TPM-85A5x6

- 6 inch - OEM
- capacitive touch
- USB

6 INCH OEM TOUCHPAD

Using years of knowledge/experience gained from developing industrial trackball technology, Cursor Controls Ltd have developed a range of advanced touchpad solutions. The touchpads provide smooth and precise cursor control using the latest and most advanced touch sensing technology and are designed for use in the most extreme environments.

The TPM Series OEM touchpad provides both conventional X and Y-axis cursor movement with plug-and-play, multi-finger gesture support for enhanced user interaction. The mutual-capacitance based tracking engine combines the benefits of solid state sensing (no moving parts) with the precision, functionality and performance associated with the Cursor Controls product range. When installed, the design allows for easy cleaning and decontamination, ensuring continued optimum performance and operation under the harshest of conditions. The unit has been designed to be mounted as part of OEM keyboards and consoles.

FEATURES

- Solid state sensing technology – capacitive touch sensing tracking engine
- Output: USB
- Haptic and audible feedback (function specific)
- Multi-finger gesture support
- 8 capacitive touch feature buttons
- Smooth operation in rugged environments
- Tolerant to moisture, water and liquid contaminants
- Various touch surface overlay options available as standard
- Custom feature button configurations / overlays available

APPLICATIONS

- Industrial consoles
- Medical systems
- Marine systems
- Sound and lighting desks
- Video editing consoles
- Custom keyboard applications

TECHNICAL FEATURES

MECHANICAL

Dimensions	143mm x 109mm
Weight	~65 grams
Touch Surface Material	Polyester or Glass (anti-fingerprint & anti-glare).
Touch Surface Colour	Polyester: Slate Grey - RAL 7015 or Glass: Metallic grey - Pantone PMS 10392

OPERATIONAL

Motion Detection Method	Mutual capacitance sensing
X/Y Position Reporting	Relative
Sample Rate	Up to 100 samples/sec.

ELECTRICAL

Protocol	USB
Supply Voltage	4.40 – 5.25V
Supply Current	60mA typical – default resolution setting, feedback idle
	300mA peak – max resolution setting, feedback effects playing
Resolution (X, Y)	960 x 720 counts (default setting) – linear tracking mode.
	See section „cursor speed/resolution settings" on page 3 for further options.
Output Connector(CN1)	12-way connector, Molex PicoBlade Series PN: 53261-1271
Switch Connector (Cn2)	6-way connector, Molex PicoBlade Series PN: 53261-0671

ENVIRONMENTAL
Operating Temperature   0° to 70°C
Operating Humidity   5% to 95% relative humidity
Storage Temperature   -40° to +85°C
Vibration   2g, 10-500Hz, 1 octave/min, 10 sweep cycles (IEC 60068-2-6)
Operating Shock   15g/11ms, ½ sine, 3 shocks in +ve and –ve direction, all 3 axes, IEC 60068-2-27)
ESD   15kV air-discharge and 8kV contact discharge (IEC 61000-4-2)
EMC   Radiated immunity - limits according to level 3 of IEC 61000-4-3
                             Radiated emissions to EN55022 class B

OPERATING SYSTEM COMPATIBILITY
USB   Windows, Linux, Mac OS, and Android. Fully compliant with USB 2.0 framework (chapter 9) & HID specifications

CONNECTION DETAILS

Output connector: CN1

Description	12-way, 1.25mm pitch, right-angled connector
Manufacturer	Molex (or equivalent) – Pico Blade Series
Manufacturer Part Number:	53261-1271 (or equivalent)
Mating Connector:	51021-1200 Crimp Housing (or equivalent)

PIN No.	USB
1	NC [1]
2	NC [1]
3	NC [1]
4	NC [1]
5	EARTH [2]
6	NC [1]
7	VBUS (+5V)
8	D -
9	D +
10	GND (0V)
11	NC [1]
12	NC [1]

Switch Input Connector Pin 1

Output Connector Pin 1

Notes
1. Pin to be left unconnected (floating).
2. Earth connection required for ESD management.
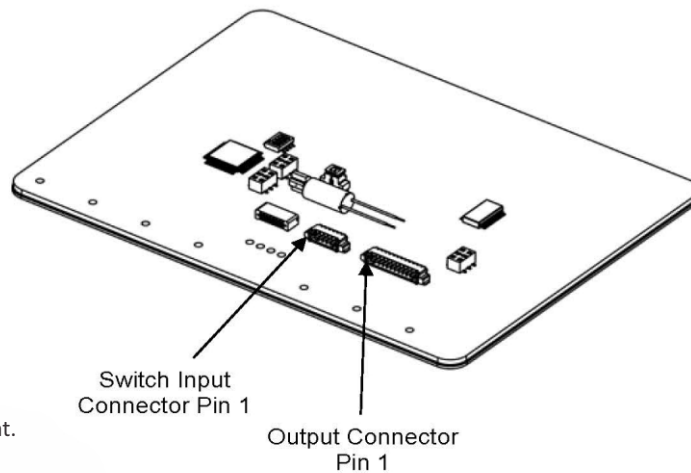
Switch input connector: CN2

Description	6-way, 1.25mm pitch, right-angled connector
Manufacturer	Molex (or equivalent) – Pico Blade Series
Manufacturer Part Number:	53261-0671 (or equivalent)
Mating Connector:	51021-0600 Crimp Housing (or equivalent)

| PIN No.	FUNCTION
1	Left Switch
2	GND (0V)
3	Middle Switch
4	GND (0V)
5	Right Switch
6	GND (0V)

Switch connection schematic
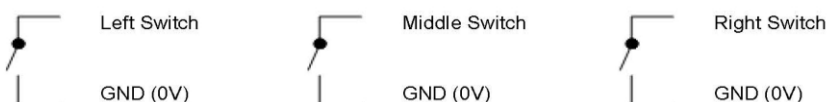
TOUCHPAD FEATURES

The TPM Series touchpad module includes the following features / technologies;

• **Touchpad Technology**: The 6-inch active touchpad area provides both conventional X and Y-axis cursor movement with plug-and-play, multi-finger gesture support for enhanced user interaction.

• **Feature Buttons**: 8 x feature buttons are located at the top of the touchpad module. These utilise capacitive touch sensing technology and incorporate functions such as Cut, Copy & Paste, cursor resolution adjustment, and a panel lock feature to facilitate cleaning / decontamination of the device.
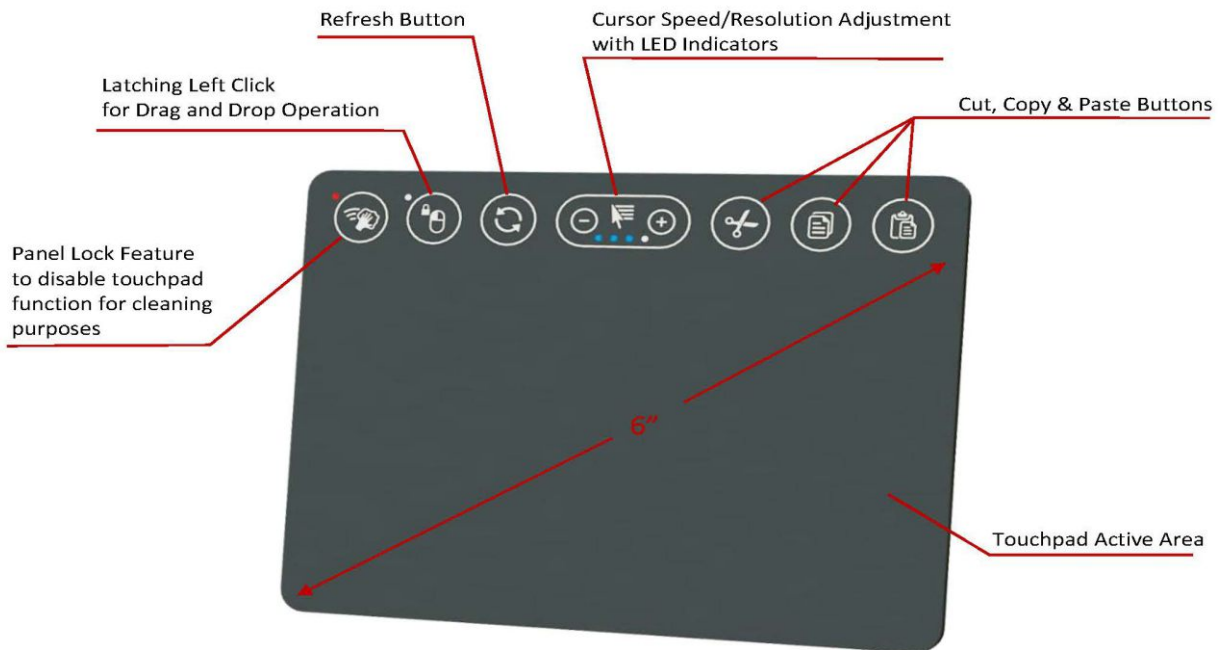
CURSOR TRACKING MODE

The touchpad includes an intuitive **Ballistic Tracking** algorithm to provide increased cursor resolution when tracking fast, whilst retaining the native resolution (960 x 720 counts) for tracking accurately at slow speeds.

The touchpad also includes an **Inertia Tracking** algorithm which applies inertia to the X and Y axis, allowing cursor movement or scroll to continue in the intended direction after the finger(s) is lifted from the touchpad surface, after which the cursor will naturally slow to a stop.

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GESTURE OPERATIONS

The touchpad incorporates an in-built gesture recognition engine designed to enhance user experience and increase the overall efficiency of user interaction with a host system. Use of gesture control enables the user to access frequented functions such as button clicks, scrolling and zooming by means of highly intuitive multi-finger operations. See table below for details on the available gesture actions.

GESTURE ACTION	FUNCTION
Single-Finger Tap	Left mouse button click Double/triple tap supported
Two-Finger Tap	Right mouse button click Double/triple tap supported
Three-Finger Tap	Middle mouse button click Double/triple tap supported
Two-Finger Vertical Drag	Scroll Up/Down
Two-Finger Horizontal Drag	Scroll Left/Right [1]
Two-Finger Splay	Zoom In [1]
Two-Finger Pinch	Zoom Out [1]
Three-Finger Swipe Left	Back [1]
Three-Finger Swipe Right	Forward [1]

1. Horizontal scroll and zoom functions are dependent on application support.

CURSOR SPEED / RESOLUTION SETTINGS

The touchpad allows the user to increase or decrease the cursor resolution as required across 8 levels, indicated by the LED indicators underneath the + and - buttons. The table here below provides details of the resolution provided by each level.

Level	Cursor Resolution	
	X	Y
0	360	240
1	480	360
2	720	540
3 (Default factory setting)	960	720
4	1200	900
5	1440	1080
6	1680	1260
7	1920	1440

TOUCHPAD FEEDBACK

The touchpad features haptic and audible feedback to provide a perceptible response to user interaction events. The table here below details the default event mapping for user feedback;

Event	Haptic Feedback	Audio Feedback
Finger Taps (e.g. Left Mouse Click)	No	Yes
Gesture Operations (e.g. Two finger Vertical Drag)	Yes	Yes
Feature Buttons	Yes	Yes
Active Area Edge Detection	Yes	No

PANEL LOCK FEATURE

The panel lock feature allows the touchpad to be locked / disabled for cleaning purposes. This can be achieved by tapping and holding the panel lock button for 3 seconds to toggle ON or OFF. The panel lock LED will remain illuminated whilst the touchpad is locked.

TOUCHPAD CONFIGURATION

The touchpad provides embedded features that may be selected using the DIP switches located on the printed circuit board. The table here below details the assigned function of each switch;

DIP Switch Functions

Description	6-way, 1.25mm pitch, right-angled connector
Manufacturer	Molex (or equivalent) – Pico Blade Series
Manufacturer Part Number:	53261-0671 (or equivalent)
Mating Connector:	51021-0600 Crimp Housing (or equivalent)

PIN No.	FUNCTION
1	Left Switch
2	GND (0V)
3	Middle Switch
4	GND (0V)
5	Right Switch
6	GND (0V)

Factory default setting: All DIP switches OFF
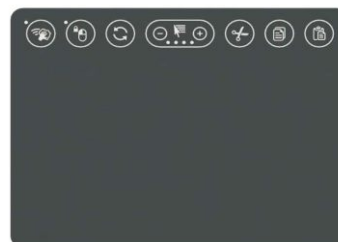
ORIENTATION

The orientation of the device is in one direction only as shown in this image :

ELECTROSTATIC DISCHARGE (ESD) PROTECTION

The TPM series touchpad module provides measures to protect against hardware damage due to ESD however, in order to achieve a high-level of immunity to ESD events (up to 15kV), it is necessary to provide adequate earthing methods during system/panel integration, thus providing a low impedance path for charge to dissipate.

The most likely route for ESD is the creepage path between the user accessible touch surface and the touchpad PCB. The touchpad module provides a conductive perimeter frame on both the top and bottom layers to protect the circuit from ESD strikes. It is necessary to provide a suitable connection between the perimeter frame and earth or chassis-ground.

Possible earthing methods include;

1. Housing the touchpad module within an earthed conductive interface panel (e.g. metal keyboard frame), ensuring that there is sufficient contact between the perimeter frame of the touchpad module and the interface panel.

2. Attaching an earth connection to Pin 5 (EARTH) of the output connector CN1 – this pin is internally connected to the perimeter frames. A convenient method for providing an earth connection to this pin is to use the USB or PS/2 cable shield or drain wire.

3. Attach an earth wire directly to the perimeter frame. Using the dedicated earth pad shown in the image to do this is recommended.

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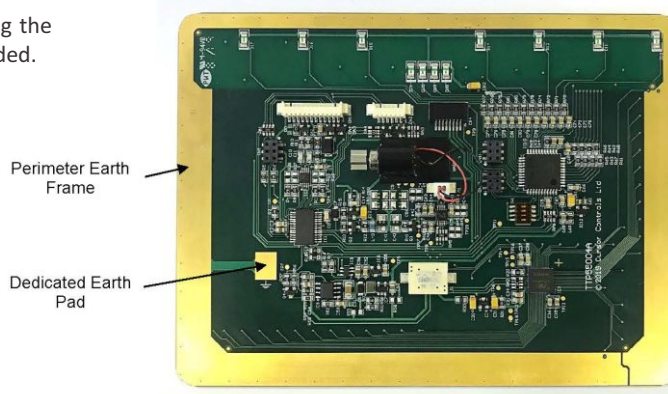
DIMENSIONAL DRAWING
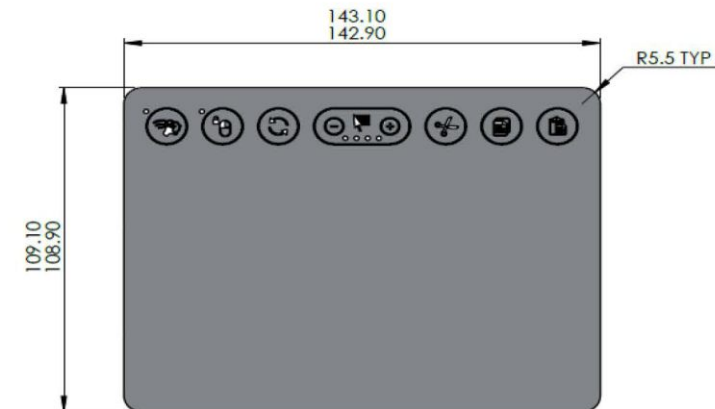
VARIANT	DIM. A	DIM. B
POLYESTER OVERLAY	2.30	9.1
GLASS OVERLAY	3.20	10.0
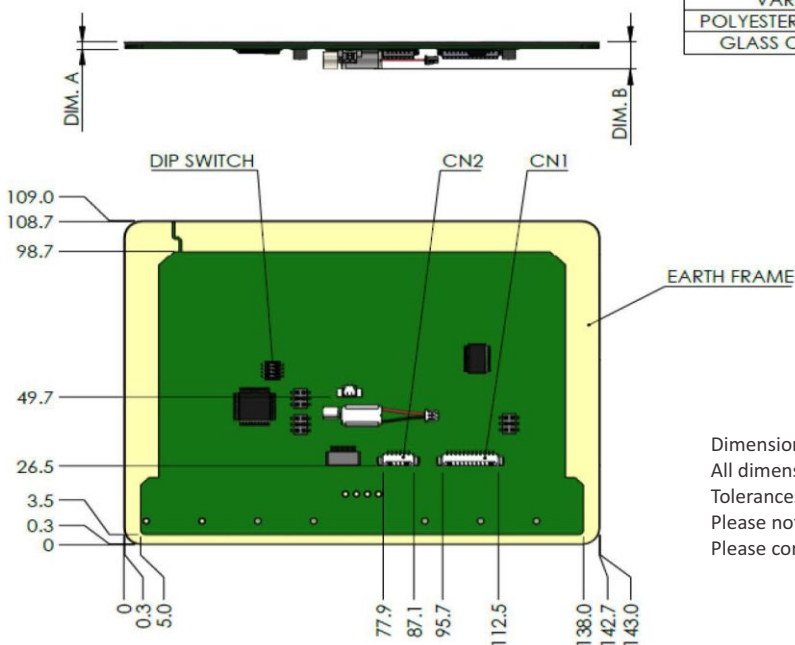
Dimensional drawing specifies factory default orientation.
All dimensions are in mm unless otherwise stated.
Tolerances +/- 0.2mm unless otherwise stated.
Please note that an IGES model is available on request.
Please contact your local sales office for more information

MOUNTING RECOMMENDATIONS
The TPM series touchpad module can be mounted into panels and consoles using various methods. For details of typical mounting methods applicable to this module, please contact us.

ORDER INFO

6 inch OEMtouchpad - Polyester overlay	**TPM-85A516**
6 inch OEM touchpad - Glass overlay	**TPM-85A526**