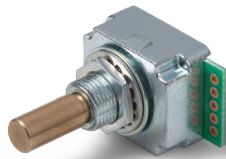


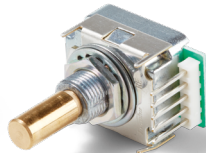
# Data Sheet for Panel Encoders

## Optoelectronic Panel Encoder

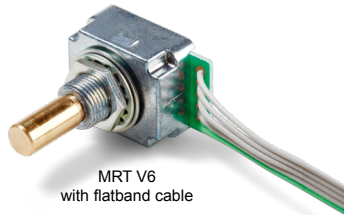
## Series MRT



MRT  
with lands



MRT V5  
with front pins



MRT V6  
with flatband cable

- Compact design, ideal for small installation spaces
- Resolution 25 pulses per revolution
- Low power consumption < 10 mA
- Long push switch travel 1,2 mm
- Lifespan 1 mio. shaft revolutions
- With push button switch - with detent (25 clicks) or without
- Various electrical connection variants
- 5 V supply voltage

MRT offers some special features and is mainly used where a long push switch travel and / or low power consumption is required. The solid construction and the long life span round up the overall picture positive.

| Electrical Data Sensor      | MRT                        | MRTC                    |
|-----------------------------|----------------------------|-------------------------|
|                             | with switch without detent | with switch with detent |
| Output signal               | A, B                       |                         |
| Number of pulses            | 25 pulses per rev.         |                         |
| Output voltage high         | ≥ (supply voltage -0,5V)   |                         |
| Output voltage low          | ≤ 0.4 V max.               |                         |
| Limit frequency             | 200 Hz                     |                         |
| Supply voltage              | 5 V ±10%                   |                         |
| Power consumption (no load) | < 10 mA                    |                         |
| Output load                 | 20 mA                      |                         |
| Insulation voltage 1.)      | 250 VAC, 1 min             |                         |
| Insulation resistance 1.)   | 100 MOhm @ 250 VDC         |                         |
| Output electronics          | CMOS                       |                         |

| Mechanical and Environmental Data Sensor | MRT  | MRTC                    |
|--|--|-------------------------|
|  | with switch without detent                       | with switch with detent |
| Mechanical angle of rotation /stroke 1.) | 360° without stop                                |                         |
| Number of detents per revolution         | -  | 25 clicks (25 ppr.)     |
| Lifespan 2.)                             | > 1 Mio. shaft revolutions                       |                         |
| Bearing                                  | Sleeve bearing                                   |                         |
| Operational torque / detent torque       |  |                         |
| Without detent standard torque           | < 0.5 Ncm  | -                       |
| With detent high torque                  | -  | < 0.5 ±0.2 Ncm          |
| Operating temperature range              | 0..+60 °C  |                         |
| Storage temperature range                | -40..+85 °C                                      |                         |
| Protection grade standard (IEC 60529)    | IP40   |                         |
| Option D (shaft sealing)                 | IP54   |                         |
| Vibration (IEC 68-2-6, Test Fc)          | 10-55 Hz; 1.5mm 2h each direction                |                         |
| Shock (IEC 68-2-27, Test Ea)             | 490m/s <sup>2</sup> , 11 mm X, Y, Z each 3 times |                         |

# Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MRT

| Mechanical and Environmental Data Sensor | MRT<br>with switch without detent   | MRTC<br>with switch with detent |
|--|---|---------------------------------|
| Housing diameter / length                | 21.2 x 18 mm  |                                 |
| Housing depth                            | 11 mm   |                                 |
| Shaft diameter                           | 6 mm  |                                 |
| Shaft type                               | Solid shaft   |                                 |
| Max. radial load                         | < 1 N   |                                 |
| Max. axial load                          | < 1 N   |                                 |
| Connection type                          | Solder lugs, solder pins, flatband cable  |                                 |
| Connection position                      | Radial  |                                 |
| Sensor mounting                          | Bushing   |                                 |
| Mass                                     | app. 16 g   |                                 |
| Fastening parts included in delivery     | Hex nut (AF12), flat washer, and tooth washer for option D with additional sealing ring |                                 |
| Fastening torque mounting nut            | < 1.5 Nm  |                                 |
| Material shaft                           | Messing   |                                 |
| Material housing                         | Metal   |                                 |
| Material disc                            | Polyoxymethylene (POM)  |                                 |

| Electrical Data Push Button Switch |            |
|------------------------------------|------------|
| Max. voltage push button switch    | 12 VDC     |
| Max. current push button switch    | 20 mA      |
| Resistance push button switch      | < 200 mOhm |

| Mechanical Data and Environmental Data Push Button Switch |                       |
|---|-----------------------|
| Lifespan push button switch                               | > 0.5 mio. actuations |
| Travel of push button switch                              | 1.2 mm                |
| Operational force of push button switch                   | 4 ±1 N                |

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

# Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MRT

## Order code

| Description  |               | Selection: standard=black/bold, possible options=grey/cursive |           |   |   |        |               |                      |
|--|---------------|---|-----------|---|---|--------|---------------|----------------------|
| <b>Series</b>  | <b>MRT</b>    |   |           |   |   |        |               |                      |
| <b>Detent:</b><br><b>With detent and with push button switch</b><br><i>Option without detent and with push button switch</i>                         | <b>C</b><br>- |   |           |   |   |        |               |                      |
| <b>Resolution in pulses per revolution:</b><br><b>25 ppr. (detents)</b>  |               |   | <b>25</b> |   |   |        |               |                      |
| <b>Supply voltage:</b><br><b>5 V</b>   |               |   |           | - |   |        |               |                      |
| <b>Output signal:</b><br><b>A+B</b>  |               |   |           |   | - |        |               |                      |
| <b>Shaft sealing:</b><br><b>Without shaft sealing</b><br><i>Option D with shaft sealing</i>  |               |   |           |   |   | -<br>D |               |                      |
| <b>Electrical Connection:</b><br><b>With solder lands</b><br><i>Option with solder pins to the front side</i><br><i>Option flatband cable 150 mm</i> |               |   |           |   |   |        | -<br>V5<br>V6 |                      |
| <b>Shaft diameter, shaft length:</b><br><b>Ø 6.00 x 21.2 mm</b><br><i>Option shaft length in mm</i><br><i>Option shaft diameter in mm (≤6,00 mm)</i> |               |   |           |   |   |        |               | -<br>Ax,xx<br>DMx,xx |

## Order example MRT

### Requirement:

With detent and push button switch, 25 pulses per revolution, supply voltage 5 V, output signal A+B, without shaft sealing, electrical connection solder lands, shaft diameter 6 mm, shaft length 21,2 mm

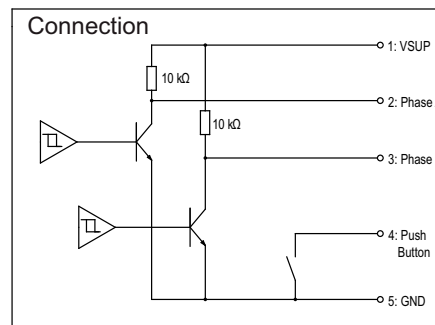
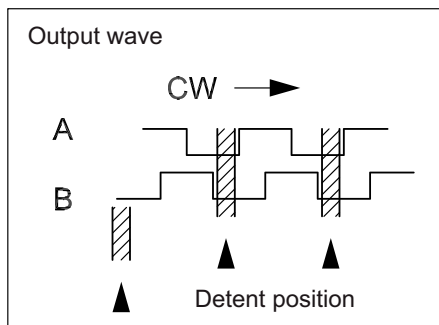
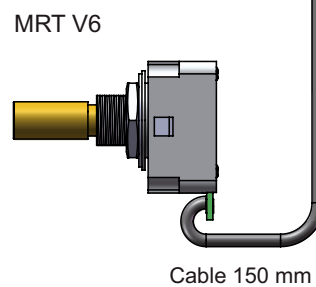
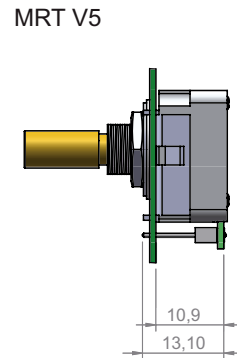
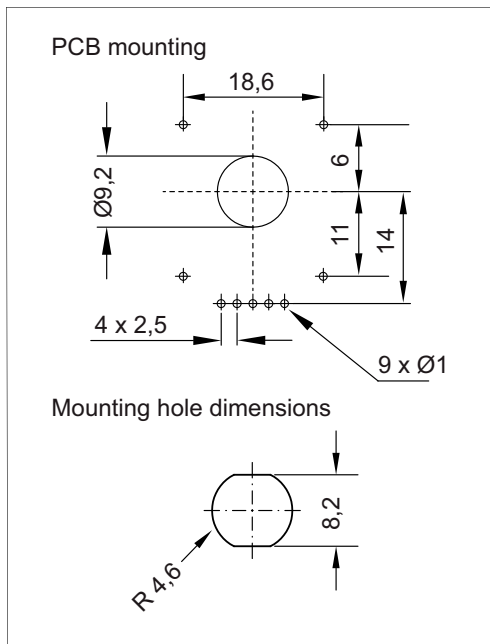
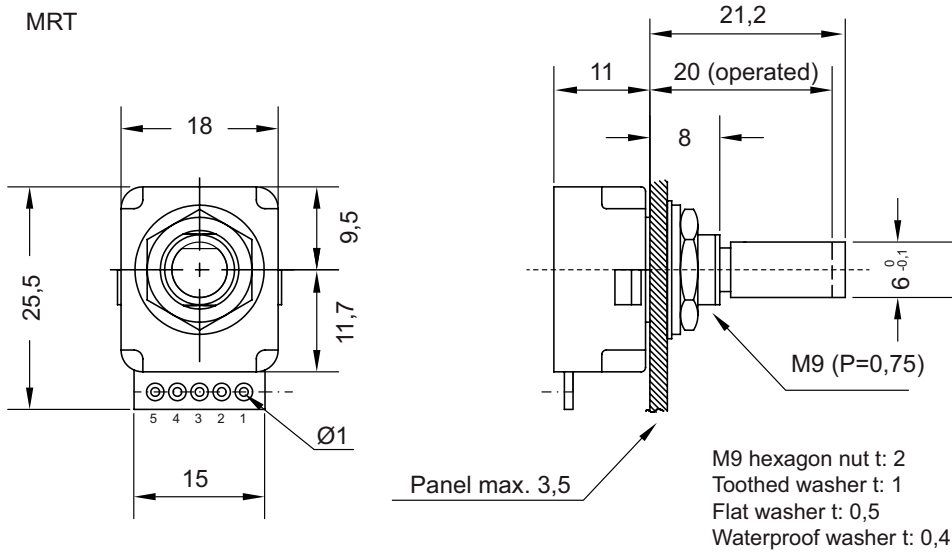
**Example for order code:** MRT C 25

## For higher quantities or on-going demand, additional options are available as described below

For example:

- Other resolutions
- Other number of detents
- Customized detent torque
- Special shaft design
- Special cable and connection design

Drawing



Dimensions in mm