L50

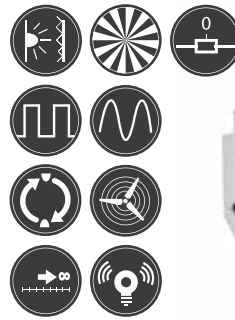## PHOTOELECTRIC LINEAR ENCODER

Modular photoelectric sealed linear encoder L50 has measuring length from 3240 mm up to 30040 mm.

The encoder is used to convert linear displacements of key machine components into electrical signals containing information about the value and direction of the displacement.

The encoder determines position by detecting light reflected of a metal band. Metal band with 40 µm pitch scale is fixed in rigid aluminium housing with protection lips.

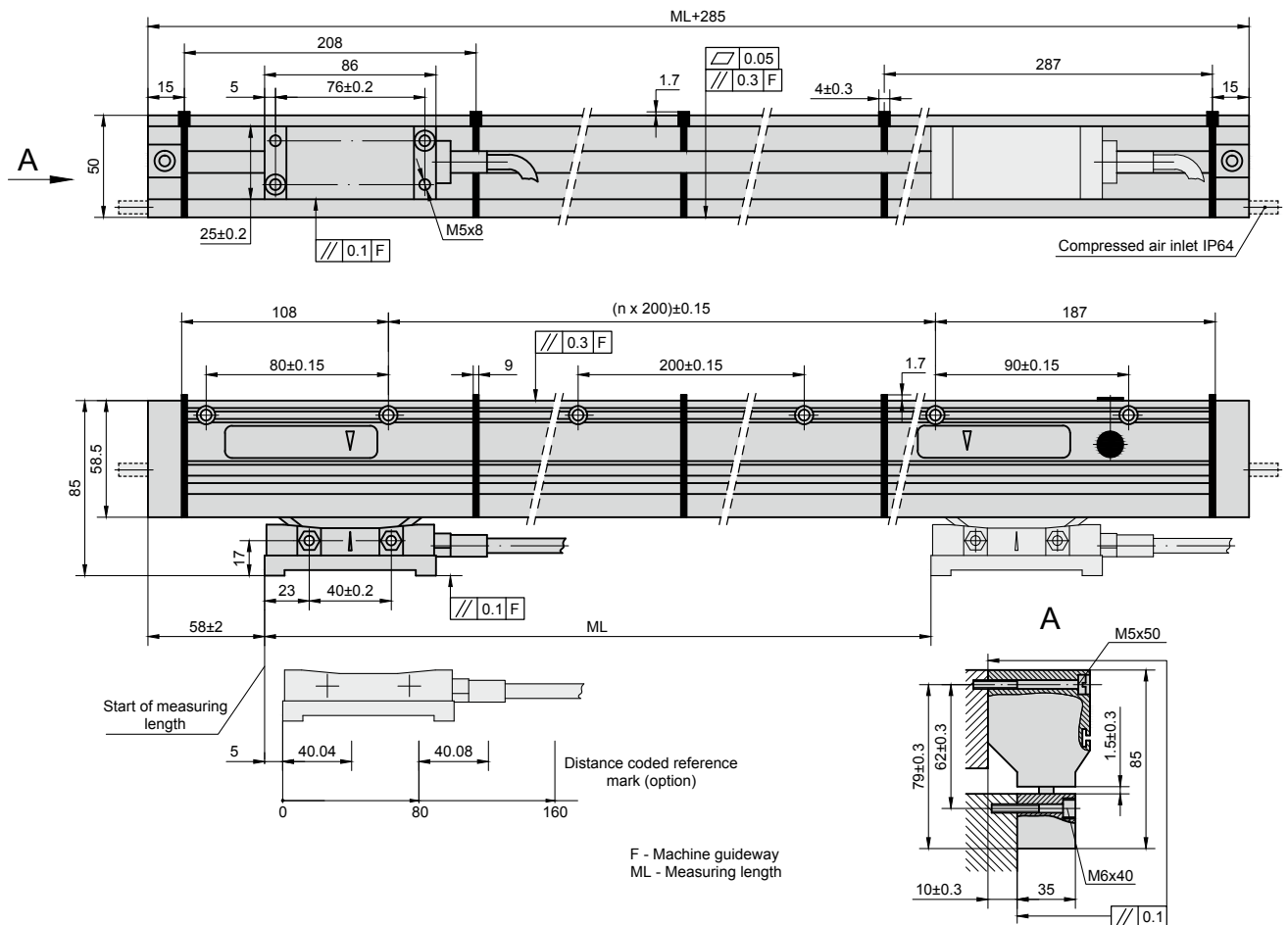The encoder consists of several separate rigid modules with length

up to 2.0 m, which are joined together, and reading head.

Two versions of output signals are available:

- • - L50-AV - Sinusoidal signals, with amplitude approx. 1 Vpp, require external

- • subdividing electronics. Resolution 0.1 µm is possible with respective external electronics.

- • - L50-F - Square-wave signals, with integrated subdividing electronics for interpolation x1, x2, x5, x10.
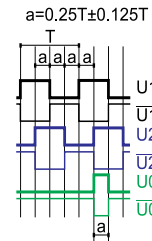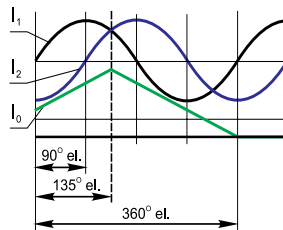
MECHANICAL DATA

Measuring lengths (ML), mm	from 3240 up to 30040 (length of each module with steps 200 mm)
Accuracy grades to any metre within the ML (at 20°C)	±10 µm/m
Grating period	40 µm
Reference marks (RI): - C - P - E	at coded distance 80 mm at constant step 50 mm selectable through magnet
Max. traversing speed	1 m/min
Required moving force	< 6 N

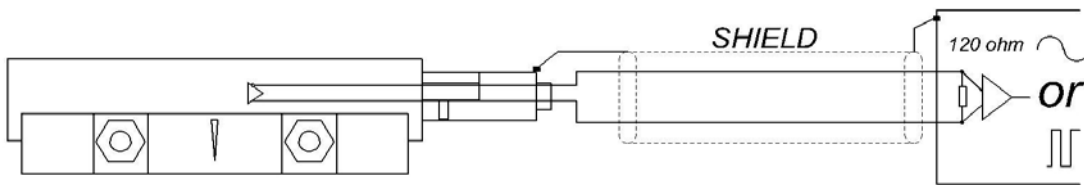|	
Protection (IEC 529): -without compressed air -with compressed air	IP53 IP64
Weight	1.8 kg + 3.3 kg/m
Operating temperature	0...+50°C
Storage temperature	-20...+70°C
Permissible vibration (10...2000 Hz)	≤ 100 m/s²
Permissible shock (11 ms)	≤ 300 m/s²
Coefficient of thermal expansion	10.6 x 10⁻⁶ °C

F - Machine guideway
ML - Measuring length

ELECTRICAL DATA

VERSION	L50-AV 〜 1Vpp	L50-F ⊓⊔ TTL
Power supply	+5 V ±5% /100 mA (120Ω)	+5 V ±5% /150 mA (120Ω)
Light source	LED	LED
Resolution	Up to 0.1 µm depending on external subdividing electronics	10; 5; 1; 0.5 µm (after 4-fold dividing on subsequent electronics)
Incremental signals	Differential sine +A/-A and +B/-B Amplitude at 120 Ω load: - I_1 = 0.6...1.2 V - I_2 = 0.6...1.2 V	Differential square-wave U1/$\overline{U1}$ and U2/$\overline{U2}$. Signal levels at 20 mA load current: - low (logic "0") $\leq$ 0.5 V - high (logic "1") $\geq$ 2.4 V
Reference signal	Quasi-triangular R Magnitude at 120 Ω load: - R = 0.25-0.8V (usable part)	One differential square-wave U0/$\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low (logic "0") $\leq$ 0.5 V - high (logic "1") $\geq$ 2.4 V
Direction of signals	B lags A at reading head displacement from left to right	U2 lags U1 at reading head displacement from left to right
Electrical protection	inversion of power supply polarity and short circuit on output port	
Cable length (standard)	4 m	4 m
Maximal cable length (total with extension cable)	150 m	50 m
Output signals		

CABLE CONNECTION

ACCESSORIES

CONNECTORS FOR CABLE	B12 12-pin round connector	C12 12-pin round connector	D9 9-pin flat connector	D15 15-pin flat connector	RS10 10-pin round connector	ONC 10-pin round connector
DIGITAL READOUT DEVICES		CS3000			CS5000	

ORDER FORM

L50 - XX - XXX - X - X - XX / X

OUTPUT SIGNALS AND RESOLUTION:	MEASURING LENGTH:	REFERENCE MARKS:	COMPRESSED AIR:	CABLE LENGTH:	CONNECTOR TYPE:
AV - Sinusoidal F10 - TTL 1µm F20 - TTL 2µm F50 - TTL 5µm F100 -TTL 10µm	3240 - 3240mm 5240 - 5240mm ... 30400 - 30400mm	C - at coded distance (80mm) P - at constant step (50mm) E - selectable through magnet	0 - without compressed air 1 - with compressed air	01 - 1m 02 - 2m 03 - 3m ...	W - without connector B12 - round, 12 pins C12 - round, 12 pins D9 - flat, 9 pins D15 - flat, 15 pins RS10 - round, 10 pins ONC - round, 10 pins

ORDER EXAMPLE:	1) L50-AV-30400-C-0-04/C12

Photoelectric linear encoders