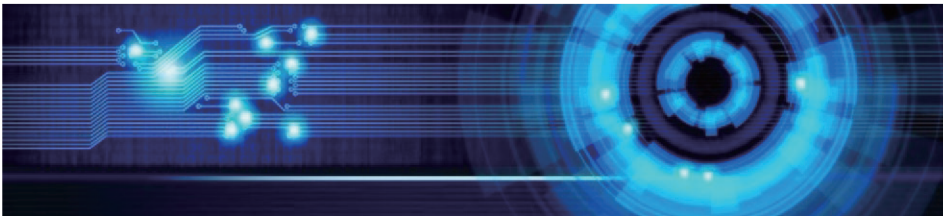


# SENSORS

# ENCODER



- Firmness with high load, suitable for heavy industries.
- SSI, CANopen, DeviceNet, Profibus-DP bus interface.
- Diameter of axle: Solid axle  $\varnothing 6, \varnothing 10$  mm, Hollow axle  $\varnothing 15$ mm.
- Single-turn resolution: Maximum 16 digits. Output code system: Binary system/Gray code.
- Infrared receiver array which won't be affected by temperature, each LED array has only one receiving photodiode, isolated bus.
- Reversed-polarity protection.
- Widely used in Metallurgical equipment and assembly line, Lifting and transportation machinery at the port, Water conservancy and irrigation machinery, Heavy machinery, Papermaking and textile machinery, Precision measurement and CNC equipment, Machine tool.

# NAMING RULES

**ENA** - **60** □□ □ **D** **CA** **16** □□ □□ - □□□□

**1**      **2**   **3** **4**   **5**   **6**      **7** **8**   **9**      **10**

## 1. TYPE CODE

**ENA:** ABSOLUTE ROTARY ENCODER

## 2. BODY SIZE

Φ60mm

## 3. FLANGE/AXIS TYPE

**AA:** CLAMP FLANGE, PRINCIPLE AXIS 20\*20mm

**AB:** SYNCHRONIZED FLANGE, PRINCIPLE AXIS 6\*10mm

## 4. SIGNAL OUTPUT TYPE

**B:** (CANopen, DeviceNet, Profibus-DP, SSI)  
BINARY CODE

**G:** (CANopen, SSI)  
GRAY CODE

## 5. POWER SUPPLY

10...30VDC

## 6. POWER SUPPLY

**CA:** CANopen

**DP:** Profibus-DP

**DN:** DeviceNet

**SI:** SSI

## 7. SINGLE-TURN RESOLUTION

**13=8192 (13 bit)**  
(Profibus-DP Standart, SSI Optional)

**16=65536 (16 bit)**  
(CANopen Adjustable, DeviceNet Adjustable, SSI Optional)

## 8. TURN NUMBER DIGITS

**00** = SINGLE-TURN

**12** = 4096 (12 bit)

## 9. CONNECTION

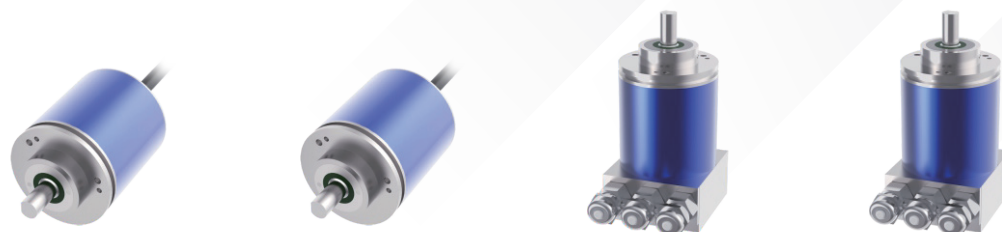
**A1:** (Profibus-Dp, DeviceNet)  
Including bus mould box, Terminal

**C1:** (CANopen, SSI)  
1m cable, Axial direction

**D1:** (CANopen, SSI)  
1m cable, Radial direction

## 10. SPECIAL FUNCTION CODE

## ABSOLUTE ROTARY ENCODER



Shell code	SSI	CANopen	DeviceNet	Profibus-DP
Supply voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Bus connection	Based on RS422/RS485 communication interface	Conforming to CAN transceiver of ISO11898, optical isolation	Conforming to CAN transceiver of ISO11898, optical isolation	Based on RS485 communication interface
Transmission rate	100k...1.5Mbit/s	20k...1Mbit/s(Programmable)	125k...500kbit/s (Set through rotary switch)	Max 6Mbit/s
Maximum single-cycle resolution	65536 ( 16 Bits )	65536 ( 16 Bits )	65536 ( 16 Bits )	8192 ( 13 Bits )
Maximum number of cycles	4096 ( 12 Bits )			
Precision	±180°			
Ambient temperature	-40°C...85°C			
Housing material	Aluminum alloy			
Machinery maximum speed	6000 circles			
Load of principal axis	Axial direction 40N, radial direction 110N			
Mounting flange	Synchronous / Clamp			
Diameter of principal axis	6mm / 10mm			
Length of principal axis	10mm / 20mm			
Protection Level	Shell: IP67 , Principal axis: IP64 ( According to customers' needs, IP66 is available )			



# NAMING RULES

Tension sensor

**TW**   **D**   -   **T**   **402**   **B**   **A**   **E**   -       

**1**   **2**   **3**   **4**   **5**   **6**   **7**   **8**

## 1. TYPE CODE

**TW:** TENSION SENSOR

## 2. SHAPE CODE

**A:** HOUSING 1  
**B:** HOUSING 2  
**C:** HOUSING 3  
**C1:** HOUSING 3 (WITH HOOKED YARN GUIDE)  
**D:** HOUSING 4 (TYPE T)  
**E:** HOUSING 5  
**F:** HOUSING OF ELEVATOR WEIGHING SENSOR  
**G:** HOUSING 6

## 3. SENSITIVE PROBE

**T:** CERAMIC SENSING PROBE  
**Y:** STRAIN GAUGE SENSING PROBE  
**H:** HALL SENSING PROBE

## 4. MEASUREMENT RANGE

**101:** 0...100cN (T/Y)  
**301:** 0...300cN (T/Y)  
**402:** 0...4000cN (T/Y)  
**202:** 0...2000cN (T/Y)

## 5. DETECT MODE

**B:** 19...29VDC  
**D:** 10...30VDC  
**F:** 10...18VDC  
**T:** 12...24VDC  
**M:** 24VDC

## 6. OUTPUT

**A:** 0.1...2.5VDC  
**B:** 0.1...5VDC  
**C:** 0.5...6VDC  
**D:** 0.5...4.5VDC  
**F:** 2...6VDC  
**N:** NPN  
**P:** PNP

## 7. CONNECTION

**2M:** 2m CABLE  
**A:** 0.25m SHIELDED CABLE WITH 3 PINS  
**B:** M12 3 PINS CONNECTOR  
**C:** M12 4 PINS CONNECTOR  
**D:** M12 5 PINS CONNECTOR  
**E:** 3 PINS CONNECTOR  
**F:** SOCKET WITH 5 PINS CONNECTOR  
**G:** SOCKET WITH 3 PINS CONNECTOR  
**H:** 3 PINS PLUG WITH CABLE (2.0)

## 8. SPECIAL REQUIREMENT

IN 4 DIGIT

## TENSION SENSOR

Tension sensors are widely used to detect tension of yarn during operation in textile and chemical fiber industry. During spinning, the tension of yarn will be changed to weak voltage signal and will be amplified by filter circuit, amplifying circuit, linear compensation circuit and adjusting circuit. The amplified voltage signal will be linearly outputted with tension.

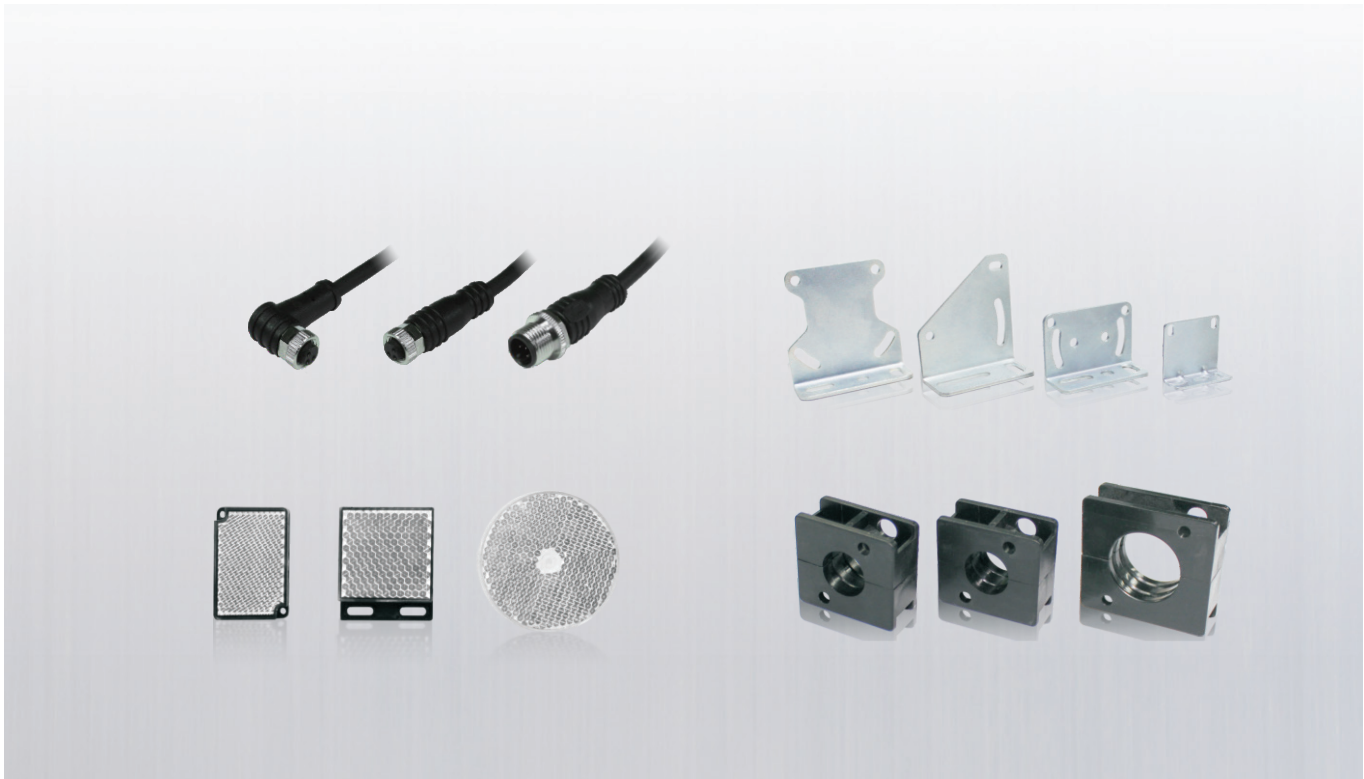
- Fast response, high sensitivity.
- Wide measuring tension range.
- Fine linearity and temperature feature.
- Less damage to material.
- Mainly used in textile industry.



Shell code	TWC	TWK
Supply voltage	10...30VDC	10...30VDC
Current consumption	<15mA	< 22mA
Non-linearity	<1%FS	< 2%FS
Tension range	0...300cN, 0...100cN	0...100cN, 0...300cN
Sensor	Ceramic strain gauge type	Hall sensor
Output	Voltage output: 0.5...6VDC	Voltage output: 0.3...2.3VDC
Connection	Terminal	Plug-in unit
Circuit protection	Reverse polarity protection	Reverse polarity protection, Surge protection
Ambient temperature	0...50°C(dewed or iced forbidden)	0...50°C(dewed or iced forbidden)
Housing material	Housing: zinc aluminum; Transmission: ceramics	Housing: zinc alloy; Transmission: ceramics

# SENSOR ACCESORIES

Sensor accessories



Sensor accessories



Connection cables & Distribution Box

Mounting brackets

Reflectors

Mounting clamps

Connection cable

# NAMING RULES

**Q** **E12** - **N** **3** **G** **5** **P** **U** - **E12** **N** **3** **F** □□□□

**1**   **2**   **3**   **4**   **5**   **6**   **7**   **8**   **9**   **10**   **11**   **12**   **13**

**1. CONNECTOR CLASSIFICATION**

**C:** CUSTOMIZED  
**Q:** STANDARD

**2. CONNECTOR SPECIFICATION**

**E8:** M8 CONNECTOR  
**E12:** M12 CONNECTOR

**3. THREAD TYPE**

**N:** INTERNAL THREAD CONNECTION  
**W:** EXTERNAL THREAD CONNECTION

**4. PIN NUMBER**

**3:** 3 PIN  
**4:** 4 PIN

**5. CABLE LEAD-OUT**

**F:** 180° straight angle  
**G:** 90° right angle

**6. CABLE LENGTH**

**N/A:** CONNECTOR  
**02:** 0.2m CABLE  
**2:** 2m CABLE  
**5:** 5m CABLE  
**10:** 10m CABLE

**7. CONNECTOR CLASSIFICATION**

**N/A:** No LED, UNIVERSAL  
WITH LED, PNP INTERFACE  
WITH LED, NPN INTERFACE

**8. CABLE MATERIAL**

**N/A:** PVC  
**U:** PUR

**9. CONNECTOR SPECIFICATION**

**N/A:** WITH CABLE DIRECTLY  
WITH M8 CONNECTOR  
WITH M12 CONNECTOR

**10. THREAD TYPE**

**N/A:** WITH CABLE DIRECTLY  
INTERNAL THREAD CONNECTION  
EXTERNAL THREAD CONNECTION

**11. THREAD TYPE**

**N/A:** WITH CABLE DIRECTLY  
3 PINS  
4 PINS  
5 PINS

**12. CABLE LEAD-OUT**

**N/A:** WITH CABLE DIRECTLY  
180 GRADES STRAIGHT ANGLE  
90 GRADES STRAIGHT ANGLE

**13. SPECIAL CODE**

IN 4 DIGITS

Model & Code

**DB** **12** **08** **04** - **x** - **Mxx** **P**

**1**   **2**   **3**   **4**   **5**   **6**   **7**

**1. PRODUCT SERIES**

**DB:** DISTRIBUTION BOX

**2. CORE WIRE**

**08:** M8 CONNECTOR  
**12:** M12 CONNECTOR

**3. I/O CHANNEL NUMBER**

**04:** 4  
**06:** 6  
**08:** 8  
**10:** 10

**4. I/O PORT**

**03:** 3  
**04:** 4  
**05:** 5

**5. CABLE MATERIAL**

**0:** NO CABLE  
**1:** PVC  
**2:** PUR

**6. CABLETYPE**

**D:** D-SUB  
**M:** PLUG CONNECTOR M23  
**NONE:** PRE-WIRED CABLE  
**3:** 3m CABLE  
**5:** 5m CABLE  
**7:** 7m CABLE

**7. LED INDICATION**

**P:** PNP  
**N:** NPN

## CONNECTION CABLE



Shell code	QE8-N3Fx	QE8-N3Gx	QE8-W3Fx	QE8-W3Gx	QE12-N4Fx
Specifications	M8*35.5	M8*21	M8*40.5	M8*21	M12*40
Operating voltage	60 VAC/DC	60 VAC/DC	60 VAC/DC	60 VAC/DC	250V AC/DC
Nominal current	4A	4A	4A	4A	4A
Insulation resistance	100MΩ	100MΩ	100MΩ	100MΩ	100MΩ
Temperature range	-30°C...90°C	-30°C...90°C	-30°C...90°C	-30°C...90°C	-30°C...90°C
Outer covering	PVC	PVC	PVC	PVC	PVC
Bearing material	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy
Protection degree	IP67	IP67	IP67	IP67	IP67
Material	PVC/PU	PVC/PU	PVC/PU	PVC/PU	PVC/PU
Diameter	Φ4.4	Φ4.4	Φ4.4	Φ4.4	Φ5.2
Core wire	3*0.25mm <sup>2</sup> ( 0.1*32 )	3*0.25mm <sup>2</sup> ( 0.1*32 )	3*0.25mm <sup>2</sup> ( 0.1*32 )	3*0.25mm <sup>2</sup> ( 0.1*32 )	4*0.34mm <sup>2</sup> ( 0.2*11 )
Length	2m/5m	2m/5m	2m/5m	2m/5m	2m/5m
Certification	CE	CE	CE	CE	CE

## CONNECTION CABLE

### Connection cable (LED)



Shell code	QE12-N4Gx	QE12-W4Fx	QE12-W4Gx	QE12-N4F-x	QE12-N4G-x
Specifications	M12*42	M12*42	M12*42	M12*40	M12*42
Operating voltage	250 VAC/DC	250 VAC/DC	250 VAC/DC	30VDC Max	30VDC Max
Nominal current	4A	4A	4A	4A	4A
Insulation resistance	100MΩ	100MΩ	100MΩ	100MΩ	100MΩ
Temperature range	-30°C...90°C	-30°C...90°C	-30°C...90°C	-30°C...90°C	-30°C...90°C
Outer covering	PVC	PVC	PVC	PU	PU
Bearing material	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy	Nickel-copper alloy
Protection degree	IP67	IP67	IP67	IP67	IP67
Material	PVC/PU	PVC/PU	PVC/PU	PVC/PU	PVC/PU
Diameter	Φ5.2	Φ5.2	Φ5.2	Φ5.2	Φ5.2
Core wire	4*0.34mm <sup>2</sup> ( 0.2*11 )	4*0.34mm <sup>2</sup> ( 0.2*11 )	4*0.34mm <sup>2</sup> ( 0.2*11 )	4*0.34mm <sup>2</sup> ( 0.2*11 )	4*0.34mm <sup>2</sup> ( 0.2*11 )
Length	2m/5m	2m/5m	2m/5m	2m/5m	2m/5m
Certification	CE	CE	CE	CE	CE