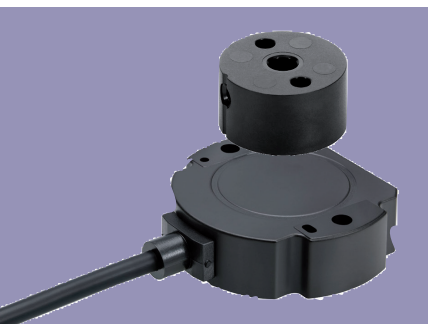


**NOVOHALL
Rotary Sensor
touchless technology
transmissive
with 2 PNP switched
outputs
Series RFC4800**



The RFC 4800 utilizes a separate magnet or magnetic position marker, attached to the rotating shaft to be measured.

The orientation of the magnetic field is measured and an analog voltage representing the angle is the output signal.

The two-part design, with the RFC sensor itself, and its magnetic position marker, offers great flexibility when mounting. The absence of shaft and bearing makes the assembly much less sensitive to axial and radial application tolerances. Measurements can be made transmissively through any non-ferromagnetic material.

The fully touchless transmissive measurement through any non-ferromagnetic material is an advantage over shaft type sensors.

Two PNP switch outputs are available with field-programmable angular positions, replacing the function of separate limit switches.

The two-state switched outputs can be positioned by the user anywhere within the electrical range of the sensor. Teach-In is accomplished through the electrical cable.

The cable length for programming can be up to 10 m. Programmed switch positions are stored non-volatile memory for at least 50 years.

Setting limits in multiple sensors can be easily accomplished by using the Teach-In Box (Z-RFC-T01), which offers easy electrical connection. The user is guided by LEDs and programs the sensor via push buttons.

Special features

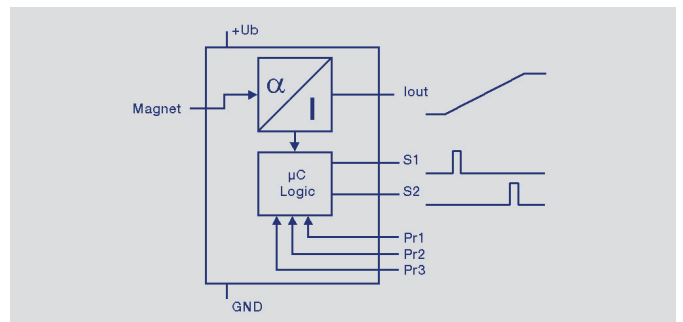
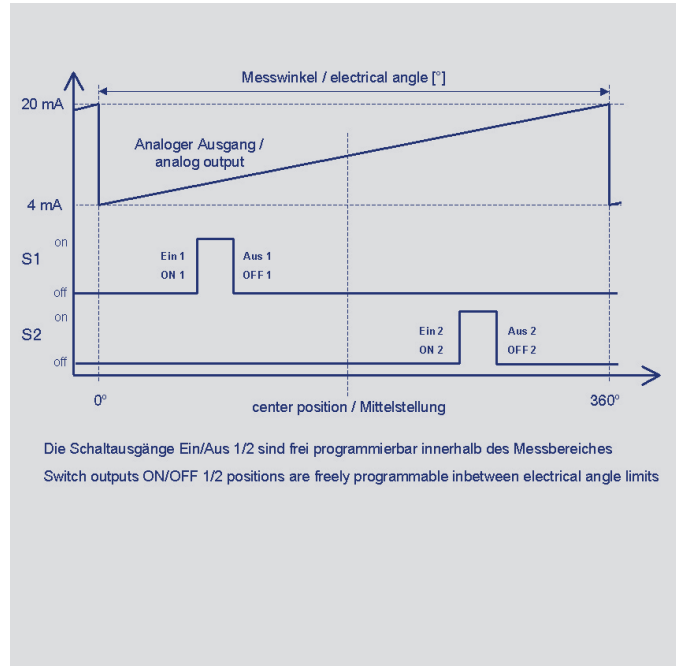
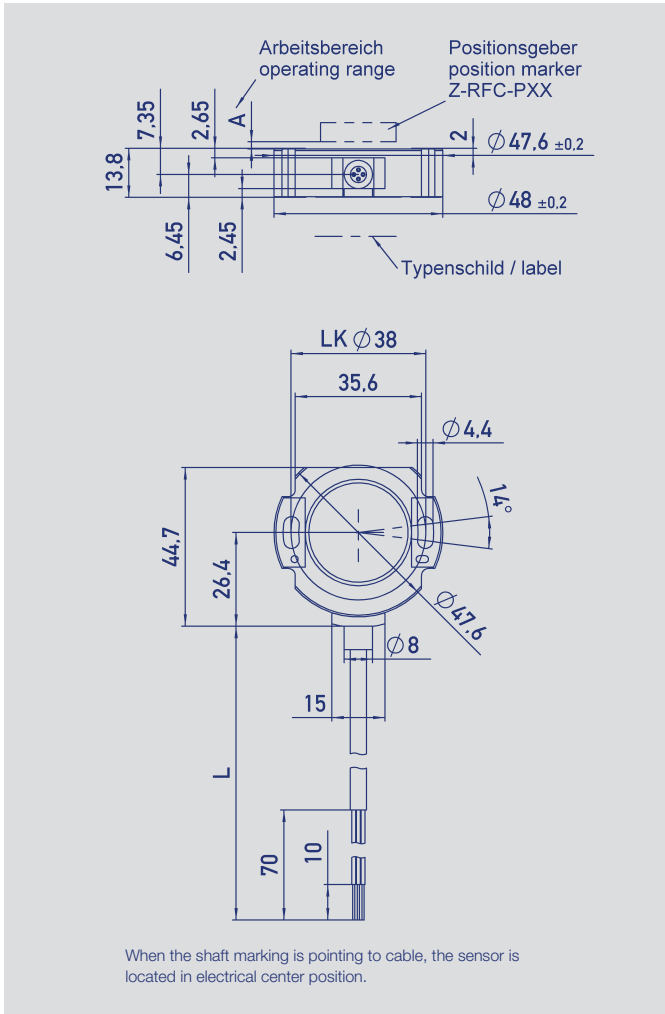
- fully touchless - no shaft or seals to wear
- measure directly through any non-ferromagnetic material
- electrical range up to 360°
- 4-20 mA current output and 2 additional programmable PNP switch outputs
- linearity $\pm 0.5\%$
- simple mounting
- large allowable radial offset for magnetic pickup
- protection class IP67
- unlimited mechanical lifetime
- resolution 12 bit
- wide temperature range -40°C up to +85°C
- for other analog or digital interface versions, see separate data sheet

The housing is made of high grade temperature-resistant plastic material. Elongated holes allow for simple mounting and easy mechanical adjustment. The sensor is totally sealed and is not sensitive to dust, dirt or moisture.

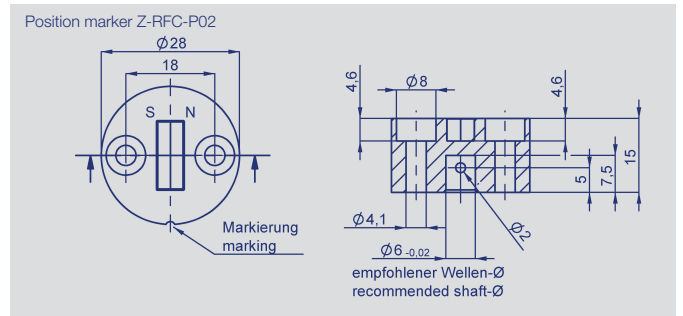
Electrical connection is made via a shielded cable or lead wires, or by optional M12 connector.

Description

Housing	high grade, temperature resistant plastic
Electrical connections	shielded cable 8x0.25 mm ²



Connection assignment	Wire color
Signal	Cable outlet
Supply voltage	Green
GND	Brown
Signal output 4...20 mA	White
Switching output channel 1	Red
Switching output channel 2	Pink
Programming line 1	Yellow
Programming line 2	Grey
Programming line 3	Blue
Shield	Shield with additional wire



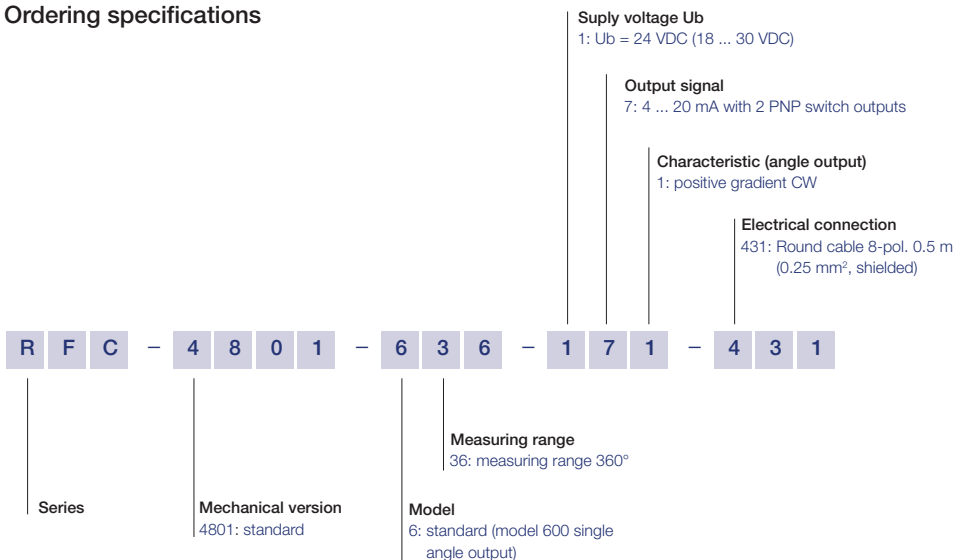
Further position markers see separate data sheet.

RFC-48__-6__-1 7_-_-_-		
Supply voltage 24 VDC		
Mechanical Data		
Dimensions	see dimension drawing	
Mounting	with 2 M4 screws (enclosed in delivery)	
Mechanical travel	360 continuous	°
Maximum operational speed	unlimited	
Weight	approx. 50	g
Electrical Data		
Supply voltage U_b	24 (18 ... 30)	VDC
No-load supply current ($U_b = 24$ V)	max. 30	mA
Reverse voltage	yes (supply lines and current output)	
Short circuit protection of current output	yes, (vs. GND and U_b)	
Measuring range	0 ... 360	°
Update rate	5000 typ.	Hz
Resolution	12	bit
Repeatability	0.1	°
Hysteresis	≤ 0.1	°
Independent linearity	≤ 0.5 of signal range	± % FS
Output signal	4 ... 20 (burden max. 500 Ω)	% FS
Temperature coefficient	typical 80	ppm/K
Insulation resistance (500 VDC)	≥ 10	MΩ
Cable length	see ordering specifications	
Cross-section cable	see ordering specifications	
Environmental Data		
Temperature range	-40...+85	°C
Vibration IEC 60068-2-6	5...2000 $A_{max} = 0.75$ $a_{max} = 20$	Hz mm g
Shock IEC 60068-2-6	50 (6 ms)	g
Life	mechanically unlimited; > 50 000 h MTBF	
Functional safety	When using our products in safety-related systems please contact us	
Protection class (DIN 40050 / IEC 529)	IP67	
EMC compatibility	EN 61000-4-2 electrostatic discharges (ESD) 4kV, 8kV EN 61000-4-3 electromagnetic fields 10V/m EN 61000-4-4 electrical fast transients (Burst) 1kV EN 61000-4-6 conducted disturbances, induced by RF fields 10V/m eff. EN 61000-4-8 Power frequency magnetic field immunity test EN 55011/EN 55022/a1 Radiated disturbances class B	
Working distance A / magnet constant	Z-RFC-P01: A = 0 ... 1.5 mm / magnet constant = 1.85 [°/mm ²] Z-RFC-P02: A = 0 ... 4 mm / magnet constant = 0.8 [°/mm ²] (See separate position marker data sheet)	
Lateral magnet offset (Results in additional linearity error)	max. ±3 mm (Z-RFC-P02), max. ±1.5 mm (Z-RFC-P01) The maximum additional linearity error due to lateral offset between sensor and position marker may be approximated as follows: Error [°] = magnet constant x (offset [mm]) ² The magnet constant depends from the position marker. Example: Z-RFC-P02: magnet constant = 0.8 °/mm ² ; offset = 0,5 mm Error [°] = 0.8°/mm ² x (0.5 mm) ² = 0,2°	

Switching output properties

Type	2 outputs PNP positive switched. Voltage ratiometric with Ub
Max. output current	30 mA guaranteed over full temperature range
Safety precautions for outputs	short circuit proof vs. VCC and GND, self reset after elimination of short circuit Outputs protected against short-time transients >40 V
Switch edge width	≤ 0.1 °
Accuracy of switched output edges	±1 °
Switch hysteresis	±1.5 °
Width of switching zone	selectable via teach-in
Data preservation of memory	minimum 50 years
Teach-In process of switching points	Teach-in is performed via connecting cable
Teach-In Medium	no additional hardware required when using connecting cable, or by using the external programming unit Z-RFC-T01 (recommended)
Number of reprogramming cycles	unlimited
Reset switching positions to factory setting	possible
Switching positions factory setting	unprogrammed (outputs off)

Ordering specifications



Required accessories

Position marker Z-RFC-P01,
P/N 005660;
Position marker Z-RFC-P02,
P/N 005661;
(see separate data sheet for
position markers).
Teach In Box Z-RFC-T01
P/N 056075

Available on request

Cable types
Customized connectors
Specific angle ranges /
characteristics
Other interfaces
Preprogrammed switch
outputs