**SENSOR FEATURES**

- 2-wire DC sensor with minimum off-state current
- ATEX-approval for zone 2 and zone 22
- High temp, UV, salt water resistant
- Rugged metal base

**TECHNICAL DATA**

**General specifications**
- Switching function: 2 x normally open (NO)
- Output type: Two-wire
- Rated operating distance: $s_o$ 2.5mm
- Installation: For non-flush mounting
- Output polarity: DC
- Assured operating distance: $s_a$ 0 ... 2.05mm
- Output type: 2 x 2-wire

**Nominal ratings**
- Operating voltage: $U_B$ 6 ... 30V
- Switching frequency: $f$ 0 ... 100 Hz
- Hysteresis: $H$ Typical 0.5 mm
- Reverse polarity protection: Reverse polarity tolerant
- Short-circuit protection: No
- Voltage drop: $U_d \leq 6$ V
- Operating current: $I_L$ 4 ... 100mA
- Off-state current: $I_r$ 100 ... 200 µA, typical 160 µA

**Functional safety related parameters**
- MTTF: $d$ 684 a
- Mission Time: $T_M$ 20 a
- Diagnostic Coverage: DC 0%

**Electrical specifications - valve circuit**
- Voltage: 10 ... 32V
- Current: Max. 240 mA

**Ambient conditions**
- Ambient temperature: $T_A$ -40 ... 75°C (-40 ... 167°F), restriction for use in hazardous area, see instruction manual
- Storage temperature: -40 ... 85°C (-40 ... 185°F)

**Mechanical specifications**
- Connection (system side): M20 x 1.5 cable gland, ground connection + earthing screw only for wire cross-section 4mm², use solid wire or stranded wire + wire end ferrule
- Connection (valve side): Screw terminal, cable gland M20 x 1.5
- Housing material: Rugged polycarbonate (PC) + GF 10%, optimized for outdoor use
- Housing base: Powder coated aluminum
- Degree of protection: IP67, additional degree of protection IP66/69K with 540100-70600533 and 540100-21900533
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Terminal assembly</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Connection type</strong></td>
<td>For connection of copper wires with 7 mm dismantle length. Tightening torque 0.5 ... 0.6 Nm</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Screw terminal block, pluggable</td>
</tr>
<tr>
<td><strong>Terminal capacity</strong></td>
<td>Conductor cross-section 0,25 ... 2,5 mm², flexible/rigid. For Multiple-wire connection: two wires of equal cross-section per 0,25...1 mm²</td>
</tr>
<tr>
<td><strong>Tightening torque, fastening screws</strong></td>
<td>2 Nm</td>
</tr>
<tr>
<td><strong>Tightening torque, housing screws</strong></td>
<td>1.5 Nm</td>
</tr>
<tr>
<td><strong>Tightening torque, earthing screw</strong></td>
<td>1.5 Nm</td>
</tr>
<tr>
<td><strong>Tightening torque, cable gland</strong></td>
<td>≤ 4 Nm</td>
</tr>
<tr>
<td><strong>Tightening torque, stopping plug</strong></td>
<td>2 Nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use in the hazardous area</strong></td>
<td>See instruction manuals</td>
</tr>
<tr>
<td><strong>Category</strong></td>
<td>3G, 3D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance with standards &amp; directives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CCC approval</strong></td>
<td>Approval and marking not required for products rated ≤ 36 V</td>
</tr>
</tbody>
</table>

### General specifications

- **Housing material**: PC
- **Activator material**: PA
- **Protective cover material**: V4A/316L
- **Valve status indicator**: Red = CLOSED Green = OPEN
- **Indicator adjustments**: 5 degree increments
- **Activator adjustment – top level**: 5 degree increments
- **Activator adjustment – bottom level**: 90 degree increments
- **Activator markings**: 5 degree increments
- **Hardware**: 316 stainless steel
- **Activator targets**: 303 stainless steel

### ACTIVATOR AND MOUNTING ASSEMBLY FEATURES

- High-visibility valve position display
- Protection against contamination and damage
- Three level adjustable
- Suitable for CW or CCW operation
- 30 x 80mm actuator mounting
- 30 x 130mm actuator mounting

### DIMENSIONS
## INDUCTIVE SENSOR KIT

30 x 80mm mounting pattern, adjustable activator

<table>
<thead>
<tr>
<th>Description</th>
<th>Hardware</th>
<th>Kit Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bray S92/93 Sizes 63 to 128 and Series 98 NAMUR VDI/VDE 3845 Compliant mounting</td>
<td>metric</td>
<td>540102-12650536</td>
</tr>
<tr>
<td>Bray S92/93 Sizes 63 to 128</td>
<td>imperial</td>
<td>540102-12600536</td>
</tr>
</tbody>
</table>

### Part List

<table>
<thead>
<tr>
<th>Qty</th>
<th>Metric (540102-12650536)</th>
<th>Imperial (540102-12600536)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sensor 540102-71104533</td>
<td>Sensor 540102-71104533</td>
</tr>
<tr>
<td>1</td>
<td>Activator assembly</td>
<td>Activator assembly</td>
</tr>
<tr>
<td>1</td>
<td>Protective cover - Zone 2/22</td>
<td>Protective cover - Zone 2/22</td>
</tr>
<tr>
<td>2</td>
<td>Socket head capscrew M5X0.8X12, Stainless Steel</td>
<td>Socket head capscrew #10-32X1/2, Stainless Steel</td>
</tr>
</tbody>
</table>

See Series 54 IOM for full mounting details.

### 30 x 80mm mounting pattern, adjustable activator

<table>
<thead>
<tr>
<th>Description</th>
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<th>Kit Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bray S92/93 Sizes 160 to 255 NAMUR VDI/VDE 3845 Compliant mounting</td>
<td>metric</td>
<td>540102-12651536</td>
</tr>
<tr>
<td>Bray S92/93 Sizes 160 to 210</td>
<td>imperial</td>
<td>540102-12601536</td>
</tr>
</tbody>
</table>
### Part List

<table>
<thead>
<tr>
<th>Qty</th>
<th>Metric (540102-12651536)</th>
<th>Imperial (540102-12601536)</th>
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<td>Sensor 540102-71104533</td>
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<tr>
<td>1</td>
<td>Activator assembly</td>
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</tr>
<tr>
<td>1</td>
<td>Protective cover - Zone 2/22</td>
<td>Protective cover - Zone 2/22</td>
</tr>
<tr>
<td>1</td>
<td>Mounting plate assembly</td>
<td>Mounting plate assembly</td>
</tr>
<tr>
<td>2</td>
<td>Socket head capscrew M5X0.8X10, Stainless Steel</td>
<td>Socket head capscrew #10-32X3/8, Stainless Steel</td>
</tr>
</tbody>
</table>

See Series 54 IOM for full mounting details.

### INSTRUCTION MANUAL - GC (NA)

**Equipment protection level Dc (tc)**
- Manual electrical apparatus for hazardous areas - Gas Group IIIC

**Device category 3G (nA)**
- For use in hazardous areas with gas, vapor and mist

**Certificate**
- BR 17 CERT 1705 X

**CE marking**
- CE

**ATEX marking**
- II 3G Ex nA IIC T6 ... T1 Gc

**Standards**
- EN 60079-0:2012+A11:2013, EN 60079-15:2010 - Protection by increased safety "nA".

**General**
- The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be observed!

**Installation, commissioning**
- Laws and/or regulations and standards governing the use or intended usage goal must be observed. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again. Seal any openings on the housing not in use, using the stainless steel stopping plugs supplied. No other devices should be used to seal the openings. The stopping plugs made of plastic must no longer be used.

**Maintenance**
- No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again.

**Special conditions**

- **Maximum operating current \([I_L]\)**: The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.

- **Maximum operating voltage \([U_{\text{max}}]\)**: The maximum permissible operating voltage \(U_{\text{max}}\) is restricted to the values in the following list. Tolerances are not permitted.

- **Maximum permissible ambient temperature \([T_{\text{max}}]\)**: Depending on the load current \(I_L\), the maximum operating voltage \(U_{\text{max}}\), and the temperature class. Details can be found in the following list.

  - at \(U_{\text{max}}=30\ \text{V}, I_L=100\ \text{mA}, T_6\) 35°C (95°F)
  - at \(U_{\text{max}}=30\ \text{V}, I_L=100\ \text{mA}, T_1 \ldots T_5\) 57°C (134.6°F)
  - at \(U_{\text{max}}=30\ \text{V}, I_L=50\ \text{mA}, T_6\) 35°C (95°F)
**INSTRUCTION MANUAL - GC (NA)**

- **Device protection level DC (tc):**

  - At $U_{B\text{max}} = 30 \text{ V}$, $I_{L} = 50 \text{ mA}$, $T_{1} ... T_{5}$: $60^\circ \text{C} (140^\circ \text{F})$

- **Maximum values of the valve circuit:**

  - $U_v = 32 \text{ V}, I_v = 240 \text{ mA}$

- **Protection from mechanical danger:**

  - The sensor must not be exposed to any form of mechanical danger. If you use the protective cover S40100-70600533 and the actuator with protective cover S40100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If protective cover becomes damaged, replace the protective cover.

- **Protection from UV light:**

  - The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas. If you use the protective cover S40100-70600533 and the actuator with protective cover S40100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If the protective cover becomes damaged, replace the protective cover.

- **Electrostatic charge:**

  - Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Sliding contact discharges must be avoided. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1. Do not attach the nameplate provided in areas where electrostatic charge can build up.

- **Lead insertion:**

  - If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.

- **Material selection accessories:**

  - When selecting accessories, ensure that the material allows the temperature of the enclosure to rise to up to 70°C.

- **Plug connector:**

  - The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING· DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).

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**INSTRUCTION MANUAL - DC (tc)**

- **Equipment protection level DC (tc):**

  - Manual electrical apparatus for hazardous areas - Dust Group IIIC

- **Device category 3D (tc):**

  - For use in hazardous areas with combustible dust

- **Certificate:**

  - BR 17 CERT 1705 X

- **CE marking:**

  - II 3D Ex tc IIIC T80°C Dc

- **ATEX marking:**

  - The Ex-related marking can also be printed on the enclosed label.

- **Standards:**


- **Protection from mechanical danger:**

  - The sensor must not be exposed to any form of mechanical danger. If you use the protective cover S40100-70600533 and the actuator with protective cover S40100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If protective cover becomes damaged, replace the protective cover.

- **Protection from UV light:**

  - The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas. If you use the protective cover S40100-70600533 and the actuator with protective cover S40100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If the protective cover becomes damaged, replace the protective cover.

- **Electrostatic charge:**

  - Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Sliding contact discharges must be avoided. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1. Do not attach the nameplate provided in areas where electrostatic charge can build up.

- **Lead insertion:**

  - If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.

- **Material selection accessories:**

  - When selecting accessories, ensure that the material allows the temperature of the enclosure to rise to up to 70°C.

- **Plug connector:**

  - The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING· DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).

- **Lead insertion:**

  - If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.

- **Material selection accessories:**

  - When selecting accessories, ensure that the material allows the temperature of the enclosure to rise to up to 70°C.

- **Plug connector:**

  - The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING· DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).
Maximum permissible ambient temperature \([T_{\text{Umax}}]\) | Dependant of the load current \(I_L\) and the maximum operating voltage \(U_{\text{Bmax}}\). Details can be found in the following list.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>at (U_{\text{Bmax}}=30,V, I_L=100,mA), (T=80^\circ\text{C})</td>
<td>57°C (134.6°F)</td>
</tr>
<tr>
<td>at (U_{\text{Bmax}}=30,V, I_L=50,mA), (T=80^\circ\text{C})</td>
<td>60°C (140°F)</td>
</tr>
</tbody>
</table>

Maximum values of the valve circuit

- \(U_V = 32\,V\)
- \(I_V = 240\,mA\)

Protection from mechanical danger

The sensor must not be exposed to ANY FORM of mechanical danger. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/ EN 60079-0. If the protective cover becomes damaged, replace the protective cover.

Protection from UV light

The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533 it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If the protective cover becomes damaged, replace the protective cover.

Electrostatic charge

Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Sliding contact discharges must be avoided. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-21. Do not attach the nameplate provided in areas where electrostatic charge can build up.

Lead insertion

If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.

Plug connector

The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING - DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).