

# No Contact Rotary Position Sensor

## SRH220DR

- No Contact – Hall-effect technology
- Measurement angle 20-360°
- 5V or 9-30V supply
- Dual redundant outputs
- Analog output – 0.5-4.5V, 0.2-4.8V or 0-10V
- Fail-safe outputs
- PWM output
- Sealing to IP68
- AMP or Deutsch connector options
- Crush-proof mounting flange
- Optional lever drive arm



The SRH220DR is a shaft-operated, No Contact rotary position sensor with dual-redundant outputs. The versatile, factory-programmable electronics, which can be supplied from 5V or 9-30V, can be easily set to one of three analog voltage output ranges or one of three PWM frequencies. In addition, the polarities of the analog outputs can be set to one of three combinations – both tracking in the same direction or one opposite to the other.

The electrical output span can be set to correspond to rotations of 20° to 360° and the sensor contains two independent measuring circuits, each with its own power connections, meaning safety critical applications can be addressed. Furthermore, on-board diagnostic functions mean that the outputs can be put into safe, pre-defined states should an internal error be detected.

A fully sealed design offers exceptional levels of performance with respect to water and dust, shock, vibration and temperature, meaning the sensor is ideal for use in hostile, on- and off-highway vehicle environments.

Connection options are industry-standard AMP Superseal or Deutsch DT04 series connectors, which are integrated into the sensor body meaning customer wiring harnesses can be directly connected. As an option, a drive lever with 30, 40 and 50mm moment positions can be supplied.

Custom output options available on request include: non-linear laws, switch outputs, clamp voltage, reduced input/output delay and output mapping to replicate potentiometers.

## SPECIFICATIONS

### SUPPLY

SUPPLY VOLTAGE	5Vdc $\pm$ 0.5Vdc or 9-30Vdc (13.5-30V for 0-10V output)
SUPPLY CURRENT	< 25mA (<30mA for 0-10V output)
OVER VOLTAGE	Up to 40Vdc (-40 to 60°C)
REVERSE POLARITY PROTECTED	Yes
POWER-ON TIME	< 1s
CONNECTIONS	AMP Superseal or Deutsch DT04

### OUTPUT

MEASUREMENT RANGE	20-360° in 1° increments
OUTPUT DIRECTION	Both increase CW, both decrease CCW or opposing
OUTPUT VOLTAGE (0.5-4.5V)	10-90% $\pm$ 1% of Vsupply
MONOTONIC RANGE (0.5-4.5V)	5-95% of Vsupply
OUTPUT VOLTAGE (0.2-4.8V)	4-96% $\pm$ 1% of Vsupply
MONOTONIC RANGE (0.5-4.5V)	2-98% of Vsupply
OUTPUT VOLTAGE (0-10V)	0.2-9.8V $\pm$ 0.2V
OUTPUT NOISE	<1mV rms
INPUT/OUTPUT DELAY	<2ms (<3.5ms for 0-10V output)
PWM FREQUENCY	244, 500 or 1000Hz
PWM LEVEL	0-Vsupply $\pm$ 1% (0-5V $\pm$ 3% for 9-30V supply)
PWM DUTY CYCLE	10-90% over measurement range
MONOTONIC RANGE (PWM)	5-95% nominal
PWM RISE/FALL TIME	<15 $\mu$ s typical
RESOLUTION	12-bit (0.025% of measurement range)
LINEARITY	< $\pm$ 0.4%
TEMPERATURE COEFFICIENT	< $\pm$ 30ppm/°C (< $\pm$ 110ppm/°C for 9-30V supply)
LOAD RESISTANCE	10k $\Omega$ min. to GND
SHORT CIRCUIT PROTECTION	Output to GND and Output to 5V

### MECHANICAL

ANGLE	360° continuous
OPERATING TORQUE	120g-cm
MAXIMUM OPERATING SPEED	3600°/s
WEIGHT	<51g
FIXING	2 x 4.50mm slots with $\pm$ 10° adjustment
SHAFT	6mm diameter D-section

### ENVIRONMENTAL

OPERATING TEMPERATURE (5V)	-40°C to 140°C
STORAGE TEMPERATURE	-55°C to 140°C
VIBRATION	EN 60068-2-64 (31.4gn rms) 20-2000Hz random
LIFE	20M operations (10M cycles of $\pm$ 75°)
SHOCK	3m drop onto concrete and 2500g
EMC	Directive 2004/108/EC
SEALING	IP68 (IP67 with Deutsch connector)