

# JC 300

## MULTI-AXIS FINGERTIP JOYSTICK



JC300-XY with ZC handle and connector

Developed for those applications where weight and functionality are paramount, the JC300 offers switched or proportional fingertip control in up to three axes.

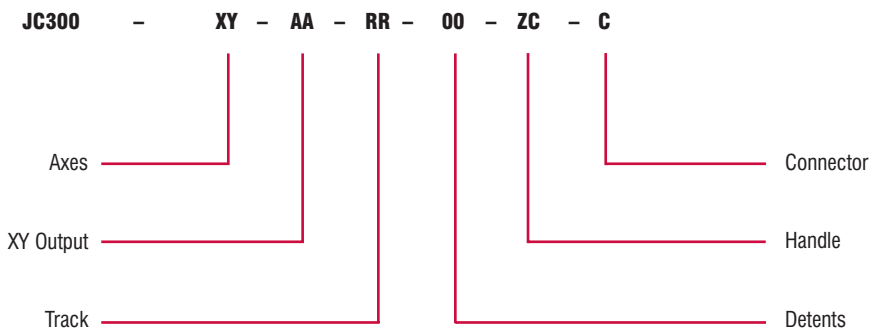
Designed for use with an electronic controller, the JC300 can be specified to generate up to five switched outputs per half axis, or analogue and switched reference signals. This analogue output can be configured to provide signals for fault detection circuits within the controller. A center tap on the analogue track provides an accurate voltage reference for the center position or a zero point for a bipolar supply voltage.

The JC300's range of ergonomic handles feature rotary operated potentiometers for a third axis of control, or Deadman's switches that can be used to improve the integrity of your control system.

Installation time has been reduced through the use of standard electronic connectors, whilst the absence of all micro switches and camshafts has eliminated the need to maintain the joystick throughout its operating life of in excess of four million cycles.

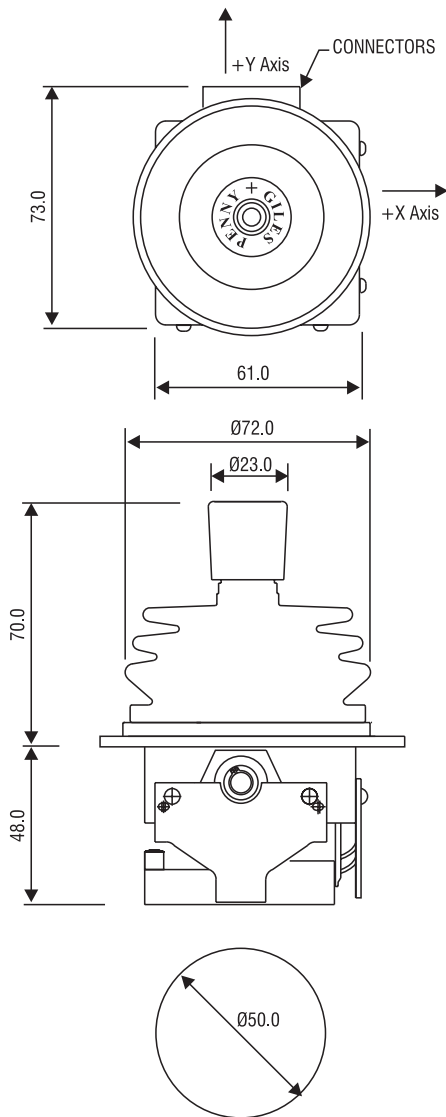
Typical applications include remote control chest-packs and the control of agricultural attachments.

### ORDER CODE



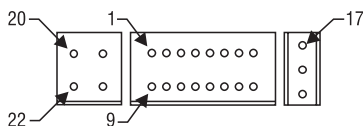
<b>Axes</b>	<b>X</b>	<b>XY</b>		
No of Axes	1	2		
<b>XY Output</b>	<b>A</b>			<b>S</b>
Type of Output	Potentiometric			Switched
<b>Track</b>	<b>N</b>	<b>R</b>	<b>Q</b>	<b>1 to 5</b>
Track Resistance	1k6Ω	2kΩ	3k2Ω	
Output Voltage Swing	0% to 100% Vs	8% to 92% Vs	25% to 75% Vs	
Number of Switches				1 to 5
Directional Switch Angle	± 5°	± 5°	± 5°	± 5°
<b>Detents</b>	Number of detents required either side of center (0 to 5) Note: The potentiometric output version can only have a maximum of 4 detents			
<b>Handle</b>	ZC knob fitted as standard. Please refer to the handle data sheet for alternatives.			
<b>Connector</b>	<b>C</b>	<b>F</b>		
	Connector	Flying Leads		
<b>16 way, 3 way and 4 way connectors and 23 pins</b>	SA47363			
<b>Flying leads</b>	SA47304 (2 connector) SA48087 (3 connector)			

## Specifications



PANEL MOUNTING DETAILS

Mounted from below the panel, the JC300 is held in place by a clamp plate inserted over the handle such that the mounting panel is sandwiched between the clamp plate and the joystick body.



All dimensions in mm

### Mechanical

Breakout Force	2.5N	70mm above flange
Operating Force	3.5N	Full deflection 70mm above flange
Maximum Applied Force	50N	Full deflection 70mm above flange
Mechanical Angle of Movement	±35° switched option ±28° potentiometric option ±26° potentiometric option	Maximum
Electrical Angle of Movement		
Expected Life (Operations)	> 4 million	
Mass	200g	With ZC handle option

### Environmental

Operating Temperature Range	-25°C to +50°C	
Storage Temperature Range	-40°C to +85°C	
Environmental Sealing Above the Flange	IP65	BSEN60529
	Clamp plate supplied with foam gasket	

### Electrical General

Maximum Load Current	Potentiometer wiper – See Design Note in rear of Data Sheet Directional switches – 200mA Resistive
Maximum Power Dissipation	0.25W at 25°C
Mating Connector for all units	Dupont Dubox Connector 65239-008 (16 way)
Mating Connector 1 for Z-axis	Dupont Dubox Connector 65240-003 (3 way)
Mating Connector 2 for Z-axis	Dupont Dubox Connector 65239-002 (4 way)
Mating Connector Pins	Dupont Dubox Pins 76357-301

### Analogue Track

Total Track Resistance	1k6Ω, 2kΩ or 3k2Ω,	Tolerance ±20%
Output Voltage Range	0% to 100%Vs, 8% to 92%Vs or 25% to 75%Vs	Tolerance ±2%
Center Tap Voltage (1MΩ Load)	50%Vs	Tolerance ±2%
Center Tap Angle	2.5° either side of center	Tolerance ±1°

### Directional or Center Off Switch

Switch Operating Angle	5° either side of center	Tolerance ±1°
Maximum Supply Voltage (Vs)	35Vdc	

### Switch Option

Maximum Number of Switch Options	5 either side of center	Switches are latched with diodes
Maximum Number of Detents	5 either side of center	
Switch/Detent Angles	±7°, ±14°, ±21°, ±28°, ±35°	
Maximum Supply Voltage (Vs)	35Vdc	

### JC300 Termination Details

Potentiometric Option	Switch Option	Pin No.	Wire Color
	Y axis Switch 1	3	Gray/Black
Y-axis positive supply voltage	Y axis Switch 2	14	Green
Y-axis center tap	Y axis Switch 3	16	Brown
Y-axis negative or zero supply voltage	Y axis Switch 4	13	White
Y-axis output voltage signal	Y axis Switch 5	12	Black
N/O signal handle forward (+Y)	N/O signal handle forward (+Y)	1	Pink/Black
N/O signal handle back (-Y)	N/O signal handle back (-Y)	9	Green/Red
	X axis Switch 1	4	Gray/Blue
X-axis positive supply voltage	X axis Switch 2	7	Orange
X-axis center tap	X axis Switch 3	10	Gray
X-axis negative or zero supply voltage	X axis Switch 4	8	Red
X-axis output voltage signal	X axis Switch 5	11	Yellow
N/O signal handle right (+X)	N/O signal handle right (+X)	2	Orange/Black
N/O signal handle left (-X)	N/O signal handle left (-X)	6	Red/Black
Common terminal directional switches and handle buttons	Common terminal all switch signals and handle buttons	5	Red/Green
N/O signal from Deadman's handle	N/O signal from Deadman's handle	15	White/Black
		17	Yellow/Red
		18	Violet
		19	Pink
		20	Blue
		21	Yellow/Black
		22	White/Red
		23	Red/Blue

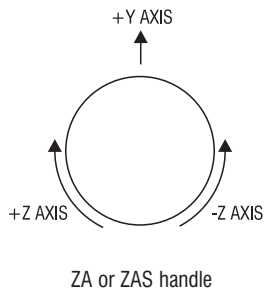
Please refer to the data sheet for your chosen handle

**Notes** Switches on either side of the center position are connected in parallel in the switch track option. The directional switch is used to determine the direction of handle movement. Switch positions are fitted with diodes such that as each switch output is made it remains on when the next switch in the series is also made.

## ZA/ZAS HANDLE OPTIONS



ZA handle



ZA or ZAS handle

Developed to move in the same plane as the equipment that they are controlling, the ZA and ZAS fingertip handles feature an additional axis of proportional/switched control.

Rotating horizontally about their center, the ZA handles generate both analogue and/or switched reference signals proportional to the direction and distance in which they are turned. The handles have an expected life in excess of 500,000 operations.

Specification	ZA	ZAS
Joystick Range	JC300, JC400	JC300, JC400
Maximum Height Above Flange	80mm	80mm
Maximum Diameter	39mm	39mm
Environmental Sealing (BSEN 60529)	IP65	IP65
<b>Third (Z) Axis</b>	Rotary	Rotary
Breakout Torque/Force	0.1Nm	0.1Nm
Operating Torque/Force	0.3Nm	0.3Nm
Maximum Operating Torque	1Nm	1Nm
Expected Life (Operations)	1 million	1 million
Mechanical Angle	$\pm 29^\circ$	$\pm 29^\circ$
Electrical Angle	$\pm 27^\circ$	
<b>Analogue Track</b>	Yes	No
Track Resistance	$2k7\Omega \pm 20\%$	
Output Voltage Range	7% to 93% $\pm 1\%$	
Center Tap Voltage (1M $\Omega$ load)	50% $\pm 3\%$	
Center Tap Angle	$\pm 2.5^\circ$	
Maximum Load Current	See Design Note in rear of Joystick Controllers data sheet	
Maximum Power Dissipation	Directional switches – 200mA Resistive 0.25W @ 25° C	
<b>Directional Switch</b>	Yes	Yes
Switch Operating Angle	$\pm 4^\circ \pm 1^\circ$	$\pm 20^\circ \pm 2^\circ$
Maximum Load Current	1 mA	1 mA
Maximum Supply Voltage (Vs)	35Vdc	
<b>Termination Details</b>	<b>ZA or ZAS</b>	
Joystick	JC300	JC300, JC400
	<b>Terminal</b>	<b>Wire Color</b>
Z-axis positive supply voltage	17	Yellow/Red
Z-axis negative or zero supply voltage	18	Violet
Z-axis output voltage signal	19	Pink
Z-axis center tap	20	Blue
N/O signal indicating handle movement in the +Z axis	21	Yellow/Black
N/O signal indicating handle movement in the -Z axis	22	White/Red
Common terminal for +Z axis switch track	23	Red/Blue

## ZC/ZCS HANDLE OPTIONS



ZC or ZCS handle option

The convex profile of the top of ZC handle has been designed to allow for thumb control of the JC300 and JC400 range of joysticks. Your company logo can be accommodated on the top of the ZC handle. The deadman's button inside the ZCS handle can be used to verify the change in signals from the joystick, so increasing the integrity of your control system

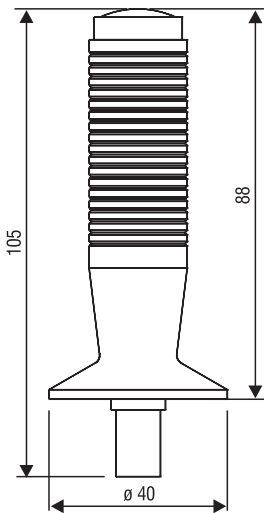
Specification	ZC	ZCS
Joystick Range	JC300, JC400	JC300, JC400
Maximum Height Above Flange	70mm	73mm
Maximum Diameter	23mm	23mm
Environmental Sealing (BSEN 60529)	IP65	IP65
Number of switches	0	1
Action		Momentary button
Operating Force		7Nm
Maximum Current @ 30Vdc		100mA
Expected Life (Operations)		500,000
Termination Details	ZCS	
Joystick	JC300, JC400	
	Terminal	Wire Color
Common Terminal Switch 1	5	Red/Green
N/O Contact Switch 1	15	White/Black

## KW/KWS HANDLE OPTION



KWS handle

Developed to allow full grip use of the smaller joysticks, it is fitted with (KWS) or without (KW) push button switch in the top of the handle within easy reach of the operator's thumb. This button can be used, as in a deadman's function, to verify the change in signals from the joystick, so increasing the integrity of your control system.



All dimensions in mm

Specification	KW	KWS
Joystick Range	JC300, JC400	JC300, JC400
Maximum Height Above Flange	130mm	130mm
Maximum Grip Diameter	22mm	22mm
Environmental Sealing	IP65	IP65
Number of Switches	0	1
Action		Momentary Button
Switch Operating Force		3N
Maximum Current @ 50Vdc		100mA
Expected Life (Operations)		50,000

Termination Details		
Joystick	JC300	JC300, JC400
	<b>Terminal</b>	<b>Wire Color</b>
Common Terminal Switch	5	Red/Green
Switch	15	White/Black