### Type 3211 & 3221

### **Analog Weatherproof Regulators**

### Description

The Type 3211 single loop and 3221 double loop controllers offer non-bleeding solenoid valve technology with an integral flow booster that produces forward flows equivalent to standard industrial electronic regulators or I/P converters. The 3211/3221 offers analog monitoring of the output pressure by a 0-10 VDC signal, plus logic monitor output of the solenoid valves. Many output pressures are available up to 150 psi. A built in air volume booster provides for a forward flow of up to 15 SCFM and a reverse flow (exhaust) of up to 7 SCFM. The double loop (3221) option permits 0-10 VDC feedback from a remote sensor.

Applications include; Machine Automotive, Robotics Control, Web Tension Control, Tire Manufacturing and Testing, Torque Control, Molding and Forming Operations, and Paint Spray.

#### Features

- Weatherproof Enclosure
- User Selectable Input Signal
- Analog Monitor Output
- Single Loop and Dual Loop Control



Type 3211 and 3221

Type 3211/3221 Ordering Information						mation						
2		1			0					1		
_	A	Ā	<b>A</b>	A	A	A	AAA	A	A	Ā	AA	Number of Loops
	1											1 Loop
	2											2 Loop
	_											
		1										
												Logic Output
			M									CMOS
			T									TTL
			0									Open-Collector
												Analog Control Signal
				E								0-10V
				Т								4-20mA
												Lower Output Pressure
					0							Lower Limit of Output Pressure
												Pressure Units
						G						PSIG
												Upper Output Pressure
							005					5 PSIG Output Pressure
							015					15 PSIG Output Pressure
							030					30 PSIG Output Pressure
							100					100 PSIG Output Pressure
							150					150 PSIG Output Pressure
							150					Upper Limit
								_				Mounting*
								P				Pipe (in-line)
								M				Manifold-Mount
												Supply and Output Ports
									0			1/4 NPT
									1			1/4 BSPT
									2			1/4 BSPP
												Connector
										1		
												Options
											00	None
						12 VDC supply						
Order panel bracket and DIN rail clip separately. or Manifold-Mount (no threads), specify 0 for Supply and Output Ports.												

	Type 3211	and 3221					
Performance	Full-Scale Accuracy 0.5%						
Electrical Inputs							
Supply Voltage	15-24VDC (12VDC option)						
Stand by Supply	80 mA						
Current							
Maximum Supply	325 mA						
Current	325 IIIA						
E/P Control	0-10V,10K OHMS						
I/P Control	4-20 mA ,	250 OHMS					
2nd-loop Remote	T3221: 0-10V						
Sensor Feedback							
<b>Electrical Outputs</b>							
Monitor Output		mA option)					
Logic Output	CMOS, TTL, O	Ipen-Collector					
Pneumatic Inputs							
	Max. Output PSIG (BAR)						
	Up to 5 (.35)	20 (1.4)					
Supply Pressure	>5 to 15 (.35-1.03)	30 (2.1)					
	>15 to 30 (1.03-2.1)	60 (4.1)					
	>30 to 100 (2.1-6.9)	165 (11.4)					
Dunanasia Ontont	>100 to 150 (6.9-10.3)	200 (13.8)					
Pneumatic Outputs							
Full-scale Atmospheric	5, 15, 30, 100, 150 psig						
Pressure Ranges	0.07, 0.35, 1.03, 2.07, 6.9, 10.34 BAR						
Forward Flow Capacity	15 SCFM 425 LPM						
Exhaust Flow Capacity	7 SCFM 198 LPM						
Environmental							
Operating	32-141°F (0-60°C)						
Temperature							
Media-Wetted	Aluminum, copper alloys, nickel, buna-n, silicon, 316SS						
Materials							
Required Accessories	6-pin micro cordset						
Recommended	DIN-rail Bracket, Panel Bracket, Power Supply,						
Accessories	Control Knob, Remote Pressure Sensor						

# Type 3000 Comparison of I/P's

Type 3000 Series Comparison Ch	art		
T1000, T1500, T1001 and T2000	T3000 Series		
Steady Air Consumption	Minimal Air Consumption at Steady State		
Many are Loop Powered	All Require Supply Voltage		
Most Available in Intrinsically Safe or Explosion Proof Versions	No Hazardous Area Approvals		
"Standard" Pressure Range to 120 PSI, No Vacuum Models, Limited Low Pressure Control Capability	Wide variety to 600 psi or vacuum, even possible in 0 to 0.2 psi range		
Downstream Sensor Feedback Not Available	Second Loop Feedback Available		
	Analog and Logic Output Signal Monitoring		
	Digital Versions have Keypad or Serial User Interface		
	Wide Range of Input Signal/Output Pressure Endpoint, Available in Digital		



### Air Quality

Bellofram specifies the use of instrument quality air (clean, dry, oil free) for all transducers. Transducers should be used within the following conditions:

Dew Point < 35°F (2°C) (indoor) Oil Content < 1ppm Particles < 3µm.

The use of filters in the supply air system is highly recommended. Contact us for information on our filters and filter regulators.

Type 3000 Series Electro-Pneumatic Transducers								
		Packaging						
		DIN-mount Circuit Card	Weatherproof Enclosure					
		Low Flow (1.2 SCFM) (34 LPM)	Low Flow (1.2 SCFM) (34 LPM)	Medium Flow (15 SCFM) (425 LPM)	High Flow (60 SCFM) (1700 LPM)	Very High Flow (175 SCFM) (5000 LPM)		
0	Analog 0-10V 4-20mA	T3110, T3120 or T3111	T3210 or T3220	T3211, T3221 or T3311	T3212 or T3222	T3215		
User Interface	Serial RS-485, RS-232, USB	T3410S or T3420S	T3510S or T3520S	T3511S or T3521S	T3512S or T3522S			
	Keypad/Display Programmer	N/A	T3510P or T3520P	T3511P or T3521P	T3512P or T3522P			
M	ounting	DIN tray, manifold, panel	In-line, DIN-rail, panel bracket, or manifold	In-line, DIN-rail, panel bracket, or manifold	In-line, DIN-rail, panel bracket, or manifold	In-line or panel bracket		

## Type 3000 Series

### Features and Capabilities

The Type 3000 series of electro-pneumatic transducers offers an innovative set of features and capabilities. Each electronic pressure regulator utilizes a pair of reliable guick-firing solenoid valves and an onboard pressure sensor to precisely control downstream pressure and at the same time achieve excellent accuracy and stability.

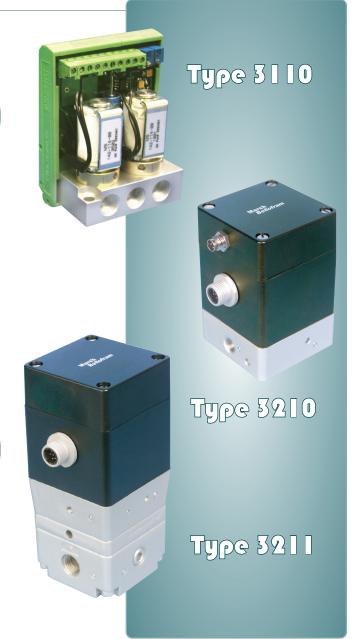
Feed-and-bleed transducers are inherently resistant to shock, vibration, and orientation. To size the regulator for the application, a selection of external volume boosters up to 2000 SCFM (56,000 lpm) are available.

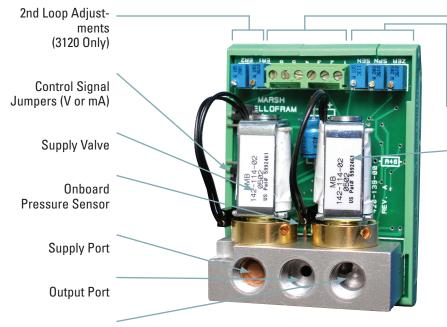
- Analog Control Signals: 0-10v, 4-20 mA, etc.
- Remote Sensor Feedback
- Monitor Output
- · High/Low Logic Output
- Digital Signal Processing
- PID Tuning
- · Deadband Adjustment
- Serial, Keypad/Display

#### Theory of Operation

T3000 transducers utilize proven feed-and-bleed technology. The Supply Solenoid Valve feeds supply pressure to the downstream application. The Exhaust Solenoid Valve bleeds off overpressure. By monitoring the onboard pressure sensor (or the user-supplied remote sensor on two-loop units), the electronics rapidly fire one solenoid or the other to maintain the desired setpoint.

Standard Type 3000s hold output pressure upon loss of electrical power, as long as there are no downstream flow demands. Special versions are available for Fail High or Low Operation.



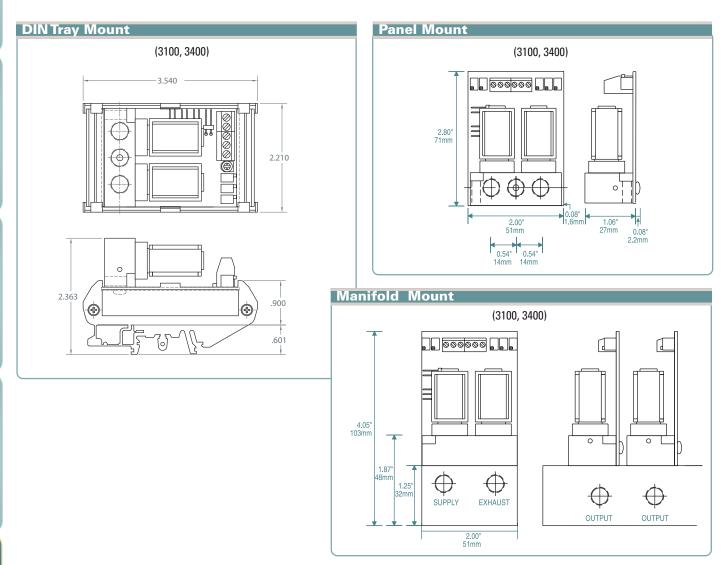


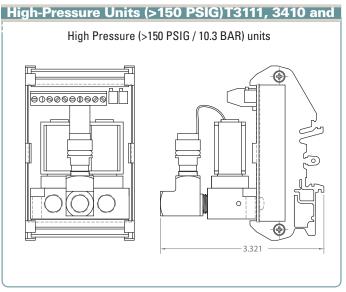
**Electrical Connections:** Control Signal, DC Power, Analog Monitor Output, Logic Output, Remote Sensor Feed Back, Ground

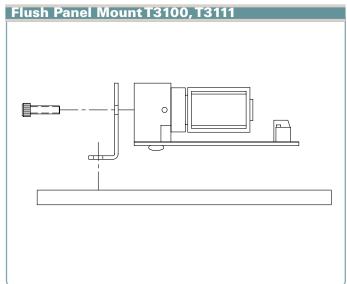
Zero, Span and Gain Adjustment

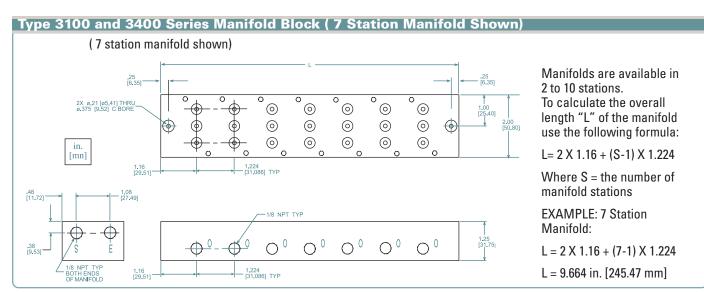
**Exhaust Valve** 

### Dimensional Drawings









Circuit Board Regulators – Mounting and Packaging						
Mounting	Product Configuration	Accessories				
DIN Tray	Product mounted in DIN Tray	None				
Panel	Product configured for panel mounting	For 'flush' mounting, order Flush Mount Bracket (161-520-00) separately				
Multi-Unit Manifold	Product configured for multi-unit manifold mounting	Order Multi-Unit Manifold (350-110-XX) separately. $XX = \#$ stations.				

### **Weatherproof Regulator Mounting Options**

The Type 3200 and 3500 regulators can be mounted in-line or by brackets which are available separately (DIN-rail bracket — 010-115-000; Panel bracket — 010-135-000). Bracket mounting holes (2 X 8-32 UNC 2B X 0.375"/9.5mm deep minimum) are available on the rear and right faces (when looking at product with IN/OUT flow from left to right) and also on the bottom of the

