gSENS Geometric Measurement
Good Work is Measurable

\[ \text{gSENS Geometric Sensors from WIKA Mobile Control} \]

Benefits of the gSENS Sensors

- Precise and reliable length measurement
- Precise angle measurement (-180° to +180°)
- Suitable for harsh environments (-40°C to +70°C)
- Compact and robust design
- Long service life
- CE-compliant
- Customizable for any application
Special Feature: Precision

gSENS sensors detect geometric parameters such as an object's angle or length and convert them into electrical values. Based on captured loads, moments are calculated to meet compliance with safety regulations.

Characteristics

**Application:**
- For all mobile machines
- Both rotational directions supported
- Left or right mounting

**Quality**
- Expert technical guidance
- Final check for 100% of sensors
- Long-life cycle

**Precise Length Measurement**
- Telescoping lengths up to 55 meters
- Hysteresis-free
- Integrated cable guide
- Constant cable tension

**Precise Angle Measurement**
- Angle range: -180° to +180°
- Accuracy: < 0.2°

**Signal Transmission**
- Output signal: 4...20 mA, CANopen, CANopen Safety
- Up to 15 signal, data, and electrical transmission lines
- Gold-plated slipring contacts for reliable transmission
- Different drum-windable cable types

**Service & Maintenance**
- Compact design
- Easy mounting
- Zero-point adjustment via software
- Simple plug connection
- Spring module

**Safety**
- Ambient temperature range: -40°C to +70°C
- IP66/67 die cast aluminum housing: sturdy, lightweight, robust
- Redundant design possible (EN 13849)
- All sensors CE-compliant
Customized Control Solution

The gSENS Series and the iSCALE Control System

Benefits of using gSENS sensors in combination with the iSCALE Control System:

- Ideably adjustable via controls (cSCALE), consoles (vSCALE), sensors (xSENS), or SLI software (qSCALE)
- Modularity and scalability from one source: flexible system design, choice of components, wiring, final acceptance, and startup
- Flexibility meeting the needs of both OEMs and final users
- Wide controller performance range
- Customized software solutions for a wide range of applications
- Integrated diagnostic capabilities (e.g. to detect cable breaks, short circuits, etc.)
- Auto Configuration of replacement parts
Overview: the gSENS Series

**gSENS LWG/LG**
- For all equipment
- Telescopic lengths up to 55 m
- Up to 11 logical slip ring poles

**gSENS WGX**
- Extremely versatile
- Selectable measurement range
- Flexible and adjustable

**gSENS DWG**
- Suitable for harsh conditions
- Single- and multi-turn versions
- Adaptable to installation situation
gSENS LWG – Length Angle Sensors

gSENS LG – Length Sensors
The Right Sensor for any Application

WIKA Mobile Control develops and produces several standard types of gSENS LWG. There is a variety of terms of cable reel size, internal mechanical design, and a number of cable wires leading to the tip of the crane.

### gSENS LWG 15x
- Sheet metal housing
- Up to 11 logical slip ring poles
- Telescoping length up to 32 meters

### gSENS LWG 2xx/3xx/5xx
- Die-cast aluminium housing
- Up to 11 logical slip ring poles
- Telescoping length up to 55 meters

### gSENS LWG 9xx
- Die-cast aluminum housing
- Standardized sensor elements
- High resolution and accuracy
- New cable guiding mechanism
- Simple connection, no need to open the device

### gSENS LWG 92x
- Especially suited for applications with limited space
- Up to 8 logical slip ring poles
- Telescoping length up to 15 meters

### gSENS LWG 95x
- Most in-demand geometric sensor for cranes in new and retrofit business
- Up to 8 logical slip ring poles
- Telescoping length up to 35 meters

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### Technical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>gSENS LWG 15x</th>
<th>gSENS LWG 2xx/3xx/5xx</th>
<th>gSENS LWG 92x</th>
<th>gSENS LWG 95x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle range</td>
<td>-90° to +90°</td>
<td>-90° to +90°</td>
<td>-180° to +180°</td>
<td>-180° to +180°</td>
</tr>
<tr>
<td>Length range</td>
<td>8-32 meters</td>
<td>15-55 meters</td>
<td>15 meters</td>
<td>Analog: 34 meters CAN: 35 meters</td>
</tr>
<tr>
<td>Output signal</td>
<td>4...20 mA, CANopen</td>
<td>4...20 mA, CANopen</td>
<td>4...20 mA, CANopen</td>
<td>4...20 mA, CANopen</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>9...36 V DC</td>
<td>9...36 V DC</td>
<td>9...36 V DC</td>
<td>Analog: 16...30 V DC CAN: 10...30 V DC</td>
</tr>
<tr>
<td>Safety architecture</td>
<td>Single or redundant</td>
<td>1-channel, 2 channel</td>
<td>1-channel, 2 channel</td>
<td>1-channel, 2 channel</td>
</tr>
<tr>
<td>Temperature drift</td>
<td>0,1%/10°K</td>
<td>0,1%/10°K</td>
<td>0,1%/10°K</td>
<td>0,1%/10°K</td>
</tr>
<tr>
<td>Linearity (typical) length measurent</td>
<td>&lt; 0,2 % FS</td>
<td>&lt; 0,2 % FS</td>
<td>&lt; 0,1 %</td>
<td>&lt; 0,1 %</td>
</tr>
<tr>
<td>Hysteresis (typical) length measurent</td>
<td>&lt; 0,1 % FS</td>
<td>&lt; 0,1 % FS</td>
<td>0 % FS</td>
<td>0 % FS</td>
</tr>
<tr>
<td>Housing material</td>
<td>Sheet metal</td>
<td>Die-cast aluminium</td>
<td>Die-cast aluminium</td>
<td>Die-cast aluminium</td>
</tr>
<tr>
<td>Connector</td>
<td>M12, customer specific</td>
<td>M12, CANNON, customer specific</td>
<td>M12, M23, customer specific</td>
<td>M12, M23, customer specific</td>
</tr>
<tr>
<td>Life cycle</td>
<td>10⁶ cycles</td>
<td>10⁶ cycles</td>
<td>10⁶ cycles</td>
<td>10⁶ cycles</td>
</tr>
<tr>
<td>Number of slip rings</td>
<td>0-11</td>
<td>0-11</td>
<td>0-8</td>
<td>0-8</td>
</tr>
<tr>
<td>Surface temperature</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
</tr>
</tbody>
</table>
gSENS WGX – Inclination Sensors
Precise  Robust  Compact

gSENS WGX inclination sensors can be used for all kinds of angle and position measurements on mobile machines.

- Absolute encoder
- Measuring via MEMS technology
- High operational reliability, also in extreme conditions
- Single- and two-axis configurations for measuring boom or jib angle as well as tilt angle of mobile machines
- Any zero-point setting via software
- Compact and robust design
- Long service life due to no mechanical wear
- Die-cast aluminium housing

Technical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>gSSENS WGX 360</th>
<th>gSSENS WGX 160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(Measurement) technology</td>
<td>MEMS</td>
<td>MEMS</td>
</tr>
<tr>
<td>Measured angle</td>
<td>360°</td>
<td>± 80°</td>
</tr>
<tr>
<td>Output signal</td>
<td>4...20 mA/CANopen</td>
<td>4...20 mA/CANopen</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>10...30 V DC</td>
<td>10...30 V DC</td>
</tr>
<tr>
<td>Resolution</td>
<td>± 0,01°</td>
<td>± 0,01°</td>
</tr>
<tr>
<td>Accuracy (sum)</td>
<td>± 0,1°</td>
<td>± 0,1°</td>
</tr>
<tr>
<td>Interface connection</td>
<td>M12 male</td>
<td>M12 male</td>
</tr>
<tr>
<td>Configuration interface</td>
<td>RS232</td>
<td>RS232</td>
</tr>
<tr>
<td>Protection rating</td>
<td>IP66/67 and IP69K</td>
<td>IP66/67 and IP69K</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
</tr>
</tbody>
</table>
gSENS DWG – Rotary Encoder
**Customizable**

\textbf{gSENS DWG geometric sensors are used to measure angles of rotation in harsh environmental conditions. They capture rotational changes and convert them into electrical signals.}

- Absolute encoder
- Optical and magnetic measurement technology
- Single-turn version: measurement range from 0° to 360°
- Multi-turn version: detects number of revolutions

\textbf{Technical Specifications}

<table>
<thead>
<tr>
<th>Description</th>
<th>gSENS DWG 10</th>
<th>gSENS DWG 20</th>
<th>gSENS DWG 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Measurement) technology</td>
<td>Optical</td>
<td>Optical</td>
<td>Magnetic</td>
</tr>
<tr>
<td>Interface, galvanically isolated</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Output signal</td>
<td>CANopen</td>
<td>x</td>
<td>4…20 mA/CANopen</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>10…30 V DC</td>
<td>10…30 V DC</td>
<td>Analog: 10…30 V DC CAN: 15…30 V DC</td>
</tr>
<tr>
<td>Resolution (single turn)/360°</td>
<td>13 bit/0,044*</td>
<td>13 bit/0,044*</td>
<td>12 bit/0,088**</td>
</tr>
<tr>
<td>No. of cycles</td>
<td>CAN: 4096</td>
<td>CAN: 1</td>
<td>Analog: 4 bit resolution CAN: 4096</td>
</tr>
<tr>
<td>Measurement accuracy</td>
<td>± ½ LSB</td>
<td>± ½ LSB</td>
<td>± 0,35°*</td>
</tr>
<tr>
<td>Interface connection</td>
<td>M12 male</td>
<td>M12 male</td>
<td>M12 male, JST</td>
</tr>
<tr>
<td>Protection rating</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td>PL/SIL Level</td>
<td>Synchro flange</td>
<td>Synchro flange / clamp flange</td>
<td>Clamp flange</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
</tr>
</tbody>
</table>

*Type relevant

LSB = least significant bit
We make lifting loads safer!

As an experienced specialist, we have spent many years providing reliable safety solutions for lifting loads, setting innovative standards in the process and ensuring dependable communication between machines and their operators, particularly in harsh environments.

By developing application software, mobile controllers and robust sensors, we ensure that our customers benefit from maximum safety and equipment uptime.

We are system integrators, supporting our customers through all project phases: from analysis and concept evaluation, through system design and project planning to prototype testing and field launches. Our safety experts support certification processes and are available for seamless life cycle management.

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