

500 Series High Precision Analog VLD Controller

Vacuum-Lock Doors are employed on horizontal furnace process tubes where a positive door seal is critical, such as with H₂ Anneal and Polysilicon deposition processes. The tube flange is typically configured with an annular channel between two o-rings. When the door is closed against the tube flange, vacuum is applied to the annulus, establishing a positive door to flange seal that can be verified by monitoring the vacuum level in the annulus.

The *iSiS* 500 Series Vacuum-Lock Door (VLD) Controller features a high accuracy (<1 torr) pressure sensor with on-board LED display and analog output of the vacuum level. The unit is compact and cost effective and will provide the precise control and monitoring of your VLD to yield optimal, repeatable performance.



The 500 Series VLD Controller employs a three-way solenoid valve in a stainless steel plumbing assembly. Once the door is closed against the tube flange, the valve is energized to apply vacuum from a user-supplied source to the VLD flange. At the end of the process, the valve is de-energized and vents the VLD flange back to atmosphere and allows the door to open. Valve actuation is controlled via a digital signal from the Host which can be either a contact closure or a 24VDC High logic signal.

The 500 Series VLD Controller features a high-precision vacuum sensor to continuously monitor the vacuum level in the VLD. The sensor features two user-adjustable setpoints that provide digital signals (contact closures) to the Host. These setpoints are typically used to indicate operating vacuum and vented conditions in the VLD. It also provides an analog output signal to the Host of the actual vacuum level, so VLD performance can be monitored for repeatability and early detection of o-ring or vacuum system problems before they lead to failure. The unit has 3½ digit LED display of the vacuum level and LED status lights for valve position and both setpoints.

The furnace controller is typically programmed with the following sequence:

- Boat In Complete signal received
- Open VLD Valve (contact closure or 24 VDC output)
- Wait for Low Pressure (P1) Setpoint signal to indicate a positive seal
- Process Start (monitor/log analog signal and setpoint signals)
- Process End
- Close VLD Valve (contact open or remove 24VDC output)
- Wait for High Pressure (P2) Setpoint signal to indicate complete vent of VLD
- Initiate Boat Out

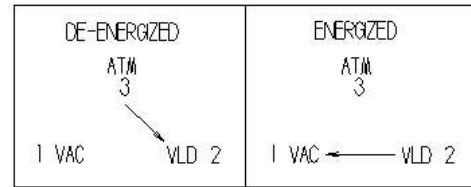
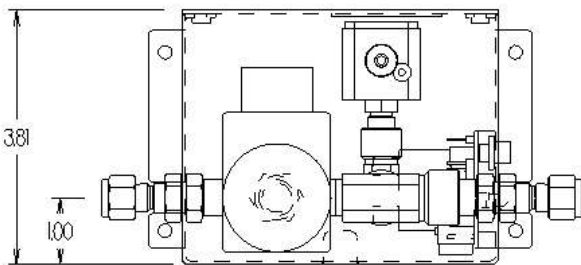
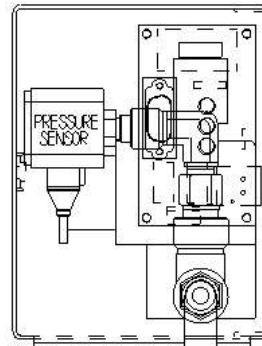
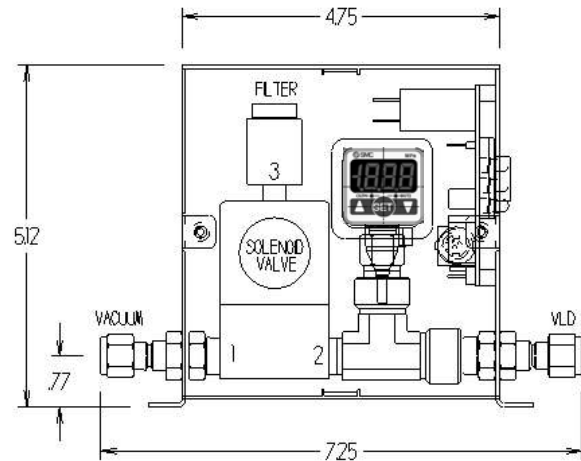
The 500 Series VLD Controller comes standard with ¼" tube compression fittings, but can be ordered with 3/8" compression or ¼" VCR fittings.



innovative Silicon Systems

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System Specifications

Size:	7.25" W (fitting-fitting) x 5.0-5.5" H x 3.81" D
Operating Pressure Range:	+10 to -101.3 kPa (+1.5 to -14.7 psig)
Maximum Pressure:	500 kPa (70 psig)
Operating Temperature:	0-50 C
Wetted Materials:	Stainless Steel
Power Requirement:	24VDC, 1.0A (or 120VAC, 0.3A with optional AC Wall Adapter)
Input Signal (from Host):	Contact Closure or +24VDC, 0.05A High Logic Signal
Output Signals (to Host):	
Analog:	1-5VDC +/-2.5% F.S. (~1K ohm output impedance) Linearity +/-1% F.S.
Digital:	Two Contact Closures (Setpoint 1 & 2) Contacts Rated at 60W (2A max)
Setpoint:	Adjustable, +10 to -101.3 kPa gauge (825 to 0 torr absolute)
Setpoint Resolution:	0.1 kPa (0.75 torr)
Repeatability:	0.2 kPa (1.5 torr)
Display:	3½ Digit LED +/-2% F.S.
Connections:	Host Signals: 9 pin D-sub (15 ft cable supplied) 24VDC Power: 3 pin locking Power Jack (15 ft cable supplied)



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Ordering Information:

Part Number 8-66-05AB-0C High Precision Analog VLD Controller

Where:

A = Vacuum Connection Fitting

1 = 1/4" Tube Compression

2 = 3/8" Tube Compression

3 = 1/4" Male VCR

B = VLD Door Connection Fitting

1 = 1/4" Tube Compression

2 = 3/8" Tube Compression

3 = 1/4" Male VCR

C = Power Source Option

0 = No power source supplied; User supplies required 24VDC

1 = 24VDC, 1.0A power source included (120VAC wall adapter type)

Pricing:

8-66-05AB-0C High Precision Analog VLD Controller \$1595.00

Options:

A = Vacuum Connection Fitting

1 = 1/4" Tube Compression

NC

2 = 3/8" Tube Compression

\$35.00

3 = 1/4" Male VCR

\$105.00

B = VLD Door Connection Fitting

1 = 1/4" Tube Compression

NC

2 = 3/8" Tube Compression

\$35.00

3 = 1/4" Male VCR

\$105.00

C = Power Source Option

0 = No power source supplied

NC

1 = 24VDC, 1.0A power source included

\$45.00

Innovative Silicon Systems provides a wide range of semiconductor productivity enhancement tools and services. We welcome the opportunity to discuss your specific needs.



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