

- **Designed primarily for Aerial Work Platforms**
- **Single- or dual-axis**
- **Ergonomic grips**
- **Top switch and person-present lever options**
- **Rocker grip with proportional output and detent**
- **Hall-effect sensor technology**
- **Choice of voltage outputs**
- **Dual outputs on each axis including rocker grip**
- **Center-reference signal**
- **Rated for 6 million cycles**
- **Under- or above-panel mounting**
- **Enclosure sealing to IP67**
- **EMC performance to 100V/M**
- **Integrated Connector or Flying-Lead termination**

The JC4000 joystick base and accompanying range of grips have been designed for use in Aerial Work Platform (AWP) applications, with options for single- or dual-axis operation making the product suitable for both scissor lifts and booms. Three, dual-axis gates are available – round, square or plus – while the ergonomically-designed grip offers the choice of one or two top switches, as well as a person-present lever, meaning the unit can be used across a wide variety of machines. These carefully-chosen configuration options offer an optimal combination of performance and cost.

Non-contacting, Hall-effect sensing technology ensures smooth operation and a long life – in excess of 6 million operating cycles – while dual electrical outputs on each axis, plus a center-reference signal, enhance overall system safety. The range of the



electrical outputs can be set to either 10-90%, 20-80% or 25-75% of a 5V regulated supply, with the polarity of each adjustable to suit the host electronics.

The joystick can be fitted to an enclosure in both under-panel and above-panel configurations, and provides sealing of the enclosure to IP67. In addition to a robust mechanical design that is resilient to high shaft load, shock and vibration, the operational integrity of the unit is assured in electrical fields of up to 100V/m.

The joystick is also available either with an integrated connector or with 300mm long flying leads.

Alternative grip options to those described above are available.

## SPECIFICATIONS

### ELECTRICAL

SUPPLY VOLTAGE	5Vdc $\pm$ 0.5Vdc
OUTPUT VOLTAGE (FACTORY SET)	Two outputs of 10% to 90% or 20% to 80% of the supply voltage
CENTER REFERENCE	50% $\pm$ 2% of supply voltage as supplied; $\pm$ 3% of supply voltage at 6 million cycles
OUTPUT SENSE	The dual outputs can be configured to have positive ramps, negative ramps or a combination of positive and negative ramps
CURRENT CONSUMPTION	< 30mA
CONNECTION	12-way Molex connector (53047-1210) or 300mm long PTFE insulated 22 AWG cables

### MECHANICAL

BREAKOUT FORCE	0.7 Nm (nominal)
OPERATING FORCE AT END OF TRAVEL	1.35 Nm (nominal)
MAXIMUM STATIC HORIZONTAL LOAD	50 Nm
MAXIMUM STATIC VERTICAL LOAD	1,100 N
MAXIMUM STATIC ROTATIONAL LOAD	6 Nm
MAXIMUM HORIZONTAL IMPACT LOAD	5 Joules (on operating rod)
MAXIMUM VERTICAL IMPACT LOAD	15 Joules (on operating rod)
MECHANICAL ANGLE	$\pm$ 20° in X and Y axes
GATE	Single (Y-axis), round, square or plus
MECHANICAL LIFE	> 6 million cycles
MTTFd	> 100 years
WEIGHT	310 g including grip

### ENVIRONMENTAL

OPERATING TEMPERATURE	-40°C to 80°C	
STORAGE TEMPERATURE	-40°C to 80°C	
ENVIRONMENTAL PROTECTION	IP66 or IP67 above panel dependent on grip, IP20 below the panel	
EMC IMMUNITY LEVEL	EN 61000-4-3: 2002	100V/m, 80% AM peak modulation, 80MHz-1GHz and 1.4GHz-2.1GHz
EMC EMISSIONS LEVEL	EN 61000-6-4: 2011	30MHz to 1GHz Class B limits
ESD IMMUNITY LEVEL	EN 61000-4-2, Level 2: 1995	8kV contact (including connector pins); 15kV air discharge
POWER FIELD IMMUNITY	EN 61000-4-8	30A/m; 50Hz & 60 Hz
VIBRATION (SINUSOIDAL)	EN 60068-2-6: 2008	3Gn, 10-200Hz, 1h per axis
VIBRATION (RANDOM)	EN 60068-2-64: 2008	3.6gn, 10-200Hz, 2h per axis
BUMP	EN 60068-2-29: 2008	40gn, ½ Sine 6ms, 1,350 bumps in each of 6 directions
SHOCK	EN 60068-2-27: 2008	50g, 6ms, Half Sine, 3 shocks in each of 6 directions