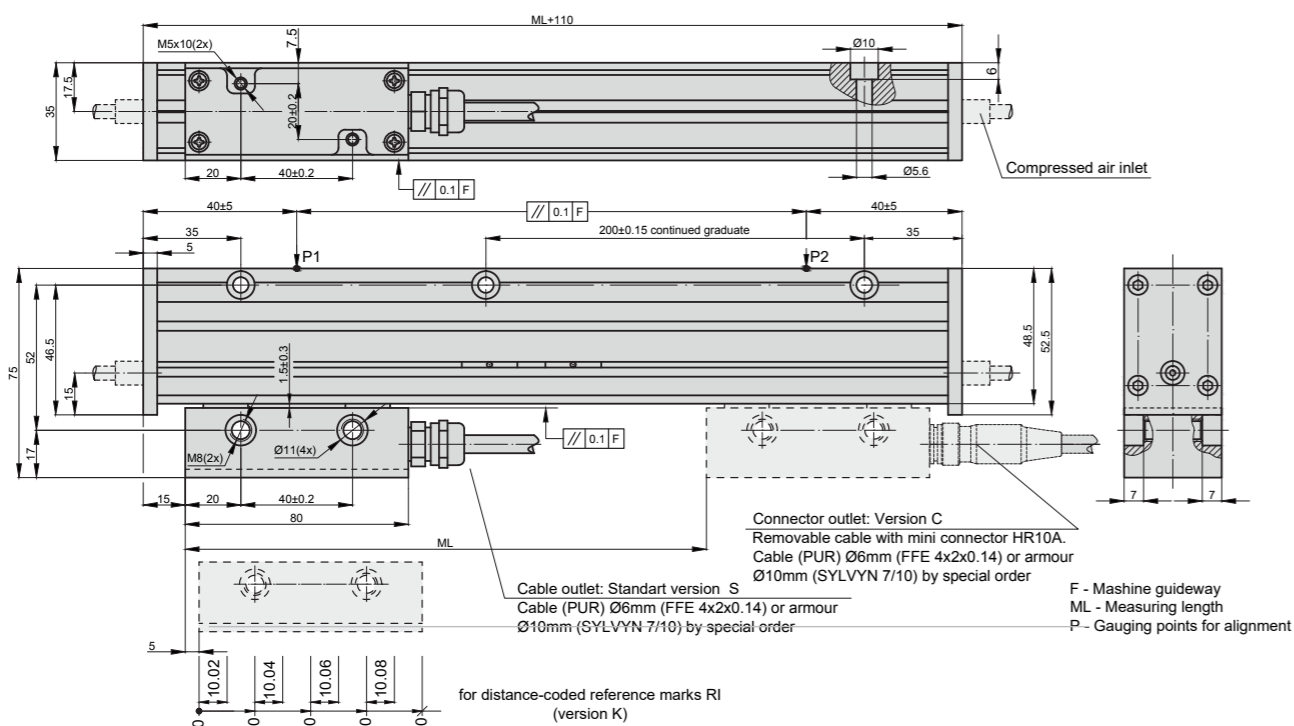


L35

PHOTOELECTRIC LINEAR ENCODER

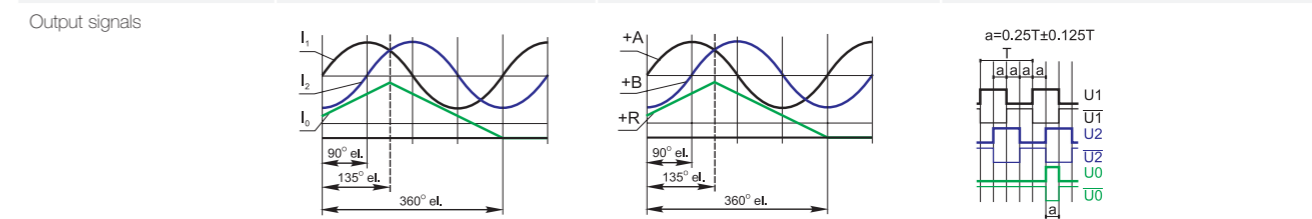
Photoelectric linear encoder L35 is an incremental linear displacement measuring device that has up to 3.240 mm measuring length, up to $\pm 3 \mu\text{m}$ accuracy grades to any meter within the ML depending on measuring length demanded. L35 series is more vibration resistant than L18 series of encoders.

-  Distance Coded reference mark
-  Analog output signals
-  High vibration resistance



ELECTRICAL DATA

VERSION	L35-A $\sim 11 \mu\text{App}$	L35-AV $\sim 1 \text{Vpp}$	L35-F \square TTL; \square HTL
Power supply	+5 V $\pm 5\%$ / < 90 mA	+5 V $\pm 5\%$ < 90 mA	+5 V $\pm 5\%$ / < 120 mA; +12V $\pm 5\%$ / < 130mA
Light source	LED	LED	LED
Resolution	Depends on external subdividing electronics	Depends on external subdividing electronics	5; 2.5; 1; 0.5; 0.2; 0.1 μm (after 4-fold dividing in subsequent electronics)
Incremental signals	Two sinusoidal I1 and I2 Amplitude at 1 k Ω load: - I1 = 7-16 μA - I2 = 7-16 μA	Differential sine +A/-A and +B/-B Amplitude at 120 Ω load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Differential square-wave U1/ $\bar{U}1$ and U2/ $\bar{U}2$. Signal levels at 20 mA load current: - low (logic "0") $\leq 0.5 \text{ V}$ at Up=+5V - high (logic "1") $\geq 2.4 \text{ V}$ at Up=+5V - low (logic "0") $\leq 1.5 \text{ V}$ at Up=+12V (HTL) - high (logic "1") $\geq (Up-2) \text{ V}$ at Up=+12V (HTL)
Reference signal	One quasi-triangular I ₀ . Signal magnitude at 1 k Ω load: - I ₀ = 2-8 μA (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120 Ω load - R = 0.2-0.8 V (usable component)	One differential square-wave U0/ $\bar{U}0$ per revolution. Signal levels at 20 mA load current: - low (logic "0") $\leq 0.5 \text{ V}$ at Up=+5V - high (logic "1") $\geq 2.4 \text{ V}$ at Up=+5V - low (logic "0") $\leq 1.5 \text{ V}$ at Up=+12V (HTL) - high (logic "1") $\geq (Up-2) \text{ V}$ at Up=+12V(HTL)
Maximum operating frequency	50 kHz (v=1 m/s) 100 kHz (v=2 m/s shortly)	50 kHz (v=1 m/s) 100 kHz (v=2 m/s shortly)	(50 x k) kHz for k=1, 2, 5, 10 1000 kHz for k=25, 50, where k- interpolation factor
Direction of signals (displacement from left to right)	I ₂ lags I ₁	B+ lags A+	U ₂ lags U ₁
Standard cable length	3 m, without connector	3 m, without connector	3 m, without connector
Maximum cable length	5 m	25 m	25 m



Note: If cable extension is used the power supply conductor section should not be smaller than 0.5 mm².

ACCESSORIES

CONNECTORS FOR CABLE	B12 12-pin round connector	C9 9-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	HR10A 12-pins round mini connector
DIGITAL READOUT DEVICES	CS3000				CS5500			
EXTERNAL INTERPOLATOR	NK							

MECHANICAL DATA

Measuring lengths (ML), mm	170; 220; 270; 320; 370; 420; 470; 520; 620; 720; 820; 920; 1020; 1140; 1240; 1340; 1440; 1540; 1640; 1740; 1840; 1940; 2040; 2140; 2240; 2340; 2440; 2540; 2640; 2740; 2840; 2940; 3040; 3140; 3240 (other intermediate lengths on request)	- distance-coded - selection by magnets	see drawing standard - one magnet (RI) in ML middle
Accuracy grades to any metre within the ML (at 20°C): - for ML from 170 up to 2040 mm - for ML from 2040 up to 3240 mm	$\pm 5; \pm 3$ $\pm 10 \mu\text{m}$	Max. traversing speed: -when interpolation factor is 1,2,5,10 -when interpolation factor is 25 -when interpolation factor is 50	1 m/s (shortly 2 m/s) 0.5 m/s 0.4 m/s
Grating period	20 μm ; 40 μm	Required moving force with sealing lips	< 5 N
Reference marks (RI): -standard for ML ≤ 1020 mm -standard for ML > 1140 mm -optional	35mm from both ends of ML 45mm from both ends of ML one RI at any location, two or more RI's separated by distances of (n x 50 mm)	Protection (IEC 529): -without compressed air -with compressed air	IP54 IP64
		Weight	0.4 kg + 2.8 kg/m
		Operating temperature	0...+50°C
		Storage temperature	-20...+70°C
		Permissible vibration (40 to 2000 Hz)	$\leq 150 \text{ m/s}^2$
		Permissible shock (11 ms)	$\leq 300 \text{ m/s}^2$

ORDER FORM

OUTPUT SIGNALS AND RESOLUTION:	MEASURING LENGTH:	REFERENCE MARKS:	ACCURACY:	SUPPLY VOLTAGE:	CABLE OR CONNECTOR OUTLET:	CABLE LENGTH:	CONNECTOR TYPE:
A - Sinusoidal AV - Sinusoidal F01 - TTL / HTL 0.1 μm F02 - TTL / HTL 0.2 μm F05 - TTL / HTL 0.5 μm F10 - TTL / HTL 1.0 μm F25 - TTL / HTL 2.5 μm F50 - TTL / HTL 5.0 μm	0070 - 70mm 0520 - 520mm ... 3240 - 3240mm	N - none RI S - standard M - every 50mm K - distance-coded Ln/XXX - nRI with 50-fold steps /XXX distance of the first RI from the beginning of ML, mm O - selection by magnets (standard - one magnet (RI) in ML middle)	10 - $\pm 10 \mu\text{m}$ 05 - $\pm 5 \mu\text{m}$ * 03 - $\pm 3 \mu\text{m}$ (optional) *depends on length	05V - +5V 12V - +12V* *only for HTL	S - version S (cable outlet) C - version C (connector outlet)	01 - 1m 02 - 2m 03 - 3m ... CP01 - 1m armoured CP02 - 2m armoured CP03 - 3m armoured ...	W - without connector B12 - round, 12 pins C9 - round, 9 pins C12 - round, 12 pins D9 - flat, 9 pins D15 - flat, 15 pins RS10 - round, 10 pins ONC - round, 10 pins
ORDER EXAMPLE:	1) L35-F05-2040-O-10-05V-C-CP03/C12						