MAIN FEATURES

This board is used when it is necessary to adjust encoder electronic features to control ones.
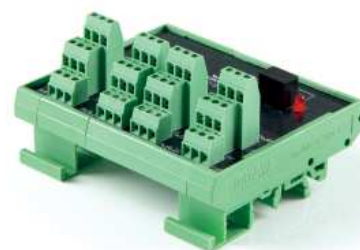**Main functions of EMB are output signal splitting and adaptation of output stages.**
For instance, it happens to have an encoder with 5 V DC output and a control that accepts only 24 V DC inputs. It may also happen to use an encoder connected with a control with the same power supply, but different 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.**

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

SERIES
signal splitter EMB

INPUT OPTION
* add for optically isolated input O

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

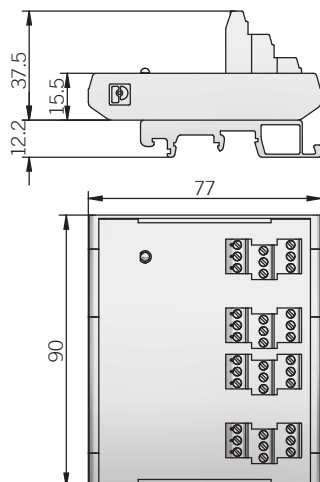EMB**5L** indicates 5 V DC line driver input on X1 connector
EMB5L**8/24P** indicates 24 V DC push-pull output on X2 connector
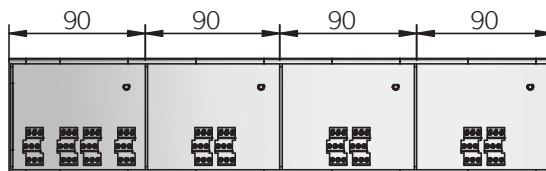EMB5L8/24P**5L** indicates 5 V DC line driver output on X3 connector

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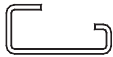
eltra@eltra.it

EMB

Single implementation

37.5
15.5
12.2

77

90

dimensions in mm

Multiple implementation
(4 modules / 8 outputs max)

90   90   90   90

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 2015/863/EU directive
UL / CSA	certificate n. E212495

MECHANICAL SPECIFICATIONS

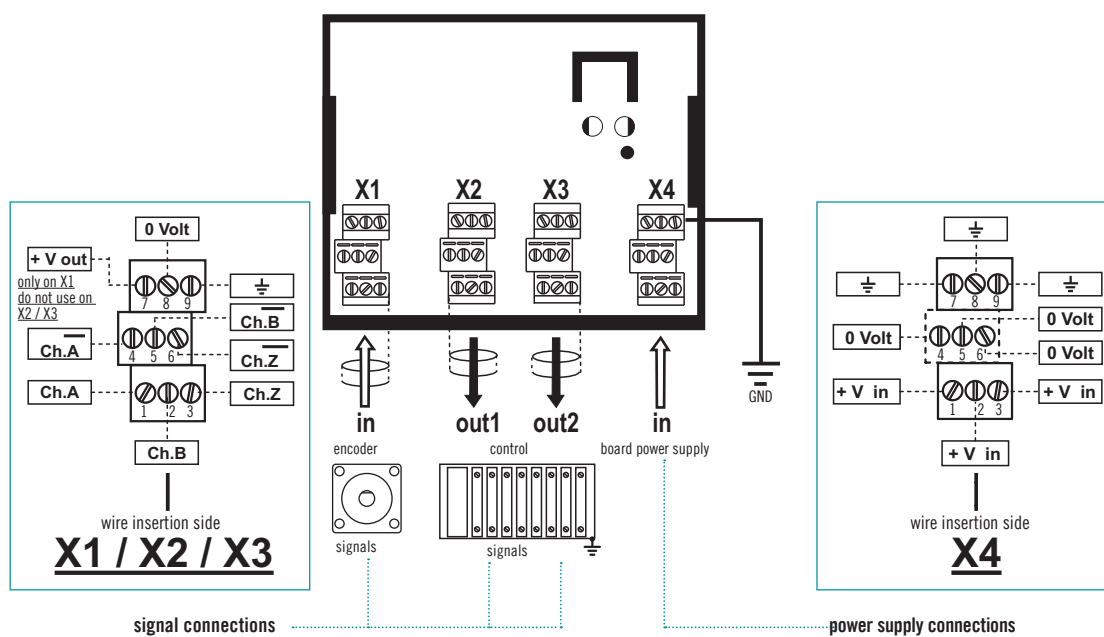|	
Enclosure rating	IP00
Operating temperature[3, 4]	-20° ... +85°C (-4° ... +185°F)
Storage temperature[4]	-20° ... +85°C (-4° ... +185°F)
Mounting type	DIN 46277-3 rail (Omega) DIN 46277-2 rail (Omega)
Weight	150 g (5,29 oz) (1 module)

[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

+ V out
only on X1
do not use on
X2 / X3

0 Volt

Ch.A

Ch.A

Ch.B

⏚

Ch.B

Ch.Z

Ch.Z

wire insertion side

X1 / X2 / X3

X1 X2 X3 X4

in
encoder
signals

out1 out2
control
signals

in
board power supply

GND

⏚

⏚

⏚

0 Volt

0 Volt

0 Volt

+ V in

+ V in

+ V in

+ V in

wire insertion side

X4

signal connections

power supply connections

APPLICATION EXAMPLES

**ADAPTATION OF
ELECTRONIC SIGNALS**

proximity switch

EMB

X1 X2 X3 X4

control

PNP 24 V

LD 5 V

**INTERMEDIATE
SIGNAL AMPLIFIER**

encoder

EMB

X1 X2 X3 X4

control

> 100 m

> 100 m