



DISCO

Kiru · Kezuru · Migaku Technologies



Resistivity Management Unit CO₂ Injector

High-quality processing through direct link to dicing saw



Workpiece charge-up significantly reduced

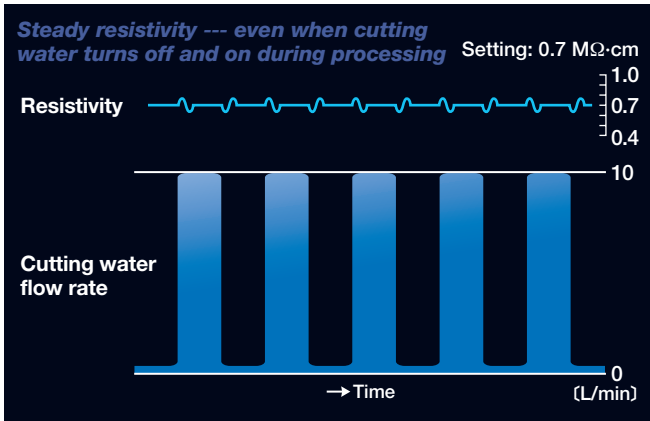
The CO₂ Injector lowers the resistivity of purified water to 1M Ω ·cm or less by dissolving carbon dioxide gas in the dicing cutting water. Once the user-set resistivity is reached, the CO₂ Injector maintains this level with a high degree of accuracy. By lowering the degree of static charge the workpiece acquires during cutting, the CO₂ Injector helps prevent particle adhesion and device damage caused by static electricity.

Stable control of resistivity

The CO₂ Injector was designed especially for dicing saw, in which, owing to processing requirements, the flow rate of cutting water is extremely variable. Thanks to the feedback control using the resistivity sensor and the multi-stage mixing system, which adjusts carbon dioxide concentration in two stages, the resistivity can be adjusted highly accurately. When turning on or off the cutting water, when the variation in resistivity becomes particularly larger, stability can be maintained at the high level, so that constant discharge of cutting water is not necessary any more.



Resistivity Management Unit CO₂ Injector



Resistivity vs. cutting water flow (schematic)

Easy control via direct link to dicing saw

The CO₂ Injector is easily controlled through the dicing saw's interface, allowing for real-time monitoring of cutting water flow and resistivity during cutting. To protect yield, settings allow for alarm activation or process termination when user-specified tolerances are exceeded.

Logging of resistivity measurements

The CO₂ Injector may be set to log resistivity measurements automatically when dicing saw function is initiated, when the dicing of each wafer is complete, and when an alarm is activated. This logging function can be a valuable contributor to process quality design and management.

Compact size and dicing saw build-in

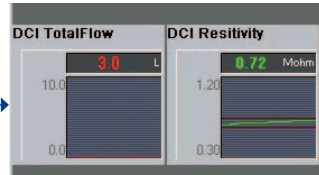
The CO₂ Injector fits neatly within the case of DFD6240, DFD6340/6341, DFD6361/6362 and DFD6450.

Compatibility with DFD600 Series

A specification that can also be connected to the DFD600 series is also available. (Limited to some models)



Dicing saw control screen



CO₂ Injector information

CO₂ Injector Specification

Resistivity setting range	MΩ·cm	0.5 - 1.0
Resistivity fluctuation range		Setting ±10 % *
Utilities		
DC power supply (from dicing saw)	V	24
Max. power consumption	W	20
Cutting water requirements		
Pressure	MPa	0.20 - 0.50**
Temperature	Deg C	20 - 25
Resistivity	MΩ	12 or higher
Flow rate	L/min	3 - 15
CO₂		
Supply pressure	MPa	0.15 - 0.35
Regulator setting	MPa	0.10
CO₂ consumption (at cutting water flow rate of 15 L/min)		
at 1.0 MΩ·cm	g/h	Approx. 1.74
at 0.5 MΩ·cm	g/h	Approx. 3.54
Machine dimensions (W x D x H)	mm	328.0 x 178.0 x 366
Machine weight	kg	Approx. 7 (when dry) Approx. 10 (when in use)

* This range applies when cutting water flow rate is 3 - 15 L/min and cutting water temperature is 20 - 25 °C.
** In order to insure accuracy of resistivity, cutting water water pressure must be kept higher than CO₂ gas pressure.

Environmental conditions

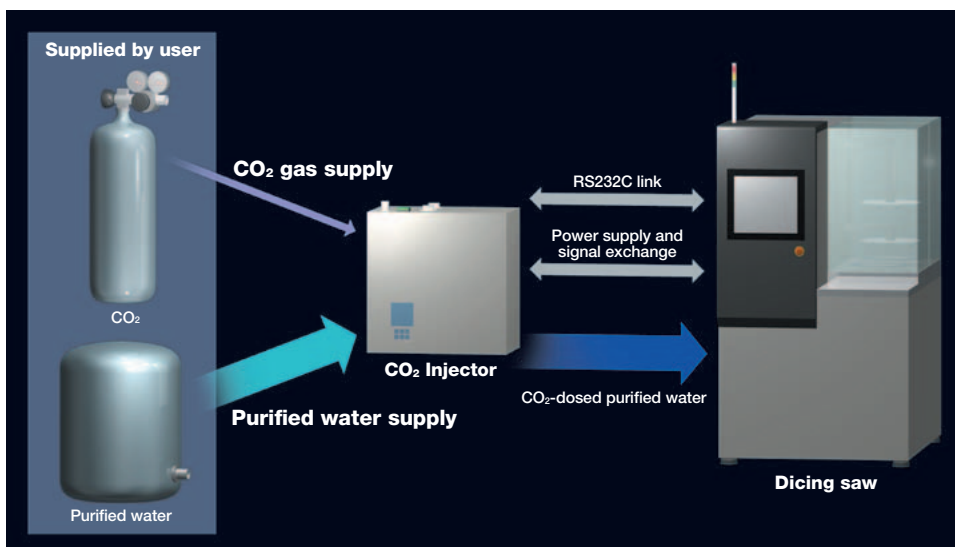
- Use CO₂ gas free of oil and other contaminants (99.5 % pure or higher). Further, use of a gas filter (0.3 μm or less) is recommended.
- Keep room temperature between 20 - 25 °C.
- Keep spindle cooling water the same as room temperature (fluctuations within ±1 °C).
- The machines should be used in an environment free from external vibration. Do not install machine near a ventilation opening, heat generation equipment or oil mist generating parts.
- This machine uses water. In case of water leakage, please install the machine on the floor with sufficient waterproofing and drainage treatments.

* This machine does not include a CO₂ gas canister or regulator.

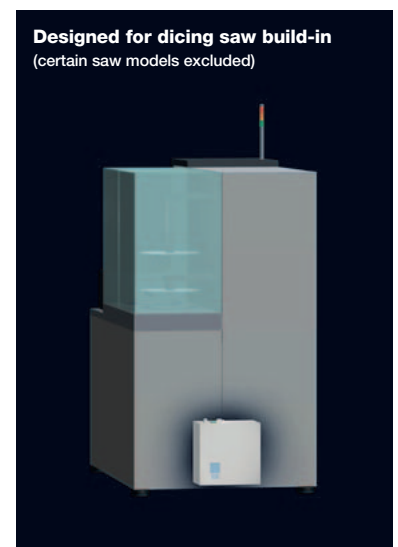
** All pressures specified above are gauge pressures.

* As the above specification may change due to technical modifications. Please confirm when placing your order.

* For further information, please contact your local sales representative.



Configuration of CO₂ Injector, dicing saw, and utilities



Location of CO₂ Injector in dicing saw