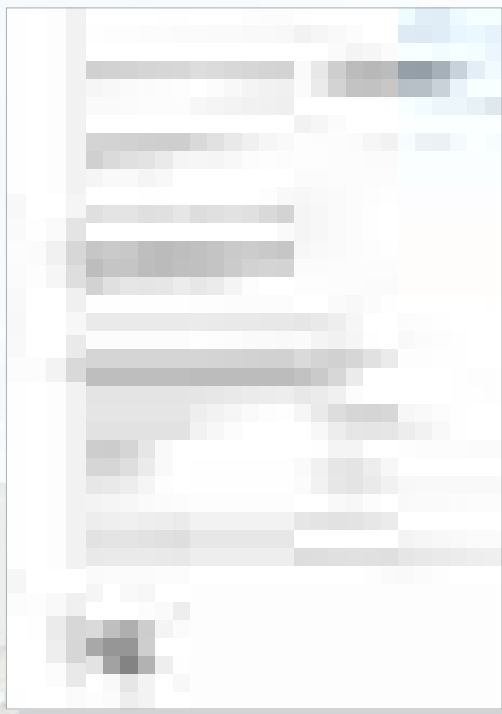


ITEC srl., a 100% family owned company, was founded in 1989 in Inverio (NO), Italy. Since from its inception, ITEC has always been focused in manufacturing & sales of mechanical instruments for pressure and temperature measurement. ITEC has been established itself as an European leader in the field of quality and technical expertise. The experience acquired in many years of manufacturing and worldwide sales, enables ITEC srl. with the flexibility to meet customer's needs in terms of short-time inquiry response, expertise to solve and provide the proper measuring instruments and stablest delivery times.

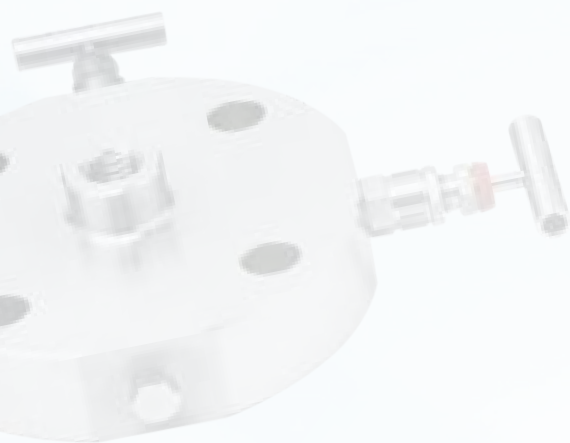
ITEC srl., manufacture and sell Pressure Gauges, Differential Pressure Gauges, Thermometers, Thermowells, Diaphragm Seals, Low Pressure gauges, Valves and Accessories. To serve the customers in a wide other areas of instrumentation, a second unit was started in India, ITEC Measures Pvt. Ltd. This enabled ITEC to expand the existing product line with Pressure Switches, RTDs, Thermocouples, Level Switches, Level Gauges & Flow Switches.

Quality has always been one of the driving synergy of ITEC's working philosophy. ITEC's both manufacturing units are ISO 9001:2008 certified organizations. A certain products are CE marked and as well as ATEX approved.



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PRESSURE GAUGES

FULL STAINLESS STEEL TYPE

APPLICATIONS

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical
- Food & Beverages
- Nuclear power plants



| BASIC MODEL | P101 | P102 | P103 | P104 |
|---------------------------------|---|---|--|--|
| SPECIAL FEATURES | All SS measuring system Socket-case, direct welded Dry / liquid filled CE marking | All SS measuring system Socket-case, direct welded Dry / liquid filled CE marking External zero adjustment | All SS measuring system Socket-case, direct welded Dry / liquid filled | All SS measuring system Socket-case, direct welded Dry / liquid filled CE marking DIN style case and ring |
| NOMINAL DIAL SIZES | DN100, DN125, DN150 & DN250 | DN100, DN125, DN150 & DN250 | DN50, DN63, DN80 ¹ & DN100 ¹ | DN63, DN100 & DN150 |
| RANGE | -1...2,100 bar | -1...2,100 bar | -1...400 bar for DN50 -1...1,000 bar for DN50/80/100 | -1...2,100 bar -1...1,000 bar for DN63 |
| ACCURACY | CL 1.0 CL 0.5 or CL 0.6 ² | CL 1.0 CL 0.5 or CL 0.6 ² | CL 1.6 | CL 1.0 CL 0.5 or CL 0.6 ² |
| MOUNTING STYLES | Bottom Bottom with wall mounting Lower back Lower back with 3-hole panel Lower back with mounting bracket 2" Pipe mounting | Bottom Bottom with wall mounting Lower back Lower back with 3-hole panel Lower back with mounting bracket 2" Pipe mounting | Bottom Lower / Centre back Bottom with wall mounting Centre back with 3-hole panel Centre back with mounting bracket | Bottom Lower / Centre back Bottom with wall mounting Centre back with 3-hole panel Centre back with mounting bracket 2" Pipe mounting |
| PROCESS CONNECTION ³ | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/4" NPT (M) 1/4" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) |
| WETTED PARTS | AISI 316L SS Monel ² | AISI 316L SS Monel ² | AISI 316L SS | AISI 316L SS Monel ² |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ² Epoxy coated ² | AISI 304 SS AISI 316 SS ² Epoxy coated ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² Epoxy coated ² |
| PROTECTION CLASS | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) | IP 65 (Dry) IP 66 / IP 67 ² |
| REFERENCE STANDARD | EN 837-1 | EN 837-1 | EN 837-1 | EN 837-1 |
| SAFETY CLASS | S1 (Open front, blow off disc) | S1 (Open front, blow off disc) | S1 (Open front) ⁴ | S1 (Open front, blow off disc) |
| WINDOW | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Steel glass Shatterproof / Plexi ² |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 IBR certificate ATEX certificate Dampened movement MRP Pointer Short overpressure Oxygen service | NACE MR0175 / MR0103 IBR certificate ATEX Certificate Dampened movement MRP Pointer Short overpressure Oxygen service | MRP Pointer Oxygen service | NACE MR0175 / MR0103 IBR certificate Dampened movement MRP Pointer Short overpressure Oxygen service |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

- Notes
1. In two piece construction (case connected to process connection through sealed compression fitment).
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

4. For DN80 & DN100 only
5. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

PRESSURE GAUGES

HIGH SAFETY TYPE

APPLICATIONS

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical
- Food & Beverages



| BASIC MODEL | P201 | P202 | P201 | P203 |
|---------------------------------|---|---|--|--|
| SPECIAL FEATURES | Solid front with full blow back All stainless steel system External zero adjustment ¹ | Solid front with full blow back All stainless steel system External zero adjustment | Solid front with full blow back All stainless steel system | Solid Front, Turret design Thermoplastic case Standard accuracy $\pm 0.5\%$ FS |
| NOMINAL DIAL SIZES | DN100 & DN150 | DN100 & DN150 | DN63 | 4.5" |
| RANGE | -1...2,100 bar | -1...2,100 bar | -1...1,000 bar | -1...2,100 bar |
| ACCURACY | CL 1.0 CL 0.5 or CL 0.6 ¹ | CL 1.0 CL 0.5 or CL 0.6 ¹ | CL 1.6 | CL 0.5 CL 1.0 ¹ |
| MOUNTING STYLES | Bottom Bottom with wall mounting Lower back with 3-hole panel | Bottom Bottom with wall mounting Lower back with 3-hole panel | Bottom Bottom with wall mounting Centre back with 3-hole panel | Bottom Bottom with wall mounting Lower back with 3-hole panel |
| PROCESS CONNECTION ² | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/4" NPT (M) 1/4" BSP (M) | 1/2" NPT (M) 1/4" NPT (M) |
| WETTED PARTS | AISI 316L SS Monel ¹ | AISI 316L SS Monel ¹ | AISI 316L SS | AISI 316L SS Monel ¹ |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | Phenolic Resin (PBTP) |
| PROTECTION CLASS | IP 65 (Dry) IP 66 / IP 67 ¹ | IP 65 (Dry) IP 66 / IP 67 ¹ | IP 65 (Dry) | IP 65 (Dry) IP 66 / IP 67 ¹ |
| REFERENCE STANDARD | EN 837 - 1 | EN 837 - 1 | EN 837 - 1 | ANSI B 40.1 |
| SAFETY CLASS | S3 (Solid front, full blow back) | S3 (Solid front, full blow back) | S3 (Solid front, full blow back) | Solid front, full blow back |
| WINDOW | Shatterproof | Shatterproof | Shatterproof | Sheet glass Shatterproof / Plexi ¹ |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 IBR certificate ATEX certificate Dampened movement MRP Pointer Short overpressure Oxygen service | NACE MR0175 / MR0103 IBR certificate ATEX certificate Dampened movement MRP Pointer Short overpressure Oxygen service | MRP Pointer Oxygen service | NACE MR0175 / MR0103 IBR certificate Dampened movement Short overpressure Oxygen service |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

Notes 1. Optional, charges extra, contact factory for details.

2. Other connections & sizes are available, charges extra, contact factory for details.

3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

DIFFERENTIAL PRESSURE GAUGES

HEAVY DUTY DIAPHRAGM / BELLOWS TYPE

APPLICATIONS

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical
- Filtration & Water applications
- Pumps, compressors & diesel engines



| BASIC MODEL | P301 | P302 | P303 | P303 |
|---------------------------------|--|--|---|---|
| SPECIAL FEATURES | Single side static sustainable Electric contacts (Optional) Static pressure 200 bar (max) Dry / liquid filled ATEX certificate External Zero Adjustment | All SS measuring system Electric contacts (Optional) Static pressure 100 bar (max) Dry / liquid filled External Zero Adjustment | Economical version All SS measuring system Static pressure 4 bar (max) Bellow type Electric contacts (Optional) External Zero Adjustment | Suitable for direct valve mounting All SS measuring system Static pressure 4 bar (max) Bellow type Electric contacts (Optional) External Zero Adjustment |
| NOMINAL DIAL SIZES | DN100, DN125 & DN150 | DN100, DN125 & DN150 | DN150 | DN150 |
| RANGE | 250...6,000 mmWC & 1...40 bar | 0.6...10 bar | 100 mbar...6 bar | 100 mbar...6 bar |
| ACCURACY | CL 1.6 CL 1.0 ¹ | CL 2.5 | CL 1.6 (range ≤ 1 bar) CL 1.0 (range > 1 bar) | CL 1.6 (range ≤ 1 bar) CL 1.0 (range > 1 bar) |
| MOUNTING STYLES | Bottom Bottom with wall mounting Bottom with 2" Pipe / Yoke Centre back with 3-hole panel | Bottom Bottom with wall mounting Bottom with 2" Pipe / Yoke Centre back with 3-hole panel | Bottom Bottom with wall mounting Bottom with 2" Pipe / Yoke | Bottom Bottom with wall mounting Bottom with 2" Pipe / Yoke |
| PROCESS CONNECTION ² | 1/4" NPT (F) x 2 Nos | 1/4" NPT (F) x 2 Nos | 1/2" NPT (M) x 2 Nos | 1/2" NPT (M) x 2 Nos |
| CHAMBERS | AISI 316L SS Monel ² Hastelloy C ² | AISI 304 SS AISI 316L SS ² | AISI 316L SS | AISI 316L SS |
| DIAPHRAGM | AISI 316L SS Monel ² Hastelloy C ² | AISI 316L SS | AISI 316L SS | AISI 316L SS |
| CASE MATERIAL | AISI 304 SS AISI 316 SS (Optional) | AISI 304 SS AISI 316 SS (Optional) | AISI 304 SS AISI 316 SS (Optional) | AISI 304 SS AISI 316 SS (Optional) |
| PROTECTION CLASS | IP 67 | IP 65 (Dry) | IP 65 (Dry) | IP 65 (Dry) |
| STATIC PRESSURE | 10 bar up to 600 mmWC 40 bar for 1000...2500 mmWC 100 bar for 4000 and above | 40 bar standard 100 bar (Optional) | 6 bar up to 0.4 bar 25 bar for 1 bar...2.5 bar 40 bar for 4 bar...16 bar | 6 bar up to 0.4 bar 25 bar for 1 bar...2.5 bar 40 bar for 4 bar...16 bar |
| WINDOW | Shatterproof | Shatterproof, Sheet glass | Shatterproof | Shatterproof |
| REFERENCE STANDARD | EN 837 - 3 | EN 837 - 3 | EN 837 - 3 | EN 837 - 3 |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 MRP Pointer Oxygen service | MRP Pointer Dampened movement Oxygen service CE / ATEX approved contacts Single / Double insulated contacts Inductive type contacts | MRP Pointer | MRP Pointer |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

- Notes
1. Optional, charges extra, contact factory for details.
 2. Other connections & sizes are available, charges extra, contact factory for details.
 3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.





DIFFERENTIAL PRESSURE GAUGES

COMPACT / PISTON TYPE

APPLICATIONS

- Hydraulic & pneumatic
- Pumps & compressors
- Diesel engines
- Water applications
- Filtration plants
- Blower vacuum monitoring
- Duct or room pressures
- Clean room applications



| |  |  |  |  |
|---------------------------------|---|---|---|--|
| BASIC MODEL | P401 | P402 | P403 | P404 |
| SPECIAL FEATURES | Compact design Migrated pressure chamber Static pressure 200 bar (max) Piston operated | Isolated pressure chamber Static pressure 100 bar (max) Diaphragm operated | Isolated pressure chamber Static pressure 100 bar (max) Ex-proof version Various types of switches | Die cast aluminum case Silicon rubber diaphragm Jeweled bearings Red tipped pointer |
| NOMINAL DIAL SIZES | DN63, DN100 & DN150 | DN63, DN100 & DN150 | DN63, DN100 & DN150 | 120 mm |
| RANGE | 0.25...10 bar | 25 mmWC...600 mmWC (LP) 0.075...4 bar (HP) | 25 mmWC...600 mmWC (LP) 0.075...4 bar (HP) | -20 "Hg...15 psig -0.677...1.034 bar |
| ACCURACY (Ascending) | CL 4.5 CL 2.0 | CL 2.0 | CL 2.0 | CL 2.0 |
| MOUNTING STYLES | Bottom/with 3-hole panel Back/with 3-hole panel In-line/with 3-hole panel | Bottom/with 3-hole panel Back/with 3-hole panel In-line/with 3-hole panel | Bottom/with 3-hole panel Back/with 3-hole panel In-line/with 3-hole panel | Back / Panel |
| PROCESS CONNECTION ¹ | 1/4" NPT (F) x 2 Nos | 1/4" NPT (F) x 2 Nos | 1/4" NPT (F) x 2 Nos | 1/8" NPT (F) x 2 Nos |
| WETTED PARTS | AISI 316 SS Aluminum ² | AISI 316 SS Aluminum ² | AISI 316 SS Aluminum ² | Consult factory |
| CASE MATERIAL | AISI 304 SS | AISI 304 SS | AISI 304 SS | Die cast aluminum |
| PROTECTION CLASS | IP 65 (Dry) | IP 65 (Dry) | IP 65 (Dry) | - |
| STATIC PRESSURE | 200 bar | 100 bar for HP 35 bar for LP | 100 bar for HP 35 bar for LP | 25 psig (1.72 barg) |
| WINDOW | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Acrylic |
| OPTIONAL EXTRAS | MRP Pointer Reed switches | MRP Pointer Reed switches | MRP Pointer Reed switches | - |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

Notes 1. Other connections & sizes are available, charges extra, contact factory for details.

2. Optional, charges extra, contact factory for details.

3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

APPLICATIONS

- Pumps & motor controls
- Water treatment plants
- Hydraulic & pneumatics
- Chemical & petrochemicals
- Pharmaceutical industries
- HVAC & compressor industries
- Refrigeration



| BASIC MODEL | P501 | P502 | P503 | P504 |
|---------------------------------|---|---|--|---|
| SPECIAL FEATURES | Electrical contacts Dome type case Filled version optional | Electrical contacts High Case version Filled version optional | Analogue gauge with transmitter Solid front with full blow back Transmitter output (4...20 mA) | CE complied microswitch SS case & measuring system High repeatability |
| NOMINAL DIAL SIZES | DN100 & DN150 | DN100 & DN150 | DN100 & DN150 | DN100 & DN150 |
| RANGE | -1...2,100 bar | -1...2,100 bar | -1...600 bar | -1...600 bar |
| ACCURACY | CL 1.0 ⁴ | CL 1.0 ⁴ | CL 1.0 ⁵ | CL 1.0 ⁵ |
| MOUNTING STYLES | Bottom Lower back Bottom with wall mounting Lower back with 3-hole panel Lower back with mounting bracket | Bottom Bottom with wall mounting Lower back Lower back with 3-hole panel Lower back with mounting bracket | Bottom | Bottom |
| PROCESS CONNECTION ¹ | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/4" NPT (M) 1/4" BSP (M) |
| WETTED PARTS | AISI 316L SS Monel ² | AISI 316L SS Monel ² | AISI 316L SS | AISI 316L SS Monel ² |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS | AISI 304 SS |
| PROTECTION CLASS | IP 65 (Dry) | IP 65 (Dry) | IP 65 (Dry) | IP 65 (Dry) |
| REFERENCE STANDARD | EN 837 - 1 | EN 837 - 1 | EN 837 - 1 | EN 837 - 1 |
| SAFETY CLASS | S1 (Open front, blow off disc) | S1 (Open front, blow off disc) | S3 (Solid front, full blow back) | S1 (Open front, blow off disc) |
| WINDOW | Plexi | Shatterproof Plexi ² | Shatterproof Plexi ² | Plexi |
| OPTIONAL EXTRAS | CE / ATEX approved contacts Single / Double insulated contacts Inductive type contacts SPDT / DPDT Booster relay for Inductive contacts Dampened movement Dielectric oil filled | CE / ATEX approved contacts Single / Double insulated contacts Inductive type contacts SPDT / DPDT Booster relay for Inductive contacts Dampened movement Dielectric oil filled | Dampened movement | 1 SPDT / 2 SPDT |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

- Notes
1. Other connections & sizes are available, charges extra, contact factory for details.
 2. Optional, charges extra, contact factory for details.
 3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

4. Gauge accuracy CL 1.0 & Switching accuracy within CL 5.0
5. Gauge accuracy CL 1.0 & Switching accuracy as per the Microswitch® / Transmitter

PRESSURE GAUGES

DIAPHRAGM TYPE

APPLICATIONS

- Low viscous liquids
- LP draft measurement
- Non-crystallized media
- Non-corrosive environments
- Clean-air, pharmaceutical & breweries



| BASIC MODEL | P601 | P602 | P604 | P603 |
|---------------------------------|--|--|---|--|
| SPECIAL FEATURES | All SS measuring system Socket-case direct welded Zero adjustment, on dial Dry / filled version | All SS measuring system Threaded/Flanged connections External Zero adjustment ⁷ | All stainless steel system Electric contacts (Optional) Screwed/Flanged connections External zero adjustment | Compact design Stainless steel case Zero adjustment, on dial |
| NOMINAL DIAL SIZES | DN63, DN100, DN125 & DN150 | DN100 & DN150 | DN100 & DN150 | DN63, DN100 & DN150 |
| RANGE | -600...25...600 mbar 6...16 mbar ⁷ 100...600 mbar ⁶ | -1...0...25 bar ⁴ 60...600 mbar 6...40 mbar | -1...0.4...25 bar 40...250 mbar 10...25 mbar | - |
| ACCURACY | CL 1.6...CL 2.5 | CL 1.6 CL 2.5 (below 60 mbar) | CL 1.6 | CL 2.5 |
| MOUNTING STYLES | Bottom Bottom with wall mounting Lower (LB) / Centre (CB) back LB ⁵ / CB with 3-hole panel LB ⁵ / CB with mounting bracket | Bottom Bottom with 2" Pipe / Yoke | Bottom Bottom with 2" Pipe / Yoke | Bottom Bottom with wall mounting Lower / Centre back Centre back with 3-hole panel Centre back with mounting bracket |
| PROCESS CONNECTION ¹ | 1/2" NPT (M) [DN100/125/150] 1/4" NPT (M) [DN63] | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/2" BSP (M) [DN100/150] 1/4" BSP (M) [DN63] |
| WETTED PARTS | AISI 316 SS | AISI 316 SS ⁴ | AISI 316 SS | Copper Alloy |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS |
| PROTECTION CLASS | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² |
| REFERENCE STANDARD | EN 837 - 3 | EN 837 - 3 | EN 837 - 3 | EN 837 - 3 |
| SAFETY CLASS | S1 (Open front) | S1 (Open Front) | S1 (Open Front) | S1 (Open Front) |
| WINDOW | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² | Sheet glass Shatterproof / Plexi ² |
| OPTIONAL EXTRAS | Filled version External zero adjustment Dampening screw Phenol case version ON/OFF type vent plug | PTFE protection on wetted parts Oxygen service | Filled version External zero adjustment Monel / Hastelloy C diaphragms PTFE protection on wetted parts Oxygen service Electric contact versions Special overpressure protection | |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.





Notes

- Other connections & sizes are available, charges extra, contact factory for details.
- Optional, charges extra, contact factory for details.
- Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.
- Diaphragm material Spring steel + PTFE coated for range -1...10 bar.
- Not available in DN63 sizes.
- Applicable in filled version.
- Only available in DN150.

APPLICATIONS

- Sterile applications
- Oil & Gas applications
- Corrosive environments
- Dairy, Ice cream industries
- Sanitary, food & beverages
- Pharmaceutical & paint industries
- Prevent Bacterial & fungal accumulation



| |  |  |  |  |
|--|---|---|--|--|
| BASIC MODEL | P701 | P702 | P703 | P704 |
| SPECIAL FEATURES | Integrated gauge seal assembly Laser welded diaphragm Reduced vibration/pulsation | Laser welded diaphragm Electric contacts ² Transmitter output ² Filled version | All welded system Diaphragm seal integrally welded to the gauge | All welded system Diaphragm seal integrally welded to the gauge |
| NOMINAL DIAL SIZES | DN50, DN63, DN80 ⁴ & DN100 ⁴ | DN100 | DN100 ⁴ & DN150 ⁴ | DN100, DN125 & DN150 |
| RANGE | -1...40 bar | 0...160 bar / 0...250 bar / 0...400 bar / 0...600 bar | 4...70 bar | -1...400 bar |
| ACCURACY | CL 1.6 | CL 1.6 | CL 1.6 | CL 1.6 |
| MOUNTING STYLES | Bottom | Bottom | Bottom | Bottom |
| PROCESS CONNECTION ¹ | Centre back 1.5" Clamp | Homogenizer, connection Homogenizer, with flange Homogenizer, with 1/4" BSP (F) | 1/2" NPT (M) 1/2" BSP (M) | Lower back 1"...5" flange, ANSI B16.5 Rating: 150#...2500# |
| WETTED PARTS (Diaphragm & bottom chamber) | AISI 316L SS | AISI 316L SS | AISI 316 SS | AISI 316L SS ² |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² |
| PROTECTION CLASS | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) IP 66 / IP 67 ² |
| REFERENCE STANDARD | EN 837-1 | EN 837-1 | EN 837-1 | EN 837-1 |
| SAFETY CLASS | S1 (Open Front) | S1 (Open front, blow off disc) | S1 (Open front, blow off disc) | S1 (Open front, blow off disc) |
| WINDOW | Shatterproof | Shatterproof | Shatterproof | Shatterproof |
| OPTIONAL EXTRAS | Filled version Oxygen service Tri clamp with gasket Bottom mating part | MRP pointer Oxygen service Magnetic contacts | Filled version Oxygen service | Filled version Oxygen service Dampened movement MRP pointer External zero adjustment |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

Notes 1. Other connections & sizes are available, charges extra, contact factory for details.

2. Optional, charges extra, contact factory for details.





3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

4. DN63 measuring system

APPLICATIONS

- Calibration & testing labs
- Mud pumps & Well drilling
- Oil & Gas applications
- Petroleum industries
- Nuclear power plants
- Furnace or flow measurement
- Steam boilers & thermal power stations



| |  |  |  |  |
|---------------------------------|---|--|---|---|
| BASIC MODEL | P801 | P802 | P803 | P804 |
| SPECIAL FEATURES | Precision measuring system High resolution dial Anti-parallax mirror band | Socket-case, direct welded CE marking External zero adjustment External deadband adjustment | Rugged construction Fixed pointer, moving dial | Economical version |
| NOMINAL DIAL SIZES | DN150 & DN250 | DN150 | DN100 | 150x78 mm OR 200x104 mm |
| RANGE | -1...700 bar | -1...2,100 bar | 0...40 bar up to 0...800 bar | -600...600 mbar |
| ACCURACY | CL 0.25 | CL 1.0 | CL 2.0 | CL 2.5 |
| MOUNTING STYLES | Bottom Bottom with wall mounting Lower back Lower back with 3-hole panel Lower back with mounting bracket | Bottom Lower back | Bottom | Back with wall mounting |
| PROCESS CONNECTION ¹ | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 2" NPT (M) 2" BSP (M) | 1/4" BSP (M) |
| WETTED PARTS | Beryllium copper and AISI 316L SS | AISI 316L SS Monel ² | AISI 316 SS | Copper Alloy and AISI 304 SS |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ² | AISI 304 SS AISI 316 SS ² | Gun metal | Steel, black painted |
| PROTECTION CLASS | IP 65 (Dry) | IP 65 (Dry) IP 66 / IP 67 ² | IP 65 (Dry) | - |
| REFERENCE STANDARD | EN 837-1 | EN 837-1 | - | - |
| SAFETY CLASS | S1 (Open front, blow off disc) | S1 (Open front, blow off disc) | - | - |
| WINDOW | Shatterproof | Shatterproof | Plexi | Plexi |
| OPTIONAL EXTRAS | Solid Front case NPL / NABL traceability Wooden carrying case Calibration tool kit | NACE MR0175 / MR0103 Filled version Customized deadband dials | SS tag plate | SS tag plate |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

Notes 1. Other connections & sizes are available, charges extra, contact factory for details.



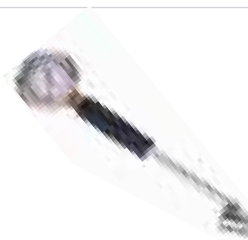

2. Optional, charges extra, contact factory for details.

3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

APPLICATIONS

- Valve positioners
- HVAC & FLR Units
- Water & air applications
- Allied process industries
- Tyre pressure measurement
- Air conditioning & Refrigeration
- Pumps, compressors & diesel engines



| |  |  |  |  |
|----------------------|--|--|--|---|
| BASIC MODEL | P901 | P902 | P904 | P903 |
| SPECIAL FEATURES | Economical version General purpose application Copper alloy system | Stainless steel case Dry / liquid filled Copper alloy system | Compact design | Ammonia application Coated MS case Dial with refrigerant scales |
| NOMINAL DIAL SIZES | DN25, DN40, DN50, DN63 DN80, DN100, DN150 & DN250 | DN50, DN63, DN80 & DN100 | DN50 & DN63 | DN100 |
| RANGE | -1...10 bar for DN25 & DN40 -1...400 bar for others | -1...280 bar for DN50 -1...400 bar for DN63/80/100 | 0...30 psi, 0...60 psi, 0...100 psi, 0...150 psi & 0...220 psi | -1...12.5 kg/cm ² /psi -1...16 kg/cm ² /psi -1...25 kg/cm ² /psi |
| ACCURACY | CL 2.5 for DN25/40/50 CL 1.6 for others | CL 2.5 for DN50 CL 1.6 for others | CL 1.6 for DN63 CL 2.5 for DN50 | CL 1.6 |
| MOUNTING STYLES | Bottom Centre back Bottom with wall mounting Centre back with 3-hole panel Centre back with mounting bracket | Bottom Centre back Bottom with wall mounting Centre back with 3-hole panel Centre back with mounting bracket | Bottom | Bottom Bottom with wall mounting |
| PROCESS CONNECTION 1 | 1/8" BSP (M)...1/2" BSP (M) 1/8" NPT (M)...1/2" NPT (M) | 1/4" NPT (M) 1/4" BSP (M) | Twin connection | 1/4" NPT (M) 3/8" NPT (M) |
| WETTED PARTS | Copper Alloy | Copper Alloy | Copper Alloy | AISI 316 SS + AISI 304 SS |
| CASE MATERIAL | Steel, black painted | AISI 304 SS AISI 316 SS ² | AISI 304 | Steel, black painted |
| PROTECTION CLASS | IP 32 | IP 65 (Dry) | IP 55 (Dry) | - |
| REFERENCE STANDARD | EN 837 - 1 | EN 837 - 1 | - | EN 837-1 |
| SAFETY CLASS | - | S1 (Open Front) ⁴ | - | - |
| WINDOW | Sheet glass | Plexi | Sheet glass | Sheet glass |
| OPTIONAL EXTRAS | Oxygen service Dampening screw Customized dials as per OEM SS tag plate | Oxygen service Dampening screw Customized dials as per OEM SS tag plate | Customized dials as per OEM | Customized dials as per OEM SS tag plate |

Refer pages 14...17 for Diaphragm Seals, 19...21 for Accessories and 39...43 for Valves & Manifolds.

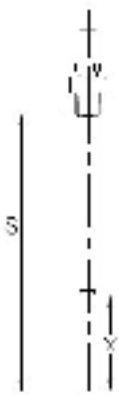
Notes 1. Other connections & sizes are available, charges extra, contact factory for details.

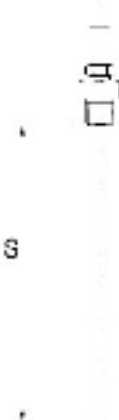
2. Optional, charges extra, contact factory for details.

3. Equivalent scales available in kg/cm², psi, kPa, MPa, bar/psi, kPa/bar, kPa/psi or any other special scales.

4. For DN80 & DN100 only.

THERMOMETER GUIDANCE

| Manufactured Temperature Ranges |  | Sensor Length Chart for Inert Gas Thermometer | | |
|---------------------------------|---|--|------------------------|------------------------------|
| | | Stem / Sensor Size (mm) | (x) Sensor Length (mm) | (S) Minimum Stem Length (mm) |
| -20#40 | | Rigid Stem type Inert Gas Thermometer | | |
| -20#60 | | Capillary type Inert Gas Thermometer (10 Mtr.) | | |
| -20#80 | | 6 / 6.35 | 200 | 240 |
| -20#100 | | 8 / 9.5 | 120 | 160 |
| -20#120 | | 10 | 90 | 130 |
| -20#180 | | 12 / 14 | 70 | 110 |
| -30#50 | | Capillary type Inert Gas Thermometer (>10 Mtr. up to 25 Mtr.) | | |
| -30#70 | | 8 / 9.5 | 170 | 210 |
| -40#40 | | 10 | 140 | 180 |
| -40#60 | | 12 / 14 | 90 | 130 |
| -50#100 | | Capillary compensation is preferred for all capillary inert gas thermometers, whose capillary length is above 6 meter. | | |
| -100#60 | | | | |
| 0#0 | | | | |
| 0#0 | | | | |
| 0#0 | | | | |
| 0#100 | | | | |
| 0#120 | | | | |
| 0#150 | | | | |
| 0#160 | | | | |
| 0#200 | | | | |
| 0#250 | | | | |
| 0#300 | | | | |
| 0#400 | | | | |
| 0#500 | | | | |
| 0#600 | | | | |
| 0#650 | | | | |
| 50#50 | | | | |
| 100#00 | | | | |
| 100#700 | | | | |

| Manufactured Temperature Ranges |  | Sensor Length Chart for Bi-metal Thermometer | | | | |
|--|--|--|----------------|-----------|------------|------------|
| | | Stem Diameter Range (Ø) | 6 mm & ?" (mm) | 8 mm (mm) | 10 mm (mm) | 12 mm (mm) |
| 0#0 | | 0#0 | 120 | 100 | 100 | 100 |
| 0#0 | | 0#0 | 100 | 85 | 85 | 85 |
| 0#0 | | 0#0 | 85 | 60 | 60 | 60 |
| 0#100 | | 0#100 | 65 | 60 | 60 | 60 |
| 0#120 | | 0#120 | 60 | 50 | 50 | 50 |
| 0#150 | | 0#150 | 50 | 40 | 40 | 40 |
| 0#200 | | 0#200 | 40 | 35 | 35 | 35 |
| 0#250 | | 0#250 | 30 | 25 | 25 | 25 |
| 0#300 | | 0#300 | 50 | 40 | 40 | 40 |
| 0#400 | | 0#400 | 40 | 35 | 35 | 35 |
| 0#500 | | 0#500 | 35 | 30 | 30 | 30 |
| 0#600 | | 0#600 | 30 | 25 | 25 | 25 |
| All length mentioned above are to be considered below thread only. | | | | | | |

ELECTRIC CONTACT DETAILS (FOR PRESSURE / TEMPERATURE GAUGE SWITCHES)

| Switch type | Contacts | Action | Rating |
|---|----------|------------------------------|-----------------------|
| Normally closed (1NC) | Single | Break contact | 230VAC/1A; 48VDC/0.5A |
| Normally open (1NO) | Single | Make contact | 230VAC/1A; 48VDC/0.5A |
| Normally closed (2NC) | Double | Break contact | 230VAC/1A; 48VDC/0.5A |
| Normally open (2NO) | Double | Make contact | 230VAC/1A; 48VDC/0.5A |
| Normally closed + Normally open (1NC+1NO) | Double | Break contact + Make contact | 230VAC/1A; 48VDC/0.5A |
| Normally open + Normally closed (1NO+1NC) | Double | Make contact + Brake contact | 230VAC/1A; 48VDC/0.5A |
| SPDT | Single | | 230VAC/1A; 48VDC/0.5A |
| DPDT | Double | | 230VAC/1A; 48VDC/0.5A |
| Normally closed (1NC) | Single | Break contact | 220VAC/0.4A |
| Normally open (1NO) | Single | Make contact | 220VAC/0.4A |
| Normally closed (2NC) | Double | Break contact | 220VAC/0.4A |
| Normally open (2NO) | Double | Make contact | 220VAC/0.4A |
| Normally closed + Normally open (1NC+1NO) | Double | Break contact + Make contact | 220VAC/0.4A |
| Normally open + Normally closed (1NO+1NC) | Double | Make contact + Brake contact | 220VAC/0.4A |





MICROSWITCH DETAILS (FOR PRESSURE / TEMPERATURE SWITCHES)

| Microswitch protection | Type | Switch rating |
|---------------------------------------|--------|---|
| General; low deadband | 1 SPDT | 250VAC/15A; 24VDC/2A or 110VDC/0.4A or 220VDC/0.2A |
| General; high deadband | 1 SPDT | 250VAC/15A; 24VDC/6A or 110VDC/0.5A or 220VDC/0.25A |
| Adjustable differential | 1 SPDT | 250VAC/15A |
| Gold plated contact | 1 SPDT | 125VAC/1A; 28VDC/0.5A |
| Environmentally sealed silver contact | 1 SPDT | 250VAC/15A; 125VDC/0.4A |
| Environmentally sealed gold contact | 1 SPDT | 28VDC/1A |
| Hermetically sealed silver contact | 1 SPDT | 230VAC/4A; 28VDC/3A resistive; 24VDC/2A inductive |
| Hermetically sealed gold contact | 1 SPDT | 125VAC/1A |
| High DC rating | 1 SPDT | 125VAC/10A; 125VDC/10A resistive; 125VDC/6A inductive |
| DPDT | 1 DPDT | 125VAC/10A; 250VDC/0.2A resistive |

APPLICATIONS

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical



| |  |  |  |  |
|---------------------------------|--|--|--|--|
| BASIC MODEL | T701 | T702 | T703 | T704/T705 |
| SPECIAL FEATURES | Inert gas filled expansion Filled versions Capillary compensation ¹ Bi-metal compensation | Inert gas filled expansion External Zero adjustment Capillary compensation ¹ Bi-metal compensation | Inert gas filled expansion Electric contacts Capillary compensation ¹ Bi-metal compensation | Inert gas filled expansion Various type of Microswitches Weatherproof / Ex-proof versions |
| NOMINAL DIAL SIZES | DN100, DN125, DN150 & DN250 | DN100, DN125, DN150 & DN250 | DN100, DN125, DN150 & DN250 | 1 SPDT / 2 SPDT / DPDT |
| SWITCH SPECIFICATION | | | | 15A / 250 VAC or 1A / 24 VDC ⁴ |
| RANGE | -100...650°C ³ | -100...650°C ³ | -100...650°C ³ | 5...400°C ³ |
| STEM LENGTH (BELOW THREAD) | 110...600 mm ≥ 600...2000 mm ¹ | 110...600 mm ≥ 600...2000 mm ¹ | 110...600 mm ≥ 600...2000 mm ¹ | 90...600 mm |
| SHEATH DIAMETER | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm |
| ACCURACY | CL 1.0 | CL 1.0 | CL 1.0 | CL 3.0 |
| MOUNTING STYLES | Bottom Lower back / Centre back Bottom with wall mounting Lower back with 3-hole panel Lower back with mounting bracket Every angle entry clamp entry | Bottom Lower back / Centre back Bottom with wall mounting Lower back with 3-hole panel Lower back with mounting bracket Every angle entry clamp entry | Bottom Lower back / Centre back Bottom with wall mounting Lower back with 3-hole panel Lower back with mounting bracket Every angle entry clamp entry | Bottom Bottom with wall mounting |
| PROCESS CONNECTION ² | 1/2" NPT (M) 1/2" BSP (M) (Fixed / Adjustable / Swivel) | 1/2" NPT (M) 1/2" BSP (M) (Fixed / Adjustable / Swivel) | 1/2" NPT (M) 1/2" BSP (M) (Fixed / Adjustable / Swivel) | 3/8" BSP (M) (Fixed / Adjustable / Swivel) |
| CASE / ENCLOSURE MATERIAL | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | Die cast aluminum |
| CAPILLARY ARMOUR | AISI 304 SS / AISI 316 SS AISI 304 SS / AISI 316 SS / PVC (Max length 25 mtrs.) | AISI 304 SS / AISI 316 SS AISI 304 SS / AISI 316 SS / PVC (Max length 25 mtrs.) | AISI 304 SS / AISI 316 SS AISI 304 SS / AISI 316 SS / PVC (Max length 10 mtrs.) | AISI 304 SS / AISI 316 SS AISI 304 SS / AISI 316 SS / PVC (Max length 10 mtrs.) |
| PROTECTION CLASS | IP 65 IP 66 / IP 67 ¹ | IP 65 IP 66 / IP 67 ¹ | IP 65 IP 66 / IP 67 ¹ | IP 67 IP 65 Flameproof Gr. IIA, IIB ¹ IP 65 Ex-proof Gr IIC ¹ |
| REFERENCE STANDARD | EN 13190 | EN 13190 | EN 13190 | - |
| OPTIONAL EXTRAS | Silicon / Glycerin filled MRP pointer Dampened movement Helium gas filled system | Silicon / Glycerin filled MRP pointer Dampened movement Helium gas filled system | Die-electric oil filled High-case version Helium gas filled system Magnetic / Inductive contacts CE / ATEX approved contacts | Helium gas filled system Double comp. SS Cable gland Wall mounting bracket 2" pipe mounting bracket |

Refer pages 30...32 for Thermowells.

Notes 1. Optional, charges extra, contact factory for details.

2. Other connections, sizes & types (threaded / flanged / triclamp) are available, charges extra, contact factory for details.

3. Refer "Thermometer guidance" for available ranges & knowing minimum stem/sensor lengths. Equivalent scales available in °F, °C/°F, °F/°C.

4. Refer "Thermometer guidance" page for further details on the switch ratings.

APPLICATIONS

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical
- Food & Beverages
- Nuclear power plants



| BASIC MODEL | T501 | T502 | T503 | |
|---------------------------------|---|--|---|--|
| SPECIAL FEATURES | Bimetal helix system Hermetically sealed Stem length max up to 1.5 Mtr | Bimetal helix system Hermetically sealed Every angle entry External zero adjustment | Bimetal helix system Hermetically sealed Elbow mounting External zero adjustment | |
| NOMINAL DIAL SIZES | DN50, DN63, DN80, DN100, DN125 & DN150 | DN80, DN100, DN125 & DN150 | DN100, DN125 & DN150 | |
| RANGE | -100...650°C ³ | -100...650°C ³ | -100...650°C ³ | |
| STEM LENGTH | 50...600 mm | 50...600 mm | 50...600 mm | |
| SHEATH DIAMETER | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | 8 mm 6 mm / 6.35 mm (1/4") 9.5 mm / 10 mm / 12 mm | |
| ACCURACY | CL 1.0 | CL 1.0 | CL 1.0 | |
| MOUNTING STYLES | Bottom Centre back | Every angle entry | Centre back with elbow | |
| PROCESS CONNECTION ² | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | 1/2" NPT (M) 1/2" BSP (M) | |
| CASE MATERIAL | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | AISI 304 SS AISI 316 SS ¹ | |
| PROTECTION CLASS | IP 65 | IP 65 | IP 65 | |
| REFERENCE STANDARD | EN 13190 | EN 13190 | EN 13190 | |
| OPTIONAL EXTRAS | Silicon / Glycerin filled External zero adjustment Hermetically sealed case Shatterproof glass | Silicon / Glycerin filled Hermetically sealed case Shatterproof glass | Silicon / Glycerin filled Hermetically sealed case Shatterproof glass | |

Refer pages 30...32 for Thermowells.

Notes 1. Optional, charges extra, contact factory for details.

2. Other connections & sizes are available, charges extra, contact factory for details.

3. Refer "Thermometer guidance" for available ranges & knowing minimum sensor lengths. Equivalent scales available in °F, °C/°F, °F/°C.

APPLICATIONS

- Separation & isolation applications
- Viscous & corrosive media
- High-pressure applications
- High vibration application



| BASIC MODEL | D101 | D102 | D103 | D104 |
|---|--|---|---|---|
| SPECIAL FEATURES | Forged chambers Rigid construction Laser welded diaphragm Optional exotic materials | Economical version Two piece design Laser welded diaphragm Optional exotic materials | Economical and light weight All welded construction Laser welded diaphragm | One piece construction Laser welded diaphragm Flushed diaphragm Ideal for Transmitters |
| TYPE | Direct coupled | Slip-ring coupled | Heavy duty seal | Flushed |
| RANGE (COMPATIBLE) | -1...70 bar 100...400 bar | -1...70 bar | -1...4 bar 6...70 bar 100...250 bar 400...600 bar | 4...600 bar |
| DIAPHRAGM ³ | AISI 316L SS Monel / Hastelloy C Tantalum / Titanium Inconel / Teflon Silver / Gold ⁴ | AISI 316L SS Monel / Hastelloy C | AISI 316L SS Monel / Hastelloy C | AISI 316L SS |
| BOTTOM CHAMBER ³ | AISI 316L SS Monel / Hastelloy C Tantalum / Titanium / Inconel PP / PTFE / PVC ⁵ | AISI 316L SS Monel / Hastelloy C | AISI 316L SS Monel / Hastelloy C | AISI 316L SS |
| DIAPHRAGM & BOTTOM CHAMBER PROTECTION ³ (Max temperature 150°C) | PTFE lining - 2 mm on chamber PTFE coating, diaphragm PTFE protection, diaphragm | PTFE lining - 2 mm on chamber PTFE coating, diaphragm PTFE protection, diaphragm | - | - |
| FILLING FLUIDS ² (Applicable Temperatures) | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] |
| PROCESS CONNECTION ¹ | ½" NPT (M) ½" BSP (M) | ½" NPT (M) ½" BSP (M) | ½" NPT (M) ½" BSP (M) | 1" NPT (M) |
| CAPILLARY | AISI 304 SS / AISI 316 SS | AISI 304 SS / AISI 316 SS | - | - |
| ARMOUR | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | - | - |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 Metal gasket for high pressure Integrated flushing ports | NACE MR0175 / MR0103 Integrated flushing ports | - | - |

Refer pages 18 for Diaphragm seal guidance and 19...21 for Accessories.





- Notes
1. Other connections & sizes are available, charges extra, contact factory for details.
 2. Other filling fluids optional, charges extra, contact factory for details.
 3. Optional, charges extra, contact factory for details.

4. Gold / silver foils over AISI 316 SS diaphragm.
5. Max pressure up to 14 bar.

APPLICATIONS

- Slurry / High viscous & corrosive media
- Separation & isolation applications
- Polymerisation applications
- High-pressure applications
- Crystallization applications



| |  |  |  |  |
|--|--|---|--|---|
| BASIC MODEL | D201 | D202 | D203 | D204 |
| SPECIAL FEATURES | "I" section extension type For flanges below 1½" Optional exotic materials | Flushed diaphragm Laser welded diaphragm Optional flushing ring Optional exotic materials | Large volume type design Laser welded diaphragm Optional flushing ring Optional exotic materials | Flushed diaphragm Laser welded diaphragm Optional exotic materials |
| TYPE | "I" section, slip-ring "I" section, retainer ring "I" section, direct coupled | Flushed | Insert | Extended neck ⁶ |
| RANGE (COMPATIBLE) | -1...70 bar 100...400 bar | -1...250 bar | -1...250 bar -1...40 bar [PTFE lined] | -1...250 bar |
| DIAPHRAGM ³ | AISI 316L SS Monel / Hastelloy C Tantalum / Titanium Inconel / Teflon Silver / Gold ⁴ | AISI 316L SS Monel / Hastelloy C Inconel | AISI 316L SS Monel / Hastelloy C Tantalum / Titanium Inconel / Teflon Silver / Gold ⁴ | AISI 316L SS Monel / Hastelloy C Inconel |
| BOTTOM CHAMBER ³ (Flange, extension pipe) | AISI 316L SS Monel / Hastelloy C PP / PTFE / PVC ⁵ | AISI 316L SS AISI 304 SS / AISI 316 SS Monel / Hastelloy C | AISI 316L SS Monel / Hastelloy C Tantalum / Titanium / Inconel | AISI 316L SS AISI 304 SS / AISI 316 SS Monel / Hastelloy C |
| DIAPHRAGM & BOTTOM CHAMBER PROTECTION ³ (Max temperature 150°C) | PTFE lining - 2 mm on chamber PTFE coating, diaphragm PTFE protection, diaphragm | PTFE coating, diaphragm | PTFE lining - 2 mm on chamber PTFE coating, diaphragm PTFE protection, diaphragm | - |
| FILLING FLUIDS ² (Applicable Temperatures) | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] |
| PROCESS CONNECTION ¹ | ½"...5" flange to ANSI B16.5 Rating 150#...2500# | 1½"...5" flange to ANSI B16.5 Rating 150#...2500# | 1½"...5" flange to ANSI B16.5 Rating 150#...2500# | 1½"...5" flange to ANSI B16.5 Rating 150#...2500# |
| CAPILLARY | AISI 304 SS / AISI 316 SS | AISI 304 SS / AISI 316 SS | AISI 304 SS / AISI 316 SS | AISI 304 SS / AISI 316 SS |
| ARMOUR | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 Metal gasket for high pressure Integrated flushing ports | NACE MR0175 / MR0103 Metal gasket / Mating flanges Fastners (Bolt/Nuts) | NACE MR0175 / MR0103 Metal gasket / Mating flanges Fastners (Bolt/Nuts) | NACE MR0175 / MR0103 Urea grade SS wetted parts ³ Metal gasket Fastners (Bolt/Nuts) |

Refer pages 18 for Diaphragm seal guidance and 19...21 for Accessories.

- Notes
1. Other connections & sizes are available, charges extra, contact factory for details.
 2. Other filling fluids optional, charges extra, contact factory for details.
 3. Optional, charges extra, contact factory for details.

4. Gold / silver foils over AISI 316 SS diaphragm.
5. Max pressure up to 14 bar.
6. Compatible with DN63 measuring system.

APPLICATIONS

- Food & beverages industries
- Dairy & Ice cream industries
- Pharmaceutical & cosmetic industries



| BASIC MODEL | D301 ³ | D302 | D303 | D401 |
|--|--|---|---|--|
| SPECIAL FEATURES | Quick connect/disconnect Laser welded flush diaphragm Tri-clamp connection | Quick connect/disconnect Laser welded flush diaphragm DIN, SMS, RJT & IDF / ISS connectionsconnections | Quick connect/disconnect Laser welded flush diaphragm DIN, SMS, RJT & IDF / ISS connectionsconnections | Floating ring design (Pulp seal) Laser welded flush diaphragm Anti-vibration connectors For paper & Pulp industries |
| TYPE | Sanitary, Triclamp Sanitary, Triclamp, neck type | Sanitary, flushed | Sanitary, flushed, threaded | Floating ring, flushed |
| RANGE (COMPATIBLE) | -1...40 bar | 1.6...40 bar -1...21 bar (Refer detailed catalogue for range/connections or contact factory) | 1.6...40 bar -1...21 bar | -1...40 bar |
| WETTED PARTS | AISI 316L SS | AISI 316L SS | AISI 316L SS | AISI 316L SS |
| FILLING FLUIDS ² (Applicable Temperatures) | Food grade oil [-20°C to 140°C] Glycerin [10°C to 150°C] | Food grade oil [-20°C to 140°C] Glycerine [10°C to 150°C] | Food grade oil [-20°C to 140°C] Glycerine [10°C to 150°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] |
| PROCESS CONNECTION ¹ | 1½" 1" 2" 2½" | DIN [DN 25, 32, 40 & 50] SMS [1½" & 2"] RJT / APV [1½" & 2"] IDF / ISS [1½" & 2"] | DIN [DN 25, 32, 40 & 50] SMS [1½" & 2"] RJT / APV [1½" & 2"] IDF / ISS [1½" & 2"] | Floating ring as per standard |
| CAPILLARY ARMOUR | - - | - - | - | AISI 304 SS / AISI 316 SS AISI 304 SS / AISI 316 SS / PVC (Max length 2 mtrs.) |
| OPTIONAL EXTRAS | Electro-plating Tri-clamp with Gasket Bottom mating part | Electro-plating Union nut Gaskets Bottom mating part | Electro-plating Union nut Gaskets Bottom mating part | Anti-vibration spring in bottom / back Fastners (Bolt/Nuts) |

Refer pages 18 for Diaphragm seal guidance and 19...21 for Accessories.

- Notes
1. Other connections & sizes are available, charges extra, contact factory for details.
 2. Other filling fluids optional, charges extra, contact factory for details.
 3. Compatible with DN63 measuring system.

APPLICATIONS

- Slurry / high viscous & corrosive media
- Separation & isolation applications
- High-pressure applications
- Transmitter diaphragm seal refurbishment



| |  |  |  |  |
|--|---|---|---|---|
| BASIC MODEL | D402 | D405 | D403 | D404 ⁴ |
| SPECIAL FEATURES | Flush fitment in pipeline Laser welded diaphragm Optional exotic materials | Flushed diaphragm Laser welded diaphragm Optional flushing ring Optional exotic materials | Saddle type flange Laser welded diaphragm Optional exotic materials | Economical version Compact welded body design |
| TYPE | Wafer/Pan cake, flange RF | Flushed, Rotatable Flange | Saddle, flange | Direct coupled, threaded |
| RANGE (COMPATIBLE) DIAPHRAGM ³ | -1...160 bar AISI 316L SS Monel / Hastelloy C | -1...250 bar AISI 316L SS Monel / Hastelloy C / Inconel | -1...100 bar AISI 316L SS Monel / Hastelloy C | -1...21 bar AISI 316L SS |
| BOTTOM CHAMBER ³ | AISI 316L SS Monel / Hastelloy C | AISI 316L SS AISI 304 SS / AISI 316 SS Monel / Hastelloy C | AISI 316L SS Monel / Hastelloy C | AISI 316L SS |
| DIAPHRAGM & BOTTOM CHAMBER PROTECTION ³ (Max temperature 150°C) | PTFE coating, diaphragm | PTFE coating, diaphragm | - | - |
| FILLING FLUIDS ² (Applicable Temperatures) | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] | Silicon DC 200 [-40°C to 205°C] Silicon DC 710 [7°C to 371°C] Food grade oil [-20°C to 140°C] |
| PROCESS CONNECTION ¹ | 2" RF / FF 3" RF / FF | 1½"...5" flange to ANSI B16.5 Rating 150#...2500# | 2½"...14" pipe sizes | ¼" NPT (M) ¼" BSP (M) |
| CAPILLARY | AISI 304 SS / AISI 316 SS | AISI 304 SS / AISI 316 SS | - | - |
| ARMOUR | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | AISI 304 SS / AISI 316 SS / PVC (Max length 6 mtrs.) | - | - |
| OPTIONAL EXTRAS | Mating Flanges Gasket Fastners (Bolt/Nuts) | NACE MR0175 / MR0103 Metal gasket / Mating flanges Fastners (Bolt/Nuts) | Saddle flange Gaskets Fastners (Bolt/Nuts) | - |

Refer pages 18 for Diaphragm seal guidance and 19...21 for Accessories.

- Notes
1. Other connections & sizes are available, charges extra, contact factory for details.
 2. Other filling fluids optional, charges extra, contact factory for details.
 3. Optional, charges extra, contact factory for details.
 4. Compatible with DN50 & DN63 pressure gauges only.

DIAPHRAGM SEAL GUIDANCE

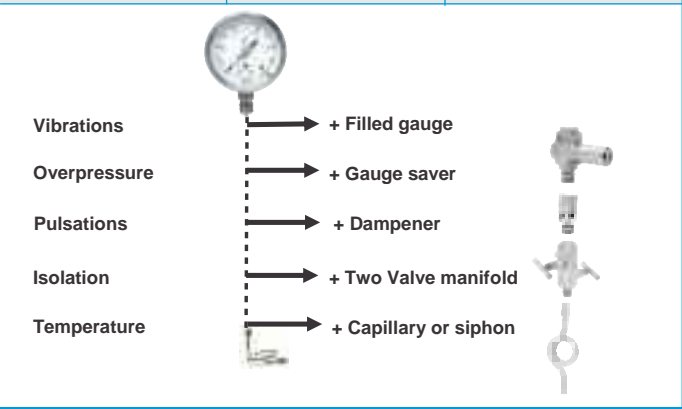
| | D101 | D102 | D103 | D104 | D201 | D202 | D203 | D204 | D301 | D302 | D303 | D401 | D402 | D403 | D404 | D405 | Fluid | Suggested Materials | Fluid |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|----------------------|-----------------------|
| P101 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Acetylene | SS 316 | Acetic Acid |
| P102 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Alcohols | SS 316 | Alums |
| P103 | | | ● | ● | | | | | ● | ● | ● | | | | | ● | Amines | SS 316 | Ammonia Nitrate |
| P104 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | ● | Ammonia | SS 316 | Arsenic Acid |
| P201 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | ● | Benzene | Monel / Hastelloy C | Boric Acid |
| P202 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | ● | Carbon dioxide | SS 316 | Carbon Monoxide |
| P203 | ● | ● | ● | | ● | ● | ● | | ● | | | | ● | ● | | ● | Chloric acid | PTFE | Borax (Sodium Borate) |
| P301 | ● | ● | ● | | ● | ● | ● | | | | | | ● | | | ● | Chlorine | Hastelloy C | Carbon Tetrachloride |
| P302 | ● | ● | ● | | ● | ● | ● | | | | | | ● | | | ● | Chocolate | SS 316 | Cream |
| P303 | ● | ● | ● | | ● | ● | ● | | | | | | ● | | | ● | Detergents | SS 316 | Dyes |
| P401 | | | | | | | | | | | | | | | | | Diesel / Kerosene | SS 316 | Diethylene Glycol |
| P402 | | | | | | | | | | | | | | | | | Fluorine | SS 316 | Formaldehyde |
| P403 | | | | | | | | | | | | | | | | | Freon 22 | Phosphor Bronze | Epsom salts |
| P404 | | | | | | | | | | | | | | | | | Freons | SS 316 | Grease |
| P501 | ● | ● | ● | | ● | ● | ● | | ● | ● | | | ● | | | ● | Fruit juices | SS 316 | Gelatin |
| P502 | ● | ● | ● | | ● | ● | ● | | ● | ● | | | ● | | | ● | Fuel oils | Hastelloy C | Hydrogen Peroxide |
| P503 | | | | | | | | | | | | | | | | | Gasoline / Jet fuels | SS 316 | Hexane |
| P504 | | | | | | | | | | | | | | | | | Glues | SS 316 | Honey |
| P601 | | | | | | | | | | | | | | | | | Hydrochloric acid | Monel / Hastelloy C | Ketones |
| P602 | | | | | | | | | | | | | | | | | Hydrogen sulfide | Hastelloy C | Lacquers |
| P603 | | | | | | | | | | | | | | | | | Milk | SS 316 | Mercury |
| P604 | | | | | | | | | | | | | | | | | Oils | SS 316 | Naphtha |
| P701 | | | | | | | ● | | | | | | | | | | Phosphorus | Hastelloy C | Pentane |
| P702 | | | | | | | | | | | | | | | | | Potassium chloride | Hastelloy C | Trichloroethylene |
| P703 | | ● | | | | | | | | | | | | | | | Propane | SS 316 | Petrolatum |
| P704 | | | | ● | | | | | | | | | | | | | Refineries | Monel / Hastelloy C | Naphthalene |
| P801 | | | | | | | | | | | | | | | | | Salt brine | Hastelloy C | Isopropyl Ether |
| P802 | | | | | | | | | | | | | | | | | Sea water | Monel | Oxalic acid |
| P803 | | | | | | | | | | | | | | | | | Sewage services | Hastelloy C / PTFE | Potassium Hydroxide |
| P804 | | | | | | | | | | | | | | | | | Soap solutions | SS 304 / Hastelloy C | Soda Ash |
| P901 | | | | | | | | | | | | | | | | | Sour service | Monel / Hastelloy C | Crude Oil |
| P902 | | | | | | | | | | | | | | | | | Sugar | SS 316 | Sulfur Dioxide (dry) |
| P903 | | | | | | | | | | | | | | | | | Sulfuric acid | PTFE | Xylene |
| P904 | | | | | | | | | | | | | | | | | Transformer oil | PTFE | Urea |
| | | | | | | | | | | | | | | | | | Varnish | SS 316 | Toluene (Toluol) |
| | | | | | | | | | | | | | | | | | Water | SS 316 | Turpentine |

MATERIAL COMPATIBILITY

PRESSURE GAUGE ASSEMBLY

| OPERATING RANGE OF DIAPHRAGM SEAL | PTFE LINING (UP TO 150°C) |
|---|---------------------------|
| -1...70 bar & 100...400 bar | < |
| -1...70 bar | < |
| -1...4 bar, 6...70 bar & 400...600 bar | x |
| 4...600 bar | x |
| -1...70 bar & 100...400 bar | < |
| -1...250 bar | x |
| -1...250 bar & -1...40 bar [PTFE Lined] | < |
| -1...250 bar | x |
| -1...40 bar | x |
| 1.6...40 bar & -1...21 bar | x |
| 1.6...40 bar & -1...21 bar | x |
| -1...40 bar | x |
| -1...160 bar | x |
| -1...100 bar | x |
| -1...21 bar | x |
| -1...250 bar | x |

| FILLING LIQUIDS | |
|-----------------|---------------------------------|
| Standard | Silicon DC 200 [-40°C to 205°C] |
| High temp. | Silicon DC 710 [7°C to 371°C] |
| Food Grade | Food grade oil [-20°C to 140°C] |
| Food Grade | Glycerin [10°C to 150°C] |



● = Recommended to use

It is NOT possible to connect a pulsation damper or snubber or a gauge cock / needle valve in between the diaphragm seal and the measuring instrument.



The information in this chart has been taken from other reputable sources and is to be used ONLY as a guide in selecting material for appropriate chemical compatibility.

ITEC undertake no any responsibility of the data provided in the compatibility chart.

APPLICATIONS

- Hydraulic machines
- Boilers & compressors
- Isolation of instruments
- Heat dispenser for gauges, switches & transmitters



| |  |  |  |  |
|------------------------------------|--|--|---|---|
| BASIC MODEL | A101 | A102 | A103 | A104 |
| SPECIAL FEATURES | Air vent hole for drain Bakelite cover on handle | 3 different loop designs Seamless pipes construction Hydrotested | Economical version 2 different loop designs ERW pipes construction Thread on pipes | Economical version |
| TYPES | 2 Way 3 Way | Coil Pigtail "U" type | Pigtail "U" type | 2 Way |
| TEMPERATURE RATING | 180°C | 180°C | 120°C | 120°C |
| PRESSURE RATING | 100 bar | As per pipe size 3/8"...1/2" and Sch 40/80/160/STD | 16 bar | 16 bar |
| INSTRUMENT CONNECTION ² | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) (Welded /Through adaptor /Swivel) | 3/8" BSP (M) 1/2" BSP (M) | 3/8" BSP (F)...1/2" BSP (F) |
| PROCESS CONNECTION ² | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) | 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) 1/2"...3" flange to ANSI B16.5 Rating 150#...2500# Plain End | 3/8" BSP (M) 1/2" BSP (M) | 3/8" BSP (F)...1/2" BSP (F) 3/8" BSP (M)...1/2" BSP (M) |
| WETTED PARTS ¹ | AISI 316 SS AISI 304 SS | AISI 316 SS AISI 304 SS AISI 316L SS ASTM A 105 (C.S.) | Steel (Plated) | Brass |
| OPTIONAL EXTRAS | NACE MR0175 IBR Certificate Oxygen Service SS Tag plate | NACE MR0175 IBR Certificate Oxygen Service SS Tag plate | Female connections through adaptors | - |

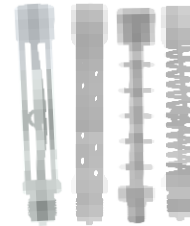
Notes 1. Optional, charges extra, contact factory for details.
2. Other connections & sizes are available, charges extra, contact factory for details.

PRESSURE GAUGE ACCESSORIES

GAUGE SAFETY DEVICES

APPLICATIONS

- For gauges, switches & transmitters
- Pulsation dampener
- Over-pressure protection
- Cooling tower



| BASIC MODEL | A201 | A202 | A203 | |
|------------------------------------|--|---|---|--|
| SPECIAL FEATURES | Reduces dampening effect of process media | Adjustable ranges Bellow & Piston operated Overpressure up to 1000 bar Field adjustable optional | All SS construction 4 variable designs | |
| TYPES | Adjustable needle | Bellow (200 mbar...4 bar) Piston (≥ 6 bar) | Fin Perforated Capillary with pillar outer Capillary with coil outer | |
| TEMPERATURE RATING | 180°C | 180°C | 300°C | |
| PRESSURE RATING | 400 bar | 600 bar 1000 bar ¹ | 1600 bar | |
| INSTRUMENT CONNECTION ² | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) | 1/4" NPT (F)...1/2" NPT (F) 1/4" BSP (F)...1/2" BSP (F) | |
| PROCESS CONNECTION ² | 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) | 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) | 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) | |
| WETTED PARTS ¹ | AISI 316 SS AISI 304 SS AISI 316L SS Monel Hastelloy C | AISI 316 SS Monel Hastelloy C | AISI 316 SS AISI 316L SS | |
| OPTIONAL EXTRAS | NACE MR0175 Oxygen Service SS Tag plate | NACE MR0175 Oxygen Service SS Tag plate | Oxygen Service SS Tag plate | |

Notes 1. Optional, charges extra, contact factory for details.
2. Other connections & sizes are available, charges extra, contact factory for details.

DIAPHRAGM SEAL ACCESSORIES

UTILITY

APPLICATIONS

- Flushing crystalized media
- For clamping the sanitary connections
- Installation of pressure instruments
- For changing of connection size/type



| |  |  |  |  |
|---|---|--|---|--|
| BASIC MODEL | A301 | A302 | A303 | A304 |
| SPECIAL FEATURES | Dual flushing ports Flanged & in-line seal designs Optional exotic materials Standard 1/2" NPT(F) flushing ports, others optional. | V-profile for the pressure equalization while tightening Different designs as per rating Single / double bolted assembly | Assemblies available as Round union nuts Welding linears Welding males | Hydrotested Various combinations Optional exotic materials |
| TYPES | Flange RF Seal in-line | Standard (S) Low pressure (L) Heavy duty (H) | DIN 11851 SMS (Swedish Metric Standard) RJT (Ring Joint Type) IDF (International Dairy Federation) | Male x Female Female x Female Male X Male Swivel Flanged Adjustable |
| TEMPERATURE RATING | 300°C ³ | 150°C | 150°C | 300°C ³ |
| PRESSURE RATING | 400 bar ⁴ | S = 50 bar (Test : 120 bar) L = 25 bar (Test : 60 bar) H = 75 bar (Test : 180 bar) | As per standard | 400 bar |
| INSTRUMENT CONNECTION ² | 1/2"...5" flange RF Suitable in-line seal designs | - | As per standard | 1/8"...2" Threads : NPT / BSP / BSPT |
| PROCESS CONNECTION ² | 1/2"...5" flange RF Suitable in-line seal designs | 1 1/2" 1" 2" 2 1/2" | 1 1/2" 1" 2" 2 1/2" | 1/8"...2" Threads : NPT / BSP / BSPT 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# |
| WETTED PARTS OR MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS AISI 316L SS Monel / Hastelloy C Titanium | AISI 304 SS | AISI 304 SS AISI 316 SS | AISI 316 SS AISI 316L SS Monel Hastelloy C |
| OPTIONAL EXTRAS | PTFE Sealing gasket 1/4" NPT ports | Silicon sealing gasket Bottom mating part | Silicon sealing gasket Bottom mating part | Oxygen service PTFE sealing gaskets |

- Notes
1. Optional, charges extra, contact factory for details.
 2. Other connections & sizes are available, charges extra, contact factory for details.
 3. Or as per exotic material specifications.
 4. Or as per diaphragm seal design specifications.



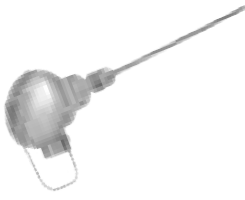

RESISTANCE TEMPERATURE DETECTOR

INDUSTRIAL TYPE

APPLICATIONS

- Power & Utilities
- Oil & gas application
- Chemical & petrochemical
- Water, waste-water treatment
- Bearing temperature measurement



| |  |  |  |  |
|---|--|---|---|--|
| BASIC MODEL | R101 | R102 | R103 | R104 |
| SPECIAL FEATURES | Nipple extension Mineral insulated Exchangeable insert Spring loaded design | Nipple-Union-Nipple extension Mineral insulated Exchangeable insert Spring loaded design | Fixed extension Mineral insulated Exchangeable insert Spring loaded design | Adjustable extension Mineral insulated Exchangeable insert Spring loaded design |
| CONNECTION TYPE | Nipple | Nipple-Union-Nipple | Fixed | Adjustable |
| SENSOR ² (Simplex/Duplex) | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 |
| RANGE ² | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C |
| ACCURACY ² | Class B Class A | Class B Class A | Class B Class A | Class B Class A |
| SHEATH DIAMETER | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm |
| SHEATH MATERIAL ² | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS / AISI 316Ti SS |
| ENCLOSURE PROTECTION ² | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 IP 67 / IP 68 Flameproof / Ex-proof |
| ENCLOSURE MATERIAL ² | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS |
| PROCESS CONNECTION ³ | 1/2" BSP (M) 1/2" NPT (M) | 1/2" BSP (M) 1/2" NPT (M) | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ |
| REFERENCE STANDARD | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 |
| APPROVAL | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) |
| OPTIONAL EXTRAS | Various cable glands Transmitter 4...20mA output Various Compensating cables | Various cable glands Transmitter 4...20mA output Various Compensating cables | Various cable glands Transmitter 4...20mA output Various Compensating cables | Various cable glands Transmitter 4...20mA output Various Compensating cables |

Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. With simplex element only.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

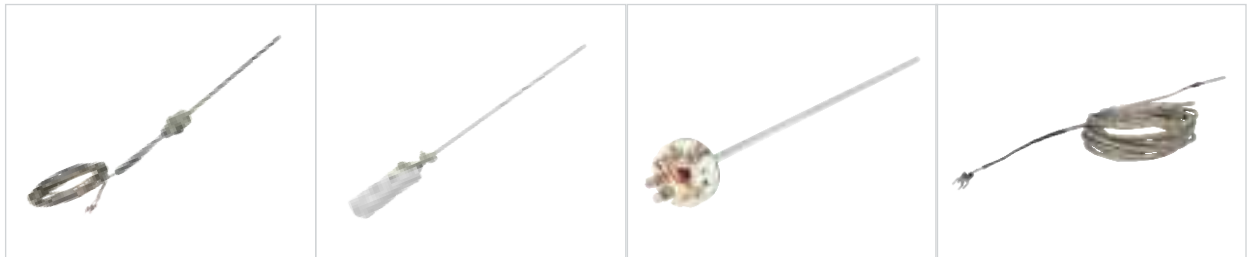
4. Applicable for 3 mm & 6 mm sheath diameters.
5. Minimum sensing length = 30 mm.

RESISTANCE TEMPERATURE DETECTOR

INSERTS

APPLICATIONS

- Nuclear applications
- Autoclave applications
- Steel & Power applications
- Power & utility applications
- Pharmaceutical applications
- Turbines / Bearing Temperature
- Spares / replacement assembly
- Pumps, compressors & diesel engines



| BASIC MODEL | R201 | R202 | R203 | R204 |
|---|--|--|---|--|
| SPECIAL FEATURES | Transition joint type Mineral insulated Crimp-on-pot sealed ISO threaded pot Adjustable / fixed connection | Plug & Jack Connection Mineral insulated OMEGA / LIMO connectors Simplex configuration Adjustable connection | Mineral insulated Spring Loaded Design Cermic block with Ni-plated / Silver plated terminals | With Flexible Cable Various designs of Hot ends Bearing temperature RTD |
| COLD END TERMINATION | Compensating cable | Plug & Jack | Spring loaded terminal block | Compensating cable |
| SENSOR ² (Simplex/Duplex) | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 |
| RANGE ² | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C |
| ACCURACY ² | Class B Class A | Class B Class A | Class B Class A | Class B Class A |
| SHEATH DIAMETER | 6 mm / 6.35 mm (1/4") 3 mm/3.2 mm ¹ , 8 mm | 6 mm / 6.35 mm (1/4") 3 mm, 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 3 mm/3.2 mm ¹ 6 mm / 6.35 mm (1/4") |
| SHEATH MATERIAL ² | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS / AISI 316Ti SS | AISI 316 SS AISI 316L SS |
| PROCESS CONNECTION ³ | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | - | - |
| REFERENCE STANDARD | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 |
| OPTIONAL EXTRAS | PTFE/PTFE cables PTFE/PTFE/SS braided cables FG/FG/SS braided cables PTFE/PTFE/Silicon cables | Various types of connectors Female connector with various types of compensating cables | Terminal block PCD 33 mm Terminal block PCD 46 mm Transmitter 4...20mA output | PTFE/PTFE cables PTFE/PTFE/SS braided cables FG/FG/SS braided cables PTFE/PTFE/Silicon cables |

Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. With simplex element only.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

4. Applicable for 3 mm & 6 mm sheath diameters.
5. Minimum sensing length = 30 mm.

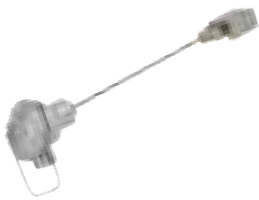
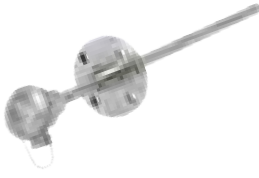
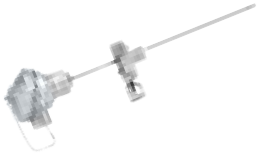

RESISTANCE TEMPERATURE DETECTOR

INDUSTRY SPECIFIC

APPLICATIONS

- Cement Industries
- Air & flue gas applications
- Steel & Power applications
- Refinery & Petrochemicals Plants
- Pharmaceutical, Food & Beverages
- Stator winding of motors & generators
- Surface measurement in refractory vessels



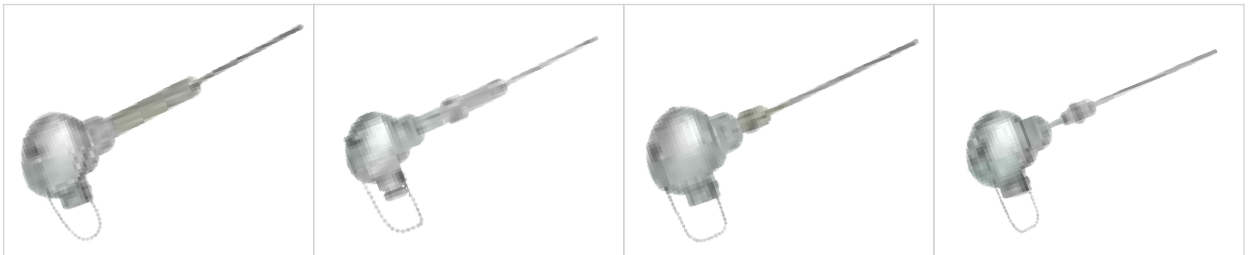
| |  |  |  |  |
|---|--|--|--|---|
| BASIC MODEL | R301 | R302/R303 | R304 | R305 |
| SPECIAL FEATURES | Weld-Pad connection Mineral insulated Exchangeable insert Spring loaded design | Threaded / flanged connection Protecting Tube Mineral insulated element Spring loaded design Fixed / adjustable connection | Tri-clover connection Mineral insulated Exchangeable insert Spring loaded design | Rectangular, flat & laminated Electrically shielded sensor High dielectric constant |
| CONNECTION TYPE | Weld-pad | Threaded / Flanged | Sanitary | - |
| SENSOR ² (Simplex/Duplex) | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 | Pt-100 Pt-500, Pt-1000 |
| RANGE ² | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C | -200°C up to 400°C -200°C up to 600°C |
| ACCURACY ² | Class B Class A | Class B Class A | Class B Class A | Class B Class A |
| SHEATH DIAMETER | 6 mm / 6.35 mm (1/4") 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 6 mm / 6.35 mm (1/4") 3 mm ¹ , 8 mm | 7 x 50 x 1.5 mm (Min) 25 x 450 x 3.5 mm (Max) Fiber Glass |
| SHEATH MATERIAL (WELD PAD) | AISI 316 SS AISI 316L SS | AISI 316 SS AISI 316L SS | AISI 316 SS AISI 316L SS | Fiber Glass |
| ENCLOSURE PROTECTION | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 IP 67 / IP 68 Flameproof / Ex-proof | IP 65 |
| ENCLOSURE MATERIAL ² | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | - |
| PROCESS CONNECTION ³ | Weld Pad (25 x 25 x 50) Weld Pad (25 x 25 x 100) Weld Pad (50 x 50 x 100) | 3/4"NPT (M) 1 1/2" RF 150# ANSI B16.5 | 1.5" 1" 2" | - |
| PROTECTION TUBE ² | - | 1/2"sch40 | - | - |
| REFERENCE STANDARD | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 | IEC 751 / DIN 43760 |
| APPROVAL | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | - |
| OPTIONAL EXTRAS | Surface / Bracket mounting 2" Yoke/ Pipe mounting Various cable glands Transmitter 4...20mA output Various compensating cables | Various cable glands Transmitter 4...20mA output Various compensating cables | Various cable glands Transmitter 4...20mA output Various compensating cables Electro-plating Tri-clamp with Gasket Bottom mating part | PTFE/PTFE cables PTFE/PTFE/Silicon cables |

Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. With simplex element only.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Power & Utilities
- Oil & gas application
- Chemical & petrochemical
- Water, waste-water treatment
- Bearing temperature measurement



| BASIC MODEL | T101 | T102 | T103 | T103 |
|---|--|---|---|--|
| SPECIAL FEATURES | Nipple extension Mineral insulated Exchangeable insert Spring loaded design | Nipple-Union-Nipple extension Mineral insulated Exchangeable insert Spring loaded design | Fixed extension Mineral insulated Exchangeable insert Spring loaded design | Adjustable extension Mineral insulated Exchangeable insert Spring loaded design |
| CONNECTION TYPE | Nipple | Nipple-Union-Nipple | Fixed | Adjustable |
| SENSOR ² (Simplex/Duplex) | K J, E, T, N, R, S, B | K J, E, T, N, R, S, B | K J, E, T, N, R, S, B | K J, E, T, N, R, S, B |
| ACCURACY ² | Standard Special | Standard Special | Standard Special | Standard Special |
| HOT END TERMINATION | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded |
| SHEATH DIAMETER | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") |
| SHEATH MATERIAL ² | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 |
| ENCLOSURE PROTECTION ² | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof |
| ENCLOSURE MATERIAL ² | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS |
| PROCESS CONNECTION ³ | 1/2" BSP (M) 1/2" NPT (M) | 1/2" BSP (M) 1/2" NPT (M) | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ |
| REFERENCE STANDARD | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 |
| APPROVAL | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) | ATEX, CSA & FM (Enclosure) |
| OPTIONAL EXTRAS | Various cable glands Transmitter 4...20mA output Various Extension cables | Various cable glands Transmitter 4...20mA output Various Extension cables | Various cable glands Transmitter 4...20mA output Various Extension cables | Various cable glands Transmitter 4...20mA output Various Extension cables |


Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. Check guidance chart before selecting the element type.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.
 4. Applicable for 3 mm, 4.8 mm & 6 mm sheath diameters.

APPLICATIONS

- Plastic Industries
- Reactor application
- Moulding Machines
- Aero-space application
- Pharmaceutical applications
- Water, waste-water treatment
- Spares / replacement assembly
- Steel, Power & Nuclear applications



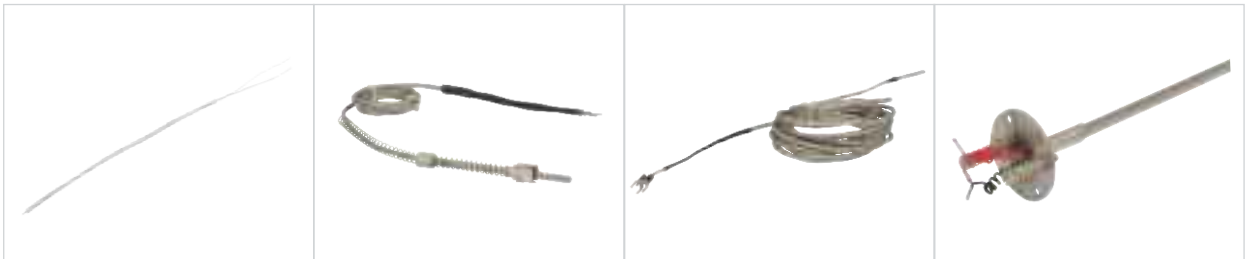
| |  |  |  |  |
|---|---|--|--|---|
| BASIC MODEL | T201 | T202 | T203 | T204 |
| SPECIAL FEATURES | Bare Conductor termination Mineral insulated High temperature application | Transition joint type Mineral insulated Crimp-on-pot sealed ISO threaded pot Adjustable / fixed connection | Plug & Jack Connection Mineral insulated OMEGA / LEMO connectors Simplex configuration Adjustable connection | Mineral insulated Spring Loaded Design Cermic block with Ni-plated / Silver plated terminals |
| COLD END TERMINATION | Bare conductors | Extension cable | Plug & Jack | Spring loaded terminal block |
| SENSOR ² (Simplex/Duplex) | K J, E, T, N | K J, E, T, N | K J, E, T, N | K J, E, T, N |
| ACCURACY ² | Standard Special | Standard Special | Standard Special | Standard Special |
| HOT END TERMINATION | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded |
| SHEATH DIAMETER | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 3 mm 1 mm, 1.5 mm, 6 mm | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") |
| SHEATH MATERIAL ² | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 |
| PROCESS CONNECTION ³ | - | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | 1/2" BSP (M) 1/2" NPT (M) 1/4" NPT (M) / 1/4" BSP (M) ⁴ | - |
| REFERENCE STANDARD | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 |
| OPTIONAL EXTRAS | SS Tag plate | PTFE/PTFE cables PTFE/PTFE/SS braided cables FG/FG/SS braided cables | Various types of connectors Female connector with various types of Extension cables | Terminal block PCD 33 mm Terminal block PCD 46 mm Transmitter 4...20mA output cables |

Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. Check guidance chart before selecting the element type.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.
 4. Applicable for 3 mm, 4.8 mm & 6 mm sheath diameters.

APPLICATIONS

- Textile Industries
- Clean room validation
- Blow moulding machine
- Limit space applications
- Injection moulding machine
- Trust plates & motor winding
- Plastic & packing industries
- Spares / replacement assembly



| BASIC MODEL | T205 | T206 | T207 | T208 |
|---|--|--|---|---|
| SPECIAL FEATURES | Economical Version Bare Wire Thermocouple | Bayonet Fitting Spring loaded design Flexible Cable | Flexible Cables Fast response time With spring loaded mounting and retaining thrust washer | Spring Loaded Design Provide with SS Base plate for mounting the temperature Transmitter |
| COLD END TERMINATION SENSOR ² (Simplex/Duplex) | Ceramic terminal block K J, E, T, N, R, S, B | Extension cable J K | Extension cable K T | SS base plate K J, E, T, N, R, S, B |
| ACCURACY ² | Standard Special | Standard Special | Standard Special | Standard Special |
| HOT END TERMINATION | Exposed | Grounded | Ungrounded Grounded | Ungrounded Grounded |
| SHEATH DIAMETER ² | 12 mm 8 mm | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 3 mm 6mm, 8 mm | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") |
| SHEATH MATERIAL ² | Ceramic Insulators (KER610 / KER710) | AISI 316 SS | AISI 316 SS | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 |
| PROCESS CONNECTION ³ | - | Bayonet connection | - | - |
| REFERENCE STANDARD | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 | IEC 548.2 / ANSI MC 96.1 |
| OPTIONAL EXTRAS | SS Tag plate Terminal head | PTFE/PTFE cables PTFE/PTFE/SS braided cables FG/FG/SS braided cables | PTFE/PTFE cables PTFE/PTFE/SS braided cables FG/FG/SS braided cables | Transmitter 4...20mA output |

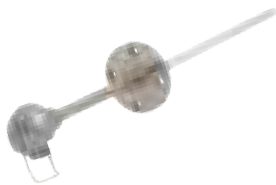

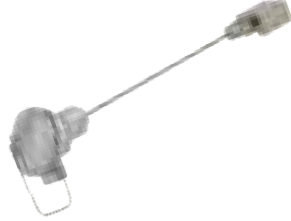
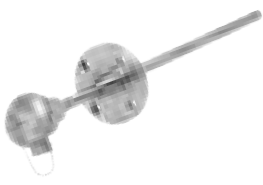
Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. Check guidance chart before selecting the element type.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Air & flue gas applications
- Steel & Power applications
- Glass & Cement Industries
- Refinery & Petrochemicals Plants
- Pharmaceutical, Food & Beverages
- Stator winding of motors & generators
- Surface measurement in refractory vessels
- Skin temperature measurement of Heater Tube



| |  |  |  |  |
|--|--|--|--|---|
| BASIC MODEL | T301 | T302 | T303 | T304 |
| SPECIAL FEATURES | Ceramic Insulator Single / Double protecting tube Exchangeable insert KER710 / KER610 Adjustable / Fixed Flange | Ceramic Insulator Single / Double protecting tube Exchangeable insert KER710 Material Adjustable / Fixed Connection | Weld-Pad connection Mineral insulated Exchangeable insert Spring loaded design | Threaded / flanged connection Protecting Tube Mineral insulated element Beaded type element Spring loaded design Fixed / adjustable connection |
| CONNECTION TYPE | Flanged | Threaded | Weld-pad | Threaded / Flanged |
| SENSOR ² (Simplex/Duplex) | R | R | K | K |
| ACCURACY ² | K,N,S, B | K,N,S, B | J,E,T,N | J, E,T,N, R,S, B |
| HOT END TERMINATION | Standard Special | Standard Special | Standard Special | Standard Special |
| SHEATH DIAMETER (Other optional sizes) | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded | Ungrounded Grounded |
| SHEATH MATERIAL ² (WELD PAD) | 26 AWG 25 AWG, 24 AWG | 26 AWG 25 AWG, 24 AWG | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") | 6 mm / 6.35 mm (1/4") 3 mm, 4.8 mm, 8 mm & 12.7 mm (1/2") |
| ENCLOSURE PROTECTION ² | Ceramic (KER610 / KER710) | Ceramic (KER610 / KER710) | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 | AISI 316 SS AISI 316L SS Inconel 600 / Inconel 800 |
| ENCLOSURE MATERIAL ² | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof | IP 65 IP 67 / IP 68 Flameproof & Ex-proof |
| PROCESS CONNECTION ³ | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS |
| PROTECTION TUBE ² | 1 1/2" ... 5" flange to ANSI B16.5 Rating 150#...2500# | 3/4" NPT (M)...1" NPT (M) 3/4" BSP (M)...1" BSP (M) | Weld Pad (25 x 25 x 50) Weld Pad (25 x 25 x 100) Weld Pad (50 x 50 x 100) | 3/4" NPT (M)...1" NPT (M) 1 1/2" ... 5" flange to ANSI B16.5 Rating 150#...2500# |
| REFERENCE STANDARD APPROVAL | Φ12 x 2 mm + Φ20 x 2.5 mm Φ15 x 2.5 mm + Φ24 x 3 mm (INNER + OUTER) | Φ12 x 2 mm + Φ20 x 2.5 mm Φ15 x 2.5 mm + Φ24 x 3 mm (INNER + OUTER) | - | 3/8" Sch 40...3/4" Sch 80 |
| OPTIONAL EXTRAS | IEC 548.2 / ANSI MC 96.1 ATEX, CSA & FM (Enclosure) | IEC 548.2 / ANSI MC 96.1 ATEX, CSA & FM (Enclosure) | IEC 548.2 / ANSI MC 96.1 ATEX, CSA & FM (Enclosure) | IEC 548.2 / ANSI MC 96.1 ATEX, CSA & FM (Enclosure) |
| | Various cable glands Transmitter 4...20mA output Various Extension cables Protection tube in Kanthal / Silicon carbide / Silicon nitrate bonded | Various cable glands Transmitter 4...20mA output Various Extension cables Protection tube in Kanthal / Silicon carbide / Silicon nitrate bonded | Surface / Bracket mounting 2" Yoke / Pipe mounting Various cable glands Transmitter 4...20mA output Various Extension cables | Various cable glands Transmitter 4...20mA output Various Extension cables Protection tubes coated with Tungsten carbide / Stellite / Ceramic |

Refer pages 29 for RTD & TC general information and 3032 for Thermowells.

- Notes
1. Check guidance chart before selecting the element type.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

Thermocouple element characteristics

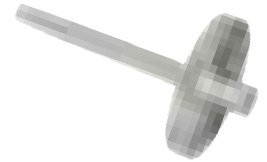
| ANSI Code | ANSI MC 96.1 Color Coding | | Alloy Combination | | Maximum T/C Grade Temp. Range | IEC 584-3 Color Coding | | IEC Code |
|-----------|---------------------------|-----------------|--------------------------------|----------------------------------|--------------------------------|------------------------|--------------------|----------|
| | Thermocouple Grade | Extension Grade | + Lead | Lead | | Thermocouple Grade | Intrinsically Safe | |
| J | | | IRON Fe (magnetic) | CONSTANTAN COPPER-NICKEL Cu-Ni | 210 to 1200°C 346 to 2193°F | | | J |
| K | | | NICKEL-CHROMIUM Ni-Cr | NICKEL-ALUMINUM Ni-Al (magnetic) | 270 to 1372°C 454 to 2501°F | | | K |
| T | | | COPPER Cu | CONSTANTAN COPPER-NICKEL Cu-Ni | 270 to 400°C 454 to 752°F | | | T |
| E | | | NICKEL-CHROMIUM Ni-Cr | CONSTANTAN COPPER-NICKEL Cu-Ni | 270 to 1000°C 454 to 1832°F | | | E |
| N | | | NICROSIL Ni-Cr-Si | NISIL Ni-Si-Mg | 270 to 1300°C 450 to 2372°F | | | N |
| R | NONE ESTABLISHED | | PLATINUM-13% RHODIUM Pt-13% Rh | PLATINUM Pt | 90 to 1768°C 98 to 3214°F | | | R |
| S | NONE ESTABLISHED | | PLATINUM-10% RHODIUM Pt-10% Rh | PLATINUM Pt | 90 to 1768°C 98 to 3214°F | | | S |
| U | NONE ESTABLISHED | | COPPER Cu | COPPER-LOW NICKEL Cu-Ni | | | | U |
| B | NONE ESTABLISHED | | PLATINUM-30% RHODIUM Pt-30% Rh | PLATINUM-6% RHODIUM Pt-6% Rh | 0 to 1820°C 32 to 3308°F | | | B |

RTD tolerance chart

| Temperature °C | Resistance Value | Tolerance DIN-IEC-751 | |
|----------------|------------------|-----------------------|----------------|
| | | Class A °C () | Class B °C () |
| -200 | 18.52 | ±0.55-(±0.24) | ±1.3-(±0.56) |
| -100 | 60.26 | ±0.35-(±0.14) | ±0.8-(±0.32) |
| 0 | 100.00 | ±0.15-(±0.06) | ±0.3-(±0.12) |
| 100 | 138.51 | ±0.35-(±0.13) | ±0.8-(±0.30) |
| 200 | 175.86 | ±0.55-(±0.20) | ±1.3-(±0.48) |
| 300 | 212.05 | ±0.75-(±0.27) | ±1.8-(±0.64) |
| 400 | 247.09 | ±0.95-(±0.33) | ±2.3-(±0.79) |
| 500 | 280.98 | ±1.15-(±0.38) | ±2.8-(±0.93) |
| 600 | 313.71 | ±1.35-(±0.43) | ±3.3-(±1.06) |
| 650 | 329.64 | ±1.45-(±0.46) | ±3.6-(±1.13) |

APPLICATIONS

- Air & flue gas
- Tanks & vessels
- Oil & Gas applications
- Corrosive environments
- Power & Steel industries
- HVAC, Air filters & utilities
- On-shore/Off-shore application



| BASIC MODEL | W101 | W102 | W103 | W104 |
|--|--|---|--|---|
| SPECIAL FEATURES | Fabricated | Solid bar-stock drilled design | Fabricated | Solid bar-stock drilled design |
| CONNECTION TYPE | Threaded | Threaded | Flanged | Flanged |
| SHANK FORM | Straight | Straight Straight reduced tip Partial taper Full taper | Straight | Straight Straight reduced tip Partial taper Full taper |
| MATERIAL OF CONSTRUCTION ¹ | SS 304 / 310 / 316 / 316L | SS 304 / 310 / 316 / 316L / 446 Inconel 600 / 800 / 625 / 825 Monel, Hastelloy C, Titanium Alloy 20, ASTM A105 | SS 304 / 310 / 316 / 316L | SS 304 / 310 / 316 / 316L / 446 Inconel 600 / 800 / 625 / 825 Monel, Hastelloy C, Titanium Alloy 20, ASTM A105 |
| INSTRUMENT CONNECTION | 3/8" NPT (F)...2" NPT (F) 3/8" BSP (F)...2" BSP (F) | 3/8" NPT (F)...2" NPT (F) 3/8" BSP (F)...2" BSP (F) | 1/2" NPT (F)...1" NPT (F) 1/2" BSP (F)...1" BSP (F) | 1/2" NPT (F)...1" NPT (F) 1/2" BSP (F)...1" BSP (F) |
| PROCESS CONNECTION ² | 3/8" NPT (M)...2" NPT (M) 3/8" BSP (M)...2" BSP (M) | 3/8" NPT (M)...2" NPT (M) 3/8" BSP (M)...2" BSP (M) | 1 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# | 1 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# |
| BORE SIZES ¹ | 7x10 mm, 7x12 mm, 9x14 mm 10x12 mm, 12x14 mm 12x16 mm Or pipe 1/8"...1/2", Sch 40...160 | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm | 1/8"...1/2", Sch 40...160 | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm |
| HEAD TYPE | Hex | Hex Round with spanner slots | Round | Hex Round |
| EXTENSION LENGTH ³ | 45 mm | 50 mm | 50 mm | 50 mm |
| INSERTION LENGTH ³ (Below thread/flange) | Up to 1000 mm | 1000 mm (Max.) 300 mm (Max. for Hex type) | Up to 1000 mm | 1000 mm (Max.) |
| OPTIONAL EXTRAS | - | Wake Frequency Calculation Plug & chain in AISI 304 SS | Plug & chain in AISI 304 SS Shank lining & coating Sleeve on shank & flange RF | Shank lining & coating Overlay of flange RF Sleeve on shank & flange RF Wake Frequency Calculation |

Refer page 30 for Thermowell Guidance.

- Notes
1. Check guidance chart before selecting the element type.
 2. Other connections & sizes are available, charges extra, contact factory for details.
 3. Optional, charges extra, contact factory for details.

APPLICATIONS

- Food & beverages
- Oil & Gas applications
- Corrosive environments
- Power & Steel industries
- Sterile process industries
- On-shore/Off-shore application
- Biochemical & pharmaceutical Industries



| |  |  |  |  |
|--|--|---|--|---|
| BASIC MODEL | W201 | W202 | W203 | W204 |
| SPECIAL FEATURES | Van-stone design Single piece forged drilled | Sanitary design Solid bar-stock drilled | Weld-in / Socket-weld design Solid bar-stock drilled | Partial bar-stock Flanged process connection |
| CONNECTION TYPE | Flange RF | Sanitary, Triclover | Weld-in / Socket-weld | Flanged |
| SHANK FORM | Straight Straight reduced tip Partial taper Full taper | Straight Straight reduced tip Partial taper Full taper | Straight Straight reduced tip Partial taper Full taper | Straight Straight reduced tip Partial taper |
| MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS / AISI 316L SS Inconel 600 / Inconel 625 Monel 400 / Hastelloy C | AISI 316 SS AISI 304 SS AISI 316L SS | AISI 316 SS / AISI 316L SS ASTM F11 / F22 / F91 Inconel 600 / Inconel 625 | SS 304 / 310 / 316 / 316L / 446 Inconel 600 / 800 / 625 / 825 Monel, Hastelloy C, Titanium Alloy 20, ASTM A105 |
| INSTRUMENT CONNECTION | 1/2" NPT (F) 1/2" BSP (F) | 3/8" NPT (F)...3/4" NPT (F) 3/8" BSP (F)...3/4" BSP (F) | 1/2" NPT (F)...1" NPT (F) 1/2" BSP (F)...1" BSP (F) | 1/2" NPT (F)...1" NPT (F) 1/2" BSP (F)...1" BSP (F) |
| PROCESS CONNECTION ² | 1" ANSI flange RF 1 1/2" ANSI flange RF 2" ANSI flange RF | 1 1/2" Sanitary seal 2" Sanitary seal 2 1/2" Sanitary seal | As per customer requirement | 1 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# |
| BORE SIZES ¹ | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm | 6.6 mm / 7 mm 9 mm, 9.6 mm, 11 mm & 13 mm |
| HEAD TYPE | Round | Round with spanner slots | Round | Round |
| EXTENSION LENGTH ³ | 45 mm | 50 mm | 50 mm | 50 mm |
| INSERTION LENGTH ³ (Below thread/flange) | 1000 mm (Max.) | 1000 mm (Max.) | 1000 mm (Max.) | Up to 1000 mm |
| SPECIAL OPTIONS | Electro polishing Wake frequency calculation Cover flange (Lap joint type) | Electro polishing Tri-clamp with Gasket | Plug & chain in AISI 304 SS Wake frequency calculation | Shank lining & coating Overlay of flange RF Sleeve on shank & flange RF |

Refer page 30 for Thermowell Guidance.

- Notes
1. Check guidance chart before selecting the element type.
 2. Other connections & sizes are available, charges extra, contact factory for details.
 3. Optional, charges extra, contact factory for details.

THERMOWELL GUIDANCE

Thermowell is a safety / protection accessory for the sensor part of the temperature measuring, indicating & controlling instruments in corrosive & high pressure areas. They are applicable in all kind of fluid areas. A critical advantage of the thermowell is that, it provides the media isolation for the purpose of maintenance / replacement of the instruments.

ITEC manufacture various types of thermowells; such as,

1. Threaded/Flanged type
2. Van-stone type
3. Socket-weld/weld-in type
4. Sanitary type
5. Multi-piece type

With reference to the shank design thermowell, further classified into,

1. Straight type
2. Reduced-tip type
3. Partial taper type
4. Taper type

ITEC thermowells are machined in CNCs and Deep Gun-drilling machines and available in a variety of stainless steel types. All welds between the flange & well are full penetration welded.

ITEC manufactures thermowells also in exotic materials like Monel, Hastelloy C, titanium, etc and variety of exotic materials and special grades alloys.

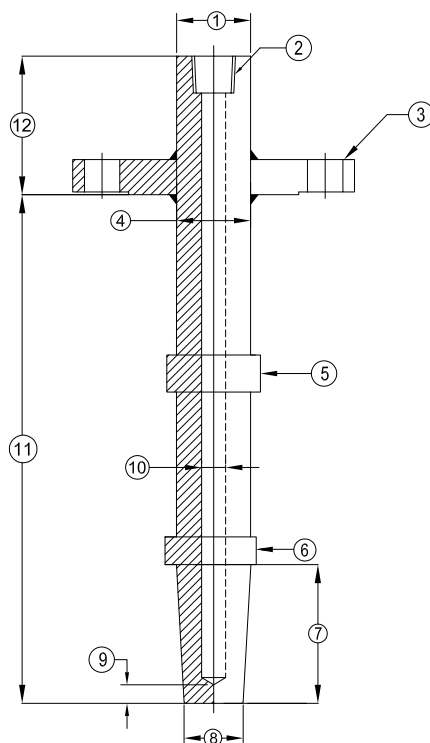
ITEC also provide lining or coating on the well/wetted parts, exotic material overlay on flange RF and sleeves for the wells for its thermowells.

Some of the in-house tests are,

1. Wake frequency calculation
2. Hydrostatic test
3. Dye Penetration test
4. Dimensional check

All other tests are conducted at a third party labs, ITEC provide conformity certificate.

Nomenclature of Thermowell:



01. Finished head diameter
02. Instrument connection
03. Process connection
04. Major diameter
05. Velocity collar 2 (Optional)
06. Velocity collar 1
07. Reduced tip/taper length
08. Minor diameter
09. Tip thickness
10. Bore diameter
11. Unsupported (U) length
12. Extension length

ASME PTC 19.3TW-2010

The wake frequency calculation for thermowells gives a calculated proof of the strength with respect to static and dynamic stress in relation to the operating temperature and pressure. The standard is divided into dynamic and static calculation results. For gaseous media, a frequency ratio [r] of 0.8 is still valid however there are some cases where this does not apply. For liquid media, for most of the applications, frequency ratio [r] considers a 0.4.

In ITEC, experienced engineers calculate, optimize and issue the Wake Frequency Calculation as per the project requirements.

Resolution for WFC failure

There are mainly 4 ways to tackle the WFC failure. The resolutions are,

1. Shortening the insertion length
2. Increasing the root diameter
3. Increasing the tip diameter
4. Velocity collars

Although the use of Velocity collars has been out of scope of the new standard, many of the existing plants, experienced customers are preferred to use the Velocity collars to have a better sensing. The ideal Velocity collar location is considered as Stub length – 1". If the result is higher than 5" an additional Velocity collar can be added to lessen the stress effect on the thermowell. A circular or triangular or 4-point collar designs are used as a regular practice.

97/23/EC PED

The applicability of the 97/23/EC Pressure equipment directive in reference to thermowells is explained below in thermowells there is neither a fluid under pressure, nor is there any fluid transported within. Thermowells therefore are not "pressure-containing equipment" within the meaning of the Pressure equipment directive (see guideline 1/40).

Thermowells are components within pressure equipment in accordance with the PED. As such a component, it does not comply with the definition for pressure equipment in article 1, paragraph 2.1 of the PED and does not have to be marked with CE (see guideline 1/22).

ITEC thermowells are designed and manufactured in compliance with "sound engineering practice" (PED article 3, paragraph 3).





LEVEL SWITCHES

SIDE / TOP MOUNTED TYPE

APPLICATIONS

- Reservoir tanks
- Ship manufacturers
- Hydro/Pneumatic tanks
- Sewage & water treatment
- Underground storage tanks
- Sterilization & coolant tanks



| |  |  |  |  |
|-----------------------------------|---|---|---|---|
| BASIC MODEL | L101 | L102 | L103 | A401 |
| SPECIAL FEATURES | Economical version Replaceable electricals | Economical version Easy installation | Field adjustable set point Easy installation All SS construction | Hydro tested |
| MOUNTING POSITION | Side Top | Top | Top | Top/Bottom Top/Side Side/Side Bottom/Side |
| TYPE | General purpose High temperature Adjustable trim | Flanged, with housing Threaded, with housing Flanged, with DIN connector | Flanged, with housing | Horizontal Top flanged Sealed Bottom flanged |
| SPECIFIC GRAVITY (Min.) | 0.75 | 0.8 | 0.75 | - |
| OPERATING TEMPERATURE (Max.) | -10...180°C Up to 350°C ¹ | 100°C | 150°C | 150°C |
| OPERATING PRESSURE (Max.) | 18 bar | 10 bar | 10 bar | As per pipe schedule |
| PROCESS CONNECTION ³ | 92 PCD forged square flange 1" NPT (M) 2" #150 RF | 92 PCD forged square flange 1" NPT (M) 2" #150 RF | 2" #150 RF...2" #600 RF 3" #150 RF...3" #600 RF | As per requirement |
| SWITCH TYPES | 1 SPDT 2 SPDT / DPDT (Optional) | 1 SPST 1 SPDT (Optional) | 1 SPST 1 SPDT (Optional) | - |
| SWITCH RATING | 5A / 250 VAC Micro switch [®] | 0.5A / 230 VAC Hermetically sealed reed switch | 5A / 250 VAC Reed switch / Micro switch [®] | - |
| SWITCHING POINTS | 1 | 1 or 2 or 3 or 4 | 1 or 2 or 3 or 4 | - |
| INSERTION LENGTH | 215 mm...375 mm (Max.) | 200 mm...3,000 mm | 200 mm...3,000 mm | 200 mm...3,000 mm |
| ENCLOSURE PROTECTION ² | Weatherproof (IP 65) Flameproof Gr. IIA, IIB Ex-proof Gr IIC | Weatherproof (IP 65) Flameproof Gr. IIA, IIB Ex-proof Gr IIC | Weatherproof (IP 65) Flameproof Gr. IIA, IIB Ex-proof Gr IIC | - |
| ENCLOSURE MATERIAL ² | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | Die-cast aluminum AISI 304 SS AISI 316 SS | - |
| OPTIONAL EXTRAS | PTFE coating (up to 150°C) Matching flange External chamber | Matching flange External chamber | Still well in AISI 304 SS Still well in ASTM A105 | MOC : ASTM A105 MOC : AISI 304 SS MOC : AISI 316 SS |

- Notes
1. With aluminum cooling tower
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.

LEVEL INDICATORS

SIDE / TOP MOUNTED TYPE

APPLICATIONS

- Petrochemicals
- Large storage tanks
- Oil & petroleum tanks
- Pressurized clear liquids
- Pharmaceutical industries
- Power & Process industries
- Chemical & fertilizer plants
- Custody transfer, reservoirs & storage tanks



| BASIC MODEL | L201 | L202/L203 | L204 | L205 |
|---------------------------------|--|---|---|--|
| SPECIAL FEATURES | Magnetic transmission Clear indication through rollers Switch & transmitter mountable Long life | Reflex / Transparent type gauge glass High pressure version | Economical version Tubular glass tube | Economical version Adjustable brackets for mounting Easy transportation & installation All non-hazardous & non-pressurized tanks |
| TYPE | Side/Side Top | Side/Side | Side/Side | Top |
| SPECIFIC GRAVITY (Min.) | 0.75 | - | - | 0.75 |
| OPERATING TEMPERATURE (Max.) | -20...120°C -20...400°C ² | 120°C Up to 240°C & 400°C ² | 120°C | 100°C |
| OPERATING PRESSURE (Max.) | Up to 10 bar Up to 25 bar & 50 bar ² | Up to 20 bar Up to 35 bar & 65 bar ² | Up to 10 bar | Up to 6 bar |
| PROCESS CONNECTION ³ | 1/2" NPT (M)...1" NPT (M) 1/2" BSP (M)...1" BSP (M) 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# | 1/2" NPT (M)...1" NPT (M) 1/2" BSP (M)...1" BSP (M) 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# | 1/2" NPT (M)...1" NPT (M) 1/2" BSP (M)...1" BSP (M) 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# | 1/2"...5" flange to ANSI B16.5 Rating 150#...2500# |
| INDICATOR | Rolling flappers (Blue/White or Red/White) | Gauge glass | Glass, tubular | CS cradle pointer on aluminum scale |
| WETTED PARTS ² | AISI 316 SSS AISI 316L SS | Carbon steel AISI 304 SS AISI 316 SS | Carbon steel AISI 304 SS AISI 316 SS | AISI 316 SS AISI 316L SS |
| CENTRE TO CENTRE DISTANCE | 200 mm...6000 mm ¹ | 350 mm...4000 mm | 350 mm...1500 mm | 1500 mm...20,000 mm |
| CALIBRATED SCALE | Aluminum AISI 304 SS ² | Aluminum AISI 304 SS ² | Aluminum AISI 304 SS ² | Aluminum, powder coated |
| OPTIONAL EXTRAS | Switches, 1 SPDT (5A/250VAC) (1 / 2 / 3 / 4 switching points) Transmitter (4...20 mA) Still well in AISI 316 SS Still well in AISI 316L SS Still well in AISI 304 SS Still well in ASTM A105 | Anti-frost protection ⁴ Illuminator with diffuser ⁴ Ball valve - Bolted bonnet type | Ball valve - Bolted bonnet type | Anchor plate |

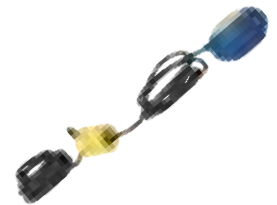
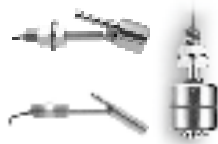
- Notes
1. Two piece construction >3500 mm.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.
 4. Applicable for L203 only.

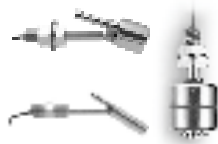


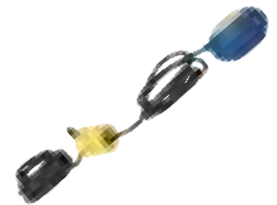
LEVEL SWITCHES

SIDE / TOP MOUNTED TYPE

APPLICATIONS

- Ship manufacturers
- Corrosive applications
- Acid or Alkaline tanks
- Alarm controls for tanks
- Water & sewage tanks
- Chemical or solvent tanks
- Coolant, processing & sterilizing tanks



| |  |  |  |  |
|-----------------------------------|---|---|---|---|
| BASIC MODEL | L301 | L302 | L303 | L304 |
| SPECIAL FEATURES | Compact design Easy installation | Compact design Economical version Wetted parts polypropelene | Economical version Easy installation | Economical version Easy installation |
| MOUNTING POSITION | Side / Top | Side / Top | Top | Top |
| TYPE | Side mounted, side switching Top mounted, top switching Side mounted, top switching | - | - | - |
| SPECIFIC GRAVITY (Min.) | 0.75 | 0.75 | 0.8 | 0.8 |
| OPERATING TEMPERATURE (Max.) | 100°C | -20...80°C | 60°C | 60°C |
| OPERATING PRESSURE (Max.) | 10 bar | 4 bar | 4 bar | 4 bar |
| PROCESS CONNECTION ² | 1/4" NPT (M)...1/2" NPT (M) 1/4" BSP (M)...1/2" BSP (M) | 1/2" NPT (M) M16 x 1 mm 1/8" PF | 3" #150 RF 3" #300 RF 4" #150 RF / 4" #300 RF | - |
| SWITCH TYPES | 1 SPST 1 SPDT ¹ | 1 SPST Reversible Switching Action 1 | 1 SPDT | 1 SPDT |
| SWITCH RATING | 0.5A / 230 VAC Hermetically sealed reed switch | 0.5A, 240 VAC / 200 VDC Reed switch | 16A / 250 VAC Reed switch | 16A / 250 VAC Reed switch |
| SWITCHING POINTS | 1 | 1 | 1 or 2 or 3 or 4 | 1 |
| INSERTION LENGTH | - | - | 200 mm...9,000 mm | 10,000 mm |
| ENCLOSURE PROTECTION ¹ | - | - | Weatherproof (IP 65) Flameproof Gr. IIA, IIB Ex-proof Gr IIC | - |
| ENCLOSURE MATERIAL ¹ | - | - | Die-cast aluminum AISI 304 SS AISI 316 SS | - |
| OPTIONAL EXTRAS | DIN connectors (side/side) | - | Matching flange | - |

Notes 1. Optional, charges extra, contact factory for details.
2. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Railways & turbines
- Fire fighting systems
- Lubrication industries
- Refrigeration & HVAC
- Water treatment plants
- Pumps, compressors & boilers
- Hydraulic & pneumatic equipments
- Textile machine builders
- Automobiles & Earthmovers



| BASIC MODEL | S101 | S102 | S103 | S104 |
|---------------------------------|---|--|---|---|
| SPECIAL FEATURES | Compact & Economical Field adjustable set point Auto Reset CE complied | Cast Aluminum enclosure Adjustable differential Field adjustable set point with internal or external Auto Reset (internal) | OEM applications Fixed differential Field adjustable set point with external | OEM applications Fixed differential Field adjustable set point with internal |
| SENSING ELEMENT ² | Bellows, Phosphor bronze Stainless steel | Bellows, Phosphor bronze Stainless steel | Diaphragm, NBR Teflon | Diaphragm, 316 SS Teflon |
| RANGE ¹ | -0.5...0...30 bar | -0.5...0...30 bar | 1...250 bar | 1...250 bar |
| REPRODUCIBILITY | CL 2.0 | CL 2.0 | CL 2.0 | CL 2.0 |
| SWITCH TYPE | Micro switch 1 SPDT | Micro switch 1 SPDT | Micro switch 1 SPST | Micro switch 1 SPDT |
| SWITCH RATING ⁴ | 15A / 220 VAC | 15A / 220 VAC | 5A / 220 VAC | 5A / 220 VAC |
| ENCLOSURE MATERIAL ² | Steel (plated) Plastic cover | Die-cast Aluminum | Stainless steel AISI 316 SS (Optional) | Die-cast Aluminum |
| ENCLOSURE PROTECTION | IP 32 | IP 67 | - | IP 67 |
| PROCESS CONNECTION ³ | 1/4" BSP (F) | 1/4" BSP (F) | 1/4" BSP (M) | 1/4" BSP (F) |
| APPROVAL | CE complied | - | - | - |
| OPTIONAL EXTRAS | Mounting bracket with screw | Mounting bracket with screw | DIN connector | SS tag plate |

Refer pages 1023 for Diaphragm seal, 1628 for Accessories, 3437 for Valves & Manifolds.

- Notes
1. Refer range table for the exact ranges.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.
 4. Refer switch table for the switch ratings available.

PRESSURE SWITCHES

WEATHERPROOF TYPE

APPLICATIONS

- Filtration plants
- Food & beverages
- Railways & turbines
- Fertilizers & cement
- Paper & pulp industries
- Chemical & petro-chemical



| BASIC MODEL | S201 | S202 | S203 | |
|---|---|--|---|--|
| SPECIAL FEATURES | Enclosure Protection : IP 67 Fix/Adjustable differential Field adjustable set point with internal/external locking Various types of switch Indicating scale | Differential pressure switch Enclosure Protection : IP 67 Fix/Adjustable differential Field adjustable set point with internal/external locking Various types of switch Indicating scale | Enclosure Protection : IP 67 Fix/Adjustable differential Field adjustable set point with internal/external locking Various types of switch Indicating scale | |
| SENSING ELEMENT ² | Diaphragm, 316 SS Monel / Hastelloy C / Teflon | Diaphragm, 316 SS Monel / Hastelloy C / Teflon | Piston, 316 SS | |
| WETTED PARTS ² (Bottom chamber) | 316 SS 316L SS / Monel / Teflon Hastelloy C | 316 SS 316L SS / Monel / Teflon Hastelloy C | 316 SS | |
| RANGE ¹ | -20mbar...160 bar | 5 mbar...25 bar | 10...400 bar | |
| REPRODUCIBILITY | CL 1.0 CL 0.5 ² | CL 1.0 CL 0.5 ² | CL 2.0 | |
| SWITCH TYPE | Micro switch 1 SPDT / 2 SPDT / DPDT | Micro switch 1 SPDT / 2 SPDT / DPDT | Micro switch 1 SPDT / 2 SPDT / DPDT | |
| SWITCH RATING ⁴ | General : 15A / 250 VAC or 2A / 24 VDC | General : 15A / 250 VAC or 2A / 24 VDC | General : 15A / 250 VAC or 2A / 24 VDC | |
| ENCLOSURE MATERIAL | Die-cast Aluminum | Die-cast Aluminum | Die-cast Aluminum | |
| ENCLOSURE PROTECTION | IP 67 | IP 67 | IP 67 | |
| PROCESS CONNECTION ³ | 1/4" BSP (F) | 1/4" BSP (F) x 2 Nos. | 1/4" BSP (F) | |
| REFERENCE STANDARD | BS 6134 | BS 6134 | BS 6134 | |
| APPROVAL | Type test to BS 6134 | Type test to BS 6134 | Type test to BS 6134 | |
| OPTIONAL EXTRAS | Plug in / DIN connector Wall mounting bracket 2" pipe mounting bracket NACE MR0175 | SS Cable gland, double compression, weatherproof Brass Cable gland, double compression, weatherproof Plug in / DIN connector Wall mounting bracket 2" pipe mounting bracket NACE MR0175 with Seal | Plug in / DIN connector Wall mounting bracket 2" pipe mounting bracket NACE MR0175 with Seal | |

Refer pages 1023 for Diaphragm seal, 1628 for Accessories, 3437 for Valves & Manifolds.

Notes 1. Refer range table for the exact ranges.

2. Optional, charges extra, contact factory for details.

3. Other connections & sizes are available, charges extra, contact factory for details.

4. Refer switch table for the switch ratings available.

PRESSURE SWITCHES

FLAMEPROOF / EXPLOSIONPROOF TYPE

APPLICATIONS

- Furnaces & Refineries
- Paper & pulp industries
- Fertilizers & cement Industries
- Marine, Glass & Paint industries
- Oil & Gas, Steel & Power Industries
- Chemical & petro-chemical industries



| BASIC MODEL | S301 | S302 | S303 |
|---|--|---|--|
| SPECIAL FEATURES | Flame-proof version (standard) Ex-proof version (optional) Fix / Adjustable differential Field adjustable set point with internal / external Various types of Micro switch | Differential pressure switch Flameproof / Ex-proof versions Fix/Adjustable differential Field adjustable set point with internal / external Various types of Micro switch | Flame-proof version (standard) Ex-proof version (optional) Fix/Adjustable differential Field adjustable set point with internal / external Various types of Micro switch |
| SENSING ELEMENT ² | Diaphragm, 316 SS Monel / Hastelloy C / Teflon | Diaphragm, 316 SS Monel / Hastelloy C / Teflon | Piston, 316 SS |
| WETTED PARTS ² (Bottom chamber) | 316 SS 316L SS / Monel / Teflon Hastelloy C | 316 SS 316L SS / Monel / Teflon Hastelloy C | 316 SS |
| RANGE ¹ | -20mbar...160 bar | 5 mbar...25 bar | 10...400 bar |
| REPRODUCIBILITY | CL 1.0 CL 0.5 ² | CL 1.0 CL 0.5 ² | CL 2.0 |
| SWITCH TYPE | Micro switch 1 SPDT / 2 SPDT / DPDT | Micro switch 1 SPDT / 2 SPDT / DPDT | Micro switch 1 SPDT / 2 SPDT / DPDT |
| SWITCH RATING ⁴ | General : 15A / 250 VAC or 2A / 24 VDC | General : 15A / 250 VAC or 2A / 24 VDC | General : 15A / 250 VAC or 2A / 24 VDC |
| ENCLOSURE MATERIAL | Die-cast Aluminum | Die-cast Aluminum | Die-cast Aluminum |
| ENCLOSURE PROTECTION | IP 65 Flameproof Gr. IIA, IIB Ex-proof Gr IIC ² | IP 65 Flameproof Gr. IIA, IIB Ex-proof Gr IIC ² | IP 65 Flameproof Gr. IIA, IIB Ex-proof Gr IIC ² |
| PROCESS CONNECTION ³ | 1/4" BSP (F) | 1/4" BSP (F) x 2 No.s | 1/4" BSP (F) |
| REFERENCE STANDARD | EN 60079-1 | EN 60079-1 | EN 60079-1 |
| APPROVAL | Type test to BS 6134 | Type test to BS 6134 | Type test to BS 6134 |
| OPTIONAL EXTRAS | Wall mounting bracket 2" pipe mounting bracket NACE MR0175 | SS Cable gland, double compression, flameproof Wall mounting bracket 2" pipe mounting bracket NACE MR0175 with Seal | Wall mounting bracket 2" pipe mounting bracket NACE MR0175 with Seal |

- Notes
1. Refer range table for the exact ranges.
 2. Optional, charges extra, contact factory for details.
 3. Other connections & sizes are available, charges extra, contact factory for details.
 4. Refer switch table for the switch ratings available.





MANIFOLDS

2-VALVE / 3-VALVE / 4-VALVE / 5-VALVE

APPLICATIONS

- Liquid & gas services
- High pressure line shut off
- Isolation & drain / vent services
- For mounting pressure instruments
- Isolation & venting of DP type transmitters



| |  |  |  |  |
|---------------------------------------|--|---|--|---|
| BASIC MODEL | M102 | M103 | M104 | M105 |
| SPECIAL FEATURES | 1 Isolate & 1 Vent valves | 2 Isolate & 1 Equalize valves with vent plugs | 2 Isolate, 1 Equalize & 1 Vent valves (DIN 19213 design) | 2 Isolate, 1 Equalize & 2 Vent valves with drain plugs |
| MOUNTING PATTERN | Pipe to Pipe Pipe to Flange (Co-planar) | Pipe to Pipe Pipe to Flange (54 mm CTC) Pipe to Flange (Co-planar) Flange to Flange | Pipe to Flange (54 mm) | Pipe to Pipe Pipe to Flange (54 mm CTC) Pipe to Flange (Co-planar) Flange to Flange |
| NEEDLE TYPE | Hard seated | Hard seated | Hard seated | Hard seated |
| MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / Inconel | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / Inconel | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / Inconel | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / Inconel |
| MOUNTING | Direct Remote | Direct Remote | Direct | Direct Remote |
| TEMPERATURE RATING | 240°C | 240°C | 240°C | 240°C |
| PRESSURE RATING | 6000 psi | 6000 psi | 6000 psi | 6000 psi |
| CONNECTION SIZES | 1/4" ... 1/2" | 1/4" ... 1/2" | 1/2" | 1/4" ... 1/2" |
| THREAD TYPES ² | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | NPT (ANSI B 1.20.1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) |
| CONNECTIONS (Instrument x Process) | Female x Female Male x Female Female x Male Socket weld Female x Co-planar | Female x Female Socket weld Male x Female (swivel nut) Female x Female (swivel nut) Female x Flange (54 mm CTC) Female x Co-planar | Female x Flange (54 mm) | Female x Female Socket weld Male x Female (swivel nut) Female x Female (swivel nut) Female x Flange (54 mm CTC) Female x Co-planar |
| STEM PACKING | PTFE Grafoil | PTFE Grafoil | PTFE Grafoil | PTFE Grafoil |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 Oxygen service Mounting brackets | NACE MR0175 / MR0103 Oxygen service Mounting brackets | NACE MR0175 / MR0103 Oxygen service Anti-tamper valve & key | NACE MR0175 / MR0103 Oxygen service Mounting brackets |

Refer page 43 for Valve Accessories.

Notes 1. Optional others, charges extra, contact factory for details.

2. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Oil & gas applications
- Isolation & drain / vent services
- Distribution applications in skids
- For mounting pressure instruments
- For Instruments with flow volume displacement at full range
- For steam metering lines with liquids flowing above 150°C...450°C



| BASIC MODEL | M201 | M202 | V204 / V205 | |
|---|---|--|--|--|
| SPECIAL FEATURES | Selection of 4, 6, 8, 10, 12, 14, 16 & 18 outlet options with individual isolation valves | Leak path reduction in conventional instrument mounting Reduced cost & weight | Various mounting types Exotic material optional | |
| MOUNTING PATTERN | Pipe to Pipe | Single block & bleed Single block & bleed + Siphon Double block & bleed | Type 1* Optional : Type 2 & Type 3 *(Standard & applicable for A204) | |
| NEEDLE TYPE | Hard seated | Hard seated | AISI 316 SS | |
| MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS AISI 316L SS AISI 304 SS ASTM A105 | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / Inconel | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C / ASTM A105 | |
| MOUNTING / PIPE SIZES | Direct | Direct | 4"/100 mm 2" / 50 mm & 3" / 80 mm | |
| TEMPERATURE RATING | 240°C | 240°C | 450°C (Max) | |
| PRESSURE RATING | 6000 psi | 6000 psi | 6000 psi | |
| CONNECTION SIZES | 1/4" ... 1" | 1/2" #150 RF...4" #2500 RF | 1/4", 1/2", 3/4" & 1" (A205) 1/4" & 1/2" (A204) | |
| CONNECTIONS (Instrument x Process)Or PIPE SCHEDULE (For A205) | Female x Female | 1/2" NPT (F) x Flange | Sch 40 Sch 80 & Sch 160 | |
| THREAD TYPES | NPT (ANSI B 1.20.1) | NPT (ANSI B 1.20.1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | |
| STEM PACKING | PTFE Grafoil | PTFE Grafoil | Grafoil | |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 Mounting brackets | NACE MR0175 / MR0103 Oxygen service Anti-tamper valve & key | NACE MR0175 / MR0103 Bleed with T handle Bleeder | |

Refer page 43 for Valve Accessories.

NEEDLE VALVES

ISOLATION / BLOCK & BLEED / MULTI-PORT

APPLICATIONS

- Gas sampling
- Instrument isolation
- Control loops / panels
- Air Header assemblies
- Multiple instrument mounting
- Instrument isolation with vent and calibration connections



| BASIC MODEL | V101 | V102 | V103 | V104 / V105 |
|---------------------------------------|--|--|---|---|
| SPECIAL FEATURES | 1 Inlet & 1 Outlet Back seating to prevent stem blow-out Isolation valve | 1 Inlet & 1 Outlet with vent plugs Back seating to prevent stem blow-out Block & bleed valve | 1 Inlet & 3 Outlet Back seating to prevent stem blow-out Multi-port valve | 1 Inlet & 1 Outlet Back seating to prevent stem blow-out for V104 Miniature valve |
| TYPE | Hard seated, needle Soft seated, needle Raising plug design, needle Standard needle pattern | Hard seated, needle | Hard seated, needle Soft seated, needle | Low torque seated, needle |
| MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Hastelloy C | AISI 316 SS AISI 304 SS |
| MOUNTING | In-line / direct Angular | In-line / direct | In-line / direct | In-line / direct |
| TEMPERATURE RATING | 240°C 100°C (soft seated) | 240°C | 240°C 100°C (soft seated) | 240°C (V104) 120°C (V105) |
| PRESSURE RATING | 6000 psi 10,000 psi & 20,000 psi ¹ | 6000 psi | 6000 psi | 3000 psi (V104) 1500 psi (V105) |
| PROCESS CONNECTION | 1/8" ... 1" 1 1/2" & 2" | 1/4" ... 3/4" | 1/4" ... 3/4" | 1/4" ... 1/2" |
| THREAD TYPES ² | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) BSPT (BS 21, ISO 7/1) |
| CONNECTIONS (Instrument x Process) | Female x Female Male x Female Male x Male Socket weld | Female x Female Male x Female Socket weld | Female x Female Male x Female | Female x Female Male x Female Male x Male |
| STEM PACKING | PTFE Grafoil | PTFE Grafoil | PTFE Grafoil | PTFE |
| OPTIONAL EXTRAS | NACE MR0175 / MR0103 Oxygen service | NACE MR0175 / MR0103 Oxygen service Vent plug in 1/4" NPT | NACE MR0175 / MR0103 Bleed with T handle Bleeder | Oxygen service |

Refer page 43 for Valve Accessories.

- Notes
1. Optional others, charges extra, contact factory for details.
 2. Other connections & sizes are available, charges extra, contact factory for details.

NEEDLE VALVES

BALL / NON-RETURN / TUBE-END

APPLICATIONS

- Media throttling
- Instrument isolation
- Liquid & gas services
- Protection of instruments from sudden pressure hikes



| BASIC MODEL | V201 | V202 | V203 | |
|---------------------------------------|---|--|---|--|
| SPECIAL FEATURES | Economical version Leak point reduction | Adjustable cracking points Variety of end connections | Back seating to prevent stem blow-out | |
| TYPE | One piece ball stem | Spring | Hard seated, needle Soft seated, needle Raising plug designs, needle | |
| MATERIAL OF CONSTRUCTION ¹ | AISI 316 SS AISI 304 SS / AISI 316L SS | AISI 316 SS | AISI 316 SS AISI 304 SS / AISI 316L SS | |
| MOUNTING | In-line / direct | In-line / direct | In-line / direct | |
| TEMPERATURE RATING | 120°C | 240°C | 240°C 100°C (soft seated) | |
| PRESSURE RATING | 1000 psi | 6000 psi | 6000 psi | |
| CONNECTION SIZES | 1/4" ... 1/2" | 1/4" ... 2" | 6 mm ... 12 mm 1/4" ... 1/2" | |
| THREAD TYPES ² | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | |
| CONNECTIONS (Instrument x Process) | Female x Female | Female x Female Tube x Tube | Tube x Tube Tube x Male Tube x Female Male x Tube Female x Tube | |
| STEM PACKING | PTFE Grafoil | PTFE | PTFE Grafoil | |
| OPTIONAL EXTRAS | Oxygen service | Oxygen service | NACE MR0175 / MR0103 Oxygen service | |

Refer page 43 for Valve Accessories.

- Notes
1. Optional others, charges extra, contact factory for details.
 2. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Mounting brackets & bolts
- Gaskets for valve / gauge mounting
- Drain & bleed accessories for valves



| BASIC MODEL | A501/A502 | A506 | A507 | A508 |
|--------------------------|----------------------------------|--|---------------------------------|----------------------------------|
| MATERIAL OF CONSTRUCTION | AISI 304 SS AISI 316 SS | Steel, nickel plated AISI 304 SS AISI 316 SS | PTFE Grafoil | PTFE |
| TYPE | Type - 1 Type - 2 Type - 3 | 7/16" UNF x 45 mm length 7/16" UNF x 25 mm length | - | 1/4" BSP 1/2" BSP 3/4" BSP |
| OTHER DETAILS | - | - | PTFE = 200°C Grafoil = 430°C | 2 mm thick |



| BASIC MODEL | A503 | A504 | A505 | A509 |
|--------------------------|---|---|---|---|
| MATERIAL OF CONSTRUCTION | AISI 316 SS Optional : AISI 316L SS, Monel (Other materials, contact factory) | AISI 316 SS Optional : AISI 316L SS, Monel (Other materials, contact factory) | AISI 316 SS Optional : AISI 316L SS, Monel (Other materials, contact factory) | AISI 316 SS Optional : AISI 316L SS, Monel (Other materials, contact factory) |
| CONNECTION SIZES | 1/8", 1/4" & 1/2" | 1/2" | 1/4" & 1/2" | M6 x 1.5 mm |
| THREAD TYPES | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | NPT (ANSI B 1.20.1) BSP (BS 2279, ISO 228/1) | Metric thread |

APPLICATIONS

- Oil & Gas industries
- Petro-chemical / Chemical processing
- Shipbuilding & Heavy industrial industries
- Power generation, Pulp & paper industries
- Cryogenic & semiconductor industries
- Research laboratories

FEATURES

- Easy & low torque engagement
- Leak free assembly & re-assembly
- Various patterns & connections
- Wide variety of materials



| BASIC MODEL | F101 | F201 | F301 | F401/ 402 |
|---------------------------------------|--|--|--|--|
| TUBE SIZE ¹ | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/4"...1" (Imperial) or 6mm...16 mm (Metric) |
| MATERIAL OF CONSTRUCTION ² | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass |
| THREAD / TUBE SIZE ¹ | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/8"...1" NPT (M) BSP, M20x1.5 mm | 1/8"...1" NPT (M) BSP, M20x1.5 mm | 1/4"...1" pipe diameter (Socket/Butt weld) |



| BASIC MODEL | F103 | F203 | F303 | F102 |
|---------------------------------------|--|--|--|--|
| TUBE SIZE ¹ | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/8"...1" (Imperial) or 6mm & 12 mm (Metric) | 1/8"...1/2" (Imperial) or 6mm & 12 mm (Metric) | 1/4"...1" (Imperial) or 8mm...25 mm (Metric) |
| MATERIAL OF CONSTRUCTION ² | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass |
| THREAD / TUBE SIZE ¹ | 1/8"...1" (Imperial) or 6mm...25 mm (Metric) | 1/8"...1" NPT (M) BSP, M20x1.5 mm | 1/8"...1/2" NPT (M) BSP, M20x1.5 mm | 1/8"...3/4" (Imperial) or 6mm...20 mm (Metric) |

Notes 1. Other connections & sizes are available, charges extra, contact factory for details.
2. Other materials, charges extra, contact factory for details.

APPLICATIONS

- Oil & Gas industries
- Petro-chemical / Chemical processing
- Shipbuilding & Heavy industrial industries
- Power generation, Pulp & paper industries
- Cryogenic & semiconductor industries
- Research laboratories

FEATURES

- Easy & low torque engagement
- Leak free assembly & re-assembly
- Various patterns & connections
- Wide variety of materials



| BASIC MODEL | F104 | F204 | F304 | F404 |
|---------------------------------------|--|--|--|--|
| TUBE SIZE ¹ | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) | 1/8" ... 1" (Imperial) or 6mm ... 16 mm (Metric) | 1/4" ... 1" (Imperial) |
| MATERIAL OF CONSTRUCTION ² | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass |
| THREAD / TUBE SIZE ¹ | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) | 1/8" ... 1" NPT (M) BSP, M20x1.5 mm | 1/8" ... 1" NPT (F) BSP, M20x1.5 mm | 1/4" ... 1" pipe diameter |



| BASIC MODEL | F105/F106 | F205 | F305 | F614 |
|---------------------------------------|--|--|--|--|
| TUBE SIZE ¹ | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) | 1/8" ... 3/4" (Imperial) or 6mm ... 16 mm (Metric) | 1/8" ... 1" (Imperial) or 6mm ... 16 mm (Metric) | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) |
| MATERIAL OF CONSTRUCTION ² | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass | AISI 316 SS AISI 304 SS / AISI 316L SS Monel / Brass |
| THREAD / TUBE SIZE ¹ | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) | 1/8" ... 3/4" NPT (M) BSP, M20x1.5 mm | 1/8" ... 1" NPT (M) BSP, M20x1.5 mm | 1/8" ... 1" (Imperial) or 6mm ... 25 mm (Metric) |

APPLICATIONS

- Density control
- Sewage handling
- Paints & Varnishes
- Interface, sumps & pits
- Agitated fluids, Heavy oils
- Foaming or surging liquids
- Condensating & viscous oils
- Light hydrocarbon to heavy acids
- Process, bridges & storage applications



| BASIC MODEL | Z101 |
|---|--|
| SPECIAL FEATURES | Easy installation Dry / Hermetically sealed contact Flanged or threaded mounting Ex-proof enclosures optional |
| MOUNTING | Direct External caged |
| MOUNTING STYLES | Side-Side or Side-Bottom Top-Side or Top-Bottom Top (for Direct mounting type) |
| SPECIFIC GRAVITY (Min.) | 0.6 |
| DISPLACER MATERIAL ¹ | AISI 316 SS Teflon / Polypropylene |
| SUPPORT SPRING | Inconel 600 |
| TRIM, DISPLACER CLAMPS & SUSPENSION CABLE | AISI 316 SS |
| MAGNETIC SLEEV | AISI 410 SS |
| PROCESS CONNECTION | AISI 316 SS |
| MATERIAL | AISI 304 SS / ASTM A-105 (C.S.) |
| PROCESS CONNECTION ² | ½"...2" NPT (M) ½"...2" Socket weld 1" #150 RF...1½" #900 RF |
| SWITCH TYPES | Micro switch Hermetically sealed Microswitch Hermetically sealed Reed switch |



| BASIC MODEL | Z102 |
|---------------------------------|---|
| SPECIAL FEATURES | Two-wire, loop-powered, transmitter Level, interface or density measurement 4 to 20 mA with HART LCD monitor |
| TYPE | Level Interface level Density |
| MOUNTING STYLES | Top mounting, direct Side-Bottom mounting, external caged Side-Side mounting, external caged |
| DENSITY | 0.3...1.6 g/cm ² |
| WETTED PARTS ¹ | AISI 316 SS AISI 304 SS / ASTM A-105 (C.S.) |
| PROCESS CONNECTION ² | 1½" #150 RF...6" #2500 RF |
| ENCLOSURE PROTECTION | Intrinsically safe (EEx ia IIC T6) Explosion isolation (EEx d IIC T6) |
| OUT PUT | 4...20 mA + HART |
| TEMPERATURE RATING | Standard (from -30°C up to 100°C) Cryo (from -70°C up to -30°C) High Temperature (from 100°C up to 400°C) |
| MEASURING LEVEL ¹ | 300 mm 500 mm / 600 mm / 800 mm / 1000 mm 1500 mm / 2000 mm / 2500 mm |

Notes 1. Others optional, charges extra, contact factory for details.
2. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- For use with RTD
- For use with Thermocouple
- Universal Type transmitter
- Universal Type transmitter with HART protocol



| BASIC MODEL | Z201 | Z202 | Z203 | Z204 |
|---|---|--|--|---|
| SPECIAL FEATURES | Economical & easy to install Range adjustable High load capacity Linear output Optional ATEX / FM version | Economical & easy to install Range adjustable High load capacity Cold junction compensation Optional ATEX / FM version | Easy to install Universal 2-wire configurable High load capacity Optional ATEX / FM version | Easy to install Universal 2-wire configurable HART compatible High load capacity Optional ATEX / FM version |
| INPUT | Pt-100, 3-wire connection | Thermocouple J, L, T, K & N | RTDs, TCs, mV & resistance | RTDs, TCs, mV & resistance |
| RANGE | -50...+550°C / -60...+1120°F | As per Thermocouple types | Any value within range limits | Any value within range limits |
| OUTPUT | 4...20mA | 4...20mA | 4...20mA or 20...4mA | 4...20mA / 20...4mA + HART |
| ACCURACY | +/-0.1% of span | +/-0.1% of span | +/-0.1% of input span | +/-0.1% of input span |
| LINEARITY | +/-0.1% of span | +/-0.1% of mV span | +/-0.1% for RTD, mV & resistance +/-0.2% for Thermocouple | +/-0.1% for RTD, mV & resistance +/-0.2% for Thermocouple |
| TEMPERATURE INFLUENCE | +/-0.6 % of span/25 °C +/-0.7 % of span/50 °F | +/-0.6 % of span/25 °C +/-0.7 % of span/50 °F | ± 0.25°C/25°C or ±0.25%/25°C ± 0.5°F/50°F or ±0.28%/50°F | ± 0.25°C/25°C or ±0.25%/25°C ± 0.5°F/50°F or ±0.28%/50°F |
| POWER SUPPLY | 6.5...32VDC (Standard) 8.5...30VDC (ATEX version) | 6.5...32VDC (Standard) 8.5...30VDC (ATEX version) | 6.5...36VDC (Standard) 8.0...30VDC (ATEX version) | 10...42VDC (Standard) 12...30VDC (ATEX version) |
| OPERATING TEMPERATURE | -40...+85°C / -40...+185°F | -40...+85°C / -40...+185°F | -40...+85°C / -40...+185°F | -40...+85°C / -40...+185°F |
| RESPONSE TIME | ≤ 0.2s | ≤ 0.2s | -2s (adjustable dampening) | 0...10s (adjustable dampening) |
| ENCLOSURE | Zinc alloy + ABS / V0 | Zinc alloy + ABS / V0 | PC + ABS/V0, Polyamide/V2 | PC + ABS/V0, Polyamide/V2 |
| MOUNTING | DIN B-head or larger (PCD : 33 mm) | DIN B-head or larger (PCD : 33 mm) | DIN B-head or larger (PCD : 33 mm) | DIN B-head or larger (PCD : 33 mm) |
| ENCLOSURE RATING | IP 20 / IP 10 | IP 20 / IP 10 | IP 50 / IP 10 | IP 50 / IP 10 |
| SENSOR BREAK DETECTION (Selectable) | Upscale = 25mA (approx.) Downscale = 3mA (approx.) | Upscale = 25mA (approx.) Downscale = 3mA (approx.) | Upscale = 21.6mA (approx.) Downscale = 3.5mA (approx.) | Upscale = 22.8mA (approx.) Downscale = 3.6mA (approx.) |
| INTRINSIC SAFETY (ATEX / FM Version) | II 1 G EEx ia IIB T4, T5, T6 FM: Class I, Div.1, Group A-D | II 1 G EEx ia IIB T4, T5, T6 FM: Class I, Div.1, Group A-D | II 1 G EEx ia IIB T4, T5, T6 FM: Class I, Div.1, Group A-D T4 | II 1 G EEx ia IIB T4, T5, T6 FM: Class I, Div.1, Group A-D T4 |
| BRAND | INOR, Sweden | INOR, Sweden | INOR, Sweden | INOR, Sweden |
| MODEL | APAQ-HRF/HRFX | APAQ-HCF/HCFX | IPAQ-H/HX | MESO-H/HX |

APPLICATIONS

- Pressure / Level measurement
- Industrial / Hazardous applications
- Calibrators & Hand pumps for calibration
- Digital manometer for precise measurement



| BASIC MODEL | Z301 | Z302 | Z303 | Z304 |
|-----------------------|----------------------------------|-------------------------------|---|----------------------------------|
| FEATURES | Universal industrial transmitter | "Y-Line" transmitter | Level, digital, ATEX | High precision, digital, ATEX |
| PRESSURE TYPE | Gauge, Reference, Absolute | Gauge, Reference, Absolute | Gauge, Reference, Absolute | Gauge, Reference, Absolute |
| RANGE | 2...1,000 bar | -1...1,000 bar | 1...300 mH ₂ O or 0.2...30 bar | -1...0.2 bar up to 0...1,000 bar |
| LINEARITY.....(MAX) | +/-0.25%FS.....(+/-0.5%FS) | +/-0.25%FS.....(+/-0.5%FS) | +/-0.05%FS.....(+/-0.1%FS) | +/-0.01%FS.....(+/-0.05%FS) |
| OUTPUT SIGNAL | 4...20mA, 0...10V, 0.5...4.5V | 4...20mA, 0...10V, 0.5...4.5V | 4...20mA, 0...10V, 0.5...4.5V | RS 485, 4...20mA or 0...10V |
| POWER SUPPLY | 8...32VDC | 8...32VDC | 13...28VDC | 13...28VDC / Eex 10...28VDC |
| OPERATING TEMPERATURE | -40...100°C | -40...100°C | 0...50°C | -40...120°C |
| BRAND | KELLER, Switzerland | KELLER, Switzerland | KELLER, Switzerland | KELLER, Switzerland |
| SERIES | 21Y | 23(S)Y / 25Y | 36XW / 36XW Ei | 33X / 35X / 33XEi / 35XEi |



| BASIC MODEL | Z305 | Z306 | Z307 | Z308 |
|-----------------------|---|--|---|---|
| FEATURES | Digital Manometer Various units, Min/Max function ATEX II 1G EEx ia IIC T6 / T5 | Digital Manometer Acc. up to +/-0.025% & +/-0.01% ATEX II 1G EEx ia IIC T6 | Pressure Calibrators Digital Read-out Optional RS 232 or RS 485 | Handpumps for calibration Medium : Air, distilled water and oil |
| RANGE (bar) | -1...3, -1...30, 0...300, 0...700 | -1...2, -1...20, 0...200/400/1000 | -1...2, -1...10, -1...25/200/700 | Ranges : -0.85...25 bar (K/P) |
| ACCURACY | +/-0.1% FS (RT) | +/-0.05% FS (RT) | +/-0.05% FS (RT) | -0.95...40 bar (K/P) |
| SENSOR / OUTPUT | AISI 316L SS / Read-out | AISI 316L SS / RS 485 | AISI 316L SS / 4...20mA | -0.85...10 bar (LPB) |
| POWER SUPPLY | 3V battery (1,000 hours) | 3V battery (2,000 hours) | 3.6V battery (2,000 hours) | -0...700 bar (HTP) |
| OPERATING TEMPERATURE | -20...70°C | -10...60°C | 0...50°C | -0...700 bar (P12) |
| BRAND | KELLER, Switzerland | KELLER, Switzerland | KELLER, Switzerland | KELLER, Switzerland |
| SERIES | LEO 2 / LEO 2 Ei | LEX1 / LEX 1 Ei | LP / MP / HP | K/P / LPB / HTP / P12 |

APPLICATIONS

- Flow measurement
- Waste water or any fluid
- Water, oil & gas, air or steam



| BASIC MODEL | Z401 |
|--------------------------------------|---|
| SPECIAL FEATURES | DP type measurement Various materials Orifice sizing provided |
| TYPE | Concentric square edge, Conical entrance, Quarter circle, Segmental, Eccentric |
| ORIFICE PLATE MATERIALS ¹ | AISI 316 SS AISI 304 SS / Monel |
| BORE SIZES | Standard : ISO 5167, BS 1042 ASME MFC 3M |
| VENT / DRAIN | Vent Hole (Gas) in liquid flow Drain Hole (Gas) in gas flow |
| FLANGE TYPES | Weld-neck OR Slip-on |
| FLANGE FACING | Raised Face (RF) Ring-type Joint (RTJ) |
| FLANGE MATERIALS | ASTM A105 (Standard) Optional : ASTM A350 LF2 ASTM A182 F11, ASTM A182 F22 |
| PRESSURE TAPPING | At corner, for sizes up to 1½" At flange, for sizes 2" ... 16" D - (D/2), for sizes above 16" |
| GASKETS | SS spiral wound + Grafoil SS spiral wound + PTFE |
| STUDS / NUTS | ASTM A193 Gr. B7 |
| JACK SCREW | ASTM A105 |
| REFERENCE STANDARD | ISO 5167, BS 1042, DIN 1952 ASME MFC 3M, ISA RP 3.2 |



| BASIC MODEL | Z501 | Z502 |
|---|---|---|
| SPECIAL FEATURES | Economical version Low pressure drop Repeatability Easy installation/replacement | Economical version Low pressure drop Repeatability Easy installation/replacement |
| SCALE | 50 ... 60 mm, glass tube | Black letters, white background |
| ACCURACY | CL 1.0 | CL 2.0 |
| REPEATABILITY | +/- 0.25% of FSR | - |
| RANGEABILITY | 10:01 | - |
| TEMPERATURE RATING | 150°C | 150°C |
| PRESSURE RATING | 10 bar | 10 bar |
| MOUNTING ¹ (Inlet x Outlet) | Bottom x Top Back connection | Bottom x Top Optional : Back connection |
| MOUNTING POSITION | Vertical | Vertical |
| WETTED PARTS ¹ | AISI 316 SS AISI 304 SS / Teflon / PVC ASTM A105 / Polypropylene | AISI 316 SS AISI 304 SS / Teflon / PVC ASTM A105 / Polypropylene |
| ENCLOSURE, POINTERS ETC. | Metallic, powder coated with Trent acrylic front side | Aluminum |
| CONNECTIONS ² | ½" ... 1" NPTM, ANSI B 1.20.1 ¾" ... 4" flange, ANSI B16.5 | ½" ... 1" NPTM, ANSI B 1.20.1 ¾" ... 4" flange, ANSI B16.5 |
| METERING TUBE FLOAT | Tapered, Borosilicate AISI 316 SS (Standard) AISI 304 SS / Teflon | AISI 316 SS AISI 316 SS |

Notes 1. Others optional, charges extra, contact factory for details.
2. Other connections & sizes are available, charges extra, contact factory for details.

APPLICATIONS

- Pump protection from dry run
- Booster pumps, Fire alarm systems
- Air conditioning systems
- Heat exchangers, Water treatment plants
- Constant monitoring of flow
- Digital read-outs in control panels
- Display for the level, pressure and
- Temperature transmitters



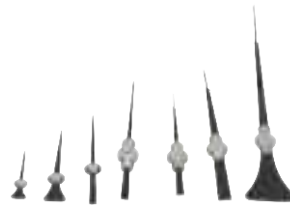
| BASIC MODEL | Z503 |
|---------------------|--|
| SPECIAL FEATURES | Rugged Design Easy installation and maintenance Economical version Optional flame-proof version |
| CONTROL TYPE | Paddle / Flapper |
| RANGE | 1" ... 6" (Applicable line sizes) |
| STATIC PRESSURE | 9.8 bar... 19.6 bar |
| PROCESS PRESSURE | 193 psig / 13.5 bar |
| STORAGE TEMPERATURE | 32°F... 108°F |
| PROCESS TEMPERATURE | 32°F... 250°F |
| FLUID TEMPERATURE | 212°F (max.) |
| MICROSWITCH | SPDT (1 NO + 1NC) |
| ELECTRICAL RATING | 220VAC, 15A |
| CONNECTION | 1" NPT (M), in Brass |
| FLAPPER | Stainless Steel |
| ENCLOSURE | Plastic with Ni-plated assembly base |
| CONDUIT | 1/2" BSP(F) |
| CABLE GLAND | 1/2" BSP(M), Ni-plated brass |



| BASIC MODEL | Z601 |
|--------------------|--|
| SPECIAL FEATURES | Dual display Universal Input Optional Retransmission Adjustable span & zero point |
| INPUT | mA, V, mV & resistance |
| ACCURACY | 0.3% of Input, +/-1 digit |
| DISPLAY | 4 digit, 7 segment LED, dual |
| POWER SUPPLY | 85...265VAC |
| AUXILLARY POWER | 24VDC, 30mA or 12VDC, 60mA |
| DIMENSION | 48 x 96 x 100 mm |
| ENCLOSURE | ABS Plastic |
| INGRESS PROTECTION | IP 67 (for the front) |
| OUTPUT | 2 Relay 4...20mA (Optional) |
| COMMUNICATION | Single loop input without comm. port Single loop input with RS485 interface |

APPLICATIONS

- For replacement & maintenance purpose



| BASIC MODEL | A607 | A613 | A606 | A611 |
|--------------------------|---|--|--|---|
| TYPE | Plain glass Plexi glass Safety shatterproof glass Toughened glass Acrylic glass | Pressed Bayonet Threaded Crimp | Fixed (Gen. / Temp / Capsule) Slotted adjustable Micro-zero adjustable DIN style fix/adjustable | Fixed span Adjustable span Dampened |
| SIZE | 25 mm...250 mm | 25 mm...250 mm | 25 mm...250 mm | For gauges 25 mm...250 mm |
| MATERIAL OF CONSTRUCTION | Glass | AISI 304 SS Phenolic Resin Pressed Steel Optional : AISI 316 SS | Aluminum | Brass AISI 304 SS AISI 316 SS |



| BASIC MODEL | A608 | A612 | A610 | A604 |
|--------------------------|---|--|---|--------------------------------|
| TYPE | Plain Printed, Customer logo** Green dial with mirror-band* | Snap action, single insulated Snap action, double insulated Inductive type | General purpose Solid front gauge type | General purpose ON-OFF type |
| SIZE | 25 mm...250 mm | 100 mm & 150 mm | DN 25, DN 100 & DN 150 | DN 12.5 |
| MATERIAL OF CONSTRUCTION | Aluminum, powder coated | Silver Nickel, gold-plated (Ag80 Ni20 gold-plated) | Neoprene Buna-N NBR AISI 304 SS AISI 316 SS | Neoprene Buna-N NBR |
| OTHER DETAILS | White background with Black and Red letters | Available in Under quadrant and On the quadrant | - | - |

APPLICATIONS

- For replacement & maintenance purpose
- Calibration of pressure & temperature gauges



| BASIC MODEL | A601 | A602 | A603/A604 | A605 |
|--------------------------|--|------------------------------|--|--|
| APPLICATION | For removing pointers from gauges | For opening the bezel rings | For calibration and repairing of pressure gauges | For Pressure & temperature gauge repairing |
| SIZE / TYPE | Version 1 (For gauges \geq DN100) Version 2 (For gauges \leq DN100) | One size fit for all | Pneumatic Hydraulic | - |
| MATERIAL OF CONSTRUCTION | AISI 304 SS Optional : Brass | Plated steel with nylon belt | Stainless Steel with pressed powder coated steel covers | - |
| OTHER DETAILS | | | Pneumatic : Vacuum up to 40 bar Hydraulic: 40 bar up to 100 bar (Water) 100 bar up to 1000 bar (Oil) | The Repairing kit include : Pointer puller (Ver.1 & Ver.2) Soft hammer (1 No.) Bezel Opener belt (1 No.) Phillips screwdriver (1 No.) Slot screwdriver (1 No.) Reamer (2 Nos.) |

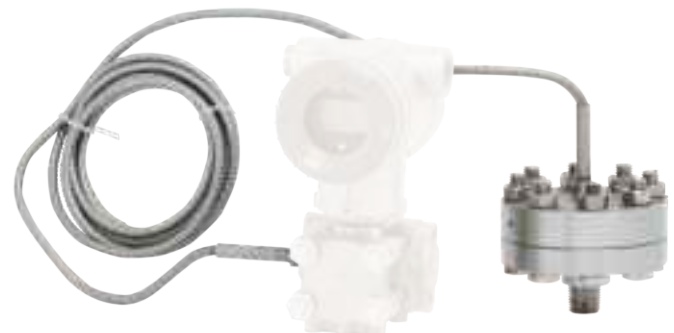
SERVICES

DIAPHRAGM SEAL REFURBISHMENT

APPLICATIONS

- For replacement & maintenance purpose
- Calibration of pressure & temperature gauges

| BASIC MODEL | X105 |
|------------------|---|
| SERVICES OFFERED | Transmitter assembling with diaphragm seal Diaphragm seal refurbishment & calibration |
| REASONS | Bulging of diaphragm Diaphragm 'blown up' Diaphragm damaged due to corrosion Dents in the diaphragm Customized requirements of customer/process |
| FACILITIES | Laser Welding of diaphragms Helium Leak testing HART calibration & simulation of transmitter |





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