



EP5101 | Incremental encoder interface with differential inputs

The EP5101 EtherCAT Box is an interface for the direct connection of incremental encoders with differential inputs (RS485). A 32/16 bit counter with a quadrature decoder and a 32/16 bit latch for the zero pulse can be read, set or enabled. Incremental encoders with alarm outputs can be connected at the interface's status input. Interval measurement with a resolution of up to 100 ns is possible. The gate input allows the counter to be halted. The counter state is taken over with a rising edge at the latch input. The EP5101-1002 offers a 24 V DC sensor supply.

Due to the optional interpolating microincrement function, the EP5101 can supply even more precise axis positions for dynamic axes. In addition, it supports the synchronous reading of the encoder value together with other input data in the EtherCAT system via high-precision EtherCAT distributed clocks (DC).

The encoder is connected via an 8-pin M12 socket (EP5101-0002 and EP5101-1002) or via a 15-pin D-sub socket (EP5101-0011). In the M12 version not all signals are available.

Technical data	EP5101-0002	EP5101-0011	EP5101-1002	EP5101-2011
Connection technology	M12, 8-pin	D-sub socket, 15-pin	M12, 8-pin	D-sub socket, 15-pin
Number of channels	1			
Connection encoder/sensor	M12, screw type, 8-pin	D-sub socket, 15-pin	M12, screw type, 8-pin	D-sub socket, 15-pin
Encoder connection	A, A (inv), B, B (inv), C, C (inv), differential inputs (RS422)	A, A (inv), B, B (inv), C, C (inv), differential inputs (RS422); status input 5 V DC; gate/latch input 24 V DC	A, A (inv), B, B (inv), C, C (inv), differential inputs (RS422)	A, A (inv), B, B (inv), C, C (inv), differential inputs (RS422); status input 5 V DC; gate/latch input 24 V DC
Nominal voltage	24 V DC (-15 %/+20 %)			
Signal type	differential			
Sensor supply	+5 V DC, 150 mA (V_{CC})	+5 V DC, 150 mA (V_{CC})	24 V DC, 500 mA (V_{CC})	+5 V DC, 150 mA (V_{CC})
Counter	1 x 16/32 bit switchable			
Limit frequency	4 million increments/s (with 4-fold evaluation)	4 million increments/s (with 4-fold evaluation)	4 million increments/s (with 4-fold evaluation)	20 million increments/s (with 4-fold evaluation)
Quadrature decoder	4-fold evaluation			
Zero-pulse latch	1 x 16/32 bit switchable			
Commands	read, set, enable			
Distributed clocks	yes			
Power supply connection	feed: 1 x M8 male socket, 4-pin; downstream connection: 1 x M8 female socket, 4-pin			
Current consumption from Us	typ. 130 mA + sensor supply			
Bit width in the process image	1 x 32 bit input, 1 x 16 bit output, 8 bit control, 8 bit status			
Electrical isolation	500 V			
Weight	approx. 165 g			
Operating/storage temperature	0...+55 °C/-25...+85 °C			
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27			
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4			
Protect. class/installation pos.	IP 65/66/67 (conforms to EN 60529)/variable			
Approvals	CE, UL, Ex	CE, UL	CE, UL	CE, UL

Accessories	
ZK1090-3xxx-xxxx	Cables for EtherCAT signal in- and -output
ZK2020-3xxx-xxxx	Cables for M8 power supply