EL/EF/EW48C-P
Incremental Encoders + commutation phases

UNI EN ISO 9001

CE

Encoder EL/EF/EW48 C-P series

The encoders of the "48" series are applied in systems of retroaction on AC servomotors; they integrate, more than a traditional incremental encoder, the optic generation of " Hall effect phases". The main characteristics are :
- contained dimensions
- high temperatures resistance
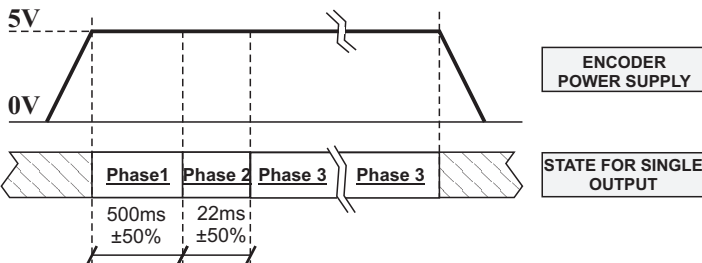- wide range of resolutions available
- easy assembly

Serie EL
Base version with incremental encoder.
Availability of various electronic output configurations

Serie EF
Optic generation of the "commutation phases" integrated to the base version. The signals transmission happens in a parallel way.

Serie EW
Special version of the EF series with a simplification in the wiring, obtained through the sequential transmission of the incremental phases and those of commutation as in the graph below.

| | ENCODER POWER SUPPLY |
| Phase1 | Phase 2 | Phase 3 | Phase 3 | STATE FOR SINGLE OUTPUT |

500ms ±50% 22ms ±50%

phase 1: HIGH "HZ" IMPEDANCE PHASE
phase2: COMMUTATION TRANSMISSION PHASES
phase3: CONTINUOUS FUNCTIONING INCREMENTAL PHASES

Signal configurations

INCREMENTAL SIGNALS
A
B
Z

COMMUTATION PHASES
U
V
W

A B C D E F
T

N° POLES	A / B / C / D / E / F	T
4	30° ± 1.5°	180°
6	20° ± 1.5°	120°
8	15° ± 1.5°	90°

General electronic characteristics

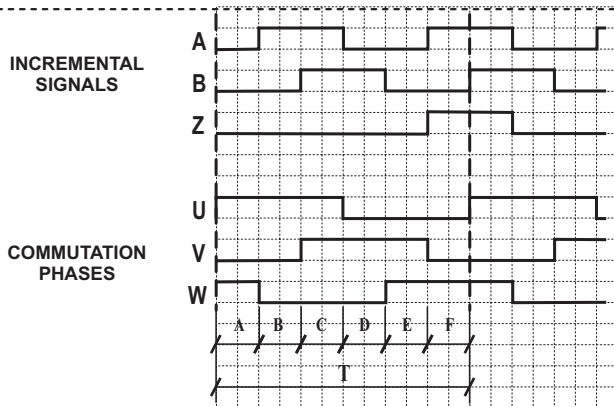| Resolutions (imp./turn)	From 1 to 2048
Source and Sink current	15 mA per channel with Line Driver 30 mA per channel with other electronics
Max output frequency	MAX 150KHz $F = \dfrac{R.P.M. \times Resolution}{60}$

"EL" electronic characteristics

Power supply	5 Vdc / 8÷24 Vdc
Electronics Available	NPN / NPN OPEN COLLECTOR / PUSH PULL / LINE DRIVER
Current consumption without load	100 mA per EL48

"EF/EW" electronic characteristics

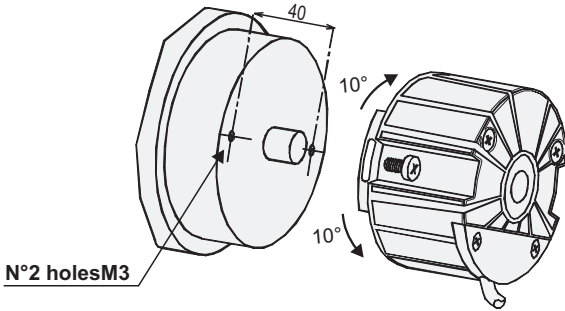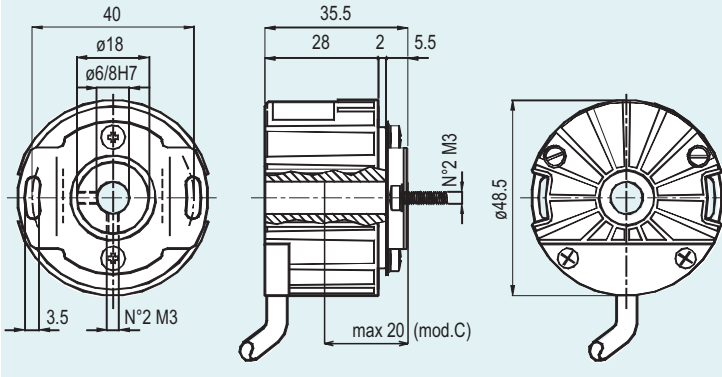| Power supply	5Vdc ± 5%
Electronics for incremental phases	LINE DRIVER
Electronics for effect Hall phase	LINE DRIVER/ NPN OPEN COLLECTOR(only for EF)
Current consumption without load	150 mA per EF/EW48

Cable colour

COLOUR	FUNCTION	EL	EF	EW
RED	+Vdc	●	●	●
BLACK	0 Volt	●	●	●
GREEN	A	●	●	●
YELLOW	B	●	●	●
BLUE	Z	●	●	●
BROWN	$\overline{A}$	●	●	●
ORANGE	$\overline{B}$	●	●	●
WHITE	$\overline{Z}$	●	●	●
GREY	U		●	
VIOLET	V		●	
GREY/ RED	W		●	
RED/ BLUE	$\overline{U}$		●	
WHITE/ GREEN	$\overline{V}$		●	
BROWN/ GREEN	$\overline{W}$		●	

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EL / EF / EW 48 mod. C-P

40
35.5
ø18
28   2   5.5
ø6/8H7
N°2 M3
ø48.5
3.5   N°2 M3
max 20 (mod.C)

40
10°
10°
N°2 holesM3

Maximum rotation for the zero phase= 20°

Mechanical Characteristics

Hole diameter	ø6 / ø8H7
Protection	IP40
R.P.M.	6000 MAX
Shock	50 G per 11 msec
Vibrations	5G 10 ÷ 500 Hz
Bearings	n° 2 ball bearings
Shaft material	Brass OT58 UNI 5705-65
Body material	Aluminium D11S - UNI9002/5
Cover material	Special plastic reinforced with glass fibre
Operating temperature	-10° ÷ + 85°C
Storage temperature	-25° ÷ + 85°C
Weight	100 g

Ordering code

In case of particular Customer variant separate by a full stop

EF   48   C   6   L   2000   Z   5   L   6   X   6   PR   .   XXX

EL = incremental encoder
EF =incremental encoder +
         commutation phases
EW =incremental encoder +
         commutation phases
         "LESS WIRED" version
         transmission phases with less wires

48 = body dimension

C = with blind hole
P = with passing hole with frontal fixage

TO BE INDICATED ONLY FOR EF / EW MODELS

4 = n° 4 poles
6 = n° 6 poles   **N° poles of the motor**
8 = n° 8 poles

C = NPN OPEN COLLECTOR (not available for EW)
L = LINE DRIVER   **Electronic for phases commutation**

from **1** to **2048** imp./turn   **Incremental encoder resolutions**
N.B.: For impulse availability contact directly our offices

S = without zero impulse
Z = with zero impulse

Special Customer variants
XXX = indicated by a progressive
number from 001 to 999

PR = radial output cable
(standard length 0.3 m)

6 = 6000 R.P.M. max

X = Protection IP40

6 = ø6 mm
8 = ø8 mm   **Shaft hole diameter**

L = LINE DRIVER   **Electronics for   EF / EW mod.**

N = NPN
C = NPN OPEN COLLECTOR   **Electronics for EL mod.**
P = PUSH PULL
L = LINE DRIVER

N.B.: For the optionals on the output configurations see the incremental output connections card

5 = 5 Vdc   **Power supply for EF / EW mod.**

5 = 5 Vdc
8 ÷ 24= from 8 to 24 Vdc   **Power supply for EL mod.**

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