

DI-Solver™ CO₂

Dissolved Carbon Dioxide Ultrapure Water Delivery System



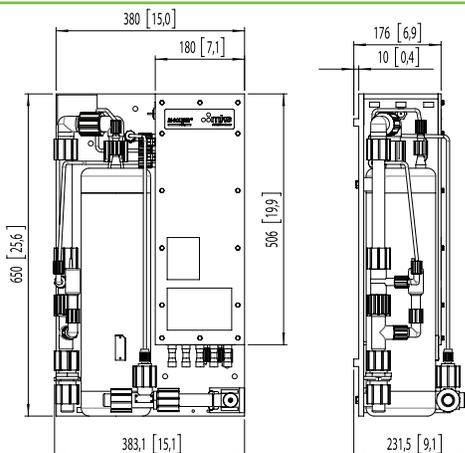
The DI-Solver™ CO₂ is used in single substrate cleaning tools for rinsing steps to prevent ESD effects and/or metallic corrosion. By adding carbon dioxide to UPW (ultrapure water) conductive DI-CO₂ water (carbonated DI-water) is created, which prevents surface charging. Dissolved carbon dioxide provides optimal cleaning capability in an acidic chemistry, improving cleanliness. The prevention of ESD effects reduces structural damage such as punch through holes, arcing and improves yield.

The DI-Solver system is designed to deliver dissolved carbon dioxide with a constant conductivity at different flow rates for single or multiple applications simultaneously. Operated within the specified ranges, the typical conductivity control accuracy for a stable dissolved carbon dioxide flow differs less than 5% from setpoint.

Product Features

- Precise gas dosage through proprietary mass flow controller system
- Precise conductivity control in range from 5 to 50 $\mu\text{S}/\text{cm}$
- Up to 60 lpm flow
- Repeatable unit to unit performance
- Field proven sub-components life
- Maintenance free

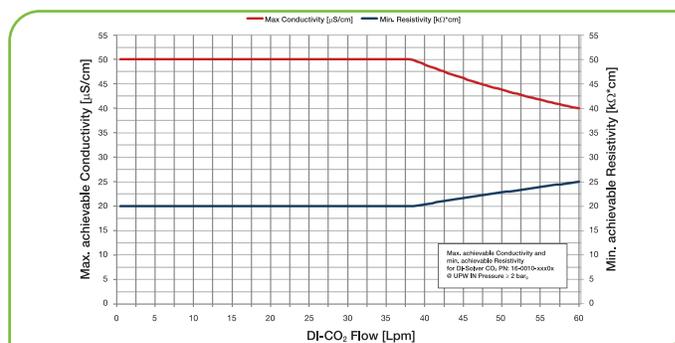
Dimensional Drawing



Key Benefits

- Best dynamic conductivity control and accuracy at point of use from proprietary control of gas
- Increases yields by inhibiting Electrostatic Discharge
- Small compact module for easy integration
- Low operating costs, no CO₂ or UPW consumption during process pauses

MKS' DI-Solver CO₂ is a component-based system to be integrated into a tool. It fully meets the demands of the semiconductor industry by using only high purity standard materials and safety features. The units provide a conductivity range from 5-50 $\mu\text{S}/\text{cm}$ at 0.5-60 liters/min.



Specified achieved DI-CO₂ conductivity range

Specifications		
Conductivity/Resistivity Range for System Pressure ≥ 2 bar _g	Min. conductivity 5 $\mu\text{S}/\text{cm}$, max. resistivity 200 $\text{k}\Omega^*\text{cm}$ Max. conductivity 50 $\mu\text{S}/\text{cm}$, min resistivity 20 $\text{k}\Omega^*\text{cm}$	
DI-CO ₂ Flow Rate	Min. total flow: 0.5 L/min (0.1 gpm) Max. total flow: 60 L/min (15.8 gpm)	
Control Accuracy for Conductivity	Typical maximum deviation from setpoint: Steady state flow: $\pm 3\%$ Fluctuating flow: $\pm 10\%$ for flow changes < 4 L/min per sec	
DI-CO ₂ Outlet Pressure	1.0 - 3.0 bar _g (0.1 - 0.3 MPag, 14.5 - 43.5 psig), depending on UPW supply pressure	
UPW Temperature Range	20 - 50 °C	
Plumbing Materials	Liquid contacted surfaces: PFA, PVDF	
Communication	Binary in/out (dry contacts), RS232, analog out, USB	
Cabinet Material, Dimensions	PVDF or C-PVC or FRPP, approx. 386 mm x 650 mm x 232 mm (WxHxD)	
Weight	Approx. 17.3 kg (empty) / 23.3 kg (filled with water)	
Electrical Supply	24 VDC/ 60 W	
Ordering Code Example: 16-001A-BCDEF	Code	Configuration
DI-CO ₂	16-001	16-001
Conductivity Range (A)		
Conductivity Range 5 - 40 $\mu\text{S}/\text{cm}$ (200 - 25 $\text{k}\Omega^*\text{cm}$)	0-	0-
Conductivity Measurement (B)		
Integrated Sensor 220 VAC, 50 Hz External Sensor	0 1	0
Connection (C)		
Super 300 Type Pillar Fitting Flaretek®	0 1	0
Housing Material (D)		
PVDF C-PVC FRPP	0 1 2	2
Currently Not Defined (E)		
Standard	0	0
Customer Specific Features (F)		
Standard	0	0