Honeywell



Smart Press

PST... and PST...-R ELECTRONIC PRESSURE SWITCHES

PRODUCT DATA



APPLICATION

Honeywell FEMA's PST and 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			
-				
Relative air humidity	095%, non-condensing			
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 m	nedium			
High-pressure versions	1.4571 + 1.4542			
Low-pressure / flush	1.4571 + 1.4435			
Process connection				
Manometer connection	G1/2" external thread			
Flush connection	G3/4" external thread			
Electrical connection				
PST series	5-prong M12 plug, A-coded as per			
	DIN IEC 60947-5-2			
PSTR series	Extra 3-prong M12 plug			
Protection class	II as per EN 60335-1			
Protection type	IP65 as per EN 60529			
Climate class	C as per DIN IEC 60654			
Power supply	1536 Vdc, max. 100 mA			
EMC	compatible as per EN61326/A1			
Switch outputs (all ver	sions)			
Open-Collector outputs	Two; configurable as high-side/			
	low-side or as push-pull switches,			
	max. load: 250 mA / 1536 Vdc			
Reaction time	30 ms			
Switching difference	(SP and RP) configurable			
Relay outputs (PSTF				
Contact type	1 switch-over contact			
Min. electrical lifetime	250,000 switching cycles			
	e, gold contacts (AgSn0 ₂ +Au)			
AC1 (resistive)	1.5 VA (24 Vdc / 60 mA, 230 Vac /			
	6.5 mA)			
AC15 (inductive)				
Max. switch-on current	60 mA for < 5 ms			
Min. switching perf.	50 mW (either > 5 V or > 2 mA)			
	e, silver contacts (AgSn0 ₂)			
AC1 (resistive)	690 VA (230 Vac / 3 Å)			
AC15 (inductive)	230 VA (230 Vac / 1 A)			
Max. switch-on current	30 A for < 5 ms			
Min. switching perf.	500 mW (> 12 V or > 10 mA)			
Diagnostic output	worping output (plug 2)			
Output configuration	warning output (plug 2),			
max. 20 mA, 1536 Vdc Transmitter output (analog output)				
Voltage / current	010 V and 420 mA,			
vollage / cullent	configurable in expert mode			
Transient response	approx. 300 ms			
	5 PP. 571 000 110			

VARIANTS

The electronic pressure switches are available in two variants, easily distinguishable by the number of M12 plugs present on the rear side.

PST... Series

The devices of this series provide both switching functionality and transmitting functionality.

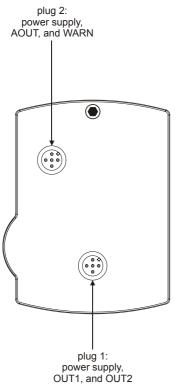
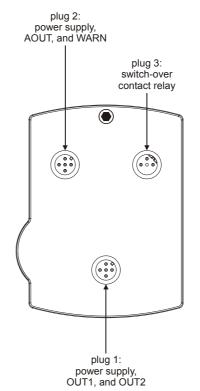
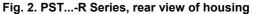


Fig. 1. PST... Series, rear view of housing

PST...-R Series

Like PST... Series devices, the devices of this series provide switching and transmitting functionality, but also relaying functionality.





FUNCTION

The PST and 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 (ZERO) 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)

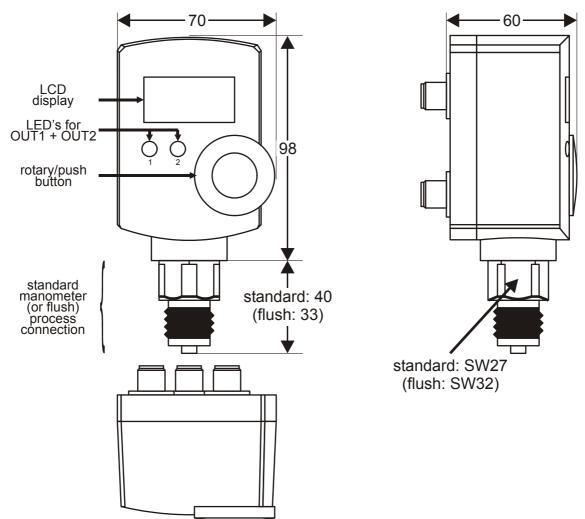
 Configurable as a 0...10 V / 10...0 V or 4...20 mA / 20...4 mA output (default setting: 0...10 V)

Additional Configuration

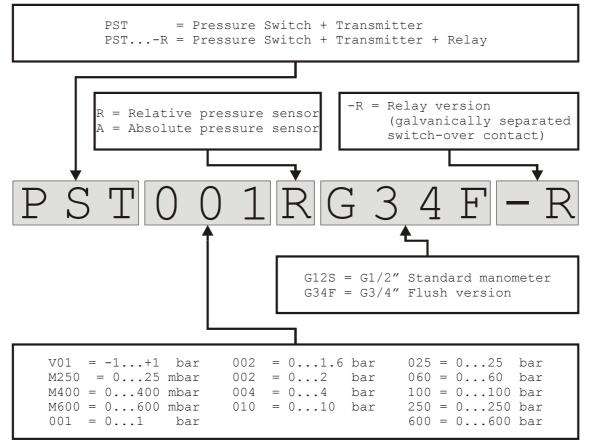
- Relay output (REL) configurable to be coupled with OUT1, OUT2, or the warning output.
- Selection of the pressure units (bar, Pa, or psi) in the UNIT display.
- Data restorable using the REST command.
- Selection of a 4-digit locking code (0001 to 9999) in the CODE display (0000 = no code).
- Simulation 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

	4	hursting	max.	temperature		equipment		
pressure range (bar)	type of pressure	pressure (bar)	pressure (bar)	drift (%/10 K)	process connection	switch and transmitter	switch, transmitter, and relay	
-1+1	relative	≥ 10	6	0.3	G1/2"	PSTV01RG12S	PSTV01RG12S-R	
00.25	relative	≥ 10	1	0.5*	G1/2"	PSTM250RG12S	PSTM250RG12S-R	
00.4	relative	≥ 10	2	0.5*	G1/2"	PSTM400RG12S	PSTM400RG12S-R	
00.6	relative	≥ 10	2	0.5*	G1/2"	PSTM600RG12S	PSTM600RG12S-R	
01	relative	≥ 10	6	0.3	G1/2"	PST001RG12S	PST001RG12S-R	
01.6	relative	≥ 10	6	0.3	G1/2"	PST002RG12S	PST002RG12S-R	
04	relative	≥ 20	12	0.3	G1/2"	PST004RG12S	PST004RG12S-R	
010	relative	≥ 50	30	0.3	G1/2"	PST010RG12S	PST010RG12S-R	
025	relative	≥ 125	75	0.3	G1/2"	PST025RG12S	PST025RG12S-R	
060	relative	≥ 300	180	0.3	G1/2"	PST060RG12S	PST060RG12S-R	
0100	relative	≥ 500	300	0.3	G1/2"	PST100RG12S	PST100RG12S-R	
0250	relative	≥ 1600	500	0.3	G1/2"	PST250RG12S	PST250RG12S-R	
0600	relative	≥ 1800	1000	0.3	G1/2"	PST600RG12S	PST600RG12S-R	
-1+1	relative	≥ 10	6	0.3	G3/4"	PSTV01RG34F	PSTV01RG34F-R	
00.25	relative	≥ 10	1	0.5*	G3/4"	PSTM250RG34F	PSTM250RG34F-R	
00.4	relative	≥ 10	2	0.5*	G3/4"	PSTM400RG34F	PSTM400RG34F-R	
00.6	relative	≥ 10	2	0.5*	G3/4"	PSTM600RG34F	PSTM600RG34F-R	
01	relative	≥ 10	6	0.3	G3/4"	PST001RG34F	PST001RG34F-R	
01.6	relative	≥ 10	6	0.3	G3/4"	PST002RG34F	PST002RG34F-R	
04	relative	≥ 20	12	0.3	G3/4"	PST004RG34F	PST004RG34F-R	
010	relative	≥ 50	30	0.3	G3/4"	PST010RG34F	PST010RG34F-R	
025	relative	≥ 125	75	0.3	G3/4"	PST025RG34F	PST025RG34F-R	
02	absolute	≥ 10	6	0.3	G1/2"	PST002AG12S	PST002AG12S-R	
010	absolute	≥ 50	30	0.3	G1/2"	PST010AG12S	PST010AG12S-R	
02	absolute	≥ 10	6	0.3	G3/4"	PST002AG34F	PST002AG34F-R	
010	absolute	≥ 50	30	0.3	G3/4"	PST010AG34F	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 she	parameters adjustable in		
	symbols	digital values / text	basic mode	expert mod
Current Pressure Is Displayed ¹				1
current pressure	IIIIIIIIIIIIIIIIIIIIIIIIII , unit	digital value	-	-
SP [RP] of OUT1	OUT1	-	-	-
SP [RP] of OUT2	OUT2	-	-	-
AOUT (pressure betw. ZERO & FSO)	AOUT	-	-	-
pressure is rising	•	-	-	-
pressure is dropping	•	-	-	-
warning	WARN	digital value	NO	NO
Parameterizing Output 1 [Output 2]				-
SP	I, OUT1 [OUT2], SP	digital value	YES	NO
RP	I, OUT1 [OUT2], RP	digital value	YES	NO
first limit of window (WIN)	∎, 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, 4</td><td>OUT1 [OUT2]</td><td>NO</td><td>YES</td></rp)<>	EXPERT, SP, RP, 4	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 ²	EXPERT, —, ZERO	FCT1 [FCT2]	NO	YES
N-O low-side output 1 [2], OC ²	EXPERT,, ZERO	FCT1 [FCT2]	NO	YES
N-C high-side output 1 [2], OC ²	EXPERT, —, FSO	FCT1 [FCT2]	NO	YES
N-O high-side output 1 [2], OC ²	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,	FCT1 [FCT2]	NO	YES
Parameterizing the Analog Output				
first limit (ZERO) of range	, AOUT, ZERO	digital value	YES	NO
second limit (FSO) of range	, AOUT, FSO	digital value	YES	NO
Configuring the Analog Output				1
010 V voltage-controlled output	EXPERT, AOUT	FCTV	NO	YES
100 V voltage-controlled output	EXPERT, AOUT, INV	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				.20
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		0.00		120
attenuation	∎, ATT, %	digital value or OFF	YES	NO
Locking / Unlocking Device Using a C			120	
unlocked (code = 0000)	-	EXP	YES	NO
locked (code \neq 0000)	-	CODE, digital value	YES	NO
	-		163	NU
Changing Code device is locked	EVDEDT	100%	NO	VEO
	EXPERT	LOCK	NO	YES
device is unlocked ¹ The same symbols appearing in the exp	EXPERT	CODE	NO	YES

¹The 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 III) and (IIII. ²Open-Collector

OVERVIEW OF ADJUSTABLE PARAMETERS (CONTINUED)

	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 displa								
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				<u>.</u>				
pressure exceeds fixed value	III), 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	<pre>(IIII, pressure unit (Pa / bar / psi)</pre>	digital value	YES	NO				
pressure drops below fixed duration	∢∎∎∎ , EDIT, h	digital value or NAVL	YES	NO				
storage reset	(III, III), EDIT	RSET	YES	NO				
Zeroing sensor (just after switching-o	n the device, press the rotary/push button u	intil "V" appears in the	display)	<u>.</u>				
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	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	digital value, SIM1	YES	NO				
execute switch simulation SIM2	I , %	digital value, SIM2	YES	NO				

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