



## Smart Press

# PST...-R

## **ELECTRONIC PRESSURE SWITCHES**

#### PRODUCT DATA



#### **APPLICATION**

Honeywell FEMA's PST...-R series Electronic Pressure Switches require adjustment (configuration and parameterization) in only two modes (the basic mode and the expert mode) and are suitable for an extremely wide range of applications, including the precision-adjustment and monitoring of system pressures in the field of plant construction, fluidics, process technology, and pneumatics, as well as in the monitoring and control of pumps and compressors.

Due to their monitored sensors with a standardized warning output, these devices are suitable for use in manufacturing lines in the automotive industry as well as in the area of machine tool construction. These switches provide sufficient accuracy (0.5% of final value) for measurement monitoring in many laboratory applications.

#### **FEATURES**

Housing and back polybutylene terephtalate (PBT)

Max. ambient temp. -20...+60 °C Storage temperature -35...+80 °C Temperature, medium -20...+100 °C

0...95%, non-condensing Relative air humidity Accuracy, total 0.5% of final value

Medium temp. drift 0.3% per 10 K (0.5% per 10 K in case of 250/400/600 mbar)

Total weight 380 grams Parts in contact with medium

High-pressure versions 1.4571 + 1.4542 Low-pressure / flush 1.4571 + 1.4435

**Process connection** 

Manometer connection G1/2" external thread G3/4" external thread Flush connection

**Electrical connection** 

5-prong M12 plug, A-code, as per Plug DIN IEC 60947-5-2 and additional

> 3-prong M12 plug II as per EN 60335-1 IP65 as per EN 60529

Protection class Protection type C as per DIN IEC 60654 Climate class Power supply 15...36 Vdc, max. 100 mA **EMC** compatible as per EN61326/A1

Switch outputs

Open-Collector outputs Two; configurable as high-side/

low-side or as push-pull switches, max. load: 250 mA / 15...36 Vdc

30 ms

Switching difference (SP and RP) configurable

Relay outputs

Reaction time

Contact type 1 switch-over contact Min. electrical lifetime 250,000 switching cycles Switching performance, gold contacts (AgSn02+Au)

1.5 VA (24 Vdc / 60 mA, 230 Vac / AC1 (resistive) 6.5 mA)

unsuitable AC15 (inductive) Max. switch-on current 60 mA for < 5 ms

Min. switching perf. 50 mW (either > 5 V or > 2 mA) Switching performance, silver contacts (AgSn0<sub>2</sub>) AC1 (resistive) 690 VA (230 Vac / 3 A) AC15 (inductive) 230 VA (230 Vac / 1 A) Max. switch-on current 30 A for < 5 ms

500 mW (> 12 V or > 10 mA) Min. switching perf.

Diagnostic output Output configuration

warning output (plug 2), max. 20 mA, 15...36 Vdc

Transmitter output (analog output)

0...10 V and 4...20 mA, Voltage / current

configurable in expert mode

Transient response approx. 300 ms

#### **HARDWARE**

The electronic pressure switches of this series provide switching and transmitting functionality, but also relaying functionality.

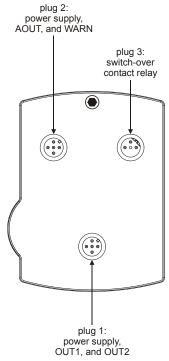


Fig. 1. PST...-R Series, rear view of housing

#### **FUNCTION**

The PST...R Electronic Pressure Switches are screwed directly into the pressure line or the boiler's connection nozzle. When monitoring gaseous media and low-viscosity liquids, G1/2" standard manometer can be used. In the case of high-viscosity and roiled liquids, G3/4" (flush) process connections must be used.

The LCD display screen indicates the pressure as a 4-digit digital value and as an analog value (bar graph).

Two LED's provide information on the switching status of the outputs and on the alarm status.

The device is configured and parameterized using the large rotary/push button. The user can move from screen to screen and enter values and/or change configurations by rotating the button. Values and configurations are confirmed and/or stored by pressing this button.

Parameterization and configuration are performed in only two modes (the basic mode and the expert mode).

#### **Basic Mode (Parameterization)**

- Outputs 1 and 2: Adjustment of the switch-points (SP) and reverse switch-points (RP).
- Adjustment of the lower (ZERÓ) and upper (FSO =
  "full-scale output") reference values for limiting the
  analog output signal to a defined pressure range.
- Setting of a filter value in a range of 0...95% (ATT)
- When locked, can be unlocked by entering a CODE.

#### **Expert Mode (Configuration)**

#### Output 1 (OUT1)

- Configurable as a maximum or minimum monitor.
- Configurable as a window monitor.
- Configurable as normally-open or normally-closed.
- Configurable as low-side/high-side switch or as pushpull switch.

#### Output 2 (OUT2)

- Configurable as a maximum or minimum monitor.
- Configurable as a window monitor.
- Configurable as normally-open or normally-closed.
- Configurable as low-side/high-side switch or as pushpull switch.
- Configurable as a warning output (max. 250 mA).

#### Analog Output (AOUT)

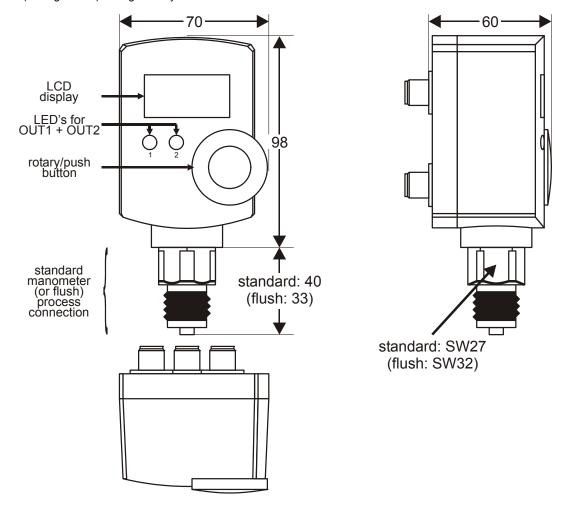
 Configurable as a 0...10 V / 10...0 V or 4...20 mA / 20...4 mA output (default setting: 0...10 V)

#### **Additional Configuration**

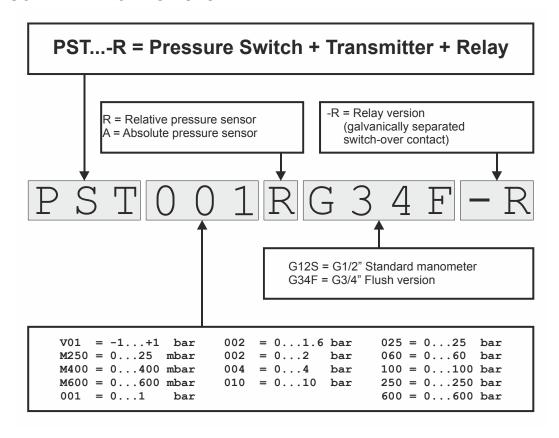
- Relay output (REL) configurable to be coupled with OUT1, OUT2, or the warning output.
- Selection of the pressure units (bar, Pa, or psi) in the UNIT display.
- Data restorable using the REST command.
- Selection of a 4-digit locking code (0001 to 9999) in the CODE display (0000 = no code).
- Simulation mode:
  - Using the rotary/push button, the pressure can be simulated over the entire range ("SIM1" shown in display).
  - The outputs can switch alternately ("SIM2" shown in display) in order to test the installation's reaction time in the range of from 4 times per second to once every 16 seconds (corresponding to a range of 0...100%).
- The LCD display's backlighting can be switched from "on continuously" ("LCD+" shown in display) to "turned off when rotary/push button not operated for 30 sec" ("LCD-" shown in display).
- Electronic drag indicator (represented in the LCD display by a dotted arrow) for indicating the max./min. pressure. After pressing the rotary/push button, the user can (in the EDIT mode) read off the elapsed time (in hours; resolution: 0.01 h) between the event and the present time.

## **PROCESS CONNECTIONS**

The device is connected to the pressure-side via a G1/2" standard manometer threaded connection or a G3/4" flush process connection (see fig. below). The geometry of the G1/2" and G3/4" connections conforms to DIN EN 837.



## PRODUCT IDENTIFICATION SYSTEM



### **PRESSURE RANGES**

Table 1. Pressure ranges, connection, and equipment of models

Table 1. Fressure ranges, connection, and equipment of models											
pressure	type of pressure	bursting pressure (bar)	max. pressure (bar)	temperature drift (%/10 K)	process	equipment					
range (bar)					connection	switch, transmitter, and relay					
-1+1	relative	≥ 10	6	0.3	G1/2"	PSTV01RG12S-R					
00.25	relative	≥ 10	1	0.5*	G1/2"	PSTM250RG12S-R					
00.4	relative	≥ 10	2	0.5*	G1/2"	PSTM400RG12S-R					
00.6	relative	≥ 10	2	0.5*	G1/2"	PSTM600RG12S-R					
01	relative	≥ 10	6	0.3	G1/2"	PST001RG12S-R					
01.6	relative	≥ 10	6	0.3	G1/2"	PST002RG12S-R					
04	relative	≥ 20	12	0.3	G1/2"	PST004RG12S-R					
010	relative	≥ 50	30	0.3	G1/2"	PST010RG12S-R					
025	relative	≥ 125	75	0.3	G1/2"	PST025RG12S-R					
060	relative	≥ 300	180	0.3	G1/2"	PST060RG12S-R					
0100	relative	≥ 500	300	0.3	G1/2"	PST100RG12S-R					
0250	relative	≥ 1600	500	0.3	G1/2"	PST250RG12S-R					
0600	relative	≥ 1800	1000	0.3	G1/2"	PST600RG12S-R					
-1+1	relative	≥ 10	6	0.3	G3/4"	PSTV01RG34F-R					
00.25	relative	≥ 10	1	0.5*	G3/4"	PSTM250RG34F-R					
00.4	relative	≥ 10	2	0.5*	G3/4"	PSTM400RG34F-R					
00.6	relative	≥ 10	2	0.5*	G3/4"	PSTM600RG34F-R					
01	relative	≥ 10	6	0.3	G3/4"	PST001RG34F-R					
01.6	relative	≥ 10	6	0.3	G3/4"	PST002RG34F-R					
04	relative	≥ 20	12	0.3	G3/4"	PST004RG34F-R					
010	relative	≥ 50	30	0.3	G3/4"	PST010RG34F-R					
025	relative	≥ 125	75	0.3	G3/4"	PST025RG34F-R					
02	absolute	≥ 10	6	0.3	G1/2"	PST002AG12S-R					
010	absolute	≥ 50	30	0.3	G1/2"	PST010AG12S-R					
02	absolute	≥ 10	6	0.3	G3/4"	PST002AG34F-R					
010	absolute	≥ 50	30	0.3	G3/4"	PST010AG34F-R					

NOTE\*: Due to their design, depending upon their installation orientation, the weight of the diaphragm and of the filling medium in the sensors of the PSTM... series can have an effect on measurement values of up to 0.5% FS. The devices are all calibrated in the vertical position; in other orientations, deviations in measurement values are therefore possible. For this reason, vertical installation (i.e. with the device positioned vertically above the connection pipe) is to be preferred. In the event that devices of the PSTM... series are installed in a horizontal position, they can be zeroed using the integrated zeroing function ("SET0" shown in the display) prior to initial operation.

## **OVERVIEW OF ADJUSTABLE PARAMETERS**

activity / situation	LCD display sho	parameters adjustable in			
	symbols	digital values / text	basic mode	expert mode	
Current Pressure Is Displayed <sup>1</sup>					
current pressure	, unit	digital value	-	-	
SP [RP] of OUT1	OUT1	-	-	-	
SP [RP] of OUT2	OUT2	-	-	-	
AOUT (pressure betw. ZERO & FSO)	AOUT	-	-	-	
pressure is rising	<b>)</b>	-	-	-	
pressure is dropping	•	1	-	-	
warning	WARN	digital value	NO	NO	
Parameterizing Output 1 [Output 2]					
SP	■, OUT1 [OUT2], SP	digital value	YES	NO	
RP	■, OUT1 [OUT2], RP	digital value	YES	NO	
first limit of window (WIN)	I, OUT1 [OUT2], SP	digital value	YES	NO	
second limit of window (WIN)	■, OUT1 [OUT2], RP	digital value	YES	NO	
Configuring Output 1 [Output 2]					
max. pressure monitor (SP>RP)	EXPERT, SP, RP, ■■■▶	OUT1 [OUT2]	NO	YES	
min. pressure monitor (SP <rp)< td=""><td>EXPERT, SP, RP, ◀▮▮▮</td><td>OUT1 [OUT2]</td><td>NO</td><td>YES</td></rp)<>	EXPERT, SP, RP, ◀▮▮▮	OUT1 [OUT2]	NO	YES	
window monitor (WIN)	EXPERT, WIN	OUT1 [OUT2]	NO	YES	
output 2 as WARN	EXPERT, WARN	OUT2	NO	YES	
N-C low-side output 1 [2], OC <sup>2</sup>	EXPERT, —, ZERO	FCT1 [FCT2]	NO	YES	
N-O low-side output 1 [2], OC <sup>2</sup>	EXPERT,, ZERO	FCT1 [FCT2]	NO	YES	
N-C high-side output 1 [2], OC <sup>2</sup>	EXPERT, —, FSO	FCT1 [FCT2]	NO	YES	
N-O high-side output 1 [2], OC <sup>2</sup>	EXPERT,, FSO	FCT1 [FCT2]	NO	YES	
output 1 [2] as "push-pull"	EXPERT,, ZERO, FSO	FCT1 [FCT2]	NO	YES	
output 1 [2] as inverted "push-pull"	EXPERT, —, ZERO, FSO	FCT1 [FCT2]	NO	YES	
Parameterizing the Analog Output					
first limit (ZERO) of range	I, AOUT, ZERO	digital value	YES	NO	
second limit (FSO) of range	■, AOUT, FSO	digital value	YES	NO	
Configuring the Analog Output					
010 V voltage-controlled output	EXPERT, AOUT	FCTV	NO	YES	
100 V voltage-controlled output	EXPERT, AOUT, INV $ackslash$	FCTV	NO	YES	
420 mA current-control output	EXPERT, AOUT	FCTA	NO	YES	
204 mA current-control output	EXPERT, AOUT, INV	FCTA	NO	YES	
Configuring the Relay				•	
relay coupled with output 1	EXPERT, OUT1	REL	NO	YES	
relay coupled with output 2	EXPERT, OUT2	REL	NO	YES	
relay configured as alarm output	EXPERT, WARN	REL	NO	YES	
Configuring Unit	-			•	
unit	EXPERT, Pa / bar / psi	UNIT	NO	YES	
Parameterizing Filter	•				
attenuation	<b>I</b> , ATT, %	digital value or OFF	YES	NO	
Locking / Unlocking Device Using a C	ode	<del>-</del>			
unlocked (code = 0000)	-	EXP	YES	NO	
locked (code ≠ 0000)	-	CODE, digital value	YES	NO	
Changing Code		, 5			
device is locked	EXPERT	LOCK	NO	YES	
device is unlocked	EXPERT	CODE	NO	YES	
	pert mode are also visible in the user mo				

<sup>&</sup>lt;sup>1</sup>The same symbols appearing in the expert mode are also visible in the user mode, where they indicate the current configuration of the given output. Exceptions: If an output has been configured to act as a max. / min. monitor, in the user mode, ▶ and ◀ appear instead of ■■■▶ and ◀■■■.

<sup>2</sup>Open-Collector

# **OVERVIEW OF ADJUSTABLE PARAMETERS (CONTINUED)**

activity / aituation	LCD display shows	parameters adjustable in							
activity / situation	symbols	digital values / text	basic mode	expert mode					
Locking the expert mode separately (just after switching-on the device, press the rotary/push button until "V" appears in the disp									
expert mode locked	EXPERT, EDIT	EXPL	NO	YES					
expert mode unlocked	EXPERT, EDIT	EXPN	NO	YES					
Resetting the display lighting									
on continuously	EXPERT	LED+	NO	YES					
turned off	EXPERT	LED-	NO	YES					
Electronic max./min. indicator									
pressure exceeds fixed value	■■■, pressure unit (Pa / bar / psi)	digital value	YES	NO					
pressure exceeds fixed duration	∎∎▶, EDIT, h	digital value or NAVL	YES	NO					
pressure drops below fixed value	◀■■■, pressure unit (Pa / bar / psi)	digital value	YES	NO					
pressure drops below fixed duration	<b>∢∎∎≣</b> , EDIT, h	digital value or NAVL	YES	NO					
storage reset	∢∎∎∎, ∎∎∎≯, EDIT	RSET	YES	NO					
Zeroing sensor (just after switching-c	on the device, press the rotary/push button ເ	ıntil "V" appears in the	display)						
selection of zeroing function	EXPERT	SET0	NO	YES					
zeroing	EXPERT, EDIT, pressure unit, ■	digital value	NO	YES					
Simulation mode									
configure simulation mode	EXPERT, EDIT	SIM- / SIM1 / SIM2	NO	YES					
execute pressure simulation SIM1	######################################	digital value, SIM1	YES	NO					
execute switch simulation SIM2	■, %	digital value, SIM2	YES	NO					

FEMR

Manufactured for and on behalf of the Environmental and Combustion Controls Division of Honeywell Technologies Sarl, Rolle, Z.A. La Pièce 16, Switzerland by its Authorized Representative:

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Subject to change without notice. Printed in Germany

EN0B-0346GE51 R0715