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# P S - 1 0 0 s e r i e s

# Explosion-proof Transducer Operational Instruction

**ZHEJIANG MAIDE MACHINE CO.,LTD.**
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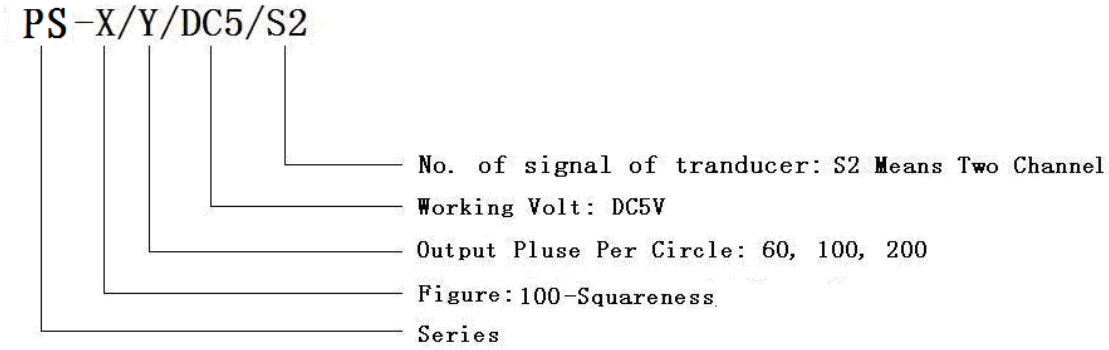
# 1. General description

**1.1.** PS-100 series transducer is designed and manufactured as explosion-proof transducer with Ex marking Exd Ⅱ BT4 according to *GB3836.1-2000 Electrical Apparatus for Explosive Gas Atmospheres--Part 1:General requirements, EN60079-0:2006 Electrical App*PS-100*aratus for Explosive Gas Atmospheres----Part 0:General requirements,GB3836.2-2000 Electrical Apparatus for Explosive Gas Atmospheres--Part 2: flameproof enclosure 'd' ,EN60079-1:2004 Electrical Apparatus for Explosive Gas Atmospheres--Part 1: flameproof enclosure 'd'.* They are used to automatic measure and automatic control of the dispenser and installed in the inside of the product, where is classified as Zone 1 or Zone 2, contained Group Ⅱ A or Group Ⅱ B gases, Temperature group T1～T4.

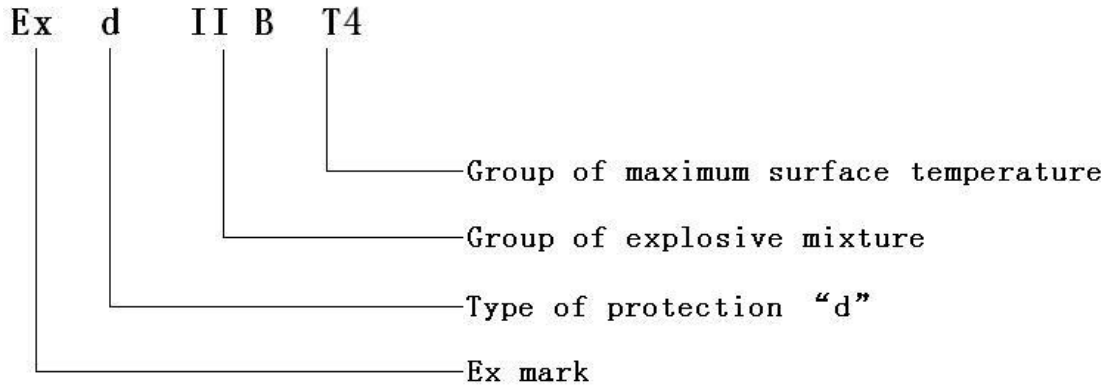
**1.2.** The technical documents, including drawings are examined and the samples are tested by CQST (China National Quality Supervision and Test Center for Explosion Protected Electrical Products), Certificate No.: CNEx 07.XXXX; and NEMKO, for ATEX certificate, Certificate No.: CE 0470 NEMKO XX ATEX XXXX.

# 2. Model and specifications of Ex mark

**2.1.** The significations of model

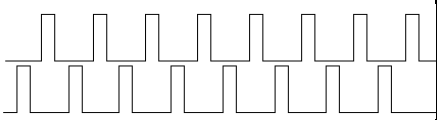
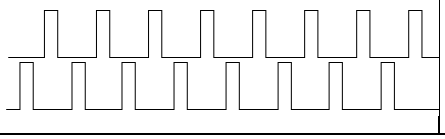



**2.2.** The significations of Ex marking




3.Specifications of the transducer

Working Voltage：DC 5V　Working Current：30mA

| Model | Volt. DC | Current mA | Pulse Count | Waveform | Signal |
|---|---|---|---|---|---|
| PS-100/60/DC5/S2 | 5V | 15 | 60 each/r |  | 2 line |
| PS-100/100/DC5/S2 | 5V | 15 | 100 each/r |  | 2 line |

Note: Based on the users’ requirements to change the parameters.

## 4. Principle and function

The transducer is composed of the photoelectricity assembly, the code dish assembly, transducer body, transducer cover and cable entry. The shaft of transducer link with code dish, which connect with gauge of fuel dispenser. While starting fueling, axis of rotation for the gauge to drive the transducer code dish to run, the code dish incises the photoelectricity coupler, which through cable to deliver the signal to the main board of fuel dispenser. Main board calculate the pulse to get the value.

Transducer is the vital point of the mechanical part and electronics part of the dispenser. The function is that converts and delivers, and transforms the mechanical energy to the electric power.

## 5.Explosion-proof Construction

**5.1.** While design the construction of transducer, we had considered the explosive mixture enter the inside of the transducer and exploded by some reasons, it can't bring the explosive mixture exploded outside the transducer, from the key part about the strength of enclosure, the joints clearance between the parts of enclosure, the length and the maximum surface temperature that limited of enclosure to ensure the flameproof function.

**5.2.** The explosion-proof transducer should be subject to, as the flameproof principle, The parameter of flameproof joints accord with the specifications of GB3836.2-2000/ EN60079-1: 2004, the surface of enclosure adopts the gray powder coasting, the structure drawing please see FIG1~3

**5.3.**. The enclosure of transducer was made of the cast aluminum alloy ZL107 which contain the Mg, is not more than 6% and the tensile strength is not less than 120 MPa, the material could be endure the impact test with 7J.

**5.4.** The flameproof enclosure of transducer, after finish machining, should be subjected to hydrostatic pressure test with 1.0 MPa for 10S～60S, which specified in the GB3836.2/EN60079-1.

**5.5.** When operate normally, the max. surface temperature of enclosure is not exceeding +130 ℃

**5.6.** The entry device of transducer adopt gland nut as the cable entry, the cable is permanent, and the external cable obligate length not less than less than 1m.

**5.7.** Transducer has internal earthing and external earthing.

**5.8.** Construction drawing as follows:

**PS-100：**

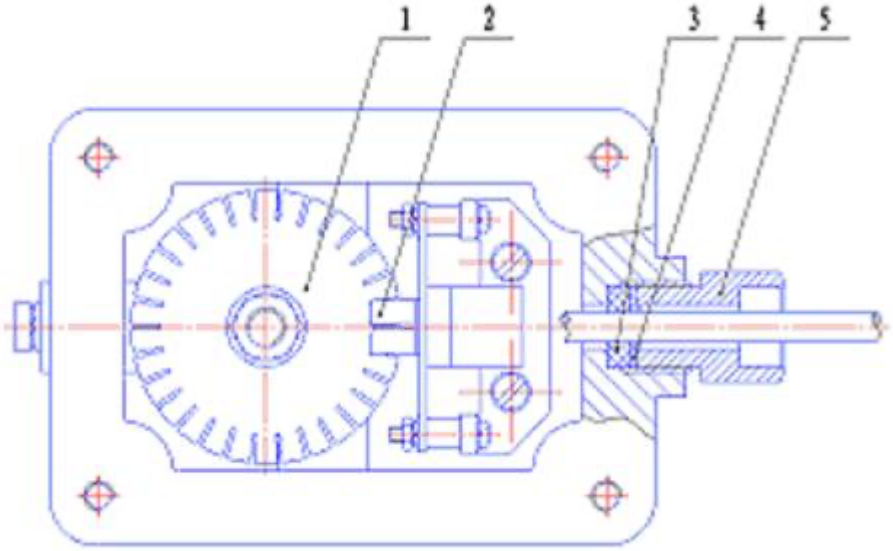



**FIG.1 Vertical View**

1. Code dish assembly 2. Photoelectricity assembly 3. Rubber sealing ring 4. Washer 5. Gland nut

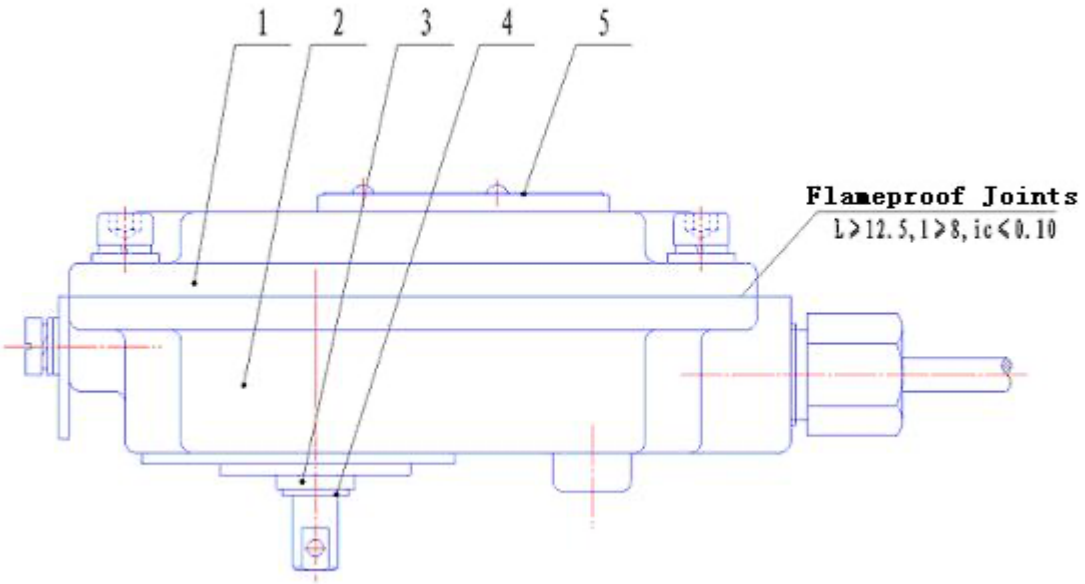



**FIG.2 Main View**

**1. Transducer cover 2. Transducer body 3. Copper sheath 4. Copper washer 5.Nameplate**

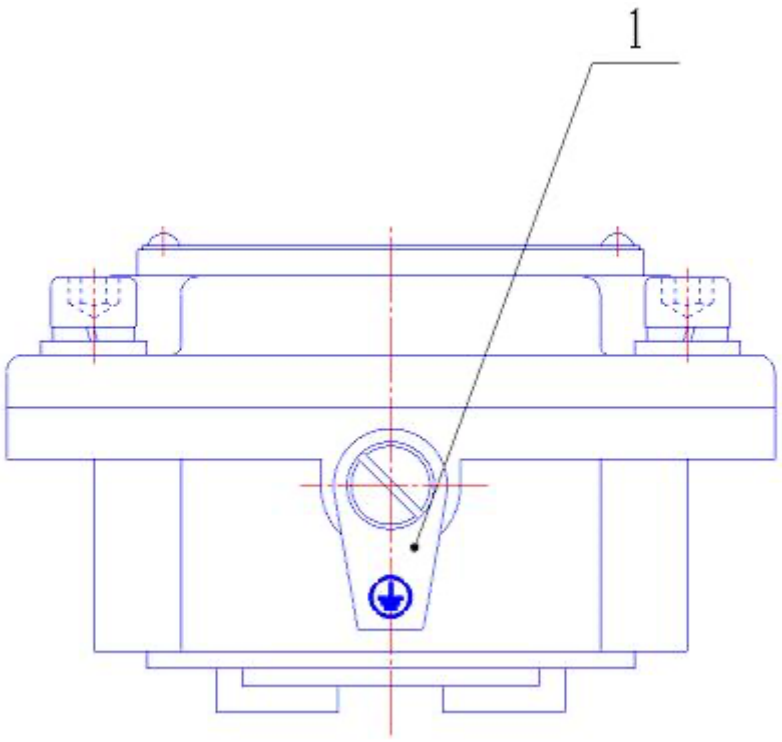



**FIG.3 Left View**

**1．Earthing Marking Plate**

## 6. Installation ,operation and Maintenance

6.1. Before installations, check the following items one by one, if any fault, the product is not allowed to put into service.

**a.** Ex marking and Cert. No.;

**b.** Ex marking should be suitable to the explosive mixture atmosphere.

**c.** No crack and defect, which may affect the explosion-proof property on the explosion-proof parts;

**6. 2.** The product could be credible used in the following circumstance

**6.2.1.** Altitude:≤ 2000 m

**6.2.2.** Ambient temperature:-20 ℃ ~+60 ℃

**6.2.3.** The relative humidity of the surroundings air :≤ 95%(+25 ℃ )

**6.2.4.** The transducer could endure the vibration and impact, the vibration:70 $m/s^2$(10~200 HZ, X, Y, Z each 2 h), the impact: 30 $m/s^2$(11 m, X, Y, Z each 2 h)

**6.3.** Installation explain

Please notice the code dish position and photoelectricity assembly can not be touched while installation , it will affect the whole explosion-proof encoder to work normally if they touched for long time and abrasion.

Make sure the two bearings of gauge should be fit together while installing , otherwise, the transducer can not transform the turning of gauge to electron signal normally.

Please notice the connection of power supply when the transducer connect with computer, otherwise, the control system of computer can't calculate the pulse normally.

**6. 4.** Installation and winding connect announcement

**6.4.1.** Observe the specification of national electric installation.

**6.4.2.** Output of transducer is signal line, so, don't wind it with power lines etc. or transmit in the same pipe, and can’t use it nearby the switchboard. The outgoing line of transducer is test line, it should be cabling according to the request of explosion, the free end of the cable should be taken into the inside of the apparatus or into the terminal box, which is suitable to the operational location.

**6.4.3.** Electrical definition:

The electrical connection should be installed based on the following ways:

Red: Power supply anode (Positive)

Yellow: Signal A

Blue: Signal B

Black: Power supply cathode (Negative)

Note: Signal A, the B could be change the direction

**6.5.** Internal earthing and external earthing of the transducer should be fitted reliably.

**6.6.** "DO NOT OPEN WHEN ENERGISED" while maintain.

**6.7.** Pay attention to protect the flameproof joints, strictly prohibit any knock and scrape while disassembly.

**6.8.** Maintenances explain

6.8.1 Replace the seal ring in time if it is aged which is embedded into cable entry to

ensure the explosion feature.

6.8.2 The transducer appears an abnormal situation while using, firstly, please check the connect line of transducer, if the condition is normally; please check the installation of code dish and photoelectricity assembly whether right or not. If everything is well, you can input the rated voltage and use oscillograph to measure the signal end A and B. whether have normal wave to output. If the problem can't settle according to the above methods, please send the transducer back and checked.

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