

# ACW4 ANALOG

## ANALOG ABSOLUTE SINGLE TURN MODULAR SENSOR

Sensata-BEI Sensors' ACW4 sensors provide absolute single turn measurement with an analog output in an over-molded, modular design that offers flexibility and protection from the environment.



### 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 -40° C to 85° C
- Uses universal supply 5 to 30 VDC – Analog output
- Available Resolution up to 12 bits per revolution
- Variety of magnet holders available

### Applications

- Factory Automation
- Process Automation



## SPECIFICATIONS

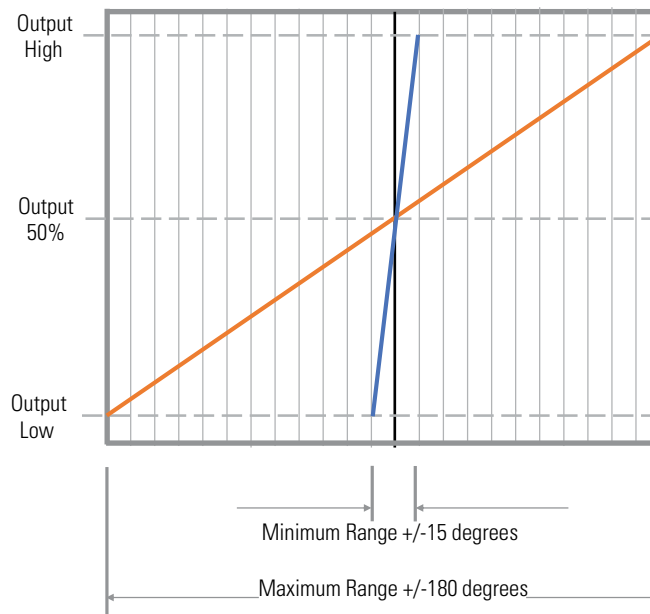
### Mechanical

|                     |                 |
|---------------------|-----------------|
| <b>Terminations</b> | PVC cable       |
| <b>Housing</b>      | Macromelt PA638 |
| <b>Weight</b>       | 0,150 kg        |

### Electrical

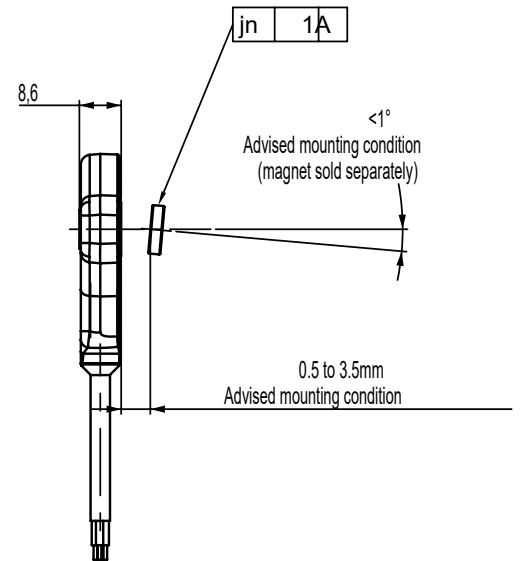
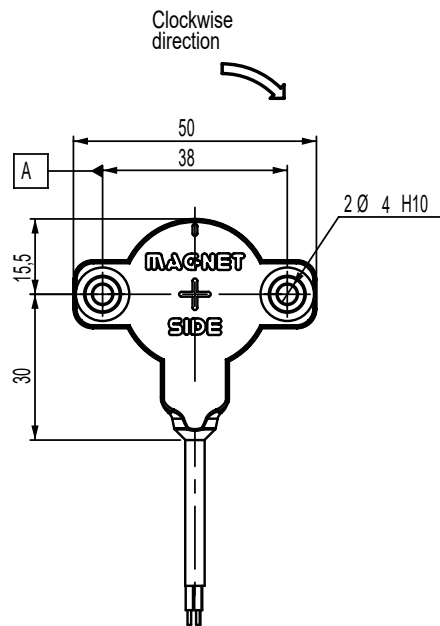
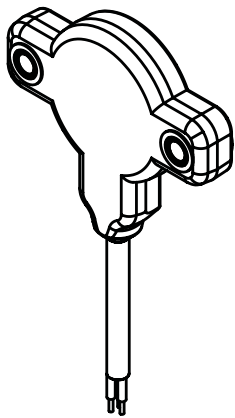
|                             |  |
|-----------------------------|--|
| <b>Electrical Angle</b>     | 360°   |
| <b>Output Function</b>      | 0– 10 Vdc, 0.5 to 4.5 Vdc, or 4 – 20 mA  |
| <b>Minimal Cycle Time</b>   | 1ms  |
| <b>Resolution</b>           | Single –turn, 12 bits  |
| <b>Accuracy</b>             | +/-0.3% on 360°  |
| <b>Repeatability</b>        | +/-0.1% on 360°  |
| <b>Supply Voltage</b>       | 5Vdc, 11 to 30 Vdc, or 15 to 30 Vdc  |
| <b>Start-up</b>             | < 1s   |
| <b>Response time</b>        | < 10 ms (5L2 and 3L1 electronics), <1ms (All other electronics)  |
| <b>Recommended Load</b>     | > 10 kOhms (voltage out), 500 Ohms (current out)   |
| <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. |

# Analog Output



## DIMENSIONS

All Dimensions are in millimeters.  
 Shaft system with magnet to be ordered separately (see Accessories).





## CONNECTIONS

|                 |             |             |             |        |
|-----------------|-------------|-------------|-------------|--------|
| <b>Function</b> | Vcc         | 0V          | Analog Out  | Ground |
| <b>Color</b>    | Brown<br>BN | White<br>WH | Green<br>GN | Shield |



## NOTES

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



## ORDERING OPTIONS

Example : ACW4\_00//3L1//1//00360//L3//R020

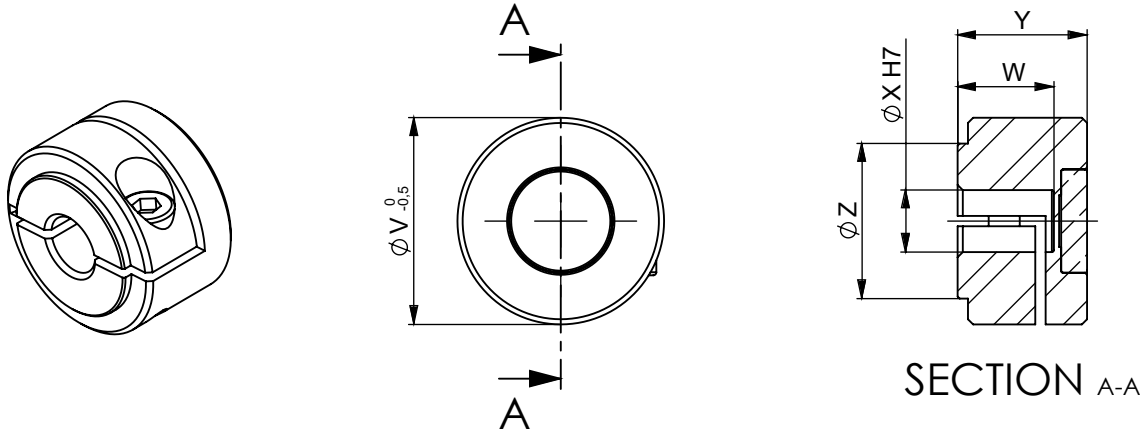
(Contact the factory for special versions, ex : dimensions, connections... )

|  |             |   |           |    |            |  |          |    |              |    |           |  |             |
|--|-------------|---|-----------|----|------------|--|----------|----|--------------|----|-----------|--|-------------|
|  | <b>ACW4</b> | - | <b>00</b> | // | <b>3L1</b> |  | <b>1</b> | // | <b>00360</b> | // | <b>L3</b> |  | <b>R020</b> |
| <b>Family</b>  | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>ACW4:</b> Absolute Single-Turn Sensor             | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Shaft Ø</b>                                       | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>00:</b> Modular                                   | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Supply</b>  | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>3L1:</b> 15 to 30 Vdc, 0-10V Output               | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>5L2:</b> 11 to 30 Vdc, 0.5 - 4.5 V Output         | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>3L3:</b> 15 to 30 Vdc, 4 – 20 mA Output           | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>2LR:</b> 5Vdc +/- 5%, Ratiometric 10 – 90% of Vcc | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Direction</b>                                     | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>1:</b> CW, Clockwise positive                     | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>2:</b> CCW, Counterclockwise positive             | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Range</b>   | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>00360:</b> 360° range                             | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Connection</b>                                    | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>L3:</b> 3 conductor PVC cable                     | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>Connection Orientation</b>                        | _____       |   |           |    |            |  |          |    |              |    |           |  |             |
| <b>R020:</b> Radial cable 2m long                    | _____       |   |           |    |            |  |          |    |              |    |           |  |             |

**Female magnet support + Magnet 8810/013**

Ordering p/n : **M9105/Kxx**

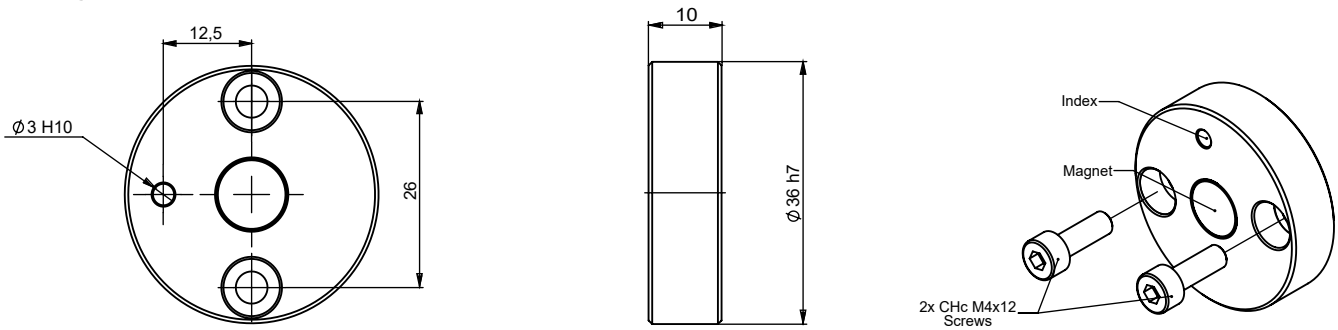
KXX: Where XX is the shaft mounting diameter in mm. Standards are 06, 08, 10, 11, and 14 mm. i.e M9105/K10 mounts to a 10 mm shaft.



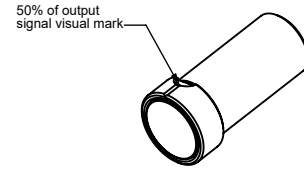
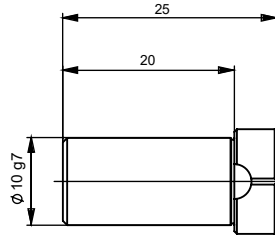
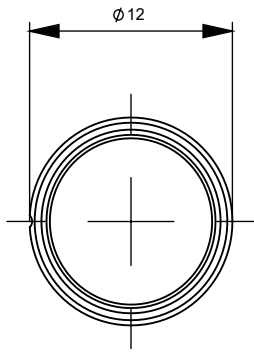
|          | M9105/K06 | M9105/K08 | M9105/K10 | M9105/K11 | M9105/K14 |
|----------|-----------|-----------|-----------|-----------|-----------|
| <b>X</b> | 06 H7     | 08 H7     | 10 H7     | 11 H7     | 14 H7     |
| <b>V</b> | 20        | 20        | 26        | 26        | 29        |
| <b>W</b> | 9,3       | 9,3       | 10        | 10        | 10        |
| <b>Y</b> | 12,5      | 12,5      | 14        | 14        | 14        |
| <b>Z</b> | 15        | 15        | 15        | 15        | 18        |

**Frontal magnet support + Magnet 8810/013**

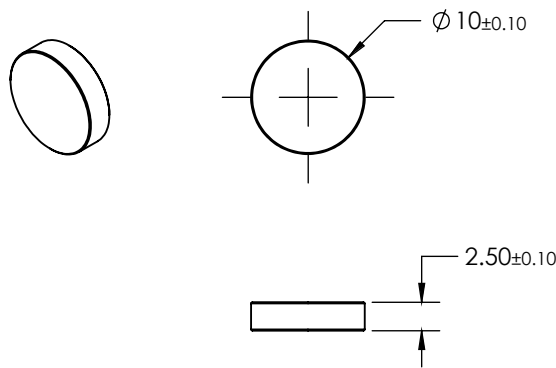
Ordering p/n : **M9105/F26**



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



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



Sensata Technologies, Inc. ("Sensata") data sheets are solely intended to assist designers ("Buyers") who are developing systems that incorporate Sensata products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products. Sensata data sheets have been created using standard laboratory conditions and engineering practices. Sensata has not conducted any testing other than that specifically described in the published documentation for a particular data sheet. Sensata may make corrections, enhancements, improvements and other changes to its data sheets or components without notice.

Buyers are authorized to use Sensata data sheets with the Sensata component(s) identified in each particular data sheet. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER SENSATA INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN. SENSATA DATA SHEETS ARE PROVIDED "AS IS". SENSATA MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE DATA SHEETS OR USE OF THE DATA SHEETS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. SENSATA DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO SENSATA DATA SHEETS OR USE THEREOF.

All products are sold subject to Sensata's terms and conditions of sale supplied at [www.sensata.com](http://www.sensata.com) SENSATA ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR THE DESIGN OF BUYERS' PRODUCTS. BUYER ACKNOWLEDGES AND AGREES THAT IT IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH ALL LEGAL, REGULATORY AND SAFETY-RELATED REQUIREMENTS CONCERNING ITS PRODUCTS, AND ANY USE OF SENSATA COMPONENTS IN ITS APPLICATIONS, NOTWITHSTANDING ANY APPLICATIONS-RELATED INFORMATION OR SUPPORT THAT MAY BE PROVIDED BY SENSATA.

Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

**CONTACT US**

**Americas**  
 +1 (800) 350 2727  
[sales.beisensors@sensata.com](mailto:sales.beisensors@sensata.com)  
**EMEA**  
[position-info.eu@sensata.com](mailto:position-info.eu@sensata.com)  
 +33 (3) 88 20 8080  
**Asia Pacific**  
[sales.isasia@list.sensata.com](mailto:sales.isasia@list.sensata.com)  
 China +86 (21) 2306 1500  
 Japan +81 (45) 277 7117  
 Korea +82 (31) 601 2004  
 India +91 (80) 67920890  
 Rest of Asia +886 (2) 27602006  
 ext 2808