

JJG

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

JJG 882-2019

Pressure transmitters (English Translation)

Issued on: December 31, 2019

Implemented on: March 31, 2020

Issued by: State Administration for Market Regulation Verification
regulation of pressure transmitters Replacing JJG 882-

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1 Scope

This regulation applies to the initial verification, subsequent verification, in-use inspection of pressure (including positive pressure, negative pressure, differential pressure, absolute pressure) transmitters.

2 Normative references

This regulation refers to the following documents.

JJG 875 Digital pressure gauge

JJF 1008-2008 Pressure measurement terms and definitions

For dated reference documents, only the dated version applies to this regulation;

for undated references, the latest version (including all amendments) is applicable to this regulation.

3.1.1 Pressure transmitter

An instrument that can convert a pressure variable into a standardized signal that can be transmitted, the output signal of which has a given continuous function relationship (usually a linear function) and the pressure variable.

3.1.2 Intellectual pressure transmitter

A pressure transmitter with automatic temperature compensation, linearity, static pressure and other functions, as well as communication and self- diagnosis functions.

3.2 Unit of measurement

The legal unit of measurement used by the pressure transmitter is Pa (Pascal), or its decimal multiple units. kPa, MPa, etc.

4 Overview

Pressure transmitters are mainly used for the measurement and control of pressure parameters in industrial processes.

The working principle of the pressure transmitter is to convert the pressure signal into a usable output electrical signal according to a certain rule through some conversion elements (usually a pressure sensor); the signal is amplified

5.1 Indication error

The indication error of the pressure transmitter is divided according to the accuracy grade. It shall meet the maximum allowable error specified in Table 1.

5.2 Hysteresis

The hysteresis of the pressure transmitter shall meet the requirements of Table 1.

5.3 Effect of static pressure of differential pressure transmitter

The static pressure effect is only applicable to the differential pressure transmitter; it is measured by the change in the output lower limit; its value shall meet the requirements of Table 2.

6.1 Appearance

6.1.1

The marking on the pressure transmitter shall be complete and clear; meanwhile it shall have the following information. product name, exit-factory number, production year, model specifications, measurement range,

6.1.2 The high-pressure and low-pressure chambers of the differential pressure

transmitter shall be clearly marked.

6.1.3 The connection terminals of the pressure transmitter shall have corresponding marks.

6.2 Tightness

When the measuring part of the pressure transmitter is subjected to the upper limit of the measured pressure (the differential pressure transmitter is the rated working pressure), there shall be no leakage; the pressure value of the last 5 min shall not drop (or rise) beyond 2% of the upper limit of the measured pressure.

6.3 Insulation resistance

When the ambient temperature is 15°C ~ 35°C and the relative humidity is 45% ~ 75%, the insulation resistance between the terminals (including the housing) of the pressure transmitter shall not be less than 20 M Ω (the test voltage is in accordance with the enterprise standard).

6.4 Insulation strength

When the ambient temperature is 15°C ~ 35°C and the relative humidity is 45% ~ 75%, the test voltage of 50 Hz specified in Table 3 shall be applied between the terminals (including the housing) of the pressure transmitter. There shall be no breakdown and arcing after 1 min.

7 Measuring instrument control

The control of measuring instruments includes first verification, subsequent verification and in-use inspection.

7.1.1 Verification equipment

The standard instruments and supporting equipment required for verification can be selected according to the technical requirements of the pressure transmitter to be

inspected, referring to Table 4 to combine them into a complete set.

7.1.3 Other conditions

Power supply. For the AC-powered pressure transmitter, its voltage change does not exceed $\pm 1\%$ of the rated value; the frequency change does not exceed

$\pm 1\%$ of the rated value. For DC-powered pressure transmitter, its voltage change does not exceed $\pm 1\%$ of the rated value; the AC ripple shall meet the requirements of Table 4.

7.2 Verification items

The verification items for the first verification, subsequent verification and in-use inspection of the pressure transmitter are as shown in Table 5.

7.3.1 Visual inspection

Visual observation and power-on inspection.

7.3.2 Tightness inspection

Increase (or evacuate) the pressure steadily so that the pressure in the measuring chamber of the pressure transmitter reaches the upper limit of measurement (or vacuum at 90% of the local atmospheric pressure). Turn off the pressure source.

7.3.3.3 Select verification point

The selection of verification points shall be basically evenly distributed according to the range, generally it shall include no less than 5 points including the upper limit and the lower limit (or within 10% of the input range near it).

Pressure transmitters with accuracy grades of 0.1 and above shall have no less than 9 points. The zero point of the absolute pressure transmitter shall be as small as possible, generally not greater than 1% of the range.

7.3.3.4 Adjustments before verification

Before verification, use the method of changing the input pressure to adjust the output lower limit and upper limit of the pressure transmitter, to make it consistent with the theoretical lower limit and upper limit. Generally, it can be done by adjusting "zero point" and "full range".

7.3.6 Verification of insulation resistance

Disconnect the power supply of the pressure transmitter. Short-circuit the power terminal and output terminal, respectively. Use an insulation resistance meter to measure the