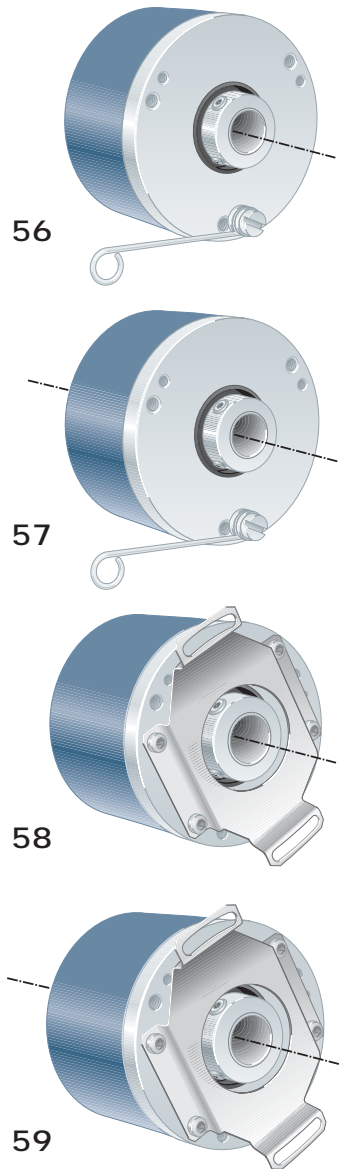


# 504 — Ruggedized Hollow shaft encoder, Incremental

EXTENDED  
TEMPERATURE



## Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 65 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> High temperature applications

## General information

Encoder data		
Type	RHI 504	
Operating temperature	-20°C .. +100°C	
Storage temperature	-20°C .. +80°C	
Ingress protection class	IP-67 according to IEC 60529	
At shaft inlet	IP-65 according to IEC 60529	
Vibration (55 to 2000Hz)	< 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup>	
Shock (6ms)	< 2000 m/s <sup>2</sup> according to IEC 60068-2-27	
Cover material	Aluminium	
Cover surface treatment	Coated and cromated or anodized	
Weight	Approx. 300g	
Accuracy and resolution		
Line count	1..5000 ppr	5001..10 000 ppr
Dividing error	± 50 °el	± 90 °el
Channel separation	90 ± 25 °el	90 ± 45 °el
Measuring steps	4 x Line count	

## Flange option

Flange type	56, hollow-shaft	57, hollow-shaft	58, hollow-shaft	59, hollow-shaft
Type	Standard	Through going	Standard	Through going
Diameter	ø58mm	ø58mm	ø58mm	ø58mm
Flange material	Aluminium	Aluminium	Aluminium	Aluminium
Surface treatment	Anodized	Anodized	Anodized	Anodized
Torque support	Torque arm	Torque arm	Stator coupling	Stator coupling

## Shaft option

Hollow-shaft type	Ø 8	Ø 10	Ø 12	Ø 14
Axial shaft load	10 N	10 N	10 N	10 N
Radial shaft load	20 N	20 N	20 N	20 N
Mech. permissible speed	6000 rpm (12 000)	6000 rpm (12 000)	6000 rpm (12 000)	6000 rpm (12 000)
Shaft material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Moment of inertia	1,9 x 10 <sup>-6</sup> kgm <sup>2</sup>	1,9 x 10 <sup>-6</sup> kgm <sup>2</sup>	2,0 x 10 <sup>-6</sup> kgm <sup>2</sup>	2,0 x 10 <sup>-6</sup> kgm <sup>2</sup>

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors

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## Connection option

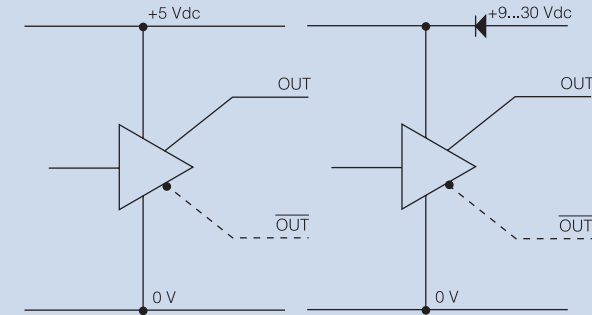
Connector type	Cable	8 pin M12	12 pin EML	8 pin PT	6 pin MS
Function	Colour	PIN	PIN	PIN	PIN
S00	Yellow	5	5	D	D
S00 inverted	Black	4	6	C	C
S90	Green	3	8	A	A
S90 inverted	White	1	1	B	B
Sref	Brown	2	3	G	NA
Sref inverted	Violet	6	4	H	NA
+E Volt	Red	8	12	E	E
0 Volt	Blue	7	10	F	F
STATUS	Grey	NA	7	NA	NA
Case	Shield				
<b>Connecting direction (flange option -56, -58)</b>					
Axial	Yes	Yes	Yes	Yes	Yes
Radial	Yes	Yes	Yes	Yes	No
<b>Connecting direction (flange option -57, -59)</b>					
Axial	No	No	No	No	No
Radial	Yes	Yes	Yes	Yes	No

## Electrical option

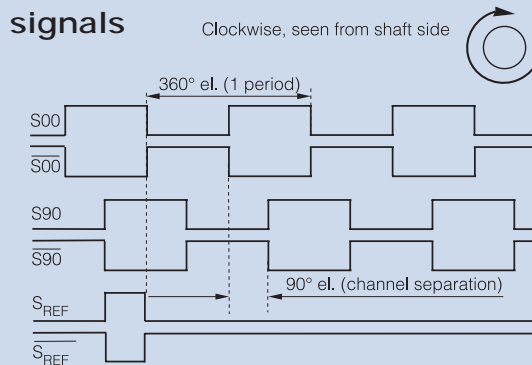
Power supply	5 V ±10%	9-30 V	
Polarity protected	No	Yes	
Output signals	TTL <sup>1</sup>	HTL	RS-422
Short circuit protected	Yes	Yes	Yes
Current consumption	45 mA	50 mA at 24Vdc	25 mA at 24Vdc
Max consumption	75 mA	75 mA	40 mA
Output load (max)	±20 mA	±40 mA	±20 mA
Output frequency (max)	300 kHz	300 kHz	300 kHz
U <sub>high</sub> at 10mA load	> 3.0 V	> +EV - 2.0 V	> 3.0 V
U <sub>low</sub> at 10mA load	< 0.4 V	< 1.15 V	< 0.4 V
Cable length (max)	50 m	200 m @ 50 kHz	1 km (TIA/EIA-422-B)
STATUS output	Yes	Yes	Yes
High level	Encoder OK	Encoder OK	Encoder OK
Low level	Warning/Failure	Warning/Failure	Warning/Failure

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

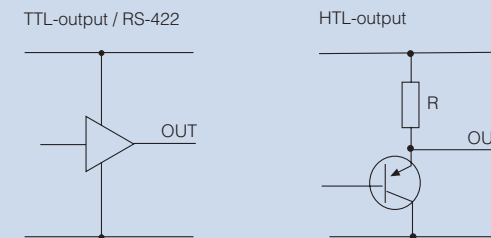
## Output circuit



## Output signals



## Status outputs

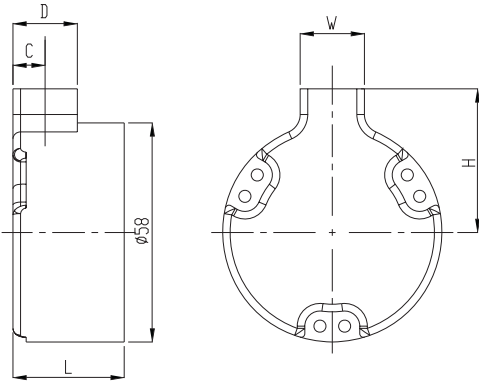


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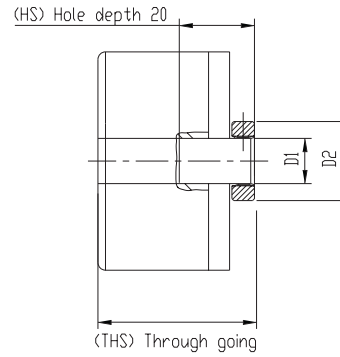


## Dimensions



Connector	Orientation	L	H	W	D	C
Cable	Radial $\varnothing 58$	29.4	34	17	17	8.5
	Axial	38.9	-	-	-	-
EML	Radial	29.4	32	27	27	13.5
	Axial	38.9	-	-	-	-
PT 8p	Radial	29.4	41	27	27	13.5
	Axial $\varnothing 58$	38.9	-	-	-	-
MS 6p	Radial	-	-	-	-	-
	Axial	38.9	-	-	-	-
M12 8p	Radial	29.4	38	27	27	9.5
	Axial	38.9	-	-	-	-

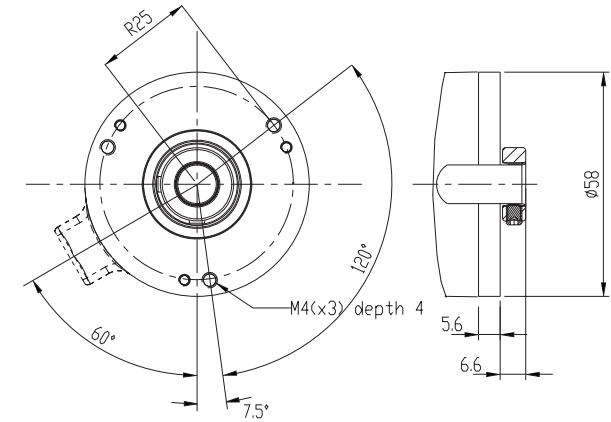
## Shafts



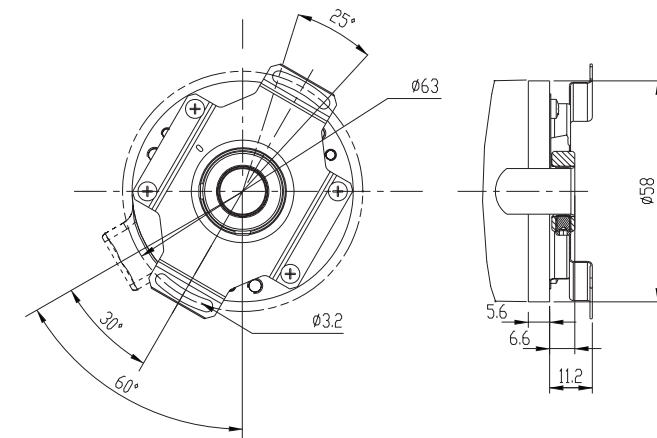
	D1	D2
$\varnothing 8\text{mm}$	$\varnothing 8$ G7	$\varnothing 19$
$\varnothing 10\text{mm}$	$\varnothing 10$ G7	$\varnothing 19$
$\varnothing 12\text{mm}$	$\varnothing 12$ G7	$\varnothing 21$
$\varnothing 14\text{mm}$	$\varnothing 14$ G7	$\varnothing 23$

## Flanges

56 and 57



58 and 59



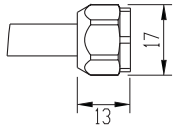
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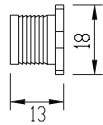


## Connectors

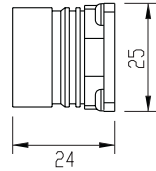
**Cable**  
5x2x0,25 shielded



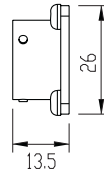
**8pin M12**



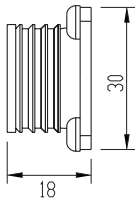
**12pin EML**



**8pin PT**

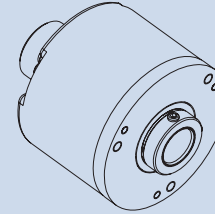


**6pin MS**

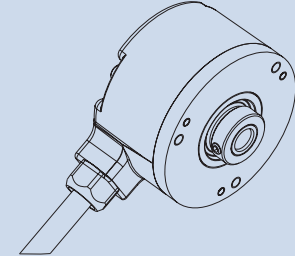


## Various combinations / examples

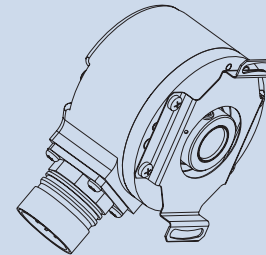
RHI 503 56 12 mm, axial MS



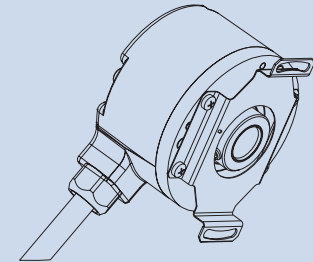
RHI 503 57 8 mm, radial cable



RHI 503 58 10 mm, radial EML



RHI 503 59 10 mm, radial cable



## Ordering information Tick your choice

Type	RHI 504					
Shaft	Ø 8mm	Ø 10mm	Ø 12mm	Ø 14mm		
Flange	56, HS	57, THS	58, HS	59, THS		
Electronics <sup>(1)</sup>	Supply	5Vdc				
	Output	TTL	HTL	RS-422		
Connection	Cable	8 pin M12	12 pin EML	8 pin PT	6 pin MS	
Connecting direction	HS	Axial/Radial	Axial/Radial	Axial/Radial	Axial/Radial	Axial
	THS	Radial	Radial	Radial	Radial	
Line count	1..5000	5001..10 000				

<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

HS Hollow-shaft THS Through going hollow-shaft

**Please, specify line count and cable length when ordering**

Ordering example: RHI 504 ø10mm 58HS 5Vdc TTL 12 pin EML Radial 1024