MULTI ROTARY SWITCH MULTI WHEEL

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SPECIFICATIONS

MINIATURE ENCODER WITH 8+1 JOYSTICK FUNCTION FOR ONE-FINGER CONTROL, IP56 SEALED

- › 12 detents Hall-effect sensed encoder with magnetic indexing
- › Center button with 8 joystick directions and center push function
- › 1 Mio encoder revolutions, 500k joystick actuations
- › Full metal front-end; silver or black
- › LED backlit illumination (RGB)
- › 2.7 to 5.5 VDC supply, UART interface
- › 400 µA stand-by current; ideal for battery powered applications
- › 6 positions ZIF or soldering pads connection
- › -20 to +60°C, IP56 sealed

Pb ELV (2000/53/EC)
RoHS (2011/65/EU)
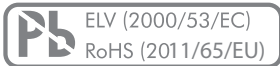
POSSIBLE CUSTOMIZATIONS

- ■ Front-end shape and color
- ■ Connectors, cabling and pinning
- ■ IPx7 or IPx8 sealing

TYPICAL APPLICATIONS

- ■ Test & measurement for outdoor environments
- ■ Cockpit (aviation, transport, construction, etc.)
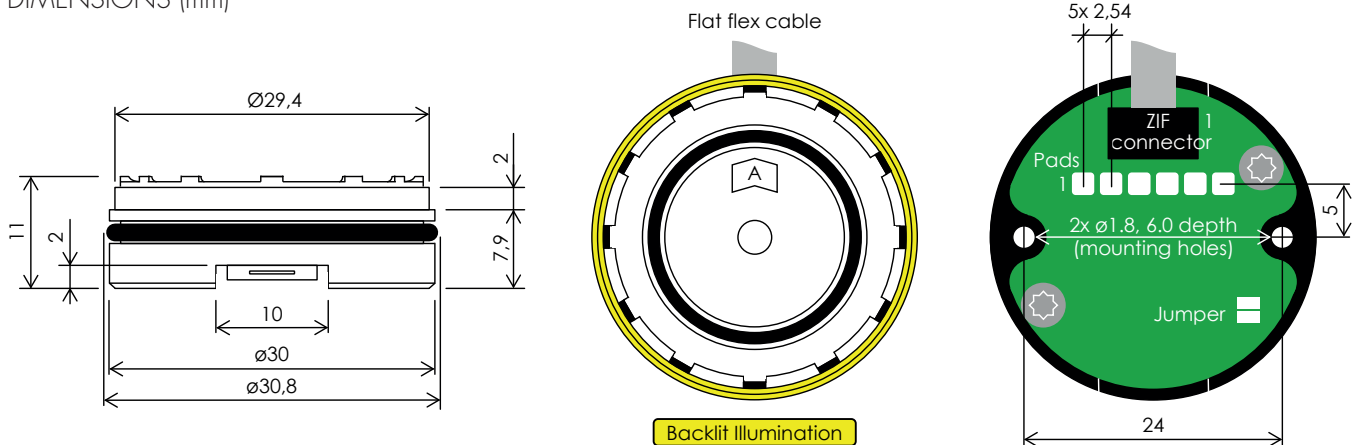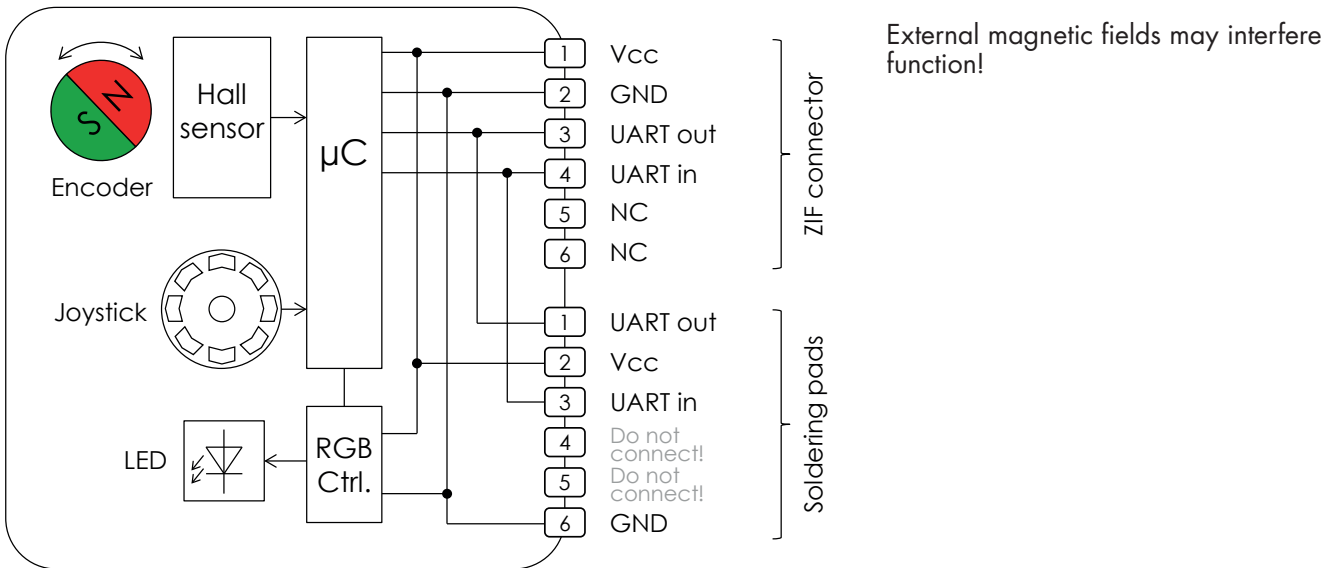- ■ Industrial controls

MULTI WHEEL silver

MULTI WHEEL black

DRAWINGS

DIMENSIONS (mm)

At room temperature, +/- 0.1 mm tolerance.

Flat flex cable

Backlit Illumination

5x 2,54

ZIF connector 1

Pads 1

2x ø1.8, 6.0 depth (mounting holes)

Jumper

24

CIRCUITRY AND PIN ALLOCATION

Encoder

Hall sensor

µC

Joystick

LED

RGB Ctrl.

ZIF connector	
1	Vcc
2	GND
3	UART out
4	UART in
5	NC
6	NC

Soldering pads	
1	UART out
2	Vcc
3	UART in
4	Do not connect!
5	Do not connect!
6	GND

External magnetic fields may interfere function!

DESCRIPTION

Multi Wheel can be mounted from the front or rear using 2 self-tapping screws (included), driven into the plastic body. The outer O-ring provides proper front panel sealing. Connections are made via a 6 position ZIF connector or via available solder pads.

Supply voltage is 2.7 to 5.5 VDC and stand-by current is typically 400 µA (when not actuated and illumination is off). The two-way UART communication interface incorporates Multi Wheel output and a LED control input.

When operating Multi Wheel, each encoder step or joystick actuation generates an 8 bit command over the UART output interface (see communication spec). There is no communication in idle mode.

Activating the on-board solder jumper (see drawing), directs the device after re-powering into a demo mode where LED color changes by actuation (UART output keeps working in demo mode).

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SPECIFICATIONS

MECHANICAL RATING

Indexing Resolution:	12 detents (magnetic indexing)
Switching torque:	0.5 Ncm (+/- 30%, over temperature range and life)
Directional push force:	1 N (+/- 30%, over temperature range and life)
Center push force:	3 N (+/- 30%, over temperature range and life)
Encoder life:	1 Mio revolutions (over temperature range, at 120 RPM max.)
Joystick life:	500k actuations (over temperature range, at 2 Hz max.)
Connector:	ZIF (6 positions, 0.5 mm pitch, top contacts) and soldering pads
Mounting screws:	M2 x 6 mm, self-tapping (DIN7500), with Torx head, included

ELECTRICAL RATING

Operating voltage (Vcc):	2.7 to 5.5 VDC (stabilized, 50 mV$_{PP}$ max. ripple)
Current consumption:	400 µA typ. stand-by (3 VDC, room temperature, backlit illumination off, no actuation) 300 mA max. operation (3 VDC, room temperature, backlit illumination at full brightness, white color, actuated)
UART interface:	9.6k baud, 1 byte non-inverted, even parity, 1 stop bit. UART output remains silent when not actuated. (When sending commands to UART input please maintain a 30 ms minimum interval time).

MATERIALS AND FINISHES

Front-end:	Zinc die-cast, matt chrome plated (silver version) or ED painted (black version)
Housing:	Polycarbonate, transparent, UV resistant
Sealings:	Outer seal (O-ring); ø1.5 mm, NBR70. Inner seal (gasket); EPDM closed cell foam rubber

ENVIRONMENTAL RATING
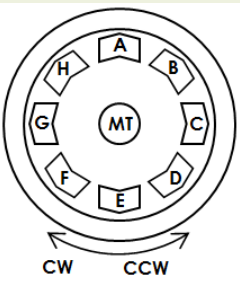
Temperature ranges:	-20 to +60°C max. operating and storage
Humidity:	90% relative humidity max., non-condensing (against front panel, MIL-STD-202G, method 103B, condition B)
IP sealing:	IP56
Dielectric strength:	1,000 VDC during 60 sec. (MIL-STD-202G, method 301)

PACKAGING

Packaging:	Single piece packed (antistatic bag)

COMMUNICATION

UART OUTPUT:

ACTION			COMMAND
Joystick	A		x1dec
	B		x2dec
	C		x3dec
	D		x4dec
	E		x5dec
	F		x6dec
	G		x7dec
	H		x8dec
	CP (center push)		x9dec
	Return to steady state		00dec
Encoder	One step CCW		1xdec
	One step CW		2xdec

A command is sent at every changing encoder or joystick situation.

UART INPUT (LED CONTROL):

FUNCTION	COMMAND	EXPLANATION
RGB Color	0dec bis 90dec	- 0 (default) to 89 (see RGB spectrum below) - 90 is white
Brightness	100dec bis 103dec	100 is off (default), 101 is lowest, 103 is highest brightness
Sign of life request	255 dec	Causes a 255dec UART output as a sign of life

RGB SPECTRUM:

0 Red	15 Yellow	30 Green	45 Turquoise	60 Blue	75 Violet

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ORDERING CODE

MW	–	_ _ _ _	–	_ _ _
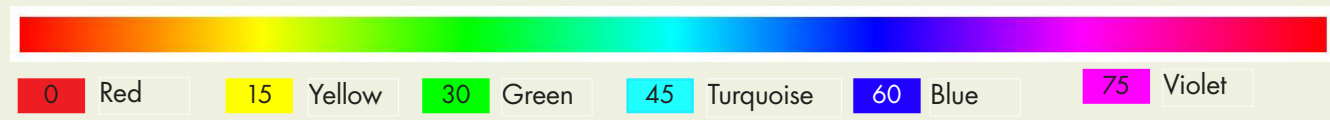
FUNCTION

1 Standard; 12 detents, 8+1 joystick

ILLUMINATION

RGB RGB

FRONT-END; SHAPE AND COLOR

SLV Standard shape, silver
BLK Standard shape, black