

MA4501 - SERIES



HEAVY DUTY ENCODER WITH OVERSPEED Ø 115 MM

Encoder with EURO-flange B10 in stainless steel AISI 316

- Combination of incremental encoder + overspeed switch
- Offshore and salt water firm
- Ø 115 mm, anodized aluminium or stainless steel AISI 316
- Ø 11 mm shaft with key, stainless steel 1.4057
- Fixed switching speed based on a centrifugal principle
- Switch with insulated make and break contact
- Enlarged sturdy bearings
- Short circuit and reversed polarity proof
- Dust and splash proof IP67
- Breathable membrane (double on terminal box)
- Double shaft seal with protective lip



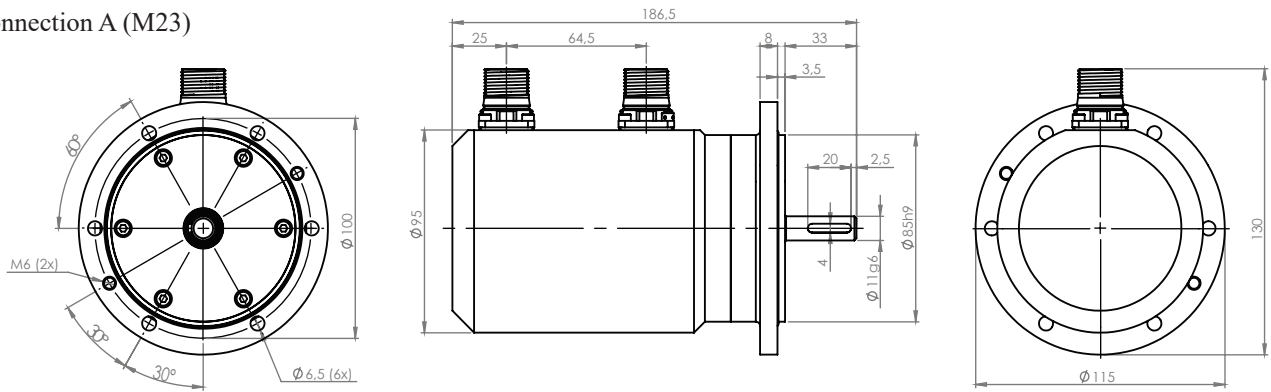
*Flexible and durable
encoder for demanding
applications*

UL File E342441

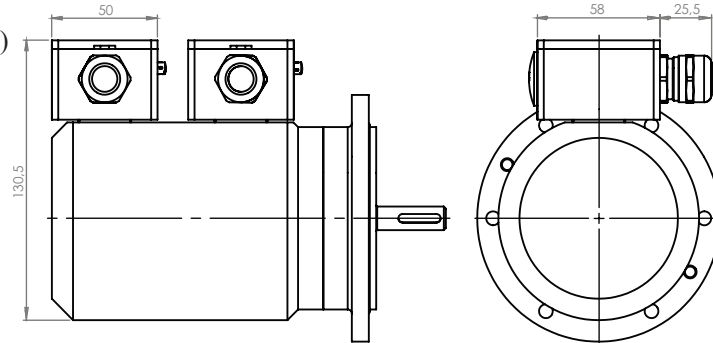


Conforms to european EMC directive
89/336/EEC standards:
EN61000-6-4 emission in industrial environments
EN61000-6-2 immunity in industrial environments

Connection A (M23)



Connection C (Terminal)



MECHANICAL SPECIFICATION

Housing	Stainless Steel AISI 316 or Anodized Aluminium
Shaft	Stainless Steel 1.4057
Sealing	IP67 dust and splash proof
Bearings	Permanently greased
Bearing load at	1 000 rpm
Radial	<350 N
Axial	<250 N
Max rpm	12000
Weight	5,5 kg (AISI316), 2,2 kg (Aluminium)

SIGNAL ACCURACY

Dividing error max	$\pm 50 \text{ el}^\circ$
Channel separation	$90 \pm 20 \text{ el}^\circ$
Max frequency	300 kHz

CONNECTION

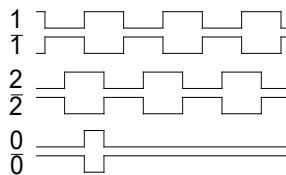
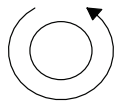
A	M23 Male Connector, CCW, Radial 12-pin
C	Terminal box for $\phi 6 \text{ mm}$ - $\phi 12 \text{ mm}$ cable

FUNCTION

Signal	A (M23)	C (Terminal)
1	5	4
2	8	6
0	3	8
1 inverted	6	5
2 inverted	1	7
0 inverted	4	9
+EV	12	1
0V	10	2
+EV sense	2	-
0V sense	11	-
Gnd	Chassis	Chassis

OUTPUT SIGNALS, STANDARD

CCW rotation viewed from shaft end



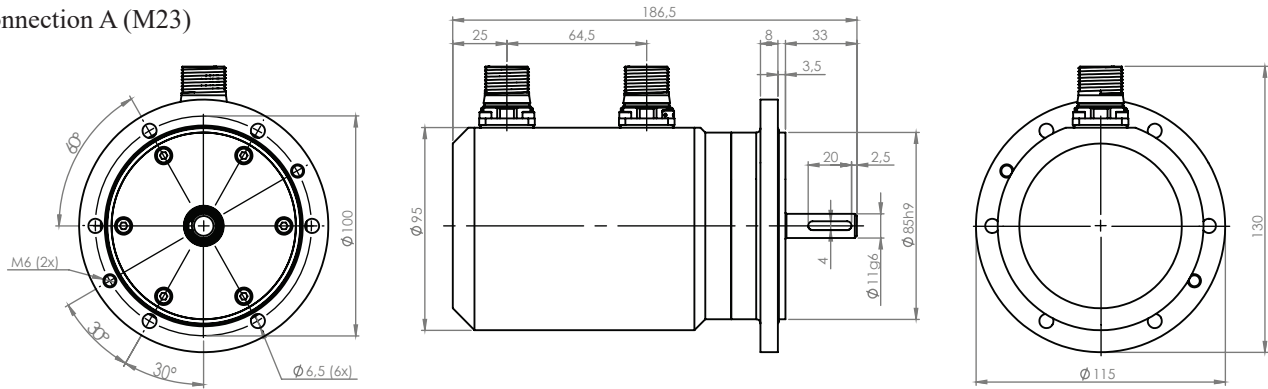
ELECTRICAL SPECIFICATIONS, INCREMENTAL ENCODER

Electronic option	T (TTL)	H (HTL)
Supply voltage	5 Vdc	5–30 Vdc (SELV)
Current consumption	Max 40 mA without load	
Output circuit	Linedriver RS422A compatible	
Low level output volt.	Max <0,5 V at 20 mA load and 20°C	
High level output volt.	Min >Vcc-1V at 20mA load and 20°C	
Short circuit protected	Yes	
Polarity protected	Yes	
Transient protected	Yes	
Max load	70 mA	

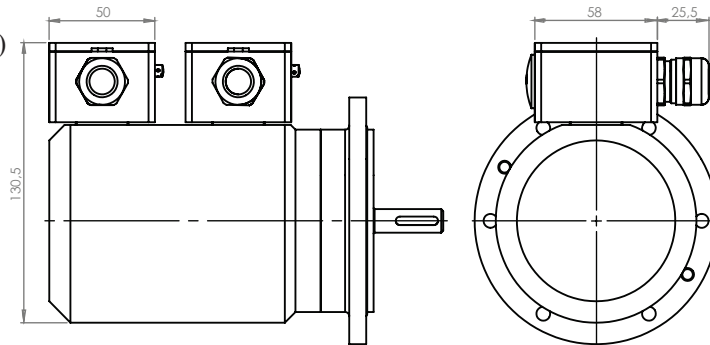
MATING CONNECTOR

12-pin M23 Female Connector, CW

Connection A (M23)



Connection C (Terminal)



ELECTRICAL SPECIFICATIONS OVERSPEED UNIT

Switching speed (n)	800 ... 4000 rpm (pre-defined value)
Overspeed principle	Mechanical centrifugal type
Switching accuracy	$n \pm 75$ rpm (standard)
Switching hysteresis	Approx. 40 - 65 % of switching speed
Switching deviation	< 3 % (cw - ccw rotation)
Mechanical lifetime	500.000 cycles
Max. rpm	5000 rpm
Contact type	Open / Close
Output switching capacity	22 A / 230 Vac (short time)

CONNECTION TYPE

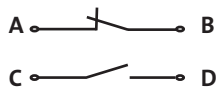
A	M23 Male, CW, 6 pin
C	Terminal box for $\phi 6\text{mm}-\phi 12\text{mm}$ cable

FUNCTION

Signal	A (M23)	C (Terminal box)
A	1	1
B	2	2
C	3	4
D	4	5
Gnd	Chassis	Chassis

OVERSPEED OUTPUT DESCRIPTION

When $\text{rpm} < n_{\text{limit}}$



When $\text{rpm} > n_{\text{limit}}$



TYPE DEFINITIONS AND ORDERING KEY

TYPE DEFINITION INCREMENTAL ENCODER

Electronics	T H	TTL HTL
Resolution	1 .. 2500	

TYPE DEFINITION OVERSPEED UNIT

Interface	R	Overspeed
Limit value	nnnn	rpm

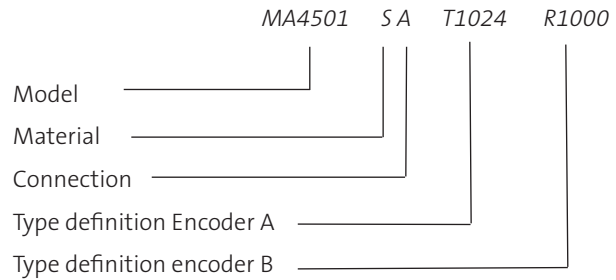
ORDERING KEY

Model - Material - Connection - Encoder - Overspeed

Model	MA450	
Material	A	Aluminium enclosure
	S	Stainless steel enclosure
Connection	A	M23 Connector
	C	Terminal box (ø6mm-ø12mm cable)
Encoder	xxxxx	Type definition
Overspeed	nnnn	Type definition

SAMPLE ORDERING KEY

MA450-SA-T1024-R1000 (1 x incremental, 1000 rpm)*
 MA450-SC-H2048-R2500 (1 x incremental, 2500 rpm)



DEPICTION OF LABELING AND ENCODER PLACEMENT

First encoder in ordering key (ENCODER -A) always placed nearest the shaft. Labeling showing type and supply voltage. As depicted below from sample ordering key.*

