



**| TCW4 SSI**  
SSI MULTI-TURN MODULAR



**Features**

- With its two-part design, the ACW4 absolute single-turn offers maximum flexibility for installation
- Rugged and excellent resistance to shock and vibration
- Robust, proven magnetic technology
- Environmentally resistant, IP 67 standard (IP69K option)
- Extended operating range from -20° C to 85° C
- Uses universal supply 5 to 30 VDC – SSI Output
- Available resolution 12 bits per turn and up to 13 bits of turns counting.
- Variety of magnet holders available

**Applications**

- Factory Automation
- Process Automation



 **SPECIFICATIONS**

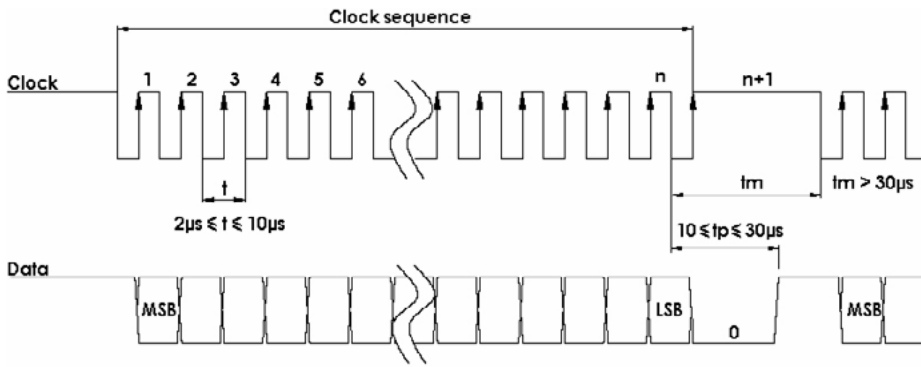
**Mechanical**

|                     |                                    |
|---------------------|------------------------------------|
| <b>Terminations</b> | PUR cable with M12 5 pin connector |
| <b>Housing</b>      | Macromelt PA638                    |
| <b>Weight</b>       | 0,150 kg                           |

**Electrical**

|                             |  |
|-----------------------------|--|
| <b>Electrical Angle</b>     | 360°   |
| <b>Output Function</b>      | SSI, 10% to 90% Duty Cycle   |
| <b>Minimal Cycle Time</b>   | 1ms  |
| <b>Resolution</b>           | Resolution 12 bits per turn and up to 13 bits of turns counting  |
| <b>Accuracy</b>             | +/-0.3% on 360°  |
| <b>Repeatability</b>        | +/-0.1% on 360°  |
| <b>Supply Voltage</b>       | 5V to 30 Vdc   |
| <b>Start-up</b>             | < 1s   |
| <b>Response time</b>        | < 10 ms  |
| <b>Recommended Load</b>     | > 10 kOhms   |
| <b>Isolation</b>            | 500 Veff   |
| <b>Current Requirements</b> | < 40mA   |
| <b>Protection</b>           | Overvoltage Protection: Yes<br>Reverse Polarity Protection: Yes<br>Short Circuit Protection: Yes   |
| <b>EMC</b>                  | IEC 61000-4-2 Electrostatic discharge (ESD) 4 kV, 8 kV<br>IEC 61000-4-3 Electromagnetic fields 10 V/m (80MHz - 1GHz), 3V/m (1.4GHz - 2GHz), 1V/m (2GHz - 2.7GHz)<br>IEC 61000-4-4 Electrical fast transients (burst) 1 kV<br>IEC 61000-4-6 Conducted disturbances, induced by RF-fields 10 Veff. |

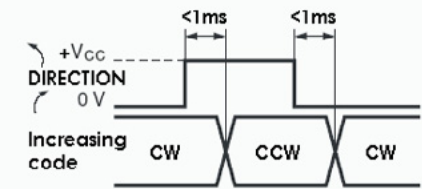
# SSI Transmission



|                     |  |
|---------------------|--|
| <b>Transmission</b> | Transmission up to 400m* at 100kHz in function of the cable characteristics. |
| <b>Cable</b>        | High security of transmission by using shielded cable and twisted pairs.     |

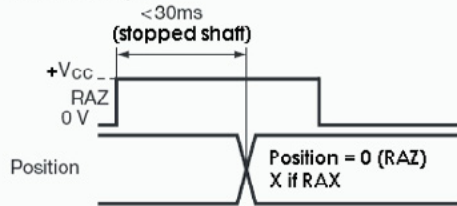
\* Consult us for length > 100m.

## DIRECTION input



|             |                    |                 |            |
|-------------|--------------------|-----------------|------------|
|             | min                | max             | Increasing |
| Level "0"   | 0 V                | $0,3x(+V_{CC})$ | CW         |
| Level "1"   | $0,7x(+V_{CC})$    | $+V_{CC}$       | CCW        |
| I direction | <math>< 5mA</math> |                 |            |

## RAZ / RAX Input



|           |                    |                 |
|-----------|--------------------|-----------------|
|           | min                | max             |
| Level "0" | 0 V                | $0,3x(+V_{CC})$ |
| Level "1" | $0,7x(+V_{CC})$    | $+V_{CC}$       |
| I raz/rax | <math>< 5mA</math> |                 |

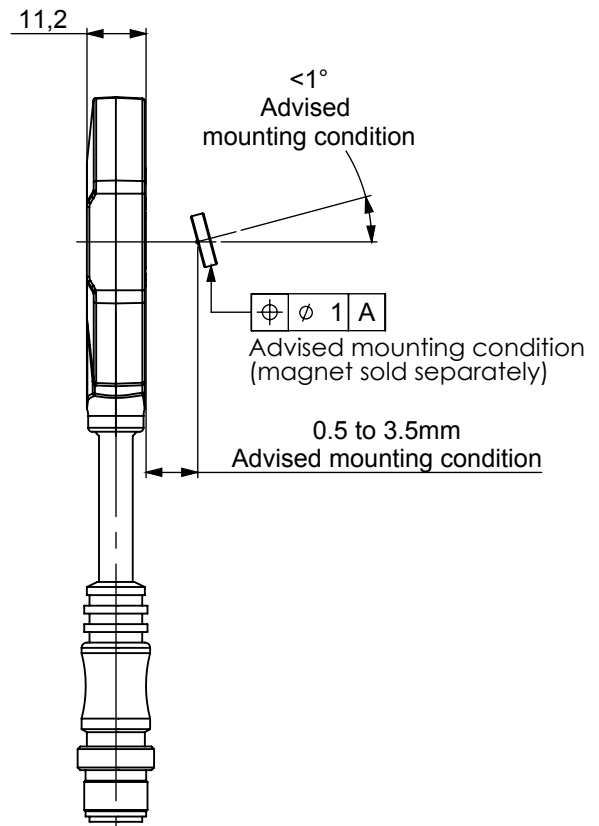
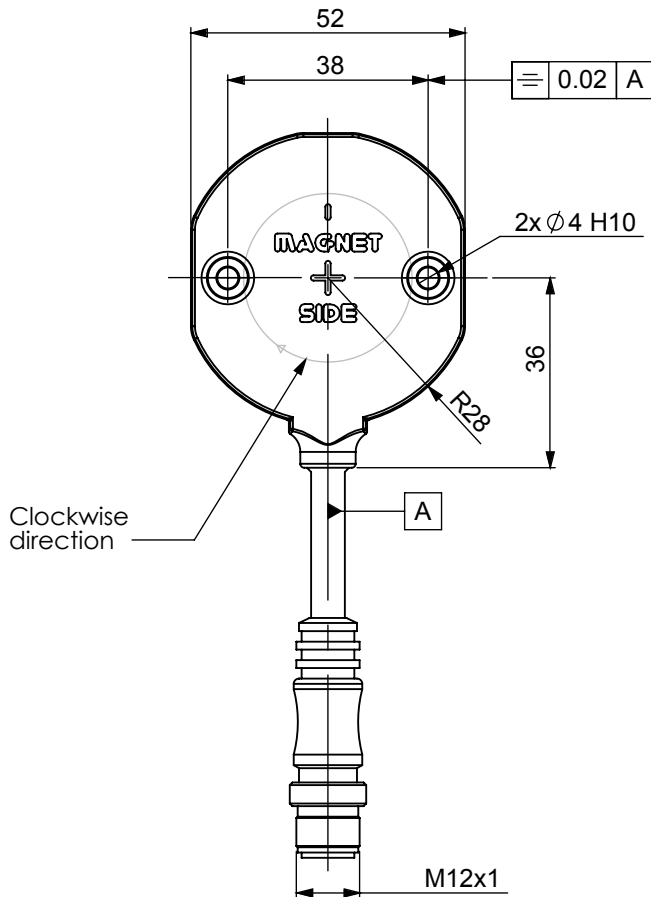
Note: Connect DIRECTION and RAZ/RAX to a potential (RAZ at 0V if not used)

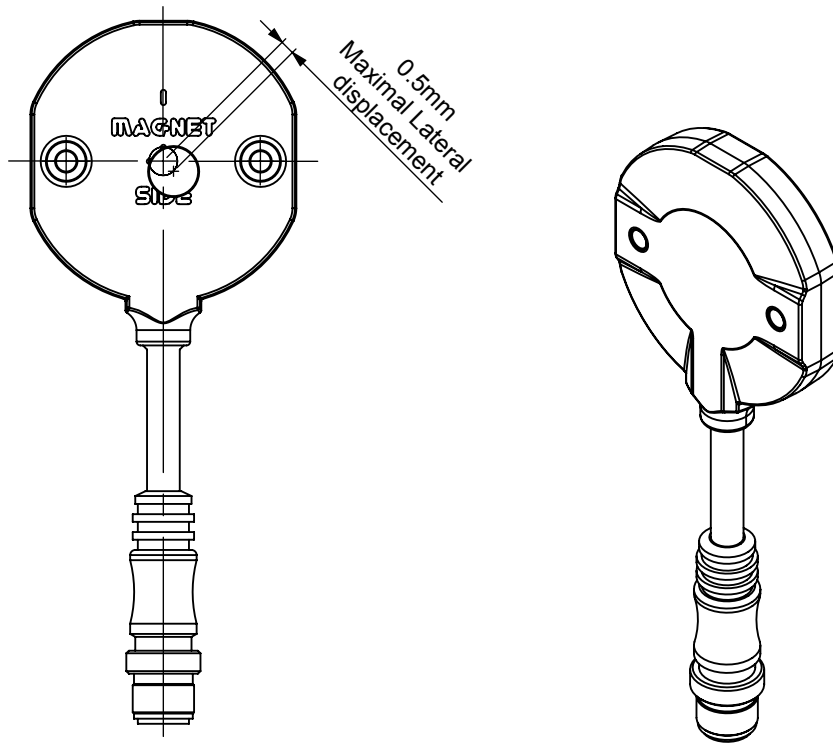


## DIMENSIONS

All Dimensions are in millimeters.

Shaft system with magnet to be ordered separately (see Accessories).





## CONNECTOR PIN OUT

| Ref. | Type                   | + Vcc                    | 0 V                  | Clk+        | Data+      | RAZ        | Data-      | Clk-        | Direction   | Ground               |
|------|------------------------|--------------------------|----------------------|-------------|------------|------------|------------|-------------|-------------|----------------------|
| S5   | SSI cable PUR 8230/050 | BN/GN<br>Brown/<br>Green | WH/GN<br>White/Green | GN<br>Green | GY<br>Gray | BU<br>Blue | PK<br>Pink | BN<br>Brown | WH<br>White | General<br>shielding |

## NOTES

Stray magnetic fields can interfere with accuracy and repeatability of the signal.



## ORDERING OPTIONS

Example : TCW4\_00//P CS B // 12B13D5 // S5 R005

(Contact the factory for special versions, ex : dimensions, connections... )

|                            |  |    |    |   |    |   |    |         |    |    |      |
|----------------------------|--|----|----|---|----|---|----|---------|----|----|------|
| <b>Family</b>              | TCW4   | 00 | // | P | CS | B | // | 12B13D5 | // | S5 | R005 |
| <b>TCW4:</b>               | Absolute Multi-turn Sensor                             |    |    |   |    |   |    |         |    |    |      |
| <b>Shaft Ø</b>             | 00: Modular  |    |    |   |    |   |    |         |    |    |      |
| <b>Supply/Output Stage</b> | P: 5 to 30 Vdc   |    |    |   |    |   |    |         |    |    |      |
| <b>Output Stage</b>        | SS: SSI Without Parity                                 |    |    |   |    |   |    |         |    |    |      |
| <b>Code</b>                | B: Binary<br>G: Gray                                   |    |    |   |    |   |    |         |    |    |      |
| <b>Resolution</b>          | 12B13D5: 12 bits per turn by 13 bits of turns counting |    |    |   |    |   |    |         |    |    |      |
| <b>Connection</b>          | S5: SSI PUR Cable                                      |    |    |   |    |   |    |         |    |    |      |
| <b>Orientation</b>         | R005: Radial cable 50cm long                           |    |    |   |    |   |    |         |    |    |      |

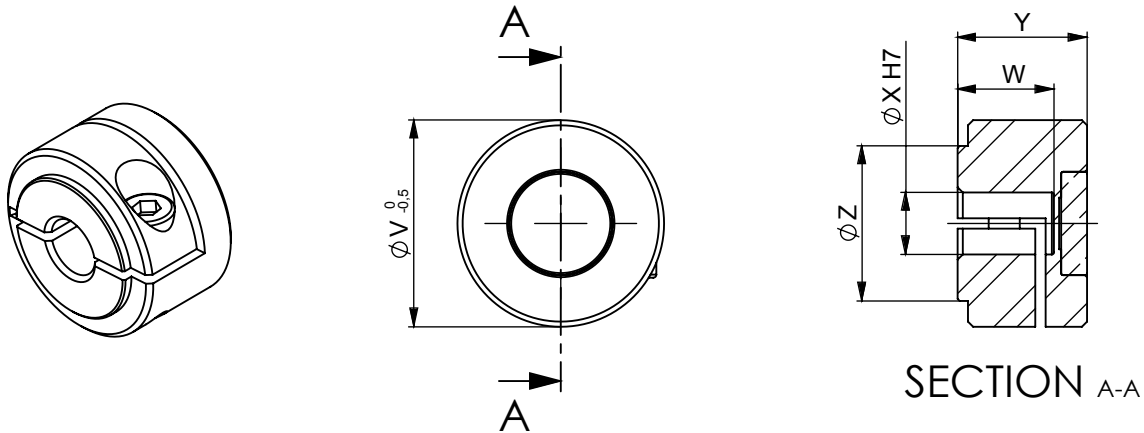


## ACCESSORIES

### Female magnet support + Magnet 8810/013

Ordering p/n : M9105/Kxx

KXX: Where XX is the shaft mounting diameter in mm. Standards are 06, 08, 10, 11, and 14 mm. i.e M9105/K10 mounts to a 10 mm shaft.



|          | M9105/K06 | M9105/K08 | M9105/K10 | M9105/K11 | M9105/K14 |
|----------|-----------|-----------|-----------|-----------|-----------|
| <b>W</b> | 6 H7      | 8 H7      | 10 H7     | 11 H7     | 14 H7     |
| <b>X</b> | 20        | 20        | 26        | 26        | 29        |
| <b>Y</b> | 12,5      | 12,5      | 14        | 14        | 14        |
| <b>Z</b> | 15        | 15        | 15        | 15        | 18        |

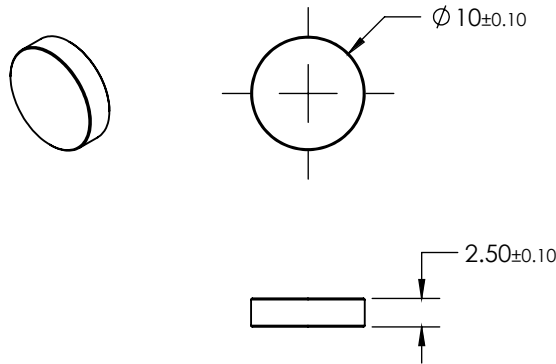
**Frontal magnet support + Magnet 8810/013**  
 Ordering p/n : **M9105/F26**



**Male magnet support + Magnet 8810/013**  
 Ordering p/n : **M9105/M10-01**



**Magnet**  
 Ordering p/n : **8810/013**



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