

Miniaturized Sealed Linear Encoders

LS 403, LS 403 C

LS 404, LS 404 C

Incremental, sealed linear encoders with **miniature cross-section** (18 mm × 46 mm/.7 in. × 1.8 in.) for **limited installation space.**

LS 403/LS 403 C

Measuring lengths

up to 1240 mm (48.8 in.)

1340 ... 2040 mm (52.7 ... 80.3 in.)

with additional mounting spar

Grating period 20 µm

LS 404/LS 404 C

The glass scale is fixed to the left-hand end of the carrier (aluminum extrusion) to prevent displacement between the glass scale and the carrier during temperature changes.

Measuring lengths

up to 620 mm (24.4 in.)

Otherwise as with LS 403

Recommended measuring steps

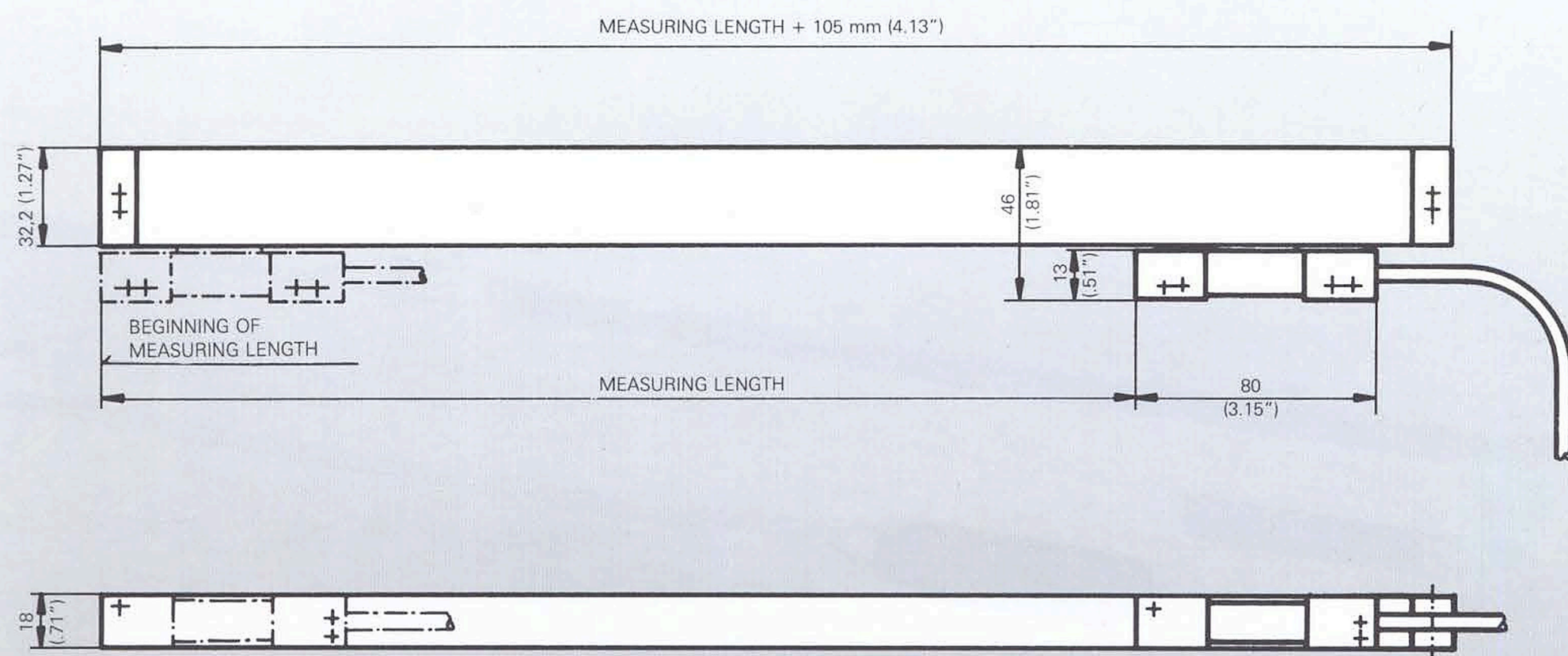
1 µm/0.5 µm

(0.000 05 in./0.000 02 in.)

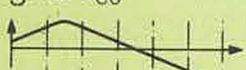


Mechanical data	LS 403, LS 403 C	LS 404, LS 404 C
Measuring standard	Glass scale with DIADUR-grating Grating period 20 µm	
Accuracy grades	± 5 µm/± 3 µm up to 1240 mm (48.8 in.) only (± 0.000 20 in./± 0.000 12 in.)	
Reference marks (standard-type)		
LS 403/LS 404	2 reference marks – with measuring lengths up to 1020 mm (40.1 in.) each 35 mm (1.4 in.) from beginning and end of the measuring length – with measuring lengths 1140 mm (44.9 in.) up to 2040 mm (80.3 in.) each 45 mm (1.8 in.) from beginning and end of the measuring length further reference mark locations on request	
LS 403 C, LS 404 C	distance-coded reference marks	
Measuring lengths LS 403, LS 403 C/	mm	70/120/170/220/270/320/370/420/470/520/570/620
LS 404, LS 404 C	inch	2.7/4.7/6.7/8.6/10.6/12.6/14.5/16.5/18.5/20.5/22.4/24.4
LS 403, LS 403 C	mm	720/770/820/920/1020/1140/1240
	inch	28.3/30.3/32.3/36.2/40.1/44.9/48.8
LS 403, LS 403 C	mm	1340/1440/1540/1640/1740/1840/2040
with mounting spar	inch	52.7/56.7/60.6/64.6/68.5/72.4/80.3
Max. traversing speed	48 m/min (160 ft/min)	
Permissible acceleration		
Max. vibration (50 ... 2000 Hz)	30 m/s ²	
Max. shock (11 ms)	100 m/s ² without mounting spar 200 m/s ² with mounting spar (LS 403/LS 403 C only)	
Required moving force	≤ 6 N	
Operating temperature	0 ... 50°C (32 ... 122°F)	
Storage temperature	–20 ... 70°C (–4 ... 158°F)	
Weight	0.1 kg + 0.5 kg/m measuring length (0.22 lb + 0.34 lb/ft)	
Connecting cable	3 m (10 ft), with connector (standard); 0.3 m (1 ft), with flange socket (male) on mounting block (special type); 3 m (10 ft), with armored sheathing with connector (special type)	

Dimensions in mm (inch) 



Electrical data LS 403, LS 403 C/LS 404, LS 404 C

Light source		Miniature lamp 5 V/0.6 W
Operating voltage		5 V $\pm$ 5 %/120 mA
Output signals	Incremental signals	2 sinusoidal signals I_{e1} and I_{e2}
		I_{e1}  I_{e2} 
	Reference signal	1 signal I_{e0}
		I_{e0} 
Signal levels with 1 k Ω load		I_{e1} approx. 7 ... 16 μ A _{pp} I_{e2} approx. 7 ... 16 μ A _{pp} I_{e0} approx. 2 ... 8 μ A (usable portion)
Total permissible cable length		20 m (65.6 ft)