

P60

Specification

Mechanical

Weight	400 grams
Ball	Thermoset Phenolic, or polyester 63 mm, 2 ½"
Tracking Force	15 grams Nominal Continuous – No seal (IP40) 25 grams Nominal Continuous – Felt seal (IP51)
Ball load	200N Maximum downward pressure (20 Kg) at 20°C
Ball rotation	Continuous and reversible – any direction
Ball speed	200 RPM max
Housing material	Base – ABS + 30%GF, Top ABS
Transducer	Photo – optical encoders with LED
Mounting Position	Horizontal to 30° (non – sealed units) Horizontal to 90° (sealed)

Electrical

Standard output connector	JST 2mm PH 10 way right angled header
Mating connector	JST 10 way CR, KR or KRD type connector Pt No PHR 10
Resolution (Quadrature) (Protocol)	220 pulses per ball revolution 440/220 pulses per ball revolution – switch selectable (Other options available upon request)
External switch inputs	3 switches Left, Middle, and Right. Connection through JST 2 mm PH 4 way right angled header. Mating part number PHR 4
Supply Voltage	5 V DC +/- 5%
Supply current (Quadrature) (Protocol)	10 mA typical 20 mA typical
Optional backlighting	+ 5 V DC, 100 mA

Environmental

Operating temperature	0°C to +70°C
Storage temperature	-25°C to + 85 °C
Humidity	30% min, 95% max, non condensing
Vibration	5G, 2-5 KHz any plane
Shock	100G's – duration 11mS
Lifetime	> 10 million ball revolutions – non sealed > 2 million ball revolution – seal life

Standard Product Options

A Top Plate Sealing 1 No seal in top plate (IP40) 3 Felt seal (IP51)	B Electrical Output 0 Quadrature 6 Universal Interface – PS/2 , USB 7 Multi – Protocol Interface – PS/2, RS232(MS & Microsoft) 8 Sun Systems	C Integrated Switches 0 No switches
D Mounting 2 Mounting to back of panel	E Top Plate / Body Style 4 Moulded top and chassis ,black	F Ball Colour 0 Black 2 Red 4 Yellow 6 Blue 9 Backlit Blue

Product Ordering Code P60 – ABCDEF. Please fill in letters A – F using numbers from the table above

External connections

Output connector				
	0	6	7	8
Pin Number	Quadrature output	Universal Interface	Multi Protocol Interface	Sun Systems
1	X1	X1	Tx	Tx
2	X2	X2	Rx	
3	Y1	Y1	DTR / Clock	
4	Y2	Y2	RTS / +5 V	+5 V
5		Drain	GND	GND
6			Data	
7	Vcc (+5 V DC)	Vcc (+5 V DC)		
8		Data / D -		
9		Clock / D+		
10	GND	GND		

Switch input connector			
	6	7	8
Pin Number	PS/2 Only output	USB Only output	Sun Systems
1	Left (Sw1)	Left (Sw1)	Left (Sw1)
2	Middle (Sw2)	Middle (Sw2)	Middle (Sw2)
3	Right (Sw3)	Right (Sw3)	Right (Sw3)
4	GND	GND	GND

Optional backlight power	
Pin Number	Function
1	+5V DC
2	GND

Configuration

Multi Protocol interface and Sun systems			
Switch	Function	Off	On
1	Protocol Mode	Microsoft RS232 / PS/2	Mouse systems / Sun *
2	Orientation 1 setting	See diagram	See diagram
3	Orientation 2 setting	See diagram	See diagram
4	Double tracking rate	2:1	1:1
5*	VX3 – Virtual 3 axis function (Sun Mode : Baud rate selection)	Feature Enabled 1200	Feature Disabled 9600
6	Smart button – Button lock	Feature Enabled	Feature Disabled
7	N/A		
8	TTL output levels	Standard output (RS232)	TTL level / Sun

* If switch 1 is on (in Sun / Mouse systems Mode), Switch 5 functions as a baud rate selector.

Universal interface			
Switch	Function	Off	On
1	Orientation 1 setting	See diagram	See diagram
2	Orientation 2 setting	See diagram	See diagram
3	VX3 – Virtual 3 axis function	Feature Enabled	Feature Disabled
4	Double tracking rate	Feature Enabled	Feature Disabled
5,6,7	N/A	Default	
8	Backlight flash feature	Enabled	Disabled

Orientation settings



Orientation 1	On	On	Off	Off
Orientation 2	On	Off	On	Off

Viewed from the top of the unit.

Not applicable to Quadrature units.

Optional lead assemblies

If required lead assemblies are available please quote the required lead as below

Universal Interface

Leads /Adapters	Part number	Description
Output cable	T9902128	10 way JST – USB type A , 2.2 meters long
Switch Input	T9902125	4 way JST – bare wires, 500mm long
Adapter	A3900126	Converts USB into PS/2 USB Type A connector – PS/2 Plug, 50 mm block

Multi Protocol Interface

Leads /Adapters	Part number	Description
Output cable	T9902127	10 way JST – PS/2 (6 pin mini Din Male) 2.2 meters long
Switch Input	T9902125	4 way JST – bare wires, 500mm long
Adapter	A3900125	Converts PS/2 – RS232 6 pin mini Din female – DB9 female, 40mm block