LS 476, LS 477
LS 486, LS 487

Incremental linear encoders for measuring steps of 1 µm and 0.5 µm (0.00005 in. to 0.00002 in.)

- **Defined thermal behavior**
- **For limited installation space**
- **Simple installation with mounting spar**
- **LS 477/LS 487 with compact mounting block**

Specifications		LS 476, LS 477 LS 486, LS 487
Measuring standard Grating period Thermal expansion coefficient		Glass scale with DIADUR graduation 20 µm $\alpha_{therm} \approx 8$ ppm/K
Accuracy grade		± 5 µm or up to ML 1240 mm ± 3 µm
Measuring length ML in mm inches		70, 120, 170, 220, 270, 320, 370, 2.7, 4.7, 6.7, 8.6, 10.6, 12.6, 14.5
Mounting spar recommended		420, 470, 520, 570, 620, 720, 770, 16.5, 18.5, 20.5, 22.4, 24.4, 28, 30,
		820, 920, 1020, 1140, 1240, 32, 36, 40, 44, 48,
Mounting spar required		1340, 1440, 1540, 1640, 1740, 1840, 52, 56, 60, 64, 68, 72,
		2040 80
Reference marks	**LS 4xx**	Selectable every 50 mm by magnet; Standard: ML 70 mm 1 at midpoint; up to 1020 mm: 2, each 35 mm from start/end of ML; from 1140 mm: 2, each 45 mm from start/end of ML
	LS 4xxC	Distance-coded; absolute position value available after max. 20 mm
Max. traversing speed		120 m/min (4720 ipm) (LS 476/LS 477: see page 45)
Vibration (55 to 2000 Hz) **Shock** (11 ms)	without mounting spar with mounting spar	≤ 100 m/s² (IEC 60068-2-6) ≤ 200 m/s² (IEC 60068-2-6) ≤ 300 m/s² (IEC 60068-2-27)
Required moving force		≤ 5 N
Protection (IEC 60529)		IP 53 when installed as per instructions IP 64 with compressed air
Operating temperature		0 to 50 °C (32 to 122 °F)
Weight		0.4 kg + 0.5 kg/m measuring length
Power supply	**LS 47x** **LS 48x**	5 V ± 5%/< 140 mA (with no load) 5 V ± 5%/< 150 mA (with Z_0 = 120 Ω)
Output signals/ Signal period	**LS 47x**	⊓⊔ TTL/integr. 5-fold interpolation: 4 µm integr. 10-fold interpolation: 2 µm
	LS 48x	∿ 1 V_{PP}/20 µm
Electrical connection Cable length to subsequent electronics	**LS 47x** **LS 48x**	Sep. adapter cable (1 m/3 m/6 m/9 m) for mounting block (see *Electrical connection*) 50 m (164 ft) max. 150 m (492 ft) max.

Dimensions

in mm

DIN ISO 8015
ISO 2768 - m H

Mounting spar

ML	m
70 ... 520 (2.7 ... 20.5")	0
570 ... 920 (22.4 ... 36")	1
1020 ... 1340 (40 ... 52")	2
1440 ... 1740 (56 ... 68")	3
1840 ... 2040 (72 ... 80")	4

Ⓘ = Without mounting spar
Ⓘⓘ = With mounting spar
F = Machine guideway
P = Gauging points for alignment
Ⓚ = Required mating dimensions
Ⓓ = Compressed air inlet
Ⓡ = Reference mark position LS 4x6

Two reference marks for measuring lengths

70 ... 1020 (2.7 ... 40")	1140 ... 2040 (44 ... 80")
z = 35 mm z_i = ML – 70 mm (2.76")	z = 45 mm z_i = ML – 90 mm (3.54")

Ⓒ = Reference mark position LS 4x6C
Ⓢ = Beginning of measuring length (ML)