



## **Non Contact, Directional Control Switch**

### FNR-GENERIC

- **Three position Forward-Neutral-Reverse switch**
- **Non Contact Hall-effect technology**
- **Return to center design**
- **Latching at the ends of travel**
- **Separate outputs at each latched position**
- **Actuator options**
- **Simple mounting with press fit into panel or grip**
- **5V supply**
- **Designed to meet the needs of EU Directive 2006/42/EC to PLc**
- **Encapsulated electronics within the body sealed to IP67**
- **Flying-lead option**



The FNR is a plastic housed directional control switch with return to center mechanics and mechanical locking at the two ends of travel.

The device has three separate outputs, one for each hold position, enabling a two-directional and center positive logic in a control system.

The design is based on a successful full lever directional control switch and has been miniaturized to fit into Curtiss-Wright or other custom grips.

Designed to meet the needs of EU Directive 2006/42/EC to level PLc ensuring design integrity suitable for needs of ISO 138949-1 systems.

The design has a long-life positive snap action ensuring that the operator makes clear directional control decisions.

Available with a range of actuators suitable for operation with the thumb (front of grip mounting) or first finger (rear of grip mounting)

The FNR uses proven encapsulated Hall-sensing technology sealed to IP67 and offers exceptional levels of performance with respect to water and dust, shock, vibration, and temperature, meaning the switch is ideal for use in hostile, On- and Off-Highway vehicle environments.

The FNR has a flow-in/flow-out mechanical design ensuring that the device does not hold water that can freeze at sub-zero temperature and will not fill with debris that may prevent mechanical operation.

Panel/grip fitting uses an integrated snap-fit feature that does not require fixing screws.

Connection is via simple flying leads for customer termination.

## SPECIFICATIONS

### ELECTRICAL

SUPPLY VOLTAGE	5V $\pm 0.5V$
SHORT-CIRCUIT PROTECTION TO GND	Yes
SHORT-CIRCUIT PROTECTION TO SUPPLY	When used with 5Vdc supply only
OVER-VOLTAGE PROTECTION	up to +12Vdc
REVERSE POLARITY PROTECTION	-5Vd.c.

### OUTPUT

SWITCH SIGNALS	Three switch signals of 5V (Vs) in the following movement ranges: Full forward: +18° to +20° Center position: - $\pm 3^\circ$ Full reverse: -18° to -20° Current limited to 1A and requires open drain resistors Switch signals are 0V when not active
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### MECHANICAL

MECHANICAL ANGLE	$\pm 20^\circ$
LATCHING ANGLE	$\pm 18^\circ$
BREAKOUT FORCE FROM SNAP POSITION	5N $\pm 1N$
MOUNTING	Snap-fit into panel
LIFE	1,000,000 cycles at 0.5Hz, one cycle defined as centre to full forward (+20°) to centre to full backward (-20°) to centre with 10N of overload that the ends of travel
WEIGHT	<20g
CABLE	28AWG, 290mm P.T.F.E. insulated wires - unscreened

### ENVIRONMENTAL

OPERATING TEMPERATURE	-40°C to +85°C
STORAGE TEMPERATURE RANGE	-40°C to +85°C
CYCLIC CHANGE IN TEMPERATURE	BS EN 60068-2-14 (70RH / 10 cycles)
THERMAL SHOCK	BS EN 60068-2-14 (-40° to +85°C / 95%RH / 5 cycles with water dousing)
TEMPERATURE WITH HUMIDITY	BS EN 60068-2-38 (10-Day profile)
HUMIDITY	BS EN 60068-2-30 and BS EN 60068-2-78
SOLAR	ASTM G155 (36000lx max / $\lambda=300-400mm$ / $63\pm 3^\circ C$ / 300hrs / D=0.75m / 2hrs)
ALTITUDE	MIL-STD-810 G, 500.5, Procedure 1
SEALING-ELECTRONICS	IP67
SEALING-MECHANICS	Flow in/Flow out design
SALT SPRAY	BS EN 60068-2-11 (96 hours)
CONTAMINATION	BS EN 60068-2-74
VIBRATION	BS EN 60068-2-6 (15-2000HZ; 39M/S, 8 HOURS EACH AXIS WITH FIRST 4 HOURS AT 85°C AND NEXT 4 HOURS AT 21°C) 8.4 (31.4GN RMS) 20-2000HZ RANDOM
MTTF'd	160 years
RADIATED EMISSIONS	CISPR25, 3rd edition 2008 and corrigendum 1, 2008
RADIATED IMMUNITY	ISO 11452-2; 2005
CONDUCTED IMMUNITY (BCI)	ISO 11452-4:2011
ESD IMMUNITY	ISO 10605: 2008
POWER FIELD IMMUNITY	ISO 11452-8: 2007

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