



MJ3 MINIATURE FORCE JOYSTICKS

Joysticks are the most suitable hand controllers for dynamic control applications. They are available in two basic forms, displacement or force operated.

Although displacement joysticks are the most commonly used, force joysticks, with their lack of moving parts, are easily miniaturised and provide a high reliability solution for applications where space and weight constraints exist. They are often installed in control grips to be used as 'thumbsticks'.

Daco offer two ranges of miniature force joysticks. The first, described overleaf is a series of modular products with standard options that can be configured in many different ways to make them suitable for the majority of applications. Alternatively, for those requiring more specialised products, we can provide a joystick individually designed through our cost effective design service which is explained in the datasheet "Custom Built Hand Controllers". One popular but non-standard version of this joystick that we offer is our 'high displacement' miniature stick, which provides the end user with some limited displacement 'feel'

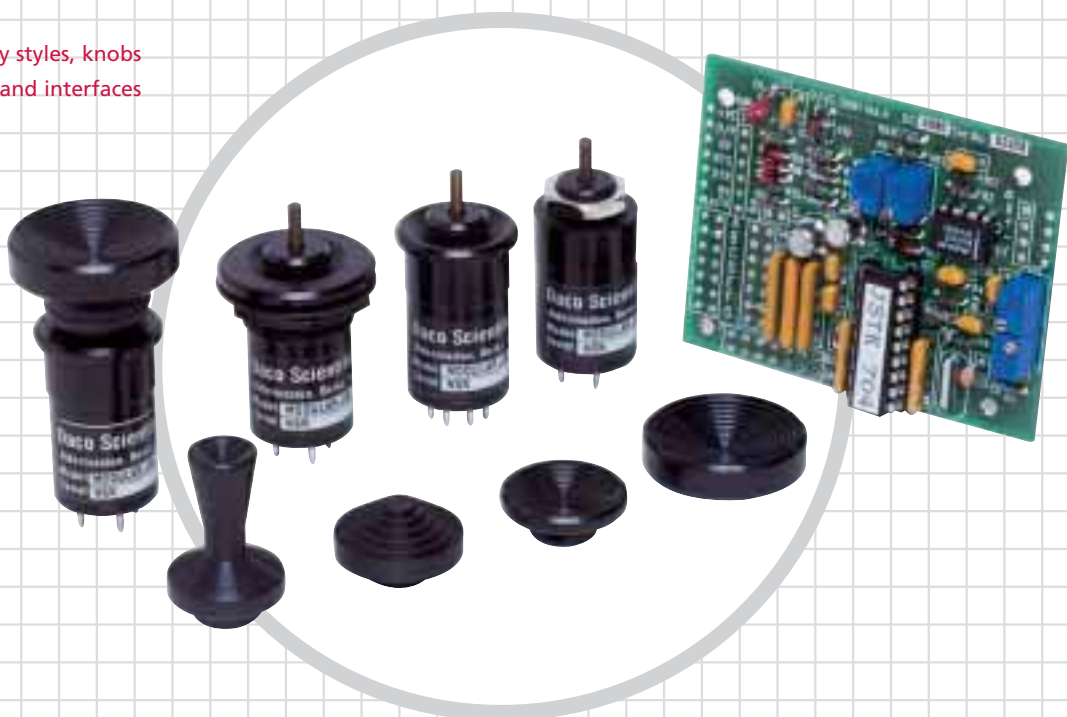




MJ3/42ECA-00

Clamping mount joysticks can
be installed in Daco's MG1
modular control grip

Choice of body styles, knobs
and interfaces



MJ3 miniature force joysticks

These are standard modular products, available on short delivery times, that can be configured in over 400 different ways.

The small size of MJ3 joysticks, approximately 50mm x 20mm, makes them particularly useful as 'thumbsticks' in control grips or for mounting in control panels and finger/thumb operation. Despite their size they are extremely resilient having an overload capability factor of 10. All units are fitted with an internal protective bellows which can be supplemented with an external elastomer seal for the most extreme industrial and military applications. The lack of moving parts ensures high reliability.

The modular options for these products include a choice of mounting configurations, knob styles and a wide range of standard electrical interfaces which are mounted externally.

All Daco joysticks are manufactured under an ISO 9001 approved quality system and are covered by a minimum two year warranty.

Characteristics

- Force operated
- Small size
- Continuous resolution
- No moving parts
- High reliability
- Sealed (or capable of sealing) to IP67
- Low return to zero hysteresis
- Low weight

Specification

Electrical

Excitation:	Rated	10V or $\pm 5\text{Vdc}$
	Maximum	12V or $\pm 6\text{Vdc}$
Input resistance		650 Ω nominal
Output:	Resistance (per half bridge)	325 Ω nominal
	No force	$\pm 125\text{mV}$ maximum
	Sensitivity	95mV/N nominal
	Full scale (FS)	1.0 $\pm 0.2\text{Vdc}$
	Balance (+FS to -FS)	200mV maximum
	Resolution	Stepless
	Non-linearity	$\pm 1\%$ FS maximum
	Hysteresis at zero	$\pm 0.3\%$ FS maximum
		$\pm 1.0\%$ FS maximum if elastomer seal used
	Interaction	$\pm 5\%$ maximum
	Zero offset thermal drift	$\pm 0.04\%$ FS/ $^{\circ}\text{C}$ typical
	Insulation	$> 50\text{M}\Omega$ at 50Vdc

Mechanical

Force, full scale	10.5N nominal
Force, maximum	100N
Deflection, full scale	$\pm 0.35\text{mm}$ nominal
Weight	25gms maximum
Dimensions	As installation drawing
Life	$> 3 \times 10^6$ FS cycles

Environmental

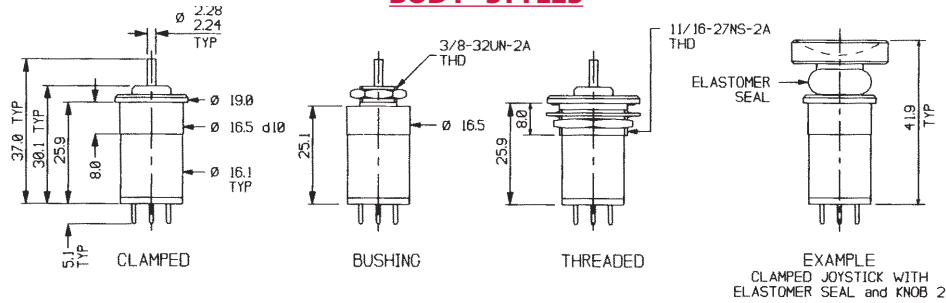
Temperature:	Operating	-40 to $+70^{\circ}\text{C}$
	Storage	-55 to $+90^{\circ}\text{C}$
Sealing (Panel sealed)		BS 5490 IP67
External materials (front of panel)		Anodised aluminium alloy
		Epichlorohydrin 60 (Elastomer seal)

Finish

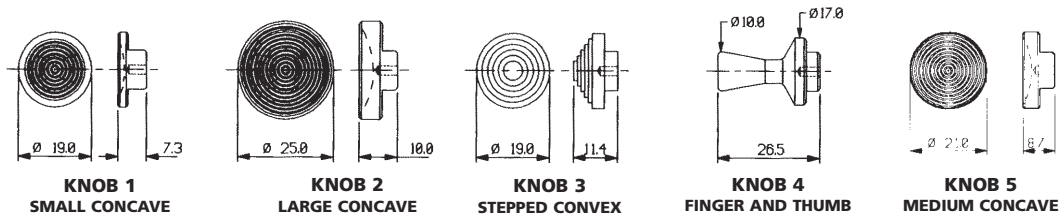
Joystick body	Black anodised
Joystick knob	Black anodised

Dimensions

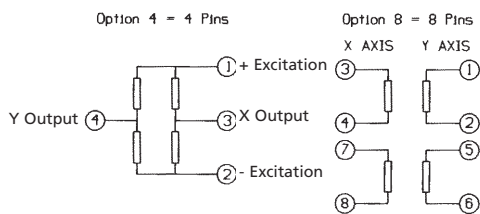
BODY STYLES



KNOB OPTIONS



PINOUT



INTERFACES

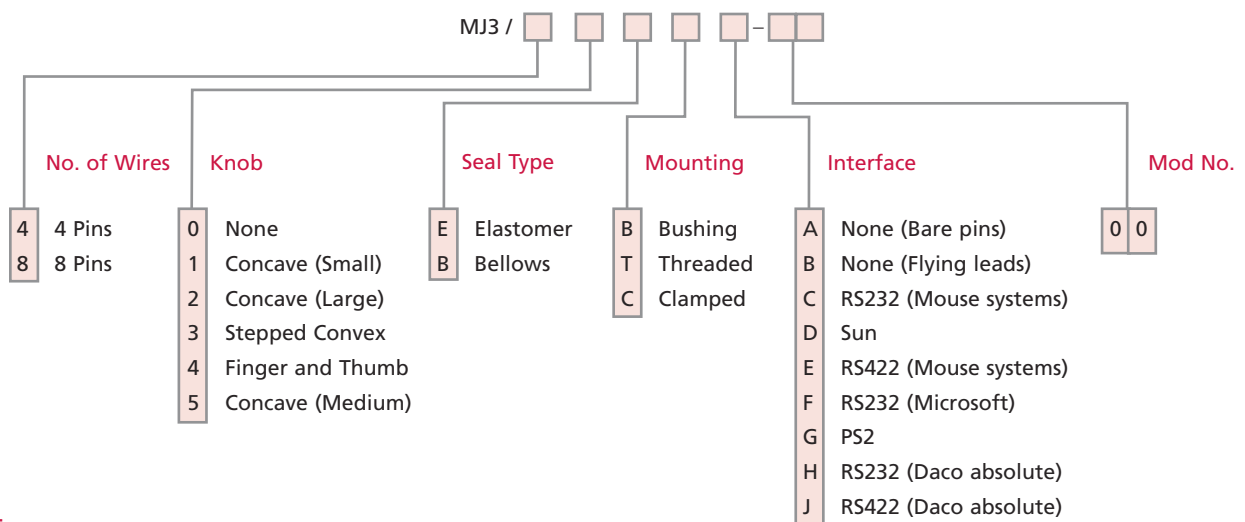
Option C - Mouse system RS232
 Option D - Sun
 Option E - Mouse system RS422
 Option F - Microsoft
 Option G - PS/2
 Option H - RS232 Daco Absolute
 Option J - RS422 Daco Absolute

PCB size 62 x 49 Max
 PCB size 62 x 49 Max
 PCB size 62 x 49 Max
 PCB size 62 x 49 Max
 PCB size 62 x 60 Max
 PCB size 62 x 49 Max
 PCB size 62 x 49 Max

Options E, H and J require an external power supply
 Options C, D, F and G are powered by the host computer.

How to order

To order MJ3 miniature force joysticks please refer to the drawing and the full list of modular options in the chart below to create a descriptive part number.



NOTES:

The Mod number gives you the opportunity to specify minor design changes. If you wish to make such a change please contact us to discuss possibilities. In all other cases the Mod number 00 should be quoted.

All interface circuit boards are connected to the joystick by a 300mm lead.

The elastomer seal cannot be fitted to the 'bushing' version joystick.

If no knob is specified but the elastomer seal is, then the joystick will be supplied with a dummy knob to hold the seal in place in transit. Mounting options B and C require you to make appropriate sealing arrangements to achieve IP67

DACO

hand controllers

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