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 ± 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% ±1% of Vsupply
- **MONOTONIC RANGE (0.5-4.5V)**: 5-95% of Vsupply
- **OUTPUT VOLTAGE (0.2-4.8V)**: 4-96% ±1% of Vsupply
- **MONOTONIC RANGE (0.5-4.5V)**: 2-98% of Vsupply
- **OUTPUT VOLTAGE (0-10V)**: 0.2-9.8V ±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 ±1% (0-5V ±3% for 9-30V supply)
- **PWM DUTY CYCLE**: 10-90% over measurement range
- **MONOTONIC RANGE (PWM)**: 5-95% nominal
- **PWM RISE/FALL TIME**: <15µs typical
- **RESOLUTION**: 12-bit (0.025% of measurement range)
- **LINEARITY**: < ±0.4%
- **TEMPERATURE COEFFICIENT**: < ±30ppm/°C (< ±110ppm/°C for 9-30V supply)
- **LOAD RESISTANCE**: 10kΩ 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 ±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 ±75°)
- **SHOCK**: 3m drop onto concrete and 2500g
- **EMC**: Directive 2004/108/EC
- **SEALING**: IP68 (IP67 with Deutsch connector)