

FP302

FIELDBUS TO PNEUMATIC SIGNAL CONVERTER



Features

- Digital LCD Display (optional).
- Configuration through FIELDBUS communication from, a PC or by the local adjustment switches (should be used the display).
- Instantiation and deletion of function blocks.
- Self-diagnostics.
- Weather proof, explosion proof and intrinsically safe.
- Network master capability.
- Universal input accepts several thermocouples, RTDs, mV and Ohm.
- Low air consumption.
- Local (with display) and remote indication of output pressure.
- Remote air loss indication.



Description

The **FP302** is from the first generation of Fieldbus devices. It is a converter mainly intended for interface of a Fieldbus system to a pneumatically actuated control valve, or a positioner. The **FP302** produces a 3~15 psi (0.2~1.0 kg/cm²) output proportional to an input received over the Fieldbus network. The digital technology used in the **FP302** enables, an easy interface between the field and the control room and several interesting features that reduce considerably the installation, operation and maintenance costs.

The FP302 is part of Smar's complete 302 series of Fieldbus devices. Fieldbus is a complete system enabling distribution of the control function to equipment in the field.

Using Fieldbus technology, with its capability to interconnect several devices, very large control schemes can be constructed. In order to be user friendly, the function block concept was introduced. The user may now easily build and overview complex control strategies. Another advantage is added flexibility, the control strategy may be edited without having to rewire or change any hardware.

The FP302 also incorporates advanced function blocks. The input selector block can be used for selector strategies of signals coming from up to three inputs.

The arithmetic block provides calculations that cover the majority of applications in a field control. Splitter/output selector block allows greater flexibility for output control applications. Like split range.

The need for implementation of Fieldbus in small as well as large systems was considered when developing the entire 302 series of Fieldbus devices. They have the common features of being able to act as a master on the network and be configured locally using a magnetic tool, eliminating the need for a configurator or console in many basic applications.

**Function
Blocks Table**

<i>BLOCK</i>	
<i>RES</i>	RESOURCE - This block contains data that is specific to the hardware that is associated with the resource.
<i>TRD</i>	TRANSDUCER BLOCK - This block converts the primary variables of the physical I/O devices into the proper engineering value requested by the function blocks.
<i>DSP</i>	DISPLAY TRANSDUCER - This configures what process variables of the function block will be displayed in the device LCD panel.
<i>DIAG</i>	DIAGNOSTICS TRANSDUCER - It provides online measurement of block execution time, check of links between blocks and other features.
<i>PID</i>	PID CONTROL - This standard block has a lot of valuable features as setpoint treatment (value and rate limiting), filtering and alarm on PV, feed-forward, output tracking and others.
<i>EPID</i>	ENHANCED PID - It has all the standard features plus: bumpless or hard transfer from a "manual" mode to an "automatic" mode and bias.
<i>AO</i>	ANALOG OUTPUT - The AO block provides a value to an output transducer block. It provides value and rate limiting, scaling conversion, fault state mechanism and other features.



ARTH	ARITHMETIC - This calculation block provides some pre-defined equations ready for use in applications as flow compensation, HTG, ratio control and others.
INTG	INTEGRATOR - It integrates a variable in function of the time. There is a second flow input that may be used for the following applications: net flow totalization, volume/mass variation in vessels and precise flow ratio control.
ISEL	INPUT SELECTOR - This block has four analog inputs that may be selected by an input parameter or according to a criterion as first good, maximum, minimum, middle and average.
CHAR	SIGNAL CHARACTERIZER - It has capability for two signal characterization based on the same curve. The second input has an option for swapping "x" to "y", providing an easy way to use the inverse function, that may be used in signal characterization of read-back variables.
SPLT	SPLITTER - This block is used in two typical applications: split ranging and sequencing. It receives the output of PID block that is processed according to the selected algorithm then it generates the values for the two analog output blocks.
AALM	ANALOG ALARM - This alarm block has dynamic or static alarm limits, hysteresis, temporary expansion of alarm limits on step setpoint changes to avoid nuisance alarms, two levels of alarm limits and delay for alarm detection.
SPG	SETPOINT RAMP GENERATOR - This block generates setpoint following a profile in function of the time. Typical applications are temperature control, batch reactors, etc.
TIME	TIMER - This block has four discrete inputs that are processed by combination logic. The selected timer processing type operates on the combined input signal to produce a measurement, delay, extension, and pulse or debounce.
LLAG	LEAD-LAG - This block provides dynamic compensation of a variable. It is used normally in a feed-forward control.
OSDL	OUTPUT SELECTOR / DYNAMIC LIMITER - It has two algorithms: <ul style="list-style-type: none"> - Output selector - selection of output by a discrete input. - Dynamic limiter - this algorithm was developed specially for double cross limit in combustion control.
CT	CONSTANT - It provides analog and discrete output parameters with constant values.

Technical Characteristics

Functional Specifications

Output Signal	3~15 psi (0,2~1,0 kg/cm ²).
Input Signal	Digital only. FOUNDATION™, 31.25 Kbit/s voltage mode with bus power.
Power Supply	Bus powered: 9 - 32 Vdc. Quiescent current consumption 12 mA.
Indication	Optional 4½-digit numerical and 5-character alphanumeric LCD indicator.
Hazardous Location Certification	Explosion proof, weather proof and intrinsically safe (CENELEC and FM standards).
Temperature Limits	Operation: -40 to 85 °C (-40 to 185 °F). Storage: -40 to 90 °C (-40 to 194 °F). Display: -10 to 60 °C (-14 to 140 °F) operation. -40 to 85 °C (-40 to 185 °F) without damage.
Humidity Limits	0 to 100% RH.
Turn-on Time	Approximately 10 seconds.
Update Time	Approximately 0.5 second.

Performance Specifications

Accuracy	0.4% of span.
Supply Pressure	18-22 psi (1,2 -1,5 kg/cm ²).
Consumption	0.24 Nm ³ /h (0.14 scfm).
Output Capacity	6.7 Nm ³ /h (4 scfm).
Ambient Temperature Effect	±0.10%/°C.
Supply Pressure Effect	Negligible.
Vibration Effect	Meets SAMA PMC 31.1.

Physical Specifications

Electro-Magnetic Interference Effect	Designed to comply with IEC 801.
Electrical Connection	1/2-14 NPT, Pg 13,5 or M20 x 1,5.
Pneumatic Connections	(Supply and output). 1/4 -18 NPT.
Material of Construction	Injected low copper aluminum with polyester painting or 316 Stainless Steel housing, with Buna N O-rings on cover (NEMA 4X, IP67).
Mounting	With an optional bracket can be installed on a 2" pipe or fixed on a wall or panel.
Weight	Without display and mounting bracket: 1.8 kg. Add for digital display: 0.13 kg. Add for mounting bracket: 0.60 kg

Ordering Code

MODEL FP302 **FIELD BUS TO PNEUMATIC SIGNAL CONVERTER**

CODE	Local Indicator
0	Without Indicator
1	With Digital Indicator

CODE	Mounting Bracket for 2" Pipe Mounting
0	Without Bracket
1	Carbon Steel Bracket
2	316 SST Bracket

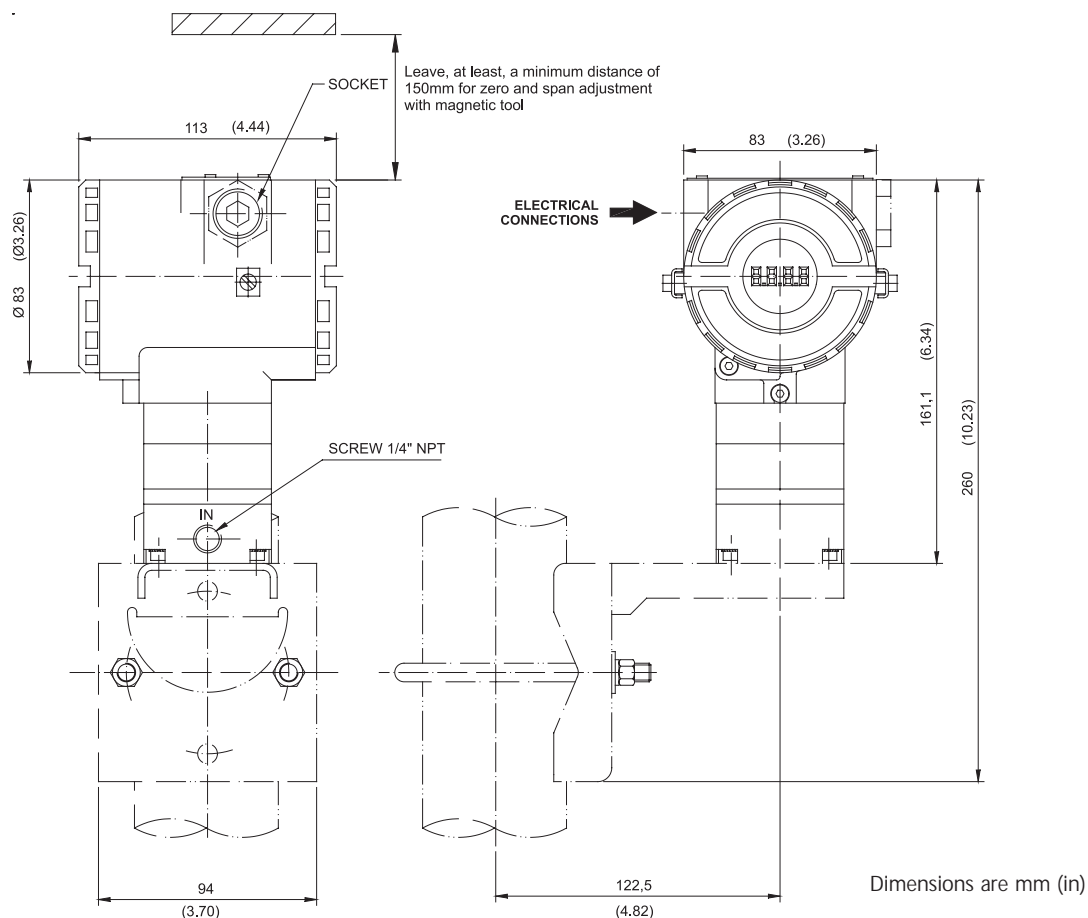
CODE	Electrical Connections
0	1/2 - 14 NPT
A	M20 x 1,5
B	Pg13,5 DIN

CODE	Optional Items *
H1	316 SST Housing
AI	316 SST Bolts
ZZ	Special Options - Specify

FP302 - 1 1 - 0 * ← TYPICAL MODEL NUMBER

*Leave it blank for no optional items.

Dimensions



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