

Applications

- Process Control Systems
- HVAC Systems
- Water Purification Systems
- Vaporizers
- Metal Cleaning Systems
- Plating Systems
- Feed Water & Fuel System
- Pressure Control Controls in Boiler Rooms

EPC-1 Electro- Pneumatic Controller

Accepts 4-20 mA Signal
Accuracy to $\pm 0.5\%$ of Span

EPC FEATURES

NEMA 4 Enclosure

is rugged, watertight and tamper resistant

Backlit LED Display

shows set point, process variable, process deviation from set point or calibrate high or low as selected by display mode switch

Response Speed Adjustment

sets the duration and frequency of air pulses controlling speed of response

Pneumatic Output

sends air to control valve up to maximum air input

AC Power Input

is 115/230 VAC, 50/60 Hz, switch selectable

Optional Remote Control and Remote Set Point Modules

can be mounted up to 1000 feet away



Display Mode Switch

selects set point, process variable, process deviation from set point or calibrate high or low for display

Set Point Adjustment

establishes process set point

Dead Band Adjustment

for hysteresis to balance system accuracy with valve wear

Pneumatic Input

uses standard plant air up to 100 psig maximum

Electrical Signal Input

is 4-20 mA or from RTD with optional signal conditioning card

Intrinsically Safe Option

Factory Mutual Approved for hazardous locations

ONE BOX REPLACES I/P TRANSDUCERS, POSITIONERS AND EXTERNAL POWER SUPPLIES



EPC-1 ELECTRO-PNEUMATIC CONTROLLER

APPLICATION DATA

- Control of E8, Kombat Series K, Intimidator Type J, Boss Type D, Doctor Type MD and other manufacturer's control valves
- Process Control Systems
- HVAC Systems
- Packaged Systems such as Water Purification, Vaporizers, Metal Cleaning, Plating, etc.
- Feed Water and Fuel System Controls in Boiler Rooms
- Ideal for Pressure Control

APPLICABLE CODES

NEMA 4 Enclosure

EPC-1 ELECTRO-PNEUMATIC CONTROLLER

- Simplified Installation eliminates need for Positioner, I/P, External Power Supply & Instrument Quality Air
- No Air Consumption at Steady State
- Air Output 0 to Maximum Supply Pressure
- Loss of Power Reset
- Accuracy to $\pm 0.5\%$ of Span
- Easy to Read Digital Display
- Internal Power Supply for Transmitter

OPTIONS

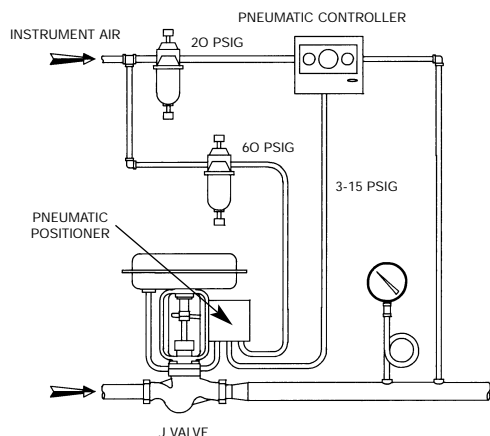
- TSC—Temperature Signal Conditioning Card (for RTD without transmitter)
- LCM-90—Local Control Module (where distance between valve & EPC exceeds 60")
- EPC-RS—Remote Set Point Module
- Pressure Transmitter
- RTD Thermometer
- Differential Pressure Transmitter
- Thermowell

MODELS

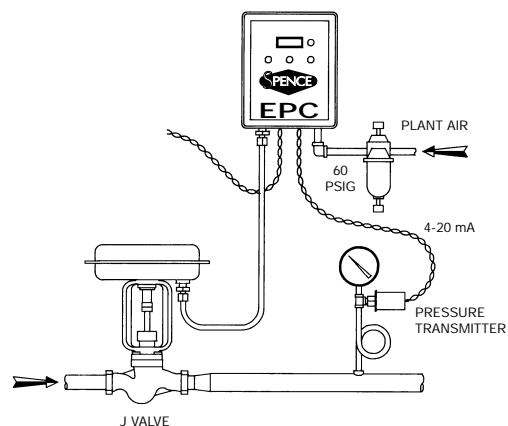
- EPC-1—Electro-Pneumatic Controller
- EPC-1M—For Actuators over 60 square inch or Dual 36 Applications
- EPC-1H—For Dual 60 square inch Actuators

SPENCE EPC SIMPLIFIES YOUR CONTROL SYSTEM

Conventional Pneumatic Control System



Spence EPC-1 Electro-pneumatic Control System



EPC-1

ELECTRO-PNEUMATIC CONTROLLER

SPECIFICATION

EPC-1 AND EPC/IS SERIES

Controllers shall be electro-pneumatic, accepting an input signal of 4 to 20 mA or RTD input and providing an output of 0-100 psig capable of modulating diaphragm or cylinder actuators without the use of valve positioners or I/P transducers. Controllers shall be capable of operating on 115/230 VAC, 50/60 Hz or 24 VDC supply and provided with a minimum 3 1/2 inch digital display indicating set point, process variable, deviation from set point and high/low calibration values.

Controllers shall be capable of direct or reverse action and provided with external AUTO/MANUAL switch. Controllers shall have no steady-state air consumption and be capable of accepting a 100 psig input without the use of regulators. Accuracy shall be $\pm 0.5\%$ of span, gain shall be adjustable, dead band shall be adjustable 0-5% of span and controllers shall be provided with an adjustable derivative function.

Enclosures shall be NEMA 1, 2, 3, 3S, 4, 4X, 12 and 13 rated and provided with a hinged cover. Controllers shall be CSA-Approved, FM-Approved for intrinsic safety.

Controllers shall be Spence Engineering or approved equivalent.

EPC/RCS-90 AND EPC/RCS-90/IS

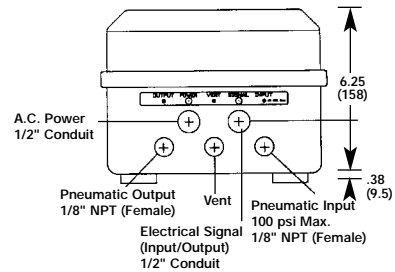
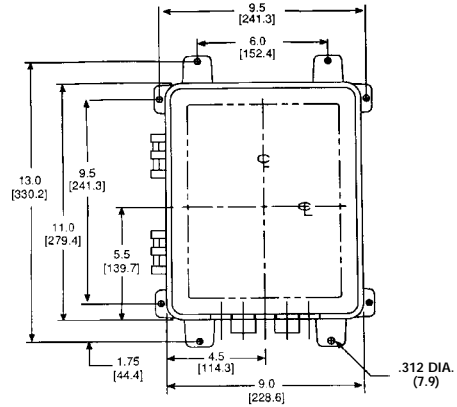
A control module shall be provided to be mounted at or near the valve which will enable the controller to be mounted up to 1000 feet away and linked to the module by only electrical connections. Enclosure shall be NEMA 1, 2, 3, 3S, 4, 4X, 12 and 13 rated. The local control module shall be CSA-Approved, FM-Approved for intrinsic safety.

EPC/RS MODULE

The remote set point module shall consist of a 1/4 DIN, NEMA 1 panel mount enclosure designed to be mounted up to 1000 feet away from the controller. Enclosure shall be provided with a clear, hinged cover equipped with a lock and two keys. Modules shall be provided with all necessary panel mount hardware and plug-in terminal connector. Modules shall have a minimum 3 1/2 inch digit backlit LCD display with 1/2 inch high characters. Display shall indicate high-low transmitter calibration values, process values, deviation from set point and process set point. Module shall allow calibration adjustment and manual change of controller set point. Module shall be powered by 24 VDC from the controller and require no external power supply.

SET POINT RAMP GENERATOR

Controller shall be capable of providing automatic ramp-up and/or ramp-down to or from final process set point incrementally in 4,096 discrete steps. Ramp time shall be adjustable from a minimum of one second to a maximum of 166 hours and shall be selected via digital switches on the front panel. Timer on/off, start/pause/resume, ramp-up/ramp-down and reset functions shall be capable of remote control with a PLC or DCC interface using a zero signal (shunt to ground contact closure).



EPC-1 ELECTRO-PNEUMATIC CONTROLLER

RATINGS

Supply Voltage	115 Volts 50/60 Hz 230 Volts 50/60 Hz 24 Volts DC
Operating Voltage Range	90 to 110%
Power Consumption	10 Watts (max) 0.7 Watts (steady state)
Input	4-20 mA
Air Supply	100 psig maximum
Output.....	0 to max supply pressure
Air Consumption	0 at steady state
Accuracy	$\pm 0.5\%$ Span
Response Speed Range	200:1
Amplifier Gain.....	Normal = 6 High = 12
Dead Band.....	Adjustable, 0 to 5% Span
Input Resistance	150 Ohms
Enclosure Material.....	Noryl*
Enclosure Cover	Polycarbonate
Pneumatic Fittings.....	1/8" FNPT
Air Delivery	0.45 scfm at 30 psi 0.55 scfm at 60 psi 0.63 scfm at 90 psi
Weight.....	9 lbs (4.1 kg)

*Noryl is a registered trademark of General Electric.

EPC-1 ELECTRO-PNEUMATIC CONTROLLER

OPTIONS



EPC/IS INTRINSICALLY SAFE

The Spence EPC/IS is an intrinsically safe, single loop electro-pneumatic controller when installed with barriers. It is Factory Mutual approved for:

- Class I, II, III Division 1, applicable Groups C, D, E, F and G
- Nonincendive for Class I, Division II, Groups C and D
- Suitable for Class II and III, Division 2, Groups F and G hazardous locations

EPC/RS REMOTE SET POINT MODULE

The Spence EPC/RS is a 1/4 DIN, panel mounted module in a NEMA 1 enclosure, designed to provide remote monitoring and control of the EPC-1 Series Controllers up to 1000 feet away.

Included are:

- 3 1/2" digit, backlit LCD display indicating:
 - PMC-1 low and high calibration values
 - Process value (temperature, pressure, etc.)
 - Process deviation from set point
 - Process set point
- Mode select button and LED indicators
- Remote set point button
- Hi-Lo calibration adjustments



EPC/RCS-90 & RCS-90/IS LOCAL CONTROL MODULE

The Spence EPC/RCS-90 is a small enclosure housing a terminal strip and the loading/unloading solenoid valves which are normally inside the EPC-1 Series Controller. Designed to mount on the wall or directly on the control valve, the RCS-90 minimizes the air signal line length and requires only electrical connections to the EPC-1 up to 1000 feet away. Available with hi-cycle standard or FM approved (same as EPC/IS) intrinsically safe solenoid valves for applications including:

- Where EPC-1 air output line to the control valve exceeds 60 feet
- When system response speed needs to be increased
- Where valve location requires intrinsically safe equipment
- Ambient temperatures near valve exceed EPC-1 rating but are within RCS-90's -20 to 175°F (-29 to 79°C) temperature rating
- When EPC-1 is installed for remote valve operation
- To operate double acting cylinder actuators



SET POINT RAMP GENERATOR

The Spence EPC-1 Set Point Ramp Generator module is a factory mounted module which provides automatic ramp-up or ramp-down to or from final process set point. The ramp time is adjustable from one second to 166 hours. Ramp time is selected by digital switches on its front panel which replaces the EPC-1's lower panel. Remote controllable functions include timer on/off, start/pause/resume, ramp-up/ramp-down and reset. Applications include:

- Steam Distribution Systems for automatic, gradual warm-up to prevent boiler overloads, allow traps to remove high startup condensate loads and to eliminate water hammer, "banging" and resulting mechanical damage
- Food, Pharmaceutical and Process Industries in single loop process control systems