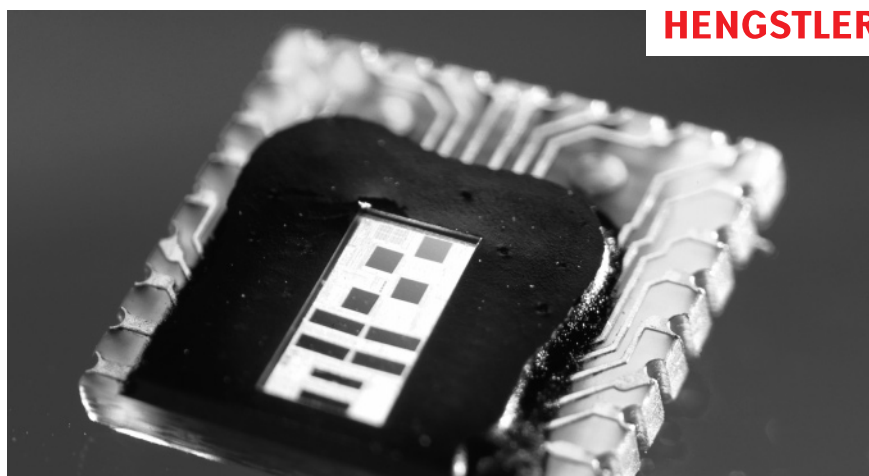


RIS58 OptoAsic – new technology for the new millennium

The newest OptoAsic
technology from Hengstler



With the introduction of the sinewave encoder family, Hengstler has taken the opportunity to significantly rework its OptoAsic technology. The best features have been maintained and new improvements have been introduced. One major feature that has been retained of course, is the high level of EMC reliability which we have achieved by integrating almost the complete encoder electronics into one component.

What is new is the integrated offset and amplitude control together with the in-chip optical system adjustment. In the past anybody wanting high quality, accurate sine-wave signals at low frequencies had to trade in this for bandwidth. We are now able to meet this apparently contradictory requirement with our in-built amplitude control. You can't fail to be convinced by a unit which delivers sine-wave signal with harmonic distortion better than 1% at low speed and 500 kHz max. frequency. The advantages are crystal clear. If you need precision at slow speeds you no longer have to compromise your productivity numbers by doing without high idling speeds for instance. You can have both.

Typical applications:

- Packaging machines
- Machine tools
- Printing machines
- Textile machines
- Drives

Sine-Wave Encoders – Industrial Types



Type	RIS 58-O	RIS 58-H
Special features	<ul style="list-style-type: none"> ■ Harmonic distortion less than 1 % ■ Extended temperature range, -40° up to +100 °C ■ 500 kHz sine-wave incremental signal frequency response ■ Self-monitoring and error compensation ■ Secure against short-circuit and overload 	<ul style="list-style-type: none"> ■ Harmonic distortion less than 1 % ■ Extended temperature range, -40° up to +100 °C ■ 500 kHz sine-wave incremental signal frequency response ■ Self-monitoring and error compensation ■ Secure against short-circuit and overload
Technical – data mechanical		
Shaft form		
Shaft variations	solid shaft	hollow shaft
Shaft diameter	6 mm	10 mm, 12 mm hollow shaft
Absolute max shaft load radial/axial	60 N/40 N	
Balance tolerances		axial ±1.5 mm, radial ±0.2 mm
Maximum speed	12,000 RPM	12,000 RPM
Torque	≤ 1 Ncm	≤ 1 Ncm
Protection class	Bearing IP 64, Housing IP 65	Bearing IP 64, Housing IP 65
General design	as per DIN EN 61010-1	as per DIN EN 61010-1
Operating temperature	-40 up to +100 °C	-40 up to +100 °C
Vibration (IEC 68-2-6)	≤ 100 m/s ²	≤ 100 m/s ²
Shock (IEC 68-2-27)	≤ 1000 m/s ²	≤ 1000 m/s ²
Housing material	Aluminium	Aluminium
Connection	Cable or connector, Conin axial or radial	Cable or connector, axial or radial
Size	Ø 58 mm	Ø 58 mm
Weight	265 g approx.	270 g approx.
Technical data – electrical		
Supply voltage (SELV)	5 VDC ±10 %	5 VDC/±10 %
Current consumption	120 mA	120 mA
Incremental signals A, B	Sine-Cosine 1 Vpp	Sine/cosine 1 Vpp
Increments	1000, 1024, 2048	1000, 1024, 2048
Accuracy	± 35"	± 35"
Repeatability	± 7"	± 7"
Max. frequency	500 kHz	500 kHz
Reference signal: R	> 0.4 V (1 pulse/turn)	> 0,4 V (1 pulse/turn)
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- Harmonic distortion less than 1 %
- Extended temperature range, -40 ° to +100 °C
- 500 kHz sine-wave incremental signal frequency response
- All accessible components, including the electrical connections, are resistant to common industrial coolants and lubricants
- Self-monitoring and error compensation
- Secure against short-circuit and overload
- Hot plug
- Unit is protected against overloads of 10 V/50 ms
- 6 x 10 mm solid shaft
- 10 or 12 mm hub shaft with stator coupling
- Emitted interference and noise immunity according to EN 50081-2 and EN 50082-2
- CE labelled

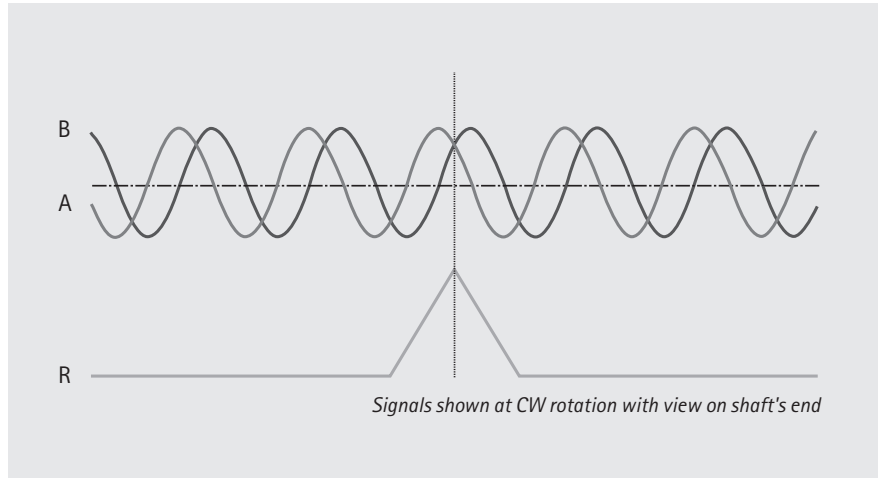
TECHNICAL DATA mechanical

	RIS 58-0 with solid shaft
Shaft entry point protection	IP 64
Housing protection	IP 67
Shaft diameter	6 mm
Maximum speed	12,000 min ⁻¹
Starting torque	< 0.01 Nm
Max. shaft load	axial 40N / radial 60N
Operating temperature	-40 to +100°C
Storage temperature	-20 to +80°C
Weight	265 g
Shock DIN EN 60068-2-27	1000 m/s ² (6 ms)
Vibration DIN EN 60068-2-6100	100 m/s ² (10- 2000 Hz)

TECHNICAL DATA electrical

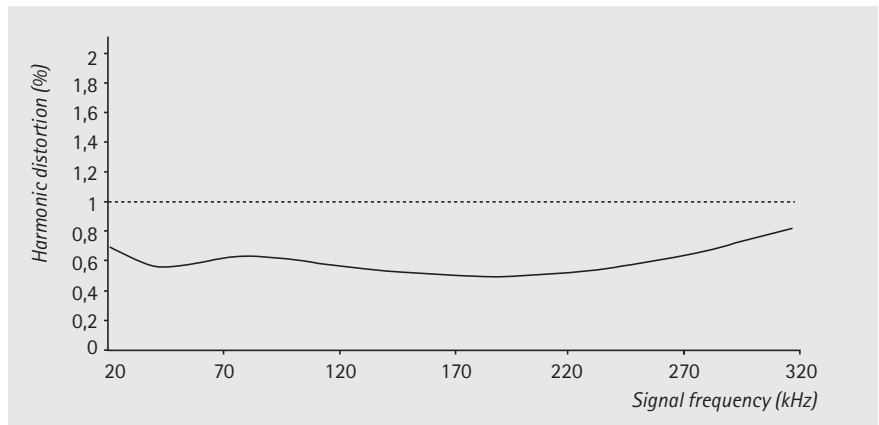
Power supply	5V ± 10%
Max. current consumption	120 mA
Incremental signal	Sine/cosine 1 V _{pp}
Line count	1000, 1024, 2048
Absolute accuracy	± 35"
Repeatability	± 7"
Max. frequency	500 kHz
Reference signal	> 0.4 V
Connection	Cable axial or radial/Conin flange box axial or radial

THE RIS 58 SIGNALS



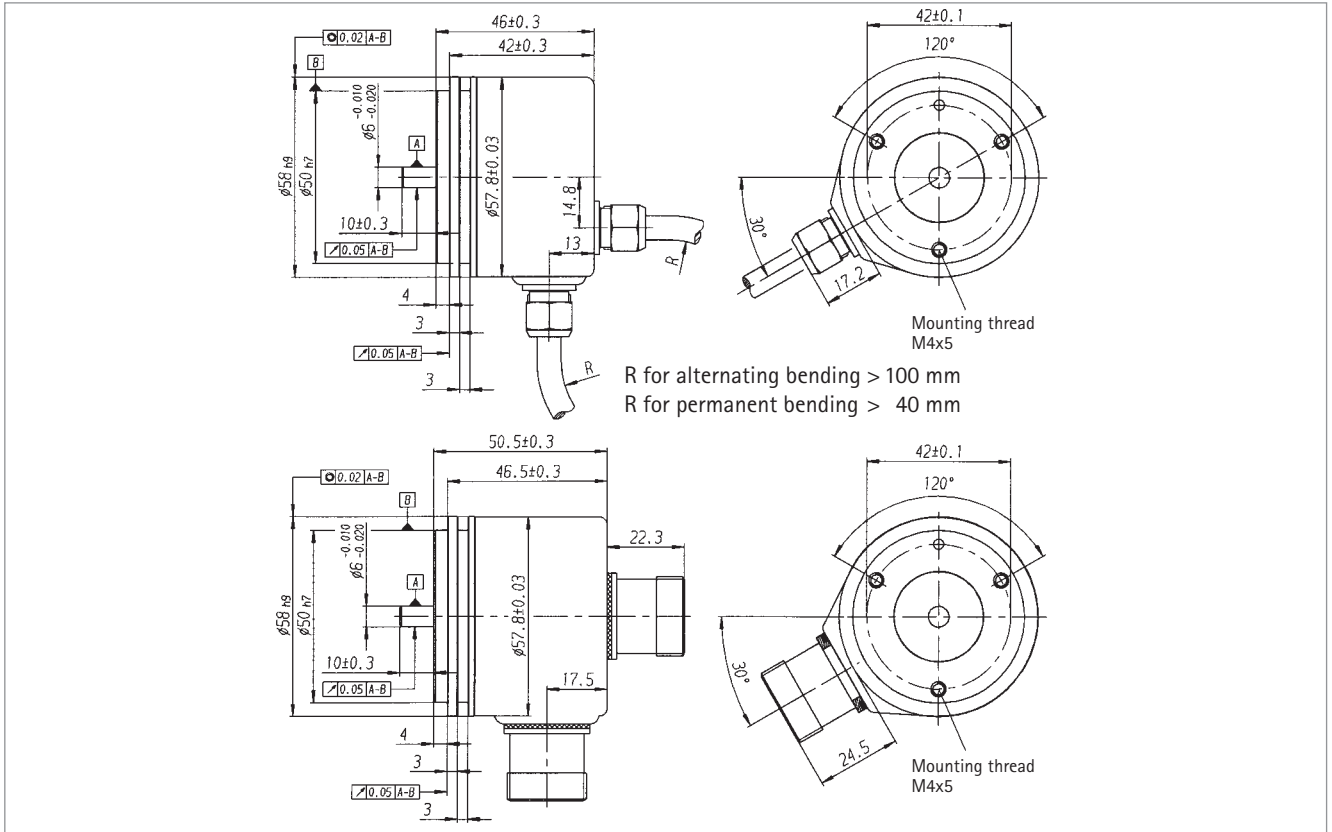
The incremental signals A and B and the zero signal R are differential voltage signals. The differential signal level is 1 Vpp. The zero signal appears once per revolution with a peak of 0.4 V and reaches its maximum value at the angle where the amplitudes of the A and B signals are equal. All signals have a DC-offset of 2.5 V.

RIS 58 SIGNAL QUALITY



The quality of the servo loop is determined to a large extent by the absence of harmonics in the encoder's sinewave signals, particularly at low speed. In order to achieve high interpolation factors in the sequencing control, the incremental sine signals A and B are available with a harmonic distortion significantly under 1% throughout the specified temperature range. This delivers excellent synchronism and a high level of positional accuracy with servo axes.

DIMENSIONED DRAWINGS RIS 58-O with solid shaft



CONNECTOR ASSIGNMENT

Signal	Conin 12 pin	TPE cable
+5 V	12	brown/green
0 V	10	white/green
A+	5	brown
A-	6	green
B+	8	grey
B-	1	pink
R+	3	red
R-	4	black
+5 V sense	2	blue
N.C.	7	violet
N.C.	9	-
0 V sense	11	white
Housing	Shield	Shield

ORDERING INFORMATION RIS 58-O with solid shaft

RIS 58-O / A S . 4 1 V

Line count
1000
1024
2048

Connection
A TPE cable - axial
B TPE cable - radial
C Conin flange box - axial;
12 pin male; CCW
H Conin flange box - radial;
12 pin male; CCW



- Harmonic distortion less than 1 %
- Extended temperature range, -40 ° to +100 °C
- 500 kHz sine-wave incremental signal frequency response
- All accessible components, including the electrical connections, are resistant to common industrial coolants and lubricants
- Self-monitoring and error compensation
- Secure against short-circuit and overload
- Hot plug
- Unit is protected against overloads of 10 V/50 ms
- 6 x 10 mm solid shaft
- 10 or 12 mm hub shaft with stator coupling
- Emitted interference and noise immunity according to EN 50081-2 and EN 50082-2
- CE labelled

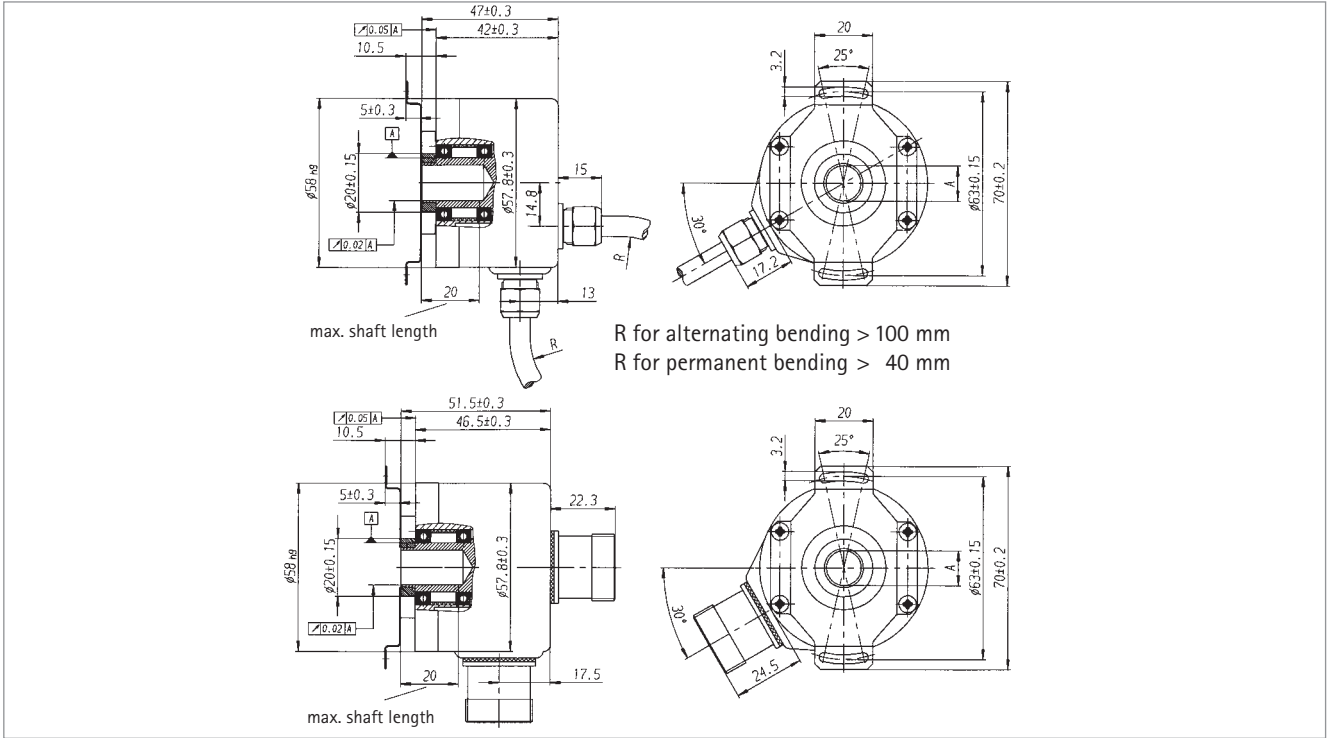
TECHNICAL DATA mechanical

	RIS 58-H with hollow shaft
Shaft entry point protection	IP 64
Housing protection	IP 67
Shaft diameter	10mm, 12mm
Maximum speed	12,000 min ⁻¹
Starting torque	< 0.01 Nm
Torque arms	
Axial compensation range	± 1.5mm
Radial compensation range	± 0.2mm
Operating temperature	-40 to +100 °C
Storage temperature	-20 to +80 °C
Weight	270 g
Shock DIN EN 60068-2-27	1000 m/s ² (6 ms)
Vibration DIN EN 60068-2-6100	100 m/s ² (10- 2000 Hz)

TECHNICAL DATA electrical

Power supply	5V ± 10%
Max. current consumption	120 mA
Incremental signal	Sine/cosine 1 V _{pp}
Line count	1000, 1024, 2048
Absolute accuracy	± 35"
Repeatability	± 7"
Max. frequency	500 kHz
Reference signal	> 0.4 V
Connection	Cable axial or radial/Conin flange box axial or radial

DIMENSIONED DRAWINGS RIS 58-H with hollow shaft



CONNECTOR ASSIGNMENT

Signal	Conin 12 pin	TPE cable
+5 V	12	brown/green
0 V	10	white/green
A+	5	brown
A-	6	green
B+	8	grey
B-	1	pink
R+	3	red
R-	4	black
+5 V sense	2	blue
N.C.	7	violet
N.C.	9	-
0 V sense	11	white
Housing	Shield	Shield

ORDERING DATA RIS 58-H with hollow shaft

RIS 58-H / A F . 4 V

Line count
1000
1024
2048

Hollow shaft
2 10 mm
7 12 mm

Connection
A TPE cable - axial
B TPE cable - radial
C Conin flange box - axial;
12 pin male; CCW
H Conin flange box - radial;
12 pin male; CCW