SRH880P SINGLE OUTPUT
rugged contactless rotary sensor

PERFORMANCE

ELECTRICAL

Measurement range	**°**	20 to 360 in 1° increments
Supply voltage	**Vdc**	9 to 30 (unregulated) and 5 ±0.5 (regulated)
Over voltage protection	**Vdc**	Up to 40 (-40 to +60°C)
Maximum supply current	**mA**	<12.5
Reverse polarity protection		Yes
Short circuit protection		
output to GND		Yes
output to supply		In 5V regulated mode only
Power-on settlement time	**S**	<1
Resolution	**%**	0.025 of measurement range (12 bit)
Non-linearity*	**%**	< ±0.4
Temperature coefficient	**ppm/°C**	< ±50

*Non-linearity is measured using the Least-Squares method on a computerised calibration system

Analog Output (order code A) – see graph on page 31

Voltage output range		
9-30V supply	**Vdc**	Absolute voltage, 0.5 to 4.5 over measurement range (±3%)
5V supply	**Vdc**	Ratiometric output voltage - 10 to 90% of Vs over measurement range(±1%)
Monotonic range	**Vdc**	0.25 (5%) and 4.75 (95%) nominal
Load resistance	**Ω**	10k minimum (resistive to GND)
Output noise	**mVrms**	<1
Input/output delay	**mS**	<2

PWM Output (order code P) – See output characteristics on page 31

PWM frequency		**Hz**	244 ±20% over temperature range
PWM levels	**9-30V supply**	**Vdc**	0 and 5 nominal (±3%)
	5V supply	**Vdc**	0 and Vs (±1%)
Duty cycle		**%**	10 to 90 over measurement range
Monotonic range		**%**	5 and 95 nominal
Load resistance		**Ω**	10k minimum (resistive to GND)
Rise/fall time		**µS**	<20

MECHANICAL

Mechanical angle	**°**	360, continuous
Operating torque - max	**g-cm**	1000
Shaft velocity max	**°/sec**	3600
Weight	**g**	500
Mounting		Use 3 x M6 threaded holes in front face or 3 x M6 clearance holes through the body - see dimensions for details
Phasing		When the shaft flat is facing the scribed mark on the front face (as shown in the diagram), sensor output is at mid travel (±5°)

SRH880P

ENVIRONMENTAL

Protection class		IP68
Life		20 million operations (10 x 10^6 cycles) of ±75° Sensing element life is essentially infinite (contactless), but the SRH880P life figures refer to the shaft seal. Mechanical load (axial and radial) on the shaft should also be considered.
Dither life		Contactless - no degradation due to shaft dither
Operational temperature†	°C	-40 to +120 (5V and 9V supply) -40 to +90 (30V supply)
Storage temperature	°C	-55 to +125
Vibration		10 to 2000Hz Random – 12.6gn rms – all axes
Shock		Survival to 2500g – all axes
EMC Immunity level		BS EN 61000-4-3:1999 to 100V/m, 80MHz to 1GHz and 1.4GHz to 2.7GHz (2004/108/EC)

† If the maximum operating temperature is exceeded, the voltage regulator will shut down to protect the device from overheating

OPTIONS

Measurement range (angle)	Select from 20° to 360° in 1° increments (factory programmed) for each output channel
Output	Analog voltage (A) or PWM (Pn)
Output direction	Clockwise or Anticlockwise shaft rotation with increasing output
Cabled socket	2m or 5m cabled socket assemblies available
Body material	Optional anodised aluminium or corrosion resistant stainless steel housing
Operating levers	Operating levers 155 or 230mm long should be ordered separately. See details page 25
OEM options	Outputs can be programmed to provide: non linear laws; switch outputs; clamp voltages; alternative PWM frequencies; faster input/output delay; extended analog range; and output mapping for potentiometer replacements.

AVAILABILITY

All standard configurations can be supplied rapidly from the factory - check with your local supplier for more details

ORDERING CODES

SRH880P/ ..... / ..... / ..... / ..... / .....

Measuring range	= angle in °
Output	A = Analog P = PWM
Direction	1 = Clockwise 2 = Anticlockwise
Cabled socket	00 = None 02 = 2m 05 = 5m
Body material	AL = Aluminium SS = Stainless steel

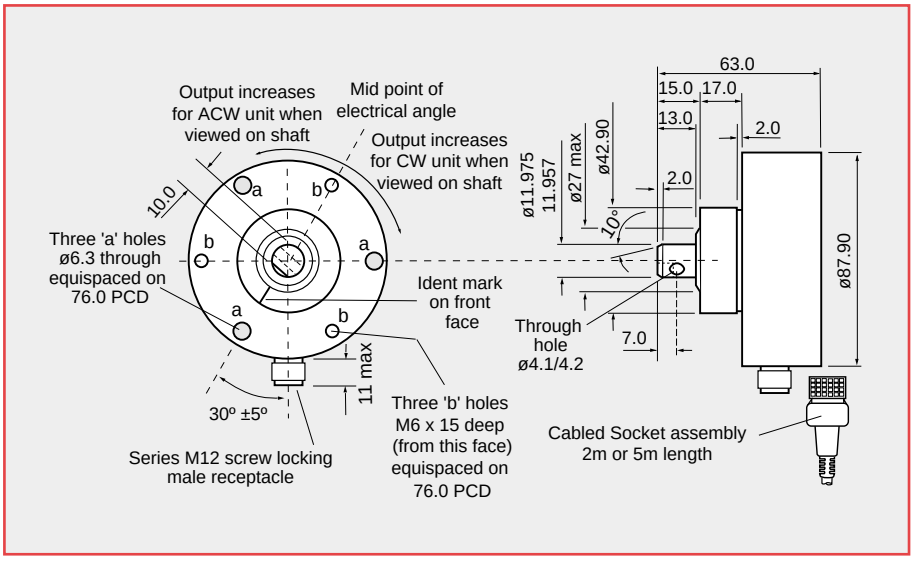
Accessories (order separately)
Drive lever kit – SA202195/MK - see page 25

DIMENSIONS

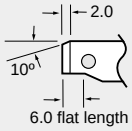
Note: drawings not to scale

LEVER OPTIONS

See SRH501P page 25



SHAFT FLAT DETAIL



ELECTRICAL CONNECTIONS

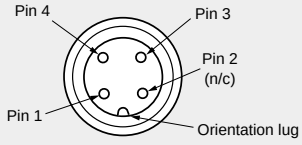
Straight cabled socket

E series M12 to IEC 61076-2-101(Ed.1) /IEC 60947-5-2,

PUR jacket

Conforms to VDE 0472 part 804

Cable temperature range -25 to +90°C



M12 connector

Cabled socket

2 metre long No. X61-169-102

5 metre long No. X61-169-105

Pin No.	Cable colour	Description
1	Brown	0V Supply (GND)
2	Not connected	
3	Blue	+V Supply
4	Black	Output

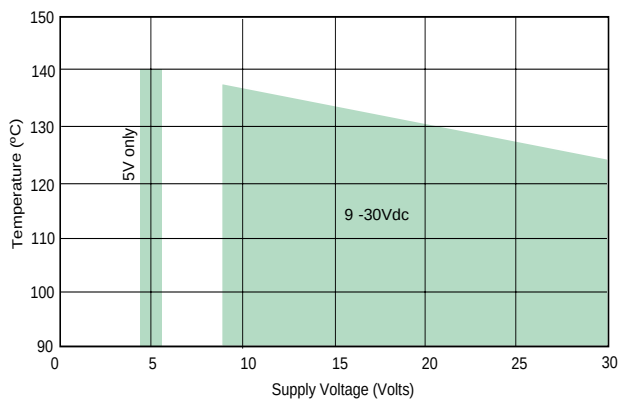
Output increases with CW or ACW rotation viewed on shaft - depending on selected order code

When connecting the sensor, care should be taken with the correct connections.
The sensor is provided with indefinite reverse polarity protection and short circuit protection between output (Pin 4 - Black) to GND (Pin 1 - Brown), **but if the output (Pin 4 - Black) is connected to the supply this will result in device failure.**

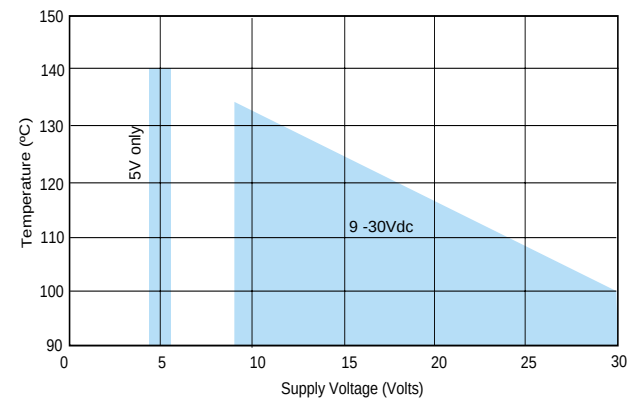
TEMPERATURE AND OUTPUT GRAPHS

MAXIMUM OPERATING TEMPERATURE - DERATING GRAPHS

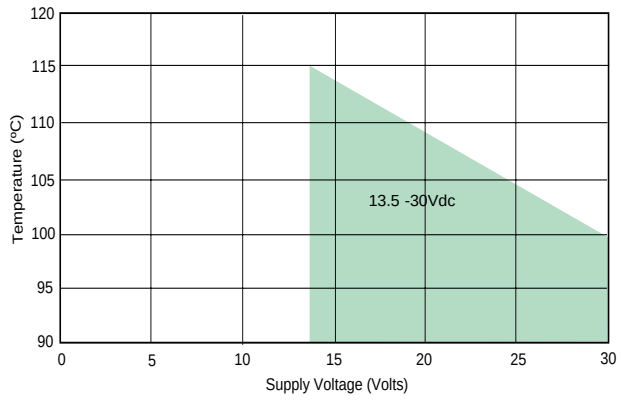
SRH280P



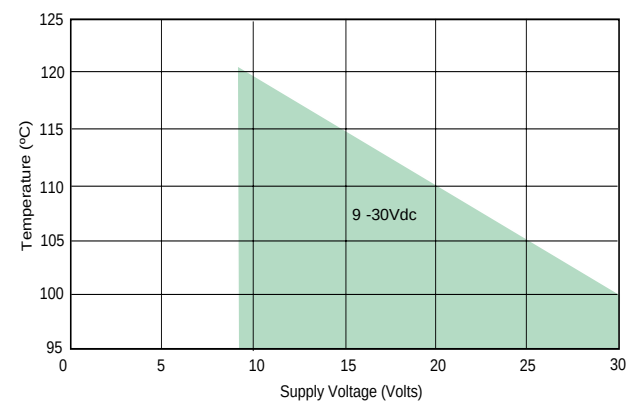
SRH280DP, NRH280DP, TPS280DP, SRH220DR SRH501P/502P (not A2 & A3 options)



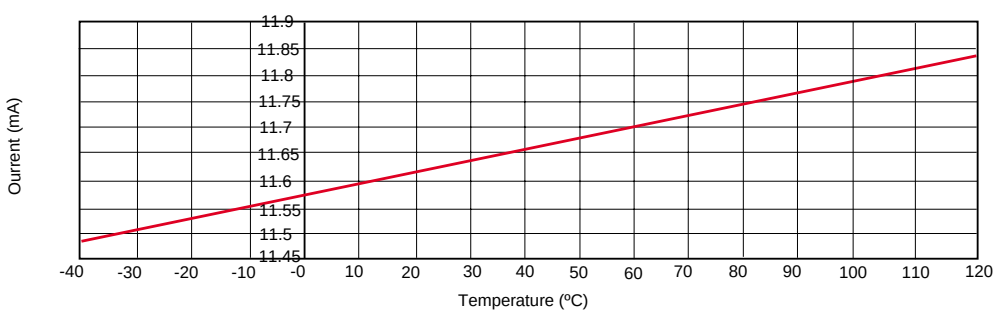
SRH220DR, SRH501P/502P - OUTPUT A2



SRH501P/502P - OUTPUT A3

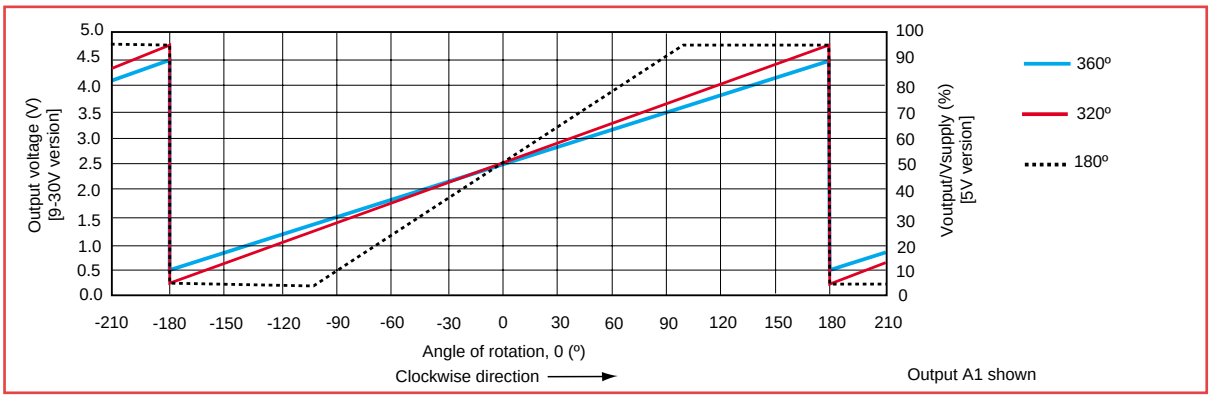


A3 Typical temperature slope characteristic (can be used for compensation)

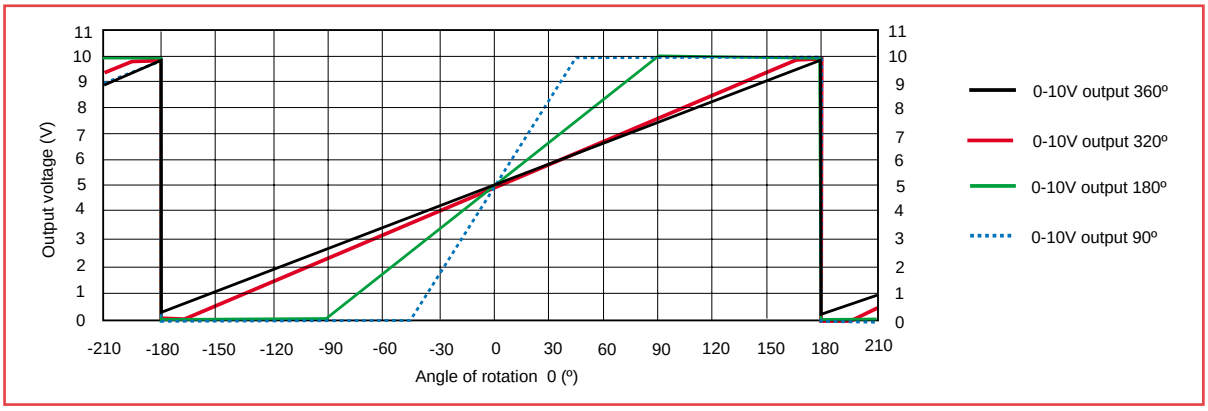


SENSOR OUTPUT GRAPH- examples for three different angles

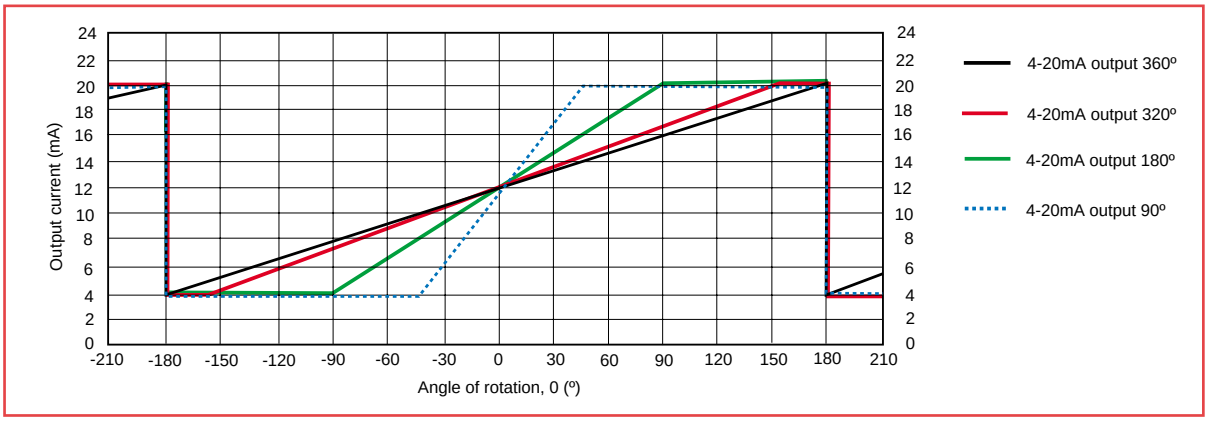
SRH280P, SRH280DP, NRH280DP, NRH285DR, TPS280DP, SRH220DR - OUTPUT A1
SRH501P/502P - OUTPUT A1
SRH880P - OUTPUT A



SRH220DR,SRH501P/502P - OUTPUT A2 (0-10Vdc)

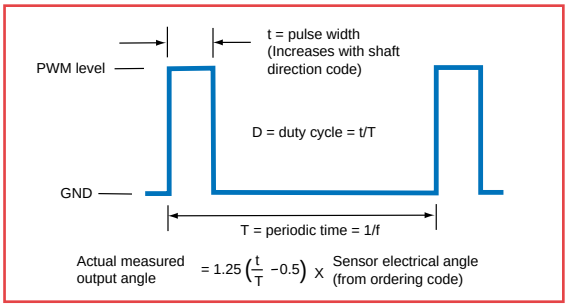


SRH501P/502P - OUTPUT A3 (4-20mA)



PWM OUTPUT CHARACTERISTICS

SRH280P, SRH280DP, NRH280DP, NRH285DR, TPS280DP, SRH220DR - OUTPUT P1, P2, P3
SRH501P/502P - OUTPUT P1, P2, P3
SRH880P- OUTPUT P



PWM levels = zero volt and 5V (±3%) for 9-30V supply
= zero volt and V_S (±1%) for 5V supply