



- Short travel backlit keys
- IP65 sealing
- Industrial grade

50 MM “CHAMELEON” BACKLIT TRACKBALL

The “Chameleon” backlit trackballs feature 7-colour illumination of the total ball surface and the mouse button legends. Up to seven different colours can be selected by internal settings on the trackball or by remote dynamic selection via an output connector. For both selection methods, internal or remote, the illumination intensity can be dimmed. The total panel mount unit is sealed to IP65 static and comes with a silicon sponge to seal the carrier plate into the users’ cabinet or console. The output is combo PS/2 & USB with auto-recognition and in both cases the current for the illumination is drained from the mouse ports.

The unit features an aluminium carrier plate with two tactile short travel switches and a dark coloured polyester overlay.

MAIN FEATURES

- Full backlighting of ball and switches in up to 7 different colours
- Colours selectable internally (fixed) or remote (dynamic)
- Illumination intensity can be dimmed internally or remotely
- Illumination power directly from mouse port, no extra power supply
- Proven industrial grade 50mm large trackball

BACKLIGHTING

- The default backlighting system is powered by the USB port
- The backlight intensity and colour can be controlled by using the onboard dipswitches, and is configurable in up to 7 different colours



CE

- Compliant to EMC Directive 89/336/EEC for Electromagnetic Compatibility
- Low Voltage Directive 73/23/EEC not applicable for our trackballs

CONNECTIVITY

- The combo PS/2 & USB trackball unit is equipped with a 1,6 meter long shielded straight cable, and connects with a USB type A plug
- An adaptor to PS/2 is added. No special device driver is needed, use the standard drivers of your operating system
- *Due to the increasing differences of the PS/2 mouse port specifications of the various PC manufacturers, we recommend that this unit should be tested on the final PC configuration and operating system prior to installing it in series

GENERAL TECHNICAL SPECIFICATIONS

Ball diameter	50.8mm (2")
Ball material	Epoxy resin, translucent
Lifetime	>= 2 million ball revolutions
Tracking force	nom. 50 grams
Operating temperature range	-10°C to +60°C
Storage temperature range	-25°C to +80°C

MECHANICAL

Weight	+/-600gr
Unit dimensions	100 x 116 x 40mm
Enclosure material / finish	Black polyester carrier
Carrier plate	Aluminium
Sealing	IP 65 static

ELECTRICAL

Output	PS/2 & USB Combo
Cable	1 shielded, straight 1.6m long
Supply voltage	+4.4V +5.25V D.C
Supply current	28mA (nonbacklit), 50mA (typical), 116mA (white backlit maximum)

Switches:	
Key switch actuation force	2.55N
Key switch lifetime	1,000,000 actuations
Key switch travel	0.3mm

DETAILED ELECTRICAL SPECIFICATION

Protocol	PS/2 USB (auto select)
Supply voltage	4.40V to 5.25V D.C.
Supply current	See table 2

Table 1: basic electrical specification

Typical supply current						
Colour configuration				LED intensity		
Red channel	Green channel	Blue channel	Resultant colour	Low	Medium	High
Off	Off	Off	Off	28mA		
Off	Off	On	Blue	31mA	38mA	53mA
Off	On	Off	Green	31mA	39mA	54mA
Off	On	On	Cyan	34mA	48mA	75mA
On	Off	Off	Red	35mA	48mA	80mA
On	Off	On	Magenta	37mA	57mA	99mA
On	On	Off	Yellow	36mA	57mA	99mA
On	On	On	White	40mA	65mA	116mA

Table 2: Details of current consumption against device configuration

Notes:

1. Typical current measured with no external backlight PCB attached to CN4. When external backlight PCB is used, current consumption will depend on LED configuration.

2. Connection details

Connections on CN1 and CN2 are as per the standard P50 protocol and switch connections. Please refer for the standard P50 datasheet (DS50023) for protocol and switch connection details.

2.1 Backlight control connector: CN3

Description: 8 way, 2mm pitch, right-angled connector

Manufacturer: JST (or equivalent)

Part No: S8B-PH-SM3-TB

Mating connector: PH, CR or KR types

Pin number	Function
1	Do not connect
2	0V
3	Blue control
4	Green control
5	Red control
6	POT+
7	POT-W/Vctrl (7,8)
8	POT-

Table 3: Control connections

Notes:

4. if external colour control is required, switches 4,5 and 6 on SW2 must be set to the OFF position. See section 3.1 for details.

5. Colour control connections are not PWM or SSDM compatible. These connections can only be switched up to 50Hz.

6. Colour control lines can be connected to a TTL/CMOS compatible driver, open-collector/open-drain driver or external switches to 0V. Pins are pulled to 5V by 5kohm resistor. Colours enabled by a logic low signal.

7. If external intensity control is required, switch 7 on SW2 must be set to the ON position.

8. Option for 10k potentiometer connection or external analogue voltage (Vctrl) in order to control intensity. Vctrl can be 1.6-3.3V with respect to 0V pin.

2.2 LED Output connector: CN4

This connection allows for external LEDs to be attached and controlled by the on-board LED controller. The LEDs must be of common anode type. No resistors are provided for current limiting on the cathode channels, these must accompany the external LEDs.

Description: 4 way, 2mm pitch, right-angled connector

Manufacturer: JST (or equivalent)

Part No: S4B-PH-SM3-TB

Mating connector: PH, CR or KR types

Pin number	Function
1	Common anode voltage (+5V)
2	Red cathode
3	Green cathode
4	Blue cathode

Table 4: LED output connections

3. DIP Switch functions

Please note that there are two DIP switch packs on the device, SW1 controls trackball functionality as described in the standard P50 datasheet (DS50023), SW2 configures settings for the backlight feature. DIP switch packs can be identified using the silkscreen overlay on the PCB

DIP switch	Function	Off	On
1	Intensity LOW ⁽⁹⁾	-	Low LED intensity
2	Intensity MEDIUM ⁽⁹⁾	-	Medium LED intensity
3	Intensity HIGH ⁽⁹⁾	-	High LED intensity
4	Red control ⁽¹⁰⁾	Colour control See table 6	
5	Green control ⁽¹⁰⁾		
6	Blue control ⁽¹⁰⁾		
7	External intensity selection ⁽¹⁰⁾	LED intensity selected from switches 1, 2 & 3	LED intensity controlled by external analogue input on POT-W/Vctrl pin
8	Demo Feature	Disabled	Enabled

Table 5: DIP switch functions on SW2

Notes:

9. Only one intensity switch should be enabled at a time. If several switches are ON, the highest intensity will take effect.

10. These switches have alternate functions when Demo Feature is enabled on switch 8. See section 3.2.

Colour control ⁽¹¹⁾			Colour
Red	Green	Blue	
Off	Off	Off	Off
On	Off	Off	Red
Off	On	Off	Green
On	On	Off	Yellow
Off	Off	On	Blue
On	Off	On	Magenta
Off	On	On	Cyan
On	On	On	White

Table 6: Colour control switch function

Notes:

11. If external colour control is required; the red, green and blue control switches should be set to the OFF position. Colours can be enabled by applying a TTL/CMOS compatible logic low signal to the applicable colour control pins on CN3.

3.2 Demo feature

The demo feature allows the trackball to scroll through a sequence of colours by varying the individual LED channels. The feature includes the ability to configure the peak intensity and the scrolling speed, this is configurable only by using the SW2 DIP switch pack. The demo feature is enabled by setting switch 8 on SW2 to the ON position, when enabled the following DIP switch functions apply:

DIP switch	Function	Off	On
1	Intensity LOW (9)	-	Low peak LED intensity
2	Intensity MEDIUM (9)	-	Medium peak LED intensity
3	Intensity HIGH (9)	-	High peak LED intensity
4	Speed 1 (12)	Scrolling speed control See table 8	
5	Speed 2 (12)		
6	Speed 3 (12)		
7	External intensity selection	Unavailable for this mode. Peak intensity must be on switches 1, 2 & 3	
8	Demo Feature	Disabled	Enabled

Table 7: Alternate DIP switch functions on SW2 when demo feature is enabled.

Notes:

12. Only one scrolling speed switch should be ON at any one time. If several speed switches are ON, the highest speed switch will take affect.

Speed control settings	
Switch configuration	Cycle time
Speed switches OFF	7 seconds
Speed 1 ON	14 seconds
Speed 2 ON	28 seconds
Speed 3 ON	57 seconds

Table 8: Scrolling speed configurations for demo feature.

DIMENSIONAL DRAWING

TCS50F4 (TCL50F1 has the same dimensions and mounting stud)

