

Automatic Dye Coating Machine (VK-DC-1010)



- Monitorinf the purity of washing liquid (by measuring color) and suggest replacing new washing liquid.
External dye coating vessel can be connected.

Application: Perform dye adsoption, washing, and drying processes under a controled nitrogen atmosphere. Ideal for dye sensitized solar cell production process.

Main Functions:

- **N₂ purging:** The first operation is to vacuum the system and fill with dry N₂, just after inserting new samples in to the dye-coating tank.
- **Filling dye solution:** Fill the dye coating tank with dye solution.
- **Circulation dye:** Circulate dye solution through the dye coating tank during the preset time period. Continuously measure and display dye solution temperature, concentration and volume. Keep the temperature and dye concentration at preset values (optional features).
- **Removing dye solution:** Pump the dye solution in the coating tank to storage tank.
- **Washing:** Fill acetonitrile solution and wash the residual dye. (Measure the color of washing liquid and display warning message and ask to change new washing liquid when color is higher than preset value.)
- **Removing acetonitrile:** Pump the acetonitrile back to the storage tank.
- **Drying:** Dry samples by vacuuming and N₂ purging.

Features:

- Dye coating and cleaning (washing) of cell performed under complete N₂ atmosphere.
- Special filling/removing ports are available for safely loading dye solution and acetonitrile into the main storage tanks without opening the machine.

Supported DSC module size	upto 100 × 100 mm (can be change according to customer's requirement)
Maximum number of modules	24 (can be change according to customer's requirement)
Coating bath capacity	2.8 L (without DSC modules)
Internal dye storage bottle capacity	3.2 L
Internal main acetonitrile storage bottle capacity	3.2 L
Control method	Microcontroller based system with LCD and key pad as an user interface
User controllable parameters	Dye coating time, temperature, dye circulation rate, function of magnetic stirring, number of washing and drying cycles.
Dye solution temperature setting range	0 - 80 °C (above 45 °C may need refluxing condenser attachment if Acetonitrile used as solvent)
Temperature control method	Dual PID (cascade) controlled by main microcontroller with 2 temperature sensors.
Dye circulation rate	0 - 100 ml/min (circulation intervals can also change from 0-99 min)
Accuracy of dye concentration monitor	1% of initial dye concentration (factory calibrated for 0.3 mM N-719 dye). Users can set their initial dye concentration as 100%
Required external items	Nitrogen or dry air supply (max pressure 0.6 MPa)
Material:	
Main storage bottles	Glass (Brown color)
Dye coating bath	Polypropylene
Sample holder	Teflon
Transporting tubes	EXLON ultra pure PFA
Power Supply	100 V AC, 50/60 Hz
Dimensions (W × D × H) (mm)	600 × 450 × 450
Weight	33 kg

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