OTHER PRODUCTS

SPECIAL PRODUCTS FOR DIFFERENT APPLICATION'S NEEDS.

Complementing the extensive range of incremental, absolute and linear transducers, Eltra also offers specific products and adaptation boards to match precise factory automation application needs.

EC 34
INCREMENTAL ENCODER FOR RACK

MAIN FEATURES

Encoder for rack with automatic slack recovery. If compared to an incremental linear system, this type of encoder extremely simplifies linear measurements and overcomes measurement problems on long distance.
Encoder is sealed in a solid aluminium body and integrate a preloading system that allows automatic slack recovery between rack and pinion.

- 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Up to 220 kHz output frequency
- Cable or connector output

ORDERING CODE

EC	34A	500	S	5/28	P	10	M	.162	+XXX

SERIES
encoder for rack EC

MODEL
flange 34A

RESOLUTION
ppr 100 ... 2500
refer to the available pulses list

ZERO PULSE
without zero pulse S
with zero pulse Z

POWER SUPPLY
(with L electrical interface) 5 V DC 5
5 ... 28 V DC 5/28

ELECTRICAL INTERFACE
NPN open collector C
push-pull P
line driver L
power supply 5/28V - output RS-422 RS

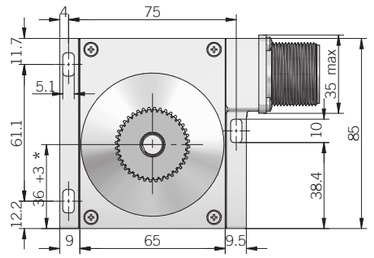
SHAFT DIAMETER
mm 10

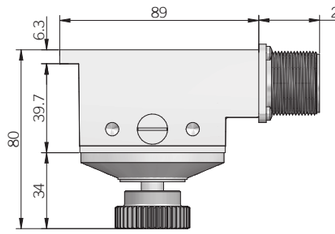
OUTPUT TYPE
cable (standard length 1,5 m) P
preferred cable lengths 2 / 3 / 5 / 10 m, to be added after output type
MIL male connector M
JIS-C-5432 male connector J

MATING CONNECTOR
mating connector not included .162
to be reported only with connector output (eg. M.162), for mating connector see Accessories

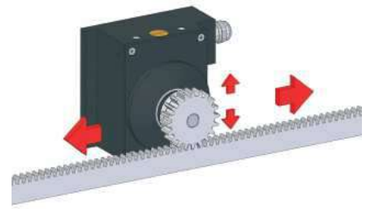
VARIANT
custom version XXX

34A





* can be adjusted to 37.5 ± 1.5 mm



for rack and cogged wheel please refer to Accessories

dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 100 to 2500 ppr
Power supply[1]	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface[2]	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	220 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

[1] as measured at the transducer without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] maximum load for static usage
[4] measured on the transducer flange
[5] condensation not allowed

RESOLUTIONS

100 - **200** - 300 - 360 - 400 - **500** - 512 - 600 - 720 - **1000** - 1024 - 1200 - 1440 - **2000** - 2048 - 2500

please directly contact our offices for other pulses, preferred resolutions in bold

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 10 mm
Enclosure rating	IP 64 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load[3]	200 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Starting torque (at +20°C / +68°F)	< 0,06 Nm (8,50 Ozin)
Housing material	painted aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Bearings	n.2 ball bearings
Bearings life	10^9 revolutions
Operating temperature [4, 5]	-20° ... +70°C (-4° ... +158°F)
Storage temperature[5]	-25° ... +70°C (-4° ... +158°F)
Weight	700 g (24,69 oz)

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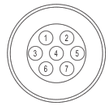
CONNECTIONS

Function	Cable C / P	Cable L / RS	7 pin J C / P	7 pin J L / RS no Zero	7 pin M C / P	7 pin M L / RS no Zero	10 pin J L / RS with Zero	10 pin M L / RS with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
A+	green	green	3	1	C	A	1	A
A-	/	brown or grey	/	3	/	C	7	G
B+	yellow	yellow	5	2	E	B	2	B
B-	/	orange	/	5	/	E	8	H
Z+	blue	blue	4	/	D	/	3	C
Z-	/	white	/	/	/	/	9	I
⏚	shield	shield	7	7	G	G	10	J

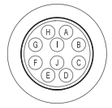
J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV



M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV

J connector (10 pin)
JIS-C-5432 Size 16
solder side view FV

M connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



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RH 200 A / B / C
MEASURING WHEELS

MAIN FEATURES

Measuring wheel series designed for specific industrial applications where is required to measure a linear movement (i.e. continuous sheet cutting machines of wood, textiles, glass, etc.).
The body is entirely designed of aluminium and mounted using an oscillating arm pivoted on the shaft. The weight of the metric wheel keeps a stable contact with the material, allowing an accurate measurement of both length and speed. Wheel surface can be in crossed-knurl aluminium, special anti-oil or anti-sliding rubber.

- 3 channel encoder (A / B / Z) up to 1024 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Up to 105 kHz output frequency
- Compact size
- Cable output

ORDERING CODE

RH200 A 500 S 5/28 P 8 X 3 PR .XXX

MODEL
200 mm measuring wheel RH200

WHEEL SURFACE
smooth A
knurled B
rubberized C
without wheel /

RESOLUTION
ppr from 50 to 1024
refer to the available pulses list

ZERO PULSE
without zero pulse S
with zero pulse Z

POWER SUPPLY
(with L electrical interface) 5 V DC 5
5 ... 28 V DC 5/28

ELECTRICAL INTERFACE
NPN open collector C
push-pull P
line driver L
power supply 5/28V - output RS-422 RS

SHAFT DIAMETER
mm 8

ENCLOSURE RATING
IP 54 X

MAX ROTATION SPEED
3000 rpm 3

OUTPUT TYPE
cable (standard length 0,5 m) PR
preferred cable lengths 1,5 / 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)

VARIANT
custom version XXX

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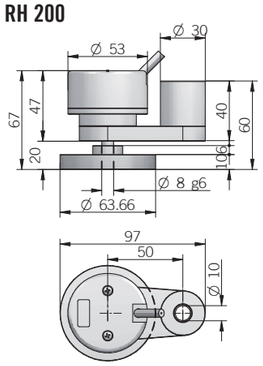
RH 200



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 50 to 1024 ppr
Power supply[1]	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface[2]	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	105 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

[1] as measured at the transducer without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] measured on the transducer flange
[4] condensation not allowed

CONNECTIONS

Function	Cable C / P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
⏚	shield	shield

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 8 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Housing material	PA66 glass fiber reinforced
Shaft material	1.4305 / AISI 303 stainless steel
Support material	EN-AW 2011 aluminum
Wheel material	EN-AW 2011 aluminum
Surface material	Smooth / Knurled = EN-AW 2011 aluminium Rubberized = Nitrile NBR 80 ± 5 Shore A
Bearings	n.2 ball bearings
Bearings life	10^9 revolutions
Operating temperature[3, 4]	-10° ... +70°C (+14° ... +158°F)
Storage temperature[4]	-25° ... +70°C (-13° ... +158°F)
Encoder + support weight	250 g (8,82 oz)
Wheel weight	90 g (3,17 oz)

RESOLUTIONS

50* - **100** - **200** - 250 - 400 - **500** - 512 - **1000** - **1024**

*available without zero pulse
please directly contact our offices for other pulses, preferred resolutions in bold

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RL - RM 500 A / B / C
MEASURING WHEELS

MAIN FEATURES

Measuring wheel series designed for specific industrial applications where is required to measure a linear movement (i.e. continuous sheet cutting machines of wood, textiles, glass, etc.).
The body is entirely designed of aluminium and mounted using an oscillating arm pivoted on the shaft. The weight of the metric wheel keeps a stable contact with the material, allowing an accurate measurement of both length and speed. Wheel surface can be in crossed-knurl aluminium, special anti-oil or anti-sliding rubber.

- 3 channel encoder (A / B / Z) up to 10000 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 500 kHz output frequency
- Model RM with internal coupling
- Cable or connector output

ORDERING CODE

RL500 A 500 S 5/28 P 10 X 3 M R .162 +XXX

MODEL
500 mm measuring wheel - RL series RL500
500 mm measuring wheel - RM series RM500

WHEEL SURFACE
smooth A
knurled B
rubberized C
without wheel /

RESOLUTION
(mod. RL) ppr from 10 to 2500
(mod. RM) ppr from 1 to 10000
refer to the available pulses list

ZERO PULSE
without zero pulse S
with zero pulse Z

POWER SUPPLY
(with L electrical interface) 5 V DC 5
5 ... 28 V DC 5/28

ELECTRICAL INTERFACE
NPN open collector C
push-pull P
line driver L
power supply 5/28V - output RS-422 RS

SHAFT DIAMETER
mm 10

ENCLOSURE RATING
IP 64 X
IP 66 S

MAX ROTATION SPEED
3000 rpm 3

OUTPUT TYPE
cable (standard length 1,5 m) P
preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)
MIL male connector M
JIS-C-5432 male connector J
M12 male connector M12
M23 male connector H
IP40 M16 male connector C

DIRECTION TYPE
axial A
radial R

MATING CONNECTOR
mating connector not included .162
to be reported only with connector output (eg. M12R.162), for mating connector see Accessories

VARIANT
custom version XXX

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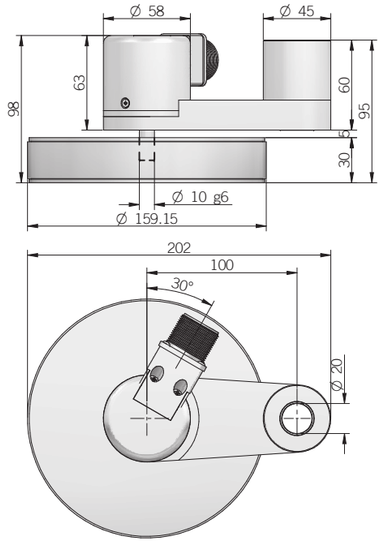
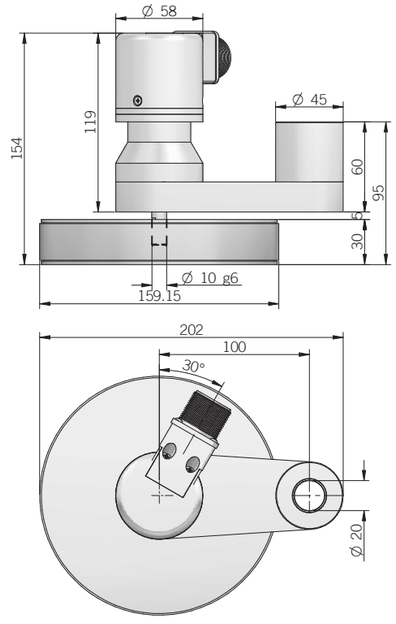
RL 500



RM 500



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 1 to 10000 ppr
Power supply[1]	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
Power draw without load	800 mW
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface[2]	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

[1] as measured at the transducer without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] measured on the transducer flange
[4] condensation not allowed

RL SERIES RESOLUTIONS

10 - 20 - 50 - **100** - 150 - 200 - 250 - 300 - **360** - 400 - **500** - **512** - 600 - 720 - **1000** - **1024** - 1200 - 1440 - **2000** - **2048** - 2500

RM SERIES RESOLUTIONS

1 - 2 - 4 - 5 - 10 - 15 - 16 - 20 - 25 - 30 - 32 - 40 - 50 - 60 - 70 - 80 - 90 - **100** - 120 - 128 - 150 - 200 - 240 - 250 - 256 - 300 - **360** - 400 - 480 - **500** - **512** - **600** - 625 - **720** - 750 - 800 - 900 - **1000** - **1024** - 1200 - 1250 - 1440 - 1500 - 1600 - 1800 - **2000** - **2048** - **2500** - 3000 - **3600** - 4000 - 4096 - **5000** - 6000 - **7200** - 8000 - 8192 - 9000 - **10000**

please directly contact our offices for other pulses, preferred resolutions in bold

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 10 mm
Enclosure rating	X = IP 64 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Starting torque (at +20°C / +68°F)	mod. RL / RM IP64 < 0,03 Nm (4,25 Ozin) mod. RL / RM IP66 < 0,06 Nm (8,50 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Housing material	PA66 glass fiber reinforced
Shaft material	1.4305 / AISI 303 stainless steel
Support material	EN-AW 2011 aluminum
Wheel material	EN AB 43100
Surface material	Smooth / Knurled = EN-AW 2011 aluminium Rubberized = PUR 50 ± 7 Shore A
Bearings	n.2 ball bearings n.2 ball bearings on support (mod. RM)
Bearings life	10^9 revolutions
Operating temperature[3, 4]	-10° ... +70°C (+14° ... +158°F)
Storage temperature[4]	-25° ... +70°C (-13° ... +158°F)
Encoder + support weight	1000 g (35,27 oz)
Wheel weight	mod. A/B 900 g (31,75 oz) mod.C with rubber belt 850g (30 oz)

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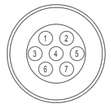
CONNECTIONS

Function	Cable C / P	Cable L / RS	7 pin J C / P	7 pin J L / RS no Zero	7 pin M C / P	7 pin M L / RS no Zero	10 pin J L / RS with Zero	10 pin M L / RS with Zero	5 pin M12 C / P	8 pin M12 L / RS	12 pin H	5 pin C C / P	8 pin C L / RS
+V DC	red	red	6	4	F	D	4 - 5	D - E	2	7	12	5	7
0 V	black	black	1	6	A	F	6	F	4	1	10	1	8
A+	green	green	3	1	C	A	1	A	3	6	5	2	1
A-	/	brown or grey	/	3	/	C	7	G	/	5	6	/	2
B+	yellow	yellow	5	2	E	B	2	B	1	4	8	4	3
B-	/	orange	/	5	/	E	8	H	/	3	1	/	4
Z+	blue	blue	4	/	D	/	3	C	5	2	3	3	5
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6
⏚	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/

J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV



M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV

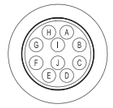
M12 connector (5 pin)
M12 A coded
solder side view FV

C connector (5 pin)
circular M16
solder side view FV

H connector (12 pin) - M23 CCW
Hummel 7.410.000000 -
7.002.912.603
solder side view FV

J connector (10 pin)
JIS-C-5432 Size 16
solder side view FV

M connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



M12 connector (8 pin)
M12 A coded
solder side view FV

C connector (8 pin)
IEC 60130-9
solder side view FV

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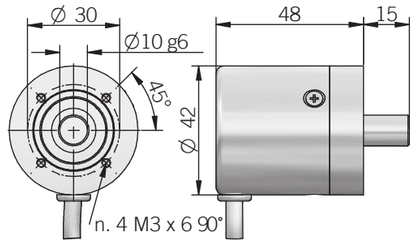
EP A
ROTARY POTENTIOMETER

MAIN FEATURES

Encoder with potentiometric output signal.
Rotary potentiometer is fitted in a sturdy housing and it is supported by two ball bearings.
It assures excellent lifetime, speed and high accuracy.

- Singleturn or multiturn models available
- Cable output, connectors available on cable end
- Mounting by round flange

A



recommended mating shaft tolerance H7 for model A
dimensions in mm

ORDERING CODE

EP | A | 103/10 | P | R | .XXX

SERIES
rotary potentiometer EP

MODEL
fixing flange screw holes ø 30 mm A

RESISTIVE VALUE
1k ohm / 1 turn 102/1
5k ohm / 1 turn 502/1
10k ohm / 1 turn 103/1
5k ohm / 3 turns 502/3
10k ohm / 3 turns 103/3
1k ohm / 10 turns 102/10
5k ohm / 10 turns 502/10
10k ohm / 10 turns 103/10

OUTPUT TYPE
cable (standard length 1,5 m) P
preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)

DIRECTION TYPE
axial A
radial R

VARIANT
custom version XXX

GENERAL SPECIFICATION

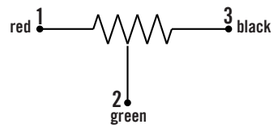
Model	Resistive value (Ohm)	Mech. rotation	Electrical rotation	Element technology	Tolerance	Linearity	Minimum resistance (Ohm)	Power rating (70 °C)	Life (shaft revolutions)	Vibration
102/1	1 k	320 ± 5°	same as mech	conductive plastic	±10 %	±1 %	0,2 %	1 W	10'000'000	15 G, 10 ... 150 Hz
102/10	1 k	3600 +10° -0°	same as mech	wirewound	±5 %	±0,25 %	1	2 W	1'000'000	15 G, 10 ... 2000 Hz
502/1	5 k	320 ± 5°	same as mech	conductive plastic	±10 %	±1 %	0,2 %	1 W	10'000'000	15 G, 10 ... 150 Hz
502/3	5 k	1080 +10° -0°	same as mech	wirewound	±5 %	±0,25 %	1	1 W	300'000	15 G, 10 ... 2000 Hz
502/10	5 k	3600 +10° -0°	same as mech	wirewound	±5 %	±0,25 %	1	2 W	1'000'000	15 G, 10 ... 2000 Hz
103/1	10 k	300 ± 5°	270 ± 10°	conductive plastic	±10 %	±5 %	4	1 W	50'000	10 G, 10 ... 150 Hz
103/3	10 k	1080 +10° -0°	same as mech	wirewound	±5 %	±0,25 %	1	1 W	300'000	15 G, 10 ... 2000 Hz
103/10	10 k	3600 +10° -0°	same as mech	wirewound	±5 %	±0,25 %	1	2 W	1'000'000	15 G, 10 ... 2000 Hz

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 10 mm
Enclosure rating	IP 54 (IEC 60529)
Shock	50 G, 11 ms
Vibration	see table
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA 66 glass fiber reinforced
Bearings	n.2 ball bearings
Limit stop	automatic clutch (no stop)
Operating temperature[1, 2]	0° ... +80°C (+32° ... +176°F)
Storage temperature[2]	-25° ... +85°C (-13° ... +185°F)
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

[1] measured on the transducer flange
[2] condensation not allowed

ELECTRICAL CONNECTIONS



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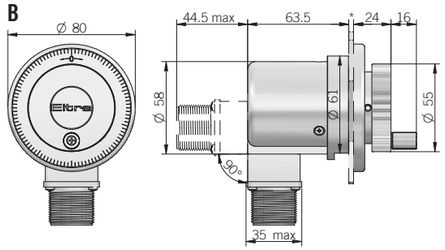
EV B
ELECTRONIC HANDWHEEL

MAIN FEATURES

Electronic handwheel series designed for positioning on CNC machines with manual drive.

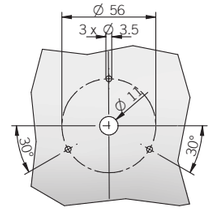
- 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Up to 220 kHz output frequency
- Cable or connector output
- Mounting by fixing flange

B



dimensions in mm

RECOMMENDED INTERFACE FLANGE DESIGN



ORDERING CODE

EV	B	*S	100	S	5	L	10	M	R	.162	+XXX

SERIES
electronic handwheel EV

MODEL
fixing flange screw holes ø 56 mm B

KNOB
* add to ordering code if without knob S

RESOLUTION
see table ppr 100 to 2500
refer to the available pulses list

ZERO PULSE
without zero pulse S
with zero pulse Z

POWER SUPPLY
(with L electrical interface) 5 V DC 5
5 ... 28 V DC 5/28

ELECTRICAL INTERFACE
NPN open collector C
push-pull P
line driver L
power supply 5/28V - output RS-422 RS

SHAFT DIAMETER
mm 10

OUTPUT TYPE
cable (standard length 1,5 m) P
preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)
MIL male connector M
JIS-C-5432 male connector J

DIRECTION TYPE
axial A
radial R

MATING CONNECTOR
mating connector not included .162
to be reported only with connector output (eg. MR.162), for mating connector see Accessories

VARIANT
custom version XXX

ELECTRICAL SPECIFICATIONS

Resolution	from 100 to 2500 ppr
Power supply[1]	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface[2]	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	220 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

EVB SERIES RESOLUTIONS

100 - 200 - 360 - 500 - 512 - 720 - **1000** - **1024** - 1440 - 2000 - 2048 - 2500

please directly contact our offices for other pulses, preferred resolutions in bold

MECHANICAL SPECIFICATIONS

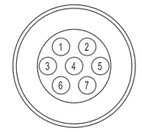
Shaft diameter	ø 10 mm
Enclosure rating	IP 64 (IEC 60529)
Mechanical indexes per turn	100
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA 66 glass fiber reinforced
Bearings	n.2 ball bearings
Bearings life	10^9 revolutions
Operating temperature[3, 4]	-10° ... +60°C (+14° ... +140°F)
Storage temperature[4]	-25° ... +70°C (-13° ... +158°F)
Weight	450 g (15,87 oz)

[1] as measured at the transducer without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] measured on the transducer flange
[4] condensation not allowed

CONNECTIONS

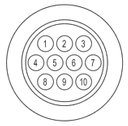
Function	Cable C / P	Cable L / RS	7 pin J C / P	7 pin J L / RS no Zero	7 pin M C / P	7 pin M L / RS no Zero	10 pin J L / RS with Zero	10 pin M L / RS with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
A+	green	green	3	1	C	A	1	A
A-	/	brown or grey	/	3	/	C	7	G
B+	yellow	yellow	5	2	E	B	2	B
B-	/	orange	/	5	/	E	8	H
Z+	blue	blue	4	/	D	/	3	C
Z-	/	white	/	/	/	/	9	I
⏚	shield	shield	7	7	G	G	10	J

J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV

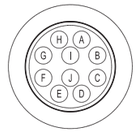


M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV

J connector (10 pin)
JIS-C-5432 Size 16
solder side view FV



M connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



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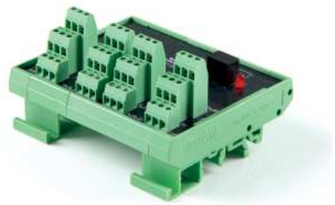
EMB / EMBO

ELECTRICAL INTERFACE SIGNAL SPLITTER

MAIN FEATURES

This board is used when it is necessary to adjust encoder electronic features to control ones.
Main functions of EMB are output signal splitting and adaptation of output stages.
For instance, it happens to have an encoder with 5 V DC output and a control that accepts only 24 V DC inputs. It may also happen to use an encoder connected with a control with the same power supply, but different electronics.
It can solve a wide range of problems: check the ordering code to find further informations.
On the board there can be up to 2 different voltages and it must be supplied through the X4 connector with the higher voltage used. Moreover it is possible to obtain up to 8 outputs from the same input by assembling several boards in a single support in order to reduce wirings drastically.
In this case the ordering code will contain informations about all outputs.
For example, a board with one 5 V DC NPN input and eight 5 V DC line driver outputs has the following ordering code: **EMB5N5L5L5L5L5L5L5L.**



ORDERING CODE

	EMB	*0	5	L	8/24	P	8/24	P	.2V	.XXX
			in		out1		out2 (optional max 8)			

SERIES
signal splitter EMB

INPUT OPTION
* add for optically isolated input 0

INPUT VOLTAGE X1 CONNECTOR
5 V DC 5
(mod. EMB) 8 ... 24 V DC 8/24
(mod. EMBO) 24 V DC 24

INPUT ELECTRONICS X1 CONNECTOR
(mod. EMB) NPN N
(mod. EMB) NPN open collector C
push-pull P
line driver L
(mod. EMB) PNP R

OUTPUT VOLTAGE (OUT1) X2 CONNECTOR
5 V DC 5
(mod. EMB) 8 ... 24 V DC 8/24
(mod. EMBO) 24 V DC 24

OUTPUT ELECTRONICS (OUT1) X2 CONNECTOR
(mod. EMB) NPN N
(mod. EMB) NPN open collector C
push-pull P
line driver L

OUTPUT VOLTAGE (OUT2) X3 CONNECTOR
5 V DC 5
(mod. EMB) 8 ... 24 V DC 8/24
(mod. EMBO) 24 V DC 24

OUTPUT ELECTRONICS (OUT2) X3 CONNECTOR
(mod. EMB) NPN N
(mod. EMB) NPN open collector C
push-pull P
line driver L

VERSION
version 2 .2V

VARIANT
custom version XXX

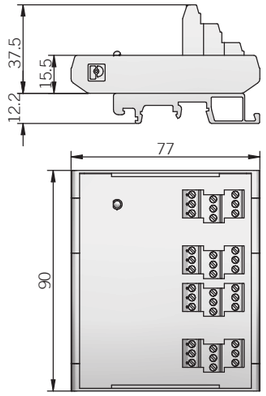
The following example may explain better a typical EMB application: an encoder with 5 V DC RS-422 output has to be connected to a 24 V DC push-pull input and also to an instrument with 5 V DC RS-422 input.
Ordering code will be: **EMB5L8/24P5L** where

EMB**5L** indicates 5 V DC line driver input on X1 connector
EMB5L**8/24P** indicates 24 V DC push-pull output on X2 connector
EMB5L8/24P**5L** indicates 5 V DC line driver output on X3 connector

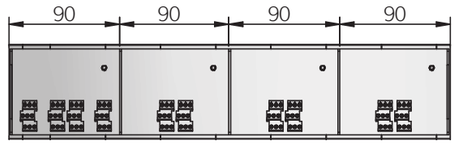
Power supply of this board is 24 V DC, because it is the highest used value, and it will be supplied through X4 connector.

EMB

Single implementation



Multiple implementation (4 modules / 8 outputs max)



dimensions in mm

ELECTRICAL SPECIFICATIONS

Power supply[1]	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 30 V DC (reverse polarity protection) 24 = 22,8 ... 25,2 V DC (reverse polarity protection)
Current consumption without load on X4	70 mA max
Supply current on X1 (for sensor power supply)	100 mA max
Max current consumption	Imax = 280 + 960 + 100 = 1340 mA considering: 4 x EMB = 70 x 4 = 280 mA 3 x 8 outputs (40mA each) = 960 mA 1 x input sensor supply current = 100 mA
Electrical interface[2] **(input)**	N / C / P / 8/24L / R = window comparator with hysteresis 5L = RS-422 (26LS32 or equivalent)
Electrical interface[2] **(output)**	NPN / NPN open coll. (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) 5L = line driver RS-422 (AELT-5000 or equivalent)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

MECHANICAL SPECIFICATIONS

Enclosure rating	IP00
Operating temperature[3, 4]	-20° ... +85°C (-4° ... +185°F)
Storage temperature[4]	-20° ... +85°C (-4° ... +185°F)
Mounting type	DIN 46277-3 rail (Omega) DIN 46277-2 rail (Omega)
Weight	150 g (5,29 oz) (1 module)

[1] as measured at the terminal board without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] measured on rack
[4] condensation not allowed

X1 INPUT ELECTRONIC SPECIFICATIONS

Input type	Max load current (mA per channel)	Max input frequency (kHz)*
5P (TTL compatible)	15	100
5L (RS-422 compatible)	40	200
8/24P (push pull)	20	100
8/24L (line driver HTL)	20	100
8/24N (NPN)	20	10
8/24C (NPN open)	20	10
8/24R (PNP)	20	10

* depending on length and cable specs

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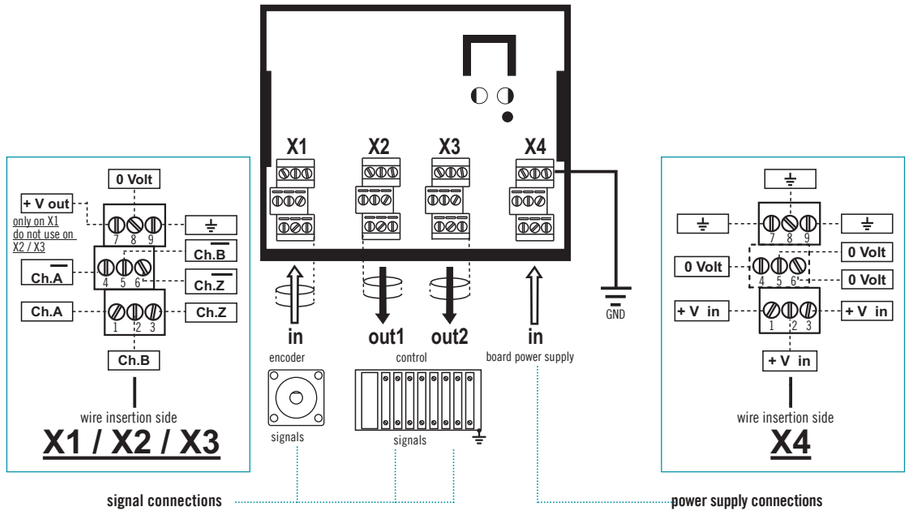
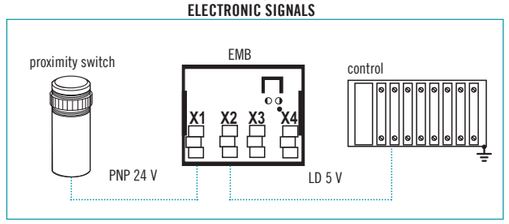
TERMINAL BOARD CONNECTIONS

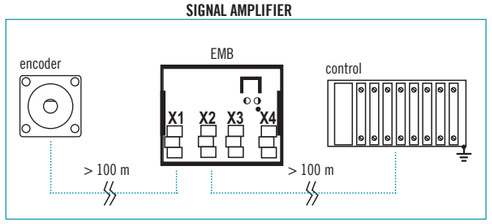


APPLICATION EXAMPLES

ADAPTATION OF ELECTRONIC SIGNALS



INTERMEDIATE SIGNAL AMPLIFIER



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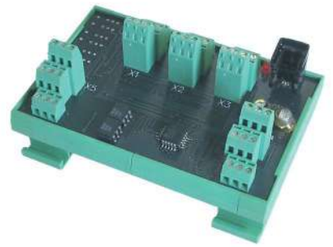
EMD

ELECTRONIC INTERFACE SIGNAL SELECTOR

MAIN FEATURES

This board is used when it is necessary to select a signal among a maximum of 3 inputs.
The EMD board accepts input signals coming from a maximum of 3 encoders and provides as output the signals of one of these encoders.
Output signals are selected connecting properly the two inputs, in1 and in2, according to the operating diagram (see next page).
EMD and encoder electronics must be indicated in the ordering code and the electrical interfaces of the connected encoders must be all identical. Moreover the EMD provides 3 contacts normally open that close when respective input is selected.
The following example is needful to understand better the use of this board.
We would like to read the signals of 3 encoders (or other devices with similar features) in sequential way. Encoders must have same output electronics, for example 5 V DC line driver. The instrument for data acquisition, on the contrary, has a different electrical interface, for example 24 V DC push-pull. In this case the EMD board will perfom the selection function among the connected encoders and the matching of the electrical interfaces.

The ordering code will be:
EMD5L8/24P, where EMD**5L** indicates that inputs are 5 V DC line driver, EMD5L**8/24P** indicates that output is 8÷24 V DC push-pull. EMD power supply must be the highest value among requested voltages: in this case 8÷24 V DC. The encoder selection is carried out through a logic type signal at in1 and in2 inputs on the terminal board.
Logic level “1” is obtained connecting a voltage included between 5 and 24 V DC to above mentioned inputs.
Logic level “0”, instead, is correctly interpreted if voltage is included between 0 and 3 V DC. The combination of logic levels at in1 and in2 inputs sets outputs to 4 different states, as described in the table in the following page.



ORDERING CODE

in out

EMD 5 L 8/24 P . XXX

SERIES
signal selector EMD
INPUT VOLTAGE X1 / X2 / X3 CONNECTOR
5 V DC 5
8 ... 24 V DC 8/24
INPUT ELECTRONICS X1 / X2 / X3 CONNECTOR
(with input voltage 8/24) push-pull P
line driver L
OUTPUT VOLTAGE X4 CONNECTOR
5 V DC 5
8 ... 24 V DC 8/24
OUTPUT ELECTRONICS X4 CONNECTOR
push-pull P
line driver L
VARIANT
custom version XXX
add 726 as variant for relay model

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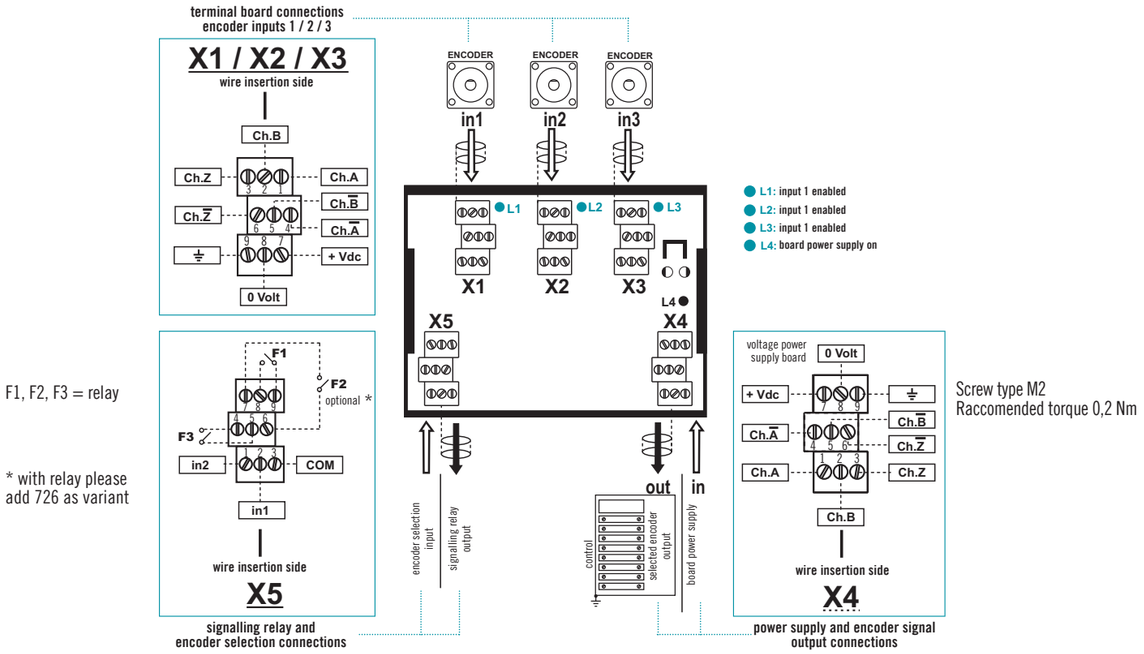
TERMINAL BOARD CONNECTIONS



F1, F2, F3 = relay

* with relay please add 726 as variant

Screw type M2
Raccomended torque 0,2 Nm

LOGIC STATES

Logic state on X5		Selected encoder on X4			Selected contact on X5 (with variant 726)		
in1	in2	X1	X2	X3	F1	F2	F3
0	0	-	-	-	-	-	-
1	0	•	-	-	•	-	-
0	1	-	•	-	-	•	-
1	1	-	-	•	-	-	•

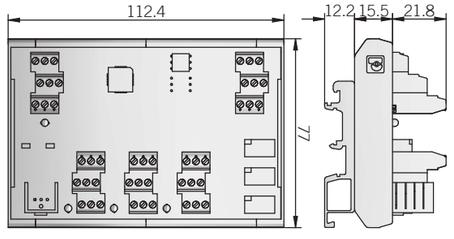
ELECTRICAL SPECIFICATIONS

Power supply[1]	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC
Current consumption without load	150 mA max
Max output current	P = 20 mA / channel L = 40 mA / channel
Electrical interface[2]	push-pull / line driver
Max input current	10 mA for channel
Input logic levels in1 and in2	"1" = 5 ... 24 V DC "0" = 0 ... 3 V DC
Contact specifications	Vmax = 125 V AC / 60 V DC Imax = 0,5 A Vmin = 5 V DC Imin = 1 mA
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

[1] as measured at the terminal board without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] measured on rack
[4] condensation not allowed

MECHANICAL SPECIFICATIONS

Enclosure rating	IP00
Operating temperature[3, 4]	0° ... +40°C (+32° ... +104°F)
Storage temperature[4]	-10° ... +60°C (+14° ... +140°F)
Mounting type	DIN 46277-3 rail (Omega)  DIN 46277-2 rail (G type) 
Weight	150 g (5,29 oz)



dimensions in mm

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