HORIBA
Semiconductor

Fiber Optic Type

CHEMICAL SOLUTION CONCENTRATION MONITOR

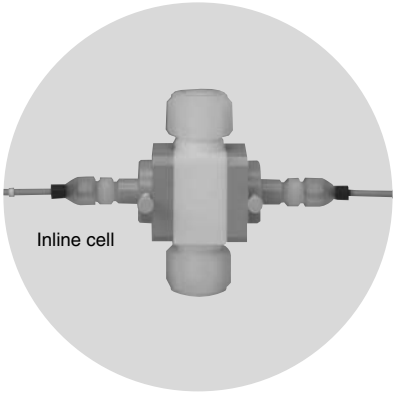
CS-100F1 Series

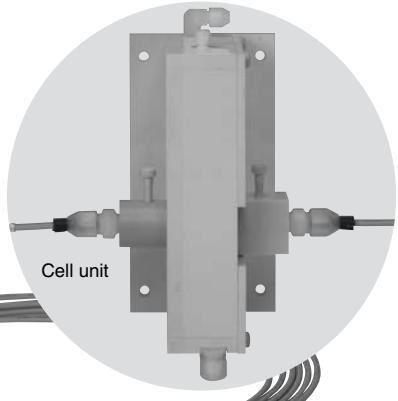
Inline cell type

Cell unit type

It's here! Inline multi-monitoring.

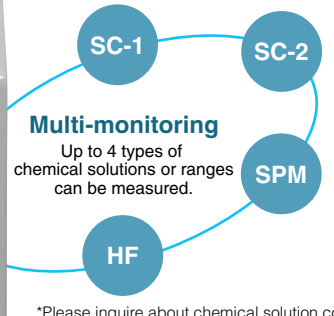
Support for multi-bath, single-bath, and single-wafer cleaning systems.





The HORIBA CS-100F1 Series chemical solution concentration monitors take straight aim at the need for highly accurate concentration monitoring of chemical solutions used in the etching and cleaning processes during semiconductor manufacturing. It offers real-time, inline measurement by directly integrating the sample cell into the cleaning system piping and by using fiber optic cable for light signal transmission. A single concentration monitor can be used to measure up to four types of chemical solutions or ranges and single-line monitoring of multiple chemical solutions in single-bath/single-wafer cleaning systems is possible. Also, a cell unit type is available with feedback concentration control for applications that demand higher accuracy.

Concentration monitor



*Please inquire about chemical solution combinations.

Inline cell for real-time measurement... Cell unit for higher accuracy... Two types to meet your exact concentration control needs.

Multi-monitoring of up to four types (chemical solution or range) with single concentration monitor.

By storing up to four calibration factors (chemical solution or range) in one monitor, you can monitor the concentrations of more than one chemical solution (or differing chemical solution ratios) in a single lot, like single-bath or single-wafer cleaning systems.

Inline measurement lets you follow the concentration in real time. A cell unit type is also available for applications that demand accuracy.

Real-time concentration monitoring is made possible by an inline cell that directly integrates into the main piping of the cleaning system. Emphasizing stability, a cell unit type is also available that uses monitor output for feedback control. This keeps chemical solution concentrations within the permissible range and eliminates unnecessary solution changes.

Supports concentration control for 300 mm processes with approx. 3 sec. measurement cycle.

With a short measurement cycle of approximately three seconds, high-speed response is realized. Precise concentration control is possible for multi-bath, single-bath, and single-wafer cleaning systems.

Increased stability by complete isolation of electrical and measurement sections.

The use of fiber optic cables to convey light signals ensures that the concentration monitor is completely separated from the cell. Corrosion will never be a concern, because the concentration monitor can be placed away from the presence of solution fumes.

Compact and lightweight, the design saves space in wet cleaning system installations.

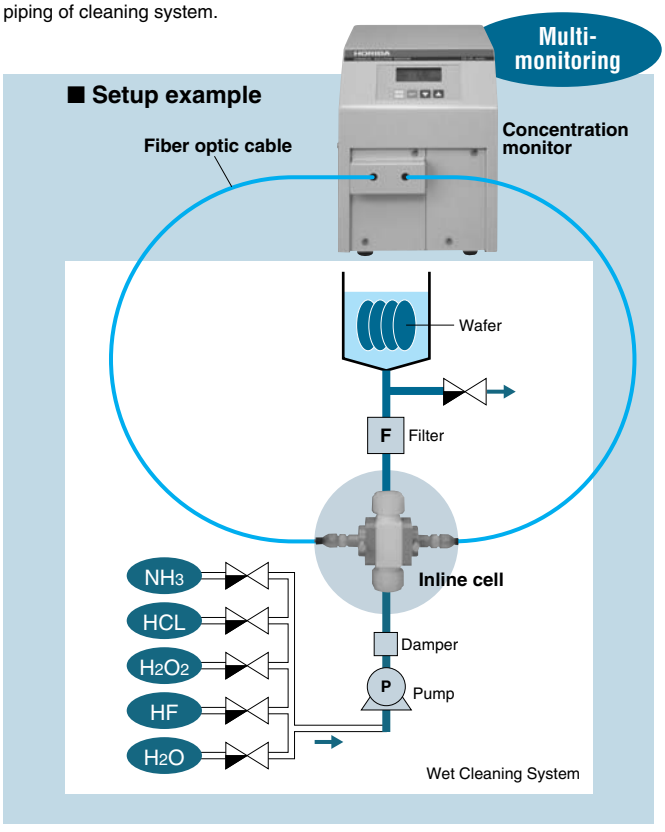
Taking up about two thirds the floor space of its predecessor, the compact design saves space in wet cleaning system installations. Easy integration and light weight make mounting possible even on top of the cleaning system itself.

Reduced lot failures boost yields in the cleaning process.

Cleaning with high repeatability is assured by employing monitor-output-based supply control of each chemical solution. This reduces lot failure in the cleaning process, which contributes to increased yields.

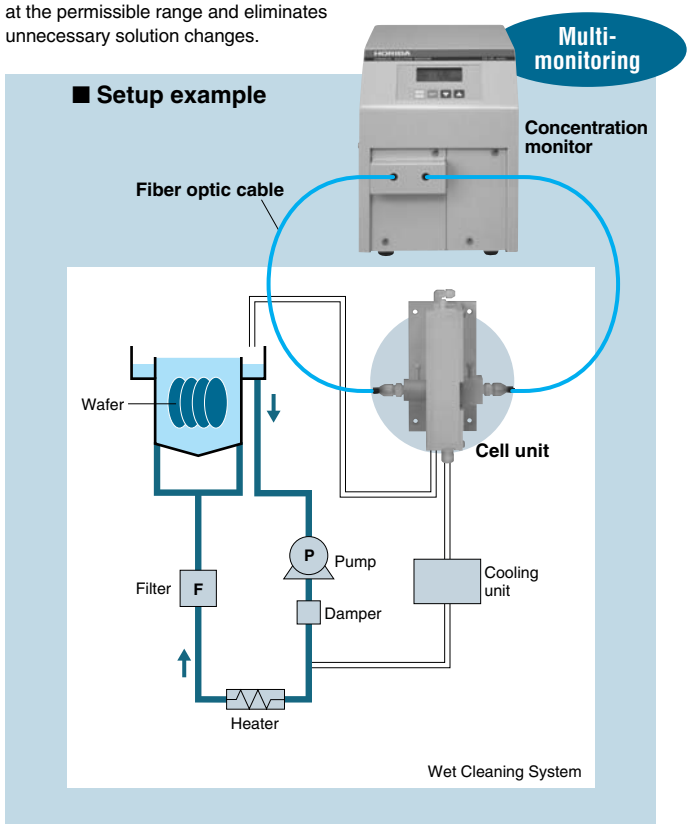
Inline Type

Real-time concentration monitoring by inline cell directly integrated into main piping of cleaning system.



Cell Unit Type

Feedback control supported using monitor output. Keeps solution concentration at the permissible range and eliminates unnecessary solution changes.



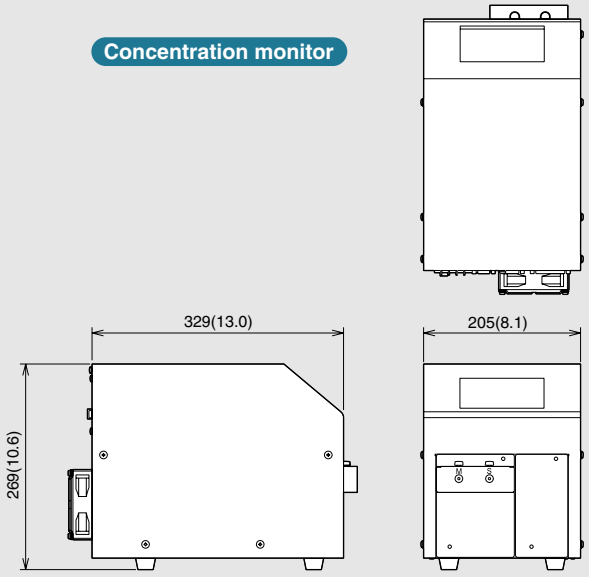
■ Specifications

Model	CS-151F1	CS-152F1	CS-150F1
Target of measurement	SC-1 (ammonia/hydrogen peroxide aqueous solution)	SC-2 (hydrochloric acid/hydrogen peroxide aqueous solution)	SPM (sulfuric acid/hydrogen peroxide aqueous solution)
	Multi-monitoring with one unit of up to 4 types of chemical solutions or ranges possible.		
Measurement principle	Absorption spectrometry		
Concentration computation principle	Temperature-compensated multivariate analysis		
Measurement range (mass %)	NH_3: 0.00% to 1.00% H_2O_2: 0.00% to 5.00% H_2O: 94.0% to 100.0%	HCl: 0.00% to 2.00% H_2O_2: 0.00% to 2.00% H_2O: 96.0% to 100.0%	H_2SO_4: 70.0% to 96.0% H_2O_2: 0.00% to 10.00% H_2O: 4.0% to 30.0%
	Please see our web site for information about other measurement ranges. http://global.horiba.com/semicon_e/cs-100f1/		
Repeatability (mass %) (within ±1% room temperature)	NH_3: ±0.15% H_2O_2: ±0.30% H_2O: ±1.5%	HCl: ±0.15% H_2O_2: ±0.15 % H_2O: ±1.5%	H_2SO_4: ±0.50% H_2O_2: ±0.50% H_2O: ±1.5%
	·Repeatability for the list above is for the cell unit type.Please contact us for the repeatability of the in-line cell type. ·Differences in the above list may occur depending on measurement range.(Please see our website for details.)		
Sample solution temperature	20 to 80℃ (when using Inline cell) 20 to 30℃ (when using cell unit)		
Measurement cycle	Approx. 3 seconds		
Content of LCD and input	• 1st component: measured concentration value (%) • 2nd component: measured concentration value (%) • 3nd component: measured concentration value (%) • 1st and 2nd components: concentration alarm status	• Error code • Parallel concentration alarm output invalid status • Serial/parallel status • Background compensation data	
RS-232C serial input	• Serial/parallel status switching • Measurement data transfer request • 1st and 2nd component concentration alarm setting	• Parallel concentration alarm output status (valid/invalid) • Target measurement solution switching	
Parallel input	12 to 30 V DC (photocoupler insulated)	• Parallel concentration alarm output • Target measurement solution switching • Background compensation	
Parallel output	Open collector output (photocoupler insulated) Max. current when on: DC 5 mA (no internal protection resistor) Max. impressed voltage when off: 30 V DC	• 1st component concentration alarm, 4 types • 2nd component concentration alarm, 4 types • Device error • Measuring • Target measurement solution type • Background compensation status	
Solution temperature input	Terminal block connection (M3 terminal screws) • Platinum resistance temperature sensor: Pt100 (Pt100 sensor should be prepared by customers)		
Analog output	• 1st component concentration alarm, 4 types: 4 to 20 mA • 2nd component concentration alarm, 4 types: 4 to 20 mA ✻We also support other measurement ranges. Please specify when ordering.		
Fiber optic cable	Dedicated CS-100F1 Series fiber optic cable (25 ±15℃ installation temperature)		
Sample cell	We can supply dedicated sample cells (inline cell or cell unit) for various kinds of chemical solutions.		
Power supply	100 V to 230 V AC (single phase) ±10%, 50/60 Hz, approx. 100 VA		
Dimensions	205 (W) x 329 (D) x 269 (H) mm 8.1 (W) x 13.0 (D) x 10.6 (H) in (excluding protruding part)		
Weight	Approx. 11 kg		

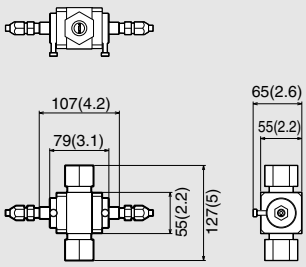
Note: Please consult us regarding concentration monitors for chemical solutions other than those given above.

■ External dimensions units: mm (in.)

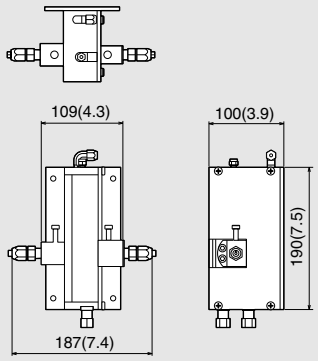
Concentration monitor



Inline cell



Cell unit



Chemical solution concentration monitor with built-in sample cell

A complete lineup of chemical solution concentration monitors with built-in sample cells is available for the individual measurement of various chemical solution types. Separate from the cleaning system, installation and removal of the concentration monitor is easy, which means it can also be used in applications involving later installation. Since chemical solution is introduced inside the unit, these monitors support a DC 24 V power supply for stability.

CS-100 Series

- SC-1 Monitor CS-131
- SC-2 Monitor CS-152
- SPM Monitor CS-150
- BHF Monitor CS-137
- HF/HNO_3 Monitor CS-153N
- TMAH/H_2O_2 Monitor CS-139E
- HF/EG Monitor CS-138

Please consult HORIBA regarding chemical solution monitor types not listed above.

■ Related Products

Hydrofluoric Acid Monitor

CM-200A/210A

This precise DIN96 hydrofluoric acid concentration monitor is easy to integrate into devices. It boasts highly accurate repeatability over a wide range, from low to high concentrations, and real-time display of the hydrofluoric acid concentration. Both flow-through and submersible type sensors are available to suit the application.

Award of Certification

ISO 14001 JQA-E-90039 (Head Office/Factory)

ISO 9001 JQA-0298

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

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