Entegris

NT® INTEGRATED FLOW CONTROLLER

For continuous and batch control

performs automated closed-loop flow control

Liquid Flow Controller

Whether it's automation, process control or safety concerns that require accurate flow control of liquid chemicals and CMP slurry, the instrumentation must be clean, accurate and reliable. Using the latest electronic technology and high purity materials, Entegris has designed a leading-edge liquid flow controller to allow for greater control of your process flow variables.

- PTFE wetted surfaces for high purity applications
- Nonmetallic components for corrosion resistance
- Integral pressure transducer for additional process information
- One percent (1%) full scale accuracy for critical dispense applications
- Compact footprint for easy field installs with limited space
- Fast response for accurate dispense rates

Constructed for Compatibility

The patented NT® Integrated Flow Controller was developed for use in ultra high purity liquid chemical instruments and slurry applications.

The instrument's valve seat and diaphragm are designed to minimize dead volume and fluid shear, reducing the possibility of process contamination. Featuring PTFE for wetted parts and inert materials for nonwetted parts, the NT® Integrated Flow Controller is resistant to harsh chemical environments and external spraydowns.

Advanced Technology

The NT® Integrated Flow Controller utilizes dual PTFE valve diaphragms for fluid containment and contamination protection. Featuring the latest motorized valve and flowmeter technology, encapsulated internal electronics control all aspects of the flow controller. The unit is activated by a set-point signal (i.e., 4-20 mA, 0-10 VDC, 0-5 VDC or via DeviceNet™ communication) to maintain fluid flow at the desired set-point.

Applications

Entegris is solving today's flow control challenges using the NT® Integrated Flow Controller. Combined with Entegris' differential pressure based flowmeter and leading-edge control valve technology, the closed-loop flow controller is ideal for:

- Continuous flow control for critical dispense applications
- CMP slurry dispense to replace existing peristaltic pumps
- Batch control for chemical spiking and blending
- On-demand chemical mixing applications

DeviceNet™ Communication

With the optional DeviceNet™ communication protocol, critical diagnostics are available for alarms, troubleshooting and preventive maintenance. Local LED indicators provide network and flow controller status.

Specifications

Description		
Materials of construction	Wetted parts	Body: PTFE Diaphragms: PTFE Sensor interface: PFA or CTFE Primary o-ring: Kalrez®
	Nonwetted parts	Polypropylene, PVDF and Viton® (In addition to materials listed above.)
Flow measurement	±1% of full scale from 20 to 100% of flow range ±2.5% of full scale from 10 to 20% of flow range [Calibrated using deionized water at 73°F (23°C)]	
Repeatability	±1% of full scale	
Reliability	Wetted parts, >3 million cycles	
Pressure measurement	0-60 PSIG (0-413.7 kPa)	
Pressure accuracy	±1% of full scale	
Operating pressure	10 PSIG (68.9 kPa) to 60 PSIG (413.7 kPa)	
Output signals	Two 4-20 mA electrically isolated outputs, one for flow and one for pressure or DeviceNet™ communication	
Response time	<3 seconds from 10 to 95% of full scale flow range	
Over-pressure limit	100 PSIG (689.5 kPa)	
Process temperature	50°F (10°C) to 149°F (65°C)	
Electrical input	24 VDC (±10%) at 1 amp	
Set-point input signal	4-20 mA, 0-10 VDC, 0-5 VDC or DeviceNet™ communication	
Enclosure	NEMA 5/IP54	
Approvals	CE DeviceNet CONFORMANCE TESTED	

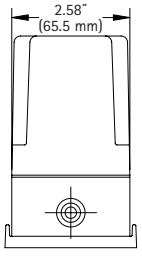
Note: Specifications are subject to change without notice. Please consult the factory for the most current information.

Dimensional Information

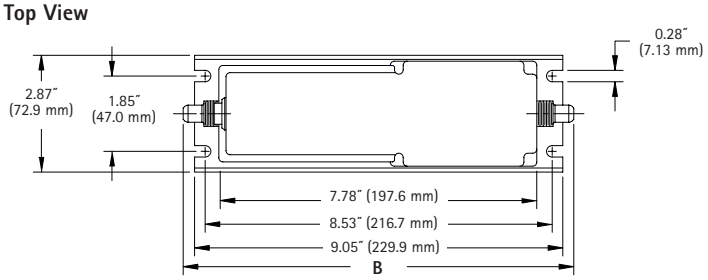
Inlet/Outlet Port Connection	Dimensions A	A*	B	C
1/4″ Flaretek®	4.63″ (117.6 mm)	4.89″ (124.2 mm)	9.61″ (244.1 mm)	0.76″ (19.3 mm)
3/8″ Flaretek®	4.63″ (117.6 mm)	4.89″ (124.2 mm)	9.75″ (247.7 mm)	0.76″ (19.3 mm)
1/2″ Flaretek®	4.72″ (119.9 mm)	4.89″ (124.2 mm)	9.91″ (251.7 mm)	0.85″ (21.6 mm)
3/4″ Flaretek®	5.02″ (127.5 mm)	5.28″ (134.1 mm)	10.15″ (257.8 mm)	1.01″ (25.7 mm)

** IFC with DeviceNet™ communication*

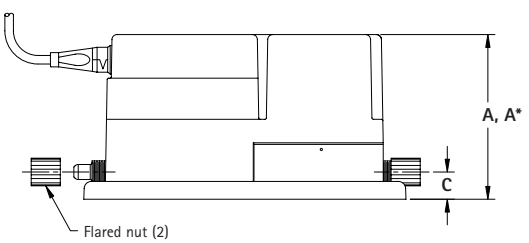
End View



Top View



Side View



Ordering Information

Part Number

6500 – T2 – F02 – D06 – A – P1 – U1

Primary/Secondary Seal
- U1 = Kalrez® 4079/Viton® (default)
- U2 = Kalrez® 1050/Viton®
- U3 = Kalrez® 6375 UP/Viton®

Sensor Interface
- P1 = CTFE (default)
- P2 = PFA

Set-Point Input Signal, Controller Type
- A = 4-20 mA, continuous
- B = 0-10 VDC, continuous
- C = 0-5 VDC, continuous
- K = 4-20 mA, batch
- L = 0-10 VDC, batch
- M = 0-5 VDC, batch
- D = DeviceNet™ communication

Electrical Connector Type
- AM6 = PVC-jacketed 6′ cable set, DeviceNet™ communication only
- AM12 = PVC-jacketed 12′ cable set, DeviceNet™ communication only
- B06 = FEP-jacketed 6′ pigtail electrical cable
- B12 = FEP-jacketed 12′ pigtail electrical cable
- B30 = FEP-jacketed 30′ pigtail electrical cable
- D00 = Polypropylene connector (cable not included)
- D06 = Polypropylene connector and 6′ PVC cable
- D12 = Polypropylene connector and 12′ PVC cable
- D30 = Polypropylene connector and 30′ PVC cable

Inlet/Outlet Port Connection
- F02 = 1/4″ Flaretek® tube fitting
- F03 = 3/8″ Flaretek® tube fitting
- F04 = 1/2″ Flaretek® tube fitting
- F06 = 3/4″ Flaretek® tube fitting

Flow Range*
- T0 = 0-50 ml/min.
- T1 = 0-125 ml/min.
- T2 = 0-250 ml/min.
- T3 = 0-500 ml/min.
- T4 = 0-1250 ml/min.
- T5 = 0-2.5 l/min.
- T6 = 0-5 l/min.
- T7 = 0-10 l/min.
- T8 = 0-20 l/min.
- T9 = 0-40 l/min.

** Flow ranges are scaled to zero flow, measurement is from 10 to 100% of full scale flow range.*

Product specified with a flared tube connection is packaged with two PVDF nuts. For alternative nut materials, or custom configurations and specifications, please contact the factory.

(Note: Specifications are subject to change without notice. Please consult the factory for the most current information.)

For Additional Information

For more information on NT® Integrated Flow Controllers or our complete line of fluoropolymer fluid handling solutions, contact your local Entegris distributor or Entegris, Inc.

To review our complete line of sensing and control product solutions visit Entegris' Web site at *www.entegrisfluidhandling.com* or contact Entegris Customer Service.

Terms and Conditions of Sale

All purchases are subject to Entegris' "Terms and Conditions of Sale."

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