ABSOLUTE ENCODERS
WITH EtherCAT® INTERFACE

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® encoders offer:

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

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EtherCAT® Conformance tested

MEM-BUS EtherCAT® ENCODER PROFILE	SETTABLE PARAMETERS	STATE INDICATORS
• **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	• Counting direction • Measuring steps per revolution • Total measuring length in steps • Preset value • Speed resolution	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**

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 *SIZE25*	Ø 58 mm body Ø 58 mm round flange Ø 50 mm centeing mask Servo coupling Shaft Ø 6, 8 or 10 mm *Synchro Flange*	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 *Clamping flange*	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

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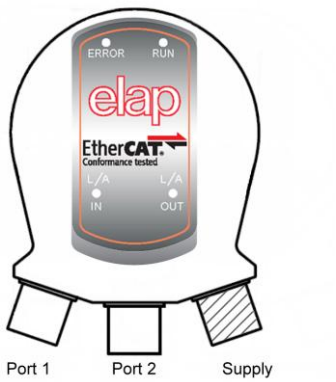
MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

MEM-Bus	620/520/540	440/450
• Materials: case shaft	Aluminium Stainless steel	
• Weight	500 g ca.	
• Shaft/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/revoltution	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

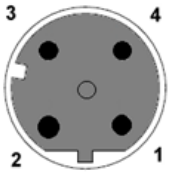
CONNECTIONS



Connectors and LEDs position

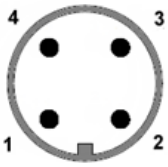
Connectors IN and OUT
M12 female type, D code

Pin	Signal
1	Tx +
2	Rx +
3	Tx -
4	Rx -



SUPPLY CONNECTOR
M12 male type, A code

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



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/HOLLOW SHAFT Ø
6 – 8 – 10- 12 – 14 – 15 mm

CONNECTORS POSITION
- = Radial outlet
A = Axial outlet

EtherCAT® Conformance tested

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CERTIFICATE NO.E510647
UL listed versions available

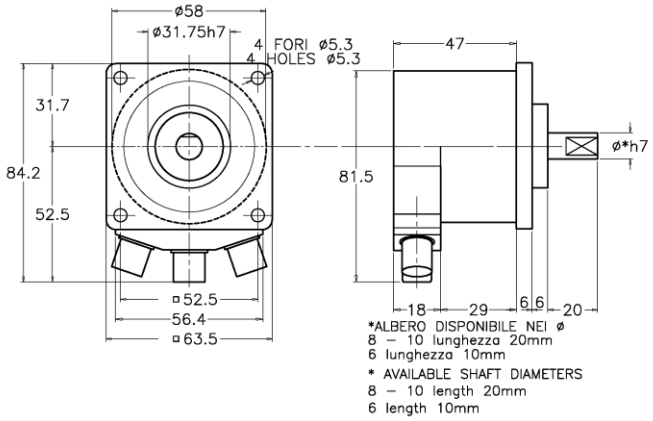
Elap reserves the right to upgrade the product without notice

DIMENSIONS

MEM-BUS EtherCAT – Radial Connectos

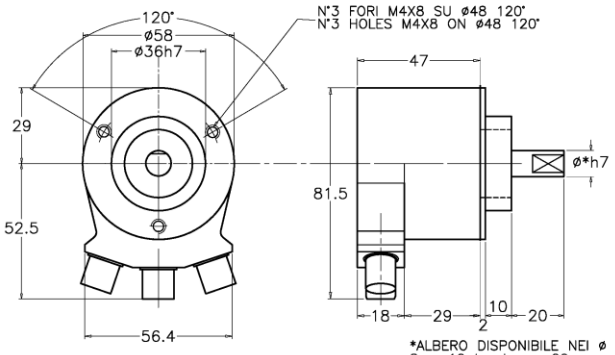
Ref.M1551B

MEM620Bus



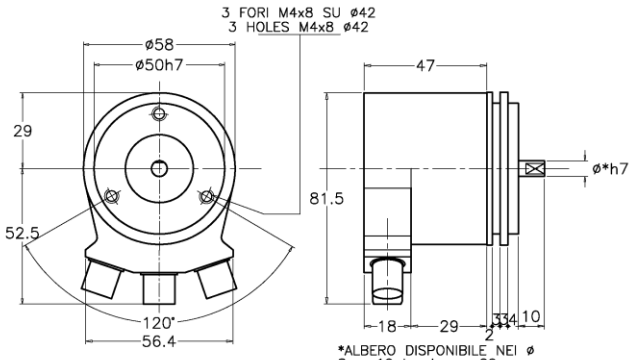
*ALBERO DISPONIBILE NEI ø
8 – 10 lunghezza 20mm
6 lunghezza 10mm
* AVAILABLE SHAFT DIAMETERS
8 – 10 length 20mm
6 length 10mm

MEM540Bus



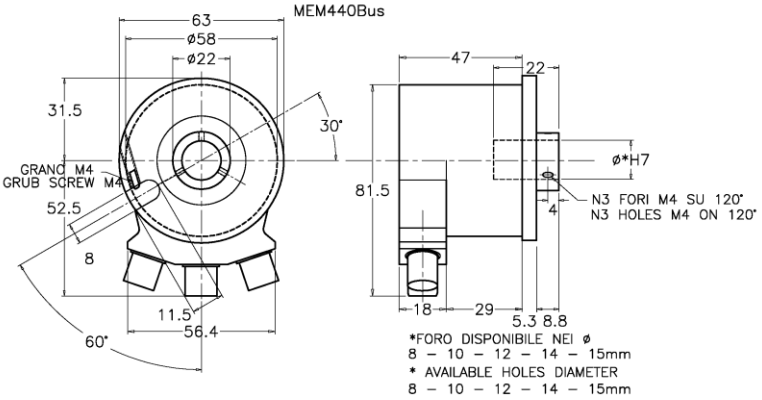
*ALBERO DISPONIBILE NEI ø
8 – 10 lunghezza 20mm
6 lunghezza 10mm
* AVAILABLE SHAFT DIAMETERS
8 – 10 length 20mm
6 length 10mm

MEM520Bus

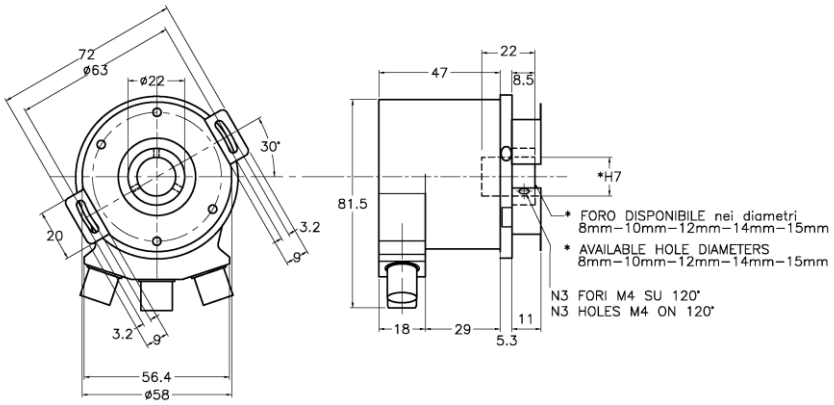


*ALBERO DISPONIBILE NEI ø
8 – 10 lunghezza 20mm
6 lunghezza 10mm
* AVAILABLE SHAFT DIAMETERS
8 – 10 length 20mm
6 length 10mm

MEM440Bus



*FORO DISPONIBILE NEI ø
8 – 10 – 12 – 14 – 15mm
* AVAILABLE HOLES DIAMETER
8 – 10 – 12 – 14 – 15mm



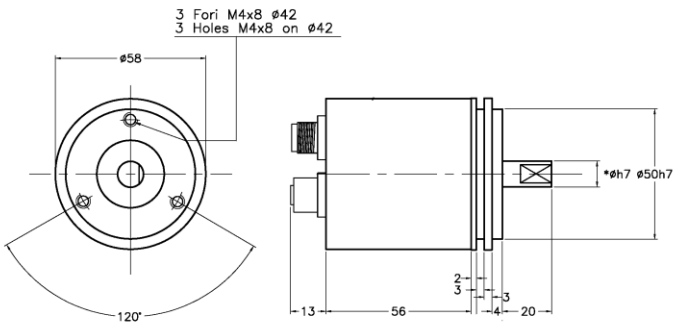
* FORO DISPONIBILE nei diametri
8mm–10mm–12mm–14mm–15mm
* AVAILABLE HOLE DIAMETERS
8mm–10mm–12mm–14mm–15mm
N3 FORI M4 SU 120°
N3 HOLES M4 ON 120°

Ref.M1553

DIMENSIONS

MEM-BUS EtherCAT – Axial Connectors

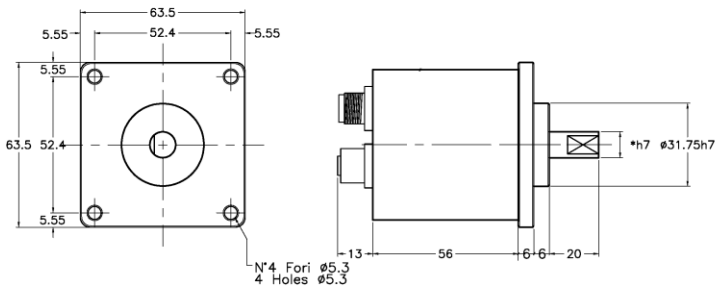
MEM520B PNT/ETC M12 assiale



* ALBERO DISPONIBILE
Nei diametri 8mm–10mm
diametro 6mm lunghezza 10mm

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

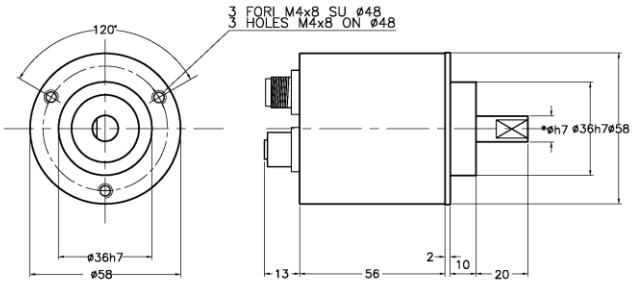
MEM620B PNT/ETC M12 assiale



* ALBERO DISPONIBILE
Nei diametri 8mm–10mm
diametro 6mm lunghezza 10mm

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

MEM540B PNT/ETC M12 assiale

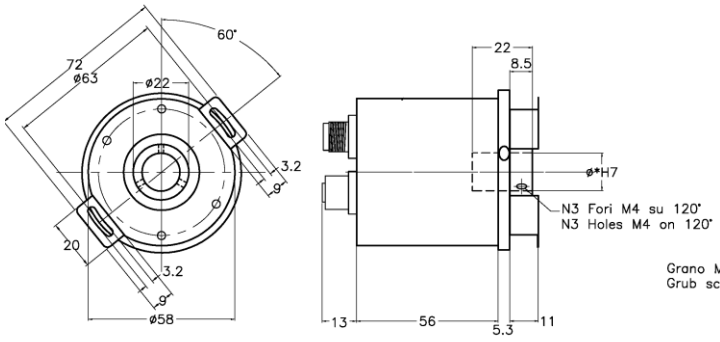


* ALBERO DISPONIBILE
Nei diametri 8mm–10mm
diametro 6mm lunghezza 10mm

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

Ref.M2103

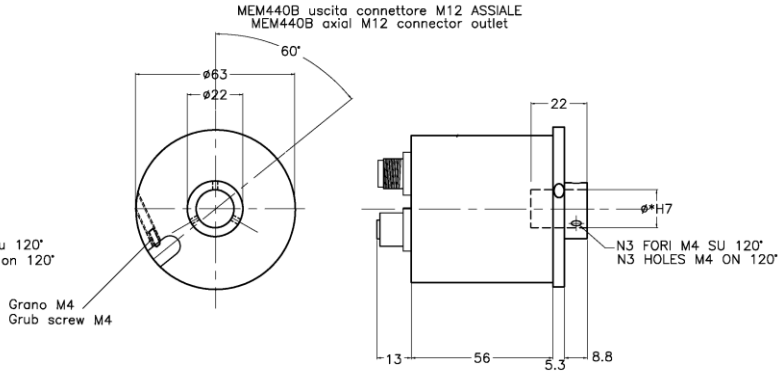
MEM450B uscita connettore M12 ASSIALE
MEM450B axial M12 connector outlet



* FORO DISPONIBILE nei diametri
8mm–10mm–12mm–14mm–15mm

* AVAILABLE HOLE DIAMETERS
8mm–10mm–12mm–14mm–15mm

MEM440B uscita connettore M12 ASSIALE
MEM440B axial M12 connector outlet



* FORO DISPONIBILE nei diametri
8mm–10mm–12mm–14mm–15mm

* AVAILABLE HOLE DIAMETERS
8mm–10mm–12mm–14mm–15mm

Ref.M2108

REFERENCES

MANUALS, SOFTWARE and DIMENSIONAL DRAWINGS can be downloaded at:

https://www.elap.it/absolute-encoders/encoder-mem-bus-ethercat/

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