

TECHNOLOGY

**HOLYKELL®**

# **HPT604**

## **LEVEL**

### **• DATASHEET •**

- 1. Pressure Measurement   2. Level Measurement   3. Temperature Measurement**  
**4. Flow Measurement   5. Display & Control Instruments**  
**6. Wireless Monitoring System   7. Velocity Measurement**

# HPT 604 (Type A )

## Submersible Pressure Water Level Transducers & Transmitters

### Applications

- Irrigation Equipment
- Sea Water Level Measurement and Control
- Deep Well and Groundwater Monitoring
- Vessel and Storage Monitor Systems
- Control of Lift and Pumping Stations
- Surface Water Monitoring
- Dewatering

### Features

- GE pressure cell, 0.25% F.S
- 316L stainless steel diaphragm,
- 316L body construction shock and erosion
- Custom level ranges from 50cm to 500m
- Unique 8 pressure holes design
- IP68 full sealed plastic waterproof design
- Lightning and Surge Protection
- Custom PU, PE or FEP cable lengths

### Profiles

HPT604A is a submersible level transducer suitable for liquid level and depth measurement. It consists of an U.S.A imported GE piezoresistive sensing element encased in 316L housing. It's all stainless steel, hermetically sealed housing makes it suitable for immersion in most industrial liquids and oils.

Each submersible pressure transducer features a removable nose cone at the sensor which protects the diaphragm from damage. Units come equipped with a 270-pound tensile strength shielded and vented cable. Ventilation tube in the cable automatically compensates for changes in atmospheric pressure above the tank. The vent is protected with a maintenance free filter eliminating particulate or water droplets from entering the transducer.

HPT604A incorporates lightning and surge protection utilizing dual arrestor technology, and assures under the input and output short-circuit conditions to prevent reverse connection. It also eliminates both power supply surges and lightning ground strike transients.

Holykell can provide a cost effective solution for level monitoring for a variety of applications. Welcome your inquiry.



RoHS

| Measuring range |                        |
|-----------------|------------------------|
| bar             | 0 to 0.05 ... 0 to 50  |
| inWC            | 0 to 20 ... 0 to 20000 |
| psi             | 0 to 1.0 ... 0 to 725  |
| mH2O            | 0 to 0.5 ... 0 to 500  |

When choosing the FEP cable, only measuring ranges up to 0 ... 10 bar, 0 ... 150 psi and 0 ... 100 mH2O are available. The given measuring ranges are also available in mbar, kPa and MPa

### Materials

| Wetted Parts         | Standard             | Optional       |
|----------------------|----------------------|----------------|
| Sensor               | Stainless steel 316L | Titanium alloy |
| Housing & filter cap | Stainless steel 316L | Titanium alloy |
| Cable                | PE                   | PU/FEP         |

### Mounting position

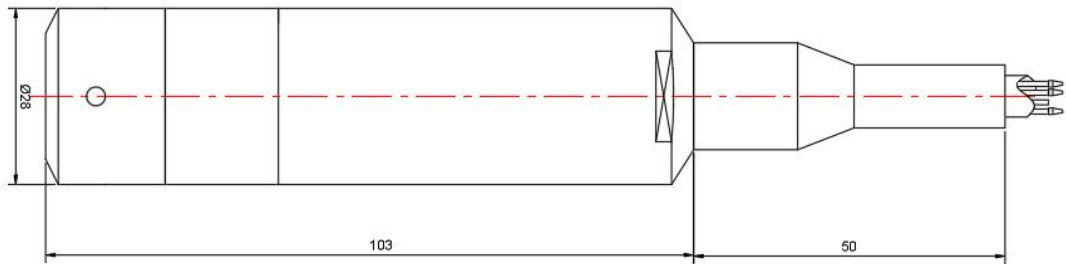
Calibrated in vertical mounting position with pressure connection facing downwards.

Specifications

Ambient Temperature: 25°C (unless specified)

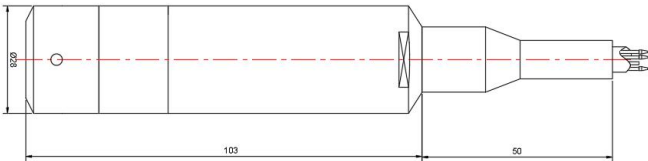
| Parameter                                     | HPT604 (Type A)                                                                                                                                                                           |                                             |             |            |           |         |                        |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------|------------|-----------|---------|------------------------|
| Pressure Range                                | 0-50bar/500m (See Page 1 description). Others by request                                                                                                                                  |                                             |             |            |           |         |                        |
| Overload                                      | 150% F.S                                                                                                                                                                                  |                                             |             |            |           |         |                        |
| Burst Pressure                                | 500% F.S                                                                                                                                                                                  |                                             |             |            |           |         |                        |
| Accuracy(Linearity, Hysteresis,Repeatability) | ≤ ±0.5%F.S(Typical); ≤ ±0.25%F.S (optional), 0.1%F.S (by customized) @25°C including non-lin., rep. and hys. optional                                                                     |                                             |             |            |           |         |                        |
| Long-term Stability                           | ≤ ±0.2%F.S/ year                                                                                                                                                                          |                                             |             |            |           |         |                        |
| Working Temp.                                 | -40 °C to +85°C                                                                                                                                                                           |                                             |             |            |           |         |                        |
| Medium Temp.                                  | 0°C to +70°C                                                                                                                                                                              |                                             |             |            |           |         |                        |
| Storage Temp.                                 | -40°C to +85°C                                                                                                                                                                            |                                             |             |            |           |         |                        |
| Temp.Compensation                             | 0°C to 50°C; -10°C to 70°C (Range > 200 kPa / 20 mH <sub>2</sub> O)                                                                                                                       |                                             |             |            |           |         |                        |
| Medium Compatible                             | Compatible with 316L Stainless Steel                                                                                                                                                      |                                             |             |            |           |         |                        |
| Electrical Wire                               | 2 Wires                                                                                                                                                                                   |                                             | 3 Wires     |            |           |         | 4 Wires                |
| Signal Output                                 | 4-20mA                                                                                                                                                                                    | Double Current Signal (4-20mA for P/L+Temp) | 1-5 V;0-5 V | 0-10 V     | 0.5-4.5 V | SDI-12  | RS485 Modbus RTU       |
| Power Supply                                  | 7-30 V DC                                                                                                                                                                                 | 12-30 V DC                                  | 8-30 V DC   | 13-30 V DC | 5 V DC±5% | 12 V DC | 3.6-5 V DC / 8-30 V DC |
| Polarity Protection                           | The power lines feature reverse polarity protection; however, the signal lines do not have reverse polarity protection against the positive power supply and must not be cross-connected. |                                             |             |            |           |         |                        |
| Insulation Resistance                         | > 100M Ω@100V                                                                                                                                                                             |                                             |             |            |           |         |                        |
| Zero-point Temp. Drift                        | 0.01%FS/°C                                                                                                                                                                                |                                             |             |            |           |         |                        |
| Full scale Temp. Drift                        | 0.005%FS/°C                                                                                                                                                                               |                                             |             |            |           |         |                        |
| Power Consumption                             | 24V: 2.8mA; 12V: 5.1mA; 5V: 10.1mA                                                                                                                                                        |                                             |             |            |           |         |                        |
| Electrical Connection                         | Fixed cable with vented tube and water proof IP68                                                                                                                                         |                                             |             |            |           |         |                        |
| Response Time                                 | ≤20 ms(Current and voltage signals); ≤100 ms (digital signals)                                                                                                                            |                                             |             |            |           |         |                        |
| Pressure Type                                 | Gauge pressure; Sealed gauge and absolute optional                                                                                                                                        |                                             |             |            |           |         |                        |
| Certificate                                   | ATEX (II 1G Ex ia IIC), IECEEx, TUV, RoHS and CE                                                                                                                                          |                                             |             |            |           |         |                        |
| EMC Standard                                  | EN 61326-1:2013; EN 61326-2-3:2013<br>EN 61000-6-2:2005; EN61000-6-4:2007+A1                                                                                                              |                                             |             |            |           |         |                        |
| Surge & Lightning Protection                  | Surge ±2000V (digital); Air discharge ±8000V; contact discharge ±6000V                                                                                                                    |                                             |             |            |           |         |                        |
| Cable Optional                                | Cable materials are optional according to request, we offer 3 types of special cables as follow: PE Cable (Water Proof); PU Cable(Oil/Fuel Proof); FEP Cable (Anti-Corrosive)             |                                             |             |            |           |         |                        |
| Note                                          | 80m max for SDI-12 signal                                                                                                                                                                 |                                             |             |            |           |         |                        |

Dimensions and Drawing



Unit: mm

Electrical Connections



| Cable-out |                                      |        |                                        |
|-----------|--------------------------------------|--------|----------------------------------------|
|           | Current                              | Red    | U+                                     |
|           |                                      | Green  | Iout(U-)                               |
|           |                                      | Yellow | ⏏ Connect to earth ground              |
|           | Current (4-20mA P/L+T)               | Red    | U+                                     |
|           |                                      | Green  | Iout(U-)                               |
|           |                                      | Yellow | ⏏ Connect to earth ground              |
|           |                                      | Blue   | T                                      |
|           | Voltage/SDI-12                       | Red    | U+                                     |
|           |                                      | Green  | Vout(for voltage) Signal (for SDI-12 ) |
|           |                                      | Yellow | ⏏ Connect to earth ground              |
|           |                                      | Black  | U-                                     |
|           | RS485 RTU Modbus / Dual RS485 P/L+T) | Red    | U+                                     |
|           |                                      | Black  | U-                                     |
|           |                                      | Green  | RS485A                                 |
|           |                                      | Blue   | RS485B                                 |
|           |                                      | Yellow | ⏏ Connect to earth ground              |

### How to Order

#### 1. Range Selection Table:

|    |       |    |       |    |       |    |       |    |       |    |               |    |       |    |       |    |       |
|----|-------|----|-------|----|-------|----|-------|----|-------|----|---------------|----|-------|----|-------|----|-------|
| 00 | 0~0.5 | 01 | 0~1.0 | 02 | 0~1.1 | 03 | 0~1.2 | 04 | 0~1.3 | 05 | 0~1.4         | 06 | 0~1.5 | 07 | 0~1.6 | 08 | 0~1.7 |
| 09 | 0~1.8 | 10 | 0~1.9 | 11 | 0~2   | 12 | 0~2.1 | 13 | 0~2.2 | 14 | 0~2.3         | 15 | 0~2.4 | 16 | 0~2.5 | 17 | 0~3   |
| 18 | 0~4   | 19 | 0~5   | 20 | 0~6   | 21 | 0~7   | 22 | 0~8   | 23 | 0~10          | 24 | 0~12  | 25 | 0~15  | 26 | 0~16  |
| 27 | 0~20  | 28 | 0~25  | 29 | 0~30  | 30 | 0~35  | 31 | 0~40  | 32 | 0~50          | 33 | 0~60  | 34 | 0~80  | 35 | 0~100 |
| 36 | 0~150 | 37 | 0~200 | 38 | 0~250 | 39 | 0~300 | 40 | 0~500 | X  | By customized |    |       |    |       |    |       |

Kindly according to your application select suitable range code , Example: code 19 = 5 .

Unit of measure select on the Part Number Selection Table . Example: Code H=mH<sub>2</sub>O , that's 5m H<sub>2</sub>O

#### 2. Part Number Selection Table:

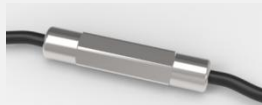
|                            |                                                                                                                                                                                                                                                                                                    |           |          |          |           |            |           |          |          |            |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|-----------|------------|-----------|----------|----------|------------|
| <b>604</b>                 | <b>A</b>                                                                                                                                                                                                                                                                                           | <b>19</b> | <b>H</b> | <b>G</b> | <b>E5</b> | <b>S11</b> | <b>CW</b> | <b>N</b> | <b>1</b> | <b>002</b> |
| Selection Type             | (Type A)                                                                                                                                                                                                                                                                                           |           |          |          |           |            |           |          |          |            |
| Range                      | Range reference to range selection table code                                                                                                                                                                                                                                                      |           |          |          |           |            |           |          |          |            |
| Pressure & Level Units     | H=m H <sub>2</sub> O (Min: 0.5 mH <sub>2</sub> O; Max:500 mH <sub>2</sub> O )<br>B=bar (Min: 0.05bar Max: 50bar)<br>P=Psi (Min: 1Psi; Max: 725Psi)<br>K= KPa (Min: 5 KPa; Max: 5000 KPa)<br>I= inWC (Min: 20 inWC; Max: 20000 inWC )<br>MB= mbar (Min: 50 mbar Max: 50000 mbar)                    |           |          |          |           |            |           |          |          |            |
| Pressure type              | G=Gauge/Relative pressure type (universal)<br>A=Absolute pressure (customized)                                                                                                                                                                                                                     |           |          |          |           |            |           |          |          |            |
| Signal Output              | E5=4-20 mA   E6=0-5 V   E7=0-10 V<br>E21=0.5-4.5 V non-ratiometric (default)<br>E8= 0.5-4.5 V ratiometric (by customized)<br>E11=RS485 (MODBUS)   E60=Dual RS485 (P/L+T)<br>E16=SDI-12   E22=Dual 4-20mA(P/L+T)<br>E0=1-5V   X= By Customized                                                      |           |          |          |           |            |           |          |          |            |
| Power Supply               | S6=5 V DC   S5=12 V DC   S11=7-30 V DC<br>S12=8-30 V DC   S62=3.6-5 V DC   S17=10-30 V DC<br>S43=13-30 V DC   X= By customized                                                                                                                                                                     |           |          |          |           |            |           |          |          |            |
| Measuring Medium           | CW= Water<br>HW= Max 100 °C geothermal water                                                                                                                                                                                                                                                       |           |          |          |           |            |           |          |          |            |
| Others Function (Optional) | N= Standard Type   AW=Additional weight<br>T1=with temperature sensor (4-20mA)   T2=with temperature sensor (RS485)<br>TAP =Titanium alloy process materials (high cost!)<br>ANC= Anti-corrosion type (for lower than 10 m level range situation)<br>10=1/2"NPT male electronic connector mounting |           |          |          |           |            |           |          |          |            |
| Accuracy                   | 1=0.5%F.S (Typical)   2=0.25%F.S (optional)   3=0.1%F.S (by customized)                                                                                                                                                                                                                            |           |          |          |           |            |           |          |          |            |
| Cable length               | 001= Cable 1 m   002= Cable 2 m   003= Cable 3 m   X= By customized                                                                                                                                                                                                                                |           |          |          |           |            |           |          |          |            |

Example of a complete PN: 604A19HGE5S11CWN1002

(Model: HPT604A, level range 0-5m, gauge type, 4-20 mA, 7-30 V DC, measuring water, standard type, 0.5%F.S accuracy with 2 meters cable)

### Accessories

(Notes: Please purchase separately. For the price of accessories, please contact our sales.)

|                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                             | Order number |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|    | <b>Liquid level display control device</b><br>With all kinds of liquid level sensor, measurement according to liquid level, and according to the setting of the container structure and size and the density of liquid, calculation, display liquid volume or quality.                                                                                                                  | 0008         |
|    | <b>Locking flange</b><br>For locking cables, made of aluminum alloy                                                                                                                                                                                                                                                                                                                     | 0029         |
|     | <b>IP68 rated deep water level cable extender</b><br>Mainly used to extend the cable of deep water level transmitter. Users can rewire it locally. It can work continuously for more than 10 years 500 meters underwater, and the safe tensile strength of the cables at both ends can reach 200N                                                                                       | 0028         |
|     | <b>Desiccant drying cartridge</b><br>Desiccant Pack installed on Vented Transducer cable. The cartridge will have to be field replaced as site environment requires.                                                                                                                                                                                                                    | 0010         |
|  | <b>Terminal box</b><br>The terminal box, with IP67 ingress protection and watertight ventilation element, provides a moisture-free electrical termination for the submersible pressure transmitter. It should be mounted in dry environment or directly in the switch cabinet.                                                                                                          | 0003         |
|  | <b>Additional weight</b><br>The additional weight increases the dead weight of the submersible pressure transmitter. It simplifies the lowering into monitoring wells, narrow shafts and deep wells. It effectively reduces negative environmental influences on the measuring result from the measured medium (e.g. turbulent flow). Stainless steel, approx. 1.46kg, height (H) 70 mm | 0009         |
|  | <b>USB to RS485 converter</b>                                                                                                                                                                                                                                                                                                                                                           | 0005         |
|  | <b>Surge electrostatic protector</b><br>Anti-surge $\pm 2000V/\pm 4000V$ , anti-static 18KV, suitable for protecting 4-20 mA and RS485 circuits.                                                                                                                                                                                                                                        | 0014         |

### Ordering information

Model / Measuring range / Output signal / Temperature measurement / Cable material / Cable length / Case / Lightning protection / Accessories