

OTHER PRODUCTS

A close-up, angled view of a green plastic electronic enclosure. The top edge of the enclosure is visible, showing a white seal. Below the enclosure, a black printed circuit board (PCB) is visible, featuring intricate white traces and several circular components. The background is a soft, out-of-focus grey.

ACCESSORIES AND SPECIAL PRODUCTS FOR DIFFERENT APPLICATION'S NEEDS.

In addition to the extensive catalog of products, Eltra makes available to its Customers also several accessories and special solutions (metric and electronic hand wheels, electronic

boards etc.) which complement the offer of rotary and linear transducers in all those production systems that present particular electronic and mechanical requirements.

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 +28 VDC with several electronic interfaces available
- Up to 220 kHz output frequency
- Cable or connector output



ORDERING CODE

EC 34A 500 S 8/24 N 10 P .XXX

SERIES
encoder for rack **EC**

MODEL
flange **34A**

RESOLUTION
ppr **100 ... 2500**
see table for pulses availability

ZERO PULSE
without zero pulse **S**
with zero pulse **Z**

POWER SUPPLY
5 V DC **5**
8 ... 24 V DC **8/24**

ELECTRONIC INTERFACE
NPN **N**
NPN open collector **C**
push-pull **P**
line driver **L**
power supply 8/24V - output RS-422 **RS**

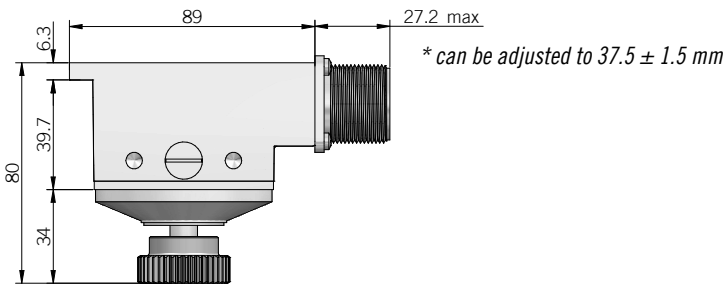
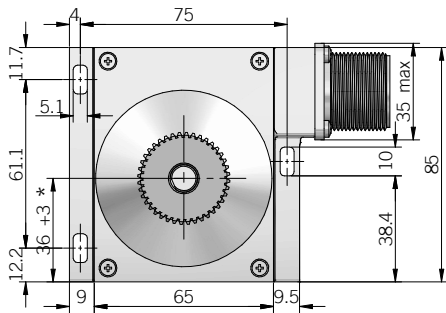
SHAFT DIAMETER
mm **10**

OUTPUT TYPE
cable (standard length 1,5 m) **P**
MIL connector **M**
JIS-C-5432 connector **J**

female connector included, without female please add 162 as variant code

VARIANT
custom version **XXX**

EC 34



rack and cogged wheel
supplied available as accessories

dimensions in mm

MECHANICAL SPECIFICATIONS	
Shaft diameter	∅ 10 mm
Enclosure rating	IP 64 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Housing material	painted aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Rack and cogged wheel material	steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-20° ... +70°C (-4° ... +158°F)
Storage temperature	-25° ... +70°C (-4° ... +158°F)
Weight	700 g (24,69 oz)

ELECTRICAL SPECIFICATIONS	
Resolution	from 100 to 2500 ppr
Power supply	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	50 mA / channel 20 mA / channel (line driver)
Output type*	NPN / NPN open collector / push-pull / line driver
Max output frequency	220 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

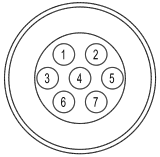
RESOLUTIONS
100 - 200 - 300 - 360 - 400 - 500 - 512 - 600 - 720 - 1000 - 1024 - 1200 - 1440 - 2000 - 2048 - 2500 ppr

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

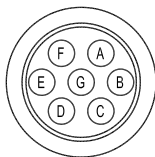
CONNECTIONS

Function	Cable output N / C / P / PC	Cable output Line driver	7 pin J output N / C / P / PC	7 pin J output Line Driver no Zero	7 pin M output N / C / P / PC	7 pin M output Line Driver no Zero	10 pin J output Line Driver with Zero	10 pin M output Line Driver with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
Ch. A	green	green	3	1	C	A	1	A
Ch. A-	/	brown	/	3	/	C	7	G
Ch. B	yellow	yellow	5	2	E	B	2	B
Ch. B-	/	orange	/	5	/	E	8	H
Ch. Z	blue	blue	4	/	D	/	3	C
Ch. Z-	/	white	/	/	/	/	9	I
⏏	shield	shield	7	7	G	G	10	J

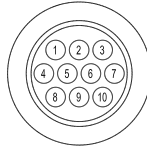
J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV



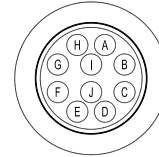
M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



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

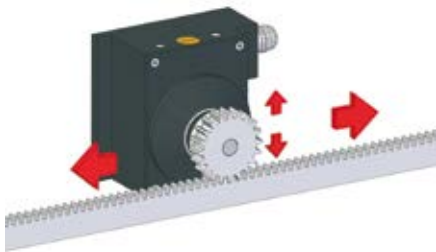


M connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV

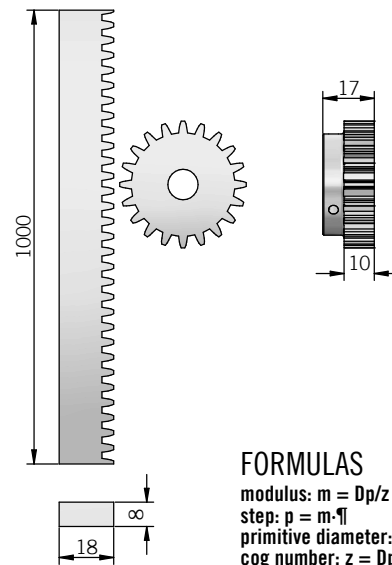


ACCESSORIES

Description	P / N
Cogged wheel - M = 0,796 / P = 2,5 / Z = 40	94080003
Rack - P = 2,5 / 1m length	23280006



Rack and cogged wheel
p = 2,5 z = 40 m = 0,796



FORMULAS
 modulus: $m = Dp/z$
 step: $p = m \cdot \pi$
 primitive diameter: $Dp = m \cdot z$
 cog number: $z = Dp/m$

dimensions in mm

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.).

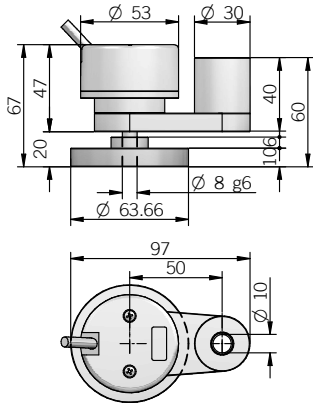
The body is entirely designed of aluminium and mounted using an oscillating arm pivoted on the shaft. It comes with an integrated self-lubricating compact box to assure a long operation period without any maintenance. The weight of the metric wheel keeps a stable contact with the material, allowing an 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 VDC with several electronic interfaces available
- Up to 500 kHz output frequency
- Model RM with internal coupling
- Cable or connector output

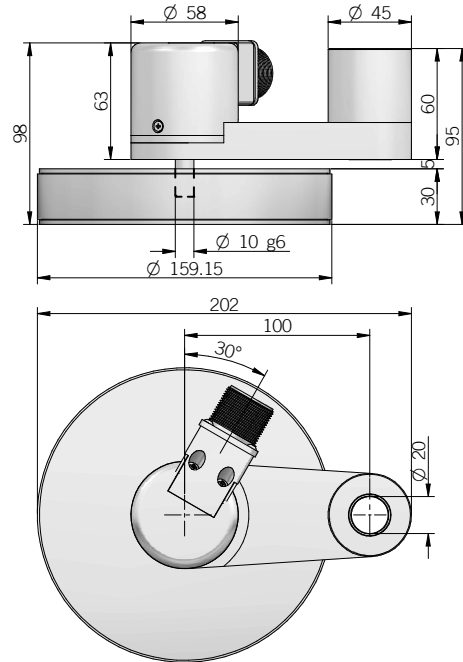


ORDERING CODE	RH200	A	500	S	8/24	N	8	X	3	P	R	.XXX
MODEL 200 mm measuring wheel - RH series RH200 500 mm measuring wheel- RL series RL500 500 mm measuring wheel - RM series RM500												
WHEEL SURFACE smooth A knurled B rubberized C without wheel /												
RESOLUTION (mod. RH) ppr from 50 to 1024 (mod. RL) ppr from 10 to 2500 (mod. RM) ppr from 1 to 10000 <i>see table for pulses availability</i>												
ZERO PULSE without zero pulse S with zero pulse Z												
POWER SUPPLY (with L electronic interface) 5 V DC 5 (with L or PC electronic interface) 8 ... 24 V DC 8/24 (mod. RL / RM) 5 ... 28 V DC 5/28												
ELECTRONIC INTERFACE NPN N NPN open collector C push-pull P (mod. RL / RM) push-pull protected (AEIC-7272) PC line driver L (mod. RL / RM) power supply 5/28V - output RS-422 RS												
SHAFT DIAMETER (mod. RH) mm 8 (mod. RL / RM) mm 10												
ENCLOSURE RATING (mod. RH) IP 54 X (mod. RL / RM) IP 64 X (mod. RL / RM) IP 66 S												
MAX ROTATION SPEED 3000 rpm 3												
OUTPUT TYPE cable (standard length: RH = 0,5 m - RL / RM = 1,5 m) P (mod. RL / RM) MIL connector M (mod. RL / RM) JIS-C-5432 connector J (mod. RL / RM) M12 connector M12 (mod. RL / RM) M23 connector H (mod. RL / RM) IP40 IEC 60130-9 connector C <i>female connector included, without female please add 162 as variant code</i>												
DIRECTION TYPE axial A radial R												
VARIANT custom version XXX												

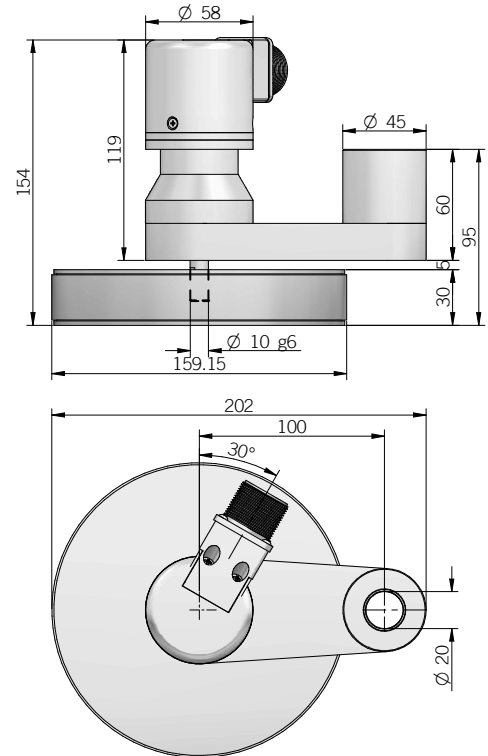
RH 200 A / B / C



RL 500 A / B / C



RM 500 A / B / C



dimensions in mm

ELECTRICAL SPECIFICATIONS (RH SERIES)

Resolution	from 50 to 1024 ppr
Power supply	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC
Current consumption without load	100 mA max
Max load current	N / C / P = 50 mA / channel L = 20 mA / channel
Output type*	NPN / NPN open collector / push-pull / line driver
Max output frequency	100 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

ELECTRICAL SPECIFICATIONS (RL SERIES)

Resolution	from 10 to 2500 ppr
Power supply	5 = 4,5 ... 5,5 V DC 5/28 = 4,75 ... 29,4 V DC 8/24 = 7,6 ... 25,2 V DC (reverse polarity protection)
Power draw without load	800 mW
Max load current	N / C / P / PC = 50 mA / channel L = 20 mA / channel
Output type*	NPN / NPN open collector / push-pull / line driver
Max output frequency	220 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

ELECTRICAL SPECIFICATIONS (RM SERIES)

Resolution	from 1 to 10000 ppr
Power supply	5 = 4,5 ... 5,5 V DC 5/28 = 4,75 ... 29,4 V DC 8/24 = 7,6 ... 25,2 V DC (reverse polarity protection)
Power draw without load	800 mW
Max load current	N / C / P / PC = 50 mA / channel L = 20 mA / channel
Output type*	NPN / NPN open collector / push-pull / line driver
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

MECHANICAL SPECIFICATIONS	
Shaft diameter	∅ 8 / 10 mm
Enclosure rating	IP 54 / IP 64 / IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms up to 2500 ppr (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Starting torque (at +20°C / +68°F)	mod. RH 200 < 0,01 Nm mod. RL / RM IP64 < 0,03 Nm mod. RL / RM IP66 < 0,06 Nm
Body material (mod.RL / RM)	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 (mod. RH) EN AB 43100 (mod. RL / RM)
Bearings	2 ball bearings 2 ball bearings on support (mod. RM)
Bearings life	10 ⁹ revolutions
Operating temperature	-10° ... +70°C (+14° ... +158°F)
Storage temperature	-25° ... +70°C (-13° ... +158°F)
Encoder + support weight	250 g (8,82 oz) mod.RH 1000 g (35,27 oz) mod. RL / RM
Wheel weight	100 g (3,53 oz) mod. RH 800 g (28,22 oz) mod. RL / RM

RH SERIES RESOLUTIONS
50* - 100 - 200 - 250 - 400 - 500 - 512 - 1000 - 1024

*available only without zero pulse

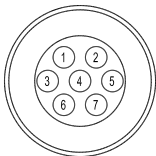
RL SERIES RESOLUTIONS
10 - 20 - 50 - 100 - 150 - 200 - 250 - 300 - 360 - 400 - 500 - 512 - 600 - 720 - 1000 - 1024 - 1200 - 1440 - 2000 - 2048 - 2500

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

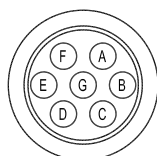
please directly contact our offices for other pulses, preferred resolutions in bold

Function	Cable output	Cable output	7 pin J output	7 pin J output	7 pin M output	7 pin M output	10 pin J output	10 pin M output	5 pin M12 output	8 pin M12 output	12 pin H output	5 pin C output	8 pin C output
	N / C / P / PC	Line driver	N / C / P / PC	Line Driver no Zero	N / C / P / PC	Line Driver no Zero	Line Driver with Zero	Line Driver with Zero	N / C / P / PC	Line Driver	CCW	N / C / P / PC	Line Driver
+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
Ch. A	green	green	3	1	C	A	1	A	3	6	5	2	1
Ch. A-	/	brown	/	3	/	C	7	G	/	5	6	/	2
Ch. B	yellow	yellow	5	2	E	B	2	B	1	4	8	4	3
Ch. B-	/	orange	/	5	/	E	8	H	/	3	1	/	4
Ch. Z	blue	blue	4	/	D	/	3	C	5	2	3	3	5
Ch. Z-	/	white	/	/	/	/	9	I	/	8	4	/	6
⊥	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/

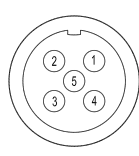
J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV



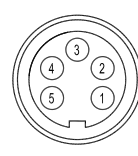
M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



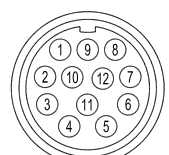
M12 connector (5 pin)
M12 A coded
solder side view FV



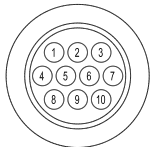
C connector (5 pin)
IEC 60130-9
solder side view FV



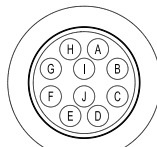
H connector (12 pin) - M23 CCW
Hummel 7.410.000000 -
7.002.912.603
solder side view FV



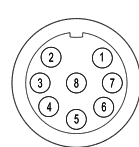
J connector (10 pin)
JIS-C-5432 Size 16
solder side view FV



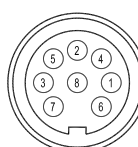
M connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



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



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



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.

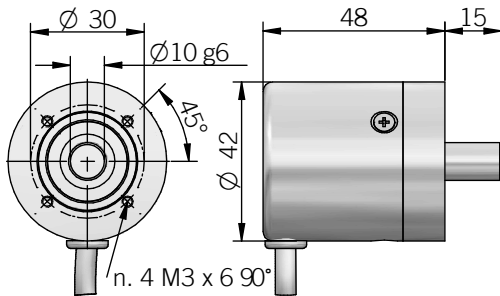
- Singleturn or multiturn models available
- Cable output, connectors available on cable end
- Mounting by round flange



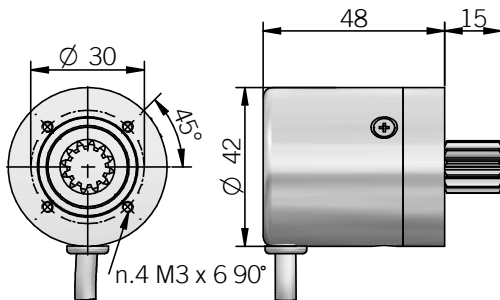
ORDERING CODE

EP	A	103/10	P	R	.XXX
SERIES rotary potentiometer EP					
MODEL fixing flange screw holes \varnothing 30 mm A fixing flange screw holes \varnothing 30 mm with cogged shaft B					
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					
DIRECTION TYPE axial A radial R					
VARIANT custom version XXX					

EP A



EP B



dimensions in mm

Cogged shaft specifications

$z = 12$
 $m = 1$
 $p = 3,1415$

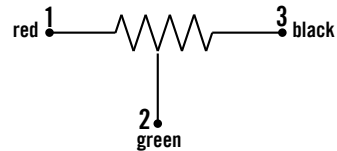
Formulas

modulus: $m = Dp/z$
 step: $p = m \cdot \pi$
 primitive diameter: $Dp = m \cdot z$
 cog number: $z = Dp/m$

MECHANICAL SPECIFICATIONS

Shaft diameter	mod. EPA \varnothing 10 mm mod. EPB cogged shaft
Enclosure rating	IP 54 (IEC 60529)
Shock	50 G, 11 ms
Vibration	see table
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel (EP A) steel UNI C45 (EP B)
Housing material	PA 66 glass fiber reinforced
Bearings	2 ball bearings
Limit stop	automatic clutch (no stop)
Operating temperature	0° ... +80°C (+32° ... +176°F)
Storage temperature	-25° ... +85°C (-13° ... +185°F)
Weight	150 g (5,29 oz)

ELECTRICAL CONNECTIONS



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 \pm 5°	same as mech	conductive plastic	\pm 10%	\pm 1%	0,2%	1 W	10'000'000	15 G, 10 ... 150 Hz
102/10	1 k	3600 +10° -0°	same as mech	wirewound	\pm 5%	\pm 0,25%	1	2 W	1'000'000	15 G, 10 ... 2000 Hz
502/1	5 k	320 \pm 5°	same as mech	conductive plastic	\pm 10%	\pm 1%	0,2%	1 W	10'000'000	15 G, 10 ... 150 Hz
502/3	5 k	1080 +10° -0°	same as mech	wirewound	\pm 5%	\pm 0,25%	1	1 W	300'000	15 G, 10 ... 2000 Hz
502/10	5 k	3600 +10° -0°	same as mech	wirewound	\pm 5%	\pm 0,25%	1	2 W	1'000'000	15 G, 10 ... 2000 Hz
103/1	10 k	300 \pm 5°	270 \pm 10°	conductive plastic	\pm 10%	\pm 5%	4	1 W	50'000	10 G, 10 ... 150 Hz
103/3	10 k	1080 +10° -0°	same as mech	wirewound	\pm 5%	\pm 0,25%	1	1 W	300'000	15 G, 10 ... 2000 Hz
103/10	10 k	3600 +10° -0°	same as mech	wirewound	\pm 5%	\pm 0,25%	1	2 W	1'000'000	15 G, 10 ... 2000 Hz

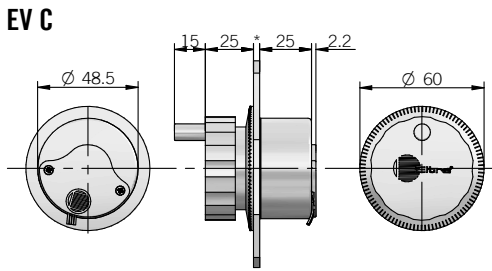
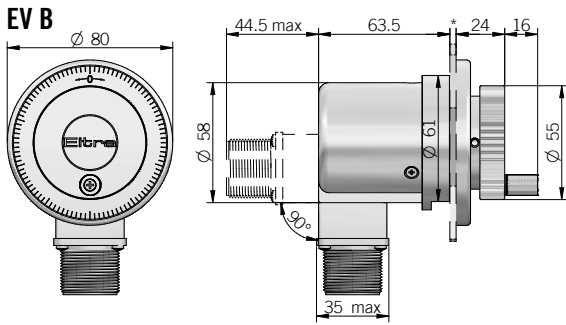
MAIN FEATURES

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 +28 VDC with several electronic interfaces available
- Up to 220 kHz output frequency
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by fixing flange

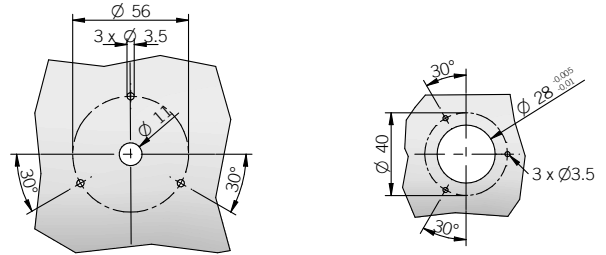


ORDERING CODE	EV	B	*S	100	S	5	N	10	P	R	.XXX
SERIES electronic handwheel EV											
MODEL fixing flange screw holes ϕ 56 mm B fixing flange screw holes ϕ 40 mm C											
KNOB <i>* add to ordering code if without knob</i> S											
RESOLUTION (mod. B) see table ppr 100 to 2500 (mod. C) ppr 100 <i>see table for pulses availability</i>											
ZERO PULSE without zero pulse S (mod. B) with zero pulse Z											
POWER SUPPLY (with L electronic interface) 5 V DC 5 (with L or PC electronic interface) 8 ... 24 V DC 8/24 5 ... 28 V DC 5/28											
ELECTRONIC INTERFACE NPN N NPN open collector C push-pull P push-pull protected (AEIC-7272) PC line driver L (mod. B) power supply 5/28V - output RS-422 RS											
SHAFT DIAMETER (mod. C) mm 6 (mod. B) mm 10											
OUTPUT TYPE cable (standard length: mod. B = 1,5 m - mod. C = 0,3 m) P (mod. B) MIL connector M (mod. B) JIS-C-5432 connector J <i>female connector included, without female please add 162 as variant code</i>											
DIRECTION TYPE (mod. B) axial A radial R											
VARIANT custom version XXX											



dimensions in mm

Mounting holes requirement



MECHANICAL SPECIFICATIONS	
Shaft diameter	Ø 6 / 10 mm
Enclosure rating	IP 64 (mod. B) (IEC 60529) IP 40 (mod. C) (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)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA 66 glass fiber reinforced (mod. B) nickel plated brass (mod. C)
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-10° ... +60°C (+14° ... +140°F)
Storage temperature	-25° ... +70°C (-13° ... +158°F)
Weight	450 g (15,87 oz) mod. B 150 g (5,29 oz) mod. C

ELECTRICAL SPECIFICATIONS	
Resolution	from 100 to 2500 ppr (mod. B) 100 ppr (mod. C)
Power supply	5 = 4,5 ... 5,5 V DC 5/28 = 4,75 ... 29,4 V DC 8/24 = 7,6 ... 25,2 V DC (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	N / C / P / PC = 50 mA / channel L = 20 mA / channel
Output type *	NPN / NPN open collector / push-pull / line driver
Max output frequency	200 kHz mod. B 150 kHz mod. C
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

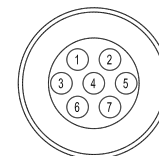
*output levels according to power supply, for further details please see under Technical basics section

EVA / EVB SERIES RESOLUTIONS
100 - 200 - 360 - 500 - 512 - 720 - 1000 - 1024 - 1440 - 2000 - 2048 - 2500

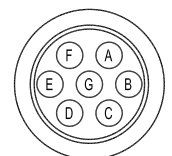
please directly contact our offices for other pulses, preferred resolutions in bold

CONNECTIONS								
Function	Cable output	Cable output	7 pin J output	7 pin J output	7 pin M output	7 pin M output	10 pin J output	10 pin M output
	N / C / P / PC	Line driver	N / C / P / PC	Line Driver no Zero	N / C / P / PC	Line Driver no Zero	Line Driver with Zero	Line Driver with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
Ch. A	green	green	3	1	C	A	1	A
Ch. A-	/	brown	/	3	/	C	7	G
Ch. B	yellow	yellow	5	2	E	B	2	B
Ch. B-	/	orange	/	5	/	E	8	H
Ch. Z	blue	blue	4	/	D	/	3	C
Ch. Z-	/	white	/	/	/	/	9	I
⊖	shield	shield	7	7	G	G	10	J

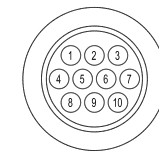
J connector (7 pin)
JIS-C-5432 Size 16
solder side view FV



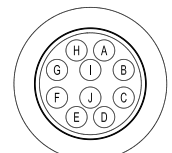
M connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



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



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
SERIES signal splitter EMB										
INPUT OPTION <i>* add to ordering code for optically isolated input</i>										
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										

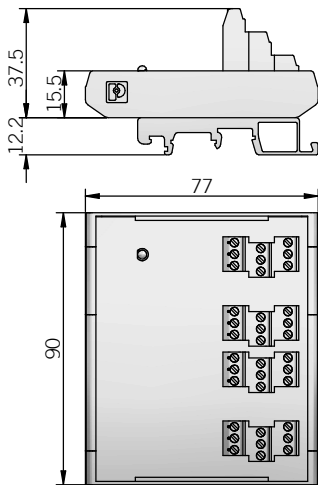
The following example may explain better a typical EMB application: an encoder with 5 V DC RS-422 output has to be connected to a 24 V DC push-pull input and also to an instrument with 5 V DC RS-422 input. Ordering code will be: **EMB5L8/24P5L** where

EMB5L indicates 5 V DC line driver input on X1 connector
EMB5L8/24P indicates 24 V DC push-pull output on X2 connector
EMB5L8/24P5L indicates 5 V DC line driver output on X3 connector

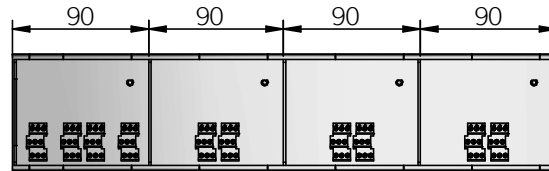
Power supply of this board is 24 V DC, because it is the highest used value, and it will be supplied through X4 connector.

EMB

Single implementation



dimensions in mm

Multiple implementation
(4 modules / 8 outputs max)

ELECTRICAL SPECIFICATIONS

Power supply	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC 24 = 22,8 ... 25,2 VDC
Current consumption without load on X4	70 mA max
Supply current on X1 (for sensor power supply)	100 mA max
Max current consumption	$I_{max} = 280 + 960 + 100 = 1340$ mA considering: 4 x EMB = $70 \times 4 = 280$ mA 3 x 8 outputs (40mA each) = 960 mA 1 x input sensor supply current = 100 mA
Output type *	NPN / NPN open collector / push-pull / line driver
Electromagnetic compatibility	IEC 61000-6-1 IEC 61000-6-4


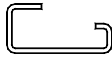
*output levels according to power supply, for further details please see under Technical basics section

X1 INPUT ELECTRONIC SPECIFICATIONS

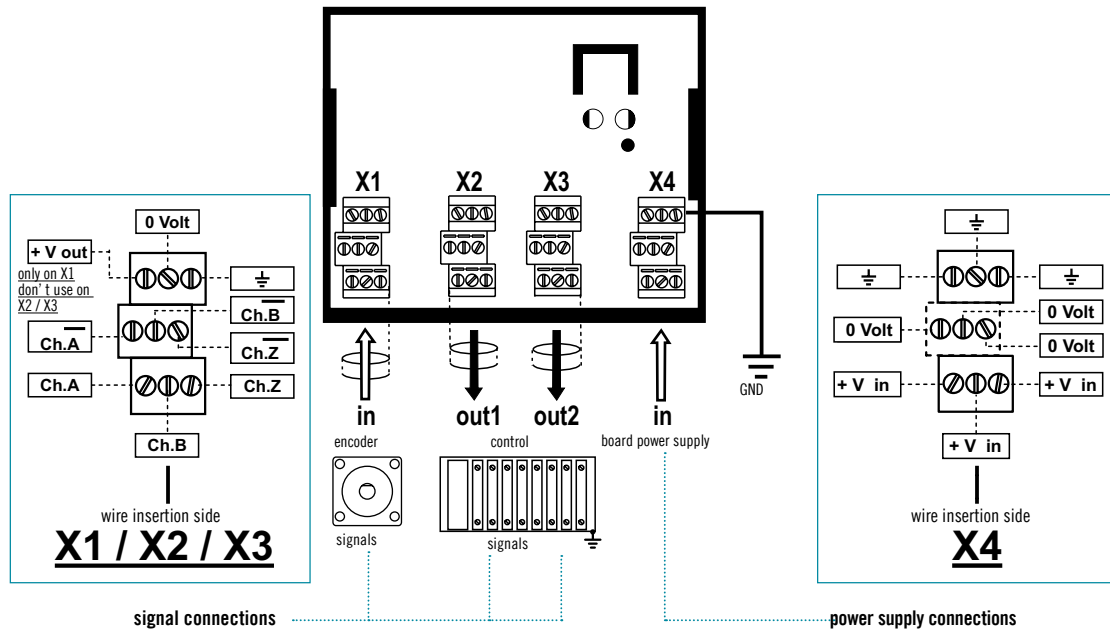
Input type	Max load current (mA per channel)	Max input frequency (kHz)*
5P (TTL compatible)	15	100
5L (RS-422 compatible)	40	200
8/24P (push pull)	20	100
8/24L (line driver HTL)	20	100
8/24N (NPN)	20	10
8/24C (NPN open coll)	20	10
8/24R (PNP)	20	10

* depending on length and cable specs

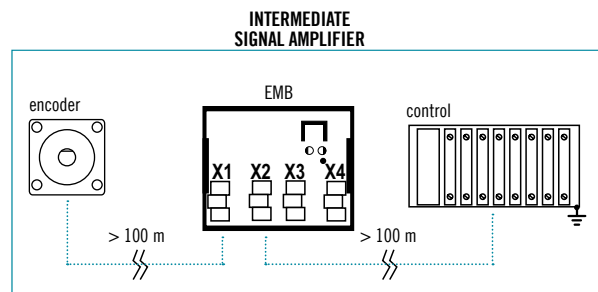
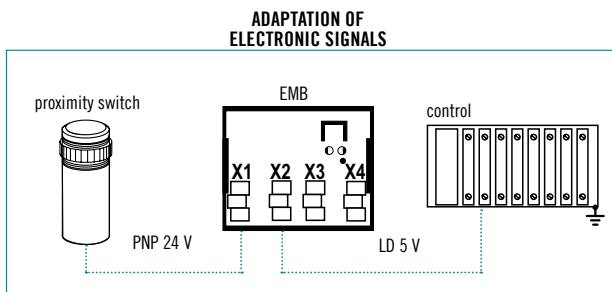
MECHANICAL SPECIFICATIONS

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

TERMINAL BOARD CONNECTIONS



APPLICATION EXAMPLES





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 electronic 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.

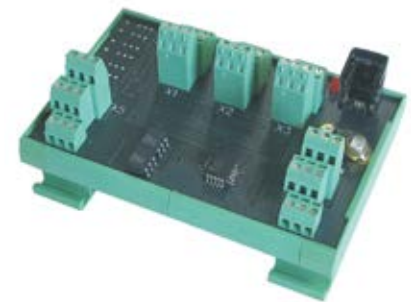
We would like to read the signals of 3 encoders (or other devices with similar features) in sequential way. Encoders must have same output electronics, for example 5 V DC line driver. The instrument for data acquisition, on the contrary, has a different electronic interface, for example 24 V DC push-pull. In this case the EMD board will perform the selection function among the connected encoders and the matching of the electronic interfaces.

The ordering code will be:

EMD5L8/24P, where EMD5L indicates that inputs are 5 V DC line driver, EMD5L8/24P 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.

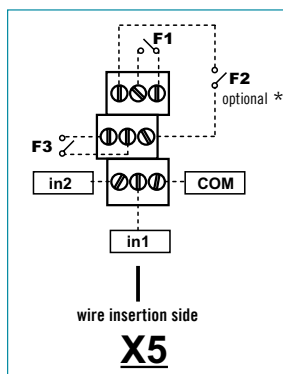
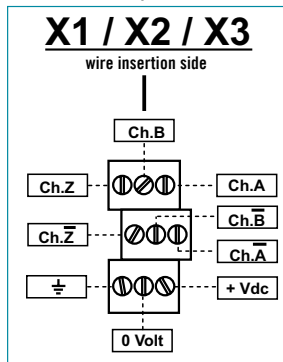
Logic level “0”, instead, is correctly interpreted if voltage is included between 0 and 3 V DC. The combination of logic levels at in1 and in2 inputs sets outputs to 4 different states, as described in the table in the following page.



ORDERING CODE	in	out
EMD	5	L
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 (8 ...24V) 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		
	8/24	P
		.XXX
		VARIANT custom version XXX

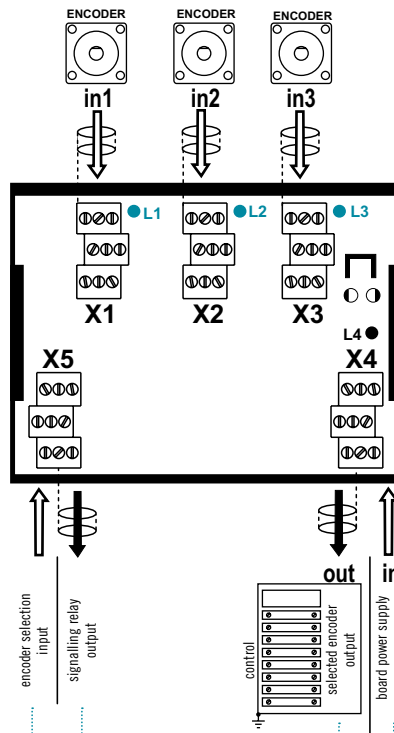
TERMINAL BOARD CONNECTIONS

terminal board connections
encoder inputs 1 / 2 / 3

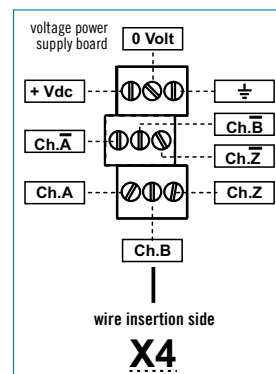


F1, F2, F3 = relay

* with relay please add 726 as variant



- L1: input 1 enabled
- L2: input 1 enabled
- L3: input 1 enabled
- L4: board power supply on



signalling relay and encoder selection connections

power supply and encoder signal output connections

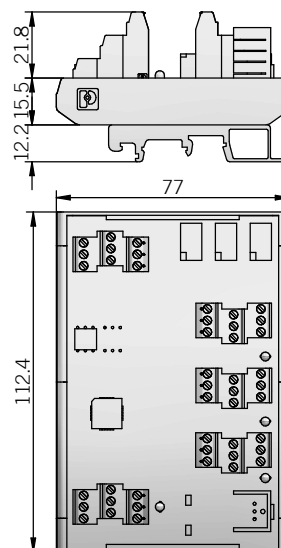
LOGIC STATES

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	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC
Current consumption without load	150 mA max
Max load current	20 mA / channel (line driver) 40 mA / channel (push-pull)
Max input current	10 mA for channel
Input logic levels in1 and in2	"1" = 5 ... 24 V DC "0" = 0 ... 3 V DC
Contact characteristics	Vmax = 125 V AC / 60 V DC Imax = 0,5 A Vmin = 5 V DC Imin = 1 mA
Operating temperature	0° ... +40°C (+32° ... +104°F)
Storage temperature	-10° ... +60°C (+14° ... +140°F)
Fixing on panel	DIN 46277-3 rail (Omega) DIN 46277-2 rail (Omega)

MECHANICAL DIMENSIONS



dimensions in mm

STANDARD ELASTIC COUPLINGS

Eltra elastic couplings are essential parts for motion transmission to the encoder shaft.

Couplings are aluminium alloy made and are composed by a cylindrical body on which there is a helical groove that determines:

- torsional rigidity
- ability to compensate for slight shaft misalignments
- ability to absorb shaft axial play

Elastic coupling can be supplied with different coupling diameters

Ordering code example: G 25 A 8 / 10 means $d_1 = 8 \text{ mm}$, $d_2 = 10 \text{ mm}$

STANDARD ELASTIC COUPLINGS ORDERING CODE

G 25 A 6 / 8

SERIES
precision elastic coupling **G**

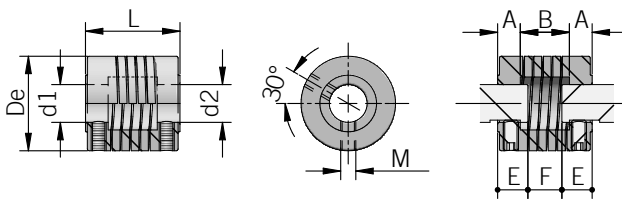
MODEL
(see table) **20**
(see table) **25**
(see table) **30**

SHAFT FIXING TYPE
shaft fixing with grub screw **A**

HOLE DIAMETER d_1
 $\phi 6 \text{ mm}$ **6**
(mod. G25 / G30) $\phi 8 \text{ mm}$ **8**
 $\phi 9,52 (3/8") \text{ mm}$ **9**
 $\phi 10 \text{ mm}$ **10**

(DO NOT ADD IF $d_2 = d_1$) HOLE DIAMETER d_2
 $\phi 6 \text{ mm}$ **6**
(mod. G25 / G30) $\phi 8 \text{ mm}$ **8**
 $\phi 9,52 (3/8") \text{ mm}$ **9**
 $\phi 10 \text{ mm}$ **10**

MECHANICAL DIMENSIONS

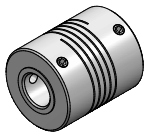


dimensions in mm

STANDARD COUPLINGS

Type of material: aluminium

For other holes (d_1 - d_2) contact our offices directly.



Standard couplings	P / N	De	L	$d_1 = d_2$		A	B	M	E	F	Torque	
G 20 A 6	94070006	$\phi 20$	20	$+0.1$ -0.1	$\phi 6H7$	$+0.012$ 0	6	8	M3	7	6	0.25 Nm
G 25 A 8	94070026	$\phi 25$	25	$+0.1$ -0.1	$\phi 8H7$	$+0.015$ 0	7	11	M4	8	9	0.4 Nm
G 25 A 9	94070030	$\phi 25$	25	$+0.1$ -0.1	$\phi 9,52H7$	$+0.015$ 0	7	11	M4	8	9	0.4 Nm
G 25 A 10	94070012	$\phi 25$	25	$+0.1$ -0.1	$\phi 10H7$	$+0.015$ 0	7	11	M4	8	9	0.4 Nm
G 30 A 10	94070051	$\phi 25$	30	$+0.1$ -0.1	$\phi 10H7$	$+0.015$ 0	8	14	M4	9	12	0.4 Nm

For proper installation it is recommended to insert shafts in the coupling observing "E" dimensions.

SPECIAL APPLICATION ELASTIC COUPLINGS

Special application couplings are designed to meet extreme coupling conditions such as high torque or severe axial or radial play. Please refer to single product description to identify right elastic coupling for your application.

GS-DA SERIES

GS-DA series are double loop plastic coupling with medium torsional stiffness, low restoring forces with impact and vibration damping effect. It allows a smooth running, maintenance-free motion and a reliable compensation of radial, lateral and angular misalignments. It is also thermally and electrically insulated.

GS-EA SERIES

GS-EA series are heavy duty helix coupling for multi-purpose use for backlash-free and angularly aligned transmission of rotary motions with high torsional stiffness with medium restoring forces. It gives vibration-damping effect and optimum compensation of misalignments. It is produced from a single piece and has clamping hubs for shaft connections without causing any surface defects.

GS-EP SERIES

GS-EP series are low-cost shaft couplings manufactured using injection moulding technology with medium torsional stiffness, low restoring forces and vibration damping effect.

Metal inserts in the hubs allows reliable shaft connection and thanks to free slot area the shafts may project into the coupling. It is also electrically insulated.

GS-M SERIES

GS-M series are multi-purpose couplings used for backlash-free transmission of rotary motions with high vibration-damping effect, good compensation of misalignments and low torsional stiffness and low restoring forces.

It has no moving parts, very robust design.

GS-O SERIES

GS-O series are elastic couplings where rotation is transmitted through a central disc that slides over the tenons on the hubs under controlled preload conditions to eliminate backlash.

These couplings provide generous radial compensation and easy maintenance.

GS-S SERIES

GS-S series are bellows couplings for backlash-free and angularly aligned transmission with high vibration-damping effect, optimum compensation of misalignments with very high torsional stiffness and low restoring forces.

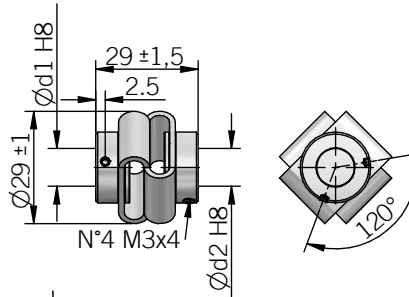
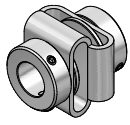
Design is very robust due to stainless steel bellows and also has clamping hubs for shaft connections without causing any surface defects.

SPECIAL APPLICATION ELASTIC COUPLINGS ORDERING CODE

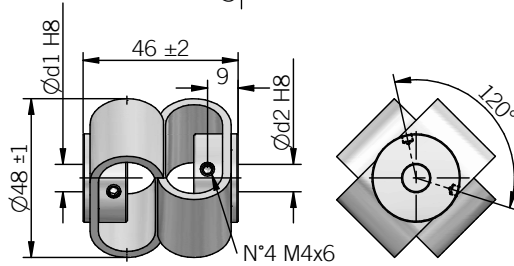
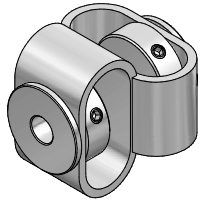
P / N	Code	Description
94070188	GS-DA2928-6 (former GS32A6)	Double loop plastic coupling 29 x 28 mm (ø 6 / 6 mm hole)
94070050	GS-DA2928-8 (former GS01A8)	Double loop plastic coupling 29 x 28 mm (ø 8 / 8 mm hole)
94070091	GS-DA2928-10 (former GS11A10)	Double loop plastic coupling 29 x 28 mm (ø 10 / 10 mm hole)
94070112	GS-DA4848-10 (former GS15A10)	Double loop plastic coupling 48 x 48 mm (ø 10 / 10 mm hole)
94070219	GS-EA1323-4 (former G13A4)	Aluminium coupling 13 x 23 mm (ø 4 / 4 mm hole)
94070143	GS-EP1520-6 (former GS21A6)	Plastic coupling with helical groove 15 x 20 mm (ø 6 / 6 mm hole)
94070149	GS-EP1520-4 (former GS22A4)	Plastic coupling with helical groove 15 x 20 mm (ø 4 / 4 mm hole)
94070115	GS-M1635-8 (former GS13A8)	Spring coupling 16 x 35 mm (ø 8 / 8 mm hole)
94070184	GS-M1635-10 (former GS30A10)	Spring coupling 16 x 35 mm (ø 10 / 10 mm hole)
94070061	GS-O1922-6 (former GS02A6)	Decomposable coupling Oldham 19 x 22 mm (ø 6 / 6 mm hole)
94070117	GS-O1922-10 (former GS16A10)	Decomposable coupling Oldham 19 x 22 mm (ø 10 / 10 mm hole)
94070218	GS-O1922-10/12 (former GS41A10/12)	Decomposable coupling Oldham 19 x 22 mm (ø 10 / 12 mm hole)
94070171	GS-S2530-10 (former GS25A10)	High pulses bellows coupling 25 x 30 mm (ø 10 / 10 mm hole)

please directly contact our offices for other models

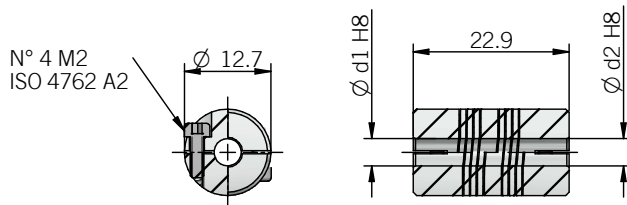
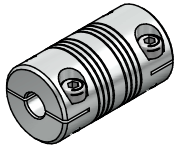
GS-DA2928



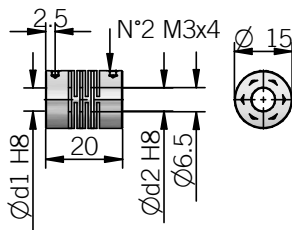
GS-DA4848



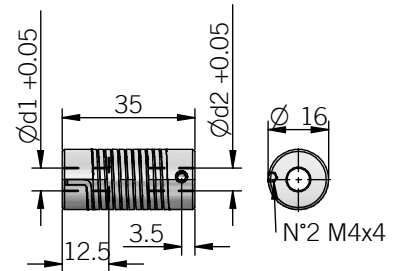
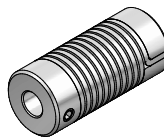
GS-EA1323



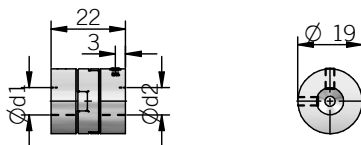
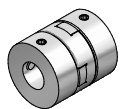
GS-EP1520



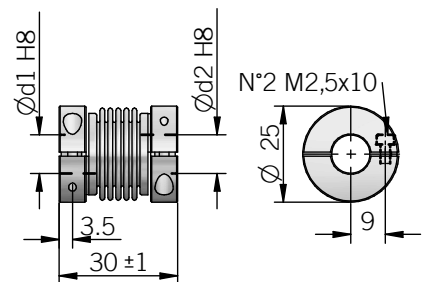
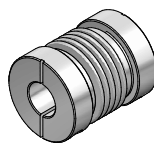
GS-M1635



GS-01922



GS-S2530



dimensions in mm

TECHNICAL DATA							
	DA2928	DA4848	EA1323	EP1520	M1635	O1922	S2530
Max speed (rpm)	3000	3000	5000	12000	3000	3000	10000
Max torque (Nm)	0,5	2	2	0,3	0,5	1,7	2
Max offset radial (mm)	± 2	± 3	$\pm 0,17$	$\pm 0,3$	± 1	$\pm 0,2$	$\pm 0,3$
Max offset axial (mm)	± 2	± 4	$\pm 0,25$	$\pm 0,2$	± 1	$\pm 0,1$	$\pm 0,4$
Max offset angular (°)	± 10	± 12	± 5	$\pm 2,5$	± 5	$\pm 0,5$	± 4
Moment of inertia (gcm ²)	41	106	1,2	2	10	6,7	29,8
Max clamping torque (Nm)	1	1	0,3	0,7	1,5	0,94	1
Temperature range	-30° ... +80°C (-22° ... +176°F)	-30° ... +80°C (-22° ... +176°F)	-40° ... +140°C (-40° ... +284°F)	-10° ... +80°C (14° ... +176°F)	-30° ... +120°C (-22° ... +248°F)	-20° ... +60°C (-4° ... +140°F)	-30° ... +120°C (-22° ... +248°F)
Weight (g) (oz)	33 (1,16)	85 (3,00)	5 (0,18)	6 (0,21)	28 (0,99)	12 (0,42)	20 (0,71)
Flange material	steel galvanized	steel galvanized	aluminium	PA 66 glass fiber reinforced	zinc die casting	aluminium	aluminium
Insert material	poliurethan	poliurethan	aluminium	aluminium	spring steel	acetal	stainless steel