

Prices Start at See Page

Calibration and Testing Instruments

Mid-West Instrument Model 830/845 Backflow Prevention Test Kits	\$750.00	366
PIE Handheld Digital Calibrators	\$695.00	364
Taylor Pneumatic Pressure Calibrator with Indicating Gauge	\$300.00	364



Power Accessories

C R Magnetics 120 VAC Current Sensing Relay	\$84.56	360
IDEC Switching DC Power Supply	\$60.00	363
Phoenix Contact DIN-Rail Mount DC Power Supplies	\$115.00	363
Phoenix Contact QUINT UPS-IQ Uninterruptible Power Supply	\$330.00	362



Positioners, Filters, and Regulators

Bellofram Type 10 Precision Air Flow Regulator	\$130.63	358
Bellofram Type 50 Airset Regulator	\$57.16	358
Bellofram Type 70 High Flow Pressure Regulator	\$89.61	358
Siemens 760 Series Pneumatic and Electropneumatic Valve Positioners	\$487.00	350
Siemens SIPART PS2 Electropneumatic Valve Positioner	\$870.48	352



Steam Traps

Delta Element Steam Traps	\$288.01	354
Capsule, Thermodynamic, and Thermostatic Steam Traps	\$127.82	356
Inverted Bucket Steam Traps	\$132.80	357
Sanitary Steam Traps for Clean Steam Applications	\$849.09	357



Transducers and Transmitters

API Process Signal Converters and Transmitters	\$279.00	361
C R Magnetics True RMS AC Current Transducer	\$210.40	360
C R Magnetics Two-Wire and Four-Wire Current Transmitters	\$374.95	360
Bellofram T2000 High Accuracy I/P Transducers	\$521.51	359
Bellofram T1000 I/P Transducer with NEMA 4 Housing	\$333.07	359
Bellofram T1500 Intrinsically Safe Miniature I/P Transducer	\$373.75	359
Phoenix Contact Signal Conditioners and Input/Output Modules	\$474.00	361



Pneumatic and Electropneumatic Valve Positioners

SIEMENS



Features

- Universal design and choice of interchangeable NAMUR IEC 534-6 rectilinear or VDI/VDE 3845 rotary mountings provide wide application flexibility
- Double-acting or single-acting service and split ranging afford application versatility in a single unit
- Non-interaction of zero and span adjustments and positive cam locking mechanism reduce calibration and setup
- Modular design supports interchangeable spare parts and reduces inventory: 4-20 mA feedback, limit switches, NAMUR switches, I/P module, and high flow spool valve all fit inside the enclosure
- Comes standard with three cams -- linear, quick opening, and equal percentage -- for application versatility
- NACE MR-01-75-compliant material ensures operation in harsh industrial environments
- Choice of beacon or flat indicator
- FM, CSA, CE, and ATEX approvals



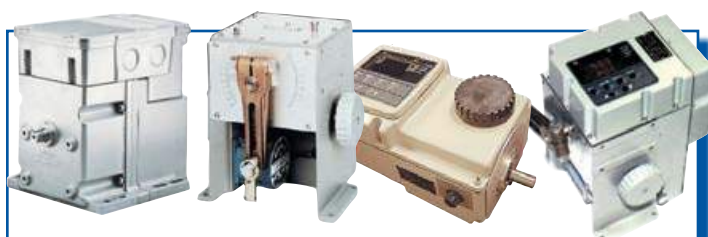
Siemens Series 760 valve positioners provide a cost-effective, universal approach to valve control. Their modular concept allows all models to be built on the basic pneumatic unit. The electropneumatic model is created by adapting an I/P transducer to the base, and installing needed accessories inside the unit.

The 760 base pneumatic unit provides cam characterization, split ranging, direct or reverse action, and single or double acting without requiring additional parts. Key design features include non-interaction of the zero and span adjustments.

Series 760 valve positioners include provisions for internal limit switch mounting and position feedback devices without the need for additional housings, so you don't have to stack housings and impede access to the main enclosure.

A spool valve is used to load the actuator for positioning in response to an input signal. A characterized cam provides mechanical feedback. The unit includes linear, equal percentage, and quick opening operation cam profiles. A blank profile cam is available for custom applications. Rectilinear action length can range from 1/2" to 6"

The feedback shaft and characterized cam can be replaced in the field to configure the positioner for use with either a rectilinear or rotary actuator. Not additional parts are necessary to change between single or double acting actuators or direct and reverse action.



Using rotary or electric actuator motors for valve positioning?

See Lesman's offering of actuators and linkage kits, starting on page 333!

Specifications

Input Signal: 760P: 3-15 PSIG, 3-27 PSIG, 50% split range; 760E: 4-20 mA, 50% split range

Linearity: 760P: 0.5% span typical; 760E: 0.75% span typical

Hysteresis: 760P: 0.75% span typical; 760E: 1.0% span typical

Deadband: $\leq 0.25\%$ span

Repeatability: Within 0.5% span

Output Configuration: Single or double acting

Action: Direct or reverse

Mechanical Feedback: 90° rotary standard; 1/2" to 6" rectilinear optional

Characterization: Equal percent, quick opening, or linear

Pressure Gain: 160:1 at 60 PSIG standard

Span: Adjustable -60% to 25% of normal span

Zero: Adjustable -10% to 60% of normal span

Supply Pressure: 150 PSIG max; *Supply pressure effect:* <0.2% span for a 5 PSI change in supply pressure

Air Consumption: *Standard or low-gain spool:* 0.5 scfm; *High flow capacity spool:* 1.0 scfm typical

Flow Capacity (at 60 PSI with 25% drop): 9.0 scfm (Cv=0.3) standard; 20.0 scfm (Cv=0.6) optional

Temperature Range: 760P: -40° or -4° to 185° F, 300 °F optional; 760E: -40° or -4° to 167° F

Enclosure: Aluminum, polyester powder coated epoxy finished, Type 4X in accordance with NEMA standard 250, Type IP65 in accordance with IEC standard 529

Connections: 1/4" NPT pneumatic and exhaust, 1/8" NPT gauge, 3/4" NPT (25mm) electrical

Hazardous Area Classification Approvals: FM: Intrinsically Safe: Class I, Div 1, Groups A-D, Class II, Div 1, Groups E-G, Class III, Div 1; Non-Incendive: Class I, Div 2, Groups A-D; Suitable for: Class II, Div 2, Groups F, G; Class III, Div 2; CSA: Intrinsically Safe: Class I, Div 1, Groups A-D, Class II, Div 1, Groups E-G, Class III, Div 1; Suitable for: Class I, Div 2, Groups A-D, Class II, Div 2, Groups E-G, Class III, Div 2; CE: EN50081-1 and EN50081-2 Emission, and EN61000-6-1 and EN60000-6-2 Immunity; ATEX: Ex II 2G EEx ia IIC T4/T5/T6, Ex II 3G EEx nL IIC T5, SIRA 03 ATEX 2577X, SIRA 03 ATEX 4578

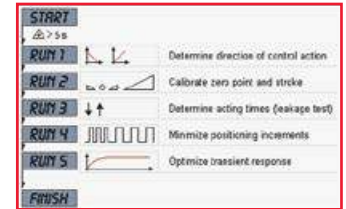
SIPART PS2 Electropneumatic Valve Positioners



**Enclosures (top to bottom right):
Standard IP65 version, explosion-proof and flame-proof
model, stainless steel enclosure**

Features

- One device for both linear and rotary actuators
- Choice of 0/4–20 mA with or without HART® or PROFIBUS PA
- Intrinsically safe or explosion-proof housings available
- Minimal own air consumption, thanks to piezo technology — short return on investment
- Automatic commissioning at initialization optimizes control by determining zero point, end value, direction of action, positioning speed, minimum pulse time, and dead zone
- Local operation and configuration with three pushbuttons and two-line front-panel LCD display
- Optional modules expand functionality for position feedback, alarms, and fault signaling
- Basic and extended diagnostic functions accessed directly or through PROFIBUS PA or HART protocols
- IP65 rated enclosure insensitive to environmental influences
- Switch between automatic, manual, and configuration modes at the push of a button
- Fully compatible with SIMATIC PDM configuration software



SIPART PS2 excels through its reduced installation overheads, functional expansion with low-cost option modules, and enhanced diagnostics.

You can choose between conventional 0/4–20 mA control technology or the PROFIBUS PA standard. Just a single two-wire lead provides the unit with the auxiliary power required and facilitates communication with the control system for complete integration.

A single SIPART® PS2 electropneumatic positioner works for both linear and rotary actuators, and features your choice of PROFIBUS PA or HART protocol for its communications capabilities.

SIMATIC PDM communications software ensures complete information interchange with each positioner in the system. Both PROFIBUS PA and HART provide detailed information on the history and operating state of the valves, such as leakages, spring breakages and travel. They can also log alarms.

With its wide range and an infinitely adjustable 3- to 130-mm stroke range, SIPART PS2 can be directly integrated to modern actuators without pipe work and without additional overhead.

SIPART PS2 can be used with even the smallest actuators because the fully integrated valve block comprehends external position signals and makes the SIPART PS2 a lot more compact.

Its user-friendly digital display shows operating states clearly, and can be operated directly at the machine without the need for additional equipment.

In contrast to conventional units, SIPART PS2's automatic start-up means that you need just five minutes for an optimum process start with the highest control accuracy. Automatic online adaptation enables permanent optimization of the dynamic performance.

Without adding programming overhead, Siemens has integrated functions into the configuration menu, making SIPART PS2 a lot more versatile. Using three pushbuttons and the two-line LCD display, you just

select the menus that deviate from the standard application.

The air loss associated with conventional positioners can be very expensive. Thanks to modern piezo technology, the SIPART PS2, by comparison, uses air only when it is required, so it pays for itself quickly.

Need diagnostics?

The SIPART PS2 provides diagnostic data about itself and its environment, the valve and actuator. For example, a change in the valve end-positions can be signaled automatically when a set limit has been exceeded. Basic diagnostics include a service time counter, temperature minimum/maximum/actual temperature, service time memory per temperature class, and setpoint alarm detection.

Extended diagnostics include online control of the valve seat (upper and lower end travel positions), monitoring and display of adjustable thresholds for accumulated travel, the number of direction changes, and the valve seat (0% position)

No matter what kind of atmosphere surrounds your SIPART PS2 positioner, the newly designed plastic enclosure and the corrosion-proof metal housing ensure that you are equipped for all occasions. With its standard IP65 protection, the SIPART PS2 defies even the roughest environment.

An integrated maintenance-free water separator can cope with moist compressed air for a few days. You can forget problems caused by temperature variations. Not even pressure changes in the pneumatic supply affect control — so a pressure regulator becomes a thing of the past. For especially critical applications, external position sensors can be used.

SIPART PS2 is also available in explosion-proof housing with EExd IIC T4/T5/T6 protection. With the help of three operating keys hidden behind a flap, the unit can be controlled even during operation without opening the housing. The display can be easily read from behind heavy-duty glass.

SIEMENS

Condensed Specifications

Types of actuators: *In plastic, flameproof, or stainless steel casing:* Single-action and double-action; *In aluminium casing:* Single-action

Travel range (linear actuators): 3–130 mm (0.12"–5.12") (angle of feedback shaft 16°–90°)

Angle of rotation (part-turn actuators): 30°–100°

Power supply (inlet air): Pressure: 20.3–101.5 psi, Sufficiently greater than max. drive pressure (actuating pressure)

Air quality to ISO 8573-1: Class 2 for solid particle size and density, pressure dewpoint, and oil content

Air valve unthrottled flow: *29 psi:* 18.1 gpm inlet, 36.1 gpm outlet; *58 psi:* 31.3 gpm inlet, 60.3 gpm outlet; *87 psi:* 43.1 gpm inlet, 84.5 gpm outlet

Valve leakage: < 0.0026 gpm

Throttle ratio: Adjustable up to ∞:1

Power consumption in the controlled state: <0.158 gpm

Installation: *On linear actuators:* Using attachment set 6DR4004-8V and where necessary with an additional lever arm 6DR4004-8L on actuators according to IEC 534-6 (NAMUR) with ribs, bars or flat face; *On part-turn actuators:* Using attachment set 6DR4004-8D on actuators with mounting plane according to VDI/VDE 3845 and DIN 3337: The required mounting console has to be provided on the actuator side; shaft with groove and female thread M6

Mounting position: Any; pneumatic connections and exhaust opening not facing up in wet environment

Controller: *Five-point switch:* Self-adjusting; *Dead zone:* -dEbA = Auto, Self-adjusting or can be set as fixed value; -dEbA = 0.1–10%, Self-adjusting or can be set as fixed value

A/D converter: *Scan time:* 10 ms; *Resolution:* ≤0.05%; *Transmission error:* ≤0.2%; *Temperature effect:* ≤0.1%/18 °F

Cycle time: *20 mA/HART device:* 20 ms; *Profibus PA device:* 60 ms; *Foundation Fieldbus device:* 60 ms (min. loop time)

Binary input BE1: (Terminals 9/10; electrically connected to basic device), Suitable only for floating contact; max. load <5 mA with 3V

Vibration resistance: *Harmonic oscillations (sine-wave):* 0.14", 2–27 Hz, 3 cycles/axis; 321.84 ft/s², 27–300 Hz, 3 cycles/axis; *Bumping (half-sine):* 492 ft/s², 6 ms, 1000 shocks/axis; *Noise (digitally controlled):* 10–200 Hz; 1 (m/s²)²/Hz (3.28 (ft/s²)²/Hz); 200–500 Hz; 0.3 (m/s²)²/Hz (0.98 (ft/s²)²/Hz); 4 hours/axis; *Recommended continuous duty range:* ≤ 30 m/s² (≤ 98.4 ft/s²) without resonance sharpness

Climate class 4: To DIN EN 60721-3-4; *Operation:* 4K3, but -22° to 176 °F

Classifications: Classification according to pressure equipment directive (DRGL 97/23/EC): For gases of fluid group 1, complies with requirements of article 3, paragraph 3 (sound engineering practice SEP)

Degree of protection: IP65 to EN 60 529/NEMA 4x

CE mark: Conformity as regards EMC Directive 89/336 EC in accordance with the following standards

EMC requirements: EN 61326/A1 Appendix A.1 and NAMUR NE21 Aug. 98

Materials: *Housing:* Glass-fiber-reinforced Macrolon plastic, GD AISI 12 metal, Austenitic stainless steel # 1.4581, or Aluminium AIMgSi, anodized pressure gauge block

Approvals: FM/CSA/ATEX; Class I, Div 1, Groups A-D, and Zone 1 Area Ex ia/ib IIC (with suitable intrinsically safe barrier); Class I, Div 2, Groups A-D, and Zone 1 Area Ex ia/ib IIC; *Plastic and aluminum housing:* FM intrinsically safe with customer-supplied barrier, Non-incendive, no barrier required; *Stainless steel housing:* Only ATEX approved for EEx n; *Explosion-proof housing:* EEx d approved



Ordering Instructions

Make one selection from each table below. A complete catalog number looks like this: 6DR5____-____-0AA_

Model Selection Guide

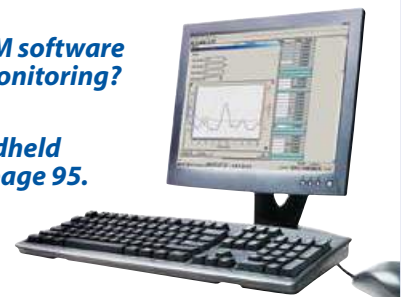
Description		Catalog Number	Price
SIPART PS2 Electropneumatic/Digital Positioner			
Input (Note 1)	4-20 mA, 2-Wire	6DR50 __-	\$870.48
	4-20 mA, 2-/3-/4-Wire	6DR53 __-	892.71
	4-20 mA, 2-Wire, with HART®	6DR51 __-	1012.05
	4-20 mA, 2-/3-/4-Wire, with HART®	6DR52 __-	1030.77
	Profibus PA Foundation Fieldbus	6DR55 __- 6DR56 __-	1180.53 1180.53
Actuator Action	Single Acting	____1 _-	0.00
	Double Acting	____2 _-	129.87
Enclosure	Plastic Housing	____0-	0.00
	Aluminum Housing (Single Acting Only)	____11-	129.87
	Stainless Steel Housing	____2-	999.68
	Explosion-Proof Housing	____5-	1263.60
Safety Rating	None	0N ____-	0.00
	FM/CSA Explosion-Proof	0E ____-	70.20
Connection	1/2" NPT Electrical, 1/4" NPT Pneumatic	__N __-	0.00
Limit Switch	None	___0 _-	0.00
	Solid State Alarm Module	___1 _-	212.94
	Mechanical Limit Switch Module	___3 _-	266.76
Option Module	None	____0-	0.00
	4-20 mA Position Feedback	____1-	277.29
Options	None	0AA0-	0.00
	Gauge Options (Add R-Code Below)	0AA9-	0.00
Gauge Block	Aluminum, Single Acting	R1B	202.41
	Aluminum, Double Acting	R2B	241.02
	316 Stainless Steel, Single Acting	R1D	475.02
	316 Stainless Steel, Double Acting	R2D	519.48
Accessories and Options			
FM-Approved Alarm Module		6DR4004-7A	212.94
FM-Approved Iy Module		6DR4004-7J	277.29
Mounting Set, 2-35 mm Linear Actuators (IEC 534)		6DR4004-8V	90.09
Mounting Set, Part-Turn Actuators (VDI/VDE 3845)		6DR4004-8D	70.20
Aluminum Gauge Block, Single Acting, 1/4" NPT		6DR4004-1MN	138.06
Aluminum Gauge Block, Double Acting, G1/4		6DR4004-2M	160.29
NCS Sensor for Part-Turn Actuator		6DR4004-8NN10	333.45
NCS Sensor for Linear Actuator (>14mm)		6DR4004-6NN30	610.16
RS-232 Siemens HART® Modem		7MF4997-1DA	449.65
Documentation			
SIPART PS2 Installation Instructions		A5E00074600	25.74
SIPART PS2 Manual for Models 6DR50 to 6DR53		A5E00074631	42.12
SIPART PS2 Manual for Model 6DR55		A5E00127926	42.12
SIPART PS2 Manual for Model 6DR56		A5E00214569	42.12

Notes

1 Models 6DR53 and 6DR51 only have explosion-proof ratings when ordered with the EExD explosion-proof housing (5)

Looking for SIMATIC PDM software for configuration and monitoring?
See page 96.

Need a HART® handheld communicator? See page 95.



Delta Elements Solve Steam Loss and Trap Failure Problems

More than 40 years ago, Bestobell Steam created the Delta Element to correct two enduring steam trap problems — steam loss and trap failure.

Simply put, Bestobell wanted to design a long-lived steam trap that accomplished what the name implied: trap steam and eliminate condensate.

Today, the Delta Element design offers operational characteristics as close to the steam curve as is available.

Bestobell in the Chemical Industry

Bestobell steam traps are designed for low, medium, and high pressures in tracing, drip leg, and process applications through the chemical process industries.

With the advantage of the largest cold startup capacity in the industry — five to six times the hot-running load — Bestobell traps are ideal for heating batch applications and reactor vessels.

In addition to providing excellent efficiency, this characteristic also allows the effective

use of steam for lower pressure applications, like steam tracing for the movement of media to storage and shipping.

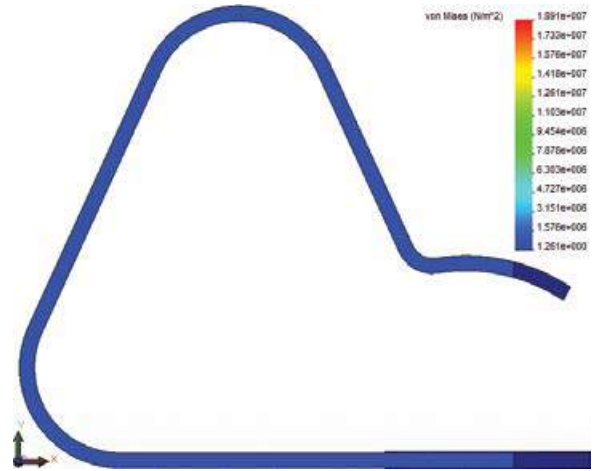
Effective removal of condensate from steam lines allows the most efficient use of steam from boiler to condensate return, reducing operating costs and improving profitability.

Consumes No Steam

The Bestobell Delta Element is a sophisticated yet simple design that provides consistent and repeatable operation with zero steam loss.

Employing a hybrid design that uses both thermostatic and thermodynamic principles, Delta Element steam traps achieve a continuous, modulating discharge of condensate as it forms, while eliminating live steam loss at the same time.

The design maximizes the thermodynamic pressure forces of the flashing steam to deliver



quick response and a wide operating range closely approximating the steam curve.

Bestobell Delta Element steam traps are warranted up to three years against the loss of steam due to mechanical failure in applications to 320 PSI.

Bestobell Steam Technologies

Delta Element

- Long-term, trouble-free service. Single blade element, stainless internals, built-in strainer and check valve
- Only 30% to 40% of total pressure drop occurs over seating surface, resulting in long valve life
- Modulating discharge eliminates cyclic discharge problems
- High cold discharge capacities provide fast startup capabilities
- Excellent heat transfer and minimum corrosion by continuous air and CO2 venting

Inverted Bucket

- Unique linkage system provides for maximum flow capacities
- Hardened stainless steel valve and seat increases trap life and minimizes corrosion impact
- Reliable and industry accepted design for applications where cyclic design is desirable

Thermodynamic Disc

- High capacities
- Withstands effects of water hammer and vibration
- Single moving part for minimal maintenance and long operating life

Steam Trap Quick Reference Table

Application	Technology	Sizes	Body Material	Max Working Pressure	Max Body Temperature	Series	See Page
Drip and Tracer	Delta Element	3/8" to 3/4"	Carbon Steel	70 PSI	650°F	DM006	355
		3/8" to 3/4"		150 PSI		DM012	355
		1/2" to 3/4"		320 PSI		DM025	355
	Capsule	3/8" to 3/4"	Stainless Steel	250 PSI	750°F	GSM17	356
	Inverted Bucket	1/2" to 1"	Cast Iron	250 PSI	450°F	IB18	357
High Pressure, Drip and Tracer	Thermodynamic Disc	3/8" to 1"	Stainless Steel	711 PSI	799°F	DT711	356
High Pressure	Delta Element	1/2" to 1"	Carbon Steel	600 PSI	750°F	DM064	355
Process and Space Heating	Delta Element	1/2" to 2"	Carbon Steel	30 PSI	650°F	GM003	355
		3/8" to 3/4"		70 PSI		M006A	355
		1/2" to 2"		70 PSI		GM006	355
		3/8" to 3/4"		120 PSI		M0010	355
		1/2" to 2"		120 PSI		GM010	355
		1/2" to 3/4"		200 PSI		GM016	355
		1/2" to 2"		200 PSI		M0016	355
	Inverted Bucket	1/2" to 2"	Cast Iron	250 PSI	450°F	IB18	357
Float/Thermostatic	3/4" to 2"	Cast Iron	250 PSI	400°F	PT	356	

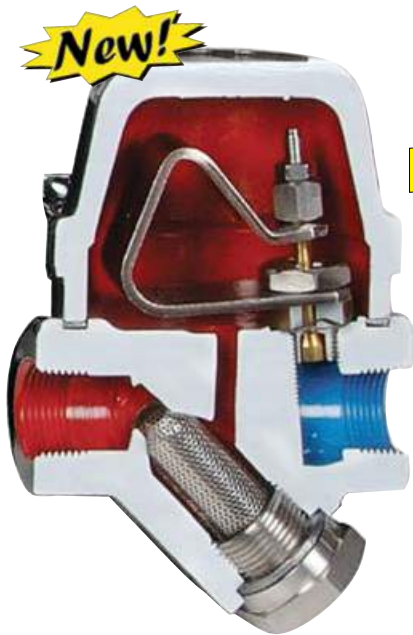
Capsule

- Small and lightweight, easy to maintain
- Thermostatic design provides good discharge of condensate and non-condensable gases

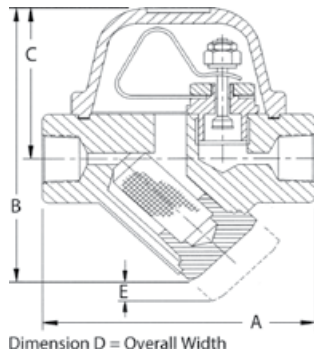
Float and Thermostatic

- Enhanced sensitivity to pressure and temperature conditions
- Continuous condensate discharge
- Separate internal air and CO2 venting provides maximum heat transfer
- Removable flush plug for easy in-line cleaning, inspection, and repair

Delta Element Steam Traps



Consumes No Steam!



- Energy-efficient design lets the process use more heat energy from both the steam and condensate
- 3-year warranty against live steam loss up to 320 PSI
- Can be mounted horizontally or vertically
- Forged carbon steel body construction
- Long-term trouble-free service due to single blade element, corrosion-resistant stainless internals, built-in strainer and check valve
- Hardened seating surface on all high-pressure traps
- Continuous air and CO2 venting maximizes heat transfer and minimizes corrosion
- High cold discharge capacities for fast start-ups
- Long valve life — only 30% to 40% total pressure drop occurs over seating surface
- Easy in-line maintenance — Isolate trap from live steam system, repair, and be running again in minutes
- Models for drip and tracer applications, high pressure steam, process and space heating steam

Model Selection Guide

Size NPT	Max DP (PSID)	Cold Startup Lb/Hr	Hot (Dripleg) Lb/Hr	Max Operating Pressure PSIG	Max Body Temp °F	Dimensions					Catalog Number	Price
						A	B	C	D	E		
3/8"	70	2700	150	750	650	2.438"	3.00"	2.25"	2.438"	—	DM006110	\$ 288.01
	70	4000	230			4.00"	5.00"	3.25"	3.125"	2.25"	M006A110	335.32
	120	4300	400			4.00"	5.00"	3.75"	3.125"	2.25"	M0010110	340.30
	150	4500	115			2.438"	3.00"	2.25"	2.438"	—	DM012110	312.08
1/2"	30	3200	750	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM003210	343.62
	70	2700	150	750	650	2.438"	3.00"	2.25"	2.438"	—	DM006210	288.01
	70	4000	230	750	650	4.00"	5.00"	3.25"	3.125"	2.25"	M006A210	335.32
	70	6200	900	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM006210	364.37
	120	4300	400	750	650	4.00"	5.00"	3.75"	3.125"	2.25"	M0010210	340.30
	120	6600	780	750	650	4.00"	5.00"	3.75"	3.125"	2.25"	GM010210	390.10
	150	4500	115	750	650	2.438"	3.00"	2.25"	2.438"	—	DM012210	312.08
	200	6300	200	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	M0016210	503.81
	200	10000	1400	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM016210	421.64
	320	2800	110	750	650	4.00"	5.00"	3.25"	3.125"	2.25"	DM025210	329.51
	450	7500	950	750	750	4.00"	6.00"	3.625"	4.00"	2.625"	DM040210	566.06
	600	5500	700	1500	750	4.00"	6.00"	3.625"	4.00"	2.625"	DM064210	730.40
3/4"	30	3200	750	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM003310	343.62
	70	2700	150	750	650	4.563"	3.125"	2.25"	2.438"	—	DM006310	288.01
	70	4000	230	750	650	4.00"	5.00"	3.25"	3.125"	2.25"	M006A310	335.32
	70	6200	900	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM006310	364.37
	120	4300	400	750	650	4.00"	5.00"	3.75"	3.125"	2.25"	M0010310	340.30
	120	6600	780	750	650	4.00"	5.00"	3.75"	3.125"	2.25"	GM010310	390.10
	150	4500	115	750	650	4.563"	3.125"	2.25"	2.438"	—	DM012310	312.08
	200	6300	200	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	M0016310	503.81
	200	10000	1400	750	650	4.00"	6.00"	3.625"	4.00"	2.625"	GM016310	421.64
	320	2800	110	750	650	4.00"	5.00"	3.25"	3.125"	2.25"	DM025310	329.51
	450	7500	950	750	750	4.00"	6.00"	3.625"	4.00"	2.625"	DM040310	566.06
	600	5500	700	1500	750	4.00"	6.00"	3.625"	4.00"	2.625"	DM064310	730.40
1"	30	9000	2000	750	650	5.00"	6.75"	3.625"	4.00"	3.50"	GM003410	618.35
	70	9800	1750	750	650					3.50"	GM006410	503.81
	120	12500	1750	750	650					2.25"	GM010410	612.54
	200	10000	1800	750	650					3.50"	M0016410	661.51
	450	12500	1300	750	750					3.25"	DM040410	642.42
	600	5500	700	1500	750					3.25"	DM064410	730.40
1-1/4"	70	9800	1750	750	650	7.125"	9.50"	5.875	6.00"	4.375	GM006510	1303.10
1-1/2"	70	26000	3900	750	650	7.125"	9.50"	5.875	6.00"	4.375	GM006610	1303.10

New!

Process and Space Heating Steam Traps

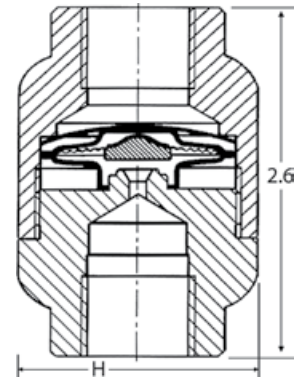


GSM17 Inline Capsule-Type Steam Traps

- For small process equipment, tracers, and drip legs in harsh environments
- All stainless steel construction and built-in strainer
- Trap can be disassembled to replace thermal capsule or inspect strainer
- For capacities up to 1200 Lbs/hr at up to 250 PSID

Model Selection Guide

Size	Maximum DP	Maximum Operating Pressure	Maximum Body Temperature	H Dimension	Catalog Number	Price
3/8"	250 PSID	580 PSIG	750°F	1.65"	GSM17110	\$ 190.07
1/2"				1.65"	GSM17210	190.07
3/4"				1.65"	GSM17310	190.07
1"				1.73"	GSM17410	198.37



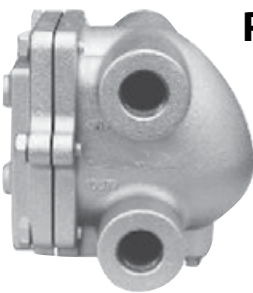
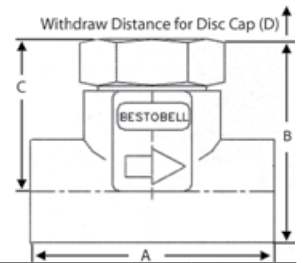
Also available with integral strainer

DT711 Thermodynamic Disc Traps

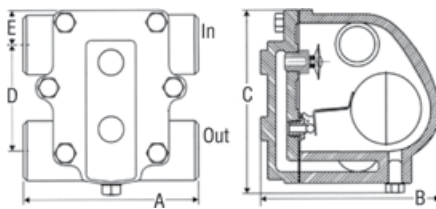
- Designed to fail open
- All stainless steel construction (ASTM A743 Gr CA40)
- Efficiently discharge condensate on working pressures up to 711 PSI
- Rugged design is unaffected by freezing or water hammer

Model Selection Guide

Size NPT	Maximum Allowable Pressure	Operating Differential Pressure Range	Maximum Operating Back Pressure	Maximum Allowable Temp.	Dimensions				Catalog Number	Price
					A	B	C	D		
3/8"	711 PSIG	3.5 to 1886 PSID	70% Inlet Pressure	799°F	2.36"	2.44"	1.69"	1.57"	DT711110	\$ 127.82
1/2"					2.56"	2.44"	1.69"	1.57"	DT711210	141.93
3/4"		2.56"			2.56"	1.69"	1.57"	DT711310	198.37	
1"		3.35"			2.87"	1.97"	1.77"	DT711410	273.07	



PT Float and Thermostatic Steam Traps

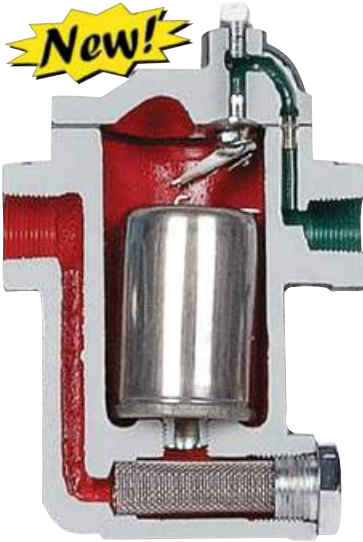


Model Selection Guide

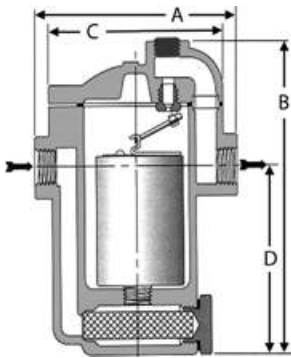
Size NPT	Max DP	Dimensions					Catalog Number	Price
		A	B	C	D	E		
3/4"	15 PSID	5.75"	6"	6"	3.38"	1.13"	PT0153	\$ 215.80
	30 PSID						PT0303	228.25
	75 PSID						PT0753	324.53
	125 PSID						PT1253	329.51
1"	15 PSID	5.75"	6"	6"	3.38"	1.13"	PT0154	255.64
	30 PSID						PT0304	258.96
	75 PSID						PT0754	359.39
	125 PSID						PT1254	364.37
1-1/4"	15 PSID	5.75"	6"	6"	3.38"	1.13"	PT0155	329.51
	30 PSID						PT0305	335.32
	75 PSID						PT0755	520.41
	125 PSID						PT1255	557.76
1-1/2"	15 PSID	7.5"	8"	8.2"	4"	2.55"	PT0156	547.80
	30 PSID						PT0306	583.49
	75 PSID						PT0756	642.42
	125 PSID						PT1256	650.72
2"	15 PSID	7.5"	8"	8.2"	4"	2.55"	PT0157	585.15
	30 PSID						PT0307	650.72
	75 PSID						PT0757	747.83
	125 PSID						PT1257	773.56

- For discharging air and condensate while preventing steam from entering return pipe
- Disc design reduces hinge action to evenly distribute motion for enhanced sensitivity to pressure and temperature
- Good to 250 PSIG max operating pressure and 400°F body temperature
- Highly engineered positioning of flat valve responds rapidly to prevent steam from entering pipe
- Float-operated discharge valve opens wide to continuously drain condensate
- Cast iron body, stainless steel internals





In catalog number:
 H = Horizontal type.
 S = Horizontal type with strainer.
 V = Vertical type.



IB18 Inverted Bucket Steam Traps

- Heavy duty cast iron body and stainless steel bucket for long-term operation and reliability
- For process heating and drip leg services
- Easy in-line inspection and maintenance — Remove the top for access to trap internals
- Bestobell unique linkage system multiplies the force exerted by the bucket for assisted opening against pressure for maximum flow capabilities
- Maximum temperature 450°F

Model Selection Guide

Size NPT	Orifice Size	Max Rated DP	Max Discharge Capacity	Max Allowable Pressure	Dimensions				Catalog Number	Price
					A	B	C	D		
1/2"	1/8"	125 PSID	950 PSID	250 PSIG	4.25"	6.38"	—	—	IB18V210-8	\$ 150.23
	3/32"	150 PSID	570 PSID	150 PSIG	5.06"	5.94"	3.75"	3.31"	IB18H210-6	132.80
	3/32"	150 PSID	570 PSID	150 PSIG	5.06"	6.5"	3.75"	3.44"	IB18S210-6	136.12
	5/32"	250 PSID	760 PSID	250 PSIG	4.25"	6.38"	—	—	IB18V210-6	150.23
3/4"	1/8"	125 PSID	950 PSID	250 PSIG	5.06"	7"	3.75"	4.38"	IB18H310-8	169.32
	1/8"	125 PSID	950 PSID		5.06"	7.5"	3.75"	4.44"	IB18S310-8	177.62
	5/32"	125 PSID	2000 PSID		5.63"	8"	—	—	IB18V310-10	203.35
	3/32"	250 PSID	760 PSID		5.06"	7"	3.75"	4.38"	IB18H310-6	169.32
	3/32"	250 PSID	760 PSID		5.06"	7.5"	3.75"	4.44"	IB18S310-6	177.62
	7/64"	250 PSID	1300 PSID		5.63"	8"	—	—	IB18V310-7	203.35
1"	5/32"	125 PSID	2000 PSID	250 PSIG	7"	9.09"	5.63"	5"	IB18H410-10	263.94
	5/32"	125 PSID	2000 PSID		7"	9.06"	5.63"	5.75"	IB18S410-10	317.06
	1/4"	125 PSID	3900 PSID		6.88"	10.5"	—	—	IB18V410-16	438.24
	7/64"	250 PSID	1300 PSID		7"	9.06"	5.63"	5.75"	IB18S410-7	317.06
	7/64"	250 PSID	1300 PSID		7"	9.09"	5.63"	5"	IB18H410-10	263.94
	3/16"	250 PSID	3500 PSID		6.88"	10.5"	—	—	IB18V410-12	438.24
1-1/4"	1/4"	125 PSID	3900 PSID	250 PSIG	8.13"	12.25"	7"	7.25"	IB18H510-16	290.50
	1/4"	125 PSID	3900 PSID		8.13"	12.31"	7"	7.38"	IB18S510-16	511.28
	11/32"	125 PSID	11000 PSID		9.06"	14.38"	—	—	IB18V510-22	537.01
	9/32"	225 PSID	9600 PSID		9.06"	14.38"	—	—	IB18V510-18	537.01
	3/16"	250 PSID	3500 PSID		8.13"	12.25"	7"	7.25"	IB18H510-12	290.50
	3/16"	250 PSID	3500 PSID		8.13"	12.31"	7"	7.38"	IB18S510-12	511.28
1-1/2"	11/32"	125 PSID	11000 PSID	250 PSIG	10.19"	16.06"	9.06"	7.88"	IB18H610-22	566.06
	11/32"	125 PSID	11000 PSID		9.06"	14.38"	—	—	IB18V610-22	594.28
	9/32"	225 PSID	9600 PSID		10.19"	16.06"	9.06"	7.88"	IB18H610-18	566.06
	9/32"	225 PSID	9600 PSID		9.06"	14.38"	—	—	IB18V610-18	594.28
2"	11/32"	125 PSID	11000 PSID	250 PSIG	10.19"	16.06"	9.06"	7.88"	IB18H710-22	602.58
	1/2"	125 PSID	20000 PSID		10.25"	16.69"	—	—	IB18V710-32	896.40
	9/32"	225 PSID	9600 PSID		10.19"	16.06"	9.06"	7.88"	IB18H710-18	602.58
	3/8"	225 PSID	18250 PSID		10.25"	16.69"	—	—	IB18V710-24	896.40
2-1/2"	1/2"	125 PSID	20000 PSID	250 PSIG	13"	20.69"	11.25"	11"	IB18H810-32	1093.11
	3/8"	250 PSID	19000 PSID		13"	20.69"	11.25"	11"	IB18H810-24	1093.11

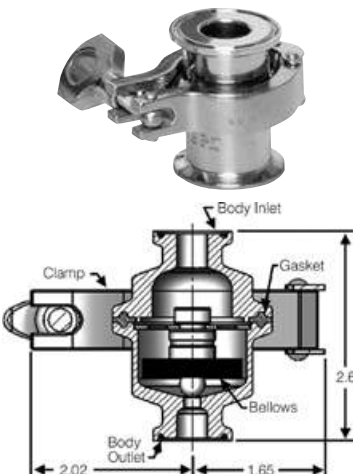
BTCS Sanitary Steam Traps for Clean Steam Applications

- Ideal for fermenters, bioreactors, sterilizers, autoclaves, SIP/CIP systems, process piping equipment and steam barriers
- For clean steam system tracking, drip leg and process applications
- Bellows-type thermostatic steam trap with Tri-clamp sanitary connections. Also available with tube or NPTF end connections
- 316L stainless steel construction, Teflon-encapsulated Viton O-ring (FDA Approved), 304 stainless steel clamp, 20Ra internal finish and self-draining design
- Designed to provide higher flow rates at low pressures and low subcooling levels to 5°F
- Maximum operating pressure: 90 PSIG, Maximum body temperature: 350°F

Model Selection Guide

Size NPT	DP Range	Catalog Number	Price
1/2"	5-65 PSID	BTCS02T	\$ 849.09
3/4"		BTCS03T	849.09
1"		BTCS04T	896.40

Also available for 55-90 PSID range.



Air Flow Regulators

Precision Flow Regulator

Bellofram Type 10: The Most Precise Flow Regulator Available!



The Type 10 regulator has a 0.1% accuracy with a low sensitivity to pressure or flow changes. Startup regulated pressure returns to its output setting — no readjustment needed.

A high-gain servo-amplifier keeps regulated pressure constant over wide flow ranges.

An integral relief valve provides exhaust flow when the regulated pressure resets to a lower value. Assures immediate response on dead-ends, when downstream regulated pressure must be reduced.

Specifications

Sensitivity: 1/8" WC

Flow Capacity: 14 SCFM @ 100 PSIG supply and 20 PSIG outlet

Effect of Supply Pressure Variation on Outlet Pressure: Less than 0.005 PSI @ 25 PSIG; **Max Supply Pressure:** 150 PSIG

Exhaust Capacity: 2 SCFM; **Total Air Consumption:** 6 SCFH

Effect of Flow Changes on Regulated Pressure: (100 PSIG supply) 0.25 PSIG over 10 SCFM change (2-25 PSIG range, 10 PSIG setpoint)

Materials: *Body:* Diecast zinc alloy with vinyl paint; *Capsule and Adjusting Screw:* Stainless steel; *Trim:* Stainless steel, brass, plated steel, acetal resin; *Diaphragm:* Buna-N elastomer with polyester fabric *Knob:* Phenolic plastic

Model Selection Guide

	Port Size	Catalog Number by Range			Price
		2 to 25 PSI	2 to 60 PSI	2 to 120 PSI	
Type 10 Precision Regulator	1/8" NPT	960-001-000	960-007-000	960-013-000	\$130.63
	1/4" NPT	960-003-000	960-009-000	960-015-000	130.63
	3/8" NPT	960-005-000	960-011-000	960-017-000	130.63

Airset Regulators

- Superior regulation characteristics
- Rugged, corrosion-resistant construction
- Integral 40 micron, self cleaning filter
- Excellent stability and repeatability
- Self-relieving
- Low droop at high flow

These Bellofram regulators are generally superior in regulated pressure versus flow, forward to reverse flow offset, supply pressure sensitivity, repeatability and stability.

Ruggedly designed and constructed, the regulators have housings of die-cast aluminum. The Type 50 regulator is finished with vinyl paint to resist scratching, weathering, and other physical abuse. And, it's pressure- and leak-tested prior to shipment.

A rubberized, soft-seat valve stem provides positive shut-off and for-gives dirt or other foreign matter. An aspirator maintains downstream pressure and compensates for droop when high flow occurs.

The full flow gauge port is convenient for gauge installation and can also be used as an additional full flow outlet. Type 50 regulators include a unique, self-cleaning 40 micron Nylon mesh filter that can be easily removed.

Model Selection Guide

Description	Range	Catalog Number	Price
1/4" Airset Regulator (Gauge Not Included)	0-35 PSIG	960-067-000	\$57.16
	0-60 PSIG	960-068-000	57.16
	0-125 PSIG	960-069-000	57.16



High Flow Pressure Regulator

- Flow Capacity to 80 SCFM
- Responds quickly to minute changes in downstream pressure
- Buna-N, polyester rolling diaphragms last through millions of cycles
- Integral baffle and aspirator action eliminates honking and buzzing
- Designed for inline service and repair

Specifications

Sensitivity: 1/4" WC

Flow Capacity: 40, 50 or 80 SCFM @100 PSIG supply and 20 PSIG outlet

Exhaust Capacity: 4 SCFM

Max Supply Pressure: 250 PSIG

Effect of Supply Pressure Variation on Outlet: < 0.025 PSI (25 PSIG)

Effect of Flow Changes on Regulated Pressure: (100 PSIG supply) 2.5 PSI overflow of 50 SCFM (3/8" NPT, 0-30 PSIG range, 15 PSIG setpoint)

Total Air Consumption: From 1.0 to 12.5 SCFH

Materials: *Body:* Diecast aluminum, vinyl paint; *Adjusting Screw:* Plated steel; *Trim:* Plated steel, brass, acetal resin; *Diaphragm:* Buna-N, polyester fabric reinforcement; *Knob:* Phenolic plastic; *Spring:* Music wire

Mounting Options: Pipe, panel, or bracket

Model Selection Guide

Description	Range PSI	Port Size (NPT)	Catalog Number	Price
High Flow Pressure Regulator	0-2	1/4"	960-129-000	\$95.21
	0-10	1/4"	960-130-000	89.61
	0-30	1/4"	960-090-000	89.61
	1-60	1/4"	960-092-000	89.61
	2-150	1/4"	960-094-000	89.61
	3-200	1/4"	960-152-000	121.82



Full line of volume boosters and relays available.

I/P Transducers for Process Control

T1500 Miniature I/P Transducers



Features

- FM, CENELEC, CSA Approved, Intrinsically Safe, Weatherproof NEMA 4X Housing
- Built-in Volume Booster for Flow Capacity to 7 SCFM

Bellofram T1500 transducers convert an electrical output signal to a proportional pneumatic output. I/P (current to pressure) and E/P (voltage to pressure) models are available, as well as zero-based, extended-range units for precise control from 0 to 120 PSIG.

These units are well suited for applications that require vibration-resistant, high-flow control devices — they're rated NEMA 4X, and are built to FM, CSA, and CENELEC specs for intrinsically safe instruments.

For longer transducer life, consider installing a filter before your I/P.

Model Selection Guide

Description		Catalog Number	Price Each
T1500 Mini Intrinsically Safe Transducer, NEMA 4X		966-	\$373.75
Electrical Input	4-20 mA DC	71 -	0.00
	0-5 VDC	72 -	0.00
	1-9 VDC	73 -	0.00
	1-10 VDC	74 -	0.00
Pneumatic Output	3 to 15 PSIG	-- 0-	0.00
	3 to 27 PSIG	-- 1-	0.00
	6 to 30 PSIG	-- 2-	0.00
	0 to 120 PSIG	-- 6-	0.00
Electrical Connection	1/2" NPTF	0 --	0.00
	Terminal Block (Not NEMA 4X)	1 --	0.00
	Hirschmann Connection	2 --	0.00
Elastomers	Nitrile	-- 0	0.00
	Fluorocarbon	-- 1	0.00
Approvals	FM/CSA/ATEX Intrinsically Safe	-- 0	0.00
Accessories	DIN Rail Kit	971-140-000	10.30
	3-15 PSI Pneumatic Repair Kit	971-141-000	81.03
	4-20 mA Electronic Repair Kit	971-142-000	92.60

I/P Transducer with NEMA 4 Housing

- External Span and Zero Adjustments
- Low Air Consumption
- Built-in Volume Booster
- Light Weight, Mounts at Any Angle

Specifications

Linearity, Hysteresis: $\leq \pm 1.0\%$ span

Repeatability: $< 0.5\%$ span

Supply Pressure: 3 PSIG above max output to 100 PSIG; **Sensitivity:** $\leq \pm 0.1\%$ span/PSIG at mid-range.

Min. Flow Rate at Mid-range: GP/IS Mod.: 4.5 SCFM @ 25 PSIG; 12 SCFM @ 100 PSIG; Explosion-Proof Mod.: 1.9 SCFM @ 25 PSIG; 2.2 SCFM @ 100 PSIG.

Air Consumption (Max.): 0.2 m³/hr (0.1 SCFM) at midrange

Port Sizes: 1/4" NPT (pneumatic); 1/2" NPT (electric)

Approvals: FM approved non-incendive for Class I, Div. 2, Grps A-D, suitable for Class II and III, Div. 2, Group G. No barriers needed. FM approved Intrinsically Safe for Class I, II, III, Div. 1, Grps A-E and G with suitable barriers. **Explosion-Proof Model:** FM approved for Class I, Div. 1, Group D; Class II, Div. 1, Groups E-G; and Class III. FM-Rated NEMA 4 outdoor.



Model Selection Guide

Description	Approval	Output	Catalog Number	Price Each
I/P Transducer 4-20 mA Input	General Purpose	3-15 PSI	961-070-000	\$333.07
	General Purpose	9-15 PSI	961-073-000	333.07
	General Purpose	3-27 PSI	961-074-000	333.07
	General Purpose	6-30 PSI	961-075-000	333.07
180Ω Nominal Impedance	Intrinsically Safe	3-15 PSI	961-099-000	381.01
	Intrinsically Safe	3-27 PSI	961-100-000	381.01
	Explosion-Proof	3-15 PSI	961-098-000	618.08

High Accuracy I/P Transducer

- 0.1% Accuracy Typical
- Exhaust Capacity 3 SCFM at 5 PSIG Above Setpoint
- Piezo-Ceramic Actuator Serves as Control Link Between Electrical Input and Pressure Output

The Type 2000 has been designed to meet your electropneumatic needs: field-selectable inputs, direct/reverse/split ranging, and precise, reliable performance under extreme conditions.

Type 2000 transducers use closed-loop pressure feedback control for precision pressure output, and to minimize the effects of temperature, supply pressure and voltage changes, and mounting angle.



Model Selection Guide

Description		Catalog Number	Price Each
Type 2000 Transducer, Intrinsically Safe Enclosure		2K-SNN -	\$521.51
Type 2000 Transducer, Explosion-Proof Enclosure		2K-ENN -	613.54
Approvals	FM/CSA	-- -- F-	0.00
	ATEX	-- -- C-	0.00
	CSA (Explosion-Proof Model Only)	-- -- G-	0.00
Electrical Inputs	4-20 mA, Direct Acting	-42D ---	0.00
	0-10 V, Direct Acting	-10D ---	0.00
Pneumatic Output	0-5 PSIG, Full Range	-- -- F005-00	0.00
	3-15 PSIG, Full Range	-- -- F315-00	0.00
	0-30 PSIG, Full Range	-- -- F030-00	0.00
	3-27 PSIG, Full Range	-- -- F327-00	0.00
	0-100 PSIG, Full Range	-- -- F100-00	0.00

Current Transmitters and Transducers



Two-Wire Current Transmitter

- Loop powered, fully isolated
- Permanently calibrated
- Output overload protected



Specifications

Accuracy: ±0.5% full scale; Ripple and noise: 1% max.
Signal Output: Calibrated: 4-20 mA DC; Maximum: 30 mA DC; Output Load: 0-600Ω
Temperature: Range: -30° to 70°C; Coefficient: ± .04%/°C
Supply Voltage: 24 VDC ± 10%; Frequency: 60 Hz; Insulation Class: 600 V
Reverse Voltage Protection: Yes

Model Selection Guide

Description	Opening Size	Catalog Number	Price
Two-Wire 4-20 mA Current Transmitter	0 - 5 Amps	CR4320-5	\$374.95
	0 - 10 Amps	CR4320-10	415.37
	0 - 15 Amps	CR4320-15	415.37
	0 - 20 Amps	CR4320-20	415.37
	0 - 30 Amps	CR4320-30	419.06
Full Scale Range Range (AC)	0 - 50 Amps	CR4320-50	419.06
	0 - 75 Amps	CR4320-75	442.96
	0 - 100 Amps	CR4320-100	442.96
	0 - 150 Amps	CR4320-150	463.17
	0 - 200 Amps	CR4320-200	463.17
	0 - 300 Amps	CR4320-300	488.90
	0 - 400 Amps	CR4320-400	505.93

Loop-Powered AC Current Transmitter

- 4-20 mA output proportional to the average RMS input AC current
- Designed for multi-point current sensing
- Single element with 0.79" window
- Available in split core design



Specifications

Accuracy: 0.5%
Frequency Range: 50 to 400 Hz
Mean Time Between Failures: >100 K hours
Typical Load: 0 to 300Ω at 24 VDC

Model Selection Guide

Description	Catalog Number	Price
Single Element Transmitter, 4-20 mA DC Output	CR4220-*	\$104.59
Single Element Transmitter, 4-20 mA DC Out, Split Core	CR4220S-*	143.19
*Add suffix for input range		
0-10 Amp AC	.....10	0-30 Amp AC..... 30
0-15 Amp AC	.....15	0-40 Amp AC..... 40
0-20 Amp AC	.....20	0-50 Amp AC..... 50
0-25 Amp AC	.....25	0-100 Amp AC..... 100

Ranges available up to 600 Amp AC.

Current Sensing Relay and Indicator

- LED trip status indicator
- No relay chatter
- Electrical isolation between circuits



The CR4395 current sensing relay can be used to monitor electrical heater elements, sense motor over/under loads, detect lamp burnout, or indicate loss of phase.

Specifications

Sensed Current: 200% FS max. continuous; Frequency: 60-400 Hz
Operating Class: 600V
Contact Rating: UL508/873, CSA
Output Relay: One Form C SPDT contact, three 1/4" male QC terminals
Output Life: Mechanical: 10 million operations; Electrical: 100,000 operations

Voltage, Load Type	N/O Contact	N/C Contact
240 VAC, Resistive	20 A	10 A
240 VAC, Motor	2 HP	1/2 HP
125 VAC, Motor	1 HP	1/4 HP
28 VDC, Resistive	20 A	10 A

Mounting: Two 3/16" dia. clearance holes on 1-15/16" x 2-15/16" centers

Model Selection Guide

Description	Catalog Number	Price
Current Sensing Relay, 120 VAC Supply	CR4395-	\$84.56
Trip Status	Energized on High Energized on Low	EH-120- EL-120- 0.00
Trip Ranges	1.0 Amp to 10 Amp 3.0 Amp to 30 Amp 10.0 Amp to 100 Amp	-110- -330- -101- 0.00
Time On Delay	None 0.5 Seconds to 6 Seconds 2 Seconds to 25 Seconds	-X- -A- -B- 0.00
Dial	Calibrated Trip-Point Dial	-CD- 0.00
Output	Electromechanical Relay	-ELR 8.00

Call for 230 VAC and 24 VDC models and other trip ranges.

True RMS AC Current Transducer

- 24 VDC powered
- Connection diagram printed on case
- Use with external current transformers
- 35mm DIN rail or panel mount



Specifications

Accuracy: 0.5%
Frequency Range: 20 Hz to 5 KHz
Mean Time Between Failures: >100 K hours
Output Load: 4-20 mA: 0 to 300Ω; 0-5 VDC: 2KΩ or greater

Model Selection Guide

Description	Catalog Number	Price
Single Element Transducer, 0-5 VDC Output	CR4110-*	\$210.40
Single Element Transducer, 4-20 mA DC Output	CR4120-*	232.76
*Add suffix for input range		
0-10 Amp AC	.....10	0-30 Amp AC..... 30
0-15 Amp AC	.....15	0-40 Amp AC..... 40
0-20 Amp AC	.....20	0-100 Amp AC..... 100

Rotary and Smart Actuator Motors
Instrument Valves
Process Control Accessories
Pressure and Temperature Switches
ASCO Solenoid Valves
Pressure Gauges

New! **Process Signal Conditioners and Transmitters**

APD-3280 Field-Ranged Valve Positioner

Automatic or Manual Valve Control. Test/Manual Positioning Buttons. Input and Relay Status LEDs. High Capacity Relay Contacts. One Minute Field Setup with Removable Plugs for Faster Installation.

Replaces Honeywell R7195 or Barber Colman 658B



Specifications

Control Input: Voltage: 0–50 mV DC to 0–10 VDC; Current: 0–1 mA to 0–20 mA DC; 1 VDC maximum burden @ 20 mA

Loop Power Supply: 15 VDC ±10%, 25 mA max to power external loads such as loop powered transmitters, sensors, etc.

Feedback Potentiometer Range: Any full range potentiometer 0 to 100 Ω to 0–100 kΩ; Excitation: 1.0 VDC nominal, 10 mA max

Response Time: 100 milliseconds typical

Relay Output: SPDT relay with neutral contact position; 8 A max @ 240 VAC resistive load

Setpoint: 12 turn potentiometer adjustable from 0 to 100% of span

Housing: Mounts to standard 35 mm DIN rail; IP 40

Connectors: Four 4-terminal removable connectors; 14 AWG max

Model Selection Guide

Description	Catalog Number	Price
60-265 VAC, 85-300 VDC	APD 3280	\$279.00
9-30 VDC, 10-32 VAC	APD 3280 D	279.00

APD-4393 DC to DC Signal Splitter

One Input to Two Outputs with Full Isolation. Zero/Span for Each Output. 1200 V Input/Output /Power Isolation. Input/Output LoopTracker® LEDs. Output Test Button for Each Channel. Built-In Loop Power Supplies for Sink/Source I/O



Specifications

Input: Factory ranged, please specify; Voltage: 0–10 mVDC to 0–100 VDC; Current: 0–1 to 0–50 mA DC, 4 to 20 mA DC

Input Impedance and Burden: Voltage: 200 kΩ minimum; Current: 50 Ω typical; Voltage Burden: 1.25 VDC max. at 20 mA current input; Input Loop Power Supply: 15 VDC ±10%, regulated, 25 mA DC; May be selectively wired for sinking or sourcing mA input

Output: Factory ranged, please specify for each output channel; Voltage: 0–1 VDC to 0–10 VDC, 10 mA max up to 20 VDC with M19, M29, M39; Current: 0–1 mA DC to 0–25 mA DC, 4 to 20 mA DC; 20 V compliance, 1000 Ω at 20 mA; Output Loop Power Supplies: One for each output channel; 20 VDC nominal, regulated, 25 mA DC; May be selectively wired for sinking or sourcing mA output

Response Time: 70 milliseconds typical

Power: 60-265 VAC, 50/60 Hz or 85-300 VDC, 6 W max.; D versions: 9 to 30 VDC or 10 to 32 VAC 50/60 Hz, 6 W max

Housing: IP 40, mounts to standard 35 mm DIN rail

Connectors: Eight 4-terminal removable connectors

Model Selection Guide

Description	Catalog Number	Price
60-265 VAC, 85-300 VDC	APD 4393	\$459.00
9-30 VDC, 10-32 VAC	APD 4393 D	459.00

Factory ranged. Please specify.

One Input	Two Outputs
0–10 mV to 0–100 V ±50 mV to ±10 V 0–1 to 0–50 mA 4–20 mA	0–1 to 0–10 V ±1 to ±10 V 0–1 to 25 mA 4–20 mA

APD-4380 DC to DC Transmitter

One Minute Setup for Hundreds of I/O Ranges. Removable Plugs for Faster Installation. Full 1200 V Input/Output/Power Isolation. Input/Output LoopTracker® LEDs. Output Test Button. Built-In Loop Power Supplies for Sink/Source I/O



Specifications

Input: Ranges and offsets via switch settings; Voltage: 0–10 mVDC to 0–130 VDC; Current: 0–200 μA DC to 0–50 mA DC; Input offset: ±100% in 15% increments

Input Impedance (Voltage): Voltage: 1 MΩ min.; Current: 50 Ω typical; Voltage Burden: 1 VDC @ 20 mA current input; Input Loop Power Supply: 15 VDC ±10%, regulated, 25 mA DC; May be selectively wired for sinking or sourcing mA input

Response Time: 70 mSec typical; 1 mSec typical with DF option

Housing: Mounts to standard 35 mm DIN rail; IP 40

Output: Ranges and offsets via switch settings; Voltage (10 mA max): 0–1 to 0–10 VDC; Current: 0–2 to 0/4–20 mA DC; 20 V compliance, 1000 Ω at 20 mA; Output Loop Power Supply: 20 VDC nominal, regulated, 25 mA DC; Can be wired for sinking or sourcing mA output

Connectors: Four 4-terminal removable connectors; 14 AWG max wire size

Model Selection Guide

Description	Catalog Number	Price
60-265 VAC, 85-300 VDC	APD 4380	\$299.00
9-30 VDC, 10-32 VAC	APD 4380 D	299.00

Signal Conditioners and Transducers



Analog signal transmission in industrial environments is very susceptible to interference. Phoenix Contact modular converters for measuring and control technology avoid the distortion of analog signals caused by external interference.

With accurate conversion, electrical isolation, and adaptation of analog signals, they provide increased transmission quality, to improve the quality of your control circuit.

Don't see the signal conditioner you need? Call us.

Model Selection Guide

Input	Output	Catalog Number	Price
Signal Multiplier			
0/4–20 mA, 0-5/10V	0/4–20 mA, 0-5/10V	2814867	\$495.50
Frequency Transducer			
0 Hz to 120 kHz	0/4–20 mA, 0-10 V, 0-5 V, Inverse Values	2814605	474.00

Rotary and Smart Actuator Motors

Instrument Valves

Process Control Accessories

Pressure and Temperature Switches

ASCO Solenoid Valves

Pressure Gauges

Power Supplies, Relays and Accessories



QUINT UPS-IQ Uninterruptible Power Supply

QUINT DC UPS-IQ Control Unit

24VDC control unit, suitable for power interruptions lasting several hours.

Power reserve

- For line and battery operation
- Static and dynamic power reserves
- Selective fuse break technology

Advanced signaling and configuration

- Dry relay contacts
- DATA port for connection to a USB interface
- Configuration using a plug-in memory block

Optimum buffer time use

- Detects the current charging state of the battery unit and calculates the remaining runtime
- Preventive battery monitoring
- Reliable load power with optimum battery utilization
- Calculates current life expectancy of the battery unit

Fast battery charging

Adaptive current management charges the battery while providing sufficient energy for the load



QUINT UPS-IQ Battery

The QUINT UPS-IQ battery pack provides buffer times of 8 hours at 5A or 30 minutes at 40A. A Lithium Ion battery is used in extreme ambient temperatures.

Fast installation

- Automatic detection of the battery unit
- Battery unit can be hot swapped

Maximum availability

Constant communication with the QUINT UPS-IQ for continuous monitoring and intelligent management

Extremely long service life

Optimum charging according to battery type and ambient conditions

Wide temperature range

Li-ION battery for reliable power at temperatures of -4° to 140° F



QUINT Buffer Module

Saves the required energy in maintenance-free capacitors, and bridges AC lines failures of 200 ms at 40 A or 8 s at 1 A.

Long buffer time

Integrated decoupling function supplies selected loads with energy for longer time than before

Easy handling

- Maintenance-free capacitor-based power storage
- Reports operational readiness

Outdoor installation

Wide temperature range of -13° to 176° F

Space-saving

- Combines UPS control unit and capacitor-based power storage device in one housing

Adjustable activation thresholds

- Auto mode: optimized for QUINT POWER power supply units
- Can be set manually for applications with long cables or transformers



QUINT Power Supply

Capacitors provide the nominal current in the case of mains power failure for at least 20 ms, and for significantly longer in the case of voltage dips.

Reliable starting of heavy loads

POWER BOOST static power reserve with up to 1.5-fold continuous nominal current

SEMI F47

- Conforms with the stringent requirements of semiconductor production
- Power supply units bridge voltage dips of nominal voltage

Preventive function monitoring

- Reports the critical operating states before any error occurs by continuously monitoring the output voltage and current
- Remote monitoring using transistor outputs and dry relay contacts

Quick triggering of thermomagnetic circuit breakers

Dynamic power reserve, selective fuse break technology with up to six-fold nominal current for 12 ms



Model Selection Guide

To order a complete UPS kit, choose one each of: Control unit, power supply, battery unit, software, and data cable.

Description		Compatible Battery	Catalog Number	Price
QUINT DC UPS Control Unit	24 Volt, 5 Amp	1.3 Ah (2320296)	2320212	\$330.00
	24 Volt, 10 Amp	1.3 Ah (2320296)	2320225	372.00
	24 Volt, 20 Amp	3.4 Ah (2320306)	2320238	436.00
	24 Volt, 40 Amp	7.2 Ah (2320319)	2320241	823.00
QUINT AC UPS	400 W / 500 VA		2320270	1173.00
Buffer Module	24 Volt, 40 Amp		2320393	436.00
Battery Unit	1.3 Ampere Hour (Ah)		2320296	175.00
	3.4 Ampere Hour (Ah)		2320306	192.00
	7.2 Ampere Hour (Ah)		2320319	235.00
Accessories	UPS-CONF Software		2320403	0.00
	Data cable		2320500	65.00
	Memory block		2986122	53.00

Features

- Class 1, Div 2-Ready field-mount enclosure
- Holes in bottom of enclosure for easy wiring
- DIN rail inside for mounting modules
- Include your choice of DIN rail mountable power supply or UPS





Mini Power DIN Rail Mount DC Power Supply

Slim power supply for use in performance class up to 100 W. The consistent provision of a input of 85–264 VAC or 90–350 VDC, an integrated power reserve, POWER BOOST, ensures safe operation in AC and DC networks.

Specifications

Input voltage: 85–264 VAC, 90 VDC–350 VDC
Output voltage: 24 V (Signal); Range: 22.5–28.5 VDC (>24 V constant capacity)
Nominal voltage: Input: 100–240 VAC; Output: 24 V ± 1 %
Current: Output: 1.3A; 1.6A @ 40°C (With POWER BOOST); Inrush surge: <15 A typical; Continuous: Max. 20 mA
Input fuse: 1.25 A (Slow-blow, internal)
Maximum power dissipation idling: 1 W
Power loss nominal load max.: 4.5 W
Status display: LED green
Ambient temperature: -25°–70°C (> 60°C derating)

MiniPower provides the total output capacity for more than 20 ms in the case of a power failure. Mini Power has approvals such as UL 60 950 for IT equipment, UL 508 for industrial control equipment, and RoHS compliance.

Enclosure: IP20, Class 2 (in an enclosed control cabinet) *Installation:* Horizontal DIN rail

Approval: UL; EN 60950/VDE 0805 (SELV); DIN VDE 0100-410, DIN VDE 0106-1010; CE compliance with EMC directive 89/336/EEC; *Emitted interference:* EN 50081-2; *Immunity:* EN 61000-6-2

Model Selection Guide

Description	Catalog Number	Price
DIN-Rail 24 VDC Power Supply, 1A	2938840	\$125.00
DIN-Rail 24 VDC Power Supply, 1.3A	2866446	115.00
DIN-Rail 24 VDC Power Supply, 2A	2938730	150.00

Single Phase Primary Switched Power Supply

Phoenix Contact QUINT power devices are designed for universal use. QUINT units offer guaranteed supply — powerful capacitors ensure mains buffering of more than 20 ms at full load. Preventive function monitoring diagnoses problem operating states and minimizes downtime in your

system. An active transistor output and a floating relay contact are used for remote monitoring.

All QUINT devices are idling- and short-circuit-proof, and are available with a regulated and adjustable output voltage of 12, 24, and 48 VDC.

Specifications

Voltage: Input: 85–264 VAC, 90–350 VDC input range; 100–240 VAC nominal; Output: 24 VDC ± 1% nominal
Input fuse: 5 A (Slow-blow, internal); Circuit breaker 6A, 10A, or 16A characteristic B recommended backup fuse
Current: Inrush surge: <20 A (Typical); Consumption: 1.6A at 120 VAC nominal; Output: 5 A; 7.5 A (With POWER BOOST)
Mains buffering: >20 ms at 120 VAC
Power dissipation: 14W max nominal load, 2W max no load

Ambient temperature: -25°–70°C (> 60°C derating)

Enclosure: IP20, NS 35 DIN rail mount per EN 60715

Approval: UL/cUL recognized 60950, UL/cUL listed UL 508

Model Selection Guide

Description	Catalog Number	Price
DIN-Rail 24 VDC Power Supply, 5A	2938581	\$365.00



Switching DC Power Supply



- No jumpers or dip switches
- DIN rail or panel mount
- LED operation indicator
- Universal AC (85–264 VAC) or DC compatible input (105–370 VDC)
- UL508 listing; CE marking according to both LVD and EMC
- Spring-up, finger-safe terminals

Specifications

Output Capacity: 23 VDC at 300 mA; *Leakage Current:* 0.75mA max.
Input Voltage (single-phase, 2 wire): 100–240 VAC (85–264 VAC), 50/60Hz (47–63Hz); *Overvoltage Protection:* Output turns off at 105% (typical)
Internal Fuse Rating: 2A
Overload Protection: 120% typical (Zener-limiting)
Operating Conditions: 14° to 140°F (-10° to 60°C); 20 to 90% rH

Model Selection Guide

Description	Catalog Number	Price
24 VDC Power Supply, 7.5W, 300mA Output	PS5R-A24	\$60.00
24 VDC Power Supply, 15W, 600mA Output	PS5R-B24	86.55
12" Length DIN Rail	BNDN-12	3.95
DIN Rail Clip	BNL5	2.00

Power Supply Capacities in Amps and Watts

Watts	Milliamps @ 24 VDC	Watts	Milliamps @ 24 VDC	Watts	Milliamps @ 24 VDC
2.5	100 mA	15	600 mA	50	2000 (2A)
5	200 mA	25	1000 (1A)	120	5000 (5A)
7.5	300 mA	30	1300 (1.3A)	240	10000 (10A)

New! Handheld Calibration Systems



PIECAL 334 4-20 mA Loop Calibrator

- Measures 0 to 52 mA (-25 to 300%)
- Measure from -99.99 to 99.99 VDC with 0.01V resolution
- Set any value to within 0.01 mA with the potentiometer dial or use 4 and 20 mA (0-100.0%) EZ-CHECK™ settings
- Check controller outputs or measure the milliamp signal anywhere in the loop
- Check loop power supplies, I/V converters, 1-5 Volt signals, and other voltages



MilliAmp,
Voltage

Model Selection Guide

Description	Catalog Number	Price
4-20 mA Loop Calibrator	334	\$695.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00

Calibrator ships with:

Rubber boot, four AA Alkaline batteries, calibration certificate, attached test leads with alligator clips

PIECAL 334 Plus Automated mA Loop Calibrator

- Check, calibrate and measure current signal instruments in a 4 to 20 mA DC loop
- Source and read 0 to 24 mA
- Simulate a two-wire transmitter
- Simultaneously power your two-wire transmitter and measure its output



MilliAmp

Model Selection Guide

Description	Catalog Number	Price
Automated Milliamp Loop Calibrator	334Plus	\$845.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00

Calibrator ships with:

Rubber boot, four AA Alkaline batteries, calibration certificate, attached test leads with alligator clips, small carrying case

Pneumatic Pressure Calibrator

- Accurate to $\pm 1.5\%$
- Check valve thumb screw to lock and relieve pressure
- Gauge with squeeze bulb with thumb-adjusted valve for one-hand operation



Model Selection Guide

Description	Catalog No.	Price
Pressure Calibrator, 0-160" H ₂ O Indicating Gauge	44S369	\$300.00
Pressure Calibrator, 0-18 PSIG Indicating Gauge	44S390	300.00

Includes carrying case.

PIECAL 820 Multifunction Process Calibrator

- Source 0 to 24 mA, 0 to 10.25 VDC and -10 to 80 mV
- Read to 24 mA, 60 VDC and -10 to 80 mV
- Thermocouple Types J, K, T, E, R, S, B, N, G, C, D, L (J DIN), U (T DIN) and P (Platinel II)
- Pt100 Ω and 1000 Ω (3850), Copper 10 Ω and 50 Ω , Nickel 100 Ω and 120 Ω RTDs
- Simulate two-wire transmitters
- Built-in 24V power supply
- Built-in 250 Ω resistor for HART®



MilliAmp,
Voltage,
T/C, RTD

Model Selection Guide

Description	Catalog Number	Price
Multifunction Process Calibrator	820	\$1845.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00
T/C - J, T, E, K Mini plug w/stranded wire, lead kit	202-0202	95.00
T/C - B, R/S, N Mini plug w/stranded wire, lead kit	202-0203	95.00

Calibrator ships with:

Four AA Alkaline batteries, calibration certificate, blue rubber boot, Evolution hands-free carrying case, one pair test leads, Evolution RTD wire kit, two red and two black leads with retractable shield banana plugs and spade lugs.

PIECAL 532 mA/V Loop Calibrator with Diagnostic

- Source and read 0-24 mA
- Simulate two-wire transmitters
- Power two-wire transmitters, read 4-20 mA
- Display current in mA or -25 to 125%
- Read 0 to ± 30 VDC with 4X over-range
- Source 0-24 VDC with up to 20 mA output
- Direct calibration 1 to 5 V
- Full five-digit display with bar graph for quick reference of input and output levels
- Power on selectable 250 Ω resistor in series with the output for compatibility with HART® protocol enabled devices
- Displays loop current, voltage, resistance, AC voltage and mode of operation simultaneously
- Measures ground current leakage from faulty wiring, flooded conduit, and corrosion bridges to reduce measurement error



MilliAmp,
Voltage

Model Selection Guide

Description	Catalog Number	Price
4-20 Milliamp/Voltage Loop Calibrator	532	\$1295.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00

Calibrator ships with:

Rubber boot, 9V Alkaline battery, calibration certificate, carrying case

PIECAL 322 Automated Thermocouple Calibrator

- For thermocouple types J, K, T, and E
- Set values to within 0.1° with the digital potentiometer dial
- Store three temperatures for instant recall
- Calibrate from -13.999 to 80.000 mV
- Choose between 2, 3, 5, 11 and 21 steps to automatically increment output in 100%, 50%, 25%, 10% or 5% of span. Select step time from 5, 6, 7, 8, 10, 15, 20, 25, 30 and 60 seconds
- Troubleshoot sensor connections and find broken wires or corroded connections
- Connect thermocouple to a mini thermocouple connector and measure the probe in degrees



Model Selection Guide

Description	Catalog Number	Price
Automated Thermocouple Calibrator	322	\$995.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00
T/C – J, T, E, K Mini plug w/stranded wire, lead kit	202-0202	95.00

Calibrator ships with:

Rubber boot, four AA Alkaline batteries, calibration certificate, carrying case

PIECAL 422 Automated Thermocouple Calibrator

- For thermocouple types J, K, T, E, R, S, B, N, G, C, D, L (J-DIN), U (T-DIN) and P (Platinel II)
- Set values to within 0.1° with the adjustable digital potentiometer dial
- Store any three temperatures for instant recall with the EZ-CHECK™ switch
- Calibrate from -13 to 80.000 mV
- Troubleshoot sensor connections and find broken wires or corroded connections
- Choose between 2, 3, 5, 11 and 21 steps to automatically increment output in 100%, 50%, 25%, 10% or 5% of span. Select step time from 5, 6, 7, 8, 10, 15, 20, 25, 30 and 60 seconds
- Connect thermocouple to a miniature thermocouple connector and measure the probe in degrees
- Secondary display shows the temperature's mV value plus the cold junction temperature.



Model Selection Guide

Description	Catalog Number	Price
Automated Thermocouple Calibrator	422	\$1295.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00
T/C – J, T, E, K Mini plug w/stranded wire, lead kit	202-0202	95.00
T/C – B, R/S, N Mini plug w/stranded wire, lead kit	202-0203	95.00

Calibrator ships with:

Rubber boot, four AA Alkaline batteries, calibration certificate, carrying case

PIECAL 311 Automated Universal RTD Calibrator

- Works with RTDs, including Pt100Ω, Pt1000Ω, Copper 10Ω and 50Ω, Nickel 100Ω and 120Ω
- Set values to within 0.1° with the digital potentiometer dial
- Store three temperatures for instant recall
- Choose between 2, 3, 5, 11 and 21 steps to automatically increment output in 100%, 50%, 25%, 10% or 5% of span. Select step time from 5, 6, 7, 8, 10, 15, 20, 25, 30 and 60 seconds
- Use like a decade box from 0–410Ω and 410–4001Ω
- Troubleshoot sensor connections and find broken wires. Secondary display shows temperature's resistance values



Model Selection Guide

Description	Catalog Number	Price
Automated Universal RTD Calibrator	311	\$1395.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00

Calibrator ships with:

Rubber boot, four AA Alkaline batteries, calibration certificate, Evolution RTD wire kit, two red and two black leads with retractable shield banana plugs and spade lugs, and carrying case

PIECAL 541 Frequency Calibrator with Totalizer

- 0.001 to 20 kHz, 0.1 to 2000 Hz, 0.01 Hz to 200 Hz, 0.1 to 2000 CPM (Counts-per-Minute), 1 to 20000 CPH (Counts-per-Hour)
- Simulate vibration pickups and variable speed drives with sine wave outputs, flow meters, and magnetic pickups with square wave outputs
- Calibrate positive displacement flowmeters, Watt-hour meters, or slow rated integrators with frequencies as slow as 1 CPH
- Set values to within 0.01 Hz
- Store any three frequencies for instant recall
- Measure flow meter, vibration, parts counter and other process frequency signals from 0.1 to 120 V
- GATE TIME LED flashes with received pulses indicating when proper input adjustment level is met



Model Selection Guide

Description	Catalog Number	Price
Frequency Calibrator with Totalizer	541	\$1295.00
NiMh Charger, Four AA Batteries (120V, 60Hz)	020-0103	80.00

Calibrator ships with:

9V Alkaline battery, calibration certificate, carrying case

Backflow Prevention Test Kits

**Mid-West®
Instrument**



Specifications

Gauge Type: Diaphragm differential pressure

Dial Range: 0 to 15 PSID (0-100 kPa)

Accuracy: ±0.2% PSID (descending)

Dial Size: 4.5" (with color-coded pointers)

Working Pressure: 200 PSIG

Construction Materials

Gauge: 830: Polysulfone body, with EPDM diaphragm and stainless steel internals; 845: Engineered plastic body with EPDM diaphragm, brass 316SS and engineered plastic internals

Valves: Soft-Seated Brass with black handles

Tubing and Fittings: Brass and Nylon

Hoses and End Fittings: 830: Nitrile jacket and liner with Schrader 1/4" brass coupler; 845: Buna-N jacket and liner and Schrader 1/4" brass coupler

Case: 830: Polyethylene; 845: Molded plastic

Hose Length: Three 5' long (color-coded), one 4' long clear bleed tube

Filters: Both test kits are protected with 90 micron brass filters to minimize plugging with scale, sand, etc. Elements can be cleaned or replaced.

Adapter Fittings: Three sets of brass fittings provided for hookup to all size devices.

Temperature Limits: Maximum 150°F. Avoid freezing temperatures.

Special Note: Suitable for all known brands of backflow prevention assemblies, test procedures, as recommended by ASE, FCCC, HR-USC, AWWA, and NEWWA, are provided in laminated plastic.

Case Dimensions (WDH): 830: 14.5" x 9" x 16"; 845: 18.5" x 9" x 9.75"

Features — Model 845 (Top Left)

- Three different portable models, removable from case
- Case has storage compartment for fittings and tools, and room for additional accessories

Features — Model 830 (Top Right)

- Industry standard for three decades
- Durable molded case with removable lid
- High quality hinges and buckles

All test kits have

- Soft seated needle valve with replaceable seats
- Durable carrying case
- Laminated test procedures
- Line pressure gauge
- Field-serviceable in-line hose filters

These test kits provide the capability for testing all brands of reduced pressure principle, pressure vacuum breaker, and double check valve type backflow prevention assemblies.

Instruction cards, laminated in clear plastic and stored in the lid of the case, provide both plumbing schematics and test procedures as specified in the *Manual of Cross Connection Control* published by the Foundation for Cross Connection Control and Hydraulic Research and the American Water Works Association. A certificate of calibration is supplied with each test kit.

Model Selection Guide

Description	Catalog Number	Price
Backflow Prevention Test Kit	830	\$970.00
Five-Valve Portable Test Kit	845-5	750.00
Three-Valve Portable Test Kit	845-3	750.00
Two-Valve Portable Test Kit	845-2	750.00
Accessories	Bleed-Off Valve Assembly	830-0001 52.50
	Vertical Tube Kit	830-0003 48.00
	Test Cock Cleaning Tool	110694 80.00
	Filter Assembly Adapter Kit (3-Pack)	109445 43.00
	Replacement Filter Element Kit (6-Pack)	98008 32.00
	Model 30 Replacement Hoses (3-Pack)	110645 85.00
Model 845 Replacement Hoses (3-Pack)	110646 85.00	

Other replacement parts available. Call for pricing.