



ABSOLUTE & INCREMENTAL ENCODERS

elap

► THE COMPANY

Since 1968 **ELAP** has been growing in the field of industrial automation, soon becoming a leader manufacturer of **position sensors and control equipments for industrial automation.**

ELAP product line offers a wide array of **position transducers and a choice of counting and control equipments**

Absolute & Incremental Encoders



Wire Transducers



Linear & Magnetic Transducers



Linear & Rotary Potentiometers, Industrial Joysticks



Vibration & Tilt Sensors



Electronic Counters & Readouts



PLC Controllers & HMI

ELAP represents as sole distributor in Italy the companies:



The accuracy and reliability featuring **ELAP** products result from advanced **technological research** joined to the long experience we achieved working strictly in touch with our customers. Proposing the best solution for each industrial reality is our goal; custom tailored solutions can be engineered if necessary.

Numberless **applications** have been developed on operating machines of all industrial fields: sheet working machinery, glass, wood-, paper-machinery, plastic- and textile machines, food-processing and further.

ELAP takes part to **international technology communities** promoting and supporting the development of industrial networks.



▶ ROTARY ENCODERS

ELAP offers a wide range of encoder types, with different dimensions, mechanical and electronic features.

All series are designed to be used in **industrial environment**, granting high performances for **reading accuracy, repeatability, speed, shock and vibration resistance**.

The **different output signals** allow to **interface to any counting and control system**.

Special versions can be engineered according to customers' specifications.



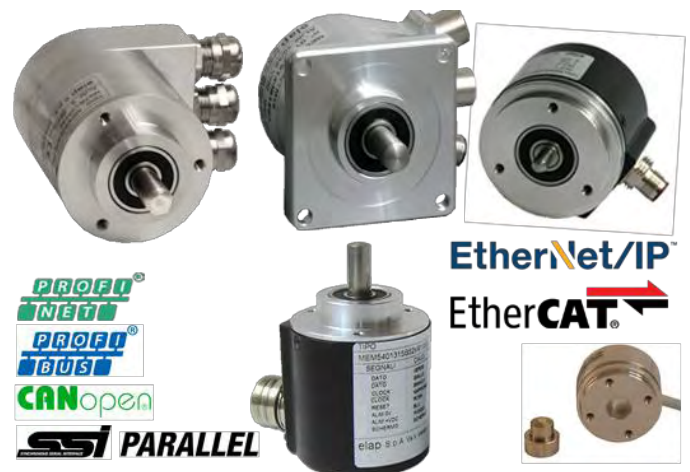
▶ ABSOLUTE ENCODERS

ELAP single and multiturn encoders provide:

- Reading resolution ranging from 4 to 13 bit, and 2 to 16 bit steps/revolution
- Binary or Gray code
- SSI, push-pull parallel, 0-10V analogue outputs
- Communication protocols:
EtherNet/IP™ - EtherCAT® - PROFINET® – PROFIBUS® - CANopen®



Encoders available in the series
MEM-Bus



▶ INCREMENTAL ENCODERS

ELAP incremental encoders offer:

- Several different mechanical versions
- Number of ppr ranging from 2 to 50000
- Push pull or line driver electronic output



Encoders available in the series
REC





MEM-BUS PROFINET & EtherCAT

Multiturn

Fieldbus					
Resolution	13 bit / 8192 info/revolution				
Steps no. (Multiturn type)	16 bit / 65536				
Supply voltage	10/30 Vdc				
Connections	3 connectors type M12				
Housing material	Aluminium				
Protection degree	IP67 – shaft side: IP65 – optional IP66 with sealing O-ring				
Dimensions	Ø 58 mm				
Flange	<input type="checkbox"/> 63.5x63.5 mm	Ø 58 mm		Blind hollow shaft	
Centering mask	Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
Fixing	4 holes	Servo holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
Shaft Ø	6, 8, 10 mm		8, 10, 12, 14, 15 mm.		

ENCODER PROFILE

PROFINET® Encoder Profile V4.1 version 3.162

- Application class 3 – 4
- Standard Telegram 81, 82, 83, 84 – User Telegram 860

EtherCAT® Ref IEC61158-1-6 & IEC61784-2

- Device Profile CANOpen over EtherCAT (CoE), CiA DS-406

• EtherNet/IP™ Ref IEC61784-1

- Device profile: CIP™ Protocol, encoder profile 22H
- CIP Sync protocol complying with standard IEEE-1588
- Assembly object 1, 2, 3 – Proprietary object 110

CERTIFICATES



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[MEM-B Profinet](#)

[MEM-B EtherCAT](#)

[MEM-B EtherNet/IP](#)



EtherNet/IP™

EtherCAT®



ENCODERS

INTERFACE

SYNCHRO FLANGE

CLAMPING FLANGE



MEM620-Bus



MEM520-Bus



MEM540-Bus



MEM410-Bus



MEM450-Bus

MEM-BUS PROFIBUS

Single/Multiturn



13 bit / 8192 info/revolution

16 bit / 65536

5/28 Vdc

3 / 2 cable glands

Aluminium

IP65 - optional IP66 with sealing O-ring

Ø 58 mm

63.5x63.5 mm	Ø 58 mm		Blind hollow shaft	
Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
4 holes	Servo 3 holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
6, 8, 10 mm			8, 10, 12, 14, 15 mm.	

BUS SPECIFICATIONS

PROFIBUS® Encoder Profile Profibus DP standard EN 501701 Vol. 2

- Application Class: 1- 2
- Parameter entering and preset functions, scaling functions

SETTABLE PARAMETERS

- Steps/revolution
- Revolutions number
- Preset
- Rotation direction

DIAGNOSTIC FUNCTIONS

- Position or parameter error
- Battery alarm

STATE INDICATORS

- 2 signalling LEDs for:
 - Supply
 - Line



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[MEM-B Profibus](#)





SYNCHRO FLANGE CLAMPING FLANGE



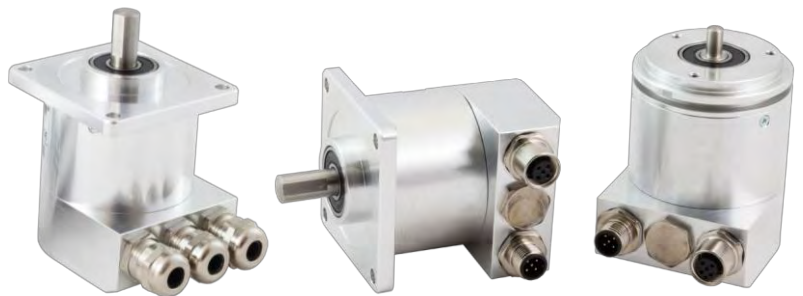
CANopen

Single/Multiturn



Fieldbus	CANopen®				
Resolution	13 bit / 8192 info/revolution				
Steps no. (Multiturn type)	16 bit / 65536				
Supply voltage	5/28 Vdc				
Connections	3 / 2 cable glands or 2 M12 connectors				
Housing material	Aluminium				
Protection degree	IP65 - optional IP66 with sealing O-ring				
Dimensions	Ø 58 mm				
Flange	63.5x63.5 mm	Ø 58 mm			Blind hollow shaft
Centering mask	Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
Fixing	4 holes	Servo 3 holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
Shaft Ø	6, 8, 10 mm			8, 10, 12, 14, 15 mm.	

BUS SPECIFICATIONS	SETTABLE PARAMETERS	DIAGNOSTIC FUNCTIONS	STATE INDICATORS
CANopen® standards CiA DS 301 and DS 406 "Device Profile for Encoders" • Class C2	<ul style="list-style-type: none"> • Steps/revolution • Revolutions number • Preset • Rotation direction 	<ul style="list-style-type: none"> • Position or parameter error • Battery alarm 	<ul style="list-style-type: none"> • 3 signalling LEDs for: • Supply • Line • Error



CANopen encoders – version with M12 connectors

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[MEM-B CANopen](#)

ENCODERS

INTERFACE



MEM40B



MEM41B

CANopen

Multiturn



13 bit / 8192 info/revolution

16 bit / 65536

5÷28 Vdc

1 M12 connector

Alluminium

IP65 - optional IP66 with sealing O-ring

Ø 41 mm

Ø 41 mm

Ad albero cavo

Ø 33 mm

Servo
4 fori su Ø 26 mm

Anti-rotational elastic support

10 mm

10 mm

BUS SPECIFICATIONS

CANopen® standards
CiA DS 301 and DS
406 "Device Profile for
Encoders"
• Class C2



SETTABLE PARAMETERS

- Steps/revolution
- Revolutions number
- Preset
- Rotation direction

DIAGNOSTIC FUNCTIONS

- Position or parameter error
- Battery alarm

STATE INDICATORS

- 3 signalling LEDs for:
- Supply
- Line
- Error



Encoders MEM40-Bus and MEM41-Bus CANopen

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[MEM40B-CANopen](#)



▶ ABSOLUTE ENCODERS

SINGLE & MULTITURN



	MEM	REMA	REC-VA
	Single/Multiturn	Single-turn	
Resolution	5 ÷ 13 bit info/revolution		9 bit
Revolutions no. (Multiturn only)	15 bit	-	-
Code	Binary or Gray	Binary	
Supply voltage	5/28 Vdc	5 Vdc / 8÷24Vdc	18 ÷ 24 Vdc
Output signals	PARALLEL - SSI	SSI	Analogue 0÷10V on 360°
Connections	Axial or radial Cable or M23 connector	Axial or radial Cable or connector	Radial M12 connector or cable
Housing material	Aluminium	Aluminium	Aluminium
Protection degree	IP65 - optional IP66 with sealing O-ring		IP65

AVAILABLE MECHANICAL VERSIONS

Square flange 620	•	•	•
Square flange 650		•	
Round flange 520	•	•	•
Round flange 510		•	
Round flange 540	•	•	•
Hollow shaft 410	•	•	
Hollow shaft 430	•	•	
Hollow shaft 440			•
Hollow shaft 450			•

Series MEM-V Single-turn absolute encoder with 16 µs typical monoflop time

▶ TECHNICAL DATASHEET *available @ URL*

[Encoder MEM](#)



[Encoder REMA](#)



[Encoder REC-VA](#)



Encoder MEM540



Encoder REC620-VA



Encoder REMA520

► ABSOLUTE & INCREMENTAL ENCODERS

MAGNETIC PRINCIPLE



RM22

RM36

Dimensions	Ø 22 mm	Ø 36 mm
Flange		Ø 36 mm
Fixing	2 holes	4 holes on Ø 26 mm
Connections	Radial cable L 1 m	
Shaft Ø	6 mm	
Housing material	Aluminium	
Protection degree	IP64 – IP65 on request	
Supply voltage	5 Vdc	
Output signals	Line driver TTL	

RM22 & RM36 are high-speed magnetic rotary encoders designed for use in harsh industrial environments. The non-contact two-part design removes the need for seals or bearings, ensuring long-term reliability and simple installation.

The encoder comprises a magnetic actuator and a separate encoder body. Rotation of the magnetic actuator is sensed by a custom encoder chip **within the body, and processed to the required output.**

RM22 & RM36 are available with different absolute and incremental versions.

RM22 – RM36	Magnetic encoder – Incremental or absolute version available
RM22-I	Incremental encoder 128 ppr – 5V line driver output
RM36-I	Incremental encoder 128, 512, 1024 ppr – 5V line driver output
RM22-P	Absolute encoder 9 bit binary code – parallel output
RM22-S	Absolute encoder 9 bit binary code – SSI output
RM22-A	Sin/cos encoder – 1 Vpp ±0,1 mV analogue output
RM22-V	Encoder with voltage analogue output 0/5 Vdc on 360° with clockwise rotation
RM36-V	Encoder with voltage analogue output 0/10 Vdc on 360°, 180°, 90°, 45° with clockwise or cc rotation



Encoders series RM22 – RM36

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[Encoder RM36](#)

[Encoder RM22](#)



► INCREMENTAL

SMALL



E30

E40

E40A

Dimensions	Ø 30 mm	Ø 40 mm	
Flange	Ø 30 mm	Ø 40 mm	
Fixing	2 holes on Ø 22 mm	6 holes on Ø 30 mm	4 holes on Ø 25.4 mm
Connections	Axial or radial cable L 1 m		
Shaft Ø	4 - 6 mm		
Housing material	ABS	ABS	
Protection degree	IP54	IP54	
PPR no.	2 ÷ 12500		
Zero reference	On request (type E31/E41)		
Supply voltage	5 Vdc – 8/24 Vdc		
Output signals	Push-pull – line driver TTL/HTL		

Series E30 & series E40:

Compact-sized and accurate these miniature encoders are ideal for a great number of applications. The series **E40** includes different flange types: round, square, hollow shaft. The series **RE40** offers aluminium housing and high protection against environmental agents.

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[Encoder E30](#)



Encoders E30

ENCODERS

SIZE



E40V



E40M




E40S



E40Q

Ø 40 mm

Ø 40 mm	Hollow shaft	Hollow shaft	 44x44 mm
M18x1 screw fixing	Anti-rotational fixing	Elastic support	4 holes di Fixing
Axial or radial cable L 1 m			
6 mm	Hole Ø 6 or 8 mm		6 mm
ABS - Optional: Aluminium			
IP54			
2 ÷ 12500			
On request (type E41)			
5 Vdc – 8/24 Vdc			
Push pull – line driver TTL/HTL			



Encoders series E40

► TECHNICAL DATASHEET *available @ URL*

[Encoder E40](#)



INCREMENTAL

SMALL SIZE



RE40 **RE40V** **RE40M** **RE40S** **RE40Q**

Dimensions	Ø 40 mm				
Flange	Ø 40 mm	Ø 40 mm	Blind hollow shaft		<input type="checkbox"/> 44x44 mm
Fixing					
Connections	6 fori	M18x1 screw fixing	Antirotational fixing	Elastic support	4 holes
Shaft Ø	Radial cable gland - cable L 1 m				
Housing material	6 mm optional 4		6 – 8 mm		6 mm optional 4
Protection degree	Alluminium				
PPR no.	IP65				
Zero reference	2 ÷ 12500				
Supply voltage	On request (type RE41/RE41V/RE41M/RE41S/RE41Q)				
Output signals	5 Vdc / 8÷24 Vdc				
Dimensions	Push pull – line driver TTL/HTL				

Series RE40:

Encoders series **RE40** avail on different flange types: round, square, hollow shaft. The aluminium housing offer high protection against environmental agents.



Encoders series RE40 with solid shaft

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[Encoder RE40](#)



Encoders series RE40 with blind hollow shaft

ENCODERS

Ø 50 ROUND FLANGED



RE50

SEB

Ø 50 mm

Ø 50 mm

3 holes on Ø 36 mm

Axial M12 connector or cable L 1 m

Axial MS connector or cable

6 – 8 – 10 mm

10 mm

Alluminium

ABS

IP65

IP65 – optional IP66 with sealing O-ring

2 ÷ 12500

On request (*type RE51*)

On request (*type SEB-Z*)

5÷30 Vdc

Push pull – line driver TTL/HTL

Series RE50:

Compact sized encoder • Body high: 48 mm

Connections by M12 connector 5 or 8 pins (flying connector excluded). Optional: 5 or 10 m cable ended with flying connector



Encoder SEB equipped with arm and wheel

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[Encoder RE50](#)

[Encoder SEB/SEB-M](#)



Ø 58 COMPACT ENCODERS



SYNCHRO FLANGE

CLAMPING FLANGE



REC620

REC520

REC540

REC440

REC450

Dimensions	Ø 58 mm H 38 mm			
Flange	<input type="checkbox"/> 63.5x63.5 mm	Ø 58 mm		Hollow shaft
Centering mask	Ø 31.75 mm	Ø 50 mm	Ø 36 mm	
Fixing	4 holes	Servo/ 3 holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support Anti-rotational elastic support
Connections	M12 connector or cable L 1 m in radial position			
Shaft Ø	6 – 8 – 9.52 – 10 mm	6 - 8 - 10 mm		Hole Ø 8-10-12-14 - 15 mm
Materiale Housing	Aluminium			
Protection degree	IP65			
PPR no.	2 ÷ 12500			
Zero reference	On request (type REC621/521/541/441/451)			
Supply voltage	5÷ 30 Vdc			
Output signals	Push pull – line driver TTL/HTL			

Series REC:

Compact sized encoder • Body high: 38 mm
 Connections by M12 connector 5 or 8 pins (socket connector excluded)
 Optional: 5 or 10 m cable ended with flying socket connector



LISTED versions available

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[Encoder REC](#)



Encoders series REC


ENCODERS

Ø 58 SQUARE-FLANGED



RE620

RE650

Ø 58 mm	
 63.5x63.5 mm	
Ø 31.75 mm	Ø 50 mm
4 holes	
Axial or radial cable or MS connector	
6 – 8 – 9.52 – 10 mm	
Aluminium	
IP65 – IP66 on request, with sealing ring on the shaft	
2 ÷ 12500 / 50000 (version REV)	
On request (type RE621/RE641)	
5 ÷ 30 Vdc	
Push pull - line driver TTL/HTL– 1V _{pp} sinusoidal outputs	

MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES

REV 50000 i/g	•	
REM	•	•
REP	•	•

Series REV	Series REM	Series REP
HIGH PPR Number 1000÷50000 ppr	MAGNETIC ENCODERS 8÷2048 ppr	PROGRAMMABLE ENCODERS 8÷2048 ppr
Glass disk - Aluminium case Supply voltage: 5÷28 Vdc Output signals: push-pull or line driver Axial/radial cable/connector Protection degree IP65, optional IP66	Magnetic operating principle Aluminium housing Supply voltage: 5÷ 30 Vdc Output signals: push-pull or line driver Axial/radial cable/connector Protection degree IP65, optional IP66	8÷2048 ppr programmable by the user Zero reference pulse Magnetic operating principle Aluminium housing Supply voltage: 5÷28 Vdc Output signals: push-pull or line driver Axial/radial connector Protection degree IP65, optional IP66

► **TECHNICAL DATASHEET** available @ URL

[Encoder RE5xx](#)

[Encoder REM](#)

[Encoder REV](#)

[Encoder REP](#)



ROUND-FLANGED



SYNCHRO FLANGE



CLAMPING FLANGE



RE510



RE530

RE520

RE540

Dimensions	Ø 58 mm			
Flange	Ø 58 mm			RE0444 Ø 110 mm
Centering mask	Ø 50 mm	Ø 36 mm	Ø 31.75 mm	
Fixing	Servo 3 holes on Ø 42 mm	3 holes on Ø 48 mm	3 holes on Ø 47.6 mm	
Connections	Axial or radial cable or MS connector			
Shaft Ø	6 – 8 – 9.52 – 10 mm			11 mm
Housing material	Aluminium			
Protection degree	IP65 – IP66 on request, with sealing ring on the shaft			
PPR no.	2 ÷ 12500 / 50000 (version REV)			
Zero reference	On request (type RE521/RE541/RE511/RE531)			
Supply voltage	5 ÷ 30 Vdc			
Output signals	Push-pull – line driver TTL/HTL –1 V _{pp} sinusoidal outputs			

MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES

REV 50000 i/g	•	•		
REM	•	•	•	•
REP	•	•	•	

Series REV	Series REM	Series REP
HIGH PPR Number 1000÷50000 ppr	MAGNETIC ENCODERS 8÷2048 ppr	PROGRAMMABLE ENCODERS 8÷2048 ppr
Glass disk - Aluminium case	Magnetic operating principle	8÷2048 ppr programmable by the user
Supply voltage: 5÷28 Vdc	Aluminium housing	Zero reference pulse
Output signals: push-pull or line driver	Supply voltage: 5÷ 30 Vdc	Magnetic operating principle
Axial/radial cable/connector	Output signals: push-pull or line driver	Aluminium housing
Protection degree IP65, optional IP66	Axial/radial cable/connector	Supply voltage: 5÷28 Vdc
	Protection degree IP65, optional IP66	Output signals: push-pull or line driver
		Axial/radial connector
		Protection degree IP65, optional IP66

► TECHNICAL DATASHEET available @ URL

[Encoder RE6xx](#)



[Encoder REM](#)



[Encoder REV](#)



[Encoder REP](#)



ENCODERS

HOLLOW SHAFT



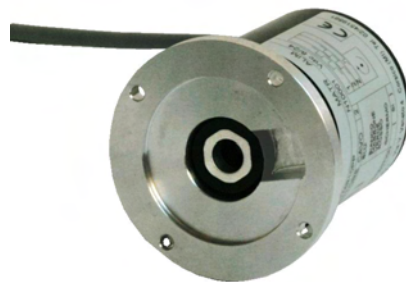
<i>RE400</i>	<i>RE470</i>	<i>RE410</i>	<i>RE450</i>
Ø 58 mm	Ø 58 mm	Ø 58 mm	Ø 58 mm
Ø 53.5 mm	Ø 72 mm	Ø 58 mm	Ø 58 mm
3 holes on Ø 30 mm	4 holes on Ø 63.5 mm	Anti-rotational support	Anti-rotational elastic support
Axial or radial cable or MS connector			
6, 8, 10 mm		8, 10, 12, 14, 15 mm	
Aluminium			
IP65			
2 ÷ 12500			
On request (type E401/E471/E411/E431)			
5÷30 Vdc			
Push-pull – line driver TTL/HTL – 1 V _{pp} sinusoidal outputs			

MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES

REV				
REM	•	•	•	•
REP	•	•	•	•



Encoder RE410



Encoder RE470

► TECHNICAL DATASHEET *available @ URL*

[xEncoder RE4xx](#)



[Encoder REM](#)



[Encoder REP](#)



► ENCODER FITTINGS

COUPLINGS



JOINTS series **BSS / WA**,
aluminium
Hole Ø mm 6-6, 6-10, 8-8,
8-10, 10-10

JOINTS series **SK**
Polyamid fiberglass reinforced
Aluminium connecting element
Hole Ø mm 4-4, 6-6, 8-8, 8-10,
10-10

JOINTS series **FK**
Nickel plated steel
Hole Ø mm 6-6, 6-8, 8-8, 8-
10, 10-10

JOINTS **PAGUFLEX**
PF0606
Galvanized steel-
polyurethane connecting
element
Hole Ø mm 6-6, 8-8, 10-10

MEASURING WHEELS



MEASURING WHEEL 552
Aluminium wheel, smooth rubber
surface, development 500±1 mm,
accuracy ±0.2%
Hole Ø 8 or 10 mm

MEASURING WHEEL 251
Aluminium wheel, smooth rubber
surface, development 200±0.2 mm,
accuracy 0,1%
Hole Ø 6, 8 or 10 mm

Aluminium **MEASURING WHEELS**,
development 200 or 500 mm
MRAR milled-aluminium surface
MRAN pointed polyurethane surface
MRAG corrugated polyurethane
surface

SUPPORTING ARM



Encoder **supporting arm** type **B100**

Encoder with supporting arm and wheel

► ORDERING INFORMATION

ELAP encoders offer different options for mechanical size, flange type, shaft dimension, connection type and position, case material – as well as a choice of electronic signals, fieldbus interfaces, resolution values, ppr no.

A number of information are necessary to define the requested encoder type, when placing an order :

INCREMENTAL ENCODERS

- **SERIES**

Eg E30, RE40S, RE50, RE620, REM, etc.

- **FLANGE TYPE**

Eg 520/540/620 etc.

- **SHAFT Ø**

4, 6, 8, 9.52, 10 mm etc.

- **CONNECTIONS TYPE & POSITION**

Cable/Connector - Axial/Radial

- **PULSES/REVOLUTION NO.**

2÷50000

- **ZERO REFERENCE**

0/1

- **SUPPLY VOLTAGE**

5÷30 Vdc, 5÷28 Vdc

- **OUTPUT SIGNALS**

Push-pull, Line driver

- **optional sealing ring**

protection degree IP66

ABSOLUTE ENCODERS

- **SERIES**

Eg MEM, MEM-BUS, REMA etc.

- **FLANGE TYPE**

Eg 520/540/620 etc.

- **SHAFT Ø**

4, 6, 8, 9.52, 10 mm etc.

- **CONNECTIONS TYPE & POSITION**

Cable/Connector - Axial/Radial

- **SINGLE/MULTITURN**

- **RESOLUTION**

4-13 bit

- **STEP NO.**

2-16 bit

- **CODE**

Binary/Gray

- **SUPPLY VOLTAGE**

5÷28 Vdc, 10÷30 Vdc

- **OUTPUT SIGNALS**

SSI, PARALLEL, 0-10V ANALOGUE

Interface:

EtherCAT/PROFINET/PROFIBUS/CANopen

The encoder nomenclature indicates the encoder specifications:

Example:



► SALES NETWORK



ELAP sales network includes several distributors worldwide. Visit our site to find a distributor in your Country.

► WWW.ELAP.IT



Visit our site www.elap.it to stay updated about our products and events.



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