

Data sheet

Rotary position sensor without shaft

DST X520



The Danfoss DST X520 rotary position sensors without shaft are designed for use in mobile hydraulic applications.

Danfoss DST X520 series uses contactless Hall technology with measurement ranges up to 360°.

All sensors are E1 approved and are designed for off-highway applications and resistant to shock and vibrations and with high electromagnetic compatibility, and comes with either analogue, CANopen or SAE J1939 output.

Single and redundant sensor types are available and are produced according to PL d (EN ISO 13849-1:2015), making the complete portfolio suitable for safety-critical applications.

Features

- Contactless Hall technology for almost infinite sensor life time
- Single or Redundant ranges up to 360° ($\pm 180^\circ$)
- Output: Analogue, CANopen and SAE J1939
- Linearity: $< \pm 0.5\%$ FS
- Resolution:
 - 12 bit (analog)
 - 14 bit (CANopen/SAE J1939)
- IP protection level I)67 - IP69K with female mating connector
- High quality 10 mm magnet (PKIT384) included

Approvals and Conformity

- CE
- RoHS
- E1 approved

Data sheet | Rotary position sensor without shaft DST X 520
Technical data
Performance

| | | |
|----------------------------------|-----------------------------------|--|
| Measuring range | | 360° (±180°) |
| Linearity | | ≤ ± 0.5% FS |
| Resolution and speed of rotation | 12 bit (analog output) | 120 rpm max. |
| | 14 bit (CANopen/SAE J1939 output) | |
| Durability | | No wear through the use of permanent external magnet |

Electrical specifications

| | |
|------------------------|--|
| Electrical connections | AMP Superseal 6p 282108-1 |
| Output signal | 0.5-4.5 V Ratiometric; CANopen / SAE J1939 |
| Supply voltage | Ratiometric + 5 Vdc; CANopen/J1939: +9 – +36 Vdc |

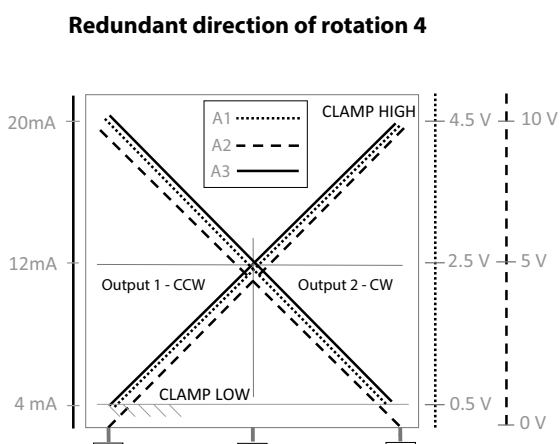
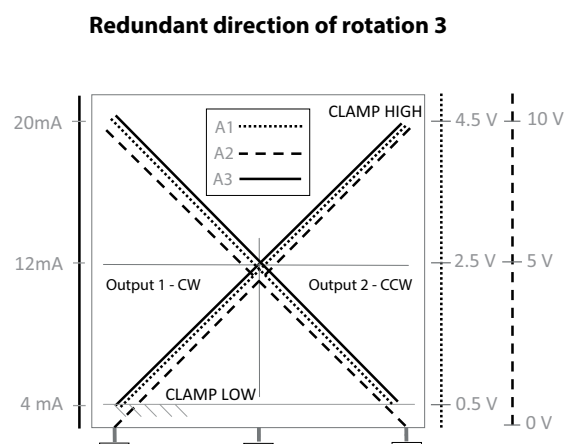
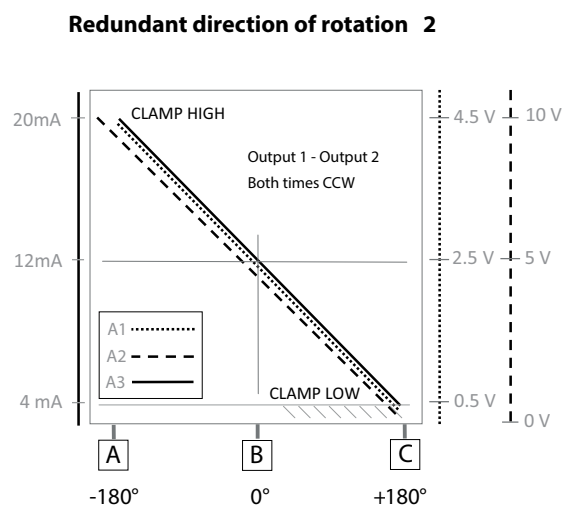
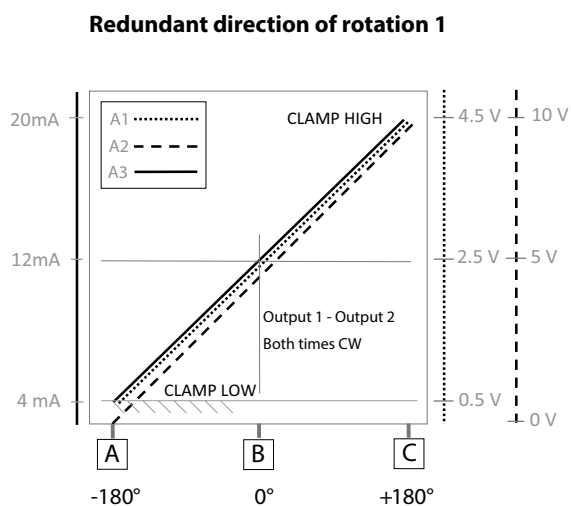
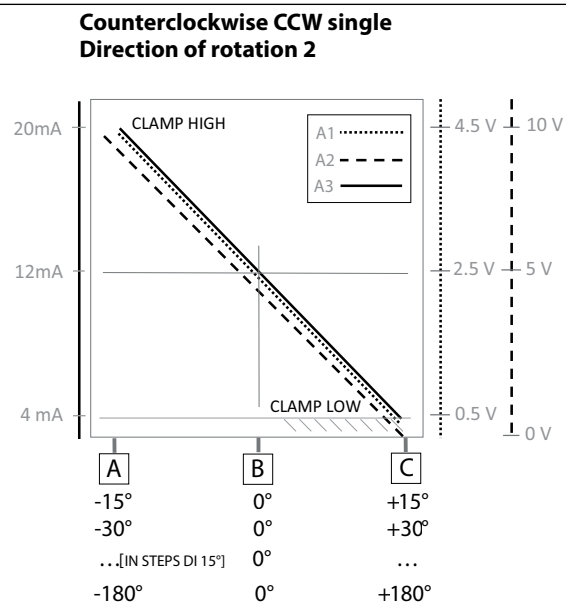
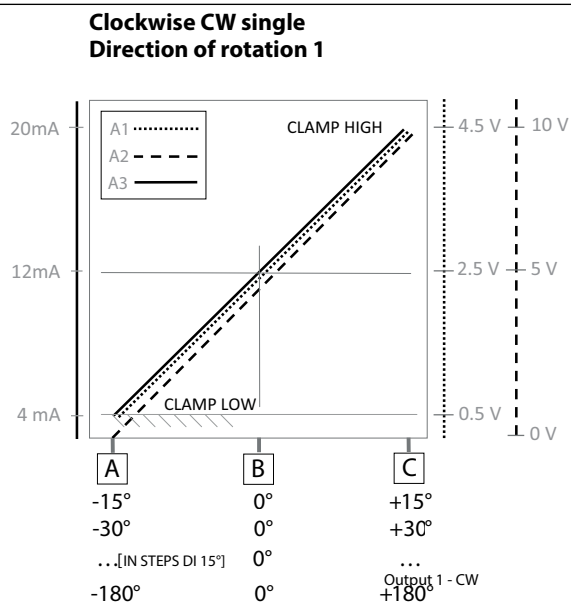
Environmental conditions

| | | | |
|-----------------------------|---------------------------|---|----------------|
| Operating temperature range | | -40 – 85 °C | |
| Thermal drift temperature | | < 50 ppm/°C | |
| EMC | Emission | EN 55011 and CISPR 25 | |
| | Immunity | EN 61236-3-2 and ISO 11452-2 | |
| | Transient on supply lines | ISO 7637-2 | |
| | Bulk current injection | ISO 11452-4 | |
| Vibration stability | Sinusoidal | 20 g, 10 Hz – 2,000 kHz | IEC 60068-2-6 |
| Shock resistance | Impulsive on 3 axes | 50 g, 11 ms | IEC 60068-2-27 |
| IP protection | | IP67 - IP69K (with female mating connector) | |

Mechanical characteristics

| | | |
|------------|-----------|----------|
| Materials | Enclosure | PBT |
| Net weight | | 0.036 kg |

Sensor output graph



Load conditions

+0.5 Vdc - +4.5 Vdc output with power + 5Vdc: It is recommended a load resistance > 10 kΩ

Ordering

| Type | Output signal | Configurations | Code no. |
|-----------------------------------|----------------|---|----------|
| DST X 520 incl. PKIT magnet | 5V Ratiometric | ±180° Clockwise CW | 098G1500 |
| | 5V Ratiometric | ±180° Counterclockwise CCW/CH2 clockwise CW | 098G1501 |
| | 36 V CANopen | ±180° Clockwise CW | 098G1502 |
| | 36 V SAE J1939 | ±180° Clockwise CW | 098G1503 |

**Ordering code -
on request**

| Electrical connections | |
|------------------------------|---|
| AMP Superseal 6P connector | A |
| Cable (specify cable length) | F |

| Circuit type | |
|-----------------------------|---|
| Single Analog or CAN/J 1939 | S |
| Redundant Analog | R |

| Angle/Channel 1 (output for single channel) | |
|---|-----|
| (Analog output A1-A2-A3 programmable in steps of ±15°) (CAN/J 1939 = 180) | xxx |

| Angle/Channel 2 (redundant versions) | |
|---|-----|
| (Analog output A1-A2-A3 programmable in steps of ±15°) (CAN/J 1939 = 180) | xxx |

| Supply voltage | |
|---|---|
| +5Vdc (only for A1 output) | L |
| +9...+36Vdc (see output signal for right supply voltage) | H |

| Output type | |
|---|----|
| +0.5...+4.5Vdc output (available with supply L = ratiometric output and with supply H = 0.5...4.5V output) | A1 |
| 0...+10Vdc output (powered at +11...36Vdc) | A2 |
| 4...20mA output (powered at +9...36Vdc) | A3 |
| CANopen output (powered at +9...36Vdc) (available in single version with +/-180° measurement range) | C1 |
| SAE J1939 (powered at +9...36Vdc) (available in single version with +/-180° measurement range) | C2 |

| Rotation direction | |
|--|---|
| Clockwise CW (single) both clockwise CW (redundant or CAN/J1939) | 1 |
| Counterclockwise CCW (single) both counterclockwise CCW (redundant or CAN/J1939) | 2 |
| CHANNEL 1 clockwise CW and CHANNEL 2 counterclockwise CCW (only for redundant version and CAN/J1939) | 3 |
| CHANNEL 1 counterclockwise CCW and CHANNEL 2 clockwise CW (only for redundant version and CAN/J1939) | 4 |

| Cable | |
|---|---|
| Single cable without connector (always "0" in case of DST X520 A version) | 0 |
| Cable (100 mm) + M12, 5-pin male overprinted connector | 1 |

| Certificate | |
|--------------------------------|---|
| No certificate attached | 0 |
| Linearity curve to be attached | L |

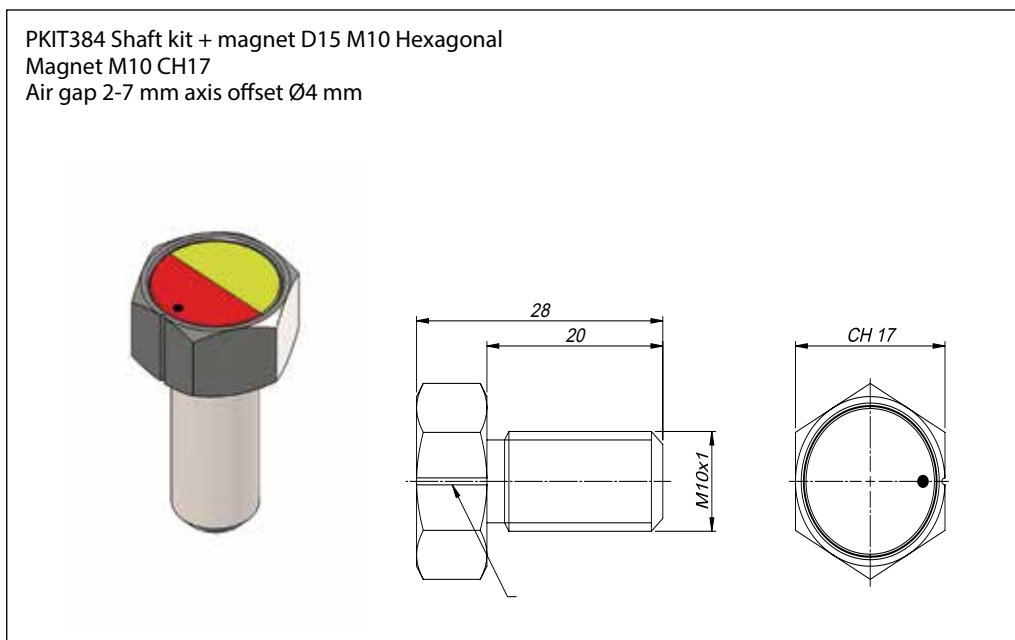
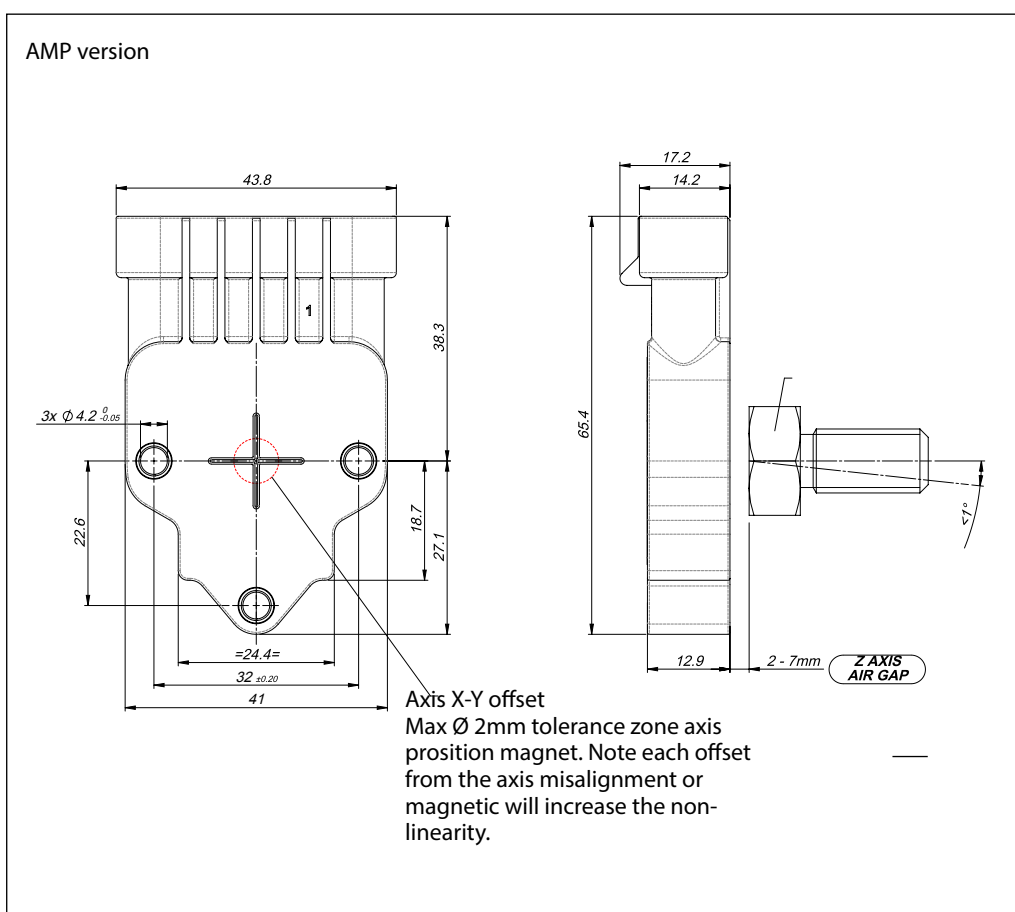
| Accessories | |
|--|---|
| No accessories | X |
| Shaft kit + magnet D 15 M10 hexagonal (PKIT 384) | A |
| Shaft kit to insert + magnet D 15 (PKIT 389) | B |
| Kit magnet Ø15 (PKIT 418) | C |

| Cable length | |
|-------------------------|-------|
| 100 mm | 01 |
| 200 mm | 02 |
| 500 mm | 05 |
| 1 m | 10 |
| 2 m | 20 |
| Other length on request | |

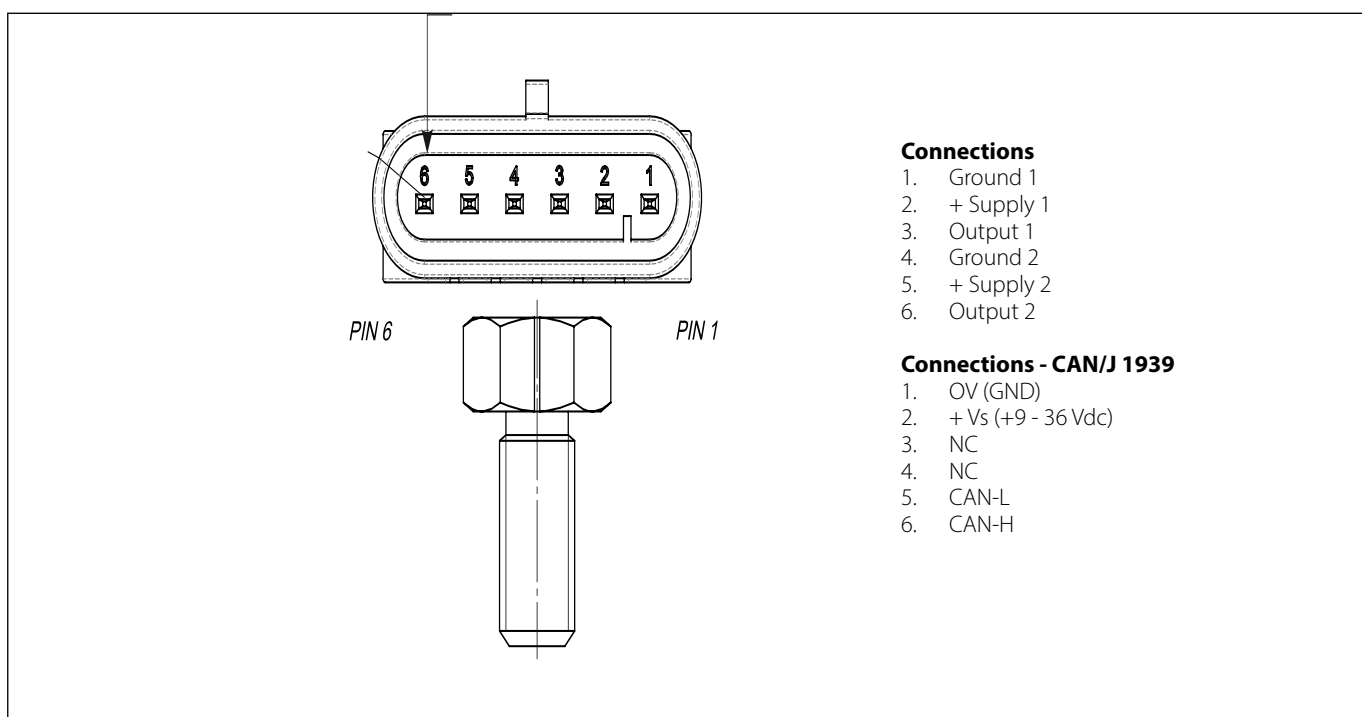
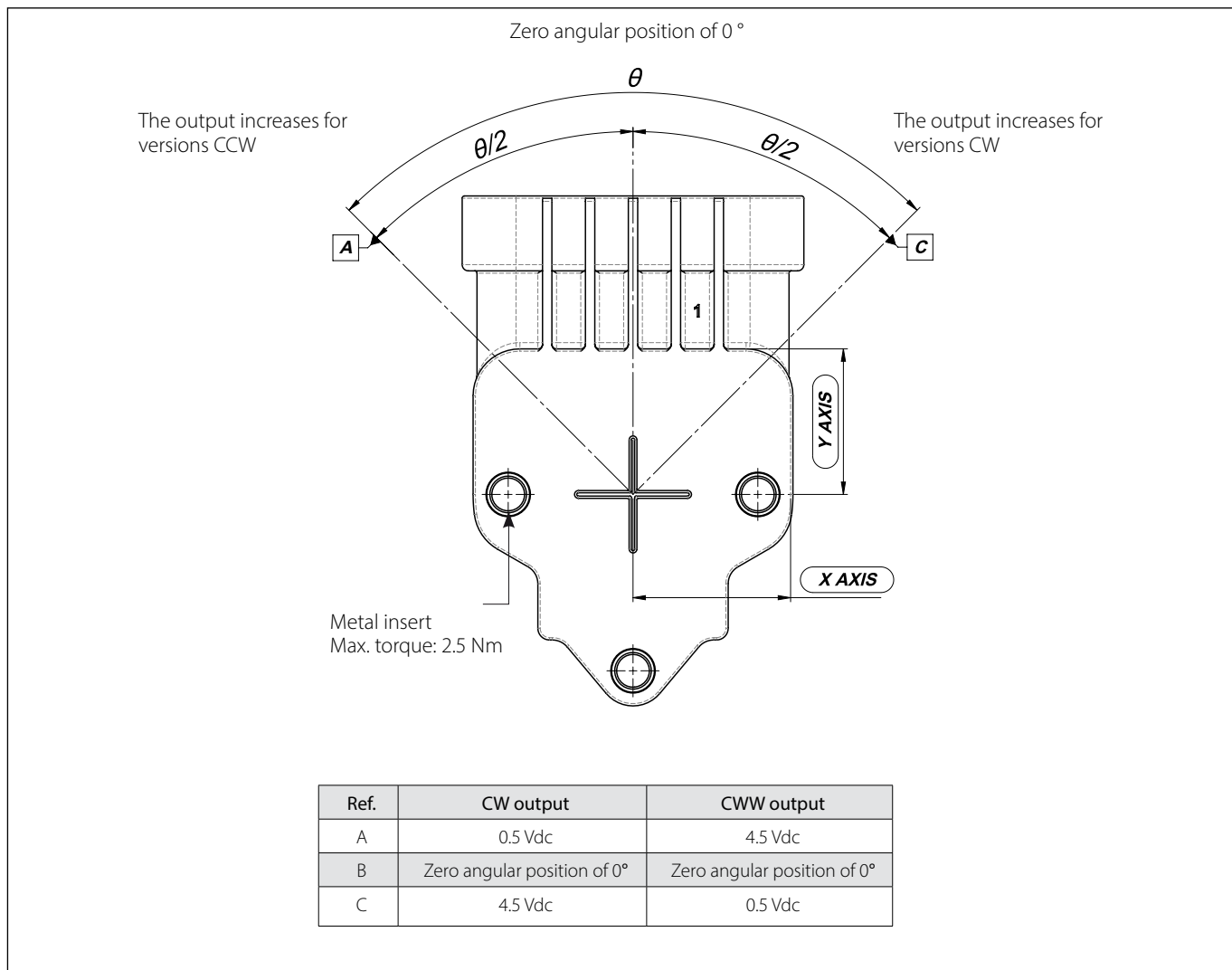
Example of ordering:
DST X520-AS180000HC14000 0033A00

| | |
|-----|--|
| A | AMP Superseal 6p |
| S | Single Analog or CAN/J 1939 |
| 180 | ±180° |
| 000 | 000 |
| H | +9 - +36 Vdc |
| C1 | CANopen |
| 4 | Channel 1: Counterclockwise CCW Channel 2: Clockwise CW |
| 0 | Cable |
| 00 | Reserved |
| 0 | No certificate |
| 033 | Standard |
| A | Magnet PKIT384 |
| 00 | Not defined (only cable version) |

Dimensions



Electrical connections



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