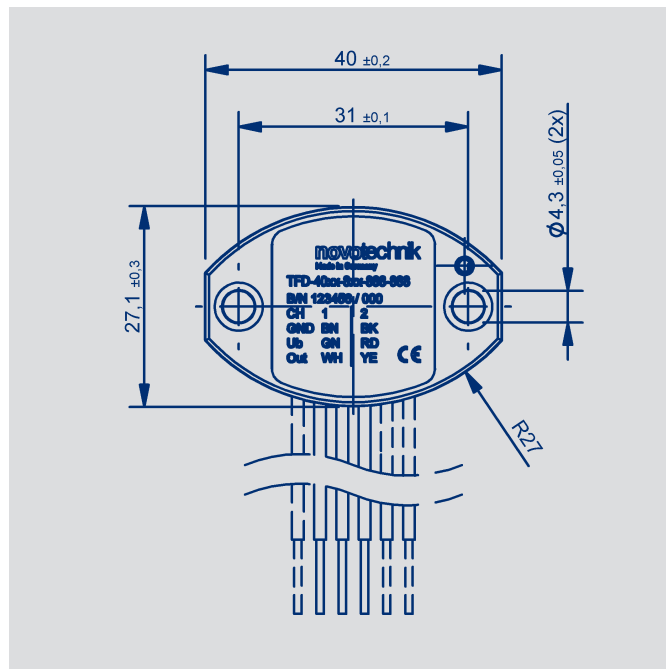
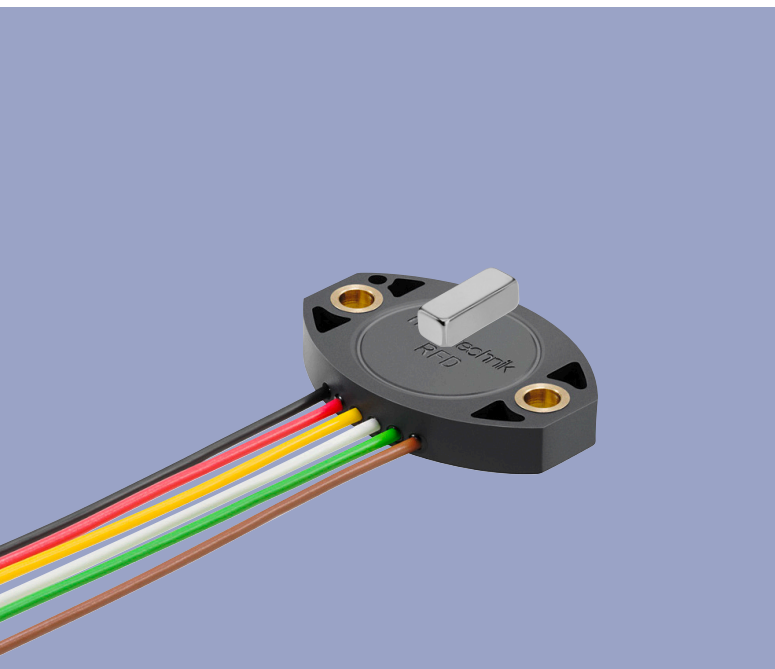


**NOVOHALL
Transducer
5 up to 50 mm
touchless**

Series TFD-4000



Special features

- Hall technology
- 2-part, mechanically decoupled
- High protection class, IP67, IP68, IP6K9K
- Resolution up to 12 bit
- Wear-free
- Temperature range -40 °C up to +125 °C
- Single and redundant versions
- Optimized for mechanical engineering and mobile applications
- Favourable price / performance ratio
- Extremely flat design
- Customized versions

Applications

- Mechanical engineering
 - Textile machinery
 - Packaging machinery
 - Sheet metal and wire working machinery
- Medical applications
- Mobile machinery
 - Industrial trucks
 - Construction machinery
 - Agricultural and forestry machinery
 - Railway technology
- Navy applications

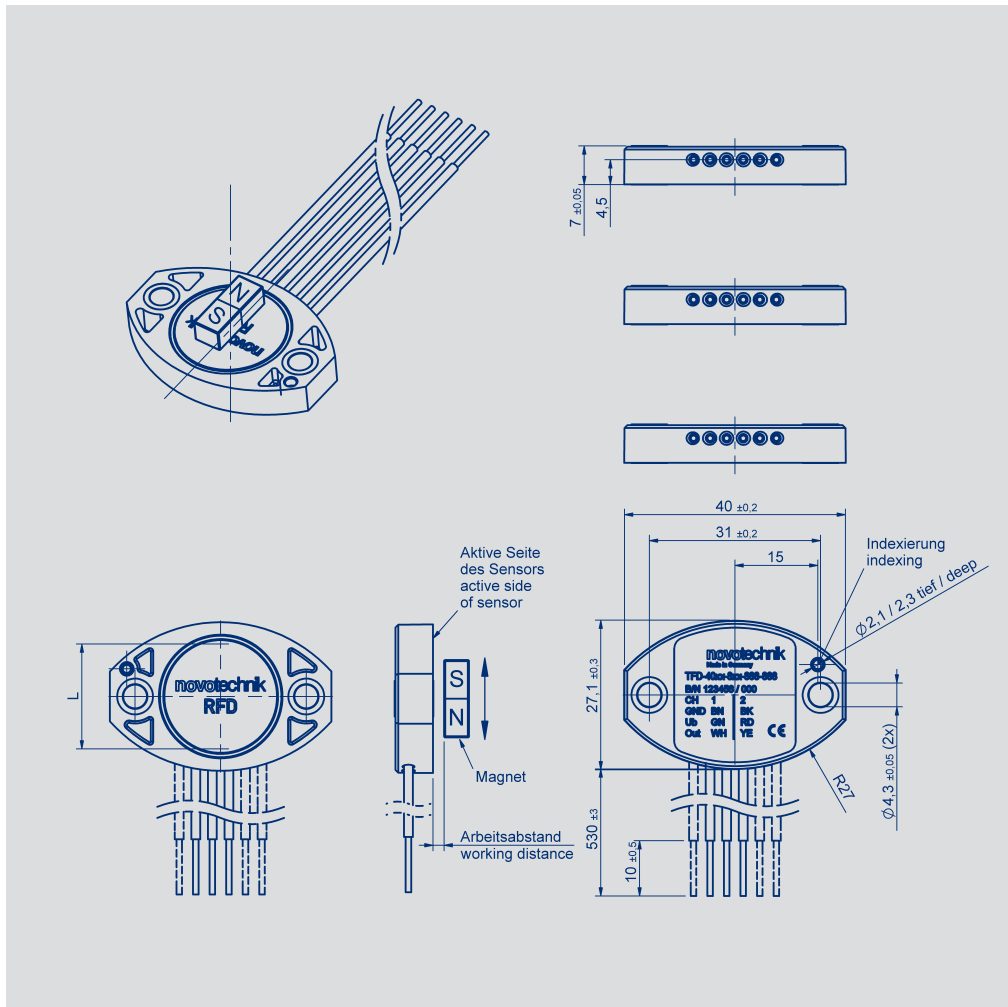
Project item

Please contact your local distributor or our technical support
Phone (+49) 711 4489-250
support@novotechnik.de

Contents

| | |
|-------------------------------|----|
| Dimension drawing | 3 |
| Mechanical data | 4 |
| Output characteristics | 5 |
| Analog versions | |
| Technical data | 6 |
| Ordering specifications | 7 |
| Accessories | |
| Position markers | 8 |
| Signal processing | 9 |
| Customized versions | |
| Connecting options | 10 |

Dimension Drawing



CAD data see
www.novotechnik.de/en/download/cad-data/

Magnet alignment

The north pole of the magnet (color marking) must show in direction of the electrical connection.

If the magnet is located centrally to the sensor, the sensor is near the electrical center position.

Characteristic directions

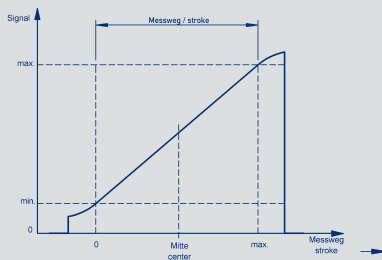
Signal channel 1 rising, signal channel 2 falling when moving away from electrical connection.

Mechanical Data

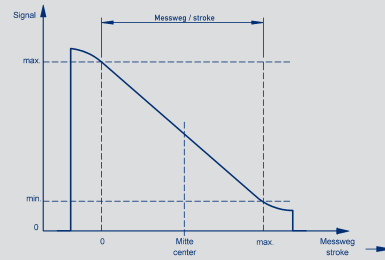
| Description | | |
|---|--|-----|
| Housing | High grade, temperature resistant plastic, Thermoplast with brass inserts | |
| Electrical connections | Lead wires, 0.5 mm ² (AWG 20), PVC insulated | |
| Mechanical Data | | |
| Dimensions | See dimension drawing | |
| Mounting | 2 round-head screws with hexagon socket M4x14 (included in delivery) | |
| Fastening torque of mounting screws | 200 ... 300 | Ncm |
| Maximum operational speed | Mechanically unlimited | |
| Weight (w/o connection) | approx. 10 | g |
| Vibration (IEC 60068-2-6) | 5 ... 2000 | Hz |
| | A _{max} = 0.75 | mm |
| | a _{max} = 20 | g |
| Shock (IEC 60068-2-27) | 100 (6 ms) | g |
| Life | Mechanically unlimited | |
| Protection class (DIN EN 60529 / DIN 40050) | IP67 / IP68 / IP6K9K | |
| Operating temperature | -40 ... +125 | °C |

Output Characteristics

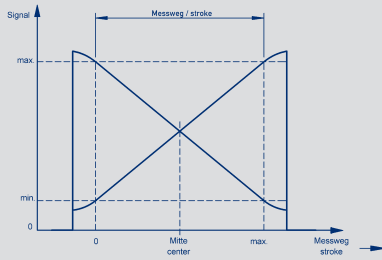
One channel, cw



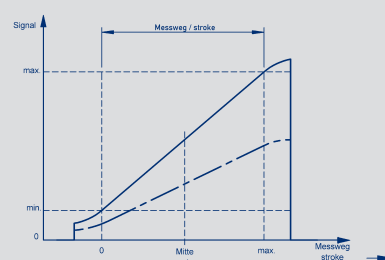
On request: one channel, ccw



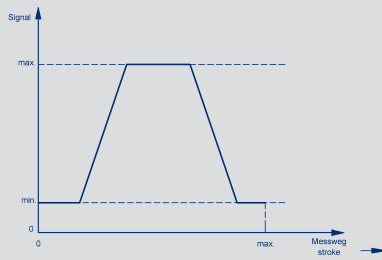
Crossed characteristics, channel 1 cw



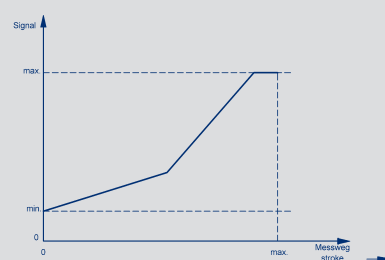
On request: two channels, signal 2 = 0.5 x signal 1



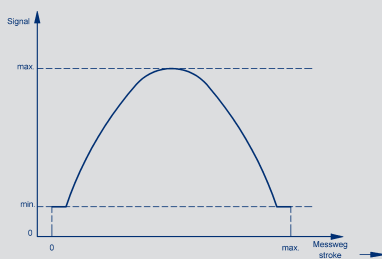
On request: Trapeze characteristic



On request: different gradients



On request: Parable characteristic



Technical Data

| Technical Data | | |
|--|---|-------------------------|
| Type designations | TFD-4021- _ _ _ - 2 _ _ - _ _ _ ratiometric | |
| Electrical Data | | |
| Supply voltage Ub | 5 (4.5 ... 5.5) | VDC |
| Current consumption (w/o load) | typical 15 (typical 8 on request) per channel | mA |
| Reverse voltage | yes, supply lines | |
| Short circuit protection | yes, all outputs vs. GND and supply voltage | |
| Measuring range (dimension L) | standard 14 and 24, other lengths from 5 up to 50 mm on request | mm |
| Number of channels | 1 / 2 | |
| Update rate | typical 2.5 | kHz |
| Resolution | 12 | bit |
| Repeatability | ≤ 0.1 | ±% FS |
| Hysteresis | ≤ 0.1 | ±% FS |
| Output signal | ratiometric to supply voltage 5 ... 95 % (0.25 ... 4.75 V at 5 V) (load ≥ 10 kΩ) | |
| Temperature error | ≤ 0.5 | ±% FS |
| Insulation resistance (500 VDC) | ≥ 10 | MΩ |
| Environmental Data | | |
| MTTF (DIN EN ISO 13849-1 parts count method, w/o load, wc) | 675 (single channel) 512 (per channel) partly redundant 516 (per channel) fully redundant | years years years |
| Functional Safety | If you need assistance in using our products in safety-related systems, please contact us | |
| EMC compatibility | ISO 11452-2 Radiated EM HF-Fields, Absorber Hall: 100 V/m ISO 11452-5 Radiated EM HF-Fields, Stripline 200 V/m ISO TR10605 Packaging und Handling + Component Test: 8 kV, 15 kV CISPR 25 Radiated and conducted emission: class 5 EN 61000-4-4 fast transients (burst) EN 61000-4-6 conducted disturbances, induced by RF fields EN 61000-4-8 power frequency magnetic fields | |



Connection assignment

| Colour | single channel code 6 _ _ | partly redundant code 7 _ _ | fully redundant code 8 _ _ |
|--------|---------------------------|-----------------------------|----------------------------|
| GN | Supply voltage Ub | Supply voltage Ub | Supply voltage Ub 1 |
| BN | GND | GND | GND 1 |
| WH | Signal output | Signal output 1 | Signal output 1 |
| RD | - | - | Supply voltage Ub 2 |
| BK | - | - | GND 2 |
| YE | - | Signal output 2 | Signal output 2 |

Ordering Specifications Analog Versions

Ordering specifications

Preferred types printed in bold

Supply voltage U_b
2: 5 V (4.5 ... 5.5 V)

Output signal

1: 0.25 ... 4.75 V ratiometric to supply voltage
Other signal levels on request

Output characteristic

1: Rising
3: Crossed output channel 1 rising (partly redundant)
4: Crossed output channel 1 rising (fully redundant)
Other characteristics on request

Electrical connections

401: Lead wires 3 x L = 0.5 m, single
411: Lead wires 4 x L = 0.5 m, partly redundant
421: Lead wires 6 x L = 0.5 m, fully redundant
Other lengths and assembled connectors on request

T F D - **4 0 2 1** - **6 2 4** - **2 1 1** - **4 0 1**

Series

Mechanical specification

4021: Standard

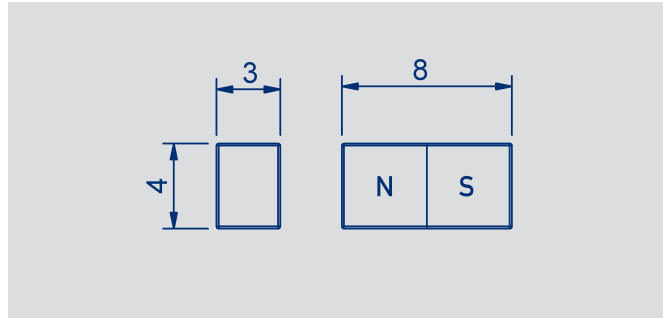
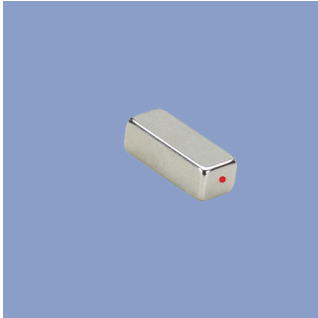
Electrical measuring range

14: 14 mm
24: 24 mm
Other lengths from 5 up to 50 mm on request

Number of channels

6: single channel 1 x U_b / 1 x output
7: partly redundant 1 x U_b / 2 x output
8: fully redundant 2 x U_b / 2 x output

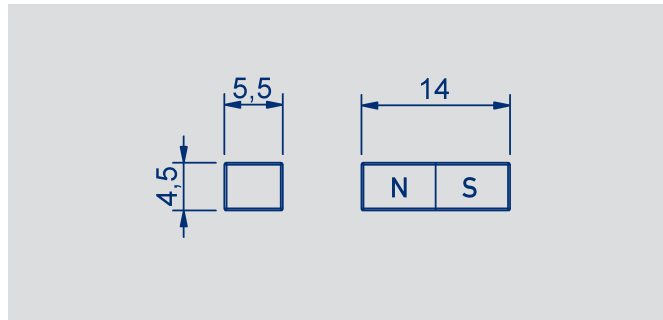
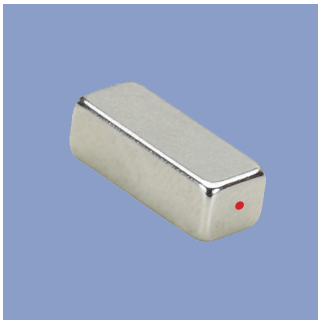
Position markers



Z-TFC-P03

Magnet for direct application

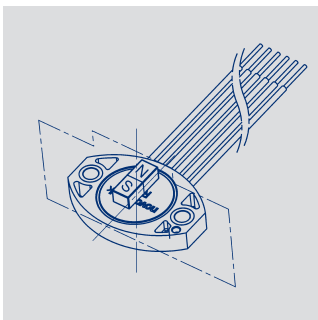
- for measuring range 8 ... 14 mm
- working distance
 - single 0.7 ± 0.5 mm
 - redundant $0.3 + 0.5$ mm / -0.3 mm
- max. permitted offset parallel to the sensing direction ± 1 mm
- P/N 104225



Z-TFC-P04

Magnet for direct application

- for measuring range 15 ... 24 mm
- working distance
 - single 2.5 ± 0.9 mm
 - redundant 2.0 ± 0.9 mm
- max. permitted offset parallel to the sensing direction ± 1 mm
- P/N 104226

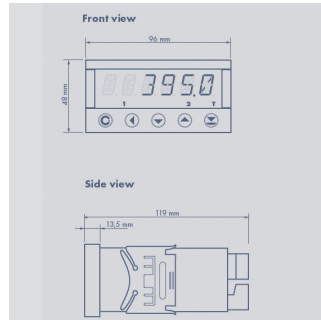


Important instructions for magnet installation

The accuracy of linear magnetic sensors is strongly influenced by the installation space. Using the latest simulation tools, we are able to design the measurement system optimally for your application. In order to select the best suitable magnet for your requirements please contact us.

Between magnet / sensor unit and surrounding magnetic or magnetizable materials a minimum distance of 12 mm must be ensured. If this is not possible, the accuracy of the system will be affected and the data have to be verified.

**Multifunctional
Measuring Device
with Display
Series MAP-4000**



Special features

- Supply voltage 10 ... 30 VDC, 80 ... 250 V DC or AC
- high accuracy
- direct connection of potentiometric and standardized signals
- adjustable supply voltage for sensors 5 ... 24 V
- Temperature coefficient 100 ppm/K
- optional RS 232, RS 485, analog output, limited switch
- complete data see separate [data sheet MAP-4000](#)

Ordering specifications

Number comparator relays

- 0: none
- 2: 2 relays
- 4: 4 relays

Analog output

- 0: no analog output
- 1: analog output present

Interface

- 0: no interface
- 1: RS 232
- 2: RS 485

M A P - 4 0 1 0 - 0 0 0 - 1 0 1

Series

Supply voltage

- 00: 10 ... 30 V AC/DC
- 10: 80 ... 250 V AC

Adjustable supply voltage (5 ... 24 V/Max. 1,2 W)

- 1: with supply voltage

Display colour

- 1: red

Data storage (only with interface)

- 0: not storage
- 1: RTC storage
- 2: FAST storage



Connecting Options on request



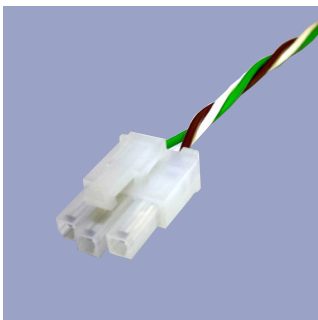
Tyco AMP Super Seal

- Pin- and bushing housing
- Customized lengths
- 3-, 4- and 6-pol. versions
- Protection class IP67
- on request



Deutsch DTM 04

- Pin- and bushing housing
- Customized lengths
- 3-, 4- and 6-pol. versions
- Protection class IP67
- on request



Molex Mini Fit jr.

- Customized length and lead wires
- 3-, 4- and 6-pol. versions
- on request



Molex Mini Fit

- Customized length and lead wires
- 3-, 4-, 6- and 8-pol. versions
- on request