

## micro DCUBED Pin-Puller (uD3PP)



### Preliminary Specifications

	Basic	Premium	Custom
Body Size (L x W x H)	25.5 x 25.5 x 25.5 mm (Standard Interface)	25.5 x 25.5 x 25.5 mm (Standard Interface)	Custom x 25.5 mm height (min.)
Mass	~ 80 g	~ 80 g	Variable
Material	1.4404 / 316L	1.4404 / 316L	1.4404 / 316L
Operating temperature range	-35°C to 80°C (TBC)	-35°C to 80°C (TBC)	-35°C to 80°C (TBC)
Pin dimensions	Ø5 mm x 6.5 mm protrusion	Ø5 mm x 6.5 mm protrusion	Modifiable
Stroke	6.5 mm	6.5 mm	Modifiable
Bushing dimensions	Ø9 mm x 4.5 mm depth	Ø9 mm x 4.5 mm depth	Modifiable
Maximum actuation side load	~ 150 N <sup>1</sup>	~ 150 N <sup>1</sup>	~ 150 N <sup>1</sup>
Rapid resettability	Yes, using Ø3 mm hole in the back	Yes, using Ø3 mm hole in the back	Yes, using Ø3 mm hole in the back
Redundancy	Yes, secondary actuation line	Yes, the secondary actuation line	Yes, the secondary actuation line
Internal actuation sensor	No	Yes (Leads: AWG 28)	If Requested
Shock Pad	No	Yes	If Requested

<sup>1</sup> Preliminary estimate only, based on early tests of prototypes. Achieved with the internal application of a space certified solid lubricant (Molykote 106). Take care when placing optics in proximity to the mechanism.

## Interfaces

Preliminary Information.

### Mechanical Interfaces

The standard mounting configuration for the uD3PP is comprised of two M3 tapped holes (please consult the drawing below).

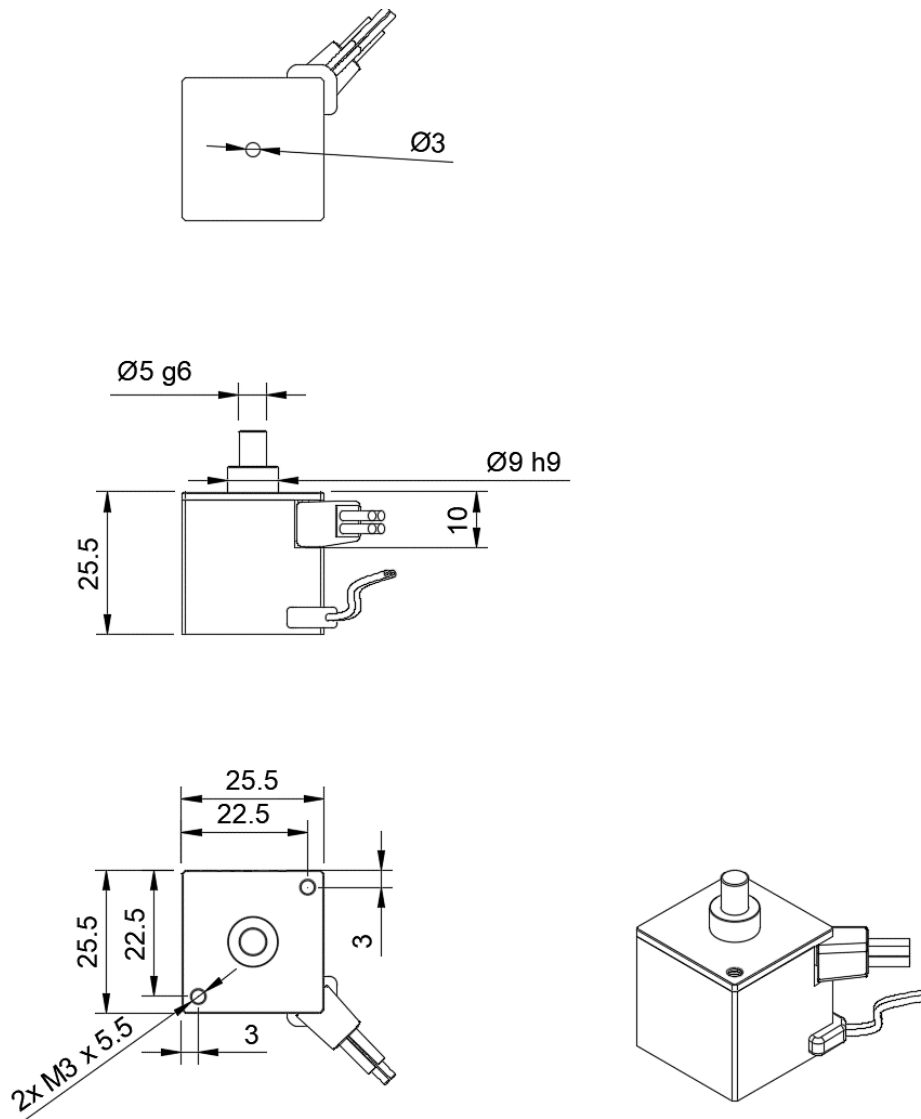


Figure 1 - Dimensions and standard mechanical interfaces

## Electrical Interfaces



Figure 2 - Redundant actuation lines on the uD3PP

To actuate the pin puller, a current must be applied across one of its actuation lines. The actuation lines are colour-coded as red and yellow wires (red-red, yellow-yellow). The actuation line behaves like a simple resistor (see the table below), with no specific polarity.

The black wires are for the optional actuation sensor, which produces a pulse signal following actuation.

Leads	2 x 2 (2 primary, 2 secondary/redundant)
Wire length	200 mm – 250 mm
Material	Silver-plated copper, PTFE
Wire gauge	24 AWG
Required current	1.6 to 2 A (DC)
Resistance ( $\Omega$ )	$1.2 \pm 0.2 \Omega^2$

## Loads

The uD3PP is designed to withstand the following external loads.

Load type	Load level	Note
Random vibration (x,y,z)	$\sim 24.3 \text{ GRMS} \pm 3 \text{ dB (PSD)}$	
Sinusoidal vibration (x,y,z)	20-130 Hz, 20 g	
Shock (x,y,z)	100 Hz: 100 g 1000 Hz-10000 Hz: 1000 g (SRS, +3 dB) <sup>2</sup>	
Maximum actuation side load	$\sim 150 \text{ N}^2$	
Survival loads	Push-in: $\sim 100 \text{ N}^2$ Sideload: $\sim 400 \text{ N}^2$	

If you have any questions concerning the uD3PP actuator, please feel free to contact us via our official company website (<https://dcubed.space/contact-us/>) or by phone (+49 (0)89 95874160).

<sup>2</sup> Preliminary estimate only, based on early tests of prototypes.