

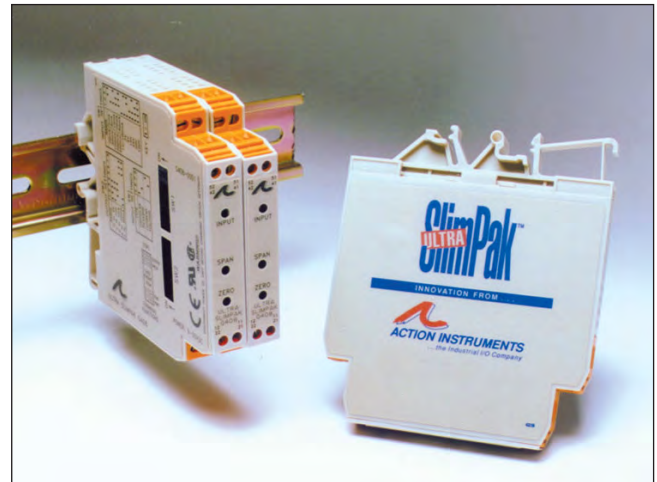
Action Instruments™ DIN Rail Mount Signal Conditioners, Isolators, Alarms, and Power Supplies

- Wide Ranging and Field Configurable for Maximum Flexibility
- ASIC Based Design for Maximum Reliability
- Lifetime Warranty
- High Density DIN Rail Mount Saves Panel Space

Ultra SlimPak

Ultra SlimPak offers a wide selection of functions, input types and ranges. These modules accept most process signals and output the commonly required voltages, current, and alarm trips.

SPECIFICATIONS	
Isolation:	1800 VDC between input, output, and power
Humidity:	15 to 95% (@45 °C) Operating
Temperature Range	
Operating:	0 to 55 °C
Storage:	-25 to 70 °C
Power	
Consumption:	1.5W typical, 2.5W Max.
Range:	9 to 30 VDC
Alarm Relays:	5A @ 120 VAC or 28 VDC 2A @ 240 VAC
Housing:	
EG8:	0.5"W x 3.54"H x 4.34"D, including rail (12.6 x 90 x 110.2mm)
EG12:	0.7"W x 3.54"H x 4.34"D, including rail (17.7 x 90 x 110.2mm)
Agency Approvals:	CSA per C22.2, UL per UL508, CE



SIGNAL
CONDITIONERS

SPECIFICATIONS AND ORDERING INFORMATION					
Cat #	Function	Input	Input Span (Field Configurable)	Housing	Output (Field Configurable)
G408	Isolator	DC Volt	10 mV to 100V 1 mA to 100 mA	EG8	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G108	Limit Alarm	DC Current	10 mV to 200V 1 mA to 100 mA Bipolar switch for ±100% span	EG12	Alarm (Dual SPDT Relay)
G418	Isolator	RTD	Platinum RTD 25°C to 800°C	EG12	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G118	Limit Alarm		Copper RTD 25°C to 468°C	EG12	Alarm (Dual SPDT Relay)
G428	Isolator	Thermocouple	B: 500°C to 1820°C E: -150°C to 1000°C	EG12	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G128	Limit Alarm		J: -200°C to 750°C K: -200°C to 1370°C R/S: 50°C to 1760°C T: -150°C to 400°C	EG12	Alarm (Dual SPDT Relay)
G438	Isolator	Pot	100 ohms to 100k ohms	EG8	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G448*	Isolator	Strain Gauge	0.5 mV/V to 50 mV/V Adjustable Excitation: 1-10 VDC, 120 mA	EG12	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G468	Isolator	AC Voltage AC Current	50 mVAC to 200 VAC	EG8	DC Voltage (0-5V, 0-10V) DC Current (0-1 mA, 0-20 mA, 4-20 mA)
G168	Limit Alarm		5 mA AC to 5 AAC**	EG12	Alarm (Dual SPDT Relay) DC Voltage (0-5V, 0-10V)
G478	Isolator	Frequency	2 Hz to 10 kHz	EG8	DC Current (0-1 mA, 0-20 mA, 4-20 mA)
WV905	Power Supply	AC Power	100 to 240 VAC; 50 to 60 Hz	17.5mm	24 VDC @ 500 mA

*Requires 18-30VDC power supply

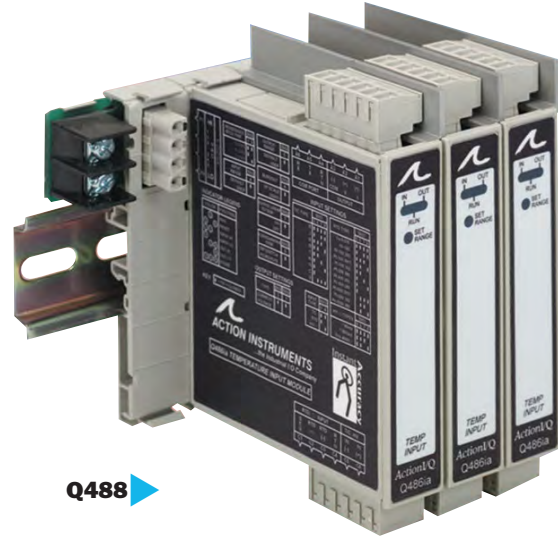
**1 to 5AAC range requires C006 0.1Ω shunt

Action Instruments™ IQ Signal Conditioners

- Multi-Channel DC, RTD, T/C Conditioners—Lower Cost/Point
- Ideal for Large Numbers of Data Points
- Extreme Operating Temperature—from -40 to 80 °C
- SnapLoc Terminal Blocks
- Optional I/Q Rail Power Bus—Saves Installation Time
- Interlocking Modules—Solid, Reliable Mounting

SPECIFICATIONS

Isolation:	From 1800 to 4000 VDC, input to output and channel to channel
Humidity:	15–90% @ 45 °C
Operating Temperature:	-40 to 80 °C (Q5XX Series) 0 to 55 °C (Q4XX Series)
Power:	12 to 35 VDC output loop (Q5XX Series) 18 to 30 VDC output common (Q4XX Series)
Response Time:	100 mSec (10–90%) typical
Approvals:	UL508, CSA C22.2, CE



Q488 ▶

HOW TO ORDER—Select the unit with the output of your choice and then add the code that identifies the input range to satisfy your application. Example: Q510-4004 is a 4-channel RTD Input, 2-wire transmitter, with a 0–250 °C range and 4–20 mA output.

DC ORDERING INFORMATION

4-20 mA	Q500
1-Channel	-1B00
2-Channel	-2B00
4-Channel	-4B00

DC ORDERING INFORMATION

Input Range	Q501 (1 Ch)	Q501 (2 Ch)
4–20 mA	-1B00	-2B00
0–10V	-1B03	-2B03
0–5V	-1B04	-2B04
1–5V	-1B05	-2B05

Q520 (T/C) ORDERING INFORMATION

Temp Range	Type J	Type K	Type T
0–500 °F	-0B01	-0B04	-0B07
0–1000 °F	-0B02	—	—
0–2000 °F	—	-0B05	—
0–250 °C	—	—	-0B08
0–500 °C	-0B03	—	—
0–1000 °C	—	-0B06	—

ORDERING INFORMATION—ACCESSORIES

WV905	24VDC @ 500mA Power Supply, 100–240VAC
MD02	TS32 DIN Rail (2m) Slotted (G-rail)
MD03	TS35 x 7.5 DIN Rail (2m) Slotted (H-rail)
IQRL-D002	IQ Rail for 2 Modules (Q488 only)
IQRL-D004	IQ Rail for 4 Modules (Q488 only)
IQRL-D008	IQ Rail for 8 Modules (Q488 only)

ACTION I/Q SIGNAL CONDITIONERS

Cat #	Input Type	Range	Output	Channels	Circuit Type
Q500	DC Current	0–20/4–20 mA	0–20/4–20 mA	1, 2 or 4	Input Loop Powered
Q501	DC Current DC Volts	4–20 mA 0–5V, 0–10V, 1–5V	4–20 mA	1 or 2	Isolated 2-Wire Transmitter
Q510	3-wire RTD Pt100Ω	See Below	4–20 mA	2 or 4	2-Wire Transmitter
Q488	TC (B, C, E, J, K, N, R, S, T) Pt RTD (100, 200, 500, 1000), Cu RTD (9), Ni RTD (120), 90mV, 900mV, 4000Ω	-270 to +1370 °C (type K) -200 to +850 °C (Pt 100)	0–1mA, 4–20mA, 0–5V, 0–10V	1	Isolated 2-Wire Transmitter (2, 3 or 4-wire input)
Q520	T/C (J,K,T)	See Blow	4–20 mA	2	Isolated 2-Wire Transmitter
Q438	Potentiometer	100Ω to 100kΩ	0–1mA,	1	3-wire to 2-Wire Transmitter
Q448	Bridge	±5mV to ±200mV	4–20mA, 0–5V, 0–10V	1	Isolated 4-wire to 2-Wire Transmitter
Q478	Frequency	2Hz – 10kHz	0–10V	1	Isolated 2-Wire Transmitter

T/C cold junction compensation (standard). Output linear to mV input.

Q510 (RTD) ORDERING INFORMATION

Temp Range	Q510 (2-Ch)	Q510 (4-Ch)
0–100 °C	-0B01	-4B01
0–150 °C	-0B02	-4B02
0–200 °C	-0B03	-4B03
0–250 °C	-0B04	-4B04
0–500 °C	-0B05	-4B05
0–200 °F	-0B06	-4006
0–300 °F	-0B07	-4B07
0–400 °F	-0B08	-4B08
0–500 °F	-0B09	-4B09
0–1000 °F	-0B10	-4B10

Other inputs & AC powered modules also available.

Action Instruments™ Isolating Two-Wire Transmitter

- Isolated, Linearized Current Loop Output for an RTD or Thermocouple Input
- HART Compatible or Field Configurable with Optional Display
- Intrinsically Safe Operation or with Display and EP Enclosure
- Programmable for 11 T/C Types, 6 RTD Types, mV or Ohm inputs



▲ **T79D**

The model T798 is a programmable temperature transmitter that can be factory or field configured using the optional 1 or 2 line alphanumeric display.

The model T798 is Highway Addressable Remote Transducer (HART) based, temperature transmitter that can be factory or field configured using an optional 1 or 2 line alphanumeric display, optional PC based modem and software. Alternatively an HC275 Hand-Held Communicator loaded with the Action T798 Device Description from the Hart Foundation Library can be used.

Both the T798 and T797 accept thermocouple (B, C, E, J, K, L, N, R, S, T, U & special) and 2, 3, or 4 wire Platinum RTDs (385 or 392 alpha) as well as millivolt (mV) and resistance inputs.

SPECIFICATIONS

Linearization:	Thermocouple and RTD linearization to $\pm 0.05^\circ\text{C}$.
Output:	Analog, two-wire 4-20 mA
Transmitter Accuracy:	$\pm 0.05\%$ of the millivolt or ohm equivalent input reading, or the value from the Accuracy Table, whichever is greater; plus $\pm 0.05\%$ of the span. For thermocouples, add $\pm 0.5^\circ\text{C}$ (0.9°F) for cold junction compensation.
Output	Analog Zero: 100% of Sensor range --- Non-interacting
Adjustments:	Analog Full-scale: Normal or Reverse Acting
Operating Temperature:	Electronics & Display (with reduced visibility): -40°C to 85°C , (-40°F to $+185^\circ\text{F}$) Display (full visibility): -20°C to $+70^\circ\text{C}$, (-4°F to $+158^\circ\text{F}$)

ORDERING INFORMATION

T797-0000	Temperature Transmitter, Non IS
T797-1000	Temperature Transmitter, IS-FM/CSA
T798-0000	Temperature Transmitter, Hart, Non IS
T798-1000	Temperature Transmitter, Hart, IS-FM/CSA

Displays & Options

T79D-2000	Two Line Alphanumeric Display
T79D-1000	One line alpha-numeric Display
T79E-1000	Weather Proof Head-Mount Enclosure
T79A-P000	Pipe Mount Bracket for T79E-0/D only
T79A-D000	DIN Rail Mounting Kit
T79A-M000	T797 Configuration Modem
T79A-MH00	T798 Hart Configuration Modem
T79A-C000	Configuration Software for T797 & T798

Action Instruments™ DC Input, Field Configurable Isolator with Math Functions

- Multi-Function, Multi-Channel Input.
- DC-Frequency or Frequency-DC Conversion for Totalization/Integration Applications.
- Math Capability Supports Many Process Control Functions.
- Switch Selectable or PC Programmable Ranges.



The Q498 is a DC powered, DIN rail mount, DC input signal conditioner. The unit is fully isolated to 1800V between input, output and power. Two isolated analog inputs each accept either a DC voltage or current. One analog output delivers either DC bi-polar voltage or uni-polar current. The Q498 also has a separated frequency input channel and a frequency output, as well as a discrete input and output channel.

The Q498 can perform single or double input math calculations on the input values. The available operators are: +, -, *, /, Sq, Sqroot & Average. Process control functions include Hi/Lo Select, Rate of Change Limiter and Track & Hold. The frequency input can also have the math functions applied. A 25-point linearization function is available for Channel 1 Analog input only. All output math and process control functions require the C698 software.

SPECIFICATIONS

Analog Input Ranges (Two Isolated Channels)	$\pm 150\text{mV}$, $\pm 1.5\text{V}$, $\pm 15\text{V}$, $\pm 150\text{V}$ $\pm 2.5\text{mA}$, $\pm 25\text{mA}$
Analog Maximum Overload (continuous)	200V DC for voltage inputs; 170mA DC and/or 60V DC maximum for current inputs (self-resetting fuse)
Analog Output Ranges	0-20mA, 0-10V, $\pm 10\text{V}$
Analog Output Drive	0-20mA: 12VDC compliance. (600 Ω maximum) Voltage ranges: 10mA drive (1000 Ω load minimum)
Analog Output Accuracy	$\pm 0.005\%$ of the FS Input Range ($\pm 0.05\%$ on 150 volts range), plus $\pm 0.05\%$ of the FS Output Range ($\pm 0.1\%$ for output loads $< 200\Omega$)
Analog Response Time	750msec max. (10-90%)
Analog Input Impedance	$\geq 100\text{k}\Omega$ on voltage ranges $> 1.5\text{V}$, $\geq 10\text{M}\Omega$ on voltage ranges $< 1.5\text{V}$ 70 Ω typical (non-overload) on all current ranges
Analog Output Impedance	Less than 3 Ω on voltage output ranges $\geq 500\text{k}\Omega$ on current output ranges
Frequency Input	One channel with two voltage range inputs: 150mV to 50Vrms with 5Vp noise suppression, or 0.5V to 150Vrms with 20Vp noise suppression, 2Hz to 10kHz in software selectable ranges.
Frequency Output	$\pm 0.1\%$, 2Hz to 10kHz in software selectable ranges Open collector pulled up through 20k to 18V, with 1mA drive. Sinks up to 20mA from 24V external supply.
Discrete Input	Input active to Common, with soft pull-up (1mA) to +18V
CMR (DC to 60Hz)	$\geq 90\text{dB}$ for 60Hz and 120dB @ DC
Power Requirements	9-30VDC, 2.5 watts max
Isolation	Input to Input to Output to Power, 1800VDC
Size	DIN rail case (0.88" x 4.0" x 4.59")
Operating Temperature	0 $^\circ\text{C}$ to +55 $^\circ\text{C}$ (32 to 131 $^\circ\text{F}$)

ORDERING INFORMATION

Q498-0000	DC-Frequency Isolator
C698-0000	Configuration Software & PC Serial Cable
H902	0.2Amp, 24VDC Power Supply
H910	1Amp, 24VDC Power Supply
H915	2.3Amp, 24VDC Power Supply

Selco Transmitters

- Miniature Size
- Variety of Input Types
- 1500V Isolation
- AC or DC Powered
- DIN Rail Mounting

TZ-1XA


SPECIFICATIONS

Basic Accuracy:	±0.1% of full scale, except ±0.2% of full scale on CA, DA & EA types
Load/supply variation:	±0.06% of full scale each
Temperature coefficient:	±0.02% FS/°C
Response time:	<50ms (0 to 90%) except 500ms on CA type, 700ms on DA & EA types
Front adjustments:	±5% for zero & span
Insulation resistance:	>100MΩ at 500VDC, between input and output or power supply
Dielectric strength:	1 min. at 1500VAC, between input and output or power supply
Power supply:	24VDC ±10% 100-240VAC ±10%
Operating temperature:	-5 to 50°C, <90% RH (non-condensing)
Case material:	Black ABS, 94V-2
Dimensions (mm):	25 W x 99 H x 41 D

ORDERING INFORMATION

To Order—Insert Number Code for Each Letter to Select Catalog Number.
Order Example: TZ-1XA-22L

A	B	-	C	D	E
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A	Basic Unit	
TZ-1	Transmitter, 100-240 VAC powered	
TZ-5	Transmitter, 24 VDC powered	
B	Input Type	
XA	DC Volts/mA	
FA	DC mV/μA	
EA	AC Volts (TRMS, AC coupled, 40-1000Hz)	
DA	AC Amps (TRMS, CT coupled, 40-1000Hz)	
AA	RTD (Pt100, 3-wire, α=385)	
CA	Thermocouple (J, K, R, S or T)	
BA	Potentiometer	
LA	mA loop (TZ-5 only)	
C	Input Range	
Select code from input table for type specified above		
D	Output Range	Allowable Load
0	0 to 5 VDC	>2kΩ
1	1 to 5 VDC	
2	0 to 10 VDC	>4kΩ for positive output,
3	-10 to +10 VDC	>10kΩ for negative output
4	-2 to +2 VDC	>2kΩ for positive output,
5	-2.5 to +2.5 VDC	>10kΩ for negative output
6	-5 to +5 VDC	
7	0 to 4 VDC	>2kΩ
A	4 to 20 mADC	
B	0 to 20 mADC	<550Ω
E	Response Time (XA & FA types only)	
L	Normal (50 msec)	
H	Fast (1 msec on type XA, 3msec on type FA)	

INPUT RANGES

Input Type XA - DC Volts/mA

Code	Range	Input Resistance	Maximum Input
0	0 to 5 VDC	>1MΩ	-50 to +150% of full scale
1	1 to 5 VDC		
2	0 to 10 VDC		
3	-10 to +10 VDC		
4	0 to 1 VDC		
5	0 to 100 mVDC		
6	0 to 60 mVDC		
7	0 to 20 VDC		
8	-2 to +2 VDC		
9	-5 to +5 VDC		
A	4 to 20 mADC	250Ω	
B	0 to 20 mADC		

Input Type FA - DC mV/μA

Code	Range	Input Resistance	Maximum Input
0	0 to 5 mVDC	>1MΩ	-50 to +150% of full scale
1	0 to 10 mVDC		
2	0 to 50 mVDC		
3	0 to 60 mVDC		
4	0 to 100 mVDC	1kΩ	
A	0 to 10 μADC		
B	0 to 100 μADC		
C	0 to 200 μADC	500Ω	

Input Type EA - AC Volts

Code	Range	Input Resistance	Maximum Input
1	0 to 35 VAC	>200kΩ	150% of full scale or 300VAC
2	0 to 100 VAC	>1MΩ	
3	0 to 110 VAC		
4	0 to 200 VAC		
5	0 to 220 VAC		

Input Type DA - AC Amps

Code	Range	Input Resistance	Maximum Input
1	0 to 1 AAC	<0.05Ω	7.5 AAC
2	0 to 5 AAC		

Input Type AA - RTD

Code	Range	Input Resistance	Maximum Input
0	-50 to +50 °C	Pt100 (3-wire)	-50% to 150% of full scale
1	0 to 100 °C		
2	0 to 200 °C		
3	0 to 300 °C		
4	-20 to +80 °C		

Input Type CA - Thermocouple

Code	TC	Range	Input Res.	Max. Input
J0	J	0 to 1000 °C	>1MΩ	±150%
K2	K	-50 to +200 °C		
K3	K	0 to 200 °C		
K4	K	-50 to +1200 °C		
K5	K	0 to 1200 °C		
R0	R	0 to 1700 °C		
S0	S	0 to 1700 °C		
T0	T	-50 to +350 °C		
T1	T	0 to 350 °C		

Input Type BA - Potentiometer

Code	Range	Input Resistance
1	0 to 100%	100Ω to 10kΩ

Input Type LA - mA loop

Code	Range	Input Resistance
A	4 to 20 mADC	250Ω

Custom ranges for any input type are available on special order.

Selco Signal Conditioners

Programmable Transmitter

- Change Input and Output Range by Front DIP Switches
- AC or DC Power
- Selectable Filter 50/500msec
- Normal or Reverse Output
- DIN Rail Mount


TW-4M

SPECIFICATIONS

Basic Accuracy:	±0.25% FS
Linearity:	Less than ±0.1% of full scale
Temperature coefficient:	±0.02% FS/°C
Response time:	<50ms (0 to 90%) with filter off
Insulation resistance:	>100MΩ at 500VDC, between input and output or power supply
Dielectric strength:	1 min. at 2000VAC, between input and output or power supply
Power supply:	24VDC ±10% 100-240VAC ±10%
Power consumption:	<80mA (at 24VDC) <50mA (at 100-240VAC)
Operating temperature:	-5 to 50°C, <95% RH (non-condensing)
Maximum input:	-50 to +150% of range
Dimensions (mm):	48 W x 98 H x 41 D
Connections:	M3.5 screw terminals

Input Range	Input Resistance	
0 to 5 VDC	>1MΩ	
0 to 10 VDC		
0 to 60 mVDC		
1 to 5 VDC		
-5 to +5 VDC		
-10 to +10 VDC	250Ω	
4 to 20 mADC		
0 to 20 mADC	Allowable Load Resistance	
Output Range		>2kΩ
0 to 5 VDC		
1 to 5 VDC		
-5 to +5 VDC		>4kΩ
0 to 10 VDC		
-10 to +10 VDC		<550Ω
4 to 20 mADC		
0 to 20 mADC		

ORDERING INFORMATION

SE/TW-4M-1-N	Programmable Transmitter, 100-240 VAC Power
SE/TW-4M-4-N	Programmable Transmitter, 24VDC Power
SE/TZ-41	Signal Isolator, Self powered
SE/TH-2X-**L	Signal Isolator, AC powered (insert input/output codes)
SE/TH-5X-**L	Signal Isolator, DC powered (insert input/output codes)

Example: SE/TH-5X-42L for 0-1V in and 0-10V out

Signal Isolators

- Small Size
- AC or DC Powered (TH)
Self-powered (TZ)
- Easy Connection
- DIN Rail Mount


TH-2X

TZ-41

TZ-41 SPECIFICATIONS

Signal input:	0 to 20mA, 4 to 20mA, 0 to 5mA
Signal output:	Same as signal input (1:1 ratio)
Input current:	Max. 30mA
Load:	Max. 1000Ω
Voltage loss:	Approx. 3.3V between input and output
Output ripple:	<0.5% (20mA at 250V)
Temperature coefficient:	Less than ±100PPM/°C
Accuracy:	±0.1% (23 ±1°C) at 250V load
Additional error:	+0.1%/100Ω at load <250Ω -0.1%/100Ω at load >250Ω & <600Ω
Operating temperature:	-5 to +50°C, less than 90% RH
Insulation resistance:	>100MΩ at 500VDC (input to output)
Dielectric strength:	1 min. at 2kVAC (input to output)
Dimensions (mm):	25 W x 98 H x 41 D

TZ-41 will also provide 0 to 5V or 1 to 5V output.

TH-2X & TH-5X SPECIFICATIONS

Basic Accuracy:	±0.1% of full scale
Load/supply variation:	±0.06% of full scale each
Temperature coefficient:	±0.02% FS/°C
Response time:	<50ms (0 to 90%)
Input resistance:	>1MΩ on VDC, 250Ω on mADC
Insulation resistance:	>100MΩ at 500VDC, between input and output or power supply
Dielectric strength:	1 min. at 1500VAC, between input and output or power supply
Power supply:	24VDC ±10% 100-240VAC ±10%
Power consumption:	<50mA @ 24VDC, <20mA @ 100VAC
Operating temperature:	-5 to 50°C, <90% RH (non-condensing)
Maximum input:	-50 to +150% of range
Dimensions (mm):	13 W x 99 H x 115 D

Input Code	Range	Input Code	Range
0	0 to 5 VDC	6	0 to 60 mVDC
1	1 to 5 VDC	7	0 to 20 VDC
2	0 to 10 VDC	8	-2 to +2 VDC
3	-10 to +10 VDC	9	-5 to +5 VDC
4	0 to 1 VDC	A	4 to 20 mADC
5	0 to 100 mVDC	B	0 to 20 mADC

Output Code	Range	Allowable Load
0	0 to 5 VDC	>2kΩ
1	1 to 5 VDC	
2	0 to 10 VDC	>4kΩ for positive output,
3	-10 to +10 VDC	>10kΩ for negative output
A	4 to 20 mADC	<550Ω

Laurel DIN Rail Transmitters

NEW

- Analog and Pulse Inputs
- Serial & Analog Outputs
- RS-232 or RS-485 Communications
- Dual Relay Outputs
- Input/Digital/Analog/Relay Isolation
- Free Setup Software

The Laureate transmitters provide serial data conversion and analog retransmit for all popular industrial signals. These modules use the proven circuitry of the Laurel panel meters for exceptional accuracy at high update rates.



LTA ▲

All Laureate transmitters are easily configured from a PC using the graphical Laurel Instrument Setup Software. The isolated analog output can be digitally scaled to any portion of the full range. Dual relay outputs add alarm and control capability. Programmable modes include operation above or below setpoint, latching or non-latching, hysteresis and band deviation.

Each DC transmitter is precalibrated for all DCV & DCA ranges. The user can change the range without recalibration. On the temperature transmitter, thermocouple or RTD type is field selectable. Measurement range can be as wide as the entire span of the sensor type or as narrow as 15°. Cold junction compensation and open sensor detection are included.

Standard functions on pulse input models are frequency, rate, period, A to B interval, up/down total to 999999. The extended model provides additional user-configurable functions.

SPECIFICATIONS

Digital Output:	RS-232 or RS-485 (2- or 4-wire)
Protocol:	Modbus RTU, Modbus ASCII or Laurel ASCII
Baud Rate:	300-19200
Accuracy:	DCV, mA: $\pm 0.01\%$ of FS ± 2 counts ACV, mA: $\pm 0.15\%$ of FS ± 2 counts (10Hz-10kHz) Strain gage, load cell: $\pm 0.01\%$ of FS ± 2 counts RTD: 0.1°C Thermocouple: 0.2°C
Update Rate:	50 or 60/sec for analog inputs
Load Cell/Strain Gage:	20, 50, 100, 250, 500mV ranges
Thermocouple:	FS range is maximum for each sensor type
Frequency/Pulse Input:	AC, magnetic pickups, pulses from NPN or PNP transistors, contact closures, digital logic
Channel A Frequency:	0.005Hz to 1MHz
Channel B Frequency:	0.005Hz to 250kHz
Time Base Accuracy:	± 2 ppm
Signal Level:	12mV min, 250VAC max
Update Rate:	Gate time + 30ms + 1 period (20/sec at 60Hz)
Gate Time:	0.01 to 199.99 sec (selectable)
Curve Fitting:	Square root extraction standard, Custom curve fitting with LTA8
Quadrature Input:	Differential or single ended
Transitions Monitored:	x1, x2 or x4
Transitions/sec:	250k max.
Error Correction:	Zero index (Z-channel)
Analog Output:	4-20mA, 0-20mA, 0-10V
Compliance (mA):	10V (0-500 Ω load)
Compliance (V):	2mA (>5k Ω load)
Accuracy:	$\pm 0.02\%$ of span (analog inputs) $\pm 0.01\%$ of span (pulse inputs)
Resolution:	16 bits (65536 steps)
Power:	DC or 47-63 Hz
Relay Outputs:	Two SPST-NO (Form A) solid-state relays 130mA@140VAC/180VDC
Excitation Output:	5V@50mA, isolated 50V from signal gnd (DC, Process & FR inputs, jumper selectable) 10V@60mA, isolated 50V 24V@50mA, isolated 50V [DC & Process inputs] 15V@60mA, non-isolated [FR input]
Isolation:	250Vrms power/analog/digital
Temperature:	0-55°C operating
Size:	120 x 101 x 22.5 mm
Mounting:	35mm DIN rail
Connections:	Detachable screw terminal plugs

ACCESSORIES

- CBL04 RS-232 cable to PC serial port or USB adaptor
- CBL02 USB to RS-232 cable adapter

ORDERING INFORMATION

To Order—Insert Number Code for Each Letter to Select Catalog Number
Order Example: LTA200DCV1

A	B	C	D
A Model			
LTA2	Standard analog inputs		
LTA4	Extended analog inputs*		
LTA6	Standard pulse/frequency input**		
LTA8	Extended pulse/frequency input**		
B Power			
0	85-264VAC $\pm 10\%$, 90-300VDC		
1	12-30VAC, 10-48VDC		
C Setpoint Output			
1	Dual isolated solid-state relays		
D Input Type (LTA2 or LTA4)			
DCV1	200mV DC	DCA4	5A DC
DCV2	2V DC	RMV1	200mV AC Trms
DCV3	20V DC	RMV2	2V AC Trms
DCV4	200V DC	RMV3	20V AC Trms
DCV5	600V DC	RMV4	200V AC Trms
DCV6	300V DC	RMV5	600V AC Trms
DCA1	2mA DC	RMV6	300V AC Trms
DCA2	20mA DC	RMA1	2mA AC Trms
DCA3	200mA DC	RMA2	20mA AC Trms
P	Process 4-20mA in/out	J	Type J TC
P1	Process Custom mA scaling	K	Type K TC
SG	Strain Gage 200mV	R	Type R TC
SG1	Strain Gage Custom	S	Type S TC
WM	Load Cell 20mV	T	Type T TC
WM1	Load Cell Custom	E	Type E TC
P385	100 Ω Pt RTD $\alpha=385$	N	Type N TC
P392	100 Ω Pt RTD $\alpha=392$		
Input Type (LTA6 or LTA8)			
FR	Dual channel frequency/pulse**		
VF1	4-20mA (process totalizing)		
VF2	0-1mA (process totalizing)		
VF3	0-10V (process totalizing)		
QD	Quadrature***		

* LTA4 adds custom curve linearization & rate from successive readings.
** LTA6 scalable for frequency, rate, totalizing, timing. LTA8 adds phase angle, duty cycle, up/down counting, rate & total simultaneously, custom linearization, arithmetic functions (A+B, A-B, AxB, A/B, A/B-1).
*** LTA6 scalable for position. LTA8 adds scalable rate.

SIGNAL
CONDITIONERS

Adtech Two-Wire Transmitters

- Wide Operating Temperature
- Adjustable Zero & Span
- Die Cast Aluminum Housing
- Optional DIN mounting or NEMA Housing

100 Series


SPECIFICATIONS

Output:	4-20mA
Accuracy:	0.1% of span (0.25% for AC)
Isolation:	600V DC, 350VAC
Protection:	RFI & reverse polarity protection standard
Operating Temp:	-31 to 85°C
Power:	8-42VDC
Size:	2.4" W x 3.0" H x 2.1" D (for T/C head mounting)

ORDERING INFORMATION

Model	Function	Ranges
AD/ACX141	AC Current	7, from 0-0.8 to 0-5 A (<0.5VA burden)
	AC Voltage	21, from 0-0.67 to 0-255 V
AD/FDX150	Frequency	11, from 0-30Hz to 0-30kHz
AD/MVX106	DC mV	8, from 0-0.5 to 0-100mV (non-isolated)
AD/MVX126	DC mV	8, from 0-0.5 to 0-100mV
AD/PTX173	3-wire Pot	50Ω to 100kΩ (non-isolated)
AD/RBX174	RTD	2, 3 or 4-wire, 1-400Ω (non-isolated)
AD/RBX172	RTD	2, 3 or 4-wire, 1-400Ω
AD/TCX126	Thermocouple	B, E, J, K, R, S, T

Options (add suffix):

-H22	Surface mounting plate
-H20A	DIN mount
-H13A	NEMA 4 housing
-H15	NEMA 7 housing

Adtech Field Selectable Alarms

- Single or Dual Setpoint
- Universal Relay Action - Normal or Fail Safe, High or Lo Limit
- 0-30 Second Adjustable Time Delay
- Latching Action
- LED Indication of Alarm Status
- Potentiometer Setpoint Adjustment


500 Series

SPECIFICATIONS

Input Ranges:

ACA	0-1, 0-5 (selectable avg or TRMS) burden <0.5VA
ACV	0-0.25, 0-2.5, 0-25, 0-250
DCV	0-5, 0-10, ±5, ±10, 1-5
DCmA	0-1, ±1 (R = 200Ω) 0-10, ±10 (R = 20Ω) 0-20, ±20, 4-20 (R = 10Ω)
DCmV	0-100
T/C	J, K, T, E, R, S, B
RTD	2, 3 or 4-wire, 1-400Ω

Accuracy: 0.1% of span (0.25% for AC)

Relay Output: SPDT, 10A @ 240VAC or 30VDC, resistive

Response Time: <200 msec

Trip Adjustment: 0-100% of span

Dead Band Adjustment: 1-100% of span

Power Supply: 100-240VAC (24V DC optional)

Temperature: -15 to 60°C operating

Dimensions:

DIN mount	2.25" W x 3.11" H x 3.3" D (57x79x84mm)
NEMA 4	4.4" W x 6.75" H x 4.3" D (112x172x109mm)

Isolation: Input/Output/Power, 1500VAC

ORDERING INFORMATION

Model	Setpoint	Function
AD/ACA514	Single	ACV, ACA
AD/ACA515	Dual	ACV, ACA
AD/DCA514	Single	DCV, DCmA
AD/DCA515	Dual	DCV, DCmA
AD/MVA514	Single	DCmV
AD/MVA515	Dual	DCmV
AD/RBA514	Single	RTD & Resistance
AD/RBA515	Dual	RTD & Resistance
AD/TCA514	Single	Thermocouple
AD/TCA515	Dual	Thermocouple

Options (add suffix):

-P2	24VDC power
-H26	Surface Mounting Plate
-H27	NEMA 4 housing
-H15D2	NEMA 7 housing (Class 1 Group B, C, D)

Adtech Loop Powered Indicators

- 3½ Digit 0.5" LCD Display
- Reverse Polarity Protection
- 2.3V Maximum Burden
- Signal Powered, No External Power Needed
- -30 to +80°C Operating Temperature
- 2.5 readings/second
- Accuracy ±3 counts

Accepts a 4-20mA process input signal from a 2, 3 or 4-wire transmitter. Displays the input as mA, 0-100% or in engineering units such as °C, °F, RPM, ft, gallons or lbs. Jumpers are provided to select decimal position and display range. Two potentiometers adjust zero & span.

ORDERING INFORMATION

AD/LPI 25	NEMA 4X Housing
AD/LPI 30	NEMA 7 Explosion Proof Housing, Class 1 Group B, C, D
AD/LPI 40	NEMA 7 Explosion Proof Housing with integral Series 100 2-wire transmitter
AD/LPI 40D	NEMA 7 Explosion Proof Housing with integral Series 200 2-wire transmitter

LPI 25

LPI 30


Action Instruments™ Low Profile Signal Conditioners

- Low Power
- Higher Accuracy
- Field Configurable
- E-Mail Alarm Notification

SlimPak II


SPECIFICATIONS

Output:	0-10V, 0-20mA, 4-20mA
Accuracy (In/Out):	±0.015% rng / ±0.05% rng
Isolation:	1800V AC/DC, In/Out/Power
Operating Temp:	0 to 60°C, <95% RH
Power:	9-30VDC, 1W typ.
Alarm:	2 SPDT, 5A@120VAC
Size:	0.5" wide DIN rail case
Approvals:	UL508, CSA C22.2, CE

ORDERING INFORMATION

Model	Function	Range
WV408-2000	DC	±150mV, 1.5/15/150V, 2.5/25mA +reverse
WV418-2000	RTD	2/3/4 wire: Pt100, Cu10
WV428-2000	T/C	J,K,T,R,S,E,B,N,C,B
WV438-2000	Potentiometer	100Ω to 100kΩ
WV448-2000	Bridge	±5/10/20/50/100/200mV (1-10VDC, 120mA excitation)
WV468-2000	AC	50/150/500mV, 5/20/50/150/250V, 20/100mA +reverse (40-400Hz)
WV478-2000	Frequency	0-10kHz (150mV-150V)
WVC16-2000	Communication	Up to 32 modules to Ethernet 10Base-T
C650-2000	Software	Includes serial cable
WV905	Power Supply	24VDC @0.5A

Also available as Limit Alarms with latching relays & reset switch

Pyromation Temperature Transmitters

- Wide Operating Temperature Range
- Factory or Field Configurable
- Sensor Break & Short Circuit Detection
- T/C Head Mounting (441 & 442)
Industrial or Explosion Proof Housing (642)
- FM & CSA Approved Intrinsically Safe & Non-Incendive

642

441


SPECIFICATIONS

Input:	T/C J,K,T,E,R,S,B,N,L,U,C,D RTD Pt or Ni, 100/500/1000, 2/3/4-wire DC -10 to 100mV Resistance 400Ω, 2000Ω
Accuracy:	0.2°C (Pt100), 1°C (K/T/C)
Output:	2-wire, 4-20mA or 20-4mA
Maximum Load:	(Vsupply - 8V)/25mA
Power Supply:	8-30V DC (40V max on 642 models)
Operating Temperature:	-40 to 85°C, condensing allowable
Dimensions (441, 442):	1.73" dia x 0.9" (44x23mm)
Galvanic Isolation:	3.75kV AC

ORDERING INFORMATION

PM/441	Temperature Head Transmitter
PM/442	Temperature Head Transmitter with HART® protocol
PM/642A	Programmable HART® Transmitter
PM/642AT	Programmable HART® Transmitter with digital display
PM/642C	Programmable HART® Transmitter, explosion proof housing

For factory configuration, specify input type & range (°C or °F); for field configuration, order communication cable & software

NLS Series 8000 Signal Conditioners

- Input, Output, Isolation, Power Supply and Special Functions Combined in One Low Cost Modular Unit
- Field-Settable Range, Span and Configuration
- Fuse Protected Linear Power
- UL Recognized
- High Impact, Flame Retardant Polycarbonate Case

The Series 8000 signal conditioners are designed with a modular architecture to allow full input, output, and special function selectability and interchangeability. They can also be used as isolators, signal amplifiers, and transmitters.

8000-1-1


NLS Series 8000 Signal Conditioners

ORDERING INFORMATION

To Order—Insert Number Code for Each Letter to Select Catalog Number.

Order Example: 8000-1-1-01(0-27.2V)-60(4-20mADC)

A - **B** - **C** - **D** - **E**

A Basic and Power—See Base Style Selection Chart	
8000-1-1	8-Pin, 120 VAC Power
8000-2-1	11-Pin, 120 VAC Power
8000-3-1	20-Pin, 120 VAC Power
8000-2-2	11-Pin, 240 VAC Power
8000-3-2	20-Pin, 240 VAC Power
8000-1-3	8-Pin, 9-30 VDC Power
8000-2-3	11-Pin, 9-30 VDC Power
8000-3-3	20-Pin, 9-30 VDC Power

B Input Code	
01	DC: Voltage to 300, Current to 100 mA—Specify Range
02	Potentiometer: Any Value from 0-100Ω to 100 kΩ
03	AC: Voltage to 250 V, Current to 100 mA—Specify Range
04	Thermocouple: non-linearized J, K, T, E, R, S, or B—Specify Type and range. See special function "43" for Linearization
05	RTD: Pt100Ω (∞00385), Cu10Ω or Ni120Ω—Specify Type and Range
06	DC Millivolts: 0-200 (8 mV min span)—Specify Range
08	LVDT: 50 mV/V to 800 mV/V RMS—Specify Range
09	Strain Gauge: 2 mV/V to 20 mV/V—Specify Range
10	Frequency: 0-50 kHz (50 Hz min span)—Specify Range
11	Ramp/Soak Programmer
12	High Select: up to 4 inputs: 4-20 mA, 1-5V, or 0-10V—Specify Range
13	Low Select: up to 4 inputs: 4-20 mA, 1-5V, or 0-10V—Specify Range
14	Add/Subtract: up to 4 inputs: 4-20 mA, 1-5V, or 0-10V—Specify Range
15	Multiply (A x B)—Specify # of inputs and type
16	Divide (A x B)—Specify # of inputs and type

C Output Code	
60	DC: 0-12V (100 mV min) or 0-50 mA (1 mA min)—Specify Range
70	Frequency: 5V (TTL), 0-50 kHz (11 pulses/hour min)—Specify Range
71	Frequency: Contact Closure 0-2 Hz (11 pph min)—Specify Range
72	Frequency: 24V pulse 0-50 kHz (11 pph min)—Specify Range
73	Valve Positioner: Pot 100-9.9 kΩ, 10k-100 kΩ; 4-20 mADC, 0-1 VDC or 0-10 VDC—Specify feedback type
80	Single Alarm Setpoint: Single Turn Pot. Screwdriver Adj.

81	Single Alarm Setpoint: Remote 4-20 mADC
82	Single Alarm Setpoint: Remote 1-5 VDC
83	Single Alarm Setpoint: Remote 0-1 VDC
84	Single Alarm Setpoint: Remote 0-10 VDC
85	Single Alarm Setpoint: Multi-turn Pot., Screwdriver Adj.
86	Single Alarm Setpoint: Plus Top Mounted Knob, 0-100%
87	Single Alarm Setpoint: Remote Pot., 0-100Ω to 100 kΩ
90	Dual Alarm Setpoint: Single Turn Pot. Screwdriver
91	Dual Alarm Setpoint: Remote 4-20 mADC
92	Dual Alarm Setpoint: Remote 1-5 VDC
93	Dual Alarm Setpoint: Remote 0-1 VDC
94	Dual Alarm Setpoint: Remote 0-10 VDC
95	Dual Alarm Setpoint: Multi-turn Pot., Screwdriver Adj.
96	Dual Alarm Setpoint: Plus Top Mounted Knob, 0-100%
97	Dual Alarm Setpoint: Remote Pot., 0-100Ω to 100 kΩ

D Special Functions	
00	None
40	Square Root
41	Power Term: N ^m Power
42	N ^m Root: Adjustable root 0.5 to 5
43	Thermocouple Linearization (type/range specified by input code)
44	Curve Fit Linearization: Curve or formula must be provided
45	Ramp Buffer: Delays signal action (adj. 1 sec to 20 min)
46	Peak/Valley Sample Hold: Specify Peak or Valley
48	Rate of Change Processor: (Specify time base, 1 sec etc.)

E Options for Alarm Setpoints	
00	None
01	Low or Low/Low relay sense (Single or dual alarms)
02	High/High relay sense (Dual alarms)
03	Fail-Safe Operation (Dual alarms)
04	Transmitter Output 0-1V output for process, Setpoint #1 and Setpoint #2 (Setpoint output not avail. with strain gage, add/subtract, or high/low select)
05	Latching relay(s): Jumper selectable for Latch/Non-Latch
07	Voltage Output (24V @ 15 mA) replaces relay contacts
Options for Temperature Inputs	
06	Down scale burnout for thermocouple input
08	Differential RTD input: Specify differential range
09	Differential thermocouple input: Specify differential range

BASE STYLE SELECTION CHART

Output Code	Type	60	80, 85, 86 90, 95, 96	73, 81, 82, 83, 84, 91, 92, 93 94; or 80, 85, 86 90, 95, 96 w/ 07	70	71	60 72	70, 71 72 w/46
01/03/04/06/10	DC, AC, Frequency	8	11	20	8	11	11	20
02	Potentiometer	8	20	20	8	20	20	20
05	RTD	20	20	20	8	20	20	20
09	Strain Gauge	11	20	20	11	11	—	—
08	LVDT	11	20	—	20	20	—	—
15/16	Multiply/Divide	8	20	20	8	20	20	20
12/13/14	High/Low	20	20	20	20	20	—	—
11	Ramp/Soak	20	20	—	—	20	—	—

To determine the number of pins required for the signal conditioner, select input code and output code and read across and down. Make sure to order mounting socket.

ACCESSORIES

Mounting Sockets—Required and Sold Separately

DR011	11-Pin Barrier Terminal Socket for DIN Rail or Flush Mount
DR014	Din Rail—Three Foot Length Metal Channel Track
DR018	8-Pin Barrier Terminal Socket for DIN Rail or Flush Mount
SM004	DIN Rail—Four Foot Length Plastic Channel Track

SM008	8-Pin Barrier Terminal Socket for Channel Track
SM011	11-Pin Barrier Terminal Socket for Channel Track
SM020	20-Pin Barrier Terminal Socket for Channel Track
SX008	Explosion Proof Housing (Meets Class I, Group D, Class II, Group E, F, and G)

Pyragon Loop Isolator

- Signal Powered CMOS Circuitry
- Precise Duplication of Input Signals
- 4–20 or 10–50 mA, Same Unit
- High Common Mode Rejection
- 1500 VRMS Isolation
- Mounts on Bulkhead or in 3" Conduit Box

 **10AI**

Provides the Necessary Signal Isolation for Noisy Process Circuits

If your process signals are influenced by ground loops, high common mode noise, or other interference, you need the Transmation Model 10 Auto-Isolator. Requiring no separate power supply, Auto-Isolator operates efficiently from input signal current, and precisely retransmits the current applied to the input with an accuracy of $\pm 0.1\%$ of span.

Usable with milliamp signal ranges of 4–20, 10–50, or other ranges between 4 and 50 mA. The instrument can be bulkhead-mounted or installed in a 3-inch cast conduit box. A trim potentiometer, accessible through the instrument's top plate, permits precise adjustment of current transfer as a function of load resistance up to 500 ohms at 20 mA, and 250 ohms at 50 mA.



SPECIFICATIONS

Input:	4–20 mA, 10–50 mA, or other spans within range of 4–50 mA
Output Ratings:	4–20 mA with loads from 0–500 ohms 10–50 mA with loads from 0–250 ohms
Accuracy:	$\pm 0.1\%$ of span
Size/Weight:	2.95" diameter, 1.88" high/6 oz

ORDERING INFORMATION

10AI	Model 10 Auto-Isolator
10AI-EXP	Model 10 in Explosion Proof Housing

Pyragon Universal Temperature Transmitters

- Configurable for Eight T/Cs, 12 RTDs, Millivolts, Ohms
- Unmatched Programmability: Input Type, Range, Zero, Span, Linear Output, Engineering Units; Calibration Runs
- Exceptionally Economical: Reduces Inventory and Maintenance Costs
- Built for Reliability: RFI Protected, Isolated, Environmentally Tough, Five-Year Warranty

SPECIFICATIONS

Input Types	
Thermocouple:	Types J, K, T, E, R, S, N, B
RTD:	Pt DIN 43760 (50, 100, 200, 500 Ω); Pt JIS C 1604 (100 Ω); Pt Burns 0.003902 α (100, 200, 500 Ω); Ni Bristol's 7NA (110 Ω); Ni Minco (120 Ω); Cu Minco (10 Ω); Cu China 0.00428 α (50 Ω)
mV:	-100 to + 100 mV
Resistance:	0 to 1000 Ω
Accuracy:	$\pm 0.05\%$ of span ± 1 digit
Input Span Limits:	Any span within range limits
Input Resolution:	0.1°, 1 μ V, 0.005 Ω
Output Range:	4 to 20 mA, calibrated; 3.7 to 22 mA, maximum
Output Resolution:	0.002 mA
RTD Excitation Current:	200 μ A, typical
Temperature Effect	
T/C and mV:	$\pm 0.2 \mu$ V/ $^{\circ}$ C max $\pm 0.005\%$ of input reading/ $^{\circ}$ C
RTD and Ω :	$\pm 0.002 \Omega$ / $^{\circ}$ C max $\pm 0.005\%$ of input reading/ $^{\circ}$ C
Loop Supply Voltage:	13V + (load resistance x 20 mA), min; 48V, max
Size	3.10 x 1.75 x 3.77" HWD


2800T 

ORDERING INFORMATION

2800T	Universal Temperature Transmitter, Digital Display (NI FM Approved)
2800T-EXP	2800T in Explosion Proof Housing
2850T	2800T with HART Protocol
100665-651	32 mm DIN Rail Adaptor–2800T
100665-652	35 mm DIN Rail Adaptor–2800T

Weschler Process Loop Splitter

- Three Separate 4 mA to 20 mA Outputs
- Flexible and Simple Scaling
- DIN Rail Mounting
- Excitation Output
- Screw Terminal Connections
- Wide Power Supply Range
- Low Input Resistance
- Narrower Case than Previous Model

SPECIFICATIONS

Input	
Input Signal:	4 mA–20 mA, 0–10 mA
Input Resistance:	50Ω
Excitation Voltage:	20 VDC nominal, 28mA max
Output	
Number of Outputs:	3
Output Range:	4 mA–20 mA, 0–10 mA
Adjustability:	Zero ±1 mA, span ±9 mA
Accuracy:	±0.1% of span
Speed of Response:	200 milliseconds
Isolation:	380V to earth and power
Drive Capacity:	600Ω per loop
Power Consumption:	3W max
Operating Temperature:	0–50°C, <90% RH non-condensing
Size (mm):	22.5 W x 99 H x 111 D
Mounting:	DIN rail EN50 022
Sealing:	IP40

The TIM-018 allows one 4 to 20 mA signal to be split into three separate loops. Each output has its own zero and span adjustments, which are accessible from the front panel.

All loops are load isolated so an open or short on one loop will not affect the other loops. An internal 20V supply provides sensor excitation.

Note: All loop + terminals are internally connected.



TIM018-Mk2

ORDERING INFORMATION

TIM018-Mk2-AC	Process Loop Splitter for 95-265VAC operation
TIM018-Mk2-DC	Process Loop Splitter for 11-30VDC operation

Pyragon Universal Process I/O Module

- Direct Replacement for Transmation 3000 Series Modules
- Universal Input Includes TC, RTD, mA DC, mVDC
- 4 Digit Alpha-Numeric LED Display
- Input Isolated from Output and Power
- 4 Year Warranty

ORDERING INFORMATION

P3100	Alarm/Transmitter in Metal Case
P3100-WOC	Alarm/Transmitter w/o case
P3100T	Transmitter Only

The P3100 accepts a wide variety of inputs. The 4 digit display provides a local readout. Use the P3100 in a new installation or to replace existing 3000 series units.

P3100



SPECIFICATIONS

Models Replaced:	3510A, 3520A, 3530A, 3540A, 3610A, 3620A, 3630A, 3640A, 3650A, 3660A, 3510DRA, 3520DRA, 3530DRA, 3540DRA, 3610DRA, 3620DRA, 3630DRA, 3640DRA, 3650DRA, 3660DRA, 3510T, 3530T, 3610T, 3630T, 3650T, 3900F, 3909F
Input Types	
Thermocouple:	J, K, T, E, R, S, B, L, U, N
RTD (2 or 3 wires):	100Ω Pt (α.00385, .00392, .003916); 200, 500 & 1000Ω Pt (α.00385); 120Ω Ni and 10Ω Cu
Current:	±20 & ±50mA DC ranges
Voltage:	±1 & ±10V DC ranges
Millivolts:	±70mV
Potentiometer (3 wire) & Resistance (2 wire):	50, 200 & 2000 ranges
Frequency:	Counts/minute, Hz & kHz ranges
Signal Output:	4-20mA DC (600Ω Load) or 1-5V DC, 10-50mA DC optional
LED Display:	4-Digit Alphanumeric, Decimal Point configurable for 0, 1st, 2nd or 3rd place
Front Panel Buttons:	Relay Trip & Recovery parameters, Relay states override, Latch reset and output manual mode
Analog Accuracy:	0.1% of Span or 10mV referred to input
Loop Power:	24VDC supply to power input mA signals up to 21mA
DPDT Relay:	Configurable delay & latching
Working Voltage:	300VAC Input to Output to Input Power
Isolation:	1000VDC Input to Output to Input Power
Configuration Interface:	RS232, 1200 baud, ASCII half duplex
Operating Temperature:	0–50°C
Power (jumper selectable):	100–240VAC, 50/60Hz and 24VDC ±10%

Laurel Serial to Analog Transmitter

NEW

- RS-232 & RS-485 Input
- Isolated 4-20mA or 0-10V Output
- ASCII & Modbus Protocols
- AC or DC Power
- DIN Rail Mount
- Dual Relay Outputs

TS6



The Laureate serial-to-analog transmitter is able to retrieve digital data from long character strings. You can specify character positions, start and stop ASCII characters, how many characters to skip and how many characters to pass. Modbus RTU, Modbus ASCII and Laurel ASCII protocols are supported.

The 16 bit analog output is isolated from the power and digital sections. Span is field adjustable using the Laurel setup software. Update rate to 60/sec provides rapid response.

SPECIFICATIONS	
Serial Input:	RS-232 or RS-485 (2- or 4-wire)
Baud Rate:	300-19200
Analog Out:	4-20mA, 0-20mA or 0-10VDC (selectable)
Compliance (mA):	10V (0-500Ω load)
Compliance (V):	2mA (>5kΩ load)
Accuracy:	±0.02% of span
Resolution:	16 bits
Isolation:	250Vrms power/analog/digital
Relay Outputs:	Two SPST-NO (Form A) solid-state relays 130mA@140VAC/180VDC
Temperature:	0-55°C operating
Size:	120 x 101 x 22.5 mm
Mounting:	35mm DIN rail
Connections:	Detachable screw terminal plugs

ORDERING INFORMATION	
To Order—Insert Code for Each Letter to Select Catalog Number. Order Example: TS602	
TS6	A B
A	Power
0	85-264VAC ±10%, 90-300VDC
1	12-30VAC, 10-48VDC
B	Setpoint Output
0	None
1	Dual isolated solid-state relays
Accessories:	
CBL04	RS-232 cable to PC serial port or USB Adapter
CBL02	USB to RS-232 cable adapter

API Frequency to DC Transmitters

- 0-1mA, 4-20mA, 0-1V or ±10V Output
- 2000V Isolation
- Simple field setup (7580)
- Input & Output Status LEDs
- Functional Test Button
- Lifetime Warranty

7580



These API transmitters accept a frequency input and provide an optically isolated DC voltage or current output that is linearly proportional to the input.

Full three-way isolation makes these modules useful for ground loop elimination, common mode signal rejection and noise pickup reduction.

The input and output ranges on the 7580 are field configured via switches - no software required. Ranges on the 7010 are factory set and must be specified when ordered. The internal loop supply can be used to power external devices, often eliminating the need for a separate supply.

ORDERING INFORMATION	
To Order—Insert Code for Each Letter to Select Catalog Number. Order Example: API 7010GDU	
A	B
A	Model
API 7010G	Frequency to DC Transmitter, 115VAC, factory ranged
API 7580G	Frequency to DC Transmitter, 115VAC, field rangeable
B	Options
A230	Powered by 230VAC ±10%, 50/60Hz, 2.5W max
D	Powered by 9-30VDC, 2.5W typical
U	Conformal coating for moisture resistance
HC	High current output to 50mA (7010G only)
M09	High voltage output to 24VDC (7010G only)
EXTSUP	Open collector [sink] output (7010G only)
Accessories:	
API 008	8-pin octal socket
API 008FS	Finger safe 8-pin octal socket
API TK36	35mm DIN rail, 39" long, aluminum

SPECIFICATIONS	
7010 Input Range:	Factory set - specify on order Minimum 0-25Hz, maximum 0-20kHz
7580 Input Range:	Field selectable via rotary switches and tables Low range: Min 0-100Hz, max 0-1500Hz High range: Min 0-2kHz, max 0-30kHz
Input Voltage:	100mVrms - 150Vrms
Input Impedance (min):	10kΩ (7580), 100kΩ (7010)
Input Sensitivity:	25mV to 2.5V (pot adjustable)
Output Ranges:	0-1V min, 0-10V max, ±1V min, ±10V max (bipolar mode), 0-2mA min, 0-20mA max (current mode). Factory set on 7010 - specify on order, Field settable on 7580
Compliance (mA):	20V, 1000W
Output Zero Adjust:	±15% of span
Output Span Adjust:	±10% of span
Accuracy:	Better than ±0.2% of span
Response Time (typ):	70msec (7010), 110msec (7580 hi range), 600msec (7580 lo range)
Isolation:	2000Vrms power/input/output
Loop Supply:	18VDC unregulated, 25mA max.
Power (standard):	115VAC ±10%, 50/60Hz, 2.5W max
Temperature:	-10 to 60°C operating
Status Indicators:	Variable brightness LEDs indicate level & status
Connections:	8-pin octal socket (order separately)

Plug-in API transmitters/isolators are available for most sensors & process signals.

SIGNAL
CONDITIONERS

Action Instruments Plug-In Signal Conditioners, Isolators and Alarms

ENVIRONMENTAL SPECIFICATIONS

Isolation

Between Input, Output and Power

Limit Alarms: 1000 VDC

Signal Conditioners: 1500 VDC

Temperature Range: Operating: 0 to 60°C

Signal Conditioners: 1500 VDC

Humidity: 15 to 95% (@45° C)

Power: 120 VAC ±10%, 50/60 Hz

Consumption: 30W Typical, 5W Max

Agency Approvals: CSA per C22.2 and UL per UL508



ActionPak ▲

SPECIFICATIONS AND ORDERING INFORMATION

Model #	Function	Input	Input Span (Field Configurable)	Output (Field Configurable)
AP4380	Isolator Single	DC Volt	10 mV to 100V	DC Voltage (0-5V, 0-10V)
AP4390	Isolator Dual	DC Current	1 mA to 100 mA	DC Current (0-1 mA, 4-20 mA)
AP4382	Isolator (Bipolar Output)			DC Voltage (±5V, ±10V)
AP1080	Limit Alarm Single	DC Volt	10 mV to 200V	Single Trip (DPDT, 5A)
AP1090	Limit Alarm Dual	DC Current	1 mA to 100 mA	Single/Dual Trip (2 SPDT, 5A)
AP4351	Isolator	Thermocouple	B: 500°C to 1820°C	DC Voltage (0-5V, 0-10V)
	E: -150°C to 1000°C		DC Current (0-1 mA, 4-20 mA)	
AP1280	Limit Alarm Single		J: -200°C to 750°C	Single Trip (DPDT, 5A)
AP1290	Limit Alarm Dual		K: -200°C to 1370°C	Single/Dual Trip (2 SPDT, 5A)
		R/S: 50°C to 1760°C		
		T: -150°C to 400°C		
AP4081	Conditioner	Bridge	10 mV to ±200 mV	DC Voltage (0-5V, 0-10V)
				DC Current (0-1 mA, 4-20 mA)
AP6380	Conditioner	AC Voltage	50 mV to 200 VAC	DC Voltage (0-5V, 0-10V)
			5 mA to 100 mA AC	DC Current (0-1 mA, 4-20 mA)
AP1690	Limit Alarm Single	AC Current	10mA to 100 mA AC	Single/Dual Trip (2 SPDT, 5A)
AP7380	Conditioner	Frequency	2 Hz to 10 kHz	DC Voltage (0-5V, 0-10V)
				DC Current (0-1 mA, 4-20 mA)
AP7500	Conditioner	DC (Fixed Range)	Specify: 4-20 mA, 0-10V, 1-5V, 0-5V, 0-10V, or 10-50 mA	Frequency (0-9 ppm up to 0-10 kHz) TTL: 0/6V
AP7501	Conditioner	DC (Fixed Range)	Specify: 4-20 mA, 0-10V, 1-5V, 0-5V, 0-10V, or 10-50 mA	Frequency (0-0.12 ppm up to 0-130 ppm) DPDT Relay: 5A Max
AP4003	Conditioner	Potentiometer (Wide Ranging)	Specify: 0-100% pot 100Ω to 100Ω pots	DC 0-20mA, 4-20 mA, 0-5V, 0-10V

MOUNTING ACCESSORIES FOR ACTION PRODUCTS

Mounting Hardware (for ActionPak IQ and SlimPak)

MD02 TS32 DIN Rail, 2 Meters, Slotted (G-Rail)

MD03 TS35 x 7.5 DIN Rail, 2 Meters, Slotted (H-Rail)

Mounting Hardware (for Action Pak Only)

MD08 8-Pin DIN Rail Socket (Surface or Rail Mountable)

MD11 11-Pin DIN Rail Socket (Surface or Rail Mountable)

These sockets mount on standard DIN Rails MD02 or MD03