

- **Robust design for arduous applications**
- **Return-to-center or return-to-end options**
- **Under-panel depth minimized to 9mm**
- **Rated for 40 million cycles**
- **Hall-effect sensor technology**
- **Dual outputs with sense and voltage span options**
- **IP67 sealing above panel**
- **Color-coded 'Tab' options**
- **Can be supplied as 'base-only' so the colored tabs can be fitted at final installation**



The JC1200 offers the next generation of paddle joystick from Curtiss-Wright to build on the success of the Penny & Giles potentiometric JC120. This new joystick utilizes non-contacting, Hall-effect sensing technology for long-life integrity of the output signal. Operating feel has been an important part of this new development to make this unit as smooth and easy to operate as possible throughout an industry-leading 40 million cycle life.

Hall-effect sensing eliminates contact wear and provides safety functionality via dual outputs, which can be set to positive or negative ramps, or a combination of both. Electronic robustness is assured with sealing of the internal PCB to a rating of IP65, while a joystick to panel rating of IP67 can be achieved.

A choice of paddle 'Tabs' is available in nine different colors. These can be fitted at the factory or supplied as loose parts to be selected as part of the final installation process.



Return-to-Center



Return-to-End



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CONFIGURATION & ORDERING CODES

JC1200-GEN-X-XX-X-XX

| Type | Output | Output Sense | Spring Return Position | Paddle Insert |
|------------|--------|--------------|------------------------|---------------|
| JC1200-GEN | X | XX | X | XX |
| | A | PN | C | 00 |
| | B | PP | R | 01 |
| | | NN | | 02 |
| | | | | 03 |
| | | | | 04 |
| | | | | 05 |
| | | | | 06 |
| | | | | 07 |
| | | | | 08 |
| | | | | 09 |

OUTPUT

JC1200-GEN-X-XX-X-XX

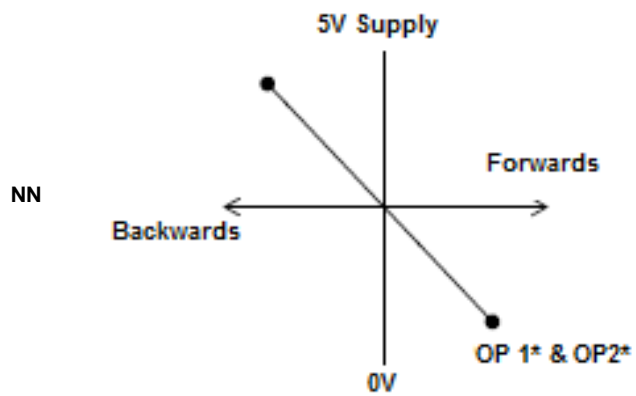
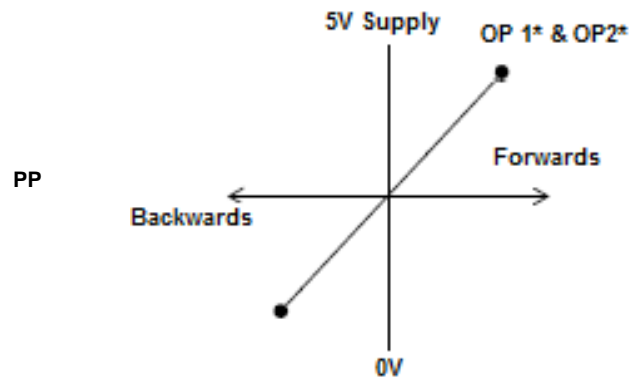
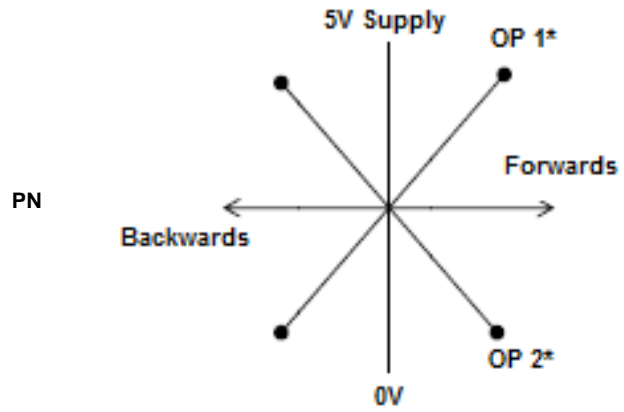
| Code | Description |
|------|---|
| A | 10-90% of 5V supply (0.5 to 4.5V nominal) |
| B | 20-80% of 5V supply (1.0 to 4.0V nominal) |



OUTPUT SENSE

JC1200-GEN-X-~~XX~~-X-XX

| Code | Description |
|------|--|
| PN | Output 1: Positive slope Output 2: Negative slope |
| PP | Output 1: Positive slope Output 2: Positive slope |
| NN | Output 1: Negative slope Output 2: Negative slope |












* 10-90% or 20-80% of 5V supply

**SPRING RETURN POSITION**JC1200-GEN-X-XX-~~X~~-XX

| Code | Description |
|-------------|--------------------|
| C | Center |
| R | End (Reverse) |

PADDLE INSERT COLORJC1200-GEN-X-XX-X-~~XX~~

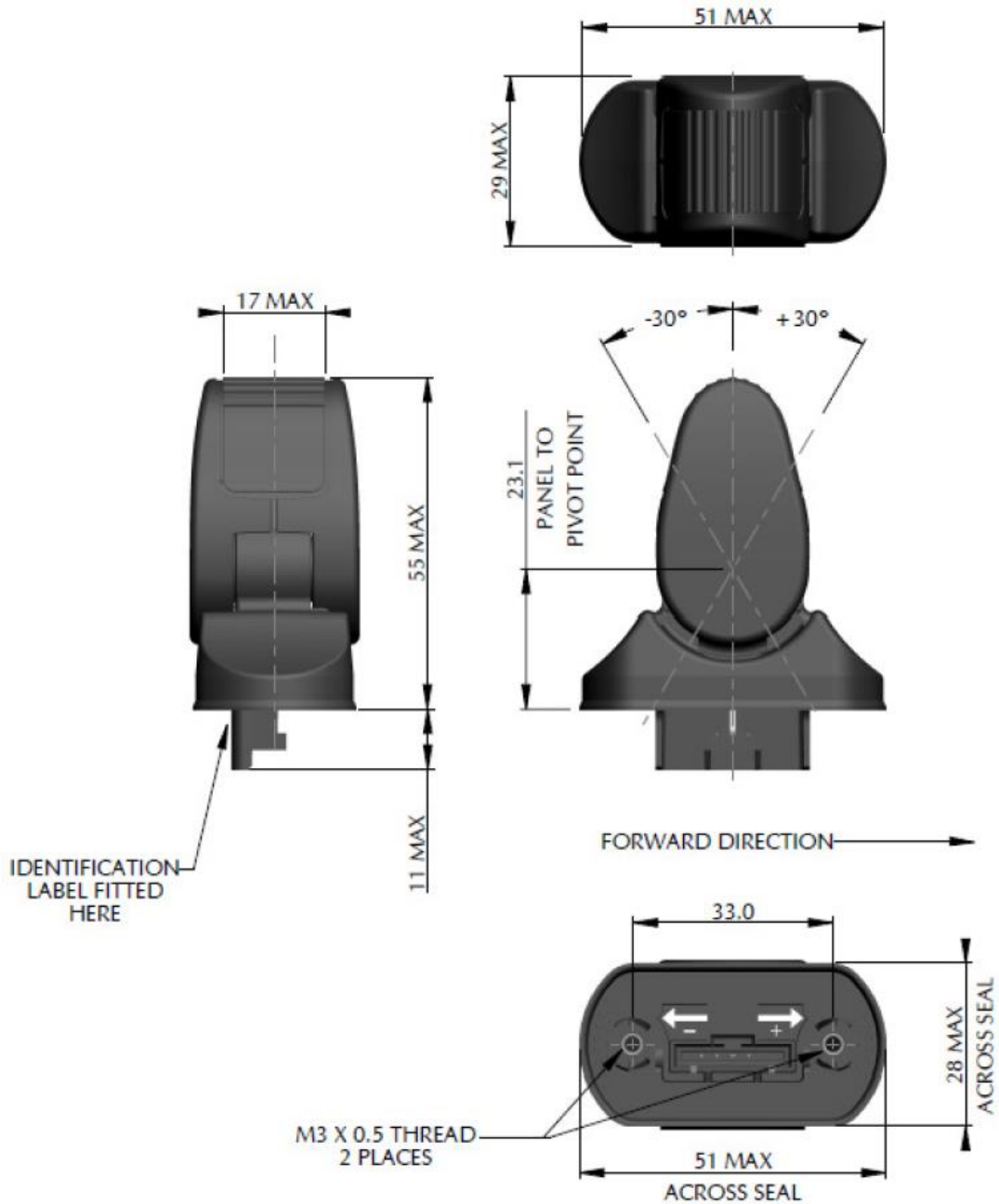
| Code | Color Description | Applicable RAL Number | Individual Colored Tab Part Number |
|-------------|--|------------------------------|---|
| 00 | Colored tab not fitted | | |
| 01 |  Black | RAL 9005 | P318818MK1 |
| 02 |  Grey | RAL 7042 | P318818MK2 |
| 03 |  White | RAL 9003 | P318818MK3 |
| 04 |  Yellow | RAL 1023 | P318818MK4 |
| 05 |  Orange | RAL 2007 | P318818MK5 |
| 06 |  Red | RAL 3028 | P318818MK6 |
| 07 |  Purple | RAL 4006 | P318818MK7 |
| 08 |  Blue | RAL 5017 | P318818MK8 |
| 09 |  Green | RAL 6038 | P318818MK9 |



INSTALLATION

MECHANICAL

Dimensions - Spring Return to Center

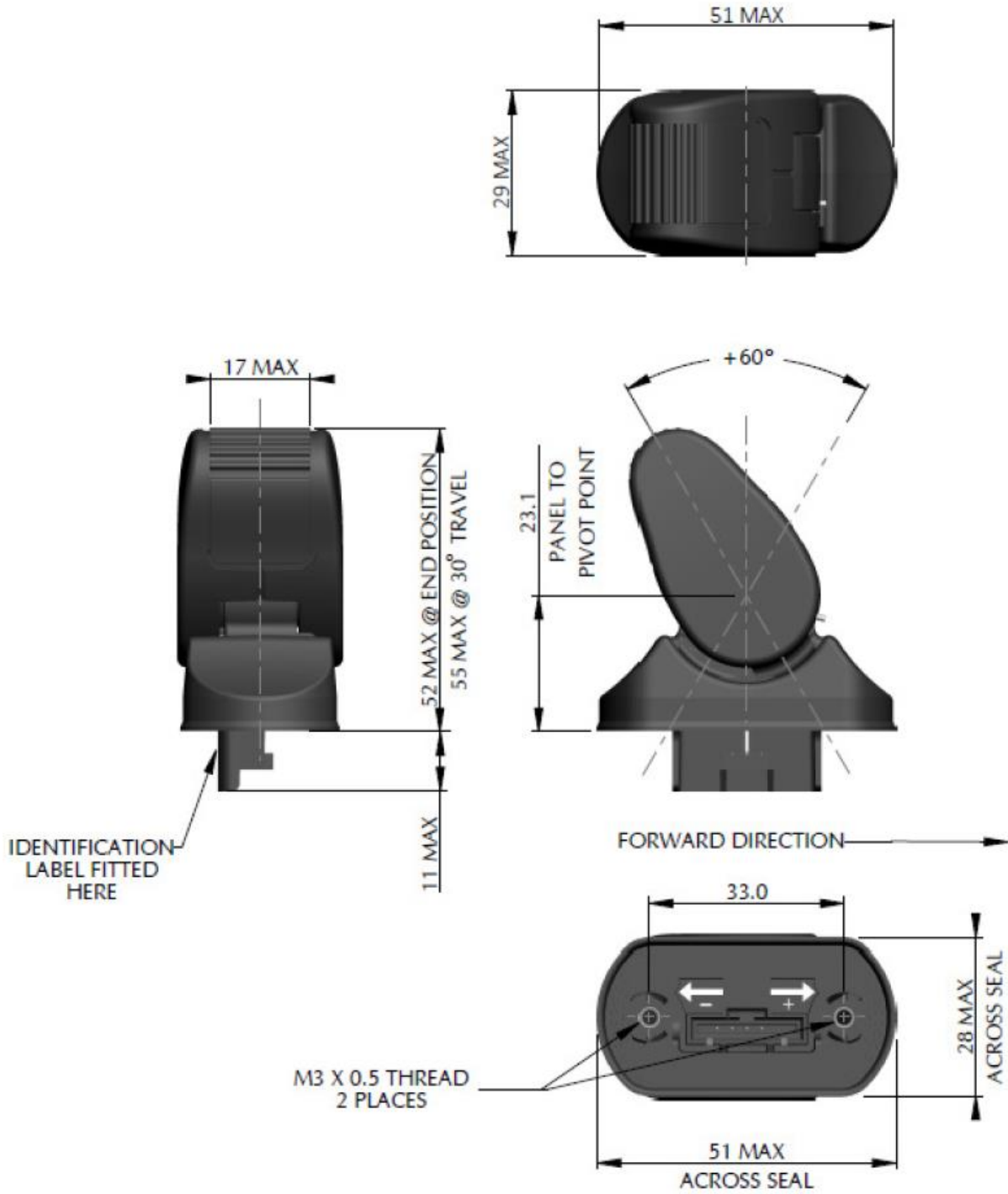


MINIMUM PANEL THICKNESS
THREAD ENGAGEMENT
SCREW TIGHTENING TORQUE RANGE

See the sealing note
6mm ± 1mm
0.5 TO 0.65Nm



Dimensions - Spring Return to End

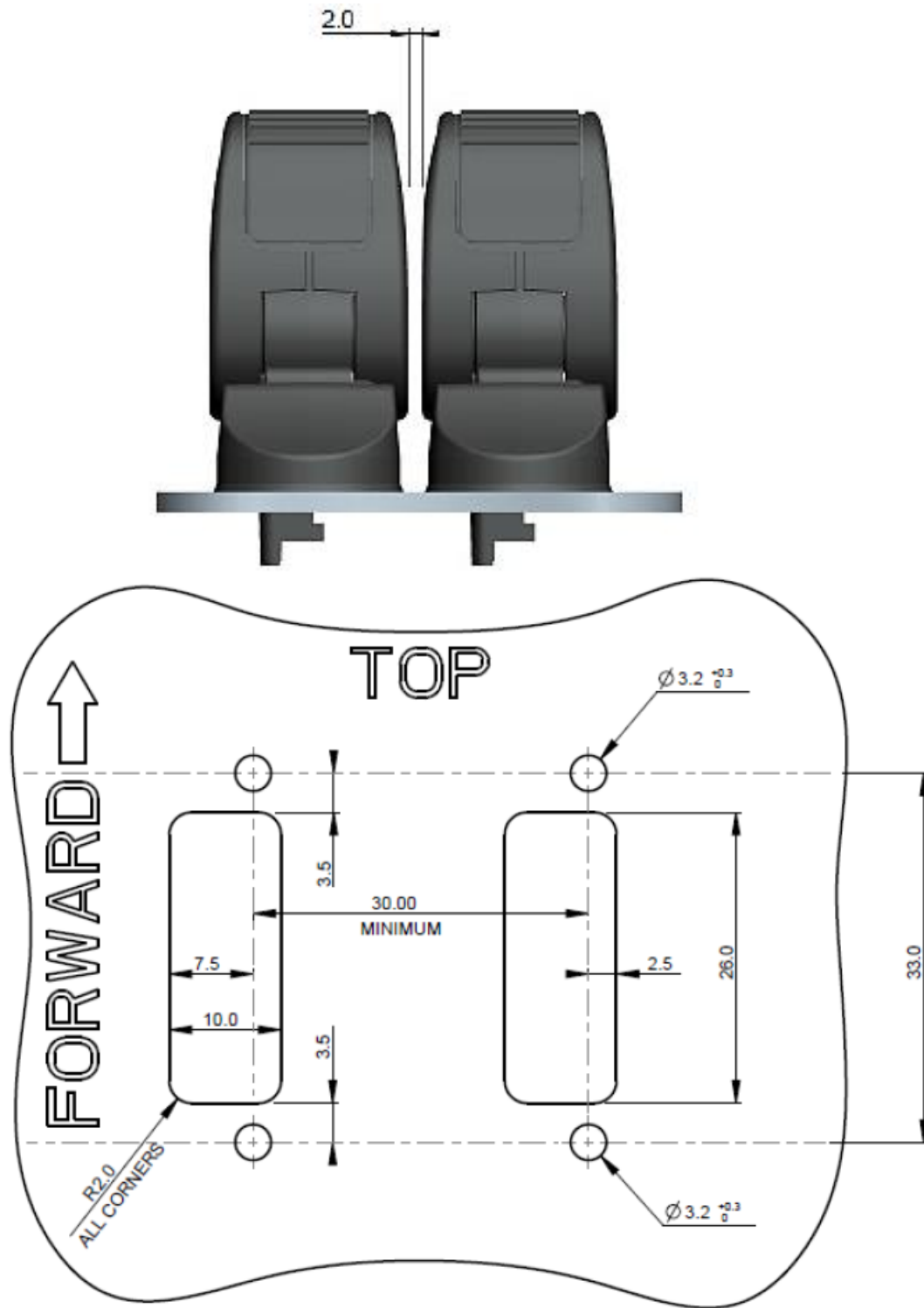


MINIMUM PANEL THICKNESS
THREAD ENGAGEMENT
SCREW TIGHTENING TORQUE RANGE

See the sealing note
6mm ± 1mm
0.5 to 0.65Nm



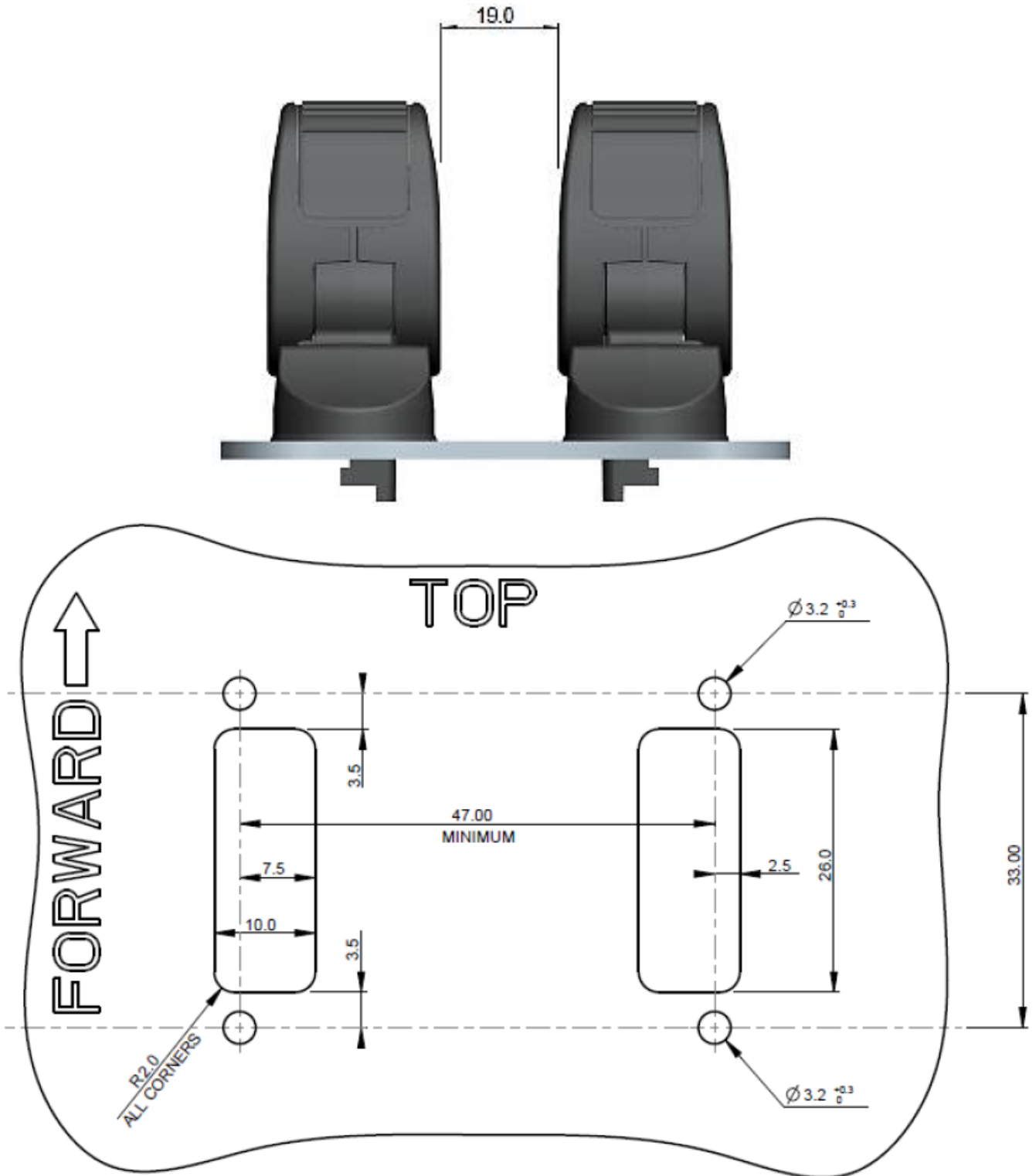
Panel Mounting Details - Standard



Minimum joystick separation is 2mm



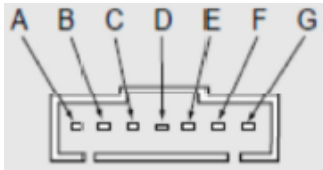
Panel Mounting Details - Non-Standard



Minimum joystick separation is 19mm



ELECTRICAL CONNECTIONS



Molex 70553-0006 7-pin connector with gold-plated pins

Recommended mating connector either:

Molex 70400 14-56-2074 (connector and pin kit)

or Molex 70066 50-57-9407 connector body plus 7 pins to the Molex number 70058 16-02-0082.

Note: the mating connector must be fitted with gold-plated pins to ensure stable output from the joystick

Standard Cables with a connector fitted are available from Curtiss Wright as follows:

CW part number SA301649 – cable length 500 mm

CW part number SA308599 – cable length 1,000 mm

| Pin | Function |
|-----|---------------|
| A | Not connected |
| B | 5V supply |
| C | Output 1 |
| D | 0V supply |
| E | Output 2 |
| F | Not connected |
| G | Not connected |



SPECIFICATIONS

ELECTRICAL

| | |
|--|--|
| SUPPLY VOLTAGE | 5Vdc \pm 0.5Vdc |
| SUPPLY CURRENT | \leq 25mA (12.5mA max. per channel) |
| OVER-VOLTAGE PROTECTION | Up to 10Vdc (-40°C to 80°C) |
| SHORT-CIRCUIT PROTECTION TO GND | Yes |
| SHORT-CIRCUIT PROTECTION TO SUPPLY | Yes |
| REVERSE POLARITY PROTECTION | 10Vdc continuous |
| POWER-ON SETTLEMENT | < 1s |
| RESOLUTION | 12-bit (0.025% of measurement range) |
| NON-LINEARITY | \pm 0.4% |
| TEMPERATURE COEFFICIENT | \leq 30ppm/°C |
| TRACKING ERROR | \pm 2% |
| OUTPUT CLAMPING | Yes (1% above and below the Maximum and Minimum end voltage values) Note: Clamping limits still apply to output voltage after life |
| OUTPUT TYPE | Dual analogue ratiometric (crossed or parallel) |
| OUTPUT RANGE: AS SUPPLIED | 10-90% \pm 2% of supply voltage (0.5-4.5V nominal) – see after life note below 20-80% \pm 2% of supply voltage (1.0-4.0V nominal) – see after life note below |
| CENTER VOLTAGE: AS SUPPLIED | 48% to 52% of supply voltage – see after life note below |
| TOLERANCE OF OUTPUT VOLTAGE AT ENDS OF TRAVEL AND CENTER POSITION AFTER LIFE | After 10 million cycles: \pm 3% |

MECHANICAL

| | | |
|--|--|---|
| MECHANICAL LIFE | > 40 million cycles at 3Hz (cycle is center to one end, to other end and back to center) | |
| MECHANICAL ANGLE | \pm 30° \pm 1° (return to center) | |
| | 60° \pm 2° (return to end) | |
| BREAKOUT FORCE AT JOYSTICK TIP | 1.0N | |
| OPERATIVE FORCE AT END OF TRAVEL AT JOYSTICK TIP | 3.5N | |
| MAXIMUM FORCE ON JOYSTICK TIP | 50N in-line, 50N transverse | |
| WEIGHT | \leq 40g | |
| VIBRATION - SINUSOIDAL | EN 60068-2-6: 2008 | 1 hour in X, Y and Z axes, 10Hz and 200Hz at 3gn |
| VIBRATION - SHOCK | EN 60068-2-27: 2008 | 50g, 6ms, Half Sine, 3 shocks in each of 6 directions |
| VIBRATION - RANDOM | EN 60068-2-64: 2008 | 3.6GN, 10-200HZ, 2 hours per axis |
| BUMP TEST | EN 60068-2-29: 2008 | 25G, 10MS, 500 Bumps in each of 6 directions |
| FREE FALL DROP TEST | EN 60068-2-31: 1993 | 1.0m at Level C, 1.2m at level E |



EMC

| | | |
|--------------------------------|----------------------------|--|
| RADIATED EMISSIONS | EN 61000-6-4: 2011 | 30MHz to 1GHz |
| IMMUNITY | EN 61000-4-3: 2002 | 100V/M, 80MHz to 1GHz and 1.4GHz to 2.7GHz |
| CONDUCTED DISTURBANCE IMMUNITY | EN 61000-4-6: 2009 | 150kHz to 80MHz, 3Vrms, 80%AM, 1kHz sine |
| ESD | EN 61000-4-2 level 2: 1995 | 4KV contact (including connector pins) , 4KV Air |
| POWER FIELD IMMUNITY | EN 61000-4-8 level 4: 1993 | 30A/m, 50Hz and 60Hz |

ENVIRONMENTAL AND LEGISLATIVE

| | | |
|------------------------|---|---|
| OPERATING TEMPERATURE | -40°C to 85°C | Temperature cycle per EN 60068-2-14: 1999 Thermal shock to EN 60068-2-14: 1999 Temperature and humidity to EN 60068-2-38: 2009 |
| STORAGE TEMPERATURE | -40°C to 85°C | Cold test to EN 60068-2-1: 1993 Dry heat to EN 60068-2-2: 1993 |
| WATER AND DUST INGRESS | IP67 above panel IP55 below panel, including connector | Panel sealing performance is dependent on the stiffness and surface condition of the panel i.e. free of scratches. It is the responsibility of the customer to define the panel material and thickness to achieve the seal rating |
| SALT SPRAY | EN 60068-2-11: 1999 | |
| MTTF'd | > 100 years | |

IMPORTANT INFORMATION

Whilst Curtiss-Wright Industrial Division - Penny & Giles has designed this joystick to meet a range of applications it is the responsibility of the customer to ensure it meets their specific requirement.

Penny & Giles Controls Ltd makes no warranty or representation in respect of product fitness or suitability for any particular design application, environment, or otherwise, except as may subsequently be agreed in contract for the sale and purchase of products. Customers should therefore satisfy themselves of the actual performance requirements and subsequently the product's suitability for any particular design application and the environment in which the product is to be used.

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