

Rosemount™ 326P Pressure Transmitter



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1 Introduction

The pressure transmitter measures and monitors pressure in a facility.

1.1 Pressure specifications

To ensure product performance and safety, adhere to the following specifications.

1.1.1 Measuring range

This table shows the range at which the pressure transmitter is able to measure pressure.

Pressure range	Measuring range limits	
	inH ₂ O	mbar
1A	-2.0 to 40	-5 to 99.5
2A	-5.0 to 100	-12.4 to 248.8
	psi	bar
3A	-14.5 to 14.5	-1 to 1
2B	-0.73 to 14.5	-0.05 to 1
4A	-1.45 to 20	-0.1 to 1.38
5A	-1.8 to 36	-0.124 to 2.48
6A	-14.5 to 55	-1 to 3.79
7A	-14.5 to 85	-1 to 5.86
8A	-14.5 to 145	-1 to 10
9A	-14.5 to 230	-1 to 15.9
1B	-14.5 to 360	-1 to 24.8

Note

The pressure transmitter is vacuum resistant. There are restrictions for nominal pressure ranges at or below 4.35 psi (300 mbar). Adhere to the specifications in the data sheet.

1.1.2 Overpressure limits

The table in this topic shows maximum allowable pressure for the pressure transmitter.

⚠ CAUTION

Take appropriate measures to avoid exceeding the specified overpressure limits.

Pressure range	Overpressure limits	
	inH ₂ O	bar
1A	1606	4
2A	2400	6
	psi	bar
3A	145	10
2B	145	10
4A	215	15
5A	290	20
6A	435	30
7A	435	30
8A	725	50
9A	1085	75
1B	1450	100

1.1.3 Burst pressure limits

The burst pressure limit is the pressure at which the pressure transmitter will no longer function or be damaged.

⚠ CAUTION

Do not exceed the burst pressure limit. Exceeding the burst pressure limit can damage the pressure transmitter. Continuing to use the pressure transmitter after exceeding the burst pressure limit can cause damage and physical injury.

Pressure range	Burst pressure limits	
	inH ₂ O	bar
1A	12044	30
2A	12044	30
	psi	bar
3A	435	30
2B	435	30
4A	580	40
5A	725	50
6A	1450	100
7A	1450	100
8A	2175	150
9A	3625	250

Pressure range	Burst pressure limits	
1B	5075	350

1.2 Operating modes

The wiring configuration sets the operating mode. After wiring the pressure transmitter, it automatically recognizes the connections and changes to the respective operating mode.

For more information, see [Electrical connection](#).

1.2.1 Two-wire operation

OUT2 (pin 2) The analog signal proportional to pressure (4-20 mA or 20-4 mA).

1.2.2 Three-wire operation

OUT1 (pin 4) Switching signal for system pressure limit value

- OUT2 (pin 2)**
- Switching signal used for system pressure limit value
 - Analog signal proportional to pressure (4-20 mA or 20-4 mA)

1.3 Functions

The Rosemount 326P Pressure transmitter performs the functions described in this section.

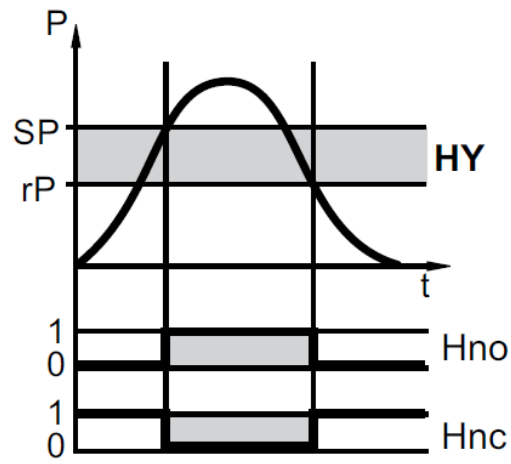
1.3.1 Switching function

The switching function is available only for three-wire operations. OUT1 or OUT2 changes its switching status if the pressure is above or below the set switching limits (SPx, rPx).

These switching functions are available:

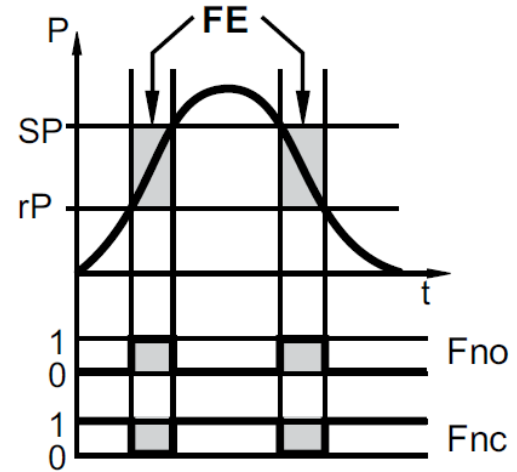
- Hysteresis function/normally open: $OUx = Hno$ ([Figure 1-1](#))
- Hysteresis function/normally closed: $OUx = Hnc$ ([Figure 1-1](#))
First set the set point (SPx), then the reset point (rPx) with the requested difference.
- Window function/normally open: $OUx = Fno$ ([Figure 1-2](#))
- Window function/normally closed: $OUx = Fnc$ ([Figure 1-2](#))
Set the width of the window using the difference between SPx and rPx. SPx is the upper value and rPx is the lower value.

Figure 1-1: Hysteresis function



- SP: Set point
- rP: Reset point
- P: Pressure
- Hy: Hysteresis
- Hno: Hysteresis function/normally open
- Hnc: Hysteresis function/normally closed

Figure 1-2: Window function



- FE: Window
- Fno: Window function/normally open
- Fnc: Window function/normally closed

1.3.2 Analog signal

The transmitter communicates measured pressure using an analog signal.

OU2 defines whether the set measuring range is provided as 4-20 mA (OU2 = I) or as 20-4 mA (OU2 = InEG).

Rerange the transmitter (set new values for ASP and AEP) by either manually entering range points or with an applied pressure source.

- Applying a pressure source for the analog start point (tASP) or manually setting the parameter (ASP) defines the measured value when the analog signal is 4 mA (20 mA at InEG).
- Applying a pressure source for the analog end point (tAEP) or manually setting the parameter (AEP) defines the measured value when the output signal is 20 mA (4 mA at InEG).

Minimum distance between ASP and AEP is 25 percent of the upper range limit (maximum rangedown 4:1). For pressure range 3A, the minimum distance is 25 percent of the measuring span.

Figure 1-3: Factory setting

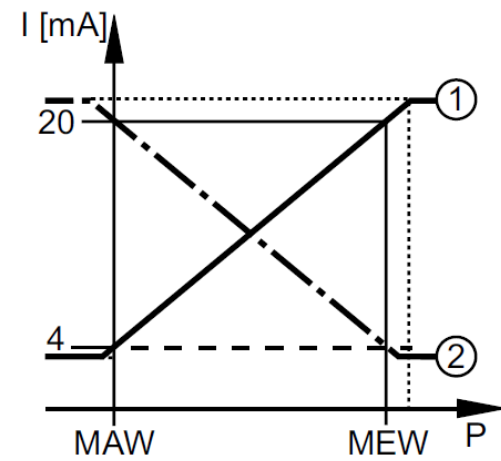
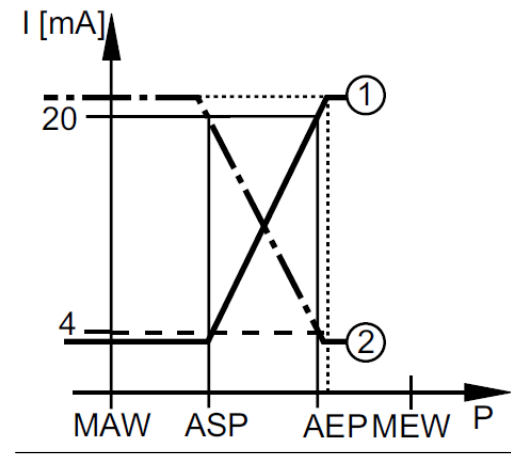


Figure 1-4: Transmitter reranged



P: system pressure

MAW: initial value of the measuring range (Lower range limit [LRL])

MEW: final value of the measuring range (Upper range limit [URL])

1: OU2 = I

2: OU2 = InEG

In the set measuring range the output signal is between 4 and 20 mA (OU2 = I) or between 20 and 4 mA (OU2 = InEG). When pressure is outside the set measuring range, the output signal is as follows:

- System pressure above the measuring range:
 - Output signal > 20 mA if OU2 = I.
 - Output signal 4 to 3.8 mA if OU2 = InEG.
- System pressure below the measuring range:
 - Output signal 4 to 3.8 mA if OU2 = I.
 - Output signal > 20 mA if OU2 = InEG.

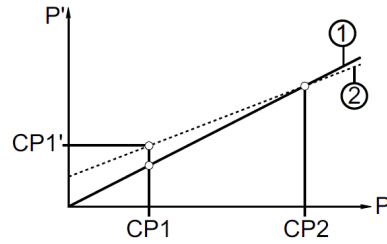
1.3.3 Customer-specific calibration (sensor trim)

A customer specific calibration (sensor trim) corrects the pressure offset and pressure range to match a pressure standard. This provides a slope correction to the transmitter's current characterization curve. An accurate pressure standard is required for a full calibration. For more information on performing a Sensor Trim, see [Perform a sensor trim](#).

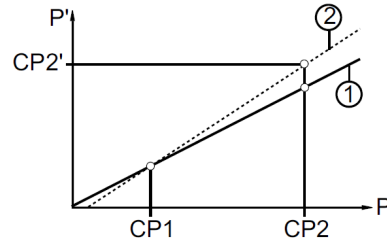
- Sensor Trim is a two-point sensor calibration that applies two end-point pressures (CP1, CP2) then linearizes the output between them. CP1 and CP2 must be within the scaled measuring range. For more information, see [Analog signal](#).
- Zero trim is a single-point offset adjustment. It compensates for mounting position effects and is most effective when performed with the transmitter installed in its final

mounting position. Since zero trim maintains the slope of the characterization curve, do not use it in place of a Sensor Trim over the full sensor range. For more information, see [Perform manual zero trim](#).

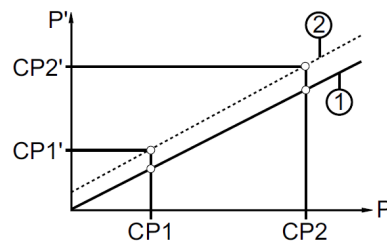
Reset the calibration by resetting all parameters to the factory default settings. For more information, see [Resetting all parameters to factory default settings](#).



- P: measured pressure
- P': modified measured value
- CP1: calibration point 1
- CP1': modified measured value for CP1
- CP2: calibration point 2
- 1: curve of measured values at factory setting
- 2: curve of measured values after calibration



- P: measured pressure
- P': modified measured value
- CP1: calibration point 1
- CP2: calibration point 2
- CP2': modified measured value for CP2
- 1: curve of measured values at factory setting
- 2: curve of measured values after calibration



- P: measured pressure
- P': modified measured value
- CP1: calibration point 1
- CP1': modified measured value for CP1
- CP2: calibration point 2
- CP2': modified measured value for CP2
- 1: curve of measured values at factory setting
- 2: curve of measured values after calibration

2 Installation

This section contains instructions for installing and wiring the Rosemount 326P Pressure Transmitter.

Note

Before installing or removing the unit, ensure no pressure is applied to the system. Note that when the pressure transmitter displays 0%, pressure might still be applied to the system.

2.1 Installation orientation (3-A[®] standards)

For optimized cleaning of the measuring element in hygienic areas according to the 3-A standards, follow these guidelines when installing the pressure transmitter.

To ensure the medium can run off the measuring element, do not install the unit at the lowest point of a pipe or container.

Note

This product is not suitable for use where the criteria for paragraph E1.2 / 63-03 of the 3-A[®] standard 63-03 must be met.

2.2 Hygienic process connection adapter installation

Hygienic process connection adapters allow the transmitter to be installed according to application requirements. All connection adapters include an EPDM O-ring. More sealing rings are available to be ordered as accessories. See the *Rosemount 326P Product Data Sheet* for all available connectors and accessories. Hygienic process connection adapters include installation instructions with the packaging.

2.3 Electrical connection

This section provides instructions for wiring the pressure transmitter. A qualified electrician must wire the pressure transmitter. The electrical installation must adhere to national and international regulations.

Voltage supply according to EN 50178, SELV, PELV.

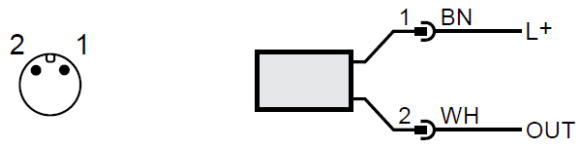
2.3.1 Wiring for two-wire operation

Follow these steps to wire the pressure transmitter for two-wire operation.

Procedure

1. Disconnect the power.
2. Wire the pressure transmitter according to [Figure 2-1](#).

Figure 2-1: Connection for two-wire operation



BN	Brown
WH	White
OUT	Analog output (4-20 mA)

Colors to DIN EN 60947-5-2

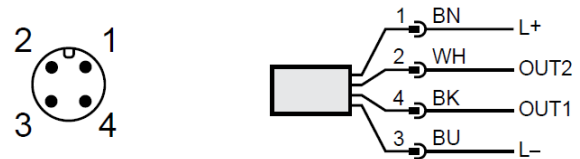
2.3.2 Wiring for three-wire operation

Follow these steps to wire the pressure transmitter for three-wire operation.

Procedure

1. Disconnect the power.
2. Wire the pressure transmitter according to [Figure 2-2](#).

Figure 2-2: Connection for three-wire operation

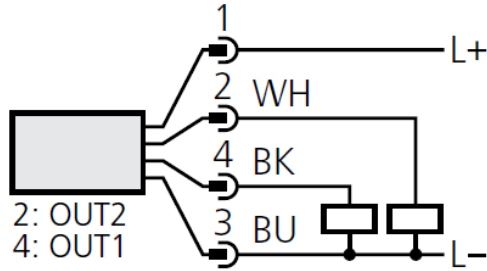


BK	Black
BN	Brown
BU	Blue
WH	White
OUT1	Switching output
OUT2	Switching output or analog output (4-20 mA)

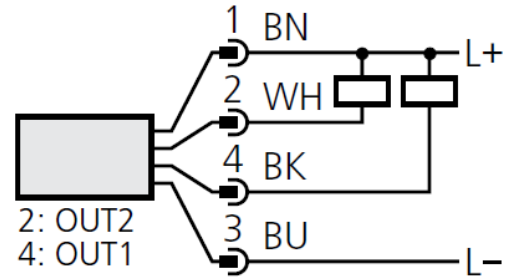
Colors to DIN EN 60947-5-2

Wiring examples

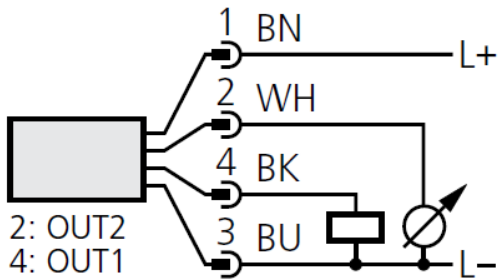
2 x positive switching



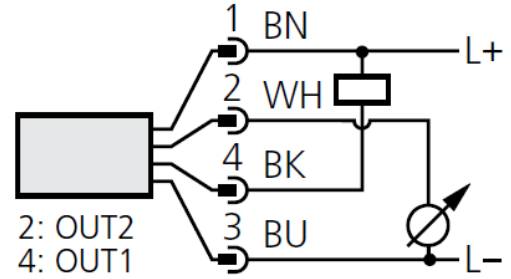
2 x negative switching



1 x positive switching / 1 x analog



1 x negative switching / 1 x analog



Note

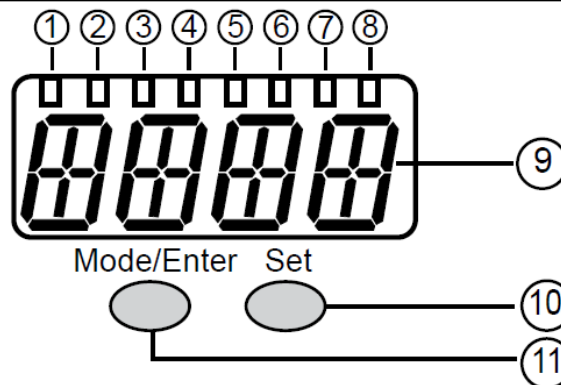
If the analog signal current (I) is selected in the menu under OU2 and the output is not connected (resistor = infinite), the pressure transmitter displays the error message W532 in intervals. This does not affect the measuring result. As an alternative, configure OU2 to a switching output.

3 Operation

This section provides instructions for configuring parameter settings.

3.1 Display and function buttons

The pressure transmitter displays information using the display and can be controlled using the function buttons.



1 to 8: Indicator LEDs	
LED 1 to LED 5	System pressure in the set unit of measurement.
LED 6	If OU2 is configured as an analog output, it indicates the system pressure in percent of the scaling of the analog output (range ASP to AEP). If OU2 is configured as a switching output, it indicates the system pressure in percent of the upper range limit (URL).
LED 7	Switching status of OUT2 (illuminates when output 2 is switched).
LED 8	Switching status of OUT1 (illuminates if output 1 is switched).
9: Alphanumeric display, 4 digits	
<ul style="list-style-type: none"> • Current system pressure • Parameters and parameter values 	
10: Set button	
Selects a parameter from the menu and modifies the value by holding pressed for five seconds.	
11: Mode/Enter button	
Scrolls through the menu and acknowledges parameter values.	

3.1.1 Read the set parameters

Follow these steps to view the set parameter values.

Procedure

1. Press **Mode/Enter** until the pressure transmitter displays the desired parameter.
2. Press **Set**.
The pressure transmitter displays the value currently set for the selected parameter for 15 seconds then returns to run mode.

3.1.2 Change the display in run mode

Follow these steps to view the pressure measurement in different indicator types. During normal operation, the pressure transmitter displays the pressure measurement in the selected unit of measurement.

Procedure

- Press **Set**.
The pressure transmitter displays the following information for 15 seconds:
 - System pressure in percent of the set scaling of the analog output if **OU2** is configured as analog output.
 - System pressure in percent of the upper range limit if **OU2** is configured as switching output.

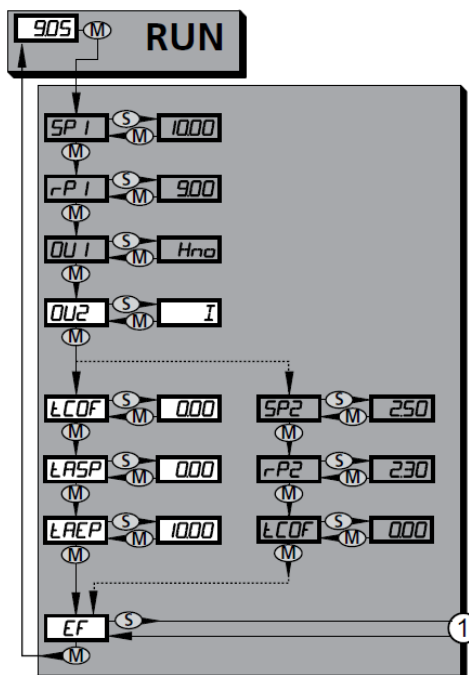
3.2 Menu

This section explains the pressure transmitter menu options and structure.

3.2.1 Main menu structure

The main menu includes options for accessing other menus, setting output functions, and changing the display mode.

Figure 3-1: Main menu



- 1: Change to the extended functions menu (level 2)
- Menu items highlighted gray are not available for two-wire operation.

Option	Description
SP1/rP1 ⁽¹⁾	Upper and lower limit values for system pressure at which OUT1 switches.
OU1 ⁽¹⁾	Output function for OUT1: Switching signal for the pressure limit values: hysteresis function (H ..) or window function (F ..), either normally open (. no) or normally closed (. nc).
OU2	Output function for OUT2: <ul style="list-style-type: none"> • Switching signal for the pressure limit values: hysteresis function (H ..) or window function (F ..), either normally open (. no) or normally closed (. nc); (only available for three-wire operation). • analog signal for the current system pressure: 4-20 mA (I), 20-4 mA (InEG).
tCOF	Perform Zero Trim.

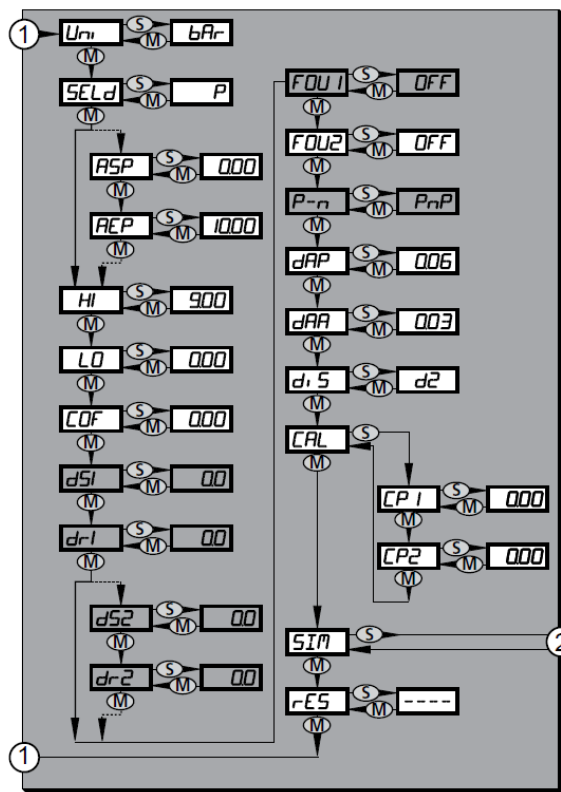
Option	Description
tASP	Set analog start point (4 mA if OU2 = I, 20 mA if OU2 = InEG) using an applied pressure source.
tAEP	Set analog end point (20 mA if OU2 = I, 4 mA if OU2 = InEG) using an applied pressure source.
SP2/rP2 ⁽¹⁾	Upper and lower limit values for system pressure at which OUT2 switches.
EF	Extended functions and opening the extended functions menu (level 2).

(1) Not active in a two-wire operation.

3.2.2 Extended functions menu

The extended functions menu provides options for configuring pressure transmitter parameters.

Figure 3-2: Extended functions menu (level 2)



- 1: Change to the main menu
- 2: Change to the simulation menu

Menu items highlighted gray are not available for two-wire operation.

Table 3-1: Extended functions menu options

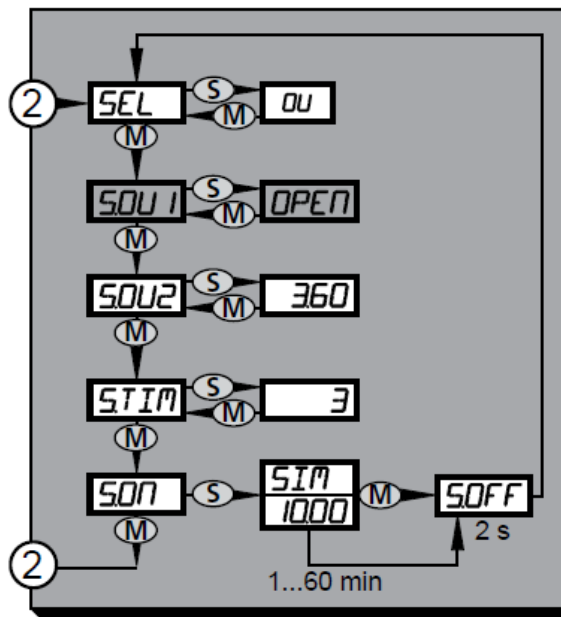
Option	Description
Uni	Standard unit of measurement for system pressure
SEld	Display mode: 1. Pressure in the unit set in Uni 2. Pressure in percent of the set scaling of the analog output
ASP	Analog start point for system pressure: measured value at which 4 mA is provided (20 mA if OU2 = InEG)
AEP	Analog end point for system pressure: measured value at which 20 mA is provided (4 mA if OU2 = InEG)
HI	Highest measured system pressure
LO	Lowest measured system pressure
COF	Zero trim
dS1 ⁽¹⁾	Switch-on delay for OUT1
dr1 ⁽¹⁾	Switch-off delay for OUT1
dS2 ⁽¹⁾	Switch-on delay for OUT2; only active if OU2 = Hnc, Hno, Fnc or Fno
dr2 ⁽¹⁾	Switch-off delay for OUT2; only active if OU2 = Hnc, Hno, Fnc or Fno
FOU1 ⁽¹⁾	Status of output 1 in case of an internal fault
FOU2	Status of output 2 in case of an internal fault
P-n ⁽¹⁾	Switching logic for the outputs: pnp or npn
dAP	Damping for switching outputs and display
dAA	Damping for analog output (OUT2)
diS	Update rate and orientation of the display
CAL	Calibration function (setting the curve of measured values)
CP1	Calibration point 1
CP2	Calibration point 2
SIM	Switch to the simulation menu (level 3)
rES	Restore factory default settings

(1) Not active in a two-wire operation.

3.2.3 Simulation menu

The simulation menu provides options for configuring and executing transmitter simulations.

Figure 3-3: Simulation menu (SEL=OU)



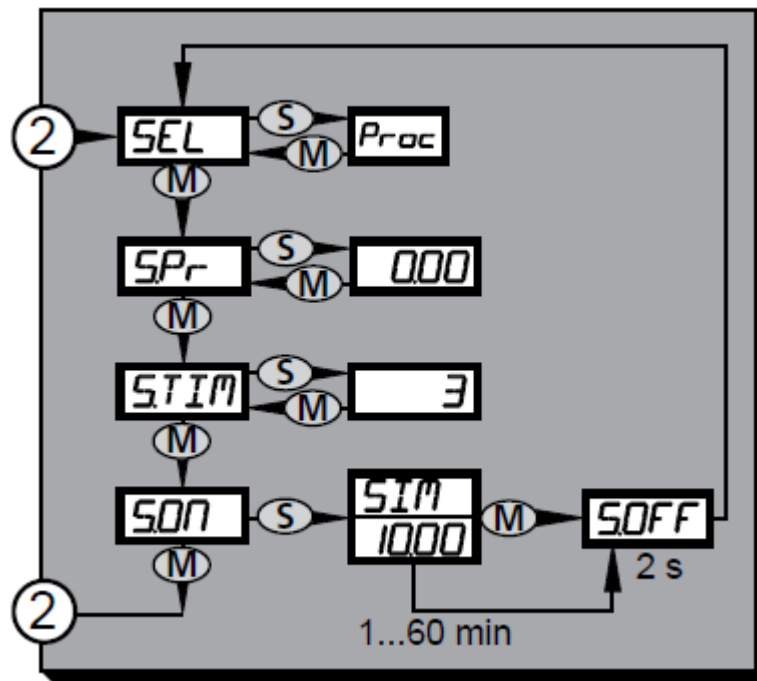
The options shown appear when SEL is set to OU.

Table 3-2: Simulation menu (SEL=OU)

Option	Description
SEL	Status to be simulated. Output functions OU.
S.OU1 ⁽¹⁾	Simulation values for OUT1; only active for three-wire operation and if SEL = OU. <ul style="list-style-type: none"> • OPEN: Output inactive • CLOS: Output active
S.OU2	Simulation values for OUT2; only active if SEL = OU. <ul style="list-style-type: none"> • For three-wire operation and if OUT2 has been configured as switching output: output inactive (OPEN) or active (CLOS). • If OUT2 is set as an analog output: analog signal between 3.6 and 21.1 mA
S.TIM	Time for the simulation process in minutes.
S.ON	Starts the simulation process. During the simulation process the display alternately shows SIM and the current operation indication. If the simulation process is aborted, the pressure transmitter displays S.OFF for two seconds, then SEL is active again.

(1) Not active in two-wire operation

Figure 3-4: Simulation menu (SEL = Proc)



The options shown appear when SEL is set to OU.

Table 3-3: Simulation menu (SEL = Proc)

Option	Description
SEL	Status to be simulated: Process value Proc.
S.Pr	Simulation of a process value; active only if SEL = Proc. Any value between lower and upper range limits (LRL and URL).
S.TIM	Time for the simulation process in minutes.
S.ON	Starts the simulation process. During the simulation process the display alternately shows SIM and the current operation indication. If the simulation process is aborted, the pressure transmitter displays S.OFF for two seconds, then SEL is active again.

3.3 Parameter settings

This section provides instructions for modifying parameter values. While modifying parameter values, the pressure transmitter remains in operating mode. It continues to monitor pressure levels using the existing parameter values until the new parameter

values are set. The pressure transmitter changes the parameter values immediately for COF, CP1, and CP2.

3.3.1 Modify parameter settings

Follow these steps to modify parameter values.

Procedure

1. Press **Mode/Enter** to select a parameter.
2. Press and hold **Set**.
The pressure transmitter flashes the current value for five seconds.
3. Modify the parameter value.
 - Press **Set** to change the value incrementally.
 - Press and hold **Set** to change the value continuously.
 - To reduce the value, continue to press **Set** until the pressure transmitter reaches the value limit and restarts at the value minimum.
4. Press **Mode/Enter**.
The pressure transmitter displays the parameter and saves the new parameter value.

Switching menu levels

Follow these steps to change from the main menu to the extended functions menu.

Procedure

1. Press **Mode/Enter** until the pressure transmitter displays **EF**.
2. Press **Set**.
The pressure transmitter displays **Uni**.
3. If the extended menu is locked with an access code, enter the access code.
 - a) Press **Set** until the pressure transmitter displays the valid access code.
 - b) Press **Mode/Enter**.

By default the extended functions menu is unlocked.

Locking and unlocking the pressure transmitter

Follow these steps to lock or unlock the pressure transmitter. While locked, the pressure transmitter does not allow parameter values to change and displays **Loc** if attempted.

Procedure

1. To lock: press and hold **Mode/Enter** and **Set** for 10 seconds.
The pressure transmitter locks and displays **Loc**.
2. To unlock: press and hold **Mode/Enter** and **Set** for 10 seconds while the pressure transmitter is locked.
The pressure transmitter unlocks and displays **uLoc**.

3.3.2 Configuring the display

This section provides instructions for changing how the pressure transmitter displays pressure data.

Change the unit of measurement

Follow these steps to change the unit of measurement in which the pressure transmitter displays process pressure.

Procedure

1. Select **Uni** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Select a unit of measurement.
 - For bar or mbar, select **bAr** or **mbAr**
 - For mPa or kPa, select **MPA** or **kPA**
 - For psi, select **PSI** (only available with pressure ranges 3A, 5A, 6A, 8A, 1B, 2B)
 - For InH₂O, select **IH2O** (only available with pressure ranges 1A, 2A, 3A, 5A, 2B)
 - For mWS, select **mWS** (only available with pressure ranges 3A, 5A, 2B)
 - For mmWS, select **mmWS** (only available with pressure ranges 1A, 2A)
4. Press **Mode/Enter**.

Change the indication type

Follow these steps to change how the pressure transmitter displays pressure level.

Procedure

1. Select **SEld** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Select a type of indication.
 - **P**: system pressure in the unit set in Uni.
 - **P%**: system pressure in percent of the set scaling of the analog output; the following applies: 0% = ASP value ; 100% = AEP value. If OU2 is configured as switching output, **ASP** and **AEP** are not active. In this case the following applies: 0% = lower range limit (LRL) / 100% = upper range limit (URL).
4. Press **Mode/Enter**.

Note

Pressure may still be applied to the system if the pressure transmitter shows **0%** pressure.

Change the update rate and display orientation

The update rate sets how often the pressure transmitter displays new data. The **diS** parameter also sets the orientation of the display. Follow these steps to change the update rate and orientation of the display.

Procedure

1. Select **diS** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Select an update rate or an update rate with a rotated display.
 - **d1**: Updates the measured values every 50 ms.
 - **d2**: Updates the measured values every 200 ms.
 - **d3**: Updates the measured values every 600 ms.
 - **rd1, rd2, rd3**: Rotates the display by 180° and selects the corresponding update rate.
 - **OFF**: Deactivates the display while in run mode. When a button is pressed, the pressure transmitter displays the system pressure for 15 seconds. Pressing **Mode/Enter** again activates the display. The LED indicators remain active when the display is deactivated. Also, the pressure transmitter displays error messages when the display is deactivated.

3.3.3 Set output signals

This section provides instructions for setting output functions and limits.

Setting output functions

Follow these steps to set the function of output 1 and output 2.

Procedure

1. Select **OU1** from the menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the switching function.
 - **Hno**: hysteresis function/NO
 - **Hnc**: hysteresis function/NC
 - **Fno**: window function/NO
 - **Fnc**: window function/NC
4. Press **Mode/Enter**.
5. Select **OU2** from the menu.
6. Press and hold **Set** to modify the parameter value.
7. Set the function.
 - **Hno**: hysteresis function/NO

- **Hnc**: hysteresis function/NC
- **Fno**: window function/NO
- **Fnc**: window function/NC
- **I**: current signal proportional to pressure 4-20 mA
- **InEG**: current signal proportional to pressure 20-4 mA

8. Press **Mode/Enter**.

Set switching limits

Follow these steps to set the limits that cause the outputs to switch.

Procedure

1. Select **SP1** or **SP2** from the menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the limit at which the output switches.
4. Press **Mode/Enter**.
5. Select **rP1** or **rP2** from the menu.
6. Press and hold **Set** to modify the parameter value.
7. Set the limit at which the output resets.
The rPx value is always lower than SPx. The pressure transmitter accepts only values lower than the value for SPx.
8. Press **Mode/Enter**.

Automatically scale the analog output

Follow these steps to set the start and end value of the analog output to the current system pressure reading. If the automatic setting is invalid, the pressure transmitter displays UL or OL. After acknowledging an incorrect value, the pressure sensor displays Err and does not accept the incorrect value.

Procedure

1. Set the minimum pressure requested in the system.
 - a) Select **tASP** from the menu.
 - b) Press and hold **Set**.
The display flashes the current set value.
 - c) Release **Set** when the value stops flashing.
The pressure transmitter displays the new value.
 - d) Press **Mode/Enter**.
The current system pressure is defined as the start value for the analog signal.
2. Set the maximum pressure requested in the system.
 - a) Select **tAEP** from the menu.

- b) Press and hold **Set**.
The current value flashes on the display.
- c) Release **Set** when the value stops flashing.
The pressure transmitter displays the new value.
- d) Press **Mode/Enter**.
The pressure transmitter sets the current system pressure as the end value for the analog signal.

Manually scale the analog output

Follow these steps to manually set the start value (ASP) and end value (AEP) for the analog output. The values for ASP and AEP must be within defined limits.

Procedure

1. Select **ASP** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the measured value at which the pressure transmitter provides 4 mA (20 mA if $OU2 = InEG$).
4. Select **AEP** from the extended functions menu.
5. Press and hold **Set** to modify the parameter value.
6. Set the measured value at which the pressure transmitter provides 20 mA (4 mA if $OU2 = InEG$).

Note

The minimum distance between **ASP** and **AEP** must be 25 percent of the upper range limit (maximum rangedown is 4:1).

3.3.4 Optional settings

This section provides instructions for modifying optional settings. Modification of these settings is not required for normal operation of the pressure transmitter.

Perform manual zero trim

Follow these steps to manually scale the pressure offset by +/-5 percent. Use this after installation to trim out any measurement offsets because of mounting effects.

Procedure

1. Select **COF** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the value between -5% and 5%.
The pressure transmitter modifies the measured pressure by this value.

Perform an automatic zero trim

Follow these steps to automatically scale the pressure offset by +/-5 percent. Use this after installation to trim out any measurement offsets because of mounting effects.

Prerequisites

Ensure no pressure is applied to the pressure transmitter.

Procedure

1. Select **tCOF** from the menu.
2. Press and hold **Set**.
The current offset value appears then the current system pressure appears.
3. Release **Set**.
4. Press **Mode/Enter** to confirm the new offset value.

Setting output reaction to fault conditions

Follow these steps to modify how the outputs react to fault conditions.

Procedure

1. Select **FOU1** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the value for output 1.
 - **On**: output 1 switches on in case of a fault.
 - **OFF**: output 1 switches off in case of a fault.
 - **OU**: output 1 switches irrespective of a fault as defined by parameters SP1, rP1 und OU1.
4. Select **FOU2** from the extended functions menu.
5. Press and hold **Set** to modify the parameter value.
6. Set the value for output 2.
 - **On**: output 2 switches on in case of a fault, the analog signal goes to the upper final value.
 - **OFF**: output 2 switches off in case of a fault, the analog signal goes to the lower final value.
 - **OU**: output 2 switches irrespective of the fault as defined by parameters SP2, rP2, OU2. The analog signal corresponds to the measured value.

Postrequisites

For more information on error messages, see [Error messages](#).

Setting a delay for the switching outputs

Follow these steps to modify the time before an output switches after a fault. The maximum delay time is 50 seconds.

Procedure

1. Select the switch-on delay parameter for the output from the extended functions menu.
 - Select **dS1** to modify the switch-on delay for OUT1.
 - Select **dS2** to modify the switch-on delay for OUT2.
2. Press and hold **Set** to modify the parameter value.
3. Set the value between 0.1 and 50 seconds.
4. Select the switch-off delay parameter for the output from the extended functions menu.
 - Select **dr1** to modify the switch-off delay for OUT1.
 - Select **dr2** to modify the switch-off delay for OUT2.
5. Press and hold **Set** to modify the parameter value.
6. Set the value between 0.1 and 50 seconds.
Setting the value to 0.0 deactivates the delay.

Setting the output logic for the switching outputs

Follow these steps to change the output logic for the switching outputs.

Procedure

1. Select **P-n** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the parameter to **PnP** or **nPn**.
4. Press **Mode/Enter**.

Setting damping for the switching signal

Damping the switching signal prevents the outputs from erroneously switching because of erratic pressure readings. The damping value is the response time in seconds between pressure change and change to the switching status. The damping value also influences the value displayed on the pressure transmitter and the switching frequency ($f_{max} = 1 \div 2dAP$).

Procedure

1. Select **dAP** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the value between 0.0 and 30 seconds.
A value of 0.0 seconds deactivates damping.
4. Press **Mode/Enter**.

Setting a damping for the analog signal

Damping the analog signal prevents the 4-20 mA output from erroneously changing because of erratic pressure readings. The analog damping value is the response time in seconds between pressure change and the change of the analog signal.

Procedure

1. Select **dAA** from the extended functions menu.
2. Press and hold **Set** to modify the parameter value.
3. Set a value between 0.01 and 99.99 seconds.
A value of 0.0 seconds deactivates damping.
4. Press **Mode/Enter**.

Perform a sensor trim

Follow these steps to perform a sensor trim and calibrate the pressure transmitter measurement.

Procedure

1. Apply a defined reference pressure to the transmitter between **ASP** and **AEP**.
2. Select **CAL** from the menu.
3. Press **Set**.
The pressure transmitter displays **CP1**.
4. Press and hold **Set** for five seconds.
The pressure transmitter displays the current pressure measurement.
5. Press **Set** until the pressure transmitter displays the reference pressure.
The pressure output can change by up to two percent of the upper range limit.
6. Press **Mode/Enter**.
The pressure transmitter displays **CP1**.
7. Press **Mode/Enter** again.
The pressure transmitter displays **CP2**.
8. To apply a second point on the curve or measured values, apply a second defined reference pressure to the transmitter.
The minimum distance between the calibration points **CP1** and **CP2** is five percent of the upper range limit.
9. Press and hold **Set** for five seconds.
The pressure transmitter displays the current pressure measurement.
10. Press **Set** until the pressure transmitter displays the reference pressure or the corresponding analog signal is provided on **OUT2**.
The pressure output can change by up to two percent of the upper range limit.
11. Press **Mode/Enter**.
The pressure transmitter displays **CP2**.
12. Press **Mode/Enter** again.
The pressure transmitter displays **CAL**.

3.3.5 Service functions

This section provides instructions for viewing and managing parameters.

View the highest and lowest measured pressure

The pressure transmitter saves the highest and lowest measured pressure values. Follow these steps to view the highest and lowest pressure values previously measured by the pressure transmitter.

Procedure

1. To view the maximum pressure value, select **HI** from the extended functions menu.
2. To view the minimum pressure value, select **LO** from the extended functions menu.

Deleting high and low pressure memory

Follow these steps to clear the highest and lowest pressure readings on the pressure transmitter.

Procedure

1. Select **HI** or **LO** from the extended functions menu.
2. Press and hold **Set** until the pressure transmitter displays —.
3. Press **Mode/Enter**.

Resetting all parameters to factory default settings

Follow these steps to reset all of the parameters to the factory default settings.

Prerequisites

Before resetting the parameters, record the current parameters using [Factory settings](#).

Procedure

1. Select **rES** from the extended functions menu.
2. Press and hold **Set** until the pressure transmitter displays —.
3. Press **Mode/Enter**.

3.3.6 Simulation function

During a simulation, the pressure transmitter replicates error conditions for testing purposes. This section includes instructions for using the simulation function.

Open the simulation menu

Open the simulation menu to view simulation options and parameters.

Procedure

1. Select **EF** from the menu.
2. Press **Set**.

- The extended functions menu opens.
3. Select **SIM** from the menu.
 4. Press **Set**.
The simulation menu opens. The first option is **SEL**.

Set the simulation output state

Follow these steps to set the output state for a simulation.

Procedure

1. Select **SEL** from the simulation menu.
2. Press and hold **Set** to change the simulation menu to **OU**.
3. For three-wire operation, select **S.OU1** from the simulation menu.
For two-wire operation, skip to step [Step 6](#).
4. Press and hold **Set** to set the value.
 - **OPEN**: output 1 not active/open
 - **CLOS**: output 1 active/closed
5. Press **Mode/Enter**.
6. Select **S.OU2** from the simulation menu.
7. Press and hold **Set** to set the value.
 - If **OU2 = Hnc, Hno, Fnc or Fno** (not in two-wire operation):
 - **OPEN**: output 2 not active/open.
 - **CLOS**: output 2 active/closed.
 - If **OU2 = I or InEG**:
 - 3.60-21.10 mA in steps of 0.01 mA.
8. Press **Mode/Enter**.

Set the simulation pressure value

The pressure transmitter will display the simulation pressure value during the simulation. Follow these steps to set the pressure value for the simulation.

Procedure

1. Select **SEL** from the simulation menu.
2. Press and hold **Set** to change the simulation menu to **Proc**.
3. Press **Mode/Enter**.
The pressure transmitter displays **S.Pr**.
4. Select **S.Pr** from the simulation menu.
5. Press and hold **Set** to modify the pressure value.
6. Press **Mode/Enter**.

Set simulation duration

Follow these steps to set the duration of the simulation. Simulations can run between 1-60 minutes.

Procedure

1. Select **S.TIM** from the simulation menu.
2. Press and hold **Set** to modify the parameter value.
3. Set the duration value between 1-60 minutes.
4. Press **Mode/Enter**.

Start a simulation

Follow these steps to start a simulation.

Prerequisites

Set the simulation parameters.

Procedure

1. Select **S.ON** from the simulation menu.
2. Press and hold **Set** until the pressure transmitter displays **SIM** and the current operating indicator.
Current operation indications include:
 - Current system pressure if **SEL = OU**.
 - Simulated measured value set in **S.Pr** if **SEL = Proc**.

The simulation runs until the set duration time elapses. Then, the pressure transmitter displays **S.OFF** then **SEL**.

Abort a simulation

Follow these steps to stop a simulation before the duration time elapses.

Procedure

Press **Mode/Enter** or **Set**.

The pressure transmitter displays **S.OFF** for two seconds then displays **SEL**.

4 Setting ranges

This section contains the minimum and maximum settings for the specified parameters by pressure range.

Table 4-1: SP1 and SP2

Unit	Minimum	Maximum	Step increment
Pressure range 1A			
inH ₂ O	-1.92	40.00	0.04
mbar	-4.8	99.5	0.1
kPa	-0.48	9.95	0.01
mmWS	-49	1016	1
Pressure range 2A			
inH ₂ O	-4.8	100.0	0.1
mbar	-12.0	248.8	0.2
kPa	-1.20	24.88	0.02
mmWS	-122	2540	2
Pressure range 3A			
psi	-14.45	14.50	0.05
inH ₂ O	-400	401	1
mbar	-998	1000	1
kPa	-99.8	100.0	0.1
mWS	-10.18	10.20	0.01
Pressure range 2B			
psi	-0.70	14.50	0.01
inH ₂ O	-19.2	401.6	0.4
mbar	-48	1000	1
kPa	-4.8	100.0	0.1
mWS	-0.49	10.20	0.01
Pressure range 4A			
psi	-1.4	20.00	0.02
inH ₂ O	-39	637.0	0.5
mbar	-96	1586	2
kPa	-9.6	158.6	0.2
mWS	-0.98	16.1	0.02

Table 4-1: SP1 and SP2 (continued)

Unit	Minimum	Maximum	Step increment
Pressure range 5A			
psi	-1.74	36.00	0.03
inH ₂ O	-48	997	1
bar	-0.120	2.482	0.002
kPa	-12.0	248.2	0.2
mWS	-1.22	25.31	0.01
Pressure range 6A			
psi	-14.35	55.00	0.05
bar	-0.990	3.79	0.005
kPa	-99.0	379.0	0.5
Pressure range 7A			
psi	-14.4	85.0	0.1
bar	-0.99	5.860	0.005
kPa	-99.0	586.0	0.5
Pressure range 8A			
psi	-14.2	145.0	0.1
bar	-0.98	10.00	0.01
MPa	-0.098	1.000	0.001
Pressure range 9A			
psi	-14.2	230.0	0.2
bar	-0.98	15.86	0.02
MPa	-0.098	1.586	0.002
Pressure range 1B			
psi	-13.8	360.0	0.3
bar	-0.96	24.82	0.02
MPa	-0.096	2.482	0.002

Table 4-2: rP1 and rP2

Unit	Minimum	Maximum	Step increment
Pressure range 1A			
inH ₂ O	-2.00	39.92	0.04
mbar	-5.0	99.3	0.1
kPa	-0.50	9.93	0.01
mmWS	-51	1014	1

Table 4-2: rP1 and rP2 (continued)

Unit	Minimum	Maximum	Step increment
Pressure range 2A			
inH ₂ O	-5.0	99.8	0.1
mbar	-12.4	248.4	0.2
kPa	-1.24	24.84	0.02
mmWS	-126	2536	2
Pressure range 3A			
psi	-14.50	14.45	0.05
inH ₂ O	-401	400	1
mbar	-1000	998	1
kPa	-100.0	99.8	0.1
mWS	-10.20	10.18	0.01
Pressure range 2B			
psi	-0.73	14.47	0.01
inH ₂ O	-20.0	400.8	0.4
mbar	-50	998	1
kPa	-5.0	99.8	0.1
mWS	-0.51	10.18	0.01
Pressure range 4A			
psi	-1.44	19.96	0.02
inH ₂ O	-40	636	0.5
mbar	-100	1582	2
kPa	-10.0	158.2	0.2
mWS	-1.02	16.06	0.02
Pressure range 5A			
psi	-1.80	35.94	0.03
inH ₂ O	-50	995	1
bar	-0.124	2.478	0.002
kPa	-12.4	247.8	0.2
mWS	-1.26	25.29	0.01
Pressure range 6A			
psi	-14.50	54.9	0.05
bar	-1.000	3.78	0.005
kPa	-100.0	378	0.5

Table 4-2: rP1 and rP2 (continued)

Unit	Minimum	Maximum	Step increment
Pressure range 7A			
psi	-14.5	84.8	0.1
bar	-1.0	5.85	0.005
kPa	-100.0	585.0	0.5
Pressure range 8A			
psi	-14.5	144.7	0.1
bar	-1.00	9.98	0.01
MPa	-0.100	0.998	0.001
9A			
psi	-14.6	229.6	0.2
bar	-1.0	15.82	0.02
MPa	-0.1	1.582	0.002
Pressure range 1B			
psi	-14.4	359.4	0.3
bar	-1.00	24.78	0.02
MPa	-0.100	2.478	0.002

Table 4-3: ASP

Unit	Minimum	Maximum	Step increment
Pressure range 1A			
inH ₂ O	-2.00	30.00	0.04
mbar	-5.0	74.6	0.1
kPa	-0.50	7.46	0.01
mmWS	-51	762	1
Pressure range 2A			
inH ₂ O	-5.0	75.0	0.1
mbar	-12.4	186.6	0.2
kPa	-1.24	18.66	0.02
mmWS	-126	1904	2
Pressure range 3A			
psi	-14.50	7.25	0.05
inH ₂ O	-401	201	1
mbar	-1000	500	1
kPa	-100.0	50.0	0.1

Table 4-3: ASP (continued)

Unit	Minimum	Maximum	Step increment
mWS	-10.20	5.10	0.01
Pressure range 2B			
psi	-0.73	10.88	0.01
inH ₂ O	-20.0	301.2	0.4
mbar	-50	750	1
kPa	-5.0	75.0	0.1
mWS	-0.51	7.65	0.01
Pressure range 4A			
psi	-1.46	15.00	0.02
inH ₂ O	-40	477.5	0.5
mbar	-100	1188	2
kPa	-10.0	118.8	0.2
mWS	-1.02	12.06	0.02
Pressure range 5A			
psi	-1.80	27.00	0.03
inH ₂ O	-50	747	1
bar	-0.124	1.860	0.002
kPa	-12.4	186.0	0.2
mWS	-1.26	18.98	0.01
Pressure range 6A			
psi	-14.50	41.25	0.05
bar	-1.000	2.840	0.005
kPa	-100.0	284.0	0.5
Pressure range 7A			
psi	-14.5	63.7	0.1
bar	-1.0	4.395	0.005
kPa	-100.0	439.5	0.5
Pressure range 8A			
psi	-14.5	108.7	0.1
bar	-1.00	7.50	0.01
MPa	-0.100	0.750	0.001
Pressure range 9A			
psi	-14.6	172.4	0.2

Table 4-3: ASP (continued)

Unit	Minimum	Maximum	Step increment
bar	-1.0	11.88	0.02
MPa	-0.1	1.19	0.002
Pressure range 1B			
psi	-14.4	270.0	0.3
bar	-1.00	18.58	0.02
MPa	-0.100	1.862	0.002

Table 4-4: AEP

Unit	Minimum	Maximum	Step increment
Pressure range 1A			
inH ₂ O	8.00	40	0.04
mbar	19.9	95.5	0.1
kPa	1.99	9.95	0.01
mmWS	203	1016	1
Pressure range 2A			
inH ₂ O	20.0	100	0.1
mbar	49.8	248.8	0.2
kPa	4.98	24.88	0.02
mmWS	510	2540	2
Pressure range 3A			
psi	-7.25	14.50	0.05
inH ₂ O	-201	401	1
mbar	-500	1000	1
kPa	-50.0	100.0	0.1
mWS	-5.10	10.20	0.01
Pressure range 2B			
psi	2.90	14.50	0.01
inH ₂ O	80.4	401.6	0.4
mbar	200	1000	1
kPa	20.0	100.0	0.1
mWS	2.04	10.20	0.01
Pressure range 4A			
psi	3.54	20	0.02
inH ₂ O	199.5	637	0.5

Table 4-4: AEP (continued)

Unit	Minimum	Maximum	Step increment
mbar	298	1586	2
kPa	29.8	158.6	0.2
mWS	3.02	16.1	0.02
Pressure range 5A			
psi	7.20	36	0.03
inH ₂ O	200	997	1
bar	0.498	2.482	0.002
kPa	49.8	248.2	0.2
mWS	5.07	25.31	0.01
Pressure range 6A			
psi	-0.75	55	0.05
bar	-.050	3.79	0.005
kPa	-5.0	379	0.5
Pressure range 7A			
psi	6.8	85	0.1
bar	0.465	5.86	0.005
kPa	46.5	586	0.5
Pressure range 8A			
psi	21.8	145.0	0.1
bar	1.50	10.00	0.01
MPa	0.150	1.000	0.001
Pressure range 9A			
psi	43.0	230	0.2
bar	2.98	15.86	0.02
MPa	0.298	1.586	0.002
Pressure range 1B			
psi	75.6	360.0	0.3
bar	5.20	24.82	0.02
MPa	0.522	2.482	0.002

5 Troubleshooting

The pressure transmitter monitors itself for issues then reports the issues using the display. If the pressure transmitter detects a fault, it will react according to FOU1 and FOU2. Use the information in this section to identify and resolve common issues with the pressure transmitter.

5.1 Error messages

Use the information in the table below to resolve errors with the pressure transmitter.

Display	Description	Corrective actions
Off	The supply voltage is too low (fault number W403).	<ul style="list-style-type: none"> Check and/or correct the supply voltage. In a two-wire operation, check and/or correct the connected load.
PARA	The parameter setting is outside the permitted range.	Reset the parameter.
E100	The pressure transmitter detected an internal error.	Replace the pressure transmitter.

5.2 Warning messages

Use the information in the table below to resolve issues indicated by warning messages with the pressure transmitter.

Display	LED Status	Description	Corrective actions
SC1	OUT1 Flashes	Excessive current switching output 1.	Check switching output 1 for a short circuit or excessive current then remove the fault.
SC2	OUT2 Flashes	Excessive current switching output 2.	Check switching output 2 for a short circuit or excessive current then remove the fault.
SC	OUT1 and OUT2 are flashing	Excessive current switching output 1 and switching output 2.	Check switching output 1 and 2 for a short circuit or excessive current then remove the fault.
OL		The measured value is more than five percent above the upper range limit (URL).	Check the system pressure and correct it if necessary.
UL		The measured value is more than five percent below the lower range limit (LRL).	Check the system pressure and correct it if necessary.

Display	LED Status	Description	Corrective actions
W531		The analog output is at the upper limit (20.5 mA).	Increase the AEP value if possible (for OU2 = InEG, increase ASP value) or reduce the system pressure.
Loc		The pressure transmitter does not allow parameter settings to change because the buttons are locked.	Unlock the buttons. (Locking and unlocking the pressure transmitter)
W530		The analog output is at the lower limit (3.8 mA).	Reduce the ASP value (for OU2 = InEG increase AEP value) or increase the system pressure.
W532		The load at the analog output is too high ⁽¹⁾	Reduce the load at output 2 or increase the supply voltage.
W203		The pressure transmitter encountered an error during the temperature compensation of the pressure measurement which can result in reduced accuracy.	Replace the pressure transmitter.
W703		The medium temperature is above 302 °F (150 °C)	Reduce the medium temperature.
W704		The medium temperature is below -22°F (-30°C).	Increase the medium temperature.
W161		The pressure transmitter temperature is above 194°F (90°C).	Remove any insulation around the pressure transmitter.
W162		The pressure transmitter temperature is below -22°F (-30°C).	Insulate the pressure transmitter.

(1) The pressure transmitter displays this message only for a three-wire operation. For two-wire operation, it detects and displays under voltage. If the pressure transmitter does not use OU2 for the application, avoid the message by defining a switching function for OU2

6 Product certifications

6.1 European directive information

The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

6.2 Ordinary location information

As standard, this product has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

6.3 3-A[®] certification

This product is authorized to display the 3-A symbol. Ensure gaskets and process connection accessories selected for installation meet both the application and 3-A requirements. A certificate of compliance is available at Emerson.com/Rosemount.

6.4 Other industry certifications

All Rosemount 326P transmitter surfaces and materials which come into contact with process medium comply with the following regulations:

- (EC) No. 1935/2004
- (EC) No. 2023/2006
- CFR Title 21 (FDA) § 186.1256
- CFR Title 21 (FDA) § 177.2600
- CFR Title 21 (FDA) § 177.1550
- CFR Title 21 (FDA) § 177.2415

7 Factory settings

Use this worksheet to record parameter values.

Setting	Factory default setting	User-defined setting
SP1	~25% URL ⁽¹⁾⁽²⁾	
rP1	~23% URL ⁽¹⁾⁽²⁾	
OU1	Hno	
OU2	l	
SP2	~75% URL ⁽¹⁾⁽²⁾	
rP2	~73% URL ⁽¹⁾⁽²⁾	
COF / tCOF	0.0	
ASP / tASP	0% URL ⁽¹⁾ Pressure range 3A: -14.5 psi (-1 bar)	
AEP / tAEP	100% URL ⁽¹⁾	
Uni	psi/inH ₂ O	
SELd	P	
dS1	0.0	
dr1	0.0	
dS2	0.0	
dr2	0.0	
FOU1	OU	
FOU2	OU	
P-n	pnp	
dAP	0.06	
dAA	0.03	
dis	d2	
CP1	0.00	
CP2	0.00	

- (1) The set percentage of the upper range limit (URL)(the percentage of the measuring span).
 (2) For specific default factory settings, see [Table 7-1](#).

Table 7-1: Specific factory settings for SP1, rP1, SP2, and rP2

Pressure range	SP1	rP1	SP2	rP2
	inH ₂ O			
1A	10.04	9.24	30.12	29.32

Table 7-1: Specific factory settings for SP1, rP1, SP2, and rP2 (continued)

Pressure range	SP1	rP1	SP2	rP2
2A	25.1	23.1	75.3	73.3
	psi			
3A	-7.25	-7.85	7.25	6.65
2B	3.63	3.34	10.88	10.59
4A	5.8	5.34	17.40	16.94
5A	9.06	5.34	17.40	16.94
6A	14.50	13.35	43.50	42.35
7A	21.8	20.0	65.3	63.5
8A	36.3	33.4	108.8	105.9
9A	58.0	53.4	174.0	169.4
1B	90.6	83.4	271.8	264.6



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