

## Incremental Rotary Encoder G24

### Shaft: Type S



- Housing diameter: 24 mm
- Shaft: Ø 4 ... 6 mm; M6
- Hollow shaft: Ø 4mm
- Line counts: 10 ... 512
- Output signals:  
RS422, PP, TTL, OC
- Connector: axial or radial

### Hollow Shaft: Type W



### Mechanical Data

G24	Shaft	Hollow shaft
	Type S	Type W
Ø Shaft / Hollow shaft	4 mm	4 mm
Weight	ca. 50 g	ca. 50 g
Accuracy	$< \pm \frac{360^\circ}{\text{Line counts} \times 20}$	$< \pm \frac{360^\circ}{\text{Line counts} \times 20}$
Mech. permissible speed	max. 12.000 min <sup>-1</sup>	max. 12.000 min <sup>-1</sup>
Starting torque (25°C)	< 0,001 Nm	< 0,001 Nm
Shaft load at 12.000 min <sup>-1</sup>	5 N axial; 3 N radial higher upon request	5 N axial; 3 N radial higher upon request
Rotor inertia	0,1 x 10 <sup>-6</sup> kgm <sup>2</sup>	0,3 x 10 <sup>-6</sup> kgm <sup>2</sup>
Vibration	100 m/s <sup>2</sup> ; higher upon request	100 m/s <sup>2</sup> ; higher upon request
Shock	1000 m/s <sup>2</sup> ; higher upon request	1000 m/s <sup>2</sup> ; higher upon request
Operating temperature	-40°C ... +85°C	-40°C ... +85°C
Protection class	IP 54; upon request: IP 64, IP 66	IP 54; upon request: IP 64, IP 66

### Line Counts

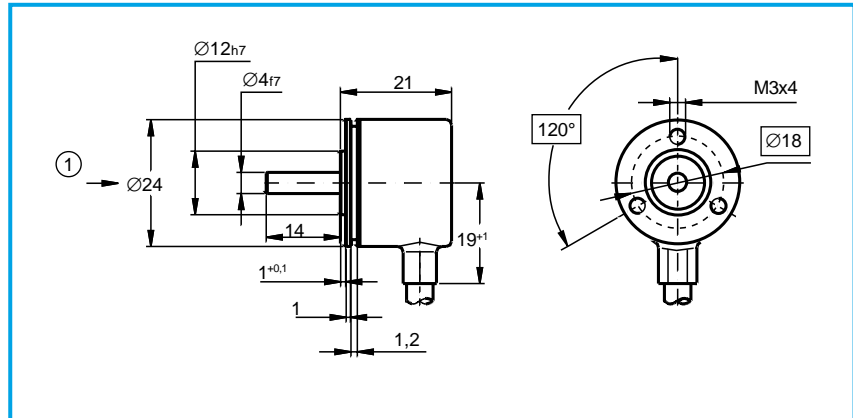
10	50	100	128	200	250	256	360	512	others upon request
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### Dimensions (mm)

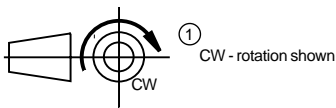
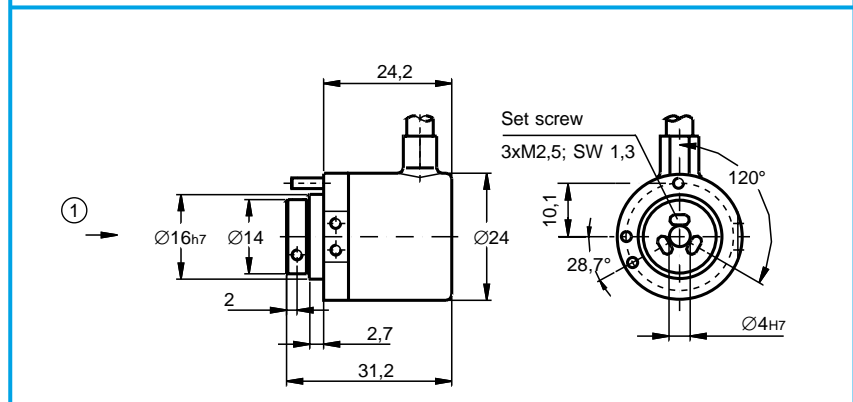
#### G 24 S

- high vibration capability
- cable output: axial or radial
- optional: Cablework



#### G 24 W

- cable output: axial or radial
- optional: torque coupling



### Electrical Data

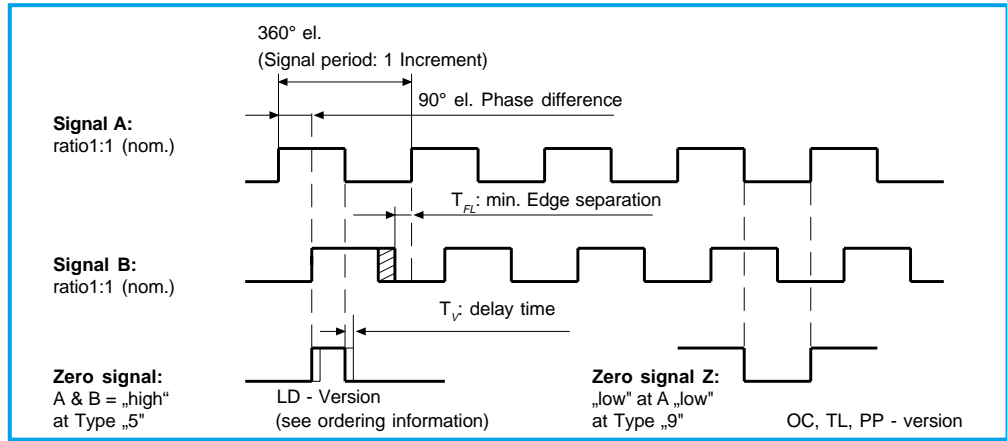
G24	Type S	Type W
Supply voltage	5 V ± 5%: LD 5 ... 24 V: TL, OC 8 ... 24 V: PP	5 V ± 5%: LD 5 ... 24 V: TL, OC 8 ... 24 V: PP
Current requirement (without load)	max. 25 mA: TL, OC max. 30 mA: LD, PP	max. 25 mA: TL, OC max. 30 mA: LD, PP
Output load	± 20 mA (RS422): LD 25 mA: OC 25 mA (4,7 kOhm): TL 50 mA: PP	± 20 mA (RS422): LD 25 mA: OC 25 mA (4,7 kOhm): TL 50 mA: PP
Output frequency	0 ... 100 kHz: PP, TL, OC 0 ... 300 kHz: LD	0 ... 100 kHz: PP, TL, OC 0 ... 300 kHz: LD
Cable length	max. 30 m: PP, TL, OC max. 50 m: LD	max. 30 m: PP, TL, OC max. 50 m: LD
Zero index	5 = Z „high“ if A + B „high“: LD 9 = Z „low“ if A „low“: PP, TL, OC others upon request	5 = Z „high“ if A + B „high“: LD 9 = Z „low“ if A „low“: PP, TL, OC others upon request

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### Output Signals

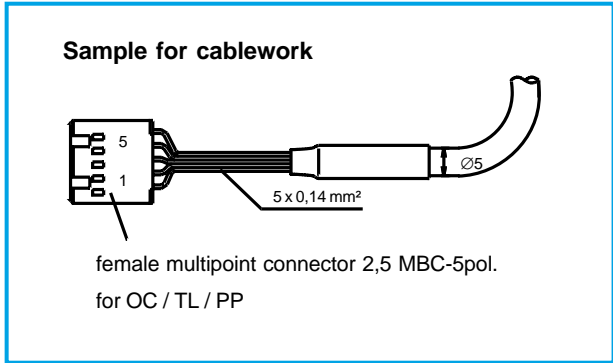
#### Version:

- LD = Line driver RS422
- PP = Push pull
- TL = TTL compatible
- OC = Open collector



### Connector- Terminal and Cable Designation

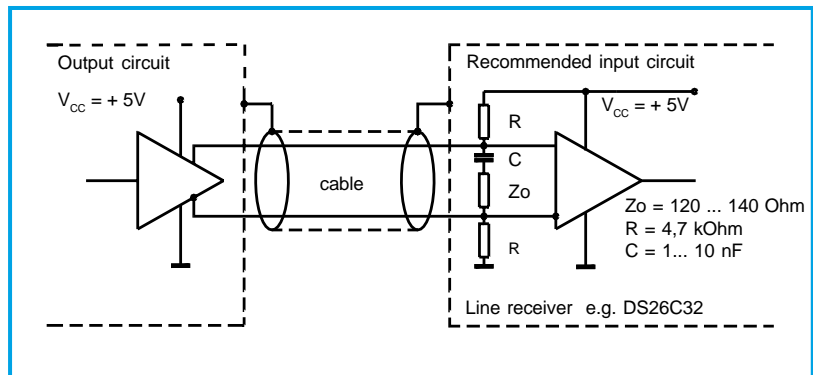
G 24 S, W	Output circuit		
	OC/TL/PP	LD (RS422)	
Function / Signal	5-pin	Cable Pur 10 x 0,14	Cable Pur 10 x 0,14
Signal A	2	green	green
Signal $\bar{A}$	-	-	blue
Signal B	4	yellow	yellow
Signal $\bar{B}$	-	-	black
Signal Z	3	grey	grey
Signal $\bar{Z}$	-	-	pink
$V_{CC}$	5	brown	brown
$V_{CC\text{Sense}}$	-	-	-
0 Volts	1	white	white
0 Volts <sub>Sense</sub>	-	-	-
Shield	-	-	white-blue



### Recommended input circuitry of subsequent electronics

#### LD: Line driver RS 422 A

- Operating voltage: 5 V ± 5 %
- Current requirement: max. 30 mA (without load)
- Output signals: A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$
- Max. Output frequency: 300 kHz
- Min. edge separation:  $T_{FL} \geq 0,25 \mu\text{s}$  (400 kHz)
- Level (RS 422):  $U_H \geq 2,5 \text{ V}$  ( $I_H = -20 \text{ mA}$ )  
 $U_L \leq 0,5 \text{ V}$  ( $I_L = 20 \text{ mA}$ )
- Max. current load cap.:  $I_{max}: \pm 20 \text{ mA}$  per Output
- Delay time:  $T_V \leq 50 \text{ ns}$
- Switching times: rise / fall times:  $\leq 100 \text{ ns}$
- Cable length: max. 50 m
- Operating temperature: -40 °C ... +85 °C



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Ordering information	G	24	X	X	XX XX	XXXX	-	X	X	X	-	XX
	G	24	3	4	5.1 5.2	6	-	7	8	9	-	10
<b>G</b>	<b>Incremental Rotary Encoder</b>											
<b>24</b>	<b>Model series</b>											
<b>3</b>	<b>Mechanical specification</b> S = Type S shaft W = Type W hollow shaft (blind hole)											
<b>4</b>	<b>Shaft or hollow shaft configuration</b> R = 4 mm (standard) W = 5 mm S = 6 mm											
<b>5.1</b>	<b>Output circuit</b> LD = Line driver; RS422 PP = Push pull TL = TTL-compatible OC = Open collector											
<b>5.2</b>	<b>Output channels</b> BI = channel A and B IN = channel B only others upon request											
<b>6</b>	<b>Line counts</b> 10      50      100      128      200      250      256      360      512											
<b>7</b>	<b>Zero Index Z</b> 5 = Z „high“ if A + B „high“ (for LD only) 9 = Z „low“ if A „low“ (for OC, TL, PP only)      others upon request											
<b>8</b>	<b>Flange</b> Type S: 2 = servo Type W: 3 = round											
<b>9</b>	<b>Connector or cable output</b> 2 = cable axial (with PG)      4 = cable radial with connector 3 = cable radial (with tubular rivet)      5 = cable axial with connector others upon request											
<b>10</b>	<b>Supply voltage</b> 05 = 5 Volts      24 = 8 ... 24 Volts											

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