Specification sheet

600T EN Series Pressure Transmitters

Model 624ES gauge/absolute with direct mount seal for beverage application

- Base accuracy: ± 0.075%
- Reliable inductive sensing system coupled with the very latest digital technologies - ensures high performance at all process conditions
- Mechanical process interfaces complete of process spud
- HART 4-20 mA, Profibus PA, FF versions with plug-and-play electronics replacement - provides interchangeability for upgrading transmitter
- Local snap calibration and full management via hand terminal or PC-running software
- HART®, Profibus PA, FF communications - allows integration with standard process bus
- CoMeter display option - offers HART Configuration capabilities combined with local indication
- Ecoefficient life cycle - ensures low environmental impact in compliance with LCA assessment to ISO 14040 standard

The all new 600T Series transmitter
The first choice pressure transmitter is now an even bigger choice
GENERAL DESCRIPTION
Model 624ES detailed in this specification sheet integrates a direct mount seal on the positive side, having the negative side reference at atmospheric or vacuum pressure, respectively for gauge or absolute measurements. The integral seal is available in 1 1/2 in diaphragm size specifically designed for beverage industry applications, providing a flush diaphragm to the process. The seal integral to the transmitter has a 6 holes flange, to match the weld process spud.

FUNCTIONAL SPECIFICATIONS

Range and span limits

<table>
<thead>
<tr>
<th>Sensor code</th>
<th>Upper Range Limit (URL)</th>
<th>Lower Range Limit (LRL)</th>
<th>Turndown ratio (TD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>160 kPa 1600 mbar 642 inH2O</td>
<td>0.07 kPa abs 0.7 mbar abs 0.5 mmHg</td>
<td>10 20 60</td>
</tr>
<tr>
<td>E</td>
<td>600 kPa 6 bar 87 psi</td>
<td>0.07 kPa abs 0.7 mbar abs 0.5 mmHg</td>
<td>10 20 60</td>
</tr>
<tr>
<td>F</td>
<td>2400 kPa 24 bar 348 psi</td>
<td>0.07 kPa abs 0.7 mbar abs 0.5 mmHg</td>
<td>10 20 60</td>
</tr>
</tbody>
</table>

Span limits
Maximum span = URL
Minimum recommended span = URL/TD extended (can be further turndown to URL/TD maximum at no stated performances)

Zero suppression and elevation
Zero and span can be adjusted to any value within the range limits detailed in the table as long as:
- calibrated span ≥ minimum span

Damping
Selectable time constant : 0, 0.25, 0.5, 1, 2, 4, 8 or 16 sec.

Electromagnetic compatibility (EMC)
Comply with EN 50081-2 for emission and EN 50082-2 for immunity requirements and test; CE marking.

Turn on time
Operation within specification in less than 2 sec. with minimum damping.

Insulation resistance
> 100 MΩ @ 1000 Vdc (terminals to earth)

Temperature limits °C (°F)
- Process
  Silicone oil or DC97-9120 filling : -40 and +150°C (-40 and 302°F)
- Ambient
  Operating limits : -40 and +85 (-40 and +185)
  Lower ambient limit for LCD indicators : -20°C (-4°F)
  Upper ambient limit for CoMeter : +70°C (+158°F)
- Storage
  Lower limit: -50°C (-58°F); -40°C (-40°F) for LCD indicators
  Upper limit:+120°C (+248°F)+85°C (+185°F) for LCD indicators

Overpressure limits (without damage to the transmitter)
- Lower : 0.07 kPa abs, 0.7 mbar abs, 0.5 mmHg
- Upper (transmitter sensor limit or flange / fitting rating of the seal, whichever is less)
  - model 624ES
    sensor code D, E, F : 14 MPa, 140 bar, 2030 psi
  - beverage seal (SK):
    - 1 1/2 in size : 4 MPa, 40 bar, 580 psi

Proof pressure
The transmitter meets SAMA PMC 27.1 requirements and can be exposed without leaking to line pressure of up to 28 MPa, 280 bar, 4000 psi or two times the flange/fitting rating of the seal, whichever is less

ELECTRICAL CHARACTERISTICS AND OPTIONS

- HART digital communication and 4 to 20 mA output

Power Supply
The transmitter operates from 10.5 to 42 Vdc with no load and is protected against reverse polarity connection (additional load allows operations over 42 Vdc).
For EEEx ia and intrinsically safe (FM, CSA and SAA) approval power supply must not exceed 30 Vdc.

MINIMUM OPERATING VOLTAGES

<table>
<thead>
<tr>
<th>MINIMUM OPERATING VOLTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>no link on output indicator plugs</td>
</tr>
<tr>
<td>with optional output LCD indicator and surge protection</td>
</tr>
<tr>
<td>with CoMeter</td>
</tr>
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<td>with optional output LCD indicator</td>
</tr>
<tr>
<td>with optional surge protection</td>
</tr>
<tr>
<td>with optional output analog indicator</td>
</tr>
<tr>
<td>with integral display</td>
</tr>
</tbody>
</table>

Load limitations - 4-20 mA and HART total loop resistance:

R(kΩ) = Supply voltage - min. operating voltage (Vdc) / 22

<table>
<thead>
<tr>
<th>Total loop resistance (ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
</tr>
<tr>
<td>600</td>
</tr>
<tr>
<td>1430</td>
</tr>
</tbody>
</table>

over 42 (volts) 4 to 20 mA only

HART digital communication

Optional indicators
- Output meter (user adjustable)
  - LCD : 3 1/2-digit with 10 mm (3/8 in) high, 7-segment characters. Engineering unit labels are provided. LCD output meter may be calibrated within the range -1999 to +1999 with a span adjustable between 100 and 3998 units. (Display of decimal point, if required, is switch selectable)
  - analog : 36 mm (1.4 in) scale on 90°

Proof pressure
The transmitter meets SAMA PMC 27.1 requirements and can be exposed without leaking to line pressure of up to 28 MPa, 280 bar, 4000 psi or two times the flange/fitting rating of the seal, whichever is less

ELECTRICAL CHARACTERISTICS AND OPTIONS

- HART digital communication and 4 to 20 mA output

Power Supply
The transmitter operates from 10.5 to 42 Vdc with no load and is protected against reverse polarity connection (additional load allows operations over 42 Vdc).
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over 42 (volts) 4 to 20 mA only

HART digital communication

Optional indicators
- Output meter (user adjustable)
  - LCD : 3 1/2-digit with 10 mm (3/8 in) high, 7-segment characters. Engineering unit labels are provided. LCD output meter may be calibrated within the range -1999 to +1999 with a span adjustable between 100 and 3998 units. (Display of decimal point, if required, is switch selectable)
  - analog : 36 mm (1.4 in) scale on 90°
• **Integral display**
  - LCD: 4-digit with 8 mm. (5/16 in) high, 9-segment alphanumeric characters.
  - User-definable display mode with HART communication:
    - process variable in engineering units, or
    - percent of range, or
    - percent of range and 4 to 20 mA output alternating every 3 seconds.
  - Factory selectable display mode with 4 to 20 mA output:
    - percent of range
    - percent of range and 4 to 20 mA output alternating every 3 seconds.
  - Display also indicates diagnostic messages.

• **CoMeter**
  - 5-digit LCD (± 99999 counts programmable) with 7.6 mm. high (3 in), 7-segment numeric characters plus sign and digital point
  - 10-segment LCD bargraph display (10% per segment)
  - 7-digit LCD with 6 mm. high (2.3 in), 14-segment alphanumeric characters.

Optional surge protection
Up to 2.5 kV (5 kA discharge current) of 8 µs rise time/20 µs decay.

Output signal
Two-wire 4 to 20 mA dc, user-selectable for linear or square root output, power of 3/2 or 5/2, 5th order or two 2nd order switching point selectable programmable polynomial output.

HART® communication provides digital process variable (% or mA or engineering units) superimposed on 4 to 20 mA signal, with protocol based on Bell 202 FSK standard.

Output current limits (to NAMUR standard)
Overload condition
- Lower limit : 3.8 mA dc
- Upper limit : 20.8 mA dc

Transmitter failure mode (to NAMUR standard)
The output signal can be user-selected to a value of 3.6 or 21.6 mA on gross transmitter failure condition, detected by self-diagnoses.
In case of CPU failure the output is driven <3.6 mA or >21.6 mA.

**Profibus PA output**

Power supply
The transmitter operates from 10.5 to 32 Vdc with no polarity. For EEx ia approval power supply must not exceed 15 Vdc. Intrinsic safety installation according to FISCO model.

Current consumption
- operating (quiescent) : 10.5 mA
- communicating : 20.5 mA
- fault current limiting : 16 mA max.

Output signal

Output interface
Profibus PA communication according to Profibus DP50170 Part 2/DIN 19245 part 1-3 compliant to Profiles 3.0 Class A & B for pressure transmitter; ident. number 052B HEX.

Output update time : 25 ms

Function blocks
2 analog input, 1 transducer, 1 physical

Optional indicator
Integral display
- LCD : 4 digit characters, displaying process variable in engineering units or as percentage value.
Display also indicates diagnostic messages.

Transmitter failure mode
On gross transmitter failure condition, detected by self-diagnoses, the output signal can be driven to defined conditions, selectable by the user as safe, last valid or calculated value.

**FOUNDATION fieldbus output**

Device type
Link Active Scheduler (LAS) capability implemented

Power supply
The transmitter operates from 9 to 32 Vdc with no polarity. For EEx ia approval power supply must not exceed 24 Vdc. Intrinsic safety installation according to FF application guide

Current consumption
- operating (quiescent) : 10.5 mA
- communicating : 20.5 mA
- fault current limiting : 16 mA max.

Output signal

Function blocks/execution period
2 standard Analog Input blocks / 25 msec. max (each)
1 standard PID block / 70 msec. max.

Additional blocks
Transducer block, 1 standard Resource block, 1 custom Pressure with calibration block

Number of link objects : 25

Number of VCRs : 24

Output interface
FOUNDATION fieldbus digital communication protocol to standard H1, compliant to specification V. 1.4; FF registration IT011000.

Optional indicator
Integral display
- LCD : 4 digit characters, displaying process variable in engineering units or as percentage value.
Display also indicates diagnostic messages.

Transmitter failure mode
The output signal is “frozen” to the last valid value on gross transmitter failure condition, detected by self-diagnoses which also indicate a BAD conditions. If electronic failure or short circuit occur the transmitter consumption is electronically limited at a defined value (16 mA approx), for safety of the network.
PERFORMANCE SPECIFICATIONS
Stated at ambient temperature of 23°C ± 3K (75°F ± 5), relative humidity of 50% ±20%, atmospheric pressure, mounting position with vertical diaphragm and zero based range for transmitter with isolating diaphragms in AISI 316 L ss and silicone oil fill and HART digital trim values equal to 4-20 mA span end points, in linear mode.
Unless otherwise specified, errors are quoted as % of span. Some performance data are affected by the actual turndown (TD) as ratio between Upper Range Limit (URL) and calibrated span. IT IS RECOMMENDED TO SELECT THE TRANSMITTER SENSOR CODE PROVIDING THE TURNDOWN VALUE AS LOWEST AS POSSIBLE TO OPTIMIZE PERFORMANCE CHARACTERISTICS.

Accuracy rating
% of calibrated span, including combined effects of terminal based linearity, hysteresis and repeatability.
For fieldbus versions SPAN refer to analog input function block outscale range
- ± 0.075% for TD from 1:1 to 10:1
- ± 0.0075% x URL/Span for TD from 10:1 to 20:1

Optional indicators accuracy
- integral display (microprocessor driven) : no error
- analog output meter : ± 2% full scale deflection
- LCD output meter : ± 0.1% of calibrated span ± 1 unit
- CoMeter
  - digital : ± 0.10% of max span (16 mA) ± 1 digit
  - analog (bargraph) : 10%

Operating influences
Temperature effects
per 20 K (36°F) ambient temperature change on transmitter sensor between the limits of -20°C to +65°C (-4 to +150°F)
- 1 1/2in beverage seal : ± (0.15% URL + 0.15% span)
Multiply by 1.5 the above coefficients for 20K (36°F) change between the limits of
-40 to -20°C (-40 to 4°F) and of +65 to +85°C (+150 to 185°F)
per 20 K (36°F) process temperature change on seal diaphragm between the process operating temperature limits of
-25 to 120°C (-13 to 248°F)
- 1 1/2in beverage seal : 0.2 kPa, 2 mbar, 0.8 inHgO
Multiply by 1.5 the above values for 20K (36°F) change between the limits of
-40 to -25°C (-40 to -13°F) and of +120 to +150°C (+248 to 302°F)
The total zero temperature error is the combination of the two above effects, as applicable due to application temperatures.

Optional LCD output meter ambient temperature
per 1 K (1.8°F) change between the limits of -20 and +80°C (-4 and +176°F)
Total effect : ± (0.0002 x span units + 0.1) of reading.

Optional CoMeter ambient temperature
Total reading error per 20K (36°F) change between the ambient limits of -20 and +70°C (-4 and +158°F):
± 0.15% of max span (16 mA).

Supply voltage
Within voltage/load specified limits the total effect is less than 0.005% of URL per volt.

Load
Within load/voltage specified limits the total effect is negligible.

Radio frequency interference
Total effect : less than 0.10% of span from 20 to 1000 MHz and for field strengths up to 30 V/m when tested with shielded conduit and grounding, with or without meter. Meets IEC 801.

Common mode interference
No effect from 100 V rms @ 50 Hz, or 50 Vdc.

Series mode interference
No effect from 1 V rms @ 50 Hz.

PHYSICAL SPECIFICATIONS
(Refer to ordering information sheets for variant availability related to specific model or versions code)

Materials
Process isolating diaphragms (*)
AISI 316 L ss

Process connection (*)
AISI 316 L ss.

Gaskets (*)
Ethylene-propylene (on request)

Sensor housing : AISI 316 L ss

Sensor fill fluid
Silicone oil (DC200)

Seal fill fluid
Silicone oil (DC200), DC 97-9120 PHARMA B-GRADE

Electronic housing and covers
Barrel version
- Low-copper content aluminium alloy with baked epoxy finish;
- AISI 316 L ss.

Covers O-ring: Buna N.

Local zero and span adjustments:
Glass filled polycarbonate plastic (removable)

Tagging
AISI 316 ss data plate attached to the electronics housing.
Calibration
- Standard: at maximum span, zero based range, ambient temperature and pressure
- Optional: at specified range and ambient conditions; or at operating temperature.

Optional extras
Output indicator:
plug-in rotatable type, LCD or analog.
Standard LCD output meter scale is 0 to 100% linear; special linear scale to specified range and engineering unit is available.
Standard analog output meter scale is 0 to 100% linear or 0 to 10 square-root; special graduation is available.

Supplemental customer tag
AISI 316 ss tag screwed/fastened to the transmitter for customer's tag data up to a maximum of 20 characters and spaces on one line for tag number and tag name, and up to a maximum of 3 spaced strings of 10 characters each for calibration details (lower and upper values plus unit).
Special typing evaluated on request for charges.

Surge protection (not available with Profibus PA and FF output)
Material traceability

Environmental protection
Wet and dust-laden atmospheres
The transmitter is dust and sand tight and protected against immersion effects as defined by IEC 529 (1989) to IP 67 (IP 68 on request) or by NEMA to 4X or by JIS to C0920

Hazardous atmospheres
With or without output meter/integral display
ATEX/BASEEFA approval
• EC-Type Examination Certificate no. BAS 99ATEX 1180
  - (HART)
    II 1 GD T50°C, EEEx ia IIC T6/T5 (-40°C ≤ Ta ≤+40°C)
    T95°C, EEEx ia IIC T4 (-40°C ≤ Ta ≤+85°C)
  - (FOUNDATION Fieldbus)
    II 1 GD T70°C, EEEx ia IIC T4 (-40°C ≤ Ta ≤+60°C)
• EC-Type Examination Certificate no. BAS 00ATEX 1241
  - (PROFIBUS-PA)
    II 1 GD T70°C, EEEx ia IIB T4 (-40°C ≤ Ta ≤+60°C)

TYPE “N”/EUROPE:
ATEX/BASEEFA type examination
• Design compliance by Certificate no. BAS 01ATEX 3380X
  - (HART)
    II 3 GD T50°C, EEEx nL IIC T5 (-40°C ≤ Ta ≤+40°C)
    T95°C, EEEx nL IIC T4 (-40°C ≤ Ta ≤+85°C)
  - (FOUNDATION Fieldbus)
    II 3 GD T70°C, EEEx nL IIC T4 (-40°C ≤ Ta ≤+60°C)
• Design compliance by Certificate no. BAS 01ATEX 3384X
  - (PROFIBUS-PA)
    II 3 GD T70°C, EEEx nL IIB T4 (-40°C ≤ Ta ≤+60°C)

FLAMEPROOF/EUROPE:
ATEX/CESI approval:
• EC-Type Examination Certificate no. CESI 00 ATEX 035
  II 1/2 GD T80°C, EEEx d IIC T6 (-40°C ≤ Ta ≤ +70°C)
  T95°C, EEEx d IIC T5 (-40°C ≤ Ta ≤ +85°C)

CANADIAN STANDARDS ASSOCIATION and FACTORY MUTUAL:
- Explosionproof: Class I, Div. 1, Groups A, B, C, D
- Dust ignitionproof: Class II, Div. 1, Groups E, F, G
- Suitable for: Class II, Div. 2, Groups F, G; Class III, Div. 1, 2
- Nonincendive: Class I, Div. 2, Groups A, B, C, D
- Intrinsically safe: Class I, II, III, Div. 1, Groups A, B, C,D,E, F, G

STANDARDS AUSTRALIA (SAA)
TS/WCA Approval (HART only)
• Conformity Certificate no. AUS Ex 3117X
  Ex d IIC T5 (Tamb +85°C)/T6 (Tamb +70°C) Class 1 Zone 1;
  Ex ia IIC T4 (Tamb +85°C)/T5 (Tamb +55°C) T6 Class 1 Zone 0

Process connections
Beverage seal (mod. S6K)
- 1 1/2in flush diaphragm with integral 6 holes flanged connection to process welded spud

Electrical connections
Two 1/2 NPT or M20x1.5 or PG 13.5 or 1/2 GK threaded conduit entries, direct on housing; straight or angle Harting HAN connector and one plug, on request.

Terminal block
• HART version
  Three terminals for signal/external meter wiring up to 2.5 mm² (14 AWG) and three connection points for test and communication purposes.
• Fieldbus versions
  Two terminals for signal wiring (bus connection) up to 2.5 mm² (14 AWG)

Grounding
Internal and external 6 mm² (10 AWG) ground termination points are provided.

Mounting position
Transmitter can be mounted in any position.
Electronics housing may be rotated to any position. A positive stop prevents over travel.

Mass
(without options)
3 kg approx (5 lb) according to specified options; add 1.5 kg (3.4 lb) for AISI housing.
Add 650 g (1.5 lb) for packing.

Packing
Carton

(*) Wetted parts of the transmitter.
**CONFIGURATION**

- **Transmitter with HART communication and 4 to 20 mA**
  
  **Standard configuration**
  
  Transmitters are factory calibrated to customer's specified range. Calibrated range and tag number are stamped on the tag plate. If a calibration range and tag data are not specified, the transmitter will be supplied with the plate left blank and configured as follows:
  
  - **Engineering Unit:** Specify code option
  - **4 mA:** Zero
  - **20 mA:** Upper Range Limit (URL)
  - **Output:** Linear
  - **Damping:** 1 sec.
  - **Transmitter failure mode:** Upscale
  - **Software tag characters:** Blank
  - **Optional LCD output indicator:** 0 to 100.0% linear
  
  Any or all the above configurable parameters, including Lower range-value and Upper range-value which must be the same unit of measure, can be easily changed using the HART hand-held communicator. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

- **Custom configuration (option)**

  The following data may be specified in addition to the standard configuration parameters:
  
  - **Descriptor:** 16 alphanumeric characters
  - **Message:** 32 alphanumeric characters
  - **Date:** Day, month, year
  - **Damping:** Seconds

- **Transmitter with Profibus PA communication**

  Transmitters are factory calibrated to customer’s specified range. Calibrated range and tag number are stamped on the tag plate. If a calibration range and tag data are not specified, the transmitter will be supplied with the plate left blank and configured as follows:
  
  - **Measure Profile:** Pressure
  - **Engineering Unit:** kPa
  - **Output scale 0%:** Lower Range Limit (LRL)
  - **Output scale 100%:** Upper Range Limit (URL)
  - **Output:** Linear
  - **Hi-Hi Limit:** Upper Range Limit (URL)
  - **Hi Limit:** Upper Range Limit (URL)
  - **Low Limit:** Lower Range Limit (LRL)
  - **Low-Low Limit:** Lower Range Limit (LRL)
  - **Limits hysteresis:** 0.5% of output scale
  - **PV filter time:** 0 sec.
  - **Tag:** 32 alphanumeric characters

  Any or all the above configurable parameters, including Lower range-value and Upper range-value which must be the same unit of measure, can be easily changed by a PC running the configuration software Smart Vision with DTM for 600T or 600T template for Siemens Simatic PDM System. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

- **Custom configuration (option)**

  The following data may be specified in addition to the standard configuration parameters:
  
  - **Descriptor:** 32 alphanumeric characters
  - **Message:** 32 alphanumeric characters
  - **Date:** Day, month, year
  - **PV filter:** Seconds

**Available engineering units of pressure measure are:**

- Pa, kPa, MPa
- inH2O@4°C, mmH2O@4°C, psi
- inH2O@20°C, ftH2O@20°C, mmH2O@20°C
- inHg, mmHg, Torr
- g/cm², kg/cm², atm
- mbar, bar
MOUNTING DIMENSIONS
(not for construction unless certified)

- 624ES with beverage seal S6K - 1 1/2in size to 6 holes flanged spud
HART hand-held communicator may be connected at any wiring termination point in the loop, providing the minimum resistance is 250 ohm. If this is less than 250 ohm, additional resistance should be added to allow communications.
ORDERING INFORMATION model S6K direct mount seal for beverage application

Select one character or set of characters from each category and specify complete catalog number, in addition to the 624ES transmitter code

<table>
<thead>
<tr>
<th>PRODUCT CODE</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>abc</td>
<td>BASE NUMBER - 1st to 3rd characters</td>
</tr>
<tr>
<td>d</td>
<td>NUMBER OF REMOTE SEALS - 4th character</td>
</tr>
<tr>
<td>ef</td>
<td>MOUNTING CONNECTION MATERIAL/TYPE - 5th and 6th characters</td>
</tr>
<tr>
<td>g</td>
<td>OTHER WETTED MATERIAL - 7th character</td>
</tr>
<tr>
<td>h</td>
<td>DIAPHRAGM MATERIAL - 8th character</td>
</tr>
<tr>
<td>i</td>
<td>EXTENSION LENGTH - 9th character</td>
</tr>
<tr>
<td>j</td>
<td>CAPILLARY - 10th character</td>
</tr>
<tr>
<td>kl</td>
<td>SYSTEM LENGTH m (feet) - 11th and 12th characters</td>
</tr>
<tr>
<td>m</td>
<td>PROCESS 'O' RING - 13th character</td>
</tr>
<tr>
<td>no</td>
<td>OPTIONS - 14th and 15th characters</td>
</tr>
</tbody>
</table>
ORDERING INFORMATION model 624ES Transmitter with direct mount seal S6K

Select one character or set of characters from each category and specify complete catalog number. Refer to supplementary code and specify another number for each transmitter if additional options are required.

**PRODUCT CODE**

<table>
<thead>
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<td>BASE MODEL - 1st to 5th characters</td>
<td>624ES</td>
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<tr>
<td>SENSOR</td>
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</tr>
<tr>
<td>f Span limits - 6th character</td>
<td></td>
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<tr>
<td>8 and 160 kPa</td>
<td>80 and 1600 mbar</td>
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<tr>
<td>30 and 600 kPa</td>
<td>0.3 and 6 bar</td>
</tr>
<tr>
<td>120 and 2400 kPa</td>
<td>1.2 and 24 bar</td>
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<tr>
<td>Diaphragm material</td>
<td>Fill fluid</td>
</tr>
<tr>
<td>g AISI 316 L ss</td>
<td>Silicone oil</td>
</tr>
<tr>
<td>h PROCESS CONNECTION - 8th character</td>
<td>P</td>
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<tr>
<td>All-welded direct mount seal, Beverage (to be coded separately as S6K)</td>
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<tr>
<td>Reference Chamber (negative) - 9th character</td>
<td></td>
</tr>
<tr>
<td>i At atmospheric pressure for gauge measurement</td>
<td>B</td>
</tr>
<tr>
<td>At vacuum for absolute measurement</td>
<td>W</td>
</tr>
<tr>
<td>10th character</td>
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<tr>
<td>Use code</td>
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<tr>
<td>j Hart digital communication and 4 to 20 mA</td>
<td>G</td>
</tr>
<tr>
<td>Profibus PA communication</td>
<td>P</td>
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<td>ELECTRICAL CERTIFICATION - 13th character</td>
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</tr>
<tr>
<td>m General Purpose</td>
<td></td>
</tr>
<tr>
<td>ATEX Group II Category 1/2 GD - Flameproof EEx d CESI approval</td>
<td>1</td>
</tr>
<tr>
<td>ATEX Group II Category 1 GD - Intrinsic Safety EEx ia BASEEFA approval</td>
<td>L</td>
</tr>
<tr>
<td>ATEX Group II Category 3 GD - Type of protection “N” EEx nL design compliance</td>
<td>N</td>
</tr>
<tr>
<td>Factory Mutual (FM) and Canadian Standard Association (CSA) approvals (only with 1/2” NPT and M20 electrical connection)</td>
<td></td>
</tr>
<tr>
<td>Intrinsic Safety and Flameproof to Standards Australia SAA approval Ex ia IIC T6/T5/T4 + Ex d IIC T6/T5</td>
<td>W</td>
</tr>
<tr>
<td>Note : not available with output code P and F at position &quot;i&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Compliance to NACE class II bolting, according to specification MR0175, latest revision
### ORDERING INFORMATION model 624ES Transmitter with direct mount seal S6K

#### TOP WORKS - 14th character

<table>
<thead>
<tr>
<th>n</th>
<th>Housing material</th>
<th>Electrical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aluminium alloy (Barrel version)</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>M20 x 1.5 (CM 20)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Pg 13.5</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1/2&quot; GK</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Harting HAN connector - straight entry (Note 1, 2)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Harting HAN connector - angle entry (Note 1, 2)</td>
</tr>
<tr>
<td>A</td>
<td>AISI 316 L ss (Barrel version)</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>M20 x 1.5 (CM 20)</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>Pg 13.5</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>1/2&quot; GK</td>
</tr>
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</table>

Note 1: requires certification code 1 at position “m”

Note 2: not available with output code P and F at position “l”

#### ELECTRICAL OPTIONS - 15th character

<table>
<thead>
<tr>
<th>o</th>
<th>Internal meter type</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Digital LCD output indicator linear 0-100%, user scalable (Note)</td>
</tr>
<tr>
<td>5</td>
<td>Digital LCD output indicator linear scale (specify range and engineering units) (Note)</td>
</tr>
<tr>
<td>7</td>
<td>Analog output indicator linear 0-100% scale (Note)</td>
</tr>
<tr>
<td>9</td>
<td>Analog output indicator, special graduation (to be specified for linear scale) (Note)</td>
</tr>
<tr>
<td>A</td>
<td>Digital LCD integral display</td>
</tr>
<tr>
<td>C</td>
<td>Digital LCD integral display and digital LCD output indicator linear 4-20 mA (Note)</td>
</tr>
<tr>
<td>E</td>
<td>Digital LCD integral display and analog output indicator linear 0-100% scale (Note)</td>
</tr>
<tr>
<td>P</td>
<td>Programmable signal meter and HART configurator (CoMeter) (Note)</td>
</tr>
<tr>
<td>R</td>
<td>Programmable signal meter and HART configurator (CoMeter) and digital LCD integral display (Note)</td>
</tr>
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Note: not available with output code P and F at position “l”

#### 16th character

<table>
<thead>
<tr>
<th>p</th>
<th>Electrical options</th>
<th>Labels language</th>
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<tbody>
<tr>
<td></td>
<td>Standard terminal block</td>
<td>English</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>German</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Italian</td>
</tr>
<tr>
<td>3</td>
<td>Surge protector (Note)</td>
<td>English</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>German</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Italian</td>
</tr>
<tr>
<td>6</td>
<td>Terminal block for external meter (Note)</td>
<td>English</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>German</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Italian</td>
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Note: not available with output code P and F at position “l”
ORDERING INFORMATION
Select one character or set of characters from each category and specify complete catalog number in addition to each transmitter code, if required.

PRODUCT CODE

<table>
<thead>
<tr>
<th>ab</th>
<th>BASE MODEL - 1st to 2nd characters</th>
<th>Code</th>
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<tr>
<td>Supplementary code</td>
<td>SC</td>
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<table>
<thead>
<tr>
<th>c</th>
<th>CONFIGURATION - 3rd character</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Standard - Pressure = kPa; Temperature = deg. C</td>
</tr>
<tr>
<td>2</td>
<td>Standard - Pressure = inH2O/psi (@ 20°C); Temperature = deg. F</td>
</tr>
<tr>
<td>3</td>
<td>Standard - Pressure = inH2O/psi (@ 4°C); Temperature = deg. F</td>
</tr>
<tr>
<td>4</td>
<td>Standard - Pressure = inH2O/psi (@ 20°C); Temperature = deg. C</td>
</tr>
<tr>
<td>5</td>
<td>Custom</td>
</tr>
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<table>
<thead>
<tr>
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<th>CALIBRATION - 4th character</th>
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<tbody>
<tr>
<td>1</td>
<td>Reference temperature</td>
</tr>
<tr>
<td>2</td>
<td>Operating temperature</td>
</tr>
<tr>
<td>3</td>
<td>Reference temperature</td>
</tr>
<tr>
<td>4</td>
<td>Operating temperature</td>
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<table>
<thead>
<tr>
<th>e</th>
<th>PROCEDURE</th>
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<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>A</td>
<td>To EN10204 - 3.1.B (certificates for flanges, adapters, diaphragms)</td>
</tr>
<tr>
<td>B</td>
<td>To EN10204 - 2.1 (declaration for instrument)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>f</th>
<th>INTEGRAL MOUNTING OF ASSOCIATED INSTRUMENTATION - 6th character</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
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</table>

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.