ATO

ATO-ZJ-AF Flange Sensor

Instruction Manual

I. Product introduction

In the mechanical transmission system, torque is one of the most important characteristic parameters of all kinds of machinery. Torque testing is an essential part of various mechanical product development, quality inspection, optimization control, working condition monitoring and fault diagnosis, which requires sensors. Torque sensor is used to detect the perception of torsional torque on different rotating or non rotating mechanical parts. It converts the physical change of torque into accurate electrical signal output. It has the characteristics of high reliability, fast frequency response, high precision and long service life.

Because the torque sensor can measure many kinds of speed, torque and mechanical power, it is widely used in the following aspects: it can be used in process and process industry; It can be used to detect the power and torque in the sewage treatment system; It can detect the output power and torque of rotating power equipment such as engine, motor and internal combustion engine; It can detect the power and torque of cars, railway locomotives, aircraft, ships, tractors and other machinery; It can be used to make viscometers; It can detect the power and torque of water pump, fan and torque wrench. Therefore, its use is almost everywhere.

ATO-ZJ-AF flange torque speed sensor is a new type of torque sensor designed for occasions with small axial installation space or high-speed rotation. Because this type of sensor does not use bearings, it can effectively avoid the measurement error caused by bearing heating. The input and output ends of the sensor adopt flange connection (one end must be rigidly connected).

II. Product features

1) The power supply and signal transmission are non-contact.

2) No bearing, wide application range of speed.

3) The connection with power shaft and load shaft is rigid connection.

4) The installation and debugging are convenient. The radial runout of the user's shaft is less than 0.2mm and the axial runout is less than 0.5mm.

III. Technical parameters

Torque accuracy: 0.2%F.S Power supply voltage: DC15V, DC24V optional

Overload capacity: 150% F.S Sensitivity:1±0.2mv/v

Sensor power consumption: 4W Nonlinear:≤±0.2%F·S

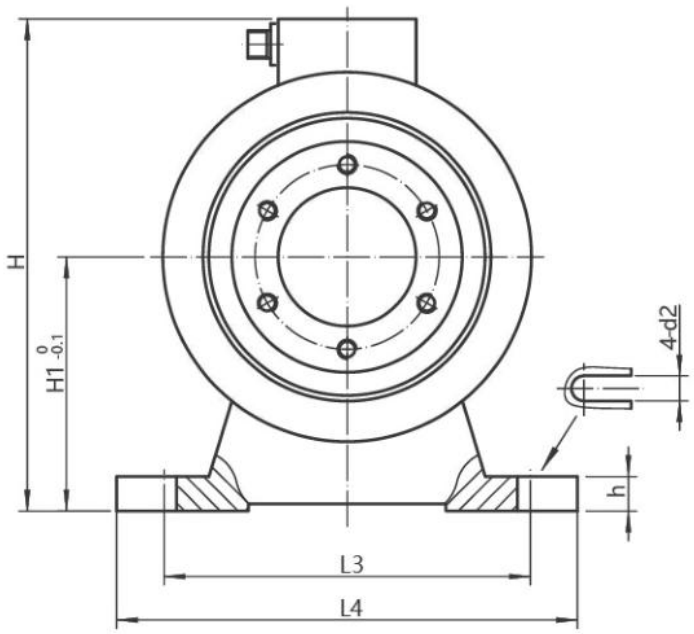
Repeatability: ≤±0.2%F • S Lag: ≤±0.2%F • S

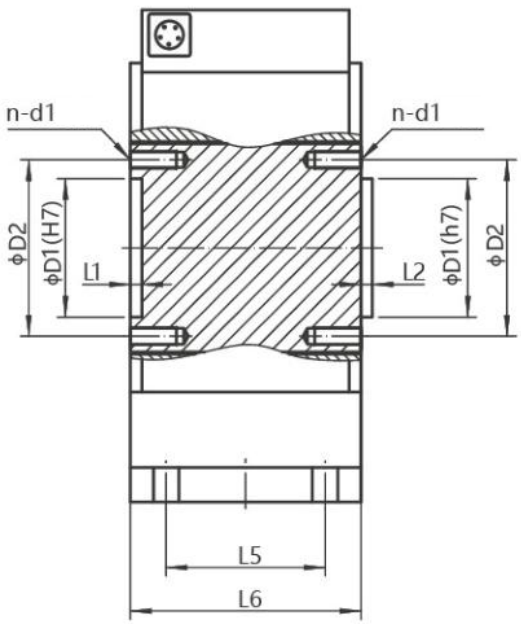
Output impedance: 1KΩ±3Ω Insulation impedance: > 500MΩ

Working environment temperature: - 20 ℃ - 60 ℃ Relative humidity: ≤ 90% RH

Output signal: 10±5KHZ (optional 4-20mA, 0-5V, 0-10V signal output)

IV. Overall dimensions





Model	Range: N.m	H	H1	D1	D2	n-d1x	L1	L2	L3	L4	L5	L6	d2	h
ZJ-5/10/20/50AF	5/10/20/50	185	100	52	66	6-M6x10	2	2	115	135	45	80	7	12
ZJ-100AF	100	185	100	52	66	6-M6x10	2	2	115	135	45	80	7	12
ZJ-200AF	200	195	105	52	66	6-M8x12	3	3	125	150	60	90	7	12
ZJ-500AF	500	205	105	55	70	8-M8x12	3	3	130	160	60	90	9	15
ZJ-1000AF	1000	213	110	60	80	8-M10x16	5	5	160	200	66	88	9	15
ZJ-2000AF	2000	213	110	60	80	8-M10x16	5	5	160	200	66	88	9	15
ZJ-5000AF	5000	286	150	80	136	8-M16x25	5	5	210	250	80	120	17	20

Range: 10000 - 2000K N.m Parameters: Please call for more details. Call for 10000~2000K N.m parameters

V. Installation method

1) Process the connecting flange according to the sensor stop diameter and hole distance (you can check the catalogue or order drawing) and wait for installation.

2) Measure the center height of power end and load end, and ensure that the center height of power end, sensor and load end is consistent through processing cushion block support.

3) First fix the power end on the installation table, then disassemble the fixed end cover at one end of the sensor, connect the sensor to the power end (it must be rigidly connected), fix and lock it with screws, and the force of each screw is consistent (torque wrench can be used if possible).

4) Then disassemble the fixed end cover at the other end of the sensor, connect the load end (elastic connection is also OK), adjust the coaxiality and center height of power equipment, sensor and load respectively, and then fix it, which shall be fastened reliably without loosening. When fixing the sensor housing, ensure that the end face of the shaft is flush with the end face of the housing, and the gap between the middle rotating flange and the housing is roughly uniform up, down, left and right.

5) The installation table shall have a certain strength to ensure the stability of installation and avoid excessive vibration, otherwise the measurement data may be unstable and the measurement accuracy may be affected.

6) Whether the sensor is installed horizontally or vertically, the sensor is not allowed to bear excessive axial force, otherwise it will affect the use of the sensor and even cause damage to the sensor.

7) Make sure the wiring is correct before the sensor is powered on and tested. It is forbidden to plug and unplug the aviation connector when it is live.

8) Please carefully read the attached instruction manual before installation.

VI. Electrical connection

1) General information

In order to connect the torque speed sensor with the amplifier, we recommend using the low capacitance measurement shielded cable of Lanmec Technology.

When using cables, ensure that they are correctly connected with minimum contact resistance and good insulation. All plug connections or swivel nuts must be fully tightened.

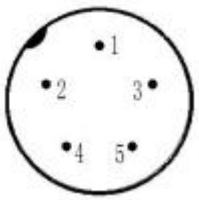
Do not route the measuring cable parallel to the power line and the control circuit. If it cannot be avoided (e.g. cable tray), keep a minimum distance of 50 cm and drag the measuring cable into the steel pipe at the same time.

Avoid sources of transformers, motors, contactors, thyristor controls and similar stray magnetic fields.

2) Connector plug

The sensor is equipped with a permanently mounted housing plug.

It is connected to the electronic equipment that can be used for measurement through the sensor connection cable. Refer to the following table for pin assignment of sensor connecting cable:



1pin: +15V
2pin: Ground
3pin: -15V
4pin: Speed signal output
5pin: Torque signal output

3) Extension cable

Extension cables must be shielded and low capacitance. We recommend using Lanmec cables because these cables can meet these requirements.

With regard to cable extension, the key is to ensure the correct connection with minimum contact resistance and good insulation. This is why all connections should be welded or at least equipped with safe and firm joints or threaded connections.

The measuring cable shall not be parallel to the power line and control circuit (e.g. do not share cable tray). If this is not possible, protect the measuring cable with a rigid conduit and keep it as far away from other cables as possible. Avoid deviation from transformers, motors and contact switches.

4) Shielding design

In case of interference due to potential difference (compensation current), please set the voltage to zero, the housing must be disconnected from the amplifier, and a potential equalization line must be established between the sensor housing and the amplifier housing(copper conductor, conductor section 10㎜²).

VII. Signal output and signal acquisition

1) Basic form of signal output

Torque square wave signal and speed pulse signal.

Voltage analog signal output or current analog signal output can be made according to the needs of users.

2)Torque signal processing form

The frequency signal output by the torque speed sensor is sent to the frequency meter or digital meter to directly read the frequency signal or voltage and current signal proportional to the torque.

The torque and frequency signals of torque speed sensor are sent to the secondary instrument of single chip microcomputer to directly display the real-time torque value, speed and output power value and RS232 communication signal.

The frequency signals of torque and speed are directly sent to the computer or PLD for processing.