

HCNJ-103

微量程扭矩传感器

HCNJ-103 MICRO RANGE TORQUE SENSOR

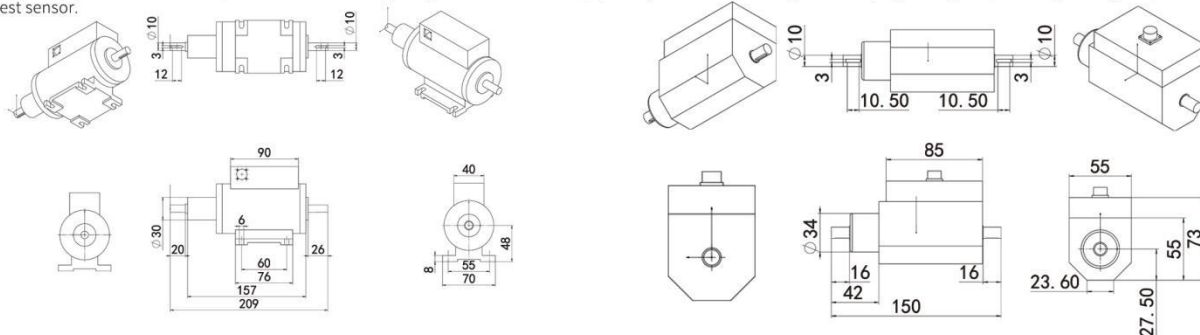


型号: HCNJ-103	电源: $\pm 15\text{VDC}$
量程: $0\pm 1\text{N.m}$	扭矩输出: $5\sim 15\text{KHz}$
转速: $0\sim 3000\text{转/分}$	转速输出: 60脉冲/转
编号: 21N02001	日期: 2023年8月

产品介绍 / Product introduction

本传感器是为了克服传感器旋转时的摩擦力矩而特殊设计的一种传感器。是在应变桥专有技术基础上研制开发的，本传感器为通用型传感器，适用于动力设备与负载之间有足够的距离，需用联轴器将传感器安装于动力设备与负载之间，适合测量范围在 $0.01\sim 4\text{Nm}$ 之间，专门用于测量瓶盖拧紧测试、螺丝拧紧测试、小电机测试的传感器。

The sensor is specially designed to overcome the friction torque when the sensor is rotating. Is developed on the basis of strain bridge proprietary technology, the sensor is a general purpose sensor, suitable for power equipment and load between the sufficient distance, the need to use a coupling to install the sensor between the power equipment and the load, suitable for measuring range between $0.01\sim 4\text{Nm}$, specially used for measuring bottle cap tightening test, screw tightening test, small motor test sensor.



底座固定款(0.01-4Nm)

壳体固定款(0.01-4Nm)

量程范围(Scale range): $0.01\sim 4\text{N.m}$ (可根据用户尺寸量身定制) (Can be customized according to user size)

安装方式/ Installation mode

- 1、HCNJ-103 扭矩传感器分 A、B 端，B 端为测量端，A 端为辅助端。B 端通过联轴器与被测设备相联接，安装时一定要避免附加弯矩；
- 2、接线必须正确；
- 3、 $\pm 15\text{V}$ 的范围：不得低于 $\pm 14.5\text{V}$ 不得高于 $\pm 15.5\text{V}$ ；
- 4、信号线输出不得对地，对电源短路，输出电流不大于 10mA
- 5、屏蔽电缆线的屏蔽层必须与 $\pm 15\text{V}$ 电源的公共端（电源地）连接
- 6、本传感器弹性体非常精小，严格限制过载，过载范围 $\leq 20\%$ ，否则极易损坏
- 7、使用中如有疑问请及时与本公司联系，保修期之内不得自行拆卸。

- 1, HCNJ-103 torque sensor is divided into a.b end, b end is the measurement end, a end is the auxiliary end. The b end is connected with the device under test through a coupling. Additional bending moments must be avoided during installation;
- 2, the wiring must be correct;
- 3, $\pm 15\text{V}$ range: not less than $\pm 14.5\text{V}$ not higher than $\pm 15.5\text{V}$;
- 4, the signal line output must not be to the ground, short circuit to the power supply, the output current is not more than 10mA
- 5, the shielding layer of the shielding cable must be connected with the common end of the $\pm 15\text{V}$ power supply (power supply)
- 6, the sensor elastomer is very small, strictly limit overload, overload range $\leq 20\%$, otherwise it is easy to damage
- 7, if you have any questions in use, please contact the company in time, the warranty period shall not be disassembled.

HCNJ-104

超小型扭矩传感器

HCNJ-104 ULTRA-COMPACT TORQUE SENSOR

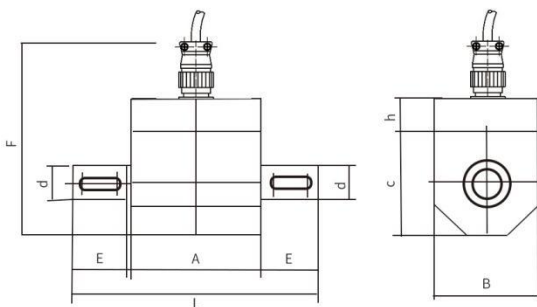


型号: HCNJ-104	电源: $\pm 15\text{VDC}$
量程: $0\pm 50\text{N.m}$	扭矩输出: 5-15KHz
转速: 0-3000转/分	转速输出: 无
编号: 21N02006	日期: 2023年8月

产品介绍 / Product introduction

本传感器是我公司在应变桥专有技术基础上研制开发的新产品，适用于各类要求体积小、转速高的扭矩测量场合。本产品尺寸小、使用安装简便、信号抗干扰能力强，是替代进口扭矩传感器的理想产品。

This sensor is a new product developed by our company on the basis of the proprietary technology of strain bridge, which is suitable for all kinds of torque measurement occasions requiring small volume and high speed. This product is small in size, easy to use and install, strong signal anti-interference ability, and is an ideal product to replace imported torque sensors.



单键 :A single bond 双键: Double bond

注: 5-100Nm标准产品不带测转速, 如果带测转速L长度增加15mm

N·M	d	L	E	A	F	C	B	H	重量	键 (长×宽×高) Key (length×width×height)	备注
5-100	18	123	25	70	98	55	55	18	1KG	26×6×6	单键
<100-300	25	138	30	75	128	85	68	18	1.5KG	30×8×7	单键
>300-500	32	155	30	91	136	93	75	18	2KG	38×8×10	单键

量程范围(Scale range): 5~5000N.m (可根据用户尺寸量身定制) (Can be customized according to user size)

单位 unit: mm

安装方式/ Installation mode

1、该系列传感器无安装固定底座，需要用弹簧、拉绳或固定卡子将壳体固定，以避免壳体和信号输出导线随轴旋转。既可水平安装也可垂直安装。

2、其它安装、电气连接方法及注意事项按标准传感器进行。

1. This series of sensors does not have a fixed base, and the shell needs to be fixed with a spring, a rope or a fixed clip to avoid the shell and signal output wire rotating with the shaft. It can be installed horizontally or vertically.

2. Other installation, electrical connection methods and precautions shall be carried out according to standard sensors.

HCNJ-105

万向轴扭矩传感器

HCNJ-105 CARDAN SHAFT TORQUE SENSOR



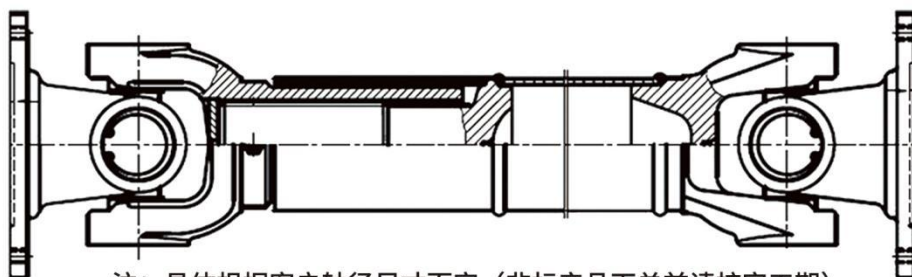
型号: HCNJ-105	电源: $\pm 15\text{VDC}$
量程: $0 \pm 15000\text{N.m}$	扭矩输出: 5-15KHz
转速: 0-500转/分	转速输出: 1脉冲/转
编号: 20N0407	日期: 2023年8月



产品介绍 / Product introduction

万向轴扭矩传感器为本质防爆型, 主要为解决油田钻井过程中因扭矩过大造成钻杆断裂, 转盘扭矩测量不准等因素经常影响钻井生产, 直接在万向轴上制作传感器, 配上控制系统, 实时监测钻井中钻机的工作情况, 万向轴传感器从推出以来, 因其测量精度高, 安装使用方便和长期稳定性好而受到油田用户的欢迎。

The gimbal torque sensor is a safety and explosion-proof type, mainly to solve the problem of drilling pipe fracture caused by excessive torque in the process of oilfield drilling, and the inaccurate measurement of rotary torque and other factors often affect drilling production, directly in the gimbal shaft. The sensor is equipped with a control system to monitor the work of the drilling rig in real time. Since its introduction, the cardan shaft sensor has been welcomed by oil field users because of its high measurement accuracy, easy installation and long-term stability.



注: 具体根据客户轴径尺寸而定 (非标产品下单前请核实工期)

量程范围(Scale range): 5~2000KN.m (可根据用户尺寸量身定制) (Can be customized according to user size)

产品特点 / Product characteristics

- 1、在钻井过程中应用扭矩传感器, 通过对扭矩参数的解释, 能正确指导工程施工, 提高录井技术和资料解释水平, 有利于快速发油气显示, 能够提高钻井效率, 确保安全钻井;
- 2、测量位置和方法能完全反映转盘扭矩的实际情况;
- 3、工艺成熟、测量精度高、长期稳定性好;
- 4、根据用户的具体要求设计制作;
- 5、石油钻井、录井、煤矿开采; 农业机械传动系统扭矩检测; 车辆、船舶传动系统扭矩检测。

- 1, the application of torque sensor in the drilling process, through the interpretation of torque parameters, can correctly guide the engineering construction, improve logging technology and The level of data interpretation is conducive to rapid oil and gas production, which can improve the drilling efficiency and ensure the safety of drilling;
2. The measuring position and method can fully reflect the actual situation of the rotary table torque;
- 3, mature process, high measurement accuracy, good long-term stability;
4. Design and manufacture according to the specific requirements of users;
5. Oil drilling, logging, coal mining; Agricultural machinery transmission system torque detection; Torque detection of vehicle and ship transmission system.

HCNJ-106

盘式扭矩传感器

HCNJ-106 DISK TORQUE SENSOR

HCNJSeries
dynamic torque
sensors

Partial non-standard
torque sensor

HCNJSeries of
static torque
sensors

To simulate
the load

Test bench
system

Sensor supporting
products

Some typical
customers



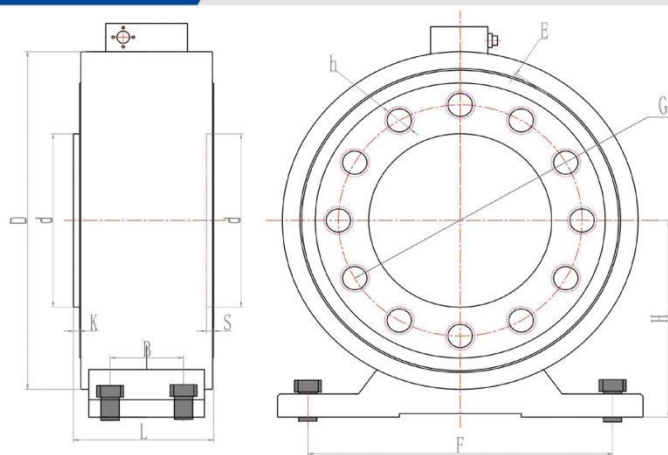
型号: HCNJ-106 量程: 300N.m
精度: 0.3%F.S 信号输出: 频率
供电: $\pm 15\text{VDC}$ 编号: 620101279

产品介绍 / Product introduction

盘式扭矩传感器是我公司在应变桥专有的技术上研制开发的专为轴向空间比较短的需要测量扭矩转速的场合设计的一种新型扭矩传感器，从而给广大用户带来极大的方便。

Disk torque sensor is a new type of torque sensor developed by our company on the special technology of strain bridge, which is specially designed for the occasion of measuring torque speed with relatively short axial space, thus bringing great convenience to the majority of users.

尺寸对照表 / Size comparison table



单位 unit: mm

Nm	D	d	K	S	L	G	H	h	E	F	B	备注 note
20	$\Phi 124$	$\Phi 50$	3	5	71	60	72	M6X6	1.5	120	40	
50-500	$\Phi 144$	$\Phi 50$	3	5	70	70	82	M10X6	1.5	130	40	
1K-3K	$\Phi 180$	$\Phi 75$	3	5	83	105	108	M12X8	1.5	140	37.5	
5K-20K	$\Phi 215$	$\Phi 80$	5	6	115	130	132	M18X10	1.5	190	60	
30K	$\Phi 292$	$\Phi 150$	5	6	115	200	170	M24X12	1.5	250	60	
40K-50K	$\Phi 478$	$\Phi 220$	5	5	133	362	297	M36X16	2	370	91	

量程范围(Scale range): 5~1000KN.m (可根据用户尺寸量身定制) (Can be customized according to user size)

安装方式/ Installation mode

- HCNJ-106 盘式扭矩传感器由定子（静止外壳）和转子（旋转盘）两部分组成；
 - 将转子的两端通过法兰联轴器分别与动力或负载联接；
 - 静止外壳固定在基座上，调整间隙，保证静止外壳与旋转盘之间不可接触！径向跳动不得大于 0.5mm。
1. HCNJ-106 disc torque sensor consists of stator (static housing) and rotor (rotating disk);
2. The two ends of the rotor are connected with power or load respectively through a flange coupling;
3. The static shell is fixed on the base, adjust the clearance, ensure that the static shell and the rotating disk is not in contact! Radial runout shall not be greater than 0.5mm.

HCNJ-101C

端面单法兰动态扭矩传感器

HCNJ-101C END FACE SINGLE FLANGE DYNAMIC TORQUE SENSOR



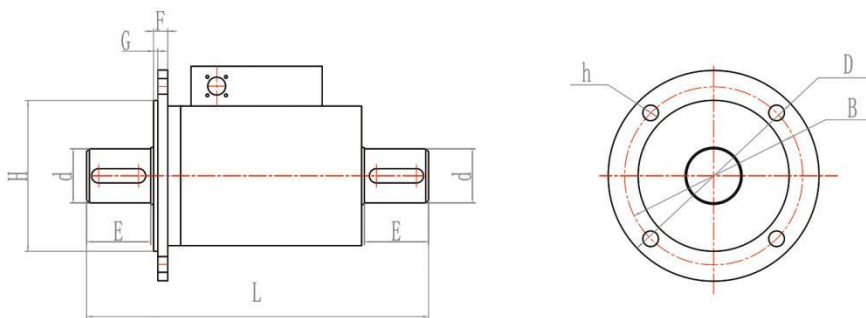
型号: HCNJ-101C	电源: $\pm 15\text{VDC}$
量程: $0\pm 5\text{N.m}$	扭矩输出: $5\sim 15\text{KHz}$
转速: $0\sim 300\text{转/分}$	转速输出: 60脉冲/转
编号: 18N06339	日期: 2023年8月

产品介绍 / Product introduction

本系列轴向安装扭矩传感器是我公司在标准款的基础上加装法兰，针对对搅拌行业或其它特殊需要垂直安装和不方便底座固定的场合设计的，可以做轴向端面单法兰或双法兰，可以是圆形法兰，也可以做成方形法兰。

This series of axial installation torque sensor is our company in the standard model on the basis of flange, especially for mixing industry or other special needs of vertical installation and inconvenient base fixed occasions designed, can be made into axial end single flange or double flange, can be circular flange, can also be made into a square flange.

尺寸对照表 / Size comparison table



单键 Single bond 双键 Double bond

单位 unit: mm

Nm	D	d	L	B		h	B	G	F	键 (长 x 宽 X 高) Key (L x W X H)	备注 remark
5-100	$\phi 138$	$\phi 18$	188	28	$\phi 78$	$\phi 9 \times 4$	120	3	11	24X6X3.5	单键
200	$\phi 158$	$\phi 28$	207	35	$\phi 100$	$\phi 10 \times 4$	138	3	15	30X8X4	单键
300-500	$\phi 148$	$\phi 38$	240	45	$\phi 106$	$\phi 11 \times 4$	125	3	10	38X10X5	双键
1000	$\phi 180$	$\phi 48$	275	60	$\phi 130$	$\phi 11 \times 6$	160	3	13	50X14X5.5	双键
2000	$\phi 180$	$\phi 55$	298	70	$\phi 124$	$\phi 12 \times 6$	151	3	15	60X16X6	双键
3K-5K	$\phi 200$	$\phi 75$	356	100	$\phi 120$	$\phi 14 \times 6$	166	3	16	93X20X7.5	双键
10K-20K	$\phi 258$	$\phi 98$	388	118	$\phi 158$	$\phi 14 \times 8$	224	3	17	108X28X12	双键

量程范围(Scale range): $5\sim 2000\text{KN.m}$ (可根据用户尺寸量身定制) (Can be customized according to user size)

HCNJ-F101

防爆扭矩传感器

HCNJ-F101 EXPLOSION-PROOF TORQUE SENSOR



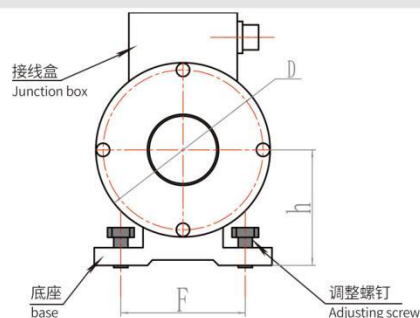
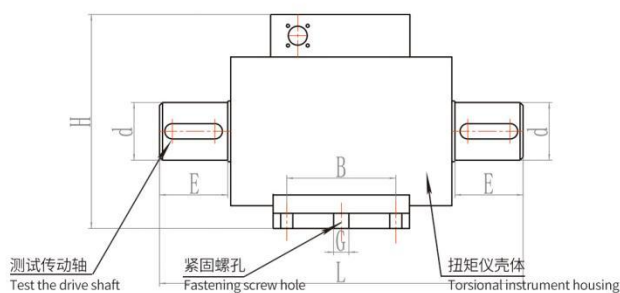
型号: HCNJ-F101	
额定电压: 24VDC	输出信号: 4~20mA
防护等级: IP 66	测量精度: 0.5%
防爆合格证号: CE20.1424	防爆标志: Ex d IIB T4 Gb
日期: 2023年8月	产品编号: 20N06001

产品介绍 / Product introduction

HCNJ-F101防爆扭矩传感器是在标准扭矩传感器的基础上做防爆处理, 防爆标准EXD IIBT4GB, 是一种测量各种扭矩、转速及机械功率的精密测量仪器。主要用于: 需要防爆的石油、天然气、煤矿、化工、军工、制药、钻井机械、电机、发动机、内燃机、航空航天、船舶等危险系数比较高并需要防爆的扭矩转速测量场合。

HCNJ-F101 explosion-proof torque sensor is based on the standard torque sensor to do explosion-proof treatment, explosion-proof standard EXD IIBT4GB, is a kind of measurement of various torque, speed and mechanical power precision measuring instrument. Mainly used: need explosion-proof oil, natural gas, coal mine, chemical industry, military, pharmaceutical, drilling machinery, motor, engine, internal combustion engine, aerospace, ships and other dangerous coefficient is relatively high and need explosion-proof torque speed measurement occasions.

尺寸对照表 / Size comparison table



单键: A single bond 双键: Double bond

单位 unit: mm

Nm	D	d	L	E	H	h	B	G	F	键 (长×宽×高) Bond (length x width x height)	备注 note
5-100	∅78	∅18	188	28	121	54	72	10	80	24X6X3.5	单键
200	∅88	∅28	207	35	132	60	72	10	80	30X8X4	单键
300-500	∅98	∅38	240	45	143	65	72	10	80	38X10X5	双键
1000	∅108	∅48	275	60	152	70	69	15	90	50X14X5.5	双键
2000	∅118	∅55	298	70	166.5	75	69	15	90	60X16X6	双键
3K-5K	∅143	∅75	356	100	189.5	90	68	15	146	93X20X7.5	双键
10K-20K	∅158	∅98	388	118	216	109	80	15	170	108X28X12	双键
30K	∅205	∅125	395	110	275	140	77	15	170	102 X32X12	双键
50K	∅215	∅140	451	135	275	137	79	15	170	123 X36X12	双键

量程范围(Scale range): 5~2000KN.m (可根据用户尺寸量身定制) (Can be customized according to user size)

HCNJSeries
dynamic torque
sensors

Partial non-standard
torque sensor

HCNJSeries of
static torque
sensors

To simulate
the load

Test bench
system

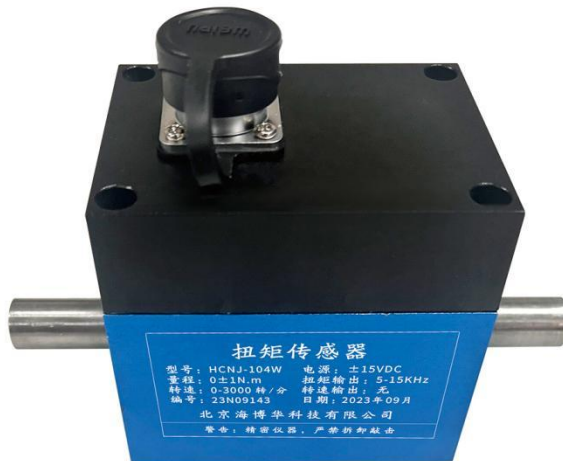
Sensor supporting
products

Some typical
customers

HCNJ-104W

超小型扭矩传感器

HCNJ-104W ULTRA-COMPACT TORQUE SENSOR



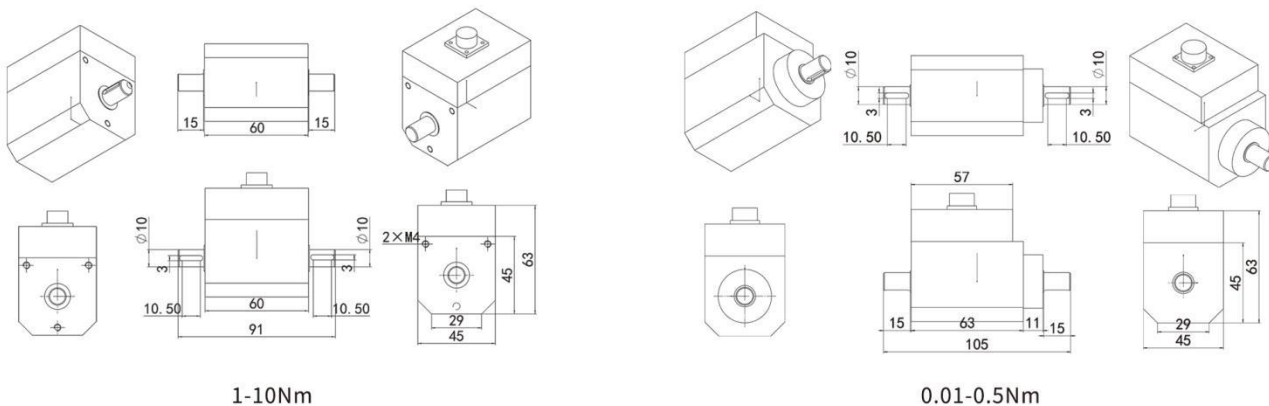
型号: HCNJ-104W	电源: $\pm 15\text{VDC}$
量程: $0 \pm 1\text{N.m}$	扭矩输出: 5-15KHz
转速: 0-3000转/分	转速输出: 无
编号: 23N09143	日期: 2023年09月

扭矩传感器
型号: HCNJ-104W 电源: $\pm 15\text{VDC}$
量程: $0 \pm 1\text{N.m}$ 扭矩输出: 5-15KHz
转速: 0-3000 转/分 转速输出: 无
编号: 23N09143 日期: 2023年09月
北京海博华科技有限公司
警告: 精密仪器, 严禁拆卸警告

产品介绍 / Product introduction

本传感器是我公司在应变桥专有技术基础上研制开发的新产品, 适用于各类要求体积小、转速高的扭矩测量场合。本产品尺寸小、使用安装简便、信号抗干扰能力强, 是替代进口扭矩传感器的理想产品。

This sensor is a new product developed by our company on the basis of strain bridge proprietary technology, which is suitable for all kinds of torque measurement occasions requiring small volume and high speed. This product size is small, easy to use and install, signal anti-interference ability is strong, is an ideal product to replace the imported torque sensor.



如需测转速L总长加长20cm

量程范围(Scale range): 0.01~10N.m (可根据用户尺寸量身定制) (Can be customized according to user size)

产品特点 / Product characteristics

- 1、采用非接触式原理;
 - 2、适合远距离传输;
 - 3、尺寸小、重量轻, 易于安装;
 - 4、不需要反复调零即可以连续测量正反扭矩;
 - 5、检测精度高, 稳定性好, 抗干扰性强, 可任意位置任意方向安装。
- 1、Non-contact principle;
 - 2、Suitable for long-distance transmission;
 - 3、Small size, light weight, easy to install;
 - 4、The forward and reverse torque can be measured continuously without repeated zero adjustment;
 - 5、High detection accuracy, good stability, strong anti-interference, can be installed in any position in any direction.

HCNJ-101J

扭矩角度传感器

HCNJ-104W ULTRA-COMPACT TORQUE SENSOR



型号: HCNJ-101J 电源: $\pm 24\text{VDC}$
量程: $0\sim 50\text{N.m}$ 扭矩输出: 5-15KHz
转速: 0-5000转/分 转速输出: 无
编号: 23N03060 日期: 2023年03月

产品介绍 / Product introduction

HCNJ-101J 扭矩角度传感器是在应变桥专有技术基础上研制开发的, 专门用于测量扭矩、角度参数的传感器。此款传感器是 HCNJ-101 标准款的基础上加装角度编码器, 角度输出 360-10000 线可选 (可根据客户要求定输出方式), 从而使角度测量更精确, 方便客户采集。

HCNJ-101J torque Angle sensor is developed on the basis of strain bridge proprietary technology, which is specially used for measuring torque and Angle parameters. This sensor is based on the HCNJ-101 standard model with Angle encoder, Angle output 360-10000 line optional (can be determined according to customer requirements), so that the Angle measurement is more accurate, convenient for customers to collect.

技术参数 / Technical parameter

指标名称 Index name	扭矩参数规格 Torque parameter specification	角度参数规格 Angle parameter specification
量程 range	5N.m、10N.m、20N.m、50N.m、100N.m、200N.m、500N.m、1KN.m、2KN.m、5KN.m、10KN.m、20KN.m、30KN.m、50KN.m、100KN.m、200KN.m、300KN.m、500KN.m	
供电电源 Power supply	默认 $\pm 15\text{VDC}$ (适用频率信号输出) 可选 24VDC 、 $\pm 12\text{VDC}$	DC 5-30V
消耗电流 Current consumption	最大300mA Max. 300mA	最大100mA Max. 100mA
扭矩信号 Torque signal	5-15KHz (幅值12V, 零点10KHz)、输出标准电流4-20mA, 电压1-5V、0-5V、1-10V、0-10V、 $\pm 5\text{V}$ 、 $\pm 10\text{V}$ 或通讯 RS485 (可选) 5-15KHz (amplitude 12V, zero 10KHz), output standard current 4-20mA, voltage 1-5V, 0-5V, 1-10V, 0-10V, $\pm 5\text{V}$, $\pm 10\text{V}$ or communication RS485 (optional)	输出信号: NPN、PNP、电压、互补、线性驱动器 Output signal: NPN, PNP, voltage, complementary, linear driver
转速量程 Speed range	0-3000转/分以内 Within 0-3000 RPM	允许最高转速: 6000转/分 Maximum allowable speed: 6000 RPM
转速信号 Speed signal	脉冲/旋转 (Pulse/rotation): 360、400、500、600、1000、1024、1200、1500、1800、2000、3600、4000、4090、10000 (可选) (optional)	
精度 precision	默认 $\pm 0.5\%$, ($\pm 0.25\%$ 、 $\pm 0.1\%$ 可选)	
年稳定性 Annual stability	0.3%/年 0.3%/year	
绝缘电阻 Insulation resistance	$\geq 200\text{M}\Omega$ (100VDC)	
环境温度 Ambient temperature	$-20\sim 60^{\circ}\text{C}$	$-10\sim 70^{\circ}\text{C}$
相对湿度 Relative humidity	0~90%RH	35~85%RH
过载能力 Overload capacity	150%	允许负载最大30mA The maximum allowable load is 30mA
频率响应 Frequency response	3ms	100kHz
引线长度 Lead length	默认5米 Default 5 m	0.5 m
接线定义 Connection definition	绿: 公共地、红: 电源正、蓝: 电源负、白: 转速输出、黄: 扭矩输出、银: 屏蔽 Green: public, red: power positive, blue: power negative, white: speed output, yellow: torque output, silver: shielding	红: +V 黑: 0V 白: A 蓝: B 棕: Z 屏蔽线: F.G Red: +V Black: 0V White: A Blue: B Brown: Z Shielding line: F.G

量程范围(Scale range): 5~500KN.m (可根据用户尺寸量身定制) (Can be customized according to user size)

HCNJSeries
dynamic torque
sensors

Partial non-standard
torque sensor

HCNJSeries of
static torque
sensors

To simulate
the load

Test bench
Test bench system

Sensor supporting
products

Some typical
customers