



## SERIES: 80E

- SINGLE, TWO OR THREE PEN
- ±1% ACCURACY
- T/C, RTD, mV, mA AND VOLTAGE INPUTS
- PNEUMATIC CONTROL OUTPUT (3-15 PSI)
- ONE, TWO OR THREE TERM CONTROLS (PROPORTIONAL, INTEGRAL, DERIVATIVE)
- ON/OFF OF DIFFERENTIAL GAP CONTROL
- ELECTRICAL CONTROL OPTION (RELAYS)
- PANEL OR SURFACE MOUNTING



### INTRODUCTION

The *80E Series* Pneumatic Recording Controllers are reliable and accurate instruments that record up to 3 electrical input signals from thermocouples, RTDs, strain gauges or any transducer producing a DC current or a voltage signal. The recording system consists of a high quality DC servo motor, pen arm(s), fiber-tipped pen(s) and a 9.5" (240 mm) round chart paper.

The *80E Series* provides continuous 3 to 15 psi control output(s), which can be ON/OFF, differential gap, proportional only (P), proportional + integral (P+I), proportional + derivative (P+D) or PID control. Optional 4-20 or 0-10 mA retransmission can be ordered for further processing of the signals.

Absolute or deviation alarm relays are optional and operate independent of the pen. They are "fail safe" and come either as absolute or deviation types. Absolute alarms can be set to any value within the range of the instrument, while deviation alarms operate with relation to the desired value, and can be set either above (positive) or below (negative) this value.

Optional Bourdon tube or diaphragm pressure measuring element can be fitted to a two-pen recorder for pressure inputs. The case is suitable for surface or panel mounting.

### SPECIFICATIONS

#### General

<b>Accuracy</b>	±1% f.s.
<b>Dead Band</b>	0.5% f.s. maximum
<b>Response Time</b>	1.5 seconds typical (0-100%)
<b>Alarm Relay</b>	5A @ 30 VDC or 250 VAC
<b>Noise Rejection</b>	Variable filter having a 3 dB point variation, from 2.5 to 0.125 Hz with 20 dB decade roll off rate
<b>Case</b>	Glass filled polyester resin
<b>Protection Class</b>	IP-55
<b>Window</b>	Acrylic
<b>Chart</b>	Round, 240 mm (9.5 inch) dia. Synchronous electric; 24 hr or 7 day rotation; Other rotations are optional
<b>Pen</b>	Disposable fiber-tipped; 1st: Red 2nd: Blue 3rd: Green
<b>Power Supply</b>	110 or 220 VAC, 50 or 60 Hz 24 VAC or VDC are options
<b>Mounting</b>	Surface or flush panel
<b>Ambient Temp.</b>	-10...+55°C
<b>Weight</b>	Single pen: 7 kg (15.5 lb) Two pen: 8 kg (17.5 lb) Three pen: 9 kg (19.5 lb)

#### Pneumatic

<b>Air Supply Output</b>	20 psi (1.4 bar) 3...15 psi (0.2...1 bar); Direct or reverse acting
<b>Air Consumption</b>	4.5 liters per minute maximum
<b>Proportional Band</b>	3%...300%
<b>Integral Time</b>	0.5...32 minute
<b>Derivative Time</b>	0.25...12 minute

# SPECIFICATIONS (continue...)

## Thermocouple Input

**Standard Inputs** Type J, K, R and T  
**Sensitivity** 5 mV to 60 mV f.s.  
**Input Overload** 4 VDC max.  
**Max. Line Resist.** 100 Ω  
**Auto. CJ Comp.** Max. error ±0.08°C over 15°C to 30°C ambient temperature  
**Ambient Temp. Drift** 3μV/°C typical, 6μV/°C max.

## RTD Input

**Sensor** Pt-100  
**Sensitivity** 10...200 Ω f.s.  
**Max. Lead Resist.** 10 Ω total (3.33 Ω/lead for 3-wire RTD)  
**Current** 5 mA max.  
**Ambient Temp. Drift** 0.02%/°C typical, 0.06%/°C max.

## Voltage Input (DC Only)

**Sensitivity** 5 mV to 50 V f.s.  
**Input Current** 150 nA max. for 5...100 mV  
**Input Resistance** [Span (V) x 100] kΩ to a maximum of 1 MΩ  
**Ambient Temp. Drift** 0.03%/°C max.  
**Input Overload** 5...100 mV range: 4 VDC max. 0.1...50 V range: 80 x span (V) up to 200 V max.

## Current Input (DC Only)

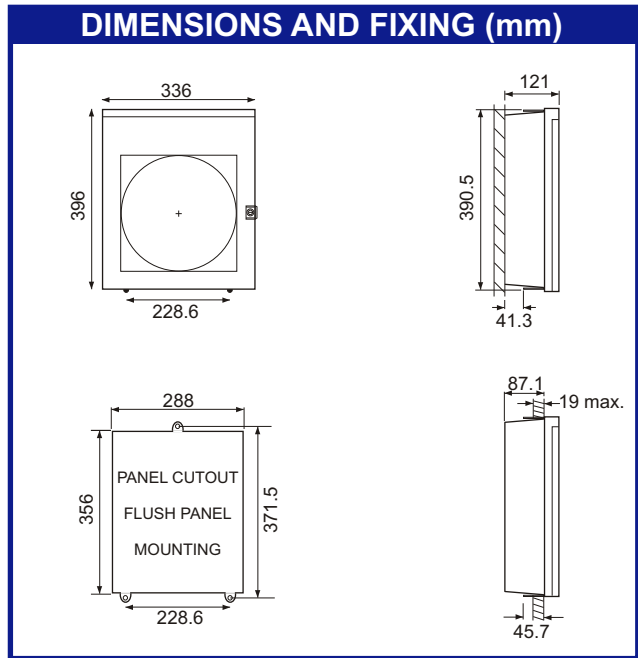
**Sensitivity** 0.05...50 mA f.s.  
**Input Resistance** [50 / mA span] Ω  
**Ambient Temp. Drift** 0.03%/°C max.  
**Input Overload** (80 x span) up to 200 mA max.

## 2-Wire Transmitter Supply

**Output Voltage** 20 V nominal  
**Output Current** 20 mA max. (short circuit protected)

## Signal Re-transmission

**Accuracy** ±0.05% of full scale input  
**Output Span** 0-10 mA & 4-20 mA standard  
**Max. Line Voltage Drop** 6 V i.e. 4-20 mA into 300 Ω & 0-10 mA into 600 Ω



# ORDER CODES

<b>Model 80E</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Second Pen</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	/	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Third Pen</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	/	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<b>RECORDER</b>	1 Pen <input type="checkbox"/>	2 Pen <input type="checkbox"/>	3 Pen (no control) <input type="checkbox"/>
<b>PNEUMATIC CONTROL</b>	No control <input type="checkbox"/>	Proportional (P) <input type="checkbox"/>	Proportional+Integral (P+I) <input type="checkbox"/>
	P+I+D <input type="checkbox"/>	Proportional+Derivative (P+D) <input type="checkbox"/>	ON/OFF <input type="checkbox"/>
	Differential Gap <input type="checkbox"/>		
<b>INPUT</b>	0-1 mA <input type="checkbox"/>	4-20 mA <input type="checkbox"/>	0-20 mA <input type="checkbox"/>
	Pt-100 <input type="checkbox"/>	Thermocouple "J" <input type="checkbox"/>	Thermocouple "K" <input type="checkbox"/>
	Thermocouple "R" <input type="checkbox"/>	Thermocouple "T" <input type="checkbox"/>	Other (specify) <input type="checkbox"/>

<b>RANGE</b>	Specify Range & Unit XXXX
<b>SENSOR FAILURE</b>	Fail Upscale <input type="checkbox"/>
	Fail Downscale <input type="checkbox"/>
<b>CONTROL ACTION</b>	No control <input type="checkbox"/>
	Direct <input type="checkbox"/>
	Reverse <input type="checkbox"/>
<b>POWER SUPPLY</b>	Electric 240 V, 50 Hz <input type="checkbox"/>
	Electric 110 V, 50 Hz <input type="checkbox"/>
	Electric 110 V, 60 Hz <input type="checkbox"/>
	Electric other (specify) <input type="checkbox"/>
<b>CHART ROTATION</b>	24 hours <input type="checkbox"/>
	7 days <input type="checkbox"/>
	Other (specify) <input type="checkbox"/>

<b>TRANSMITTER SUPPLY</b>	Required <input type="checkbox"/>
	Not Required <input type="checkbox"/>
<b>RETRANSMISSION</b>	Not Required <input type="checkbox"/>
	4-20 mA <input type="checkbox"/>
	0-10 mA <input type="checkbox"/>
<b>ALARMS (per pen)</b>	Abs. High <input type="checkbox"/>
	Abs. Low <input type="checkbox"/>
	Dev. High <input type="checkbox"/>
	Dev. Low <input type="checkbox"/>
	2 Abs. High <input type="checkbox"/>
	2 Abs. Low <input type="checkbox"/>
	1 Abs. High & 1 Abs. Low <input type="checkbox"/>
	2 Dev. High <input type="checkbox"/>
	2 Dev. Low <input type="checkbox"/>
	1 Dev. High & 1 Dev. Low <input type="checkbox"/>
	1 Abs. High & 2 Abs. Low <input type="checkbox"/>
	2 Abs. High & 1 Abs. Low <input type="checkbox"/>
	3 Abs. High <input type="checkbox"/>
	3 Abs. Low <input type="checkbox"/>
	None <input type="checkbox"/>

**Sample Order:**  
**80E33P/0-100°C/UDC1XSS**  
**second Pen 0K/0-800°C/UNXNN**  
**Third Pen B/0-100%/D**

*Re-transmission, alarms, 2-wire supply are available on pen 1 only for 3-pen recorders.*

*If control is required for the second pen, proportional only (P) must be specified.*



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