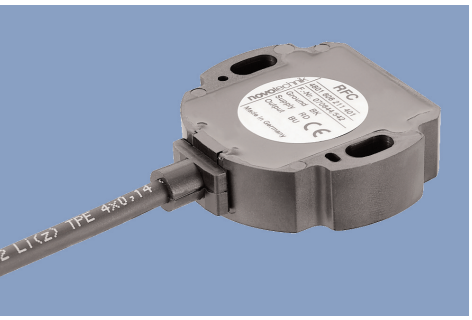
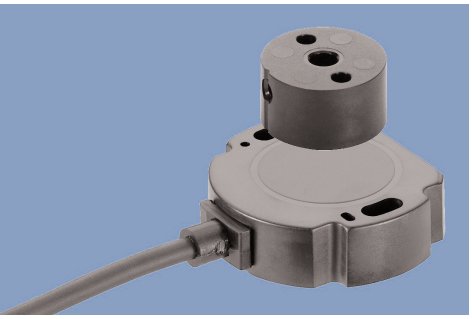
novotechnik
Siedle Group

NOVOHALL
Angle Sensor touchless technology transmissive with 2 PNP switching outputs
Series RFC4800
Model 600





Special features
- touchless technology, magnetic measurement
- enables for transmissive measurements
- electrical range 360°
- current output and 2 additional programmable PNP switch outputs
- simple mounting
- lateral magnet offset up to ±3 mm
- protection class IP67
- unlimited mechanical lifetime
- resolution 12 bit
- independent linearity ±0.5 %

The sensor utilizes the orientation of a magnetic field for the determination of the measurement angle. Therefore, a magnet is attached to the rotating shaft. The magnetic field orientation is evaluated with an integrated circuit. The output voltage is proportional to the caluclated angle.

The sensor is mounted with two bolts protruding the housing with the integrated elongated holes, allowing for simple output adjustment.
The sensor is totally sealed and therefore is not sensitive to dust, dirt or moisture.

Electrical connection is provided by a shielded cable or lead wires which are molded into the housing.

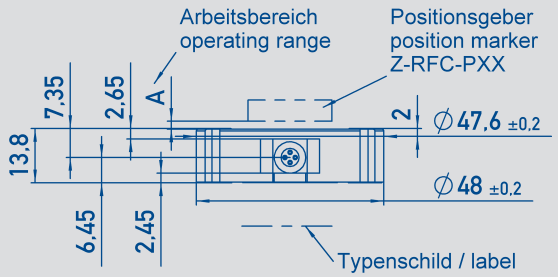
The two-part design of the sensor Series RFC and its position marker offers the customer maximum variability when mounting the sensor. The absence of shaft and bearing makes the assembly insensitive to customer application tolerances.

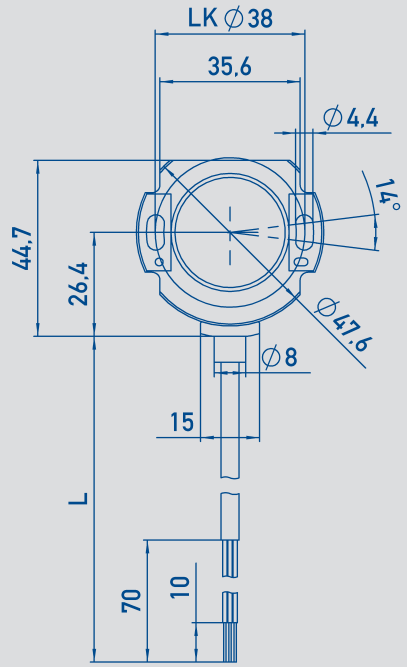
The tansmissive measurement through a variety of non-magnetic materials is an advantage over shaft type sensors.

Two additional PNP switch outputs enable a precise detection of limiting positions for applications such as drive systems. Separate limit switches for these functions can be replaced hereby.

The switch positions on/off of each separate output can be chosen freely across the electrical range. Via a teach in process these positions are taught to the sensor. The sensor does not need to be accessible as the teach in works through the output cable. The cable length for programming can be up to 10 m. Programmed switch positions are stored non volatile for at least 50 years. Using multiple sensors the use of the Teach In Box (Z-RFC-T01) is recommended. It can easily be looped into the cabling. A terminal block is used to connect the sensor, the teach in goes via buttons. The user is guided optically by LEDs.

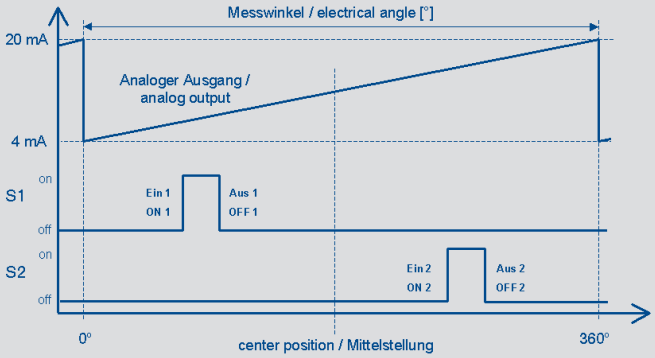
Description	
Housing	high grade, temperature resistant plastic
Electrical connections	shielded cable 8x 0,25 mm^2





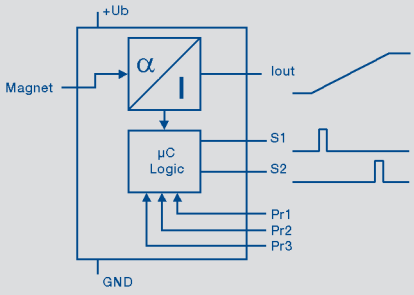
When the shaft marking is pointing to cable, the sensor is located in electrical center position.

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

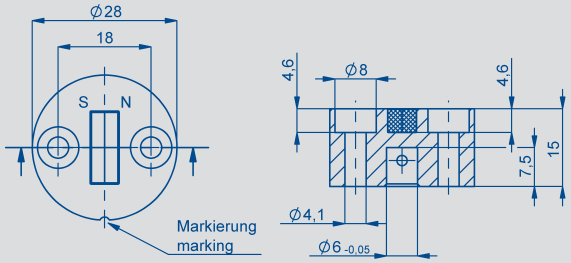


Die Schaltausgänge Ein/Aus 1/2 sind frei programmierbar innerhalb des Messbereiches

Switch outputs ON/OFF 1/2 positions are freely programmable inbetween electrical angle limits



Position marker Z-RFC-P02



Further position markers see separate data sheet.

Type designations	**RFC-4801 - 6 _ _ - 17 _ - _ _ _** **supply voltage 24 V**	
Mechanical Data		
Dimensions	see dimension drawing	
Mounting	with 2 M4 screws (included)	
Mechanical travel	360 continuous	°
Maximum operational speed	unlimited	min^{-1}
Weight	ca. 50	g
Electrical Data		
Supply voltage Ub	24 (18...30)	VDC
No-load supply current (Ub = 24 V)	max. 30	mA
Reverse voltage	yes (supply lines and current output)	
Short circuit protection of current output	yes (vs. GND and +Ub)	
Measurement range	0 ... 360	°
Update rate	5000 typ.	measur./s
Resolution	12 bit	
Repeatability	0.1	°
Hysteresis	≤ 0.1	°
Independent linearity	≤ 0.5 of signal range	%
Output signal	4...20 (burden max. 500 Ω)	mA
TC	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	mechanical unlimited; > 50 000 h MTBF	
Protection class (DIN 40050 / IEC 529)	IP67	
EMC compatibility	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-6 EN 61000-4-8 EN 55011	
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] (Position marker see separate data sheet)	
Lateral magnet offset (will cause additional linearity error)	max. ±3 mm (Z-RFC-P02), max. ±1.5 mm (Z-RFC-P01) The maximum error which is caused by 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°	

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Switching output properties	
Type	2 outputs PNP positive switched. Voltage ratiometric with Ub
Max. output current	30 mA guaranteed over full termperature range
Safety precautions for outputs	short circuit proof vs. VCC and GND, self reset after elemination of short circuit Outputs protected against short-time transients >40 V
Switch edge width	<= 0.1 °
Acccuracy swithing 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	The sensor itself has no operating elements, the teach-in is carried out via connecting cable
Teach-In Medium	without additional hardware, directly via connecting cable or using of 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

Preferred types printed in bold:

- No low volume surcharge

Supply voltage Ub
1: Ub = 24 VDC (18 ... 30 VDC)

Output signal
7: 4 ... 20 mA with 2 PNP switch outputs

Characteristic (angle output)
1: positive gradient CW

Electrical connection
432: Round cable 8-pol. 1 m (0.25 mm^2; shielded)

R	F	C	-	4	8	0	1	-	6	3	6	-	1	7	1	-	4	3	2

Series

Mechanical version
4801: Standard

Model
6: model 600 single angle output

Measuring range
36: measuring range 360°

Required accessories

Position marker Z-RFC-P01, Art.No. 005660;
Position marker Z-RFC-P02, Art.No. 005661
(see separate data sheet RFC position markers)
Teach In Box Z-RFC-T01
Art.No. 056075

Available on request

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