C		
Measuring range	High concentration range	Low concentration range	
	HF	0ppm to 5000ppm	0ppm to 1000ppm
	HCl	0ppm to 5000ppm	0ppm to 1000ppm
	NH ₃	0ppm to 10000ppm	0ppm to 2000ppm
	Conductivity	0mS/cm to 50.00mS/cm	0mS/cm to 2.000mS/cm
	temperature	0°C to 100°C (Selectable from one and two for the number of digits after the decimal point)	
Repeatability	Within ±0.5% of the full scale (in equivalent input)		
Linearity	Within ±0.5% of the full scale (in equivalent input)		
Transmission output	Number of outputs : 3		
	4mA to 20mA DC / 0mA to 20mA DC : input/output isolated type		
	Maximum load resistance : 900Ω Transmission output range : Freely selectable within the measurement range (Negative terminals of each transmission output channel are connected inside and thus have the same electric potential.)		
Contact output	Outputs : 7 points		
	Alarm contact output (R1, R2, R3, R4, R5, R6)		
	Contact type : relay contact R1 to R3, R5, R6 : SPST, R4: SPDT		
	Contact rating: DC 24V 1A (resistance load)		
	Contact function: upper and lower limit operation (ON/OFF control) is selectable for each measurement target.		
	(However, R1 and R2, R3 and R4, R5 and R6 share the COMMON contacts respectively)		
Communication Output	RS-485 input / output		
	Calibration function		
	Concentrations and Conductivity : Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer		
Transmission output hold feature	Selectable from the Previous value hold and the Optional value hold. (However, only the previous value hold is available in the maintenance mode.)		
Self-diagnosis function	·Sensor diagnosis (Short-circuit and disconnection of the temperature sensor) ·Out of the measurement range ·Converter error		
Temperature compensation	Based on the user-defined temperature coefficient (reference temperature : 25°C, temperature coefficient 0%/°C to 3%/°C)		
Temperature compensation range	HF: 0°C to 80°C, HCl: 0°C to 40°C, NH ₃ : 0°C to 80°C Conductivity: 0°C to 100°C		
Ambient environment	Temperature: -5°C to 45°C, Relative humidity: 20% to 85% (without dew condensation)		
Power supply	24V DC ±10% 10W(max)		
Protective structure	Panel: IP65, Rear case: IP20, Terminal: IP00 (Indoor-use panel installation type)		
Mass	Approx. 550g		
Conforming standards	CE Marking, FCC Part15		
Compatible sensor	FS-10F series (Flow-through sensor)		

Specifications (Flow-through sensor)

Model	FS-10F-1/4	FS-10F-3/8	FS-10F-3/4	FS-10F-1
Measurement method	Flow-type electrode method (triode method)			
Operation temperature range	5°C to 80°C			
Operation pressure range	0.5MPa or below		0.4 MPa or below	
Wetted material	Glass carbon, PFA, perfluor rubber			
Tube	1/4-inch	3/8-inch	3/4-inch	1-inch
Cable length	10m			
Compatible converter	HF-960M			

External dimensions Unit: mm (in)



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

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