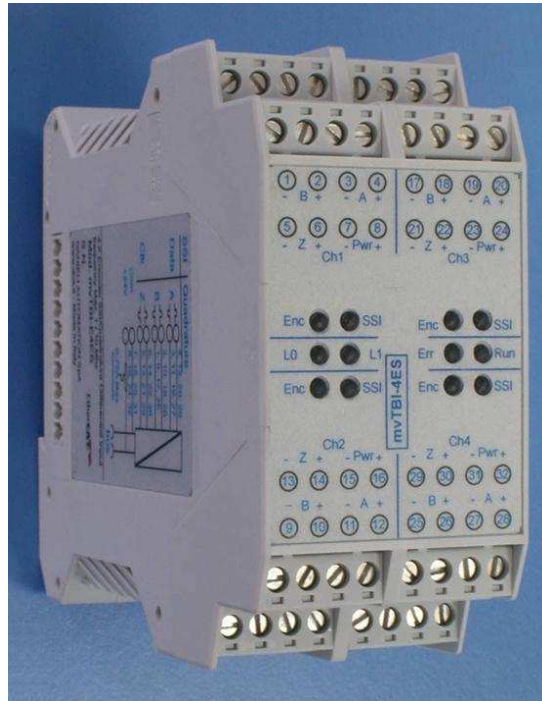# mvTBI-E4ES   EtherCAT Encoder / SSI Terminal

Features

• Fully compatible with EtherCAT protocol
• 4 Independent input channels
• Available inputs mode: SSI or Quadrature Incremental Encoder or Two Pulse Encoder
• Quadrature encoder inputs: TTL and Differential
• Each channel can be individually configured
• 32 bit counter for quadrature encoder
• Limit frequency for quadrature encoder: 10MHz
• Available parameters for Quadrature Encoder: Position, Frequency/Period, Time, Rate
• SSI frequency: up to 1 Mbit/sec
• SSI coding available: Binary, BCD, Gray
• Available parameters for SSI Encoder: Position, Time
• Software configurable (through Mailbox)

Applications

• Motors
• High Speed Control
• SSI Communications

Overview

The **mvTBI-E4ES** is a powerful 4 channels incremental encoder / SSI / Two Pulse Encoder EtherCAT terminal.

For both Differential encoder and Two-Pulse encoder, **mvTBI-E4ES** provides differential inputs (RS422) with a 32 bit counter quadrature decoder with a maximum frequency of 10 MHz. Every counter step is taken over both rising and falling edge of the input signals.

It is possible to measure one or more of these parameters: Position, Frequency/Period, Time and Rate.

For frequency/period measuring, is possible to have an external or internal base timing.

For SSI encoder, **mvTBI-E4ES** terminal provide differential inputs (RS422) with maximum acquiring speed of 1Mbit/sec. Is it possible to get Position only or Position and Time.

Each of the channels of the **mvTBI-E4ES** is individually configurable via software in any of the supported modes.

Hardware Specifications

Incremental Encoder Characteristics

Incremental Connections	A+ A-, B+ B-, Z+ Z-
Signal In/Out	Differential signal (RS422)
Sensor Input	5V - 24V
Sensor Out Supply	24V, 0.75A
Limit frequency	10Mhz (4-fold)
Quadrature Decoder	4-Fold
Counter A, B, Z	32 Bit Binary
Command	Bits width in Process Image

SSI Encoder Characteristics

SSI Connection	Input: D+ D-
	Output: Cl+ Cl-
Signal In/Out	Differential signal (RS422)
Sensor Input	5V - 24V
Sensor Out Supply	24V, 0.75A
Limit frequency	62.5kbit/sec - 1Mbit/sec
Serial Input	Adjustable 8 to 25 Bit
Serial Input Code	Binary, Gray, BCD
Command	Bits width in Process Image

Isolation   1000 V

Power Requirements

E-Bus	5V, 280 mA typ. with all inputs activated
Field	24V, 30mA + Current sunk by each encoder

Dimensions

Height	99 mm
Width	45 mm
Depth	114,5 mm

Mounting
On 35mm mounting rail conform to EN 50022

Environmental Specifications

Temperature

Operating	0° to 65° C (32° to 149° F)
Non operating	-40° to 85° C (-40° to 185° F)

Humidity   20 to 95% RH, non-condensing

Altitude

Operating	Sea level to 10,000 ft. (3048m)
Non operating	Sea level to 40,000 ft. (12192m)

Vibration

Operating	5 to 2,000 Hz .015" (.38 mm) peak-to-peak displacement 2.5g (maximum) acceleration,
Nonoperating	5 to 2,000 Hz .030" (.76 mm) peak-to-peak displacement 5.0 g (maximum) acceleration,

Shock

Operating	30 g peak acceleration 11 msec duration
Nonoperating	50 g peak acceleration 11 msec duration

EtherCAT Compliance
− IEC 61158-2-12
− IEC 61158-3-12
− IEC 61158-4-12
− IEC 61158-5-12
− IEC 61158-6-12
− EtherCAT Slave Device Description Documentation

Warranty

The **mvTBI-E4ES** carries a one-year warranty.

Ordering Information

mvTBI-E4ES   4-Channel Input Module:
- Differential Quadrature Encoder / - SSI Encoder /
- Two-Pulse Encoder