

L18B PHOTOELECTRIC (L18B-A, L18B-AV, L18B-F) LINEAR ENCODER

The linear encoder **L18B** is similar to the MSA 6717 (RSF) type encoder in electrical parameters, mounting and overall dimensions.



The sealed linear encoder L18B is used to convert linear displacements of machine key components into electrical signals containing information about the value and direction of the displacement.

The encoder consists of a glass grating scale installed into a rigid hollow housing and a ball-bearing-guided reading head. To be able to work in harsh environments such as lubricants and chips, the encoder has sealing lips. Filtered air can be supplied into the housing of the encoder for extra protection. The photoelectric unit of the reading head generates sinusoidal micro-current or TTL square-wave (standard RS422) output signals.

The encoder has three versions by its output signals:

L18B-A - Sinusoidal signals, with amplitude approx. 11 μ A_{pp}, require an external subdividing electronics.

L18B-AV - Sinusoidal signals, with amplitude approx. 1 V_{pp}, require external subdividing electronics.

L18B-F - Square-wave signals, with integrated subdividing electronics for interpolation x1, x2, x5 or x10.

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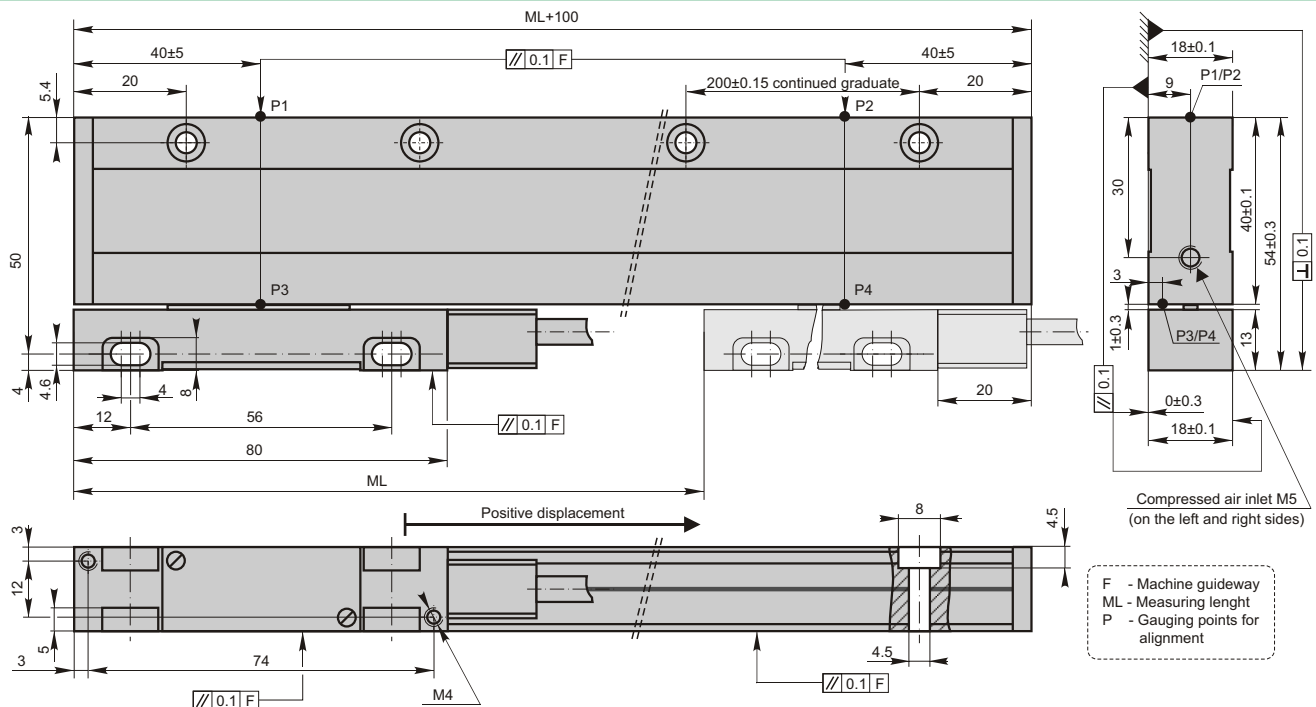
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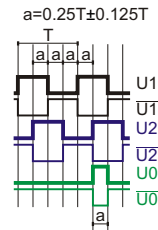
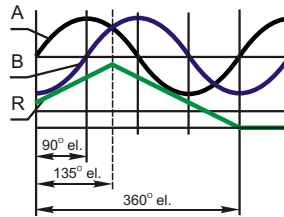
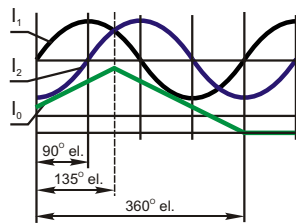
Mechanical Data

Measuring lengths (ML), mm	70, 120, 170, 220, 270, 320, 420, 520, 620, 720, 820, 920, 1020, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440	Max. traversing speed	60 m/min
Accuracy grades to any metre within the ML (at 20°C)	$\pm 10; \pm 5 \mu\text{m}$	Required moving force with sealing lips	< 3 N
Grating period	20 μm	Protection (IEC 529)	IP53 IP64
Reference marks (RI)		Weight	0.4 kg + 1.0 kg/m
-standard for ML $\leq 1020\text{mm}$	35 mm from both ends of ML	Operating temperature	0...+50°C
-standard for ML > 1140mm	45 mm from both ends of ML	Storage temperature	-20...+70°C
-optional	one RI at any location, or two or more RI's separated by distances of n x 50 mm	Permissible vibration (40 to 2000 Hz)	$\leq 30 \text{ m/s}^2$
		Permissible shock (11 ms)	$\leq 100 \text{ m/s}^2$



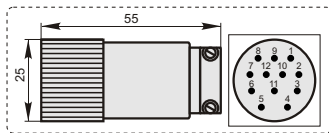
Electrical Data

Version	L18B-A $\sim 11 \mu\text{A}_{pp}$	L18B-AB $\sim 1\text{V}_{pp}$	L18B-F \square TTL
Power supply	+5 V $\pm 5\%$ / < 90 mA	+5 V $\pm 5\%$ / < 120 mA	+5 V $\pm 5\%$ / < 120 mA
Light source	LED	LED	LED
Resolution	Depends on external subdividing electronics	Depends on external subdividing electronics	5; 1; 2.5; 0.5 μm (after 4-fold dividing in subsequent electronics)
Incremental signals	Two sinusoidal I_1 and I_2 . Amplitude at 1 k load: - $I_1 = 7\text{-}16 \mu\text{A}$ - $I_2 = 7\text{-}16 \mu\text{A}$	Two sinusoidal I_A and I_B . Amplitude at 120 k load: - $A = 0.6\text{-}1.2 \text{ V}$ - $B = 0.6\text{-}1.2 \text{ V}$	Square-wave U_1 , U_2 and their inverted $\overline{U_1}$, $\overline{U_2}$. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{ V}$ - high ("1" logic) $\geq 2.4 \text{ V}$
Reference signal	Quasi-triangle I_0 . Signal magnitude at 1 k load: - $I_0 = 2\text{-}8 \mu\text{A}$	Quasi-triangle R . Signal magnitude at 1 k load: $R = 0.2\text{-}0.8 \text{ V}$	Square-wave U_0 and its inverted $\overline{U_0}$. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{ V}$ - high ("1" logic) $\geq 2.4 \text{ V}$
Maximum operating frequency	50 kHz	50 kHz	500 kHz (at x10 interpolation)
Direction of signals	I_2 lags I_1 at reading head displacement from left to right	B lags A at reading head displacement from left to right	U_2 lags U_1 at reading head displacement from left to right
Standard cable length	3 m, without connector	3 m, without connector	3 m, without connector

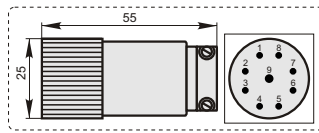


Accessories

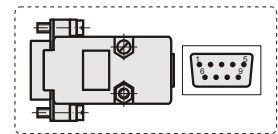
C12
12-pin round connector for
L18B-F and L18-AV



C9
9-pin round connector only
for **L18B-A**



D9
9-pin flat connector for **L18B-A,**
L18B-AV and L18B-F



Order form

L18B - X - XXX - X/XXX - XX - XX/X

Version by output signals and resolution:
A - Sinusoidal
F05 - TTL 0.5 μm
F10 - TTL 1.0 μm
F25 - TTL 2.5 μm
F50 - TTL 5.0 μm

Measuring length:
007 - 70 mm
052 - 520 mm
.....
244 - 2440 mm

Reference marks:
N - none RI
S - standard
M - every 50 mm
Ln/XXX - n RI with 50-fold steps / XXX distance of the first RI from the beginning of ML, mm

Accuracy:
05 - $\pm 5 \mu\text{m}$
10 - $\pm 10 \mu\text{m}$

Cable length:
01 - 1m
02 - 2m
03 - 3m
... - ...
Cable armour dia 10,5 mm is available on option

Type of connector:
W - without connector
C12 - round, 12 pins
C9 - round, 9 pins
D9 - flat, 9 pins