



MEM-Bus EtherCAT Encoder

Absolute Multiturn Encoder: EtherCAT Interface for steady, flexible, and fast communication

ALTHEN
SENSORS & CONTROLS

MEM-Bus EtherCAT Encoder

Features

- Real Time communication
- Flexible number of nodes
- Easy installation and maintainance
- Flexible net topologies
- Automatic slaves addressing
- Flexible work ranges programming

Introduction

Based on the industrial Ethernet communication protocol, the EtherCAT® interface is steady, flexible and fast, therefore particularly suitable for communication between control systems and peripheral devices, such as I/O systems, drives, sensors and actuators.

MEM-BUS EtherCAT® encoder profile

- Ref IEC61158-1-6 & IEC61784-2
- Device Profile **CANOpen over EtherCAT® (CoE)**, CiA DS-406
- Physical Layer: EtherCAT 100Base-TX, Fast Ethernet, ISO/IEC 8802-3
- Output code: Binary Cycle time ≥ 1 ms
- Transmission rate 100 Mbit/s
- Transmission: CAT-5 cable, shielded (STP), ISO/IEC 11801

Settable parameters

- Counting direction
- Measuring steps per revolution
- Total measuring length in steps
- Preset value
- Speed resolution

State indicators

4 signalling LEDs for:

- L/A in
- L/A out
- Error
- Run

Communication Modes

MEM-BUS EtherCAT® supports different operating modes:

Free-Run

The slave application is not synchronized to EtherCAT. The local cycle is started by the local timer interrupt of the application controller. The cycle time can be modified by the Master, but this is a local cycle and it does not depend on communication and on Master cycle.

SM3 Event

The slave application is synchronized to the SM3 Event (that is the cyclic inputs transmission to the Master). SM events are based on the time an EtherCAT frame is received. This time ca jitter in the range of a few microseconds due to the EtherCAT Master implementation (delay in stack, PHY & MAC delay, etc.).

SYNC DC

The slave application is synchronized to the SYNC0 event, which is base on the Distributed Clocks Unit (DC). The jitter can be reduced to a few nanoseconds. The DC mode grants **high real-time performances**



MEM520-Bus



MEM540-Bus



MEM620-Bus



MEM-Bus EtherCAT Encoder

Absolute Multiturn Encoder: EtherCAT Interface for steady, flexible, and fast communication

Mechanical versions

MEM620-Bus	MEM520-Bus	MEM540-Bus	MEM440-Bus	MEM450-Bus
Ø 58 mm body 63,5x63,5 mm square flange Ø 31,75 mm centering mask Shaft Ø 6, 8 or 10 mm	Ø 58 mm body Ø 58 mm round flange Ø 50 mm centering mask Servo coupling Shaft Ø 6, 8 or 10 mm	Ø 58 mm body Ø 58 mm round flange Ø 36 mm centering mask- 3 holes M4 a 120° on Ø 48 mm Shaft Ø 6, 8 or 10 mm	Ø 58 mm body Blind hollow shaft for motor fixing Hollow shaft Ø 8, 10, 12, 14 or 15 mm Antirotational fixing	Ø 58 mm body Blind hollow shaft for motor fixing Hollow shaft Ø 8, 10, 12, 14 or 15 mm Fixing by elastic metal support
SIZE 25	SYNCHRO FLANGE	CLAMPING FLANGE		

Mechanical & environmental specifications

MEM-Bus	620/520/540	440/450
Materials: housing shaft	Aluminium Stainless steel	
Weight	500 g ca.	
Shaft Ø / Hollow shaft Ø	6, 8, 10 mm	8, 10, 12, 14, 15 mm
Revolutions/minute	6000	
Starting torque	≤ 0.8 Ncm	
Intertia	≤ 25 g cm ²	
Max load	80 N axial/100 N radial	
Vibrations resistance (10÷2000 Hz)	100 m/sec ²	
Shock (11 ms)	50 G	
Protection degree	IP67 – IP65 shaft side	
Operating temperature	-30 ÷ 70°C	
Stocking temperature	-30 ÷ 85°C	

Electrical & operating specifications

Operating principle	Magnetic
Resolution/revolution	8192 steps/rev – 13 bit
Revolutions no. (multiturn)	65536 - 16 bit
Initializing time	< 1 s
Data memory	> 20 years No motion – power off
Interface	EtherCAT®
Supply	10 ÷ 30 Vdc Protection against polarity reversal
Power consumption	2 W
Accuracy	± ½ LSB
Connection	2 M12 female connectors +1 M12 male connector
Interference immunity	EN 61000-6-2
Emitted interference	EN61000-6-4

Connections



Connectors IN and OUT
M12 female type, D-code

Pin	Signal
1	TX+
2	RX+
3	TX-
4	RX-

Supply connector
M12 male type, A-code

Pin	Signal
1	Supply voltage(10-30 Vdc)
2	N.C.
3	GND (0V)
4	N.C.

Connectors and LEDs position

MEM-Bus EtherCAT Encoder

Absolute Multiturn Encoder: EtherCAT Interface for steady, flexible, and fast communication

Ordering information

MEM520B	ECT	M	10	A
TYPE MEM520-B = Round flange Ø 58 mm MEM540-B = Round flange Ø 58 mm MEM620-B = Square flange 63.5x63.5 mm MEM440-B = Blind hollow shaft for motor coupling MEM450-B = Blind hollow shaft, fixing by elastic support	INTERFACE ECT = EtherCAT®	No. of TURNS M = Multiturn	SHAFT Ø / HOLLOW SHAFT Ø 6 – 8 – 10 – 12 – 14 – 15 mm	CONNECTORS POSITION .= Radial outlet A = Axial outlet

EtherCAT®
Conformance tested

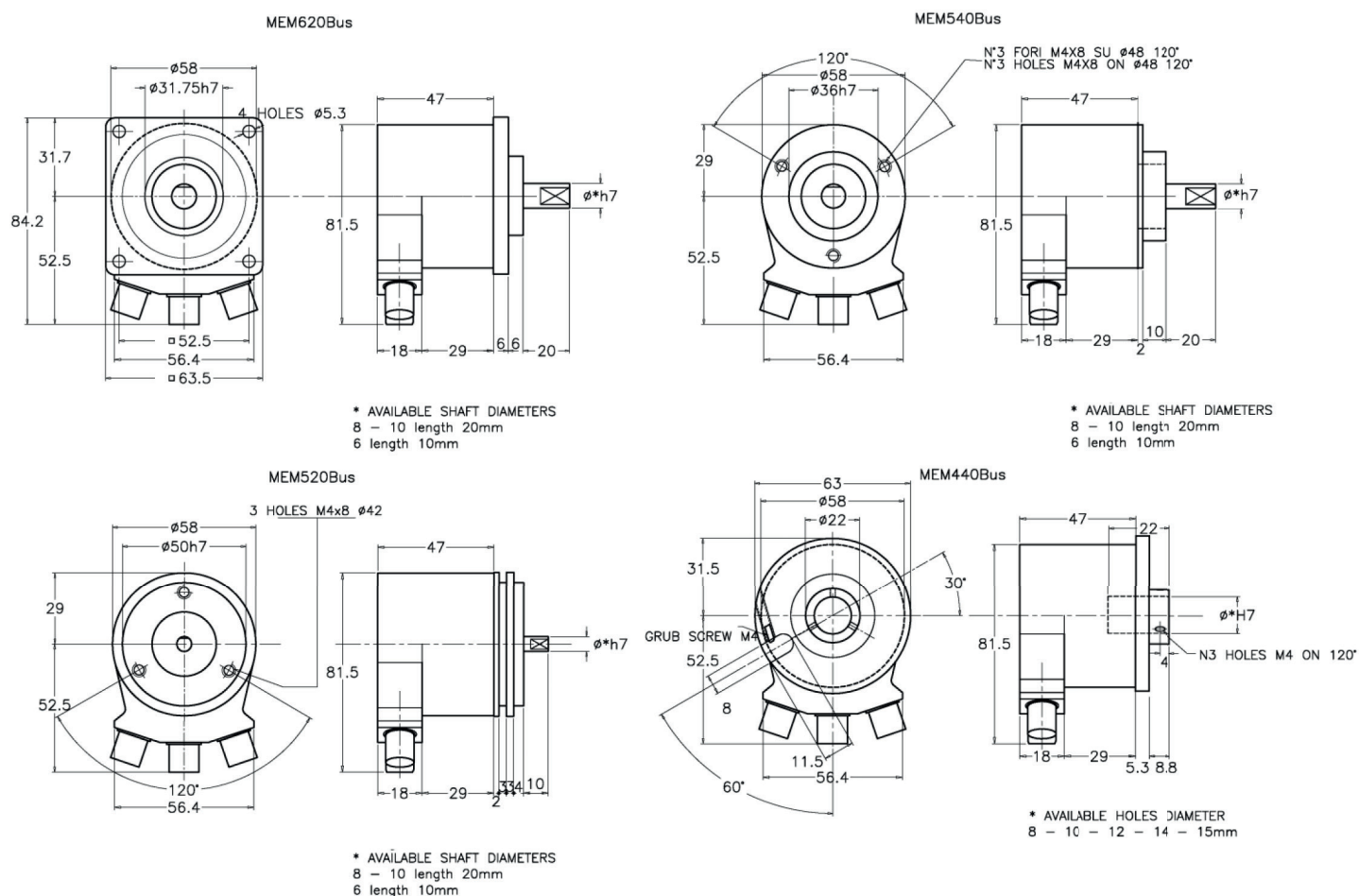


CERTIFICATE NO.E510647
UL listed versions available

Dimensions

MEM-BUS EtherCAT – Radial Connectors

Ref. M1551B

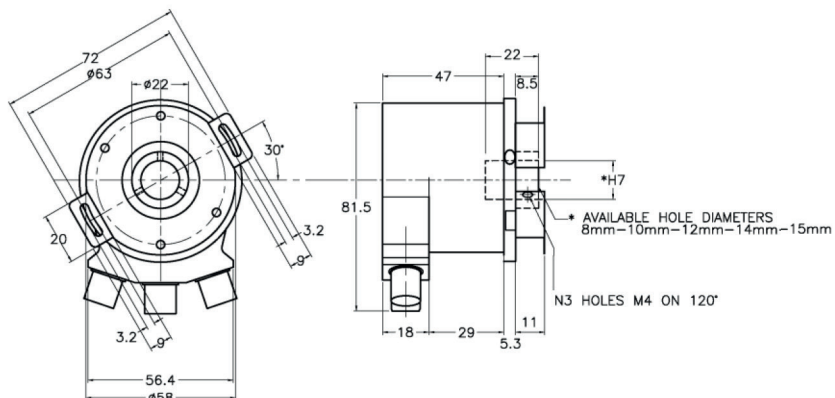


MEM-Bus EtherCAT Encoder

Absolute Multiturn Encoder: EtherCAT Interface for steady, flexible, and fast communication

Ordering information

Ref. M1553

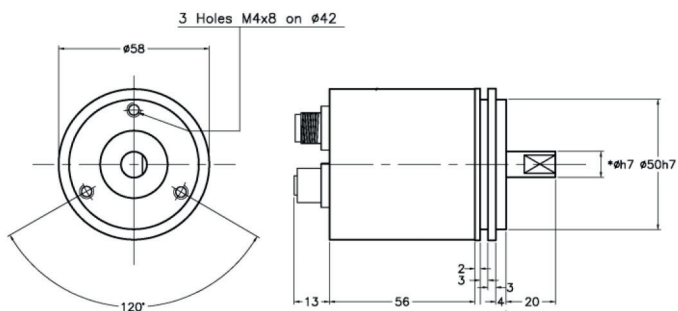


axial connectors

MEM440-Bus

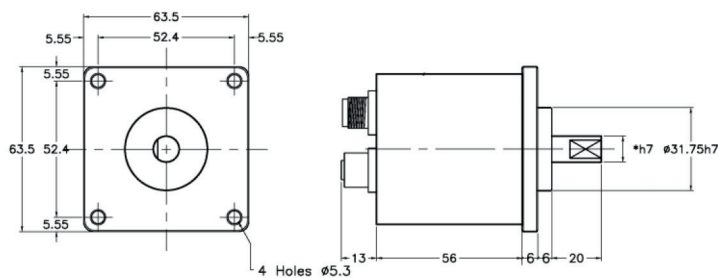
MEM-BUS EtherCAT – Axial Connectors

MEM520B PNT/ETC M12 axial



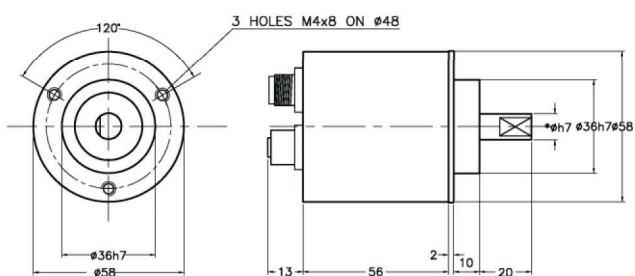
* AVAILABLE SHAFT DIAMETERS
8mm–10mm
shaft diameter 6mm length 10mm

MEM620B PNT/ETC M12 axial



* AVAILABLE SHAFT DIAMETERS
8mm–10mm
shaft diameter 6mm length 10mm

MEM540B PNT/ETC M12 axial



* AVAILABLE SHAFT DIAMETERS
8mm–10mm
shaft diameter 6mm length 10mm

Ref. M2103

MEM450-Bus

MEM-Bus EtherCAT Encoder

Absolute Multiturn Encoder: EtherCAT Interface for steady, flexible, and fast communication

Ordering information

Ref. M2108

