

## FRL90 SERIE



### for Industrial, Crane's and Locking

- ➔ Heavy duty geared limit switch
- ➔ Up to 8 free programmable cams
- ➔ Different micro switches
- ➔ Cable outputs and connector available
- ➔ Protection class IP64
- ➔ Protection against contact

### Product description

Heavy geared Limit switch in round housing, with synchroflange easy to install in any application. 100% protected against contact and shaft construction from shaft to cam. Different ratio and number of switches available. The cover is sealed with an Sealing ring and easy to dismount with only two screws.

### Application

This geared limit switch find the application in cranes, locking constructions. With the round design easy to build direct in series with a motor.

### Technical specifications

Usable Gear Ratio	1:1 – 2500:1	(more on request)
Program channels	1-8	(more on request)
Mechanical life time	> 20 Mill.	
Switching frequency	5 Hz	
Contact chatter time	<4 ms	
Actuating speed	>10 µm/s	
Contact break	0,6 mm	
Contact pressure	0,2 N	
Temperature range	-40 °C +85 °C	
Hysteresis	depend of ratio	
Repeatability	depend of ratio	
Weight	ca. 1,5 Kg	
MTBF (IEC 60050)	ON/OFF 10 Mio cycles 200'000 hours	
Rotation speed	max. 1500 RPM	
Shaft load	radial 450N, axial 200N	
Protection	IP 64 EN 60 529	
Shock resistance	2500m/s <sup>2</sup> , 6ms IEC 68-2-27	
Vibrations resistance	200 m/s <sup>2</sup> , 10....2000 Hz IEC 68-2-6	
Humidity	40% rh	

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**Microswitch**

Order code	Picture	Description
0		KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact
		switching current 4A 250 VAC / 1A 60VDC
1		KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact
		switching current 4A 250 VAC / 1A 60VDC
2		S840 V20 changeover contact for cable shoe 6.3x0.9mm silver contact
		switching current 10A 250V AC / 6A 24V DC
3		S870 W changeover with screwed silver contact
		switching current 10A 250V AC / 6A 24V DC
4		S845 controlled opening switch gold contact
		switching current 10A 250V AC / 6A 24V DC

**FRL90 SERIE**



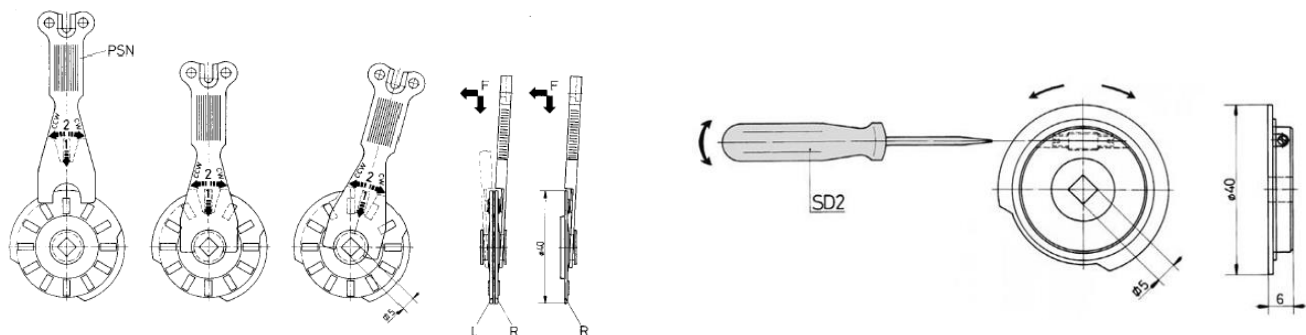
**Cam types and adjustment**

Type	Order code	Picture	Description	
NK Cams	0		single cam	
			adjustable with included PSN Key	
			available with 20 ° / 60° / 90° / 180° opening angle	
			Material: Grilon T300	
NK Cams	1		double cam	
			adjustable with included PSN Key	
			free programmable from 6° - 180°	
			Material: Grilon T300	
NV Cams	2		single cam	
			adjustable with included screwdriver	
			available with 20 ° / 60° / 90° / 180° / opening angle	
			Material: Grilon T300	
	NV Cams	3		double cam
				adjustable with included screwdriver
			free programmable from 6° - 180°	
			Material: Grilon T300	

**Adjusting guideline of NV / NK cams**

To adjust the NK cam use the PSN key with levelling the cam and turn

To adjust the NV cam use SD screwdriver and turn the small screw.

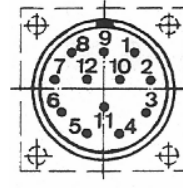
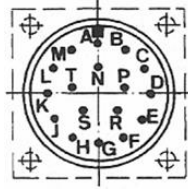


## FRL90 SERIE



### Wiring to connector

Connector male, view from face side



SFP12 (12Pin)

MS3102 A20-27P (14 Pin)

Color	Switch	Function	Pin Nr.	Pin Nr.
Black	1	COM (1) NC (2)	1	A
White		NO (3)	2	B
Black	2	COM (1) NC (2)	3	C
Brown		NO (3)	4	D
Black	3	COM (1) NC (2)	5	E
Green		NO (3)	6	F
Black	4	COM (1) NC (2)	7	G
Yellow		NO (3)	8	H
Black	5	COM (1) NC (2)	10	J
Grey		NO (3)	11	K
Black	6	COM (1) NC (2)	12	L
Pink		NO (3)		M
Black	7	COM (1) NC (2)		N
Blue		NO (3)		P
Black	8	COM (1) NC (2)		R
Red		NO (3)		S

Connection with connector  
Cable designation at  
Cable section for switch

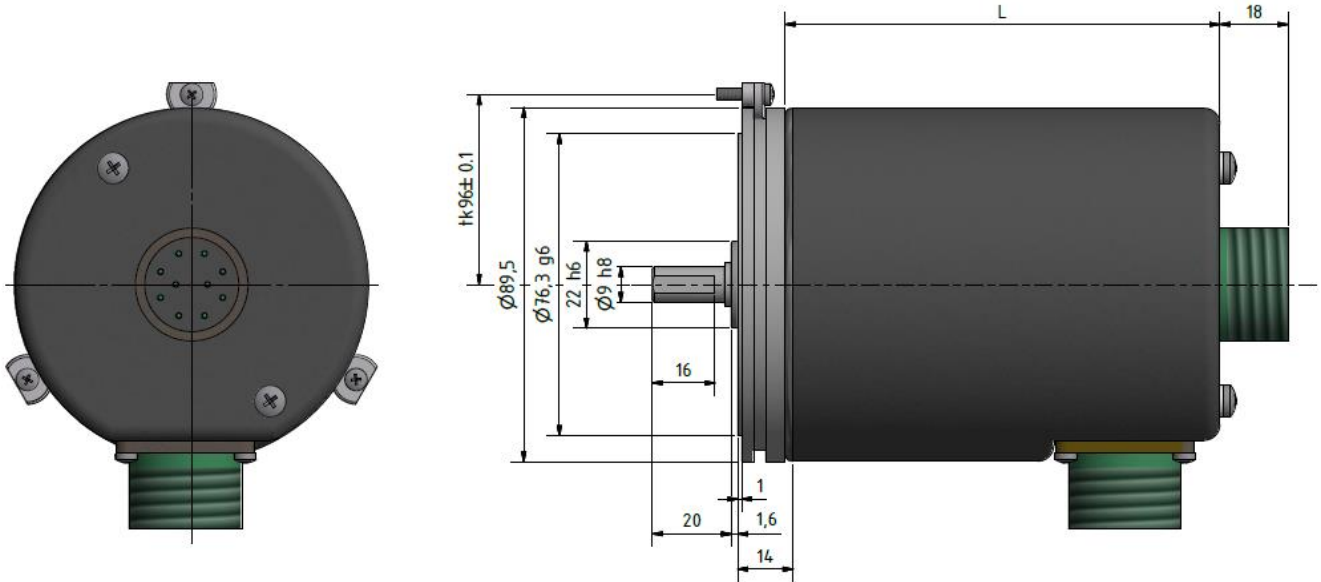
COM- NO (2.8x0.5mm)  
DIN47100  
0.334mm<sup>2</sup> / AWG22

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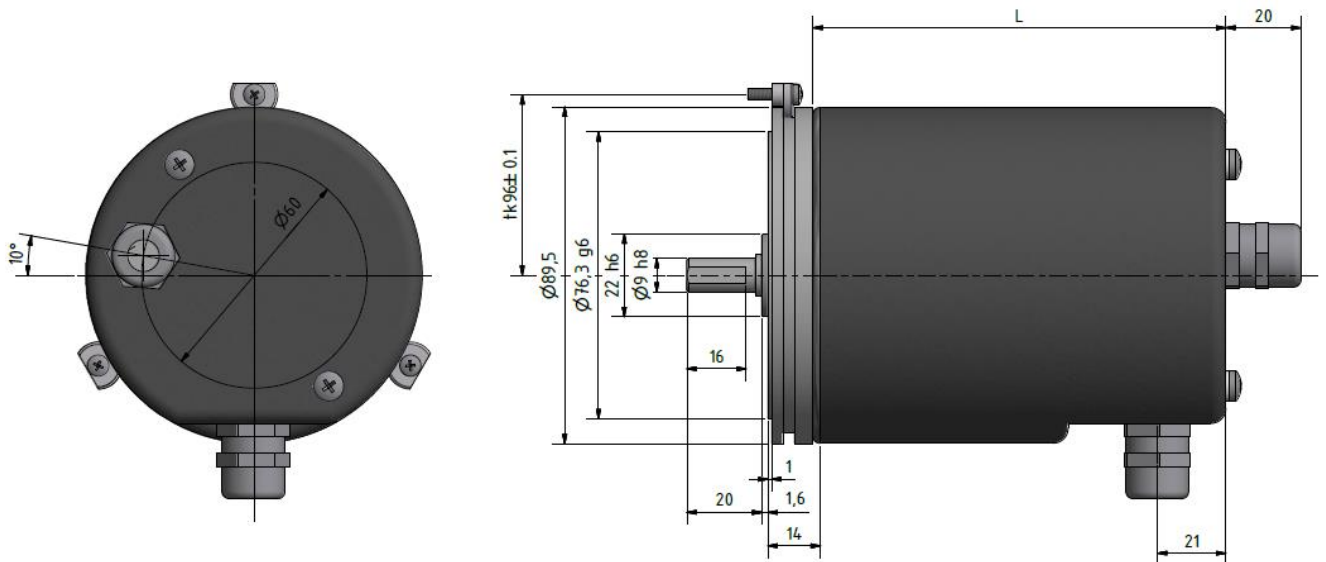


Reference drawing in mm

With Connector



With Cable output



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**Order Code**

936 x. x x. x x x

RATIO	
0	1 : 1
1	2 : 1
2	4 : 1
3	12,5 : 1
4	25 : 1
5	40 : 1
6	100 : 1
7	200 : 1
8	750 : 1
9	2500 : 1

MALE RECEPTACLE - CABLE GLAND	
0	-
1	SD12 (12 Pin) DIN
2	SD16 (16 Pin) DIN
3	MS3102 A18-1P (10 Pin) MIL
4	MS3102 A20-27P (14 Pin) MIL
5	MS3102 A20-29P (17 Pin) MIL
6	Cable Gland PG 7 stick range Ø 3...6,5mm
7	Cable Gland PG 9 stick range Ø 4...8mm
8	Cable Gland PG 10 stick range Ø 5...10mm
9	Cable Gland PG 13.5 stick range Ø 6...12mm

NUMBER OF SWITCH	
0	2 switches
1	3 switches
2	4 switches
3	5 switches
4	6 switches
5	7 switches
6	8 switches

TYPE OF SWITCH	
0	KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact
1	KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact
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4	S845 controlled opening switch gold contact

CAM	
0	single cam NK4101-180°
1	double cam NK4201-180°
2	single cam NV4101-180°
3	double cam NV4201-180°

CABLE OUTLET	
0	Axial
1	Radial



**Do you have any Questions ?** Phone: +41 (0)44 843 40 20 or Mail: [sales@micronor.ch](mailto:sales@micronor.ch)