



- To 40,000 steps by 10,000 pulses
- Short circuit proof and overload protected
- Max. pulse frequency 300 kHz
- RS 422
- Push-pull complementary
- Encoder self tests/ Alarm output
- EMC class IV as per IEC 801
- Synchro-, square- or clamping flange
- Protection class up to IP 67
- Option: Explosion proof version

## Number of pulses

RI 58-O

1 / 2 / 3 / 5 / 10 / 20 / 25 / 29 / 30 / 35 / 50 / 60 / 70 / 80 / 100 / 120 / 125 / 128 / 150 / 180 / 200 / 226 / 250 / 256 / 280 / 300 / 314 / 360 / 375 / 400 / 460 / 480 / 500 / 512 / 600 / 625 / 635 / 720 / 750 / 889 / 900 / 1,000 / 1,024 / 1,125 / 1,250 / 1,270 / 1,500 / 1,600 / 1,800 / 1,885 / 1,979 / 2,000 / 2,048 / 2,500 / 3,000 / 3,600 / 3,925 / 3,958 / 4,000 / 4,096 / 5,000 / 5,400 / 6,000 / 6,875 / 7,854 / 8,192 / 9,000 / 10,000

Other numbers of pulses available on request

RI 58-T

as above, but only for the range from 5 to 2,500 pulses

Other numbers of pulses available on request

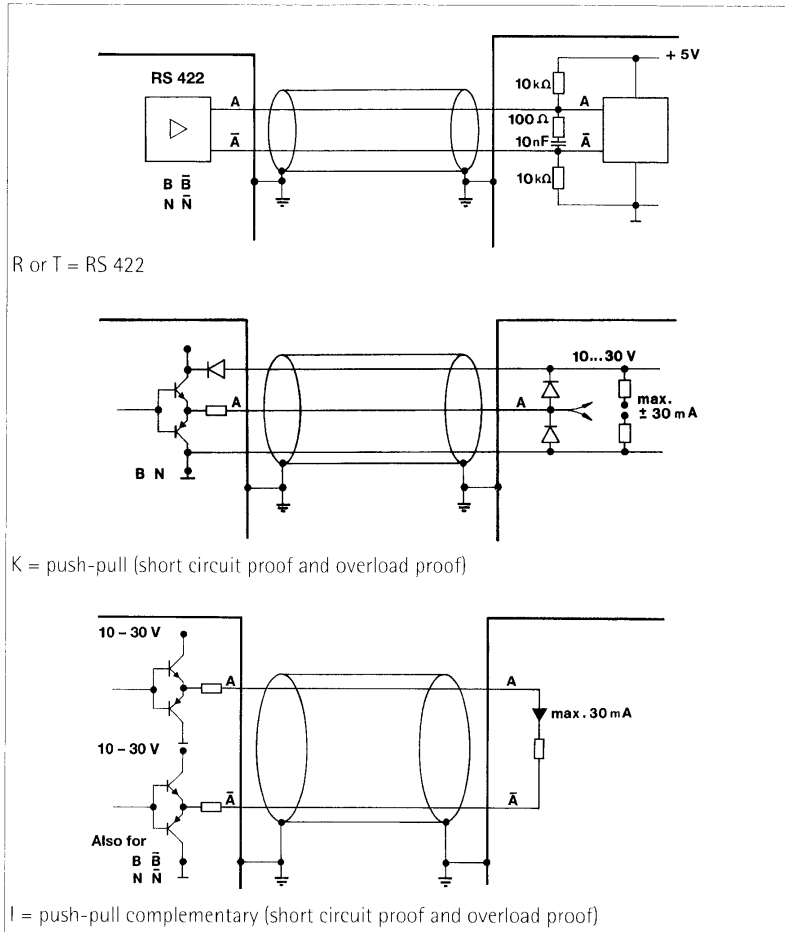
## Technical data

mechanical

Shaft diameter	6 mm/6.35 mm ( $\frac{1}{4}$ inch)/7 mm / 12 mm/10 mm/9.52 mm ( $\frac{3}{8}$ inch)
Absolute max. shaft load radial/axial	$\varnothing$ 12 mm 180/140 N (39/30 lbs) $\varnothing$ 7...10 mm 160/107 N (35/24 lbs) $\varnothing$ 6 mm/6.35 mm 110/60 N (24/13 lbs)
Absolute maximum speed	10,000 RPM
Torque	$\leq$ 1 Ncm (IP 65)
Moment of inertia	synchro flange 14 gcm <sup>2</sup> approx. clamping flange 20 gcm <sup>2</sup> approx.
Protection class (DIN 40050)	IP 50, IP 65, IP 67*
General design	as per DIN VDE 0160
Operating temperature	RI 58-O: -10 ... +70 °C; RI 58-T: -10 ... +100 °C
Storage temperature	RI 58-O: -25 ... +85 °C; RI 58-T: -25 ... +100 °C
Vibration performance (IEC 68-2-6)	100 m/s <sup>2</sup> (10 ... 2,000 Hz)
Shock resistance (IEC 68-2-27)	1,000 m/s <sup>2</sup> (3 ms)
Type of connection, axial or radial	1.5 m cable** or connector
Housing	aluminium $\varnothing$ 58 mm
Flange	S = synchro flange, K = clamping flange, G, Q = square flange, M = synchro clamping flange
Weight	360 g approx.
Bearing life	1 x 10 <sup>10</sup> revolutions (typ.) at 35 % of full rated shaft load 1 x 10 <sup>9</sup> revolutions (typ.) at 75 % of full rated shaft load 1 x 10 <sup>8</sup> revolutions (typ.) at 100 % of full rated shaft load For example 30,000 h at 6,000 RPM with a 13 lb radial load (10 mm or 9.52 mm shaft)

\*Other specifications possible on request \*\*other lengths of cable available on request

Output circuit



Code letter	R, T	K	I
Output	RS 422	push-pull	push-pull complementary
H	$\geq 2.5$ V	$\geq U_B - 3$ V	$\geq U_B - 3$ V
L	$\leq 0.5$ V	$\leq 2$ V	$\leq 2$ V
Output load max.	$\pm 20$ mA	$\pm 30$ mA	$\pm 30$ mA
Alarm output	O.C. NPN 10 mA	O.C. NPN 10 mA	O.C. NPN 10 mA

Cable lengths\* (depending on voltage and frequency) (at 25 °C) Push-pull

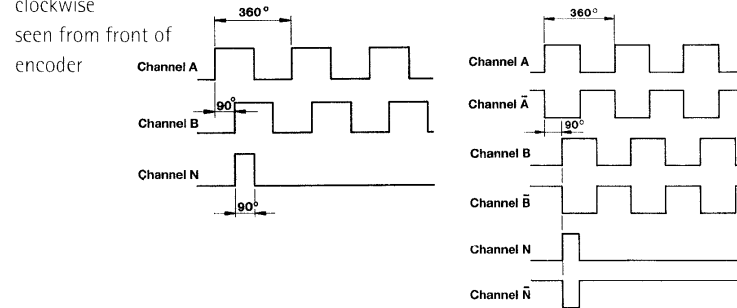
	RS 422	Push-pull	complementary
10 m	5 VDC, 300 kHz	12 VDC, 200 kHz	12 VDC, 200 kHz
		24 VDC, 200 kHz	24 VDC, 200 kHz
		30 VDC, 200 kHz	30 VDC, 200 kHz
50 m	5 VDC, 300 kHz	12 VDC, 200 kHz	12 VDC, 200 kHz
		24 VDC, 200 kHz	24 VDC, 50 kHz
		30 VDC, 100 kHz	30 VDC, 25 kHz
100 m	5 VDC, 300 kHz	12 VDC, 200 kHz	12 VDC, 150 kHz
		24 VDC, 100 kHz	24 VDC, 25 kHz
		30 VDC, 50 kHz	30 VDC, 12 kHz

\* with respect to Hengstler' own cables

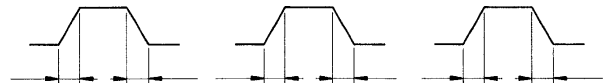
# Type RI 58

## Technical data electrical

Output <sup>1)</sup>	RS 422 (TTL)	Push-pull <sup>2)</sup>	Push-pull complementary <sup>2)</sup>
Supply voltage	5 VDC/10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Power consumption	40 mA (5 VDC)	30 mA (24 VDC) 60 mA (10 VDC)	30 mA (24 VDC) 60 mA (10 VDC)
Max. pulse frequency	300 kHz	200 kHz	200 kHz
Output signals shaft turning clockwise seen from front of encoder	Push-pull		RS 422 + push-pull complementary



Delay times  
at 1.5 m cable



$\leq 100 \text{ ns}$   $\leq 100 \text{ ns}$      $\leq 250 \text{ ns}$   $\leq 250 \text{ ns}$      $\leq 250 \text{ ns}$   $\leq 250 \text{ ns}$

Pulse shape			
Pulse duty factor	1 : 1	1 : 1	1 : 1
Pulse width error <sup>3)</sup>	$\pm 25^\circ$ electrical	$\pm 25^\circ$ electrical	$\pm 25^\circ$ electrical

<sup>1)</sup> RI 58-T only with RS 422, 5 VDC

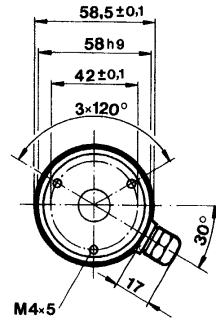
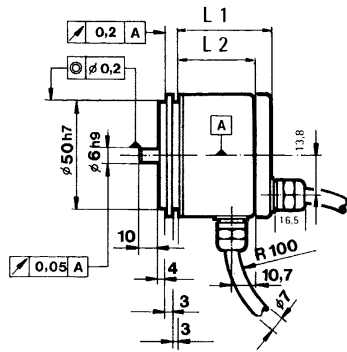
<sup>2)</sup> short circuit and overload proof over the whole temperature range.

<sup>3)</sup> distance from A to B is at least 0.45  $\mu\text{s}$

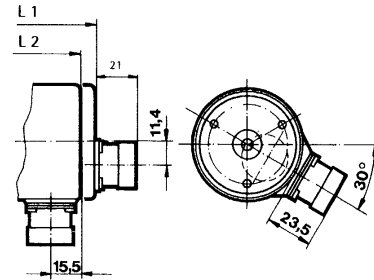
# Type RI 58

## Dimensioned drawing

Synchro flange, 58 mm  
Connecting cable axial/radial

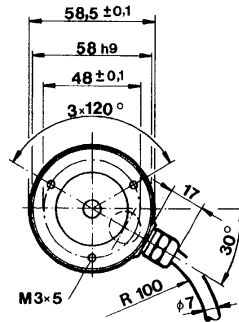
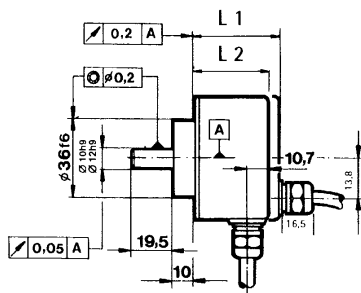


Connector 12 pole, axial/radial

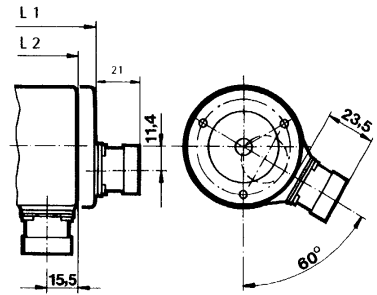


Dimensions in mm

Clamping flange, 58 mm  
Connecting cable axial/radial



Connector 12 pole, axial/radial



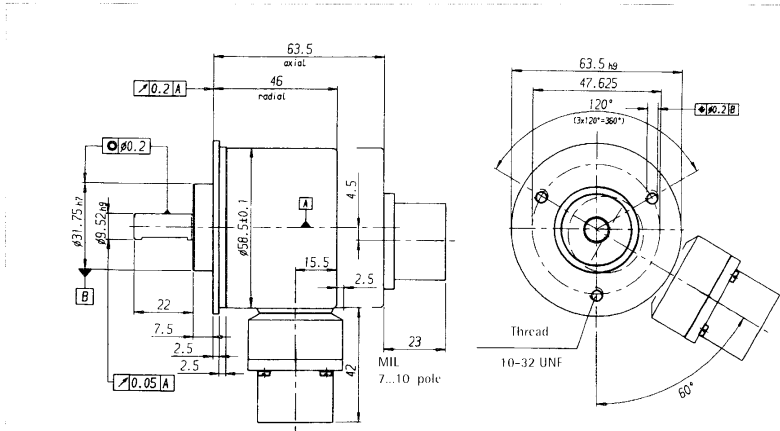
Dimensions in mm

Type	Connection	Output	axial L <sub>1</sub>	radial L <sub>1</sub>
Synchro flange, 58 mm	cable	RS 422 (5 V), push-pull	51.5	41.5
		RS 422 (10 ... 30 V)	56	56
	connector	RS 422 (5 V), push-pull	57.5	51.5
		RS 422 (10 ... 30 V)	57.5	56
Clamping flange, 58 mm	cable	RS 422 (5 V), push-pull	45.5	35.5
		RS 422 (10 ... 30 V)	50	50
	connector	RS 422 (5 V), push-pull	51.5	45.5
		RS 422 (10 ... 30 V)	51.5	50

# Type RI 58

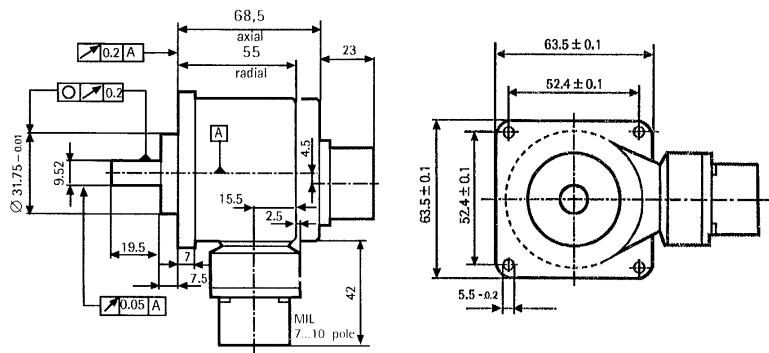
## Dimensioned drawing

Synchro clamping flange, 63.5 mm



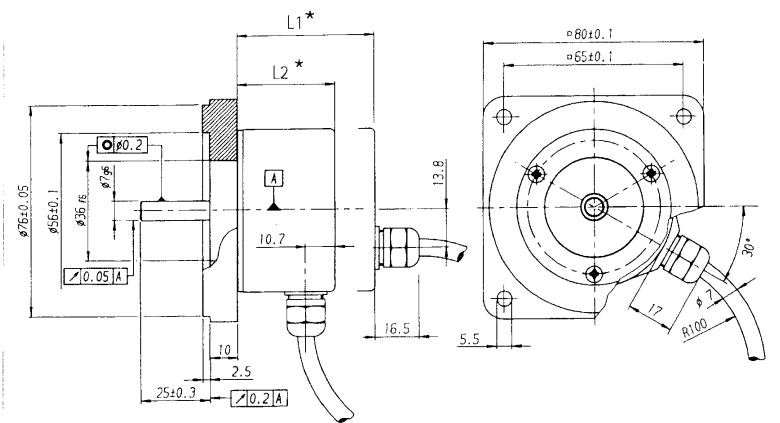
Dimensions in mm

Square flange, 63.5 x 63.5 mm



Dimensions in mm

Square flange, 80 x 80 mm



Dimensions in mm; \* L1, L2 see clamping flange

# Type RI 58

## Connection diagram Cable

PVC-cable (A, B)	TPE-cable (E, F)	Output circuit RS 422 (R, T)	Push-pull (K)	Push-pull compl. (I)
Colour	Colour	5/10...30 VDC=	10...30 VDC=	10...30 VDC=
red	brown/green	Sense $V_{CC}$	$\overline{\text{Alarm}}^4$	Sense $V_{CC}$
yellow/red	blue	Channel A	Channel A	Channel A
white	brown	Channel $\overline{A}$		Channel $\overline{A}$
white/brown	green	Channel B	Channel B	Channel B
green	grau	Channel $\overline{B}$		Channel $\overline{B}$
green/brown	pink	Channel N	Channel N	Channel N
yellow	red	Channel $\overline{N}$		Channel $\overline{N}$
yellow/brown	black	GND	GND	GND
black	white/green	$\overline{\text{Alarm}}/\text{Sense GND}^2/\overline{\text{Alarm}}^4$		$\overline{\text{Alarm}}$
yellow/black	violet (white) <sup>1)</sup>	Screen <sup>3)</sup>	Screen <sup>3)</sup>	Screen <sup>3)</sup>

<sup>1)</sup> white for RS 422 + Sense (T) <sup>2)</sup> depending on ordering code

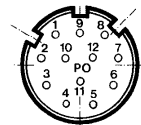
<sup>3)</sup> connected to housing

<sup>4)</sup> for PVC-cable either yellow/red or yellow/black; for TPE-cable only violet

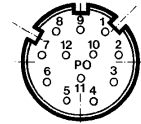
## Connector 12 pole (CONIN)

Pin	RS 422 + Sense (T)	RS 422 + Alarm (R)	Push-pull (K)	Push-pull complementary (I)
1	Channel $\overline{B}$	Channel $\overline{B}$	N.C.	Channel $\overline{B}$
2	Sense $V_{CC}$	Sense $V_{CC}$	N.C.	Sense $V_{CC}$
3	Channel N	Channel N	Channel N	Channel N
4	Channel N	Channel $\overline{N}$	N.C.	Channel $\overline{N}$
5	Channel A	Channel A	Channel A	Channel A
6	Channel $\overline{A}$	Channel $\overline{A}$	N.C.	Channel $\overline{A}$
7	N.C.	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$
8	Channel B	Channel B	Channel B	Channel B
9	N.C.*	N.C.*	N.C.*	N.C.*
10	GND	GND	GND	GND
11	Sense GND	N.C.	N.C.	N.C.
12	5 VDC = $\pm$ 10%	5/10...30 VDC=	10...30 VDC=	10...30 VDC=

\* Screen for cable with CONIN connector



Pin assignment  
connector  
counter  
clockwise (ccw)



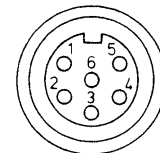
connector  
clockwise (cw)

## Connector 10 pole (MIL)

Pin	RS 422/Push-pull complementary Euro-pinout (connection codes O and K)	Push-pull (O and K)	RS 422/Push-pull complementary US-pinout (R and T)
1/A	Channel A	Channel A	Channel A
2/B	Channel B	Channel B	Channel B
3/C	Channel N	Channel N	Channel N
4/D	5/10...30 VDC =	5/10...30 VDC =	5/10...30 VDC =
5/E	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$
6/F	GND	GND	GND
7/G	Channel $\overline{A}$	Screen	Screen
8/H	Channel $\overline{B}$	N.C.	Channel $\overline{A}$
9/I	Channel $\overline{N}$	N.C.	Channel $\overline{B}$
10/J	Screen	Screen	Channel N

## Connector 6 pole (BINDER)

Push-pull	Pin
10 ... 30 VDC	1
Channel A	2
Channel N	3
Channel B	4
$\overline{\text{Alarm}}$	5
GND	6



# Type RI 58

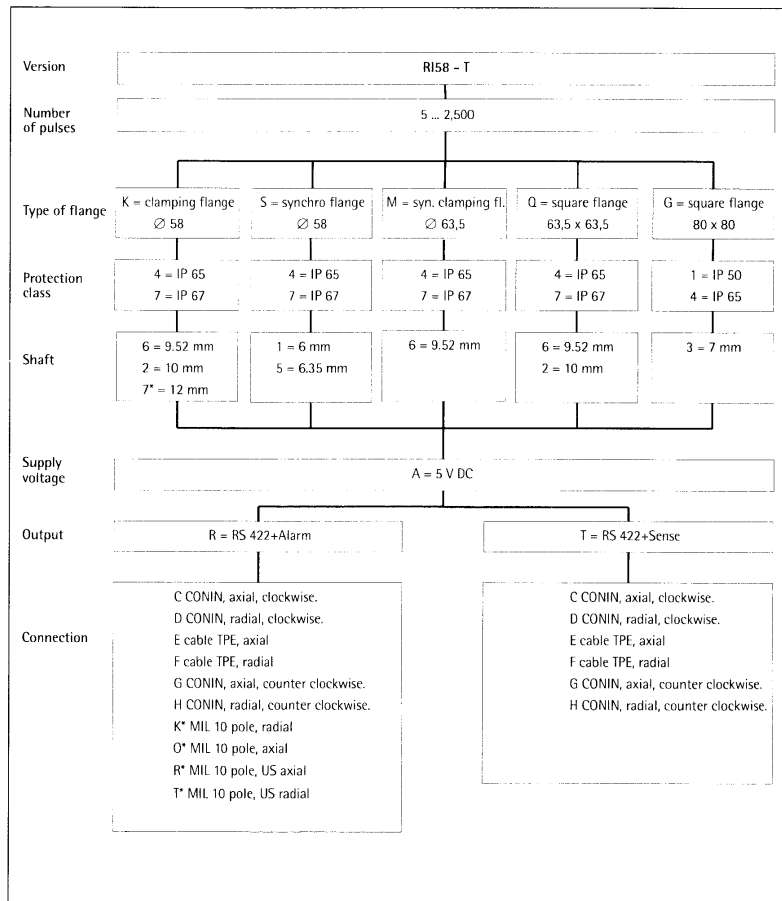
## Connector 6/7 pole (MIL)

	MIL 6 pole	MIL 7 pole
Pin	Push-pull	Push-pull
1/A	10...30 VDC	Channel A
2/B	Channel A	Channel B
3/C	Channel B	Channel N
4/D	Channel N	10...30 VDC =
5/E	GND	Alarm
6/F	Screen	GND
7/G	-	Screen

## Connector 8 pole (KPT 12-8P)

	RS 422 (R),
Pin	Push-pull complementary
1/A	Channel B
2/B	Channel $\bar{B}$
3/C	Channel $\bar{A}$
4/D	Channel A
5/E	+ U <sub>B</sub>
6/F	GND
7/G	Channel N
8/H	Channel $\bar{N}$

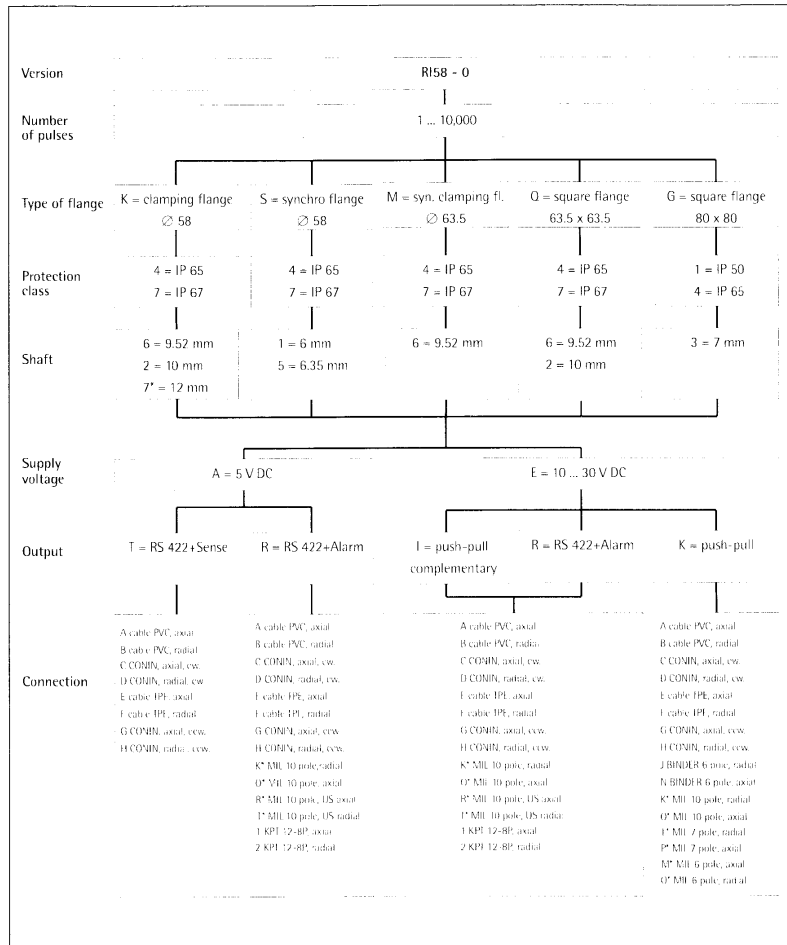
## Standard versions RI 58-T (high temperature)



\*not for IP 67  
Other versions on request

# Type RI 58

Standard versions  
RI 58-0



\* not for IP 67

Other versions and explosion-proof on request

## Accessories

Clamping eccentric  
(set of three)

Ordering code 0 070 655

Diaphragm coupling  
hole 6/6 mm

Ordering code 1 076 013

hole 10/10 mm

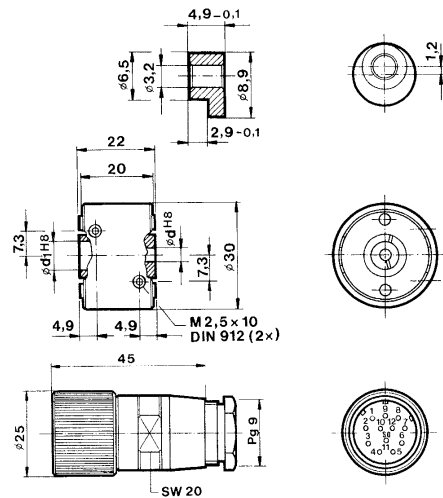
Ordering code 1 076 014

Cable plug connector  
for connector (CONIN),  
clockwise

Ordering code 3 539 202

for connector (CONIN),  
counter clockwise

Ordering code 3 539 229

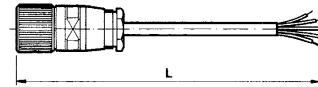




# Type RI 58

## Accessories

Extension cables  
(TPE)



12-pin plug (socket) on one end	clockwise	counter clockwise
	<b>Ordering code</b>	<b>Ordering code</b>
L= 3 m	1 522 348	1 522 394
L= 5 m	1 522 349	1 522 395
L= 10 m	1 522 350	1 522 396

TPE-cable (not made up with connectors) 3 280 112 + length

For more detailed specifications and other accessories see "Accessories".

## Ordering data

O standard	Supply	Type of flange	Shaft diameter
T high temperature	voltage	S synchro flange	1 6 mm
	A 5 VDC	K clamping flange	2 10 mm
	E 10 ... 30 VDC	G square flange 80 x 80	3 7 mm
		Q square flange 63.5 x 63.5	5 6.35 mm
		M synchro clamping flange	6 9.52 mm
			7 12 mm

Number of pulses	Protection class	Output	Type of connection
RI58-0: 1 ... 10,000	1 IP 50	T RS 422 + Sense	A PVC-cable axial
RI58-T: 5 ... 2,500	4 IP 65	K push-pull, short circuit proof	B PVC-cable radial
	7 IP 67	I push-pull complementary	C CONIN*, axial clockwise
		R RS 422+Alarm	D CONIN*, radial clockwise
			E TPE-cable axial
			F TPE-cable radial
			G CONIN*, axial counter clockwise
			H CONIN*, radial counter clockwise
			J BINDER 6 pole, radial
			N BINDER 6 pole, axial
			O MIL MS*, 10 pole, axial <sup>1)</sup>
			K MIL MS*, 10 pole, radial <sup>1)</sup>
			L MIL 7 pole, radial
			P MIL 7 pole, axial
			M MIL 6 pole, axial
			Q MIL 6 pole, radial
			R MIL 10 pole, US axial <sup>2)</sup>
			T MIL 10 pole, US radial <sup>2)</sup>
			1 KPT 12-8P, axial
			2 KPT 12-8P, radial

<sup>1)</sup> European pinout	* encoder connector with pins
<sup>2)</sup> U.S. pinout	