



Part no.: 98.3011

- 01-09-UCCW, 2x50, 4.5-32VDC, Various Outputs
- Optical shaft encoder
- ATEX, IECEX, UKEX and MID certificates
- Suitable for building into mechanical registers
- Compact and rugged design



### Electrical specifications

|                               |                                                                               |
|-------------------------------|-------------------------------------------------------------------------------|
| <b>Code:</b>                  | Incremental - quadrature                                                      |
| <b>Resolution:</b>            | 2x50ppr (pulses per revolution)                                               |
| <b>Supply voltage:</b>        | 4.5-32VDC**                                                                   |
| <b>Supply current:</b>        | Max.55mA/Typ.35mA                                                             |
| <b>Output stage:</b>          | Various Outputs                                                               |
| <b>Output current:</b>        | 30mA/channel max load**                                                       |
| <b>Output frequency:</b>      | rpm/60×ppr ≤1000Hz **                                                         |
| <b>Output format:</b>         |                                                                               |
| <b>Phase shift:</b>           | Direction is CCW when facing the visible part of the coupling                 |
| <b>Electrical protection:</b> | Reverse polarity protected                                                    |
| <b>Noise immunity:</b>        | Tested for ElectroMagnetic Compatibility (EMC) to EN61000-6-4 and EN61000-6-2 |

\*\*= It is not recommended to combine max values for all parameters

### Cable

|                      |                                                                                                                         |
|----------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Cable:</b>        | 6x0.25mm                                                                                                                |
| <b>Cable length:</b> | 2m cable with 6 core + shield                                                                                           |
| <b>Color code:</b>   | VCC: Yellow<br>GND: Brown<br>Channel 1: White<br>Channel 2: Green<br>Function select 1: Pink<br>Function select 2: Grey |
| <b>Shield:</b>       | Shield connected to housing                                                                                             |



### Certificates

|                              |                                             |
|------------------------------|---------------------------------------------|
| <b>ATEX:</b>                 | II 2 G Ex db IIB T6 Gb<br>ITS-I22ATEX35219X |
| <b>IECEX:</b>                | Ex db IIB T6 Gb<br>IECEX ITS 22.0029X       |
| <b>UKEX:</b>                 | Ex db IIB T6 Gb<br>ITS22UKEX0669X           |
| <b>MID part certificate:</b> | NMI TC8656                                  |
| <b>W&amp;M</b>               | PTB no. 5.552 - 92.14                       |

### Mechanical specifications

|                             |                                                                                             |
|-----------------------------|---------------------------------------------------------------------------------------------|
| <b>Material:</b>            | Die cast, seawater resistant aluminum alloy                                                 |
| <b>Size:</b>                | 81x68.5x24mm (excl. mechanical coupling)                                                    |
| <b>Weight:</b>              | ~200g (excl. cable)                                                                         |
| <b>Bearing:</b>             | Self-lubricating sintered bronze                                                            |
| <b>Speed:</b>               | Max. 1000rpm                                                                                |
| <b>Mechanical coupling:</b> | 62.0021+62.0500, see separate drawing.<br>The coupling is factory installed before shipping |
| <b>Clutch:</b>              |                                                                                             |
| <b>Mounting options:</b>    | 4pcs. M4 screws from lower side or 2pcs. screws from top side.                              |
| <b>Sealing:</b>             | 1 tin seal in cover                                                                         |
| <b>Other:</b>               |                                                                                             |

### Environmental specifications

|                               |                |
|-------------------------------|----------------|
| <b>Operating temperature:</b> | -30°C to +60°C |
| <b>Approved temperature:</b>  | -30°C to +60°C |

### Software features

|                     |                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suppression:</b> |                                                                                                                                                                                                                                                                                                        |
| <b>Alarm:</b>       | An alarm is generated if any one or more of the following situations occurs: <ul style="list-style-type: none"><li>a) Short circuit between outputs CH1 a and CH2.</li><li>b) One of the three optoswitches fails.</li><li>c) More than 32 backward pulses are counted by the microprocessor</li></ul> |

### Bracket & Assembly

The gearbox (p/n 90.8011) functions as a mounting bracket on the meter.  
Gearbox to encoder drive ratio is 1:1 and 1 pulse = 10cm<sup>3</sup>  
Totalizer drive output is geared for 0.5 litre/rev meter.

### Software features

|                     |                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suppression:</b> |                                                                                                                                                                                                                                                                                                        |
| <b>Alarm:</b>       | An alarm is generated if any one or more of the following situations occurs: <ul style="list-style-type: none"><li>a) Short circuit between outputs CH1 a and CH2.</li><li>b) One of the three optoswitches fails.</li><li>c) More than 32 backward pulses are counted by the microprocessor</li></ul> |

## Working modes

### Function Stages :

| Output mode   | Func. sel. 1 | Func. sel. 2 | Supply Voltage | Supply current        |
|---------------|--------------|--------------|----------------|-----------------------|
| 1 (Koppens)   | Gnd          | VCC          | 17.0V to 32.0V | <50mA, typ. 32mA      |
| 2 (Schwelm)   | Gnd          | GND          | 4.5V to 5.5V   | 40 to 50mA, typ. 45mA |
| 3 (Dunclaire) | VCC          | VCC          | 10.8V to 13.2V | <50mA, typ. 28mA      |
| 4 (3 S)       | VCC          | GND          | 9.0V to 16.0V  | <50mA, typ. 28mA      |

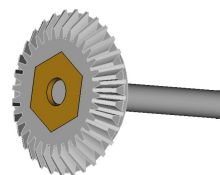
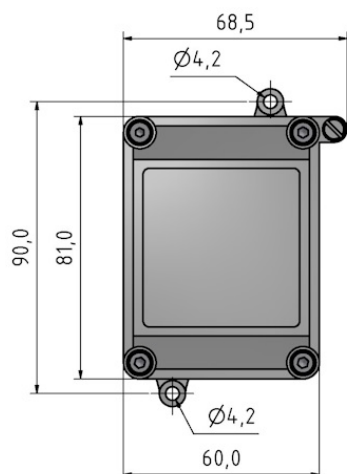
### Function Stages :

| Output mode   | Output stage       | Output signal                                            |
|---------------|--------------------|----------------------------------------------------------|
| 1 (Koppens)   | PNP open collector | Negative going pulse, 400µsec ± 50µsec, Phase 180° ± 30° |
| 2 (Schwelm)   | PNP open collector | Pulse train, Duty cycle 50%, ± 10%, Phase 90° ± 30°      |
| 3 (Dunclaire) | NPN open collector | Pulse train, Duty cycle 50%, ± 10%, Phase 90° ± 30°      |
| 4 (3 S)       | NPN open collector | Positive going pulse, 200µsec ± 50µsec, Phase 180° ± 30° |

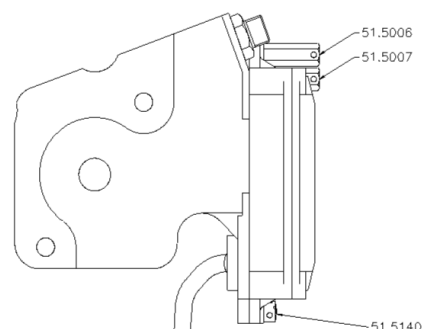
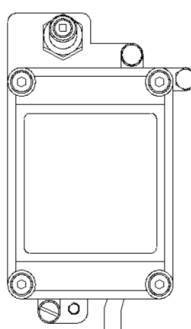
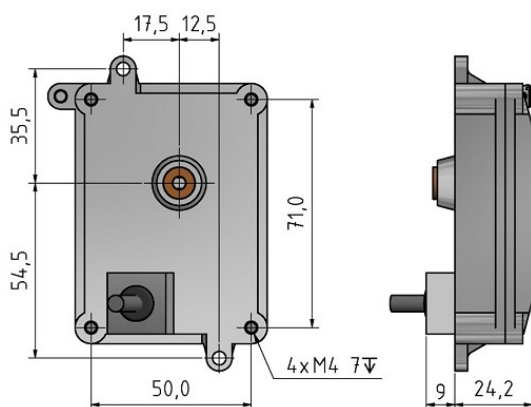
### Alarm conditions:

| Output mode   | Alarm Condition | Output signal         |
|---------------|-----------------|-----------------------|
| 1 (Koppens)   | a), b) & c)     | Both outputs "low"    |
| 2 (Schwelm)   | b) & c)         | Supply current < 20mA |
| 3 (Dunclaire) | b) & c)         | Supply current < 35mA |
| 4 (3 S)       | a), b) & c)     | Both outputs "high"   |

## Mechanical drawing



Coupling 62.0021+62.0500



Encoder with gearbox (p/n 90.8011)

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## Revision history

Revision 2: 21.01.2014 Updated approvals and labels

Revision 3: 15.07.2025 Updated Ex approvals