

Features

The differential pressure transmitter WIN10 is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure. WIN10-B/C outputs a 4 to 20 mA DC HART signal corresponding to the measured differential pressure. Other key features include quick response, remote set-up using communications, self-diagnostics and optional status output for pressure high/low alarm.

Specifications

1 PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span (includes terminal-based linearity, hysteresis, and repeatability)

$\pm 0.075\%$

If $TD > 10$ ($TD = URL / SPAN$):

$\pm(0.0075 \times TD)\%$

The square root accuracy is 1.5 times of reference accuracy of calibrated span.

Ambient Temperature Effects

| Span Code | -20°C ~ 65°C |
|-----------|---|
| A | $\pm(0.45 \times TD + 0.25)\% \times \text{Span}$ |
| B | $\pm(0.30 \times TD + 0.20)\% \times \text{Span}$ |
| C/D/E | $\pm(0.20 \times TD + 0.10)\% \times \text{Span}$ |
| Span Code | -40°C ~ -20°C & 65°C ~ 85°C |
| A | $\pm(0.45 \times TD + 0.25)\% \times \text{Span}$ |
| B | $\pm(0.30 \times TD + 0.20)\% \times \text{Span}$ |
| C/D/E | $\pm(0.20 \times TD + 0.10)\% \times \text{Span}$ |

Static Pressure Effects

| Span Code | Static Pressure Effects |
|-----------|--|
| A | $\pm(0.15\% \text{URL} + 0.10\% \text{Span}) / 4 \text{MPa}$ |
| B | $\pm(0.10\% \text{URL} + 0.075\% \text{Span}) / 16 \text{MPa}$ |
| C/D/E | $\pm(0.05\% \text{URL} + 0.05\% \text{Span}) / 16 \text{MPa}$ |

Overpressure Effects

| Span Code | Overpressure Effects |
|-----------|--|
| A | $\pm 0.2\% \times \text{Span} / 4 \text{MPa}$ |
| B | $\pm 0.2\% \times \text{Span} / 16 \text{MPa}$ |
| C/D/E | $\pm 0.1\% \times \text{Span} / 16 \text{MPa}$ |



Stability

| Span Code | Stability |
|-----------|--|
| A | $\pm 0.5\% \times \text{Span} / \text{year}$ |
| B | $\pm 0.2\% \times \text{Span} / \text{year}$ |
| C/D/E | $\pm 0.1\% \times \text{Span} / \text{year}$ |

Power Supply Effects

$\pm 0.001\% / 10 \text{V}$ (12 ~ 42V DC)

2 FUNCTIONAL SPECIFICATIONS

Span and Range Limits

| Span/Range Limits | | kPa | mbar |
|-------------------|--------------|-------------|--------------|
| A | Span | 0.1 ~ 1 | 1 ~ 10 |
| | Range Limits | -1 ~ 1 | -10 ~ 10 |
| B | Span | 0.2 ~ 6 | 2 ~ 60 |
| | Range Limits | -6 ~ 6 | -60 ~ 60 |
| C | Span | 0.4 ~ 40 | 4 ~ 400 |
| | Range Limits | -40 ~ 40 | -400 ~ 400 |
| D | Span | 2.5 ~ 250 | 25 ~ 2500 |
| | Range Limits | -250 ~ 250 | -2500 ~ 2500 |
| E | Span | 20 ~ 2000 | 0.2 ~ 20 bar |
| | Range Limits | -500 ~ 2000 | -5 ~ 20 bar |

Zero Adjustment Limits

Zero can be fully elevated or suppressed, within the lower and upper range limits of the capsule.

External Zero Adjustment

External zero is continuously adjustable with 0.01% incremental resolution of span. Re-range can be done locally using the range setting switch.

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.4 kPa which can be corrected by the zero adjustment.

Output

Two wire 4 to 20 mA DC output with digital communications, linear or square root programmable. HART FSK Protocol is option superimposed on the 4 to 20 mA signal. Output range: 3.9 mA to 20.5 mA.

Failure Alarm (the mode can be selected)

Low Mode (min): 3.7 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault. Note: The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0 to 60 sec by software and added to response time.

UpTime

< 15s

Ambient Temperature Limits

-40 to 85°C

-20 to 65°C with LCD display or fluorine rubber sealing

Storage and Transportation Temperature Limits

-50 to 85°C; -40 to 85°C with LCD display

Working Pressure Limits (Silicone oil)

Maximum working pressure: 16MPa,25MPa,40MPa

Static Pressure Limits

3.5kPa abs. to maximum working pressure.

One-way Overload Pressure Limit

The maximum one-way overload pressure is maximum working pressure.

Electromagnetic Compatibility (EMC)

Look the EMC Performance Table

3 INSTALL**Supply & Load Requirements**

24 V DC supply, $R \leq (US-12V) / \max k\Omega$, $I_{max}=23 \text{ mA}$.
Maximum voltage limited: 42VDC, Minimum voltage limited: 12VDC, 15VDC (with LCD display) 230 Ω to 600 Ω for digital communication

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm².

Process Connection

Flange with fixing thread 7/16-20 UNF and 1/4-18 NPT female thread on both sides.

4 PHYSICAL SPECIFICATIONS**Wetted Parts Materials**

| | |
|----------------------------------|---|
| Sensor Body: | 316L stainless steel |
| Isolating Diaphragm: | 316L stainless steel/Hastelloy C |
| Nuts and Bolts: | 304 stainless steel |
| Process Connector: | 304 stainless steel |
| Fill fluid | Silicone oil/Fluorinated oil |
| Process Connector Gasket: | Perbunan (NBR) /Viton (FKM) /Teflon(PTFE) |
| Amplifier Housing | Aluminum with epoxy resin coat |
| Housing Gasket: | Perbunan (NBR) |
| Name plate and tag: | 304 stainless steel |
| Weight | 3.3kg |
| Degrees of Protection: | IP67 |

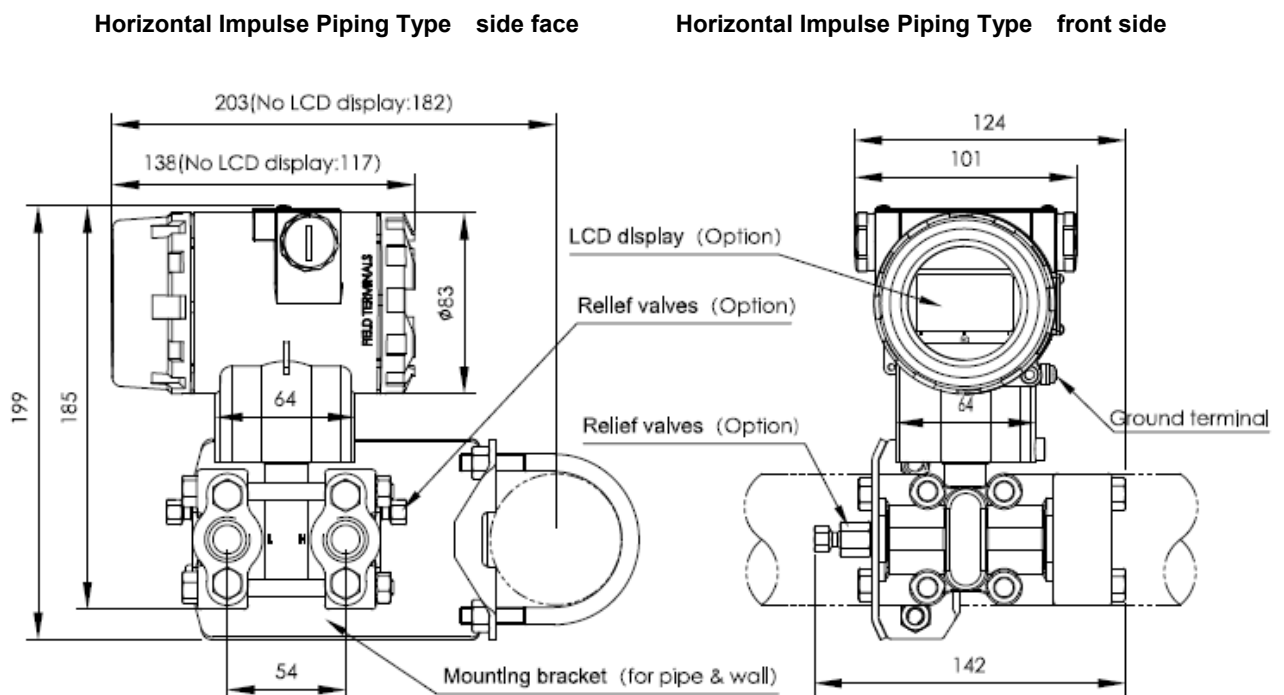
EMC Performance Table

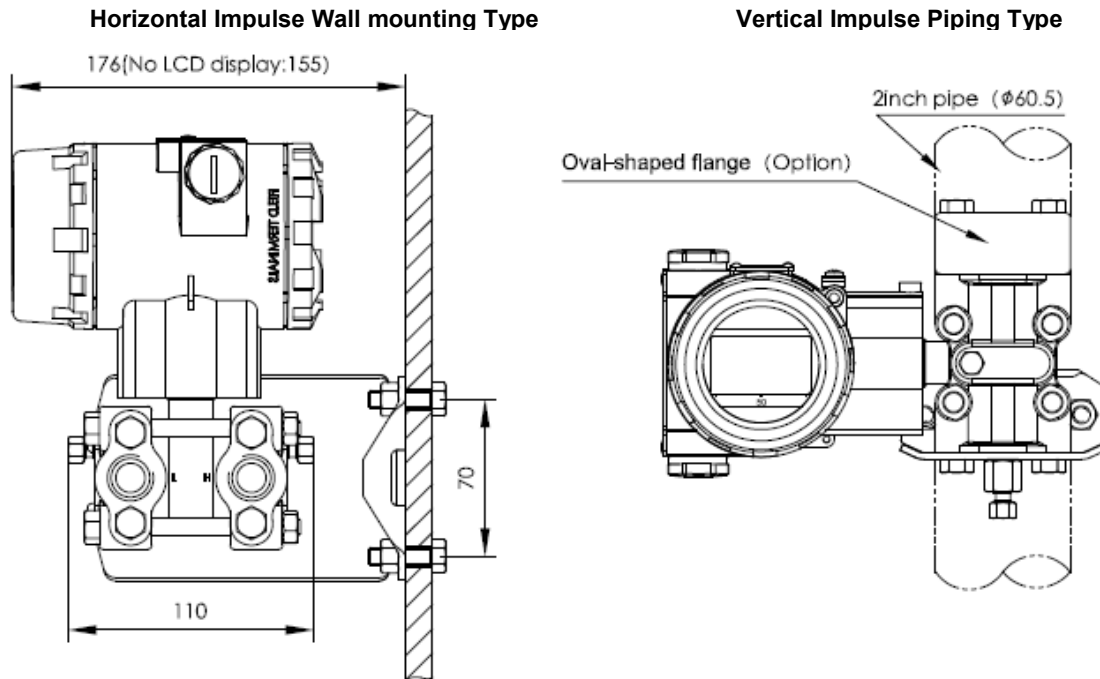
| Items | Test items | Basic standards | Test conditions | Performance Level |
|-------|---|-------------------|--|-------------------|
| 1 | Radiated interference (Housing) | GB/T 9254-2008 | 30MHz ~ 1000MHz | OK |
| 2 | Conducted interference (DC power port) | GB/T 9254-2008 | 0.15MHz ~ 30MHz | OK |
| 3 | Electrostatic Discharge (ESD) Immunity | GB/T 17626.2-2006 | 4kV(Line) 8kV(Air) | B |
| 4 | RF electromagnetic field immunity | GB/T 17626.3-2006 | 10V/m (80MHz ~ 1GHz) | A |
| 5 | Frequency magnetic field immunity | GB/T 17626.8-2006 | 30A/m | A |
| 6 | Electrical Fast Transient Burst Immunity | GB/T 17626.4-2008 | 2kV(5/50ns,5kHz) | B |
| 7 | Surge Immunity | GB/T 17626.5-2008 | 1kV (line to line) 2kV (line to ground) (1.2us/50us) | B |
| 8 | Conducted interference immunity induced by RF field | GB/T 17626.6-2008 | 3V (150KHz ~ 80MHz) | A |

Note: (1) Performance level A description: The technical specifications within the limits of normal performance.

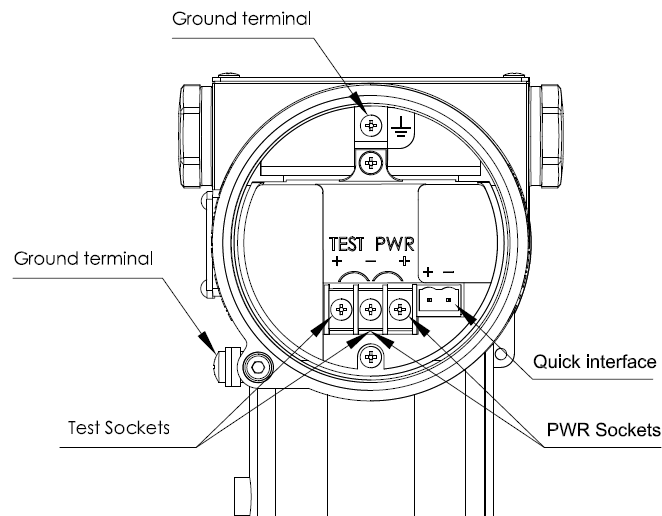
(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

DIMENSIONS (Unit : mm)



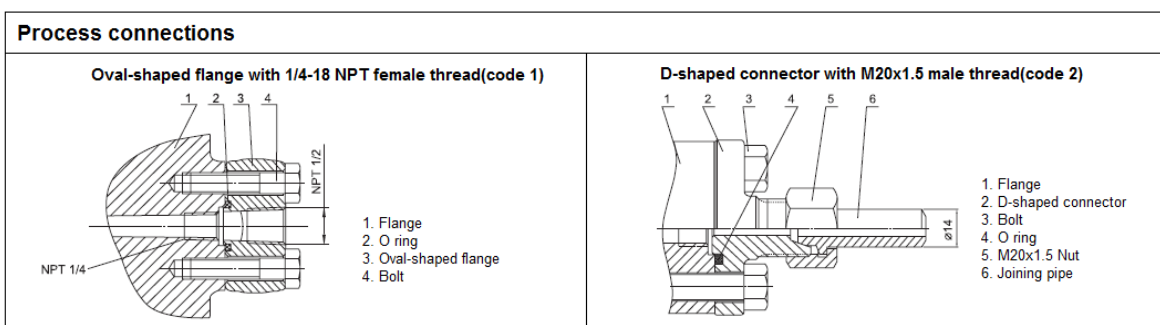


5 Terminal Configuration



Note: Quick interface functionally equivalent to the signal terminal

6 Process connections Description



WIN1001 Series Ordering Code

| | Code | Technology specs |
|-----|-------|--|
| 1. | WIN10 | Series |
| 2. | 01 | Pressure type Differential pressure |
| 3. | ... | Pressure range Specify the SPAN |
| 4. | S | Static pressure Standard |
| | H | Max. static pressure 42 MPa |
| 5. | 1 | Max. working pressure 16 MPa |
| | 2 | 25 MPa |
| | 3 | 42 MPa |
| 6. | 2 | Accuracy 0.1%URL |
| | 5 | 0.075%URL |
| | 7 | 0.05%URL |
| 7. | 1 | Output signal 4...20mA + HART |
| | 2 | Modbus |
| | 3 | Profibus |
| 8. | 0 | Display Without |
| | E | With OLED display (Min, -40 °C) |
| | C | With LCD display (Min, -20 °C) |
| 9. | S | Explosion proof Standard, non-explosion, IP66 |
| | X | Exd IIC T6 Gb, IP67 |
| | I | Exia IIC T4 Ga, IP66 |
| 10. | B1 | Filling oil Standard (-40/120 °C) option with seal -40/205 °C |
| | B2 | Inert oil (-40/120 °C) with seal -40/160 °C, Oxygen necessary |
| 11. | 2N | Process connection 1/2"NPT Female(standard) |
| | 3N | 1/2"NPT Female,with elliptic SS flange |
| | 2M | M20*1.5 Male,SS T-joint |
| 12. | SS | Diaphragm material 316L SS (standard) |
| | HC | Hastelloy C |
| | TA | Tantalum |
| | GL | 316L SS coating gold |
| | FP | 316L SS coating FEP |
| 13. | N | O-ring NBR |
| | M | FKM |
| | P | PTFE |
| 14. | 0 | Mounting bracket None |
| | 1 | SS |
| | 2 | Galvanized carbon steel |

WIN1001 Series Ordering Code

Code Technology specs

| | | Relief valve | |
|-----|----------------------|--------------|-------------------------------|
| 15. | <input type="text"/> | 0 | None |
| | | 1 | On rear side of flange |
| | | 2 | On upper side of flange |
| | | 3 | On lower side of flange |
| | | Option | |
| 16. | <input type="text"/> | 00 | None |
| | | PR | Square roots output |
| | | OX | Oxygen clean (with inert oil) |
| | | LG | Lightning protection |
| | | VV | Low voltage |
| | | NP | 1/2"NPT electrical connection |
| | | TG | SS tag plate |
| | | LM | Vertical mounting flange |

WIN1002 - Gauge Pressure Transmitter

WIN1003 - Absolute Pressure Transmitter

Features

The pressure transmitter WIN1002/3 is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure. WIN1002/3 outputs a 4 to 20 mA DC signal corresponding to the measured pressure. The key features include quick response, remote set-up using communications, self-diagnostics and optional status output for pressure high/low alarm.



Specifications

1 PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span (includes terminal-based linearity, hysteresis, and repeatability) $\pm 0.075\%$;

If $TD > 10$ ($TD = URL/SPAN$):

$\pm(0.0075 \times TD)\%$;

Ambient Temperature Effects

| Span Code | -20°C~65°C |
|-----------|---|
| B/L | $\pm(0.30 \times TD + 0.20)\% \times \text{Span}$ |
| Others | $\pm(0.20 \times TD + 0.10)\% \times \text{Span}$ |
| Span Code | -40°C~-20°C和 65°C~85°C |
| B/L | $\pm(0.30 \times TD + 0.20)\% \times \text{Span}$ |
| Others | $\pm(0.20 \times TD + 0.10)\% \times \text{Span}$ |

Overpressure Effects

$\pm 0.075\% \times \text{Span}$

Stability

| Span Code | Stability |
|-----------|--|
| B/L | $\pm 0.2\% \times \text{Span}/\text{year}$ |
| Others | $\pm 0.1\% \times \text{Span}/\text{year}$ |

Power Supply Effects:

$\pm 0.001\% / 10V$ (12~42V DC)

2 FUNCTIONAL SPECIFICATIONS

Span and Range Limits (WIN1002)

| Span/Range Limits | | kPa | bar |
|-------------------|--------------|-------------|------------|
| B | Span | 0.6~6 | 6~60mbar |
| | Range Limits | -6~6 | -60~60mbar |
| C | Span | 2~40 | 0.02~0.4 |
| | Range Limits | -40~40 | -0.4~0.4 |
| D | Span | 2.5~250 | 0.025~2.5 |
| | Range Limits | -100~250 | -1~2.5 |
| F | Span | 30~3000 | 0.3~30 |
| | Range Limits | -100~3000 | -1~30 |
| G | Span | 0.1~10MPa | 1~100 |
| | Range Limits | -0.1~10MPa | -1~100 |
| H | Span | 0.21~21 MPa | 2.1~210 |
| | Range Limits | -0.1~21 MPa | -1~210 |
| I | Span | 0.4~40 MPa | 4~400 |
| | Range Limits | -0.1~40 MPa | -1~400 |
| J | Span | 0.6~60 MPa | 6~600 |
| | Range Limits | -0.1~60 MPa | -1~600 |

Span and Range Limits (WIN1003)

| Span/Range Limits | | kPa | bar |
|-------------------|--------------|---------|-----------|
| L | Span | 2~40 | 0.02~0.4 |
| | Range Limits | 0~40 | 0~0.4 |
| M | Span | 2.5~250 | 0.025~2.5 |
| | Range Limits | 0~250 | 0~2.5 |
| O | Span | 30~3000 | 0.3~30 |
| | Range Limits | 0~3000 | 0~30 |

External Zero Adjustment

External zero is continuously adjustable with 0.01% incremental resolution of span. Re-range can be done locally using the range setting switch.

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.25 kPa which can be corrected by the zero adjustment.

Output

Two wire 4 to 20 mA DC output with digital communications, linear or square root programmable. HART FSK Protocol is option superimposed on the 4 to 20 mA signal. Output range: 3.9 mA to 20.5 mA.

Failure Alarm (the mode can be selected)

Low Mode (min): 3.7 mA, High Mode (max): 21 mA
No Mode (hold): Keep the effective value before fault.
The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0 to 60 sec by software and added to response time.

Up Time < 15s

Ambient Temperature Limits: -40 to 85°C

-20 to 65°C with LCD display or fluorine rubber sealing

Storage and Transportation Temperature Limits

-50 to 85°C, -40 to 85°C with LCD display

Working Pressure Limits (Silicone oil)

From vacuum to upper range limits

Overload Pressure Limits

| | | | | |
|------|--------------|--------------|-----------------|---------------|
| Span | 6kPa (B) | 40kPa (C) | 250kPa (D/M) | 3MPa (F/O) |
| OPL | 0.2MPa | 1MPa | 4MPa | 16MPa |
| Span | 10MPa (G) | 21MPa (H) | 40MPa (I) | 60MPa (J) |
| OPL | 20MPa | 50MPa | 50MPa | 70MPa |

Electromagnetic Compatibility (EMC)

Look the EMC Performance Table

3 INSTALL**Supply & Load Requirements**

24 V DC supply, $R \leq (US-12V) / \max k\Omega$, $I_{max}=23 \text{ mA}$.
Maximum voltage limited: 42VDC, Minimum voltage limited: 12VDC, 15VDC (with LCD display) 230Ω to 600 Ω for digital communication

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm².

Process Connection

Default Process Connection: 1/2-NPT female thread, it can be changed to 1/2-NPT, G1/2, M20x1.5 male thread and KF16 vacuum Connection.

4 PHYSICAL SPECIFICATIONS

Isolating Diaphragm: 316L stainless steel/Hastelloy C

Process Connector: 316 stainless steel

Fill fluid Silicone oil

Amplifier Housing Aluminum with epoxy resin coat

Housing Gasket: Perbunan (NBR)

Name plate and tag: 304 stainless steel

Weight 1.6kg

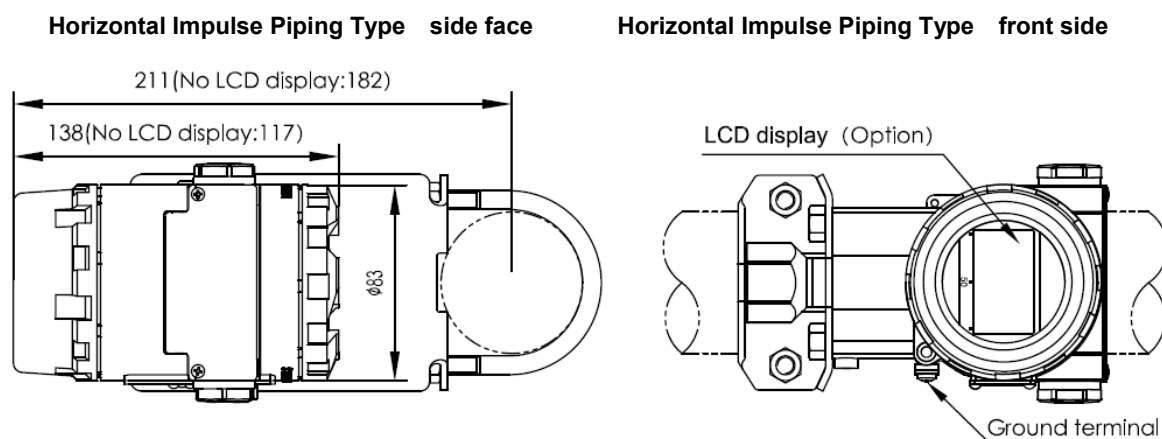
Degrees of Protection: IP67

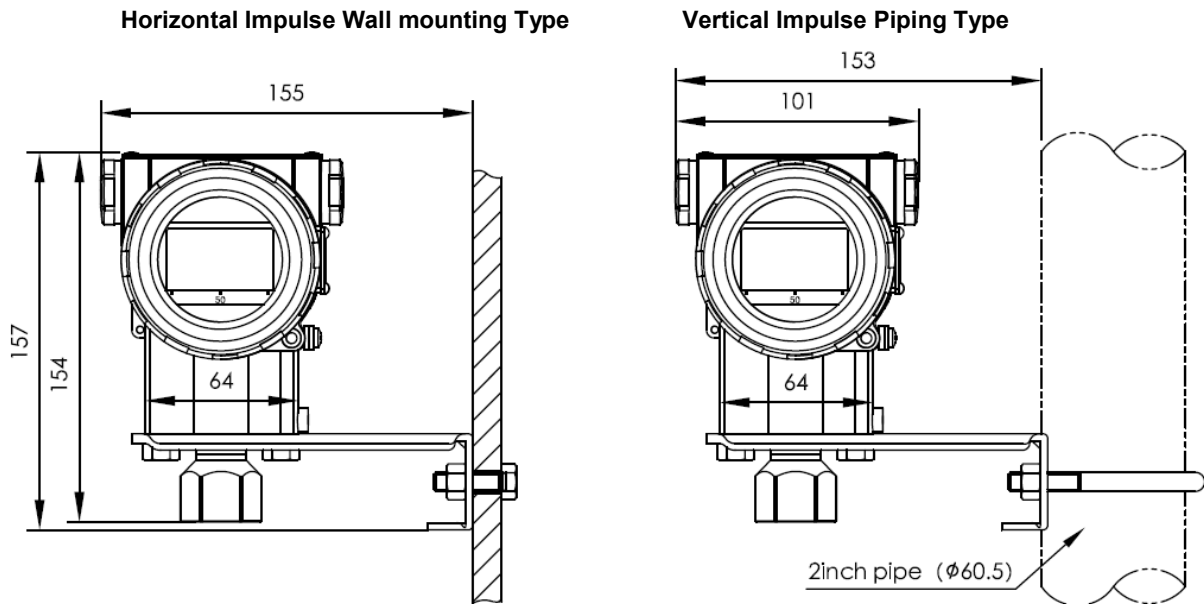
EMC Performance Table

| Items | Test items | Basic standards | Test conditions | Performance Level |
|-------|---|-------------------|--|-------------------|
| 1 | Radiated interference (Housing) | GB/T 9254-2008 | 30MHz ~ 1000MHz | OK |
| 2 | Conducted interference (DC power port) | GB/T 9254-2008 | 0.15MHz ~ 30MHz | OK |
| 3 | Electrostatic Discharge (ESD) Immunity | GB/T 17626.2-2006 | 4kV(Line) 8kV(Air) | B |
| 4 | RF electromagnetic field immunity | GB/T 17626.3-2006 | 10V/m (80MHz ~ 1GHz) | A |
| 5 | Frequency magnetic field immunity | GB/T 17626.8-2006 | 30A/m | A |
| 6 | Electrical Fast Transient Burst Immunity | GB/T 17626.4-2008 | 2kV(5/50ns,5kHz) | B |
| 7 | Surge Immunity | GB/T 17626.5-2008 | 1kV (line to line) 2kV (line to ground) (1.2us/50us) | B |
| 8 | Conducted interference immunity induced by RF field | GB/T 17626.6-2008 | 3V (150KHz ~ 80MHz) | A |

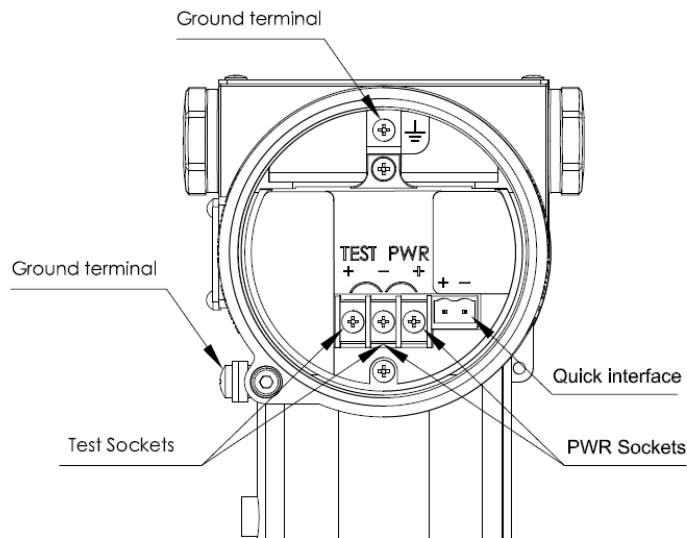
Note: (1) Performance level A description: The technical specifications within the limits of normal performance.
 (2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

DIMENSIONS (Unit : mm)





5 Terminal Configuration



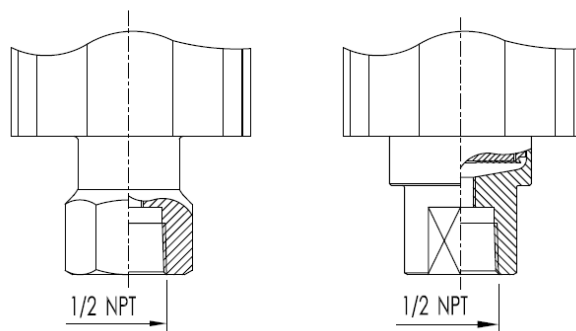
Note: Quick interface functionally equivalent to the signal terminal

6 Process connections Description

6.1 Default Process Connection Code 1

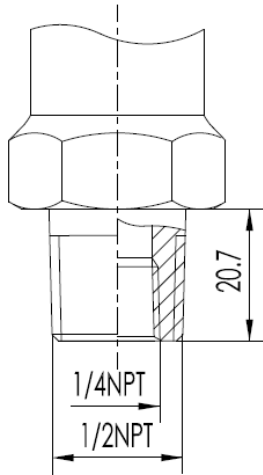
M/D/F/G/H/I/J/O Span

B/C/L Span

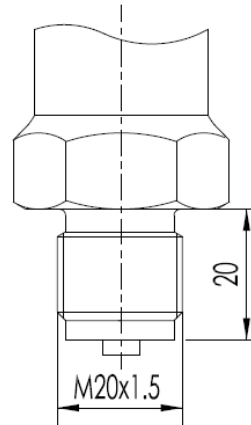


6.2 Other forms of Process connector

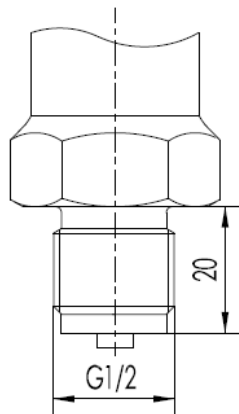
1/2-NPT male thread Code 2



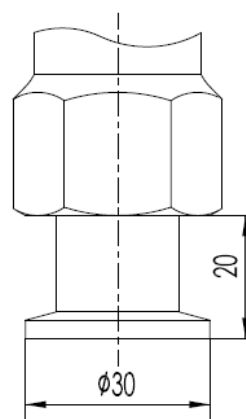
M20x1.5 male thread Code3



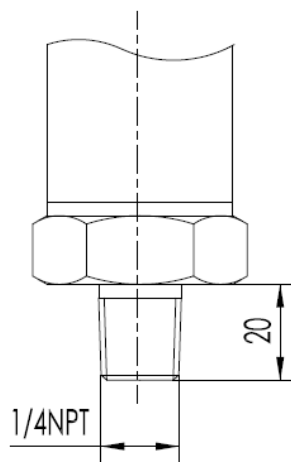
G 1/2 male thread Code 4



Vacuum Connection DIN 28403 KF16 / ISO 2861 Code 5



1/4-NPT male thread Code 6



WIN1002/03 Series Ordering Code

| | Code | Technology specs |
|-----|-------|---|
| 1. | WIN10 | Series |
| | | Pressure type |
| 2. | 02 | Gauge Pressure Transmitter |
| | 03 | Absolute Pressure Transmitter |
| | | Pressure range |
| 3. | ... | Specify the SPAN |
| | | Accuracy |
| 4. | 2 | 0.1%URL |
| | 5 | 0.075%URL |
| | 7 | 0.05%URL |
| | | Output signal |
| 5. | 1 | 4...20mA + HART |
| | 2 | Modbus |
| | 3 | Profibus |
| | | Display |
| 6. | 0 | Without |
| | E | With OLED display (Min, -40 °C) |
| | C | With LCD display (Min, -20 °C) |
| | | Explosion proof |
| 7. | S | Standard, non-explosion, IP66 |
| | X | Exd IIC T6 Gb, IP67 |
| | I | Exia IIC T4 Ga, IP66 |
| | | Filling oil |
| 8. | B1 | Standard (-40/120 °C) option with seal -40/205 °C |
| | B2 | Inert oil (-40/120 °C) with seal -40/160 °C, Oxygen necessary |
| | | Process connection |
| 9. | 2N | 1/2"NPT Female(standard) |
| | 3N | 1/2"NPT Male |
| | 2M | M20*1.5 Male |
| | 4N | 1/4"NPT Female |
| | 2G | G1/2" Male |
| | 1K | KF16 Vacuum connector |
| | CT | With high-temperature heat dissipation, tprocess interface1/2 "NPT female |
| | 1G | G1" Threaded pulp joint |
| | M4 | M44*1.25 Threaded pulp joint |
| | CP | Φ25.8 Threaded pulp joint |
| | | Diaphragm material |
| 10. | SS | 316L SS (standard) |
| | HC | Hastelloy C |
| | GL | 316L SS coating gold |
| | | Mounting bracket |
| 11. | 0 | None |
| | 1 | SS |
| | 2 | Galvanized carbon steel |
| | | Relief valve |
| 12. | 0 | None |
| | 1 | On rear side of flange |
| | 2 | On upper side of flange |
| | 3 | On lower side of flange |

WIN1002/03 Series Ordering Code

Code Technology specs

| | | Option | |
|-----|----------------------|--------|-------------------------------|
| 13. | <input type="text"/> | 00 | None |
| | | PR | Square roots output |
| | | OX | Oxygen clean (with inert oil) |
| | | LG | Lightning protection |
| | | VV | Low voltage |
| | | NP | 1/2"NPT electrical connection |
| | | TG | SS tag plate |