

InVue™ Integrated Flow Controllers NT6510, NT6520

Precise point-of-use chemical flow control

Entegris is solving today's flow control challenges using innovative flow control technology. The InVue™ Integrated Flow Controllers (IFC) NT6510 and NT6520 are designed for point-of-use chemical blending and dispense. NT6510 is engineered for applications requiring low to medium flow rates, and is the smallest InVue Integrated Flow Controller available, saving valuable space in liquid handling systems. NT6520 is engineered for applications requiring medium to high flow rates.

The following table contrasts the flow range capabilities of each product.

Model	Flow Range Capability
NT6510	15 mL/min to 1,250 mL/min
NT6520	2.5 L/min to 40 L/min

Both integrated flow controllers use proven and reliable differential pressure flow measurement technology and advanced closed-loop process control. Visual indicators provide diagnostics for preventive maintenance, troubleshooting and alarm conditions, enabling users to integrate more process functionality.

- PTFE and modified PTFE wetted surfaces for high-purity applications
- Nonmetallic components for corrosion resistance
- Integral pressure transducer for additional process information
- LED status and discrete alarm output
- 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 InVue Integrated Flow Controllers are used in ultrapure liquid chemical applications and with DI water and slurry. They also effectively control liquids containing bubbles.

The valve seat and diaphragm are designed to minimize dead volume and fluid shear, reducing the possibility of process contamination. Featuring fluorinated materials for wetted parts, the InVue Integrated Flow Controllers are ideal for protecting chemical integrity. In addition, the chemical resistant nonwetted parts perform well in harsh chemical environments.

Advanced Technology


The InVue Integrated Flow Controllers utilize dual PTFE valve diaphragms for fluid containment and contamination protection. Leveraging the latest motorized valve and flowmeter technology, encapsulated internal electronics control all aspects of the flow controllers. The units are activated by a setpoint signal (for example, 4–20 mA, 0–10 VDC, 0–5 VDC) to maintain fluid flow at the desired setpoint.

Applications

The InVue Integrated Flow Controllers combine Entegris' differential pressure based flowmeter and leading-edge control valve technology to create a closed-loop flow controller ideal for:

- Critical dispense applications
- Chemical spiking and blending
- On-demand chemical mixing
- High flow applications such as bulk delivery or tool liquid dispense (NT6520)

SPECIFICATIONS

	CODE "T" FLOW RANGE (DEFAULT)	CODE "Y" FLOW RANGE
Materials of Construction	Wetted parts	Body: Modified PTFE
		Diaphragms: PTFE
		Sensor interface: CTFE or PFA
		Primary o-ring: Kalrez® 6375 UP
	Nonwetted parts	Polypropylene, PVDF, Viton®, polyurethane and nylon (in addition to materials listed above)
Operating range options	10–100% of full scale flow	5–100% of full scale flow
Flow control accuracy	±1% of full scale (calibrated using DI water @ 23°C [73°F])	
Repeatability	±0.5% of full scale	
Pressure measurement	0–414 kPa (0–60 psig)	
Pressure accuracy	±1% of full scale	
Operating pressure	69–414 kPa (10–60 psig)	172–414 kPa (25–60 psig)
Minimum required differential pressure*	10 psi, differential	25 psi, differential
Output signals	Two 4–20 mA electrically isolated outputs, one for flow and one for pressure	
Response time	<3 seconds	
Over-pressure limit	690 kPa (100 psig)	
Process temperature	10–65°C (50–149°F)	
Electrical input	24 VDC (±10%) @ 1.2 amps	
Setpoint input signal	4–20 mA, 0-10 VDC, 0-5 VDC	
Enclosure	IP64	
Weight	NT6510: 1.6 kg (3.5 lb) approximate NT6520: 2.4 kg (5.3 lb) approximate	
Approvals		

*Minimum required differential pressure is the minimum inlet to outlet fitting differential pressure required to reach full scale flow and response time specifications.

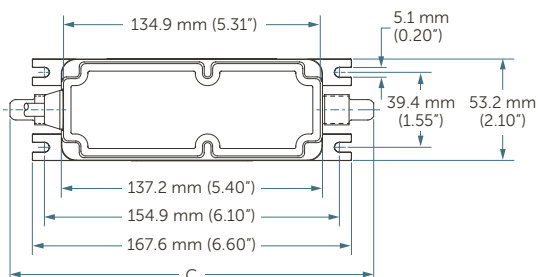
Note: Specifications are subject to change without notice. Please consult Entegris for the most current information.

NT6510

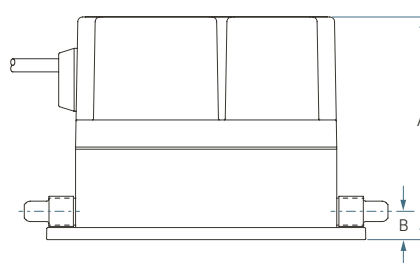
DIMENSIONS

Flaretek® Tube Fitting

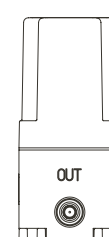
Top View



Side View



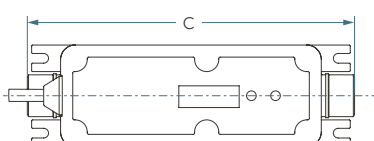
End View



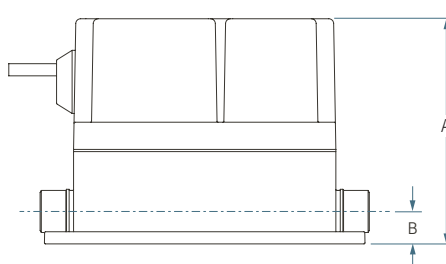
Inlet/Outlet Port Connection	Dimensions		
	A	B	C
1/4" Flaretek tube fitting	117.9 mm (4.64")	17.0 mm (0.67")	187.5 mm (7.38")
3/8" Flaretek tube fitting	117.9 mm (4.64")	17.0 mm (0.67")	191.0 mm (7.52")
1/2" Flaretek tube fitting	120.8 mm (4.76")	17.0 mm (0.67")	195.1 mm (7.68")

Super 300 Type Pillar® Fitting

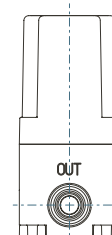
Top View



Side View



End View



Inlet/Outlet Port Connection	Dimensions		
	A	B	C
1/4" Super 300 Type Pillar tube fitting	117.9 mm (4.64")	17.0 mm (0.67")	159.3 mm (6.27")
3/8" Super 300 Type Pillar tube fitting	117.9 mm (4.64")	17.0 mm (0.67")	167.1 mm (6.58")

The following fitting size and flow range combinations are available:

Fitting Size	Flow Range (mL/min)						
	TL 0–15	TT 0–25	T0/Y0 0–50	T1/Y1 0–125	T2/Y2 0–250	T3/Y3 0–500	T4/Y4 0–1250
1/4"	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3/8"	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1/2"	—	—	—	—	—	Yes*	Yes*

*Flaretek only.

Note: The operating range for "T" code flow ranges (default) is 10–100% of full scale flow.

The operating range for "Y" code flow ranges is 5–100% of full scale flow.

Please consult Entegris for PrimeLock® tube fitting options or custom flow range requirements.

ORDERING INFORMATION

InVue Integrated Flow Controller NT6510: part number

6510- - - - -

Primary/Secondary Seal
U3 = Kalrez 6375UP/Viton

Sensor Interface
P7 = CTFE (for acids, bases and oxidants, typically)
P8 = PFA (for solvents and temperatures >40°C, typically)
Note: Selection is dependent on application and chemical media. Please contact Entegris for best selection.

Setpoint Input Signal, Controller Type
A = 4–20 mA, continuous K = 4–20 mA, batch
B = 0–10 VDC, continuous L = 0–10 VDC, batch
C = 0–5 VDC, continuous M = 0–5 VDC, batch

Electrical Connector Type
V06 = PVC-jacketed 6' pigtail electrical cable
V12 = PVC-jacketed 12' pigtail electrical cable
B06 = FEP-jacketed 6' pigtail electrical cable
B12 = FEP-jacketed 12' pigtail electrical cable
B30 = FEP-jacketed 30' pigtail electrical cable
G01 = PVC-jacketed 1' electrical cable terminated with 14-pin Turck® connector**
G06 = PVC-jacketed 6' electrical cable terminated with 14-pin Turck connector**

Inlet/Outlet Port Connection***
F02 = 1/4" Flaretek tube fitting
F03 = 3/8" Flaretek tube fitting
F04 = 1/2" Flaretek tube fitting
W02 = 1/4" Super 300 type Pillar tube fitting
W03 = 3/8" Super 300 type Pillar tube fitting

Flow Range*
TL = 0–15 mL/min Y1 = 0–125 mL/min
TT = 0–25 mL/min Y2 = 0–250 mL/min
T0 = 0–50 mL/min Y3 = 0–500 mL/min
T1 = 0–125 mL/min Y4 = 0–1250 mL/min
T2 = 0–250 mL/min
T3 = 0–500 mL/min
T4 = 0–1250 mL/min
Y0 = 0–50 mL/min

*Code "T" flow ranges are scaled to zero flow, measurement is from 10–100% of full scale flow range.
Code "Y" flow ranges are scaled to zero flow, measurements is from 5–100% of full scale flow range.

**For electrical connector types G01 and G06, a 14-pin mating cable is required for installation.
See "Electrical Mating Cables for InVue Flow Controller NT6510–Accessory" chart below for ordering information.

***For PrimeLock and other options not shown here, please contact Entegris.
Product specified with a flared tube connection is packaged with two PVDF nuts.
For custom configurations and specifications, please contact Entegris.

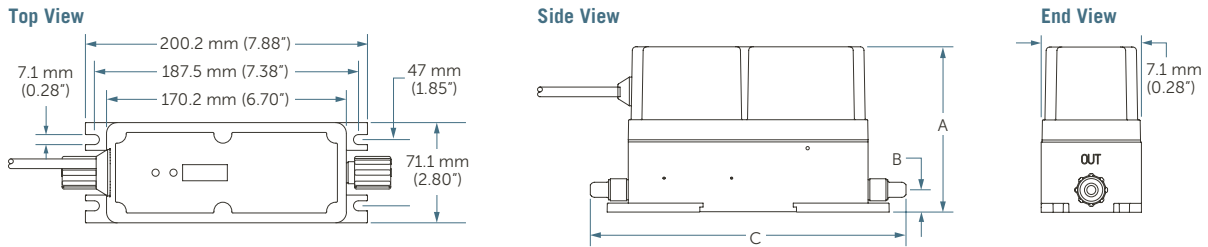
Electrical Mating Cables for InVue Flow Controller NT6510 – Accessory

Part Number	Description	Quantity
14G02	14-pin mating Turck connector with 2-meter (6.5') PVC-jacketed cable	1
14G05	14-pin mating Turck connector with 5-meter (16.4') PVC-jacketed cable	1
14G10	14-pin mating Turck connector with 10-meter (32.8') PVC-jacketed cable	1

NT6520

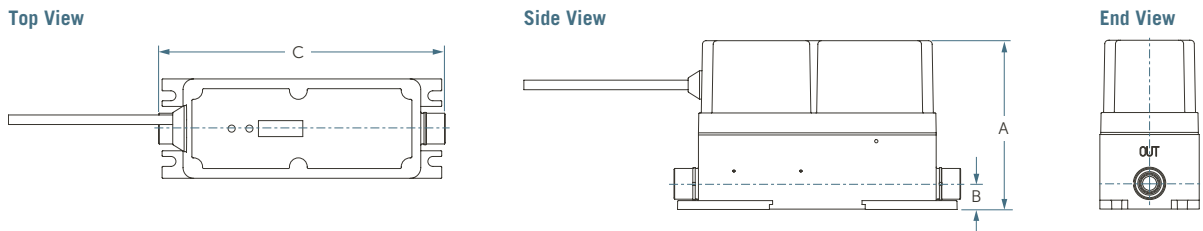
DIMENSIONS

Flaretek Tube Fitting



Inlet/Outlet Port Connection	Dimensions		
	A	B	C
3/8" Flaretek tube fitting	117.3 mm (4.62")	15.7 mm (0.62")	224.0 mm (8.82")
1/2" Flaretek tube fitting	120.9 mm (4.76")	18.3 mm (0.72")	228.0 mm (8.98")
3/4" Flaretek tube fitting	129.0 mm (5.08")	23.6 mm (0.93")	234.2 mm (9.22")

Super 300 Type Pillar Fitting



Inlet/Outlet Port Connection	Dimensions		
	A	B	C
3/8" Super 300 Type Pillar tube fitting	117.3 mm (4.62")	15.7 mm (0.62")	200.2 mm (7.88")
1/2" Super 300 Type Pillar tube fitting	120.9 mm (4.76")	18.3 mm (0.72")	205.2 mm (8.08")
3/4" Super 300 Type Pillar tube fitting	129.0 mm (5.08")	23.6 mm (0.93")	214.1 mm (8.43")

The following fitting size and flow range combinations are available:

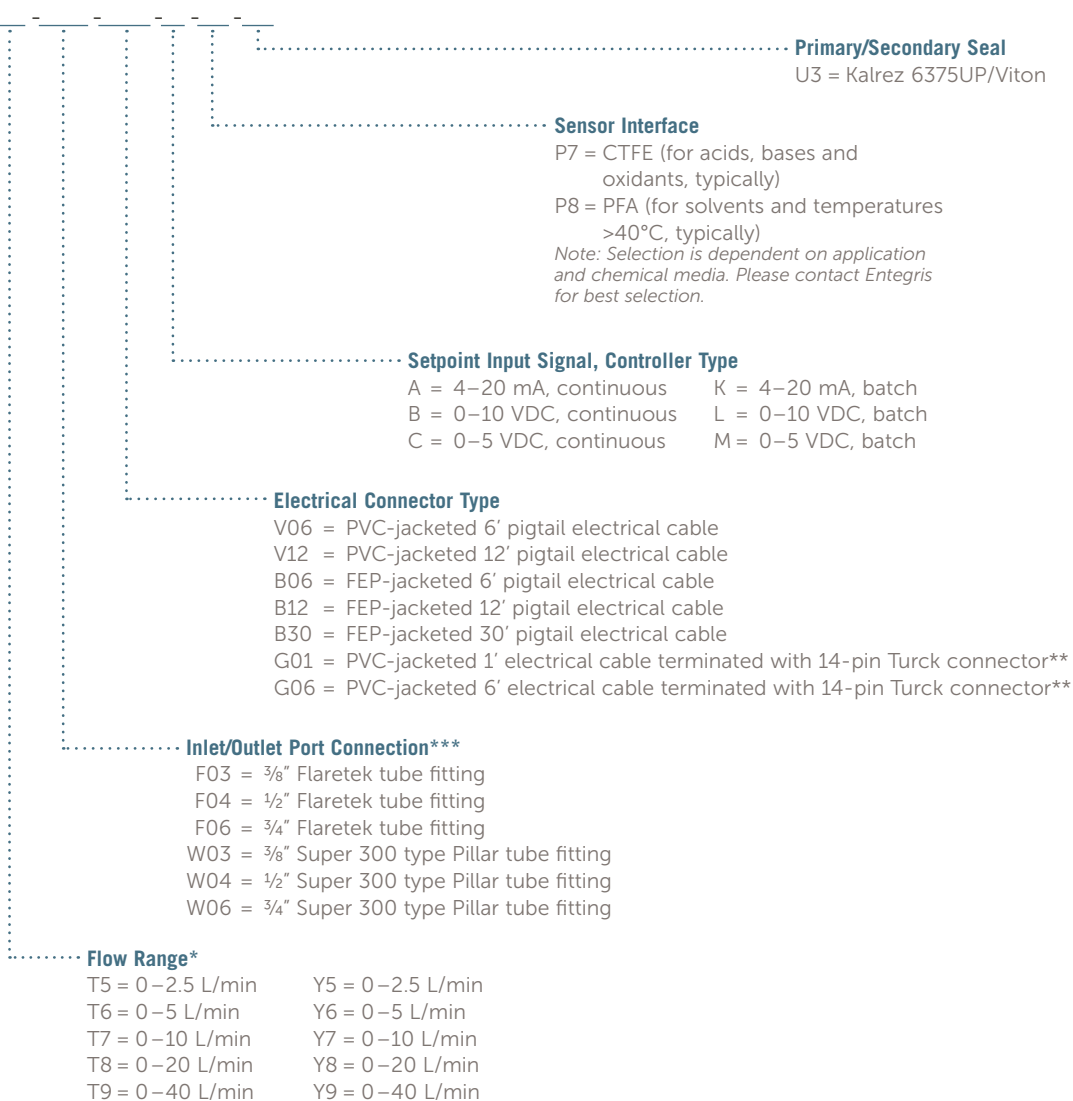
Fitting Size	Flow Range (L/min)				
	T5/Y5 0-2.5	T6/Y6 0-5	T7/Y7 0-10	T8/Y8 0-20	T9/Y9 0-40
3/8"	Yes	Yes	—	—	—
1/2"	Yes	Yes	Yes	—	—
3/4"	—	—	—	Yes	Yes

Note: The operating range for "T" code flow ranges (default) is 10–100% of full scale flow.
 The operating range for "Y" code flow ranges is 5–100% of full scale flow.
 Please consult Entegris for PrimeLock tube fitting options or custom flow range requirements.

ORDERING INFORMATION

InVue Integrated Flow Controller NT6520: part number

6520-



*Code "T" flow ranges are scaled to zero flow, measurement is from 10–100% of full scale flow range.
Code "Y" flow ranges are scaled to zero flow, measurements is from 5–100% of full scale flow range.

**For electrical connector types G01 and G06, a 14-pin mating cable is required for installation.
See "Electrical Mating Cables for InVue Flow Controller NT6520–Accessory" chart below for ordering information.

***For PrimeLock and other options not shown here, please contact Entegris.

Product specified with a flared tube connection is packaged with two PVDF nuts.
For custom configurations and specifications, please contact Entegris.

Electrical Mating Cables for InVue Flow Controller NT6520 – Accessory

Part Number	Description	Quantity
14G02	14-pin mating Turck connector with 2-meter (6.5') PVC-jacketed cable	1
14G05	14-pin mating Turck connector with 5-meter (16.4') PVC-jacketed cable	1
14G10	14-pin mating Turck connector with 10-meter (32.8') PVC-jacketed cable	1

FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit entegris.com and select the Contact Us link to find the customer service center nearest you.

TERMS AND CONDITIONS OF SALE

All purchases are subject to Entegris' Terms and Conditions of Sale. To view and print this information, visit entegris.com and select the Terms and Conditions link in the footer.



Corporate Headquarters

129 Concord Road
Billerica, MA 01821
USA

Customer Service

Tel +1 952 556 4181
Fax +1 952 556 8022
Toll Free 800 394 4083

Entegris®, the Entegris Rings Design®, InVue™, Flaretek® and PrimeLock® are trademarks of Entegris, Inc.
Kalrez® and Viton® are registered trademarks of E. I. du Pont de Nemours and Company.
Pillar® is a registered trademark of Nippon Pillar Packing Company, Ltd.
Turck® is a registered trademark of Turck Inc.

©2014-2016 Entegris, Inc. | All rights reserved. | Printed in the USA | 3811-7755ENT-0716