Active sensors

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Rotary Hall-Effect

Rotary Hall-Effect sensor range

RH 'contactless' rotary position sensors have been specifically designed to provide precision rotary measurements utilising industry proven Hall-Effect technology. When the shaft is rotated at the sensing modules face, the circuit accurately measures up to 360° of angle. There is no contact between the sensing circuit and the actuator making the sensor ideal in extreme environments of high temperatures, shock and vibration.

The sensors operate from a 5Vdc regulated or 8 to 30Vdc unregulated supply and have built-in over voltage and reverse polarity protection. The output signal is 0 - 5.0V with a 12-bit resolution (0.025%) and the operating temperature is 150°C, with excursions permissible to 170°C. Every RH sensor is heat cycled (thermally tested) prior to final calibration to ensure performance stability over its operational life.

- Measurement angle up to to 360°
- Contactless technology
- High temperature operation
- Compact 'low-profile' design
- Raychem signal cabling
- Highly accurate (+/-0.25%)
- Twin 'ball-race' shaft bearings
- Models available from stock
- Protective shrink boot option

RH0500 series

Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin 'ball-race' shaft bearings
- Operational life >20 million cycles
- Highly accurate (+/-0.25%)

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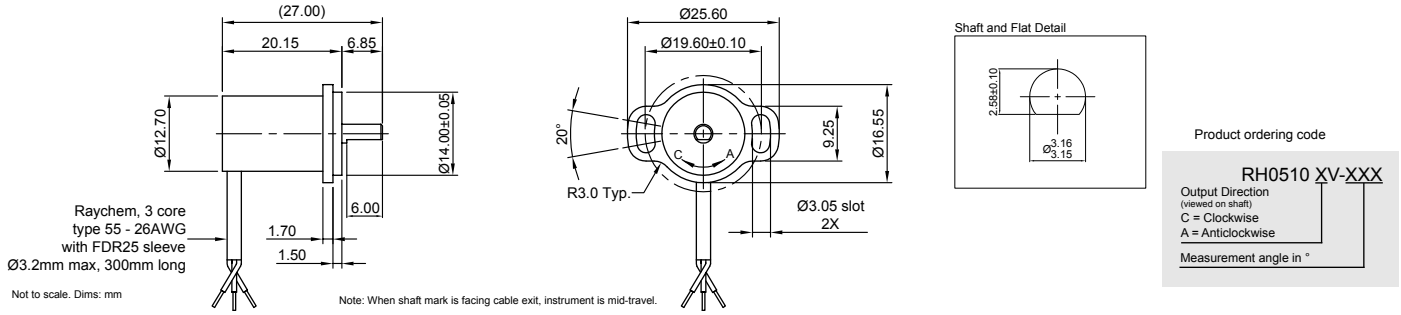
Model dimensions and mounting

RH0510 - flange mounting / flat shaft



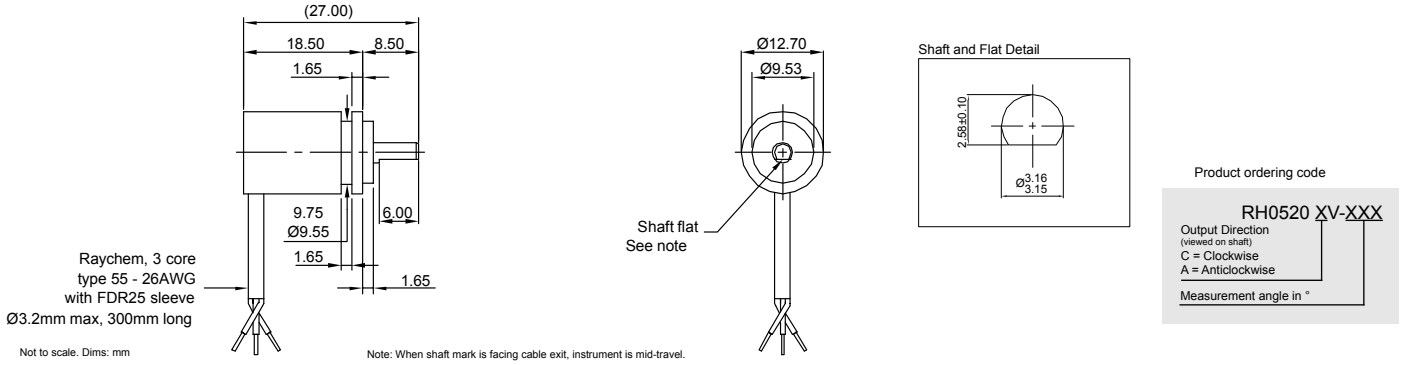
Product ordering code

RH0510 XV-XXX

Output Direction
(viewed on shaft)
C = Clockwise
A = Anticlockwise

Measurement angle in °

RH0520 - servo mounting / flat shaft



Product ordering code

RH0520 XV-XXX

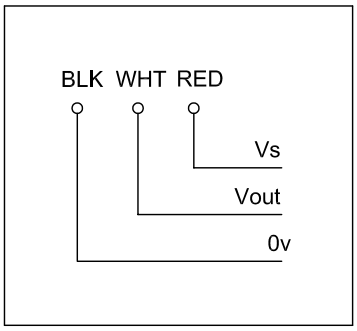
Output Direction
(viewed on shaft)
C = Clockwise
A = Anticlockwise

Measurement angle in °

Electrical & mechanical information for the RH0500 series

	5 Volt	
Performance Specification		
Electrical angle	20 to 360 in 1° increments	°
Resolution	0.025	% of measurement angle
Independant Non-Linearity (Least squares best fit method)	<±0.25	% FS
Temperature coefficient	<±30	ppm/°C FS
Update rate	>500	Hz
Max operating speed	600	rpm
Input Specification		
Supply voltage (Vs)	5.0±10% regulated	V DC
Over voltage protection	up to 20	V DC
Supply current	<15	mA
Reverse polarity protection	<-10	V DC
Power on settlement time	<100	mS
Output Specification		
Voltage output (Vout)	0-Vs	V DC
Monotonic range	1 - 99	% Vout
Load resistance	>10	KOhms
Output noise	<10	mV DC
Output type	Analogue Voltage	
Output direction	Clockwise or counter clockwise (specified at time of order)	
General Specification		
Operating torque	<0.6	gf cm
Shaft velocity	<3600	°/Sec
Weight	22	grams
Protection	IP50	
Life	> 20 million operations	
Dither life	Contactless - no degradation due to shaft dither	
Operational temperature	-40 to +150	°C
Storage temperature	-55 to +150	°C
Materials	Case - Aluminium 6026 Shaft - Stainless steel 316	

Electrical Connections



Note: Incorrect wiring may cause internal damage.

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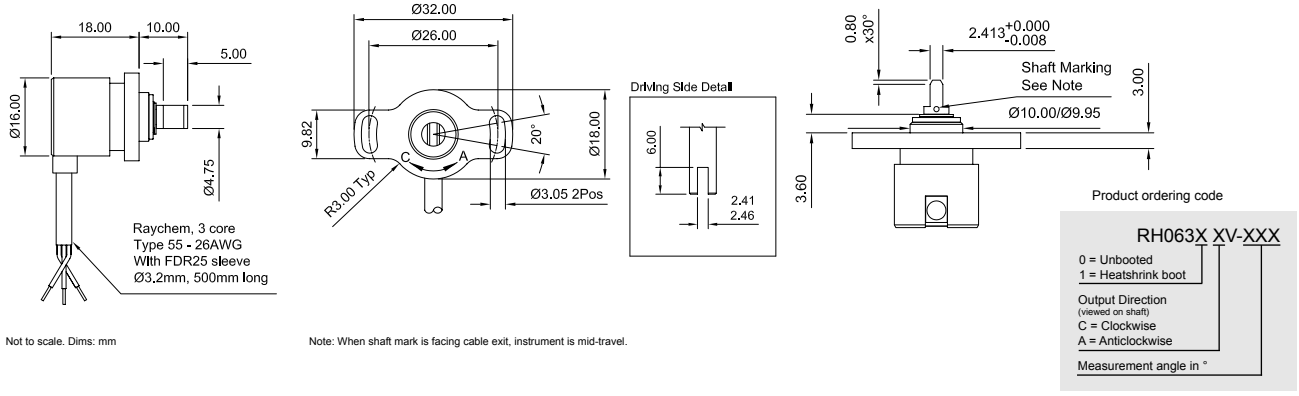
RH0600 series

Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin ‘ball-race’ shaft bearings
- Life (Bearings) >500 million cycles
- Highly accurate (+/-0.25%)

RH0630 - flange mounting / blade shaft



Not to scale. Dims: mm

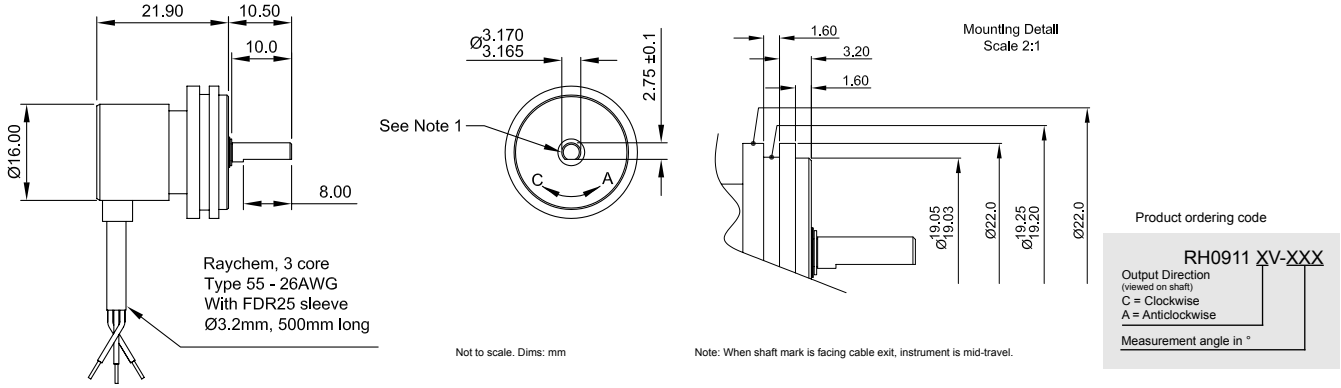
Note: When shaft mark is facing cable exit, instrument is mid-travel.

RH0900 series

Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin ‘ball-race’ shaft bearings
- Life (Bearings) >500 million cycles
- Highly accurate (+/-0.25%)

RH0911 - servo mounting / flat shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

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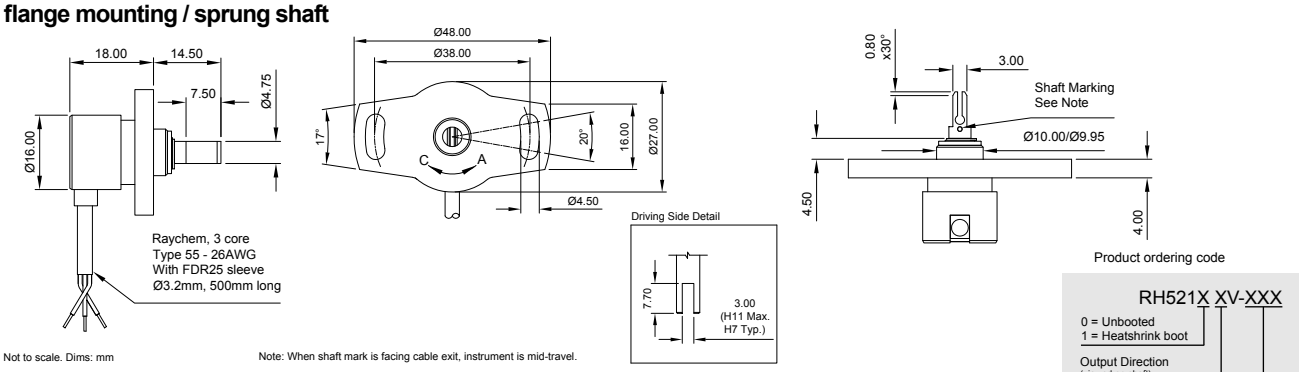
Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin ‘ball-race’ shaft bearings
- Life (Bearings) >500 million cycles
- Highly accurate (+/-0.25%)

RH5210 - flange mounting / sprung shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

Product ordering code

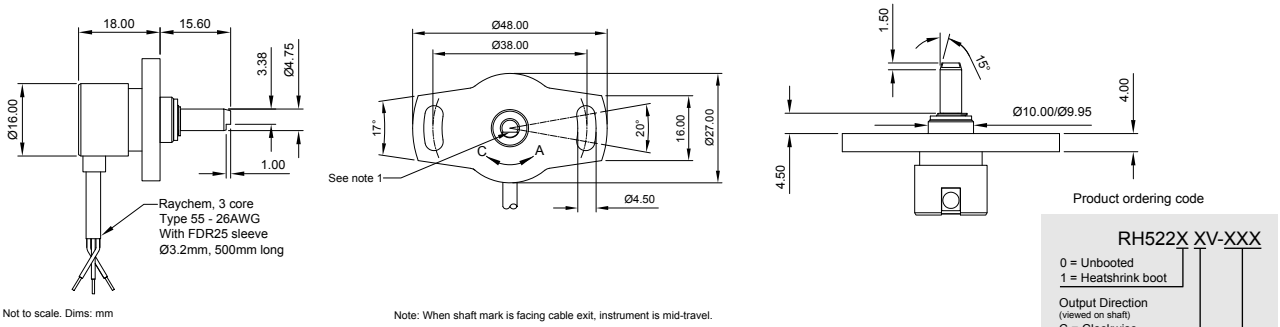
RH521X XV-XXX

0 = Unbooted
1 = Heatshrink boot

Output Direction
(viewed on shaft)
C = Clockwise
A = Anticlockwise

Measurement angle in °

RH5220 - flange mounting / round shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

Product ordering code

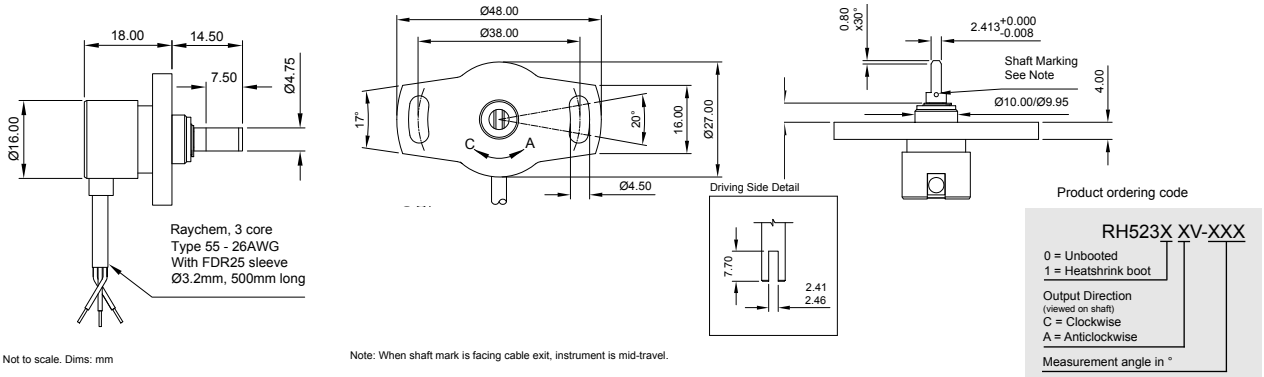
RH522X XV-XXX

0 = Unbooted
1 = Heatshrink boot

Output Direction
(viewed on shaft)
C = Clockwise
A = Anticlockwise

Measurement angle in °

RH5230 - flange mounting / blade shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

Product ordering code

RH523X XV-XXX

0 = Unbooted
1 = Heatshrink boot

Output Direction
(viewed on shaft)
C = Clockwise
A = Anticlockwise

Measurement angle in °

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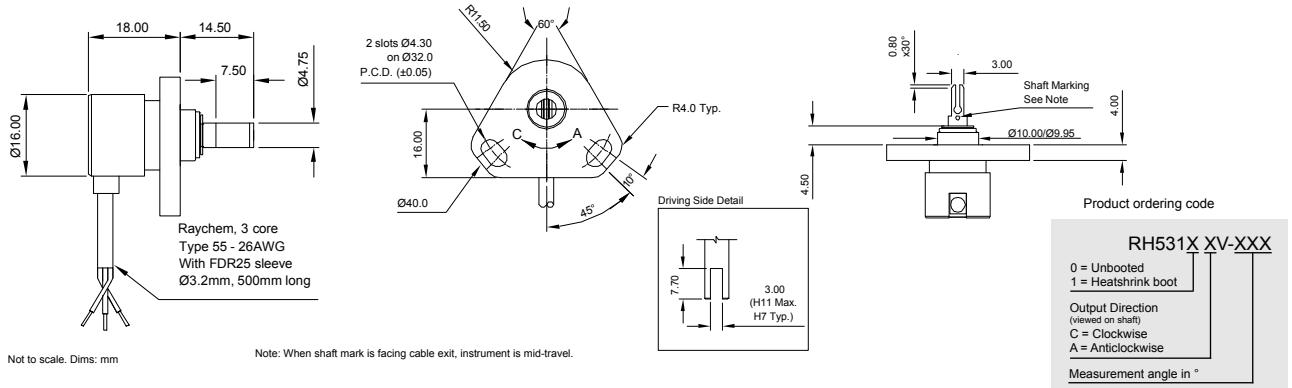
Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin ‘ball-race’ shaft bearings
- Life (Bearings) >500 million cycles
- Highly accurate (+/-0.25%)

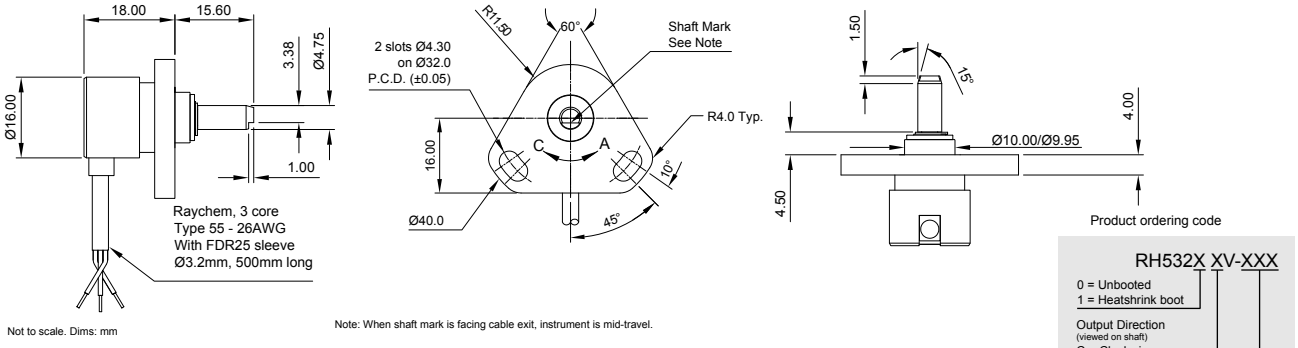
RH5310 - triangular flange mounting / sprung shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

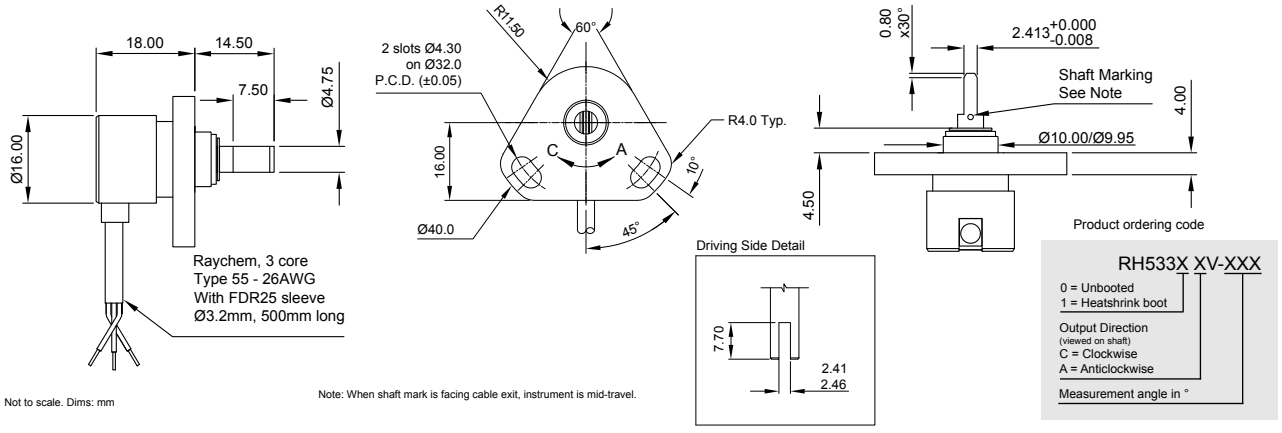
RH5320 - triangular flange / round shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

RH5330 - triangular flange / blade shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

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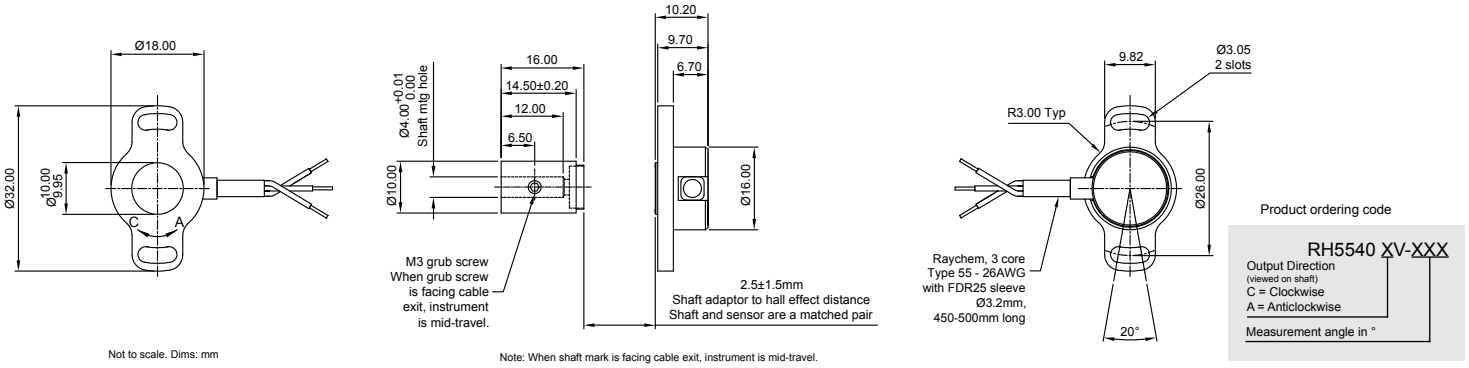
Model features

- Measurement angle up to 360°
- Contactless technology
- High temperature operation
- Twin ‘ball-race’ shaft bearings
- Life (Bearings) >500 million cycles
- Highly accurate (+/-0.25%)

RH5540 - flange mounting / free shaft



Not to scale. Dims: mm

Note: When shaft mark is facing cable exit, instrument is mid-travel.

Electrical & mechanical information for the RH0600, RH0900, RH5200, RH5300 and RH5500 series

Input Specification

Supply voltage (Vs)	5.0±10% regulated	8 to 30 unregulated	V DC
Over voltage protection	up to 50		V DC
Supply current	<15		mA
Reverse polarity protection	up to -10		V DC
Power on settlement time	<100		mS
Input voltage rise time	0.25 minimum		V/mS

Output Specification

Output type	Analogue		
Output direction	Clockwise or counter clockwise (specified at time of order)		
Voltage output (Vout)	0-Vs (+5v)	0 to 5.0	V DC
Monotonic range	1 - 99%		Vout
Load resistance	>10K		Ohms
Output noise	<5		mV rms

Performance Specification

Measurement angle	20 to 360 in 1° increments		°
Resolution	0.025		% of measurement angle
Independant Non-Linearity (see note 4)	<±0.25		FS
Temperature coefficient	<±0.003%	<±0.011%	FS/°C
Update rate	>500		Hz
Max operating speed	600		rpm

General Specification

Weight - RH0900	22		grams
Weight - RH0600/RH5300 series	33		grams
Weight - RH5200 series	25		grams
Weight - RH5500 series	Case and cable = 12, shaft adapter = 9		grams
Protection	IP67		
Life (Bearings)	> 500 million operations		(dependant on environment)
Dither life	Contactless - no degradation due to shaft dither		
Operational temperature	-40 to +150	See de-rating graph	°C
Storage temperature	-55 to +150		°C
Materials	Case - Aluminium 6026 Module - Glass filled nylon Shaft - Stainless steel 316		

Note 1: Incorrect wiring may cause internal damage. Note 2: When shaft marking is facing cable exit, instrument is mid-travel (2.5v output).
Note 3: Do not operate between 5.5V and 8V. Note 4: Non-linearity is calculated from Least Squares Best Fit method.

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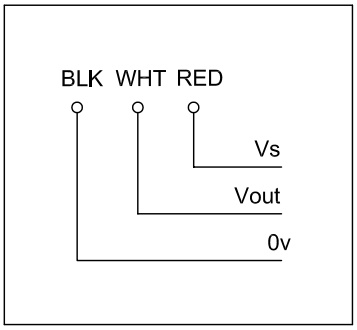
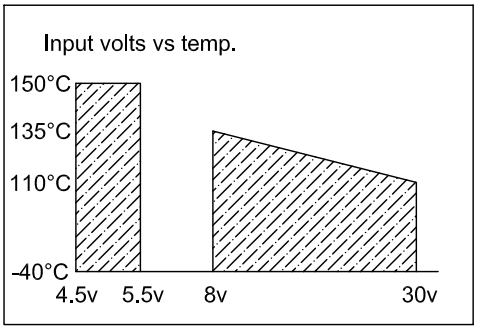
Electrical Connections



Note: Incorrect wiring may cause internal damage.

Operational Temp



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