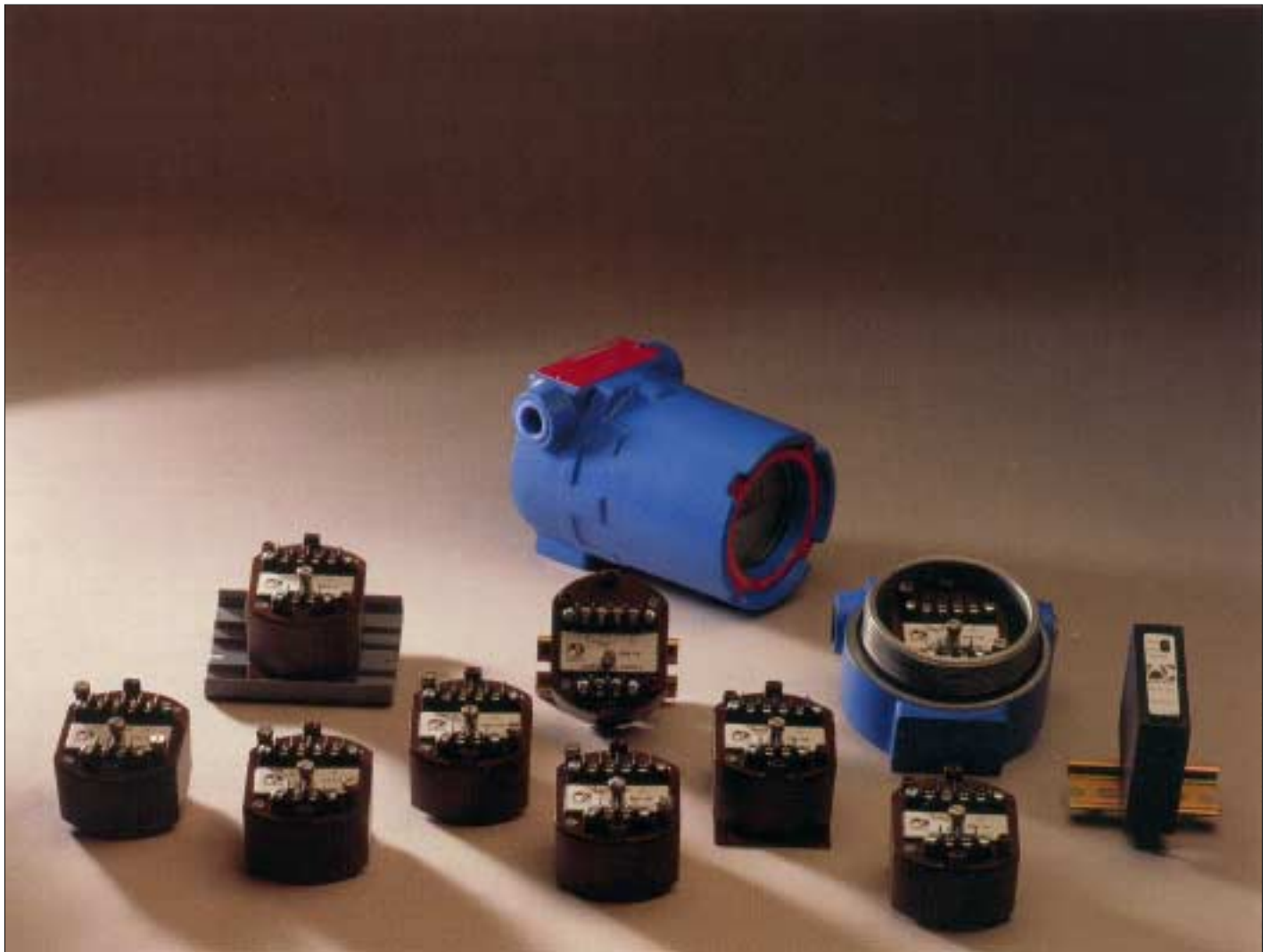




ADTECH
Analog-Digital Technology, Inc.

100 Series Two-Wire Field Selectable Wide Ranging Transmitters Guide



Features

- **Types of Inputs:** AC current & voltage, frequency, millivolts, potentiometer, RTD, thermocouple
- **No Interaction:** Zero and span controls
- **Front Accessible Controls**
- **Elevation/Suppression:** Up to 100% of range
- **Power Range:** 8 to 42 VDC
- **RFI-Immune**
- **Temperature Coefficients:**
Zero = $\pm 0.007\%/^{\circ}\text{C}$ of span—typical
Span = $\pm 0.008\%/^{\circ}\text{C}$ of span—typical
- **Repeatability:** $\pm 0.002\%$ typical
- **Bandwidth:** (-3 db): 3.2 Hz typical
- **Isolation:** 600 VDC or 350 VAC
- **Power Supply Effect:** $\pm 0.005\%$
- **Response Time:** 110 milliseconds typical
- **Reverse Polarity Protection**

Typical Applications

Measurement of:

- Temperature
- Flow
- Speed
- Position
- Displacement
- Rotation
- AC Current
- AC Voltage
- DC Millivolts

AC Input ACX 140 (Isolated)

Input/Output

Input Signals

AC Current: Any 0-0.8 to 0-5 amps AC, burden less than 0.5 VA (7 major ranges)

AC Voltage: Any 0-0.67 to 0-255 VAC rms signal, burden less than 0.5 VA (21 major ranges)

Zero Adjustment: ±10%

Span Adjustment: ±25%

Input Frequency Range: 25-1,000 Hz

Input Overload Capability:

AC Current: 15 amps continuous; 200 amps for 1 second

AC Voltage: 200% of input specified, continuous; Suppression to 20% of range

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

***Calibrated Accuracy:** ±0.25%

***Independent Linearity:** ±0.10% maximum, ±0.04% typical

*10-100% of span

Repeatability: ±0.005% max., ±0.002% typ.

Zero TC: ±0.01% of span max/°C

Span TC: Current: +0.02% ±0.015% of span max/°C
Voltage: -0.015%, ±0.01% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 350 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 1 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Isolation: Input/output/case: 750 VAC, 1,000 VDC

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips

(0.325" spacing, No. 6 screws)

Controls: One 8-position dip switch for major range; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

AC Input ACX 141 (Isolated)

Input/Output

Input Signals

AC Current: Any 0-0.8 to 0-5 amps AC, burden less than 0.5 VA (2 major ranges)

AC Voltage: Any 0-0.67 to 0-255 VAC rms signal, burden less than 0.5 VA (4 major ranges)

Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch

Span: From 0-100% full scale switch selectable. The coarse span switch adds 16 divisions to each major range.

Input Frequency Range: 25-1,000 Hz

Input Overload Capability:

AC Current: 15 amps cont.; 200 amps, 1 sec.

AC Voltage: 200% of input specified, cont.

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

***Calibrated Accuracy:** ±0.25%

***Independent Linearity:** ±0.10% max.; ±0.04% typ.

*10-100% of span

Repeatability: ±0.005% max., ±0.002% typ.

Zero TC: ±0.01% of span max/°C

Span TC: Current: +0.02%, ±0.015% of span max/°C
Voltage: -0.015%, ±0.01% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 350 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 1 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Isolation: Input/output/case: 750 VAC, 1,000 VDC

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips

(0.325" spacing, No. 6 screws)

Controls: One 8-position dip switch for major range; two 16-position rotary switches for coarse zero and span control; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

Frequency Input FDX 150 (Isolated)

Input/Output

Input Signals

Voltage (Amplitude): 10 mV-100 Vrms (0-5 kHz); 50 mV to 50 Vrms (5 kHz to 30 kHz)

Contact: Dry, 2 mA @ 24 VAC rating

Frequency Range: 0-30 Hz to 0-30 kHz full scale

Major Range Switch: Provides 11 discrete ranges with the zero control adjustable 10% of output and span control adjustable from 50% to 100% of the major range selected

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%

Independent Linearity: ±0.02% max.; ±0.01% typical

Repeatability: ±0.005% max., ±0.002% typ.

Zero TC: ±0.01% of span max/°C

Span TC: ±0.01% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 550 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 0.6 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Isolation: Input/output/case: 600 VDC or 350 VAC with RFI

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips

(0.325" spacing, No. 6 screws)

Controls: One 16-position rotary switch for range control; four multiturn potentiometers for zero, span, sensitivity, and hysteresis control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

MV Input MVX 106 (Non-Isolated)

Input/Output

Input Signals

0.5 mV to 100 mV span (Z in greater than 10 megohms)

Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch

Span: From 0.5 mV to 100 mV full scale switch selectable. The coarse span switch adds 16 divisions to each major range.

Upscale/Downscale Protection: Optional

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%

Independent Linearity: ±0.01% maximum, ±0.006% typical (14-bit digital linearity)

Repeatability: ±0.005% max., ±0.002% typ.

$$\text{Zero TC: } \pm \left(\frac{0.025}{\text{input span (mV)}} + 0.005 \right) \% \text{ of span max./}^\circ\text{C}$$

Span TC: ±0.008% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 110 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 3.2 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips (0.325" spacing, No. 6 screws)

Controls: One 8-position dip switch for major range; two 16-position rotary switches for coarse zero and span control; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
I 14 Voltage/current inputs
LPI Loop powered indicator

MV Input MVX 126 (Isolated)

Input/Output

Input Signals

0.5 mV to 100 mV span (Z in greater than 10 megohms)

Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch

Span: From 0.5 mV to 100 mV full scale switch selectable. The coarse span switch adds 16 divisions to each major range.

Upscale/Downscale Protection: Optional

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%

Independent Linearity: ±0.01% maximum, ±0.006% typical (14-bit digital linearity)

Repeatability: ±0.005% max., ±0.002% typ.

$$\text{Zero TC: } \pm \left(\frac{0.025}{\text{input span (mV)}} + 0.005 \right) \% \text{ of span max./}^\circ\text{C}$$

Span TC: ±0.008% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 110 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 3.2 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Isolation: Input/output/case: 600 VDC, or 350 VAC

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips (0.325" spacing, No. 6 screws)

Controls: One 8-position dip switch for major range; two 16-position rotary switches for coarse zero and span control; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
I 14 Voltage/current inputs
LPI Loop powered indicator

Potentiometer Input PTX 173 (Non-Isolated)

Input/Output

Input Signals

Potentiometers/Slidewire Sensors: 3 Wire

50 ohm to 100 k ohm Resistance Spans:

Standard

Zero Suppression: Up to 100% of the potentiometer rotation selected in 16 divisions of the coarse zero adjustment switch.

Span: From 0-100% full scale switch selectable. The coarse span switch adds 16 range divisions.

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum})1,000}{I \text{ out max. mA}}$$

$$V \text{ minimum} = 8.0 \text{ VDC}$$

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%

Independent Linearity: ±0.01% maximum, ±0.006% typical (14-bit digital linearity)

Repeatability: ±0.005% max., ±0.002% typ.

Zero TC: ±0.007% of span max/°C

Span TC: ±0.010% of span max/°C

Load Effect: ±0.005% zero to full load

Output Ripple: 10 mV P/P maximum

Response Time: 110 milliseconds (10 to 90% step response)

Bandwidth: (-3 db): 3.2 Hz

Temperature Range:

-25° to 185°F (-31° to 85°C) operating;

-40° to 200°F (-40° to 93°C) storage

Power Supply Effect: ±0.005% over operating range

Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Mechanical

Electrical Classification: General purpose, CSA

Connection: Barrier terminal strips (0.325" spacing, No. 6 screws)

Controls: Two 16-position rotary switches for coarse zero and span control; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12

Weight: Net Unit: 8 oz. (228 grams);

Shipping: Nominal 1 pound (455 grams)

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

RTD Input RBX 174 (Non-Isolated)

Input/Output

Input Signals

Resistance Bulb Sensor: 2,3, or 4 wire types
Conformance to RTD Curves: 0.15% max.
1 to 400 ohm Resistance Spans: Standard
Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch.
Span: From 0-100% full scale switch selectable. The coarse span switch adds 16 divisions to each major range.
Lead Compensation: 1% maximum error of differential lead resistance.

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum}) 1,000}{I \text{ out max. mA}}$$

V minimum= 8.0 VDC

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%
Independent Linearity: ±0.025% max., ±0.01% typical
Repeatability: ±0.005% max., ±0.002% typ.
Zero TC: $\pm \left(\frac{0.05}{\text{input span (ohms)}} + 0.005 \right)$
 % of span/°C max.
Span TC: ±0.008% of span max./°C
Conformance to RTD Curves: 0.15% max.
Load Effect: ±0.005% zero to full load
Output Ripple: 10 mV P/P maximum
Response Time: 110 milliseconds (10 to 90% step response)
Bandwidth: (-3 db): 3.2 Hz
Temperature Range:
 -25° to 185°F (-31° to 85°C) operating;
 -40° to 200°F (-40° to 93°C) storage
Power Supply Effect: ±0.005% over operating range
Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

RTD Input RBX 172 (Isolated)

Input/Output

Input Signals

Resistance Bulb Sensor: 2,3, or 4 wire types
Conformance to RTD Curves: 0.15% max.
1 to 400 ohm Resistance Spans: Standard
Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch.
Span: From 0-100% full scale switch selectable. The coarse span switch adds 16 divisions to each major range.
Lead Compensation: 1% maximum error of differential lead resistance.

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum}) 1,000}{I \text{ out max. mA}}$$

V minimum= 8.0 VDC

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%
Independent Linearity: ±0.025% max., ±0.01% typical
Repeatability: ±0.005% max., ±0.002% typ.
Zero TC: $\pm \left(\frac{0.05}{\text{input span (ohms)}} + 0.005 \right)$
 % of span/°C max.
Span TC: ±0.008% of span max./°C
Conformance to RTD Curves: 0.15% max.
Load Effect: ±0.005% zero to full load
Output Ripple: 10 mV P/P maximum
Response Time: 110 milliseconds (10 to 90% step response)
Bandwidth: (-3 db): 3.2 Hz
Temperature Range:
 -25° to 185°F (-31° to 85°C) operating;
 -40° to 200°F (-40° to 93°C) storage
Power Supply Effect: ±0.005% over operating range
Isolation: Input/output/case: 600 VDC, or 350 VAC
Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

T/C Input TCX 126 (Isolated)

Input/Output

Input Signals

***Thermocouple:** All standard ISA calibration (B, E, J, K, R, S, T), -20 mV to 100 mV spans (Z in greater than 1 megohm)
Zero Suppression: Up to 100% of the major range selected in 16 divisions of the coarse zero adjustment switch.
Span: From 0.5 mV to 100 mV full scale switch selectable. The coarse span switch adds 16 divisions to each major range.
Upscale/Downscale Burnout Protection: Standard
Burnout Current: 0.1 micro amperes—nominal
**Consult factory for other T/C types.*

Output Signal: 4-20 mA DC

Output Loop Drive Capability

$$R(\text{ohm}) = \frac{(V \text{ supply} - V \text{ minimum}) 1,000}{I \text{ out max. mA}}$$

V minimum= 8.0 VDC

I out	4-20 mA			
V supply	12	24	36	42
R(ohms)	200	800	1400	1700

Performance

Calibrated Accuracy: ±0.1%
Independent Linearity: ±0.01% max., ±0.006% typical (14-bit digital linearity)
Repeatability: ±0.005% max., ±0.002% typ.
Zero TC: $\pm \left(\frac{0.025}{\text{input span (MV)}} + 0.007 \right)$
 % of span/°C max.
Span TC: ±0.008% of span max./°C
Load Effect: ±0.005% zero to full load
Output Ripple: 10 mV P/P maximum
Response Time: 110 milliseconds (10 to 90% step response)
Bandwidth: (-3 db): 3.2 Hz
Temperature Range:
 -25° to 185°F (-31° to 85°C) operating;
 -40° to 200°F (-40° to 93°C) storage
Power Supply Effect: ±0.005% over operating range
Isolation: Input/output/case, 600 VDC, or 350 VAC
Cold Junction Compensation Error: 1.5°C max (0 to 50°C)
Burnout Current: 0.1 micro amps--nominal
Note: All accuracies are given as a % of span.

Power

8 to 42 VDC: Standard

Options

H 13 through H 23 Mounting
LPI Loop powered indicator

Mechanical

Electrical Classification: General purpose, CSA
Connection: Barrier terminal strips
 (0.325" spacing, No. 6 screws)

Controls: One 8-position dip switch for major range; two 16-position rotary switches for coarse zero and span control; two multiturn potentiometers for fine zero and span control

Mounting: Surface, snap-track, DIN, or NEMA 4, 7, & 12
Weight: Net Unit: 8 oz. (228 grams);
 Shipping: Nominal 1 pound (455 grams)

The ADTECH 100 Series Two-Wire Transmitters provide field mounted efficiency and ease of wiring in a compact package. The units convert sensor inputs to the industry standard 4-20 mA DC Two-Wire loop output for interface directly with PLC's, DCS's and process computers.

Most units provide independent linearity equivalent to 14-bit digital accuracy and include user friendly features such as wide ranging and non-interactive zero and span controls.

The compact mounting style allows high density mounting in new or existing field mounted or control panel enclosures.

These units are designed for industrial (field) environments. The housing is made of rugged die cast aluminum with an epoxy paint finish and is gasketed/sealed for protection against corrosion, moisture, and dust. Barrier terminal strips are provided for positive field connections.

RFI protection, meeting SAMA PMC 33.1C and EMI interference, is provided as standard.

Mounting options for NEMA 4, 7, 12, snap track, and DIN are available.

Reverse polarity protection and current limiting are supplied as standard.

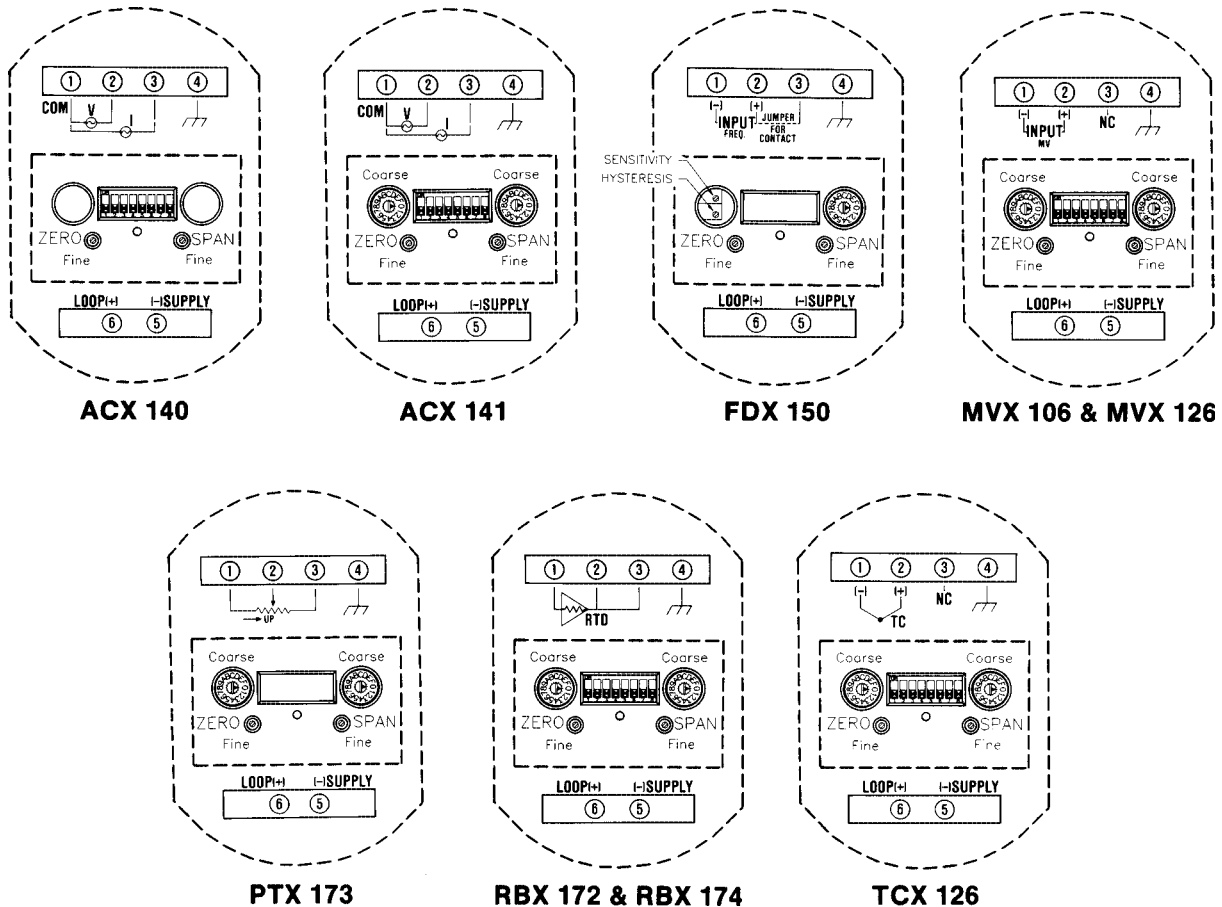
The power range of 8 to 42 VDC provides valuable added drive capability.

The input can be factory set to order as specified (no charge) or reconfigured in the field by simply adjusting switches and multi-turn potentiometers.

Integral LCD field indicator (LPI 40) is optionally available.

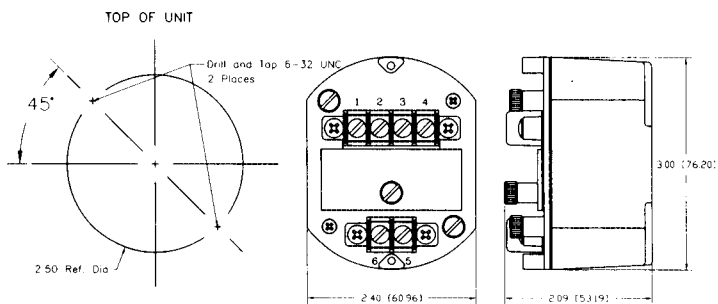
AC to DC or DC to DC instrument power supplies are available. The IPS 2402 AC/DC powers up to 2 units. The IPS 2416 AC/DC or DC/DC powers up to 16 units. DIN, surface, snap track or NEMA mountings are available.

Connections

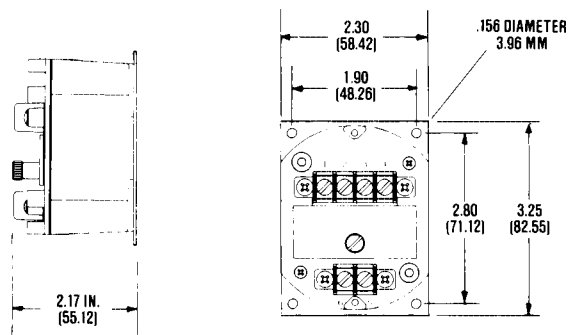


Outline & Mounting

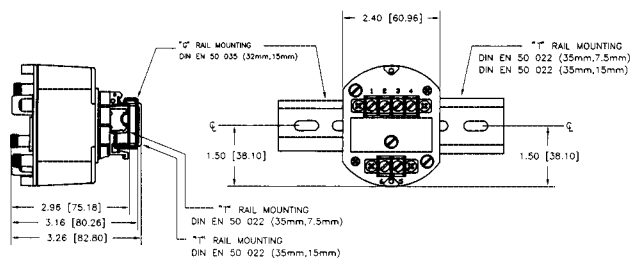
Surface (Standard)



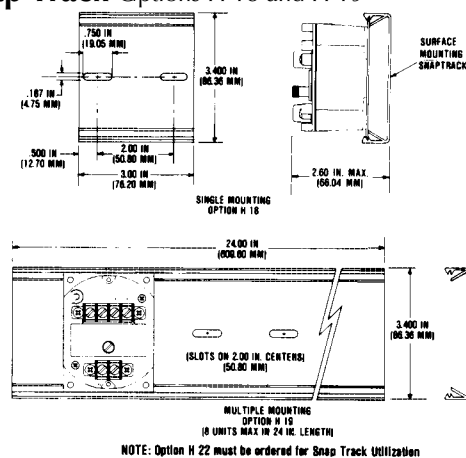
Surface Option H 22



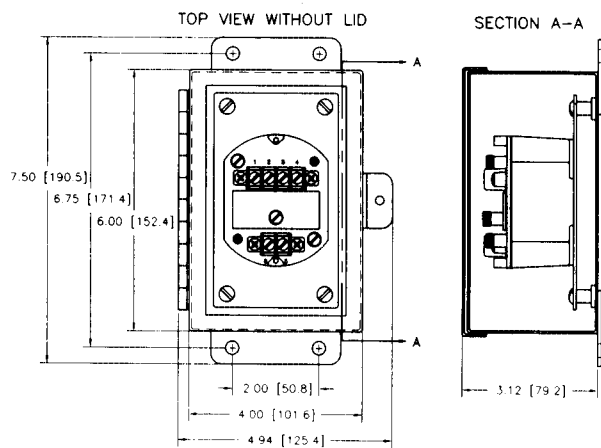
DIN Option H 20A



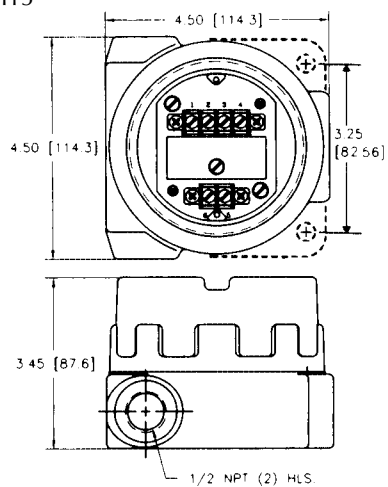
Snap Track Options H 18 and H 19



NEMA 4 & 12 Options H 13A and H 14A



NEMA 7 Option H15



Note: The LPI 40 enclosure is 5.82 (147.8) high.

Represented by:



Analog-Digital Technology, Inc.
3750 Monroe Avenue
Pittsford, New York 14534-1302

Phone: (716) 383-8280
Fax: (716) 383-8386

E Mail: adtech@adtech-inst.com
Web site: <http://www.adtech-inst.com>

Information subject to change without notice.

Printed in U.S.A. A001