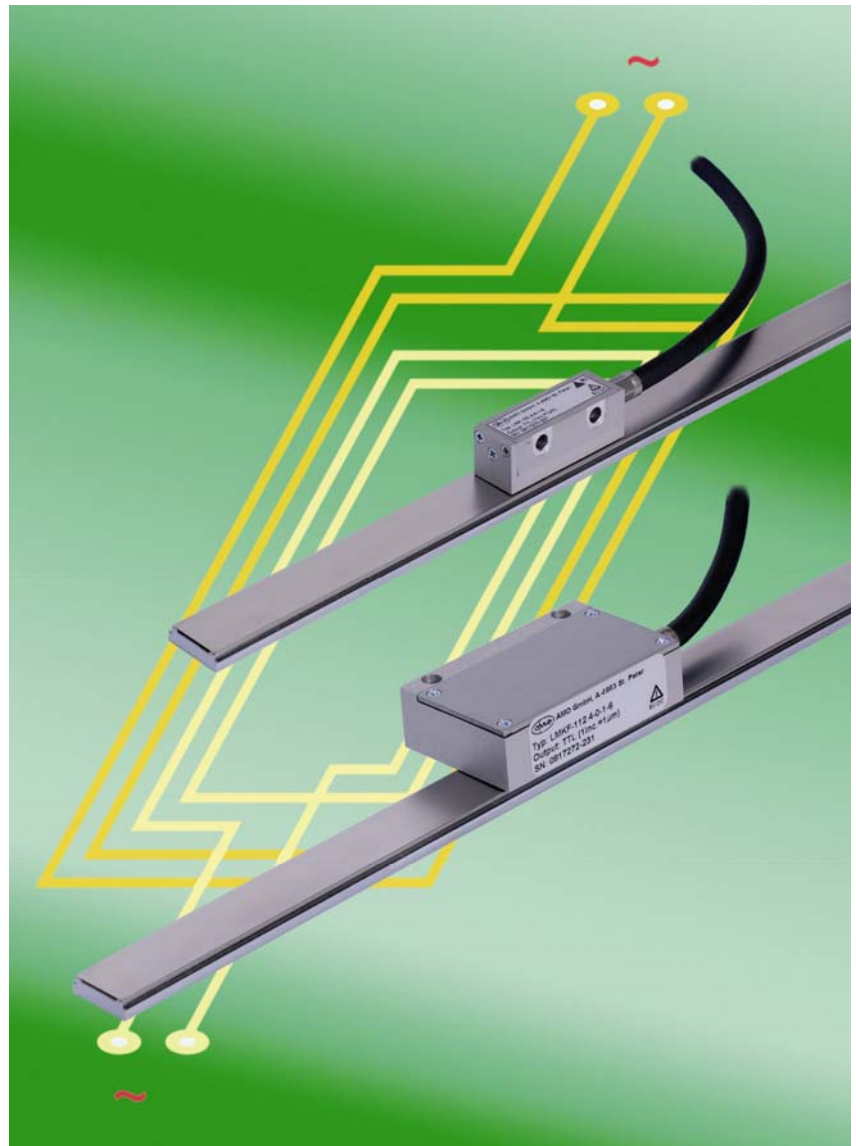


AMO GmbH

LMB-400

AMOSIN[®] Measuring scale mounted on an extrusion

- Steel extrusion as a carrier
- Easy to mount
- No limitation in length
- Possibility of length compensation to achieve maximum absolute accuracy
- Can be combined with all non guided AMOSIN[®] scanning heads



General description

The Scale type LMB-400 is designed for harsh applications where adhesive backed scale tape is not appropriate. A slim stainless steel carrier is attached to the machine with screws, with an interlocking “snap cover” securing the scale tape in position. Any non-guided AMOSIN® encoder head can be used with any of the LMB-400 scale mounting version.

Main features of this scale design:

- Mounting on the machine without any adhesive (ideal for harsh environments, replacement or repairable mounting is possible)
- Scale carrier of corrosion resistant stainless steel
- Ideal thermal matching characteristics for steel frame machines (coefficient of expansion for carrier and scale ~11 ppm/K)
- No limitation in measuring length (unlimited scale tape length mounted in modular length carriers)
- Standard one meter extrusion lengths can be butted together for ease of installation, or optional longer lengths up to four meters are available.
- Length compensation during mounting at customer side or in production, depending on the model selected.
- Scale grating pitch 500µm and 1000µm (signal output 1Vpp @ 20µm or 40µm, or down to 0,125µm TTL square wave output resolution)
- Scanning heads – all non-guided AMOSIN® types can be used, i.e. LMK-100, LMK-110, LMKF-110, LMK-1050, LMK-1150 or LMKF-1150




Overview of LMB-400 types

	Type	Mounting solution	Scale length compensation can be one by	Measuring length [mm]
Single carrier	E1	With tensioning element	Customer	<4000
	E2	Without tensioning element	Not possible	
	E3	Scale spot welded on carrier	Manufacturer	
Multiple carrier	M1	With tensioning element	Customer	>1000 – 30000
	M2	Without tensioning element	Not possible	

Technical Data

	LMB-4050/4150	LMB-400/410
grating pitch:	500 µm	1000 µm
grating accuracy:	+/- 20 µm/m, +/- 10µm/m or +/- 5µm/m	
mechanical execution:	Stainless steel measuring tape on stainless steel carrier Type E : single section carrier Type M : multiple section carrier	
measuring length:	Up to 4 m for type E and M Up to 30m for type M	
coefficient of expansion:	~11 ppm/K	
reference mark:	1 mark as standard or any desired number and position or distance coded	

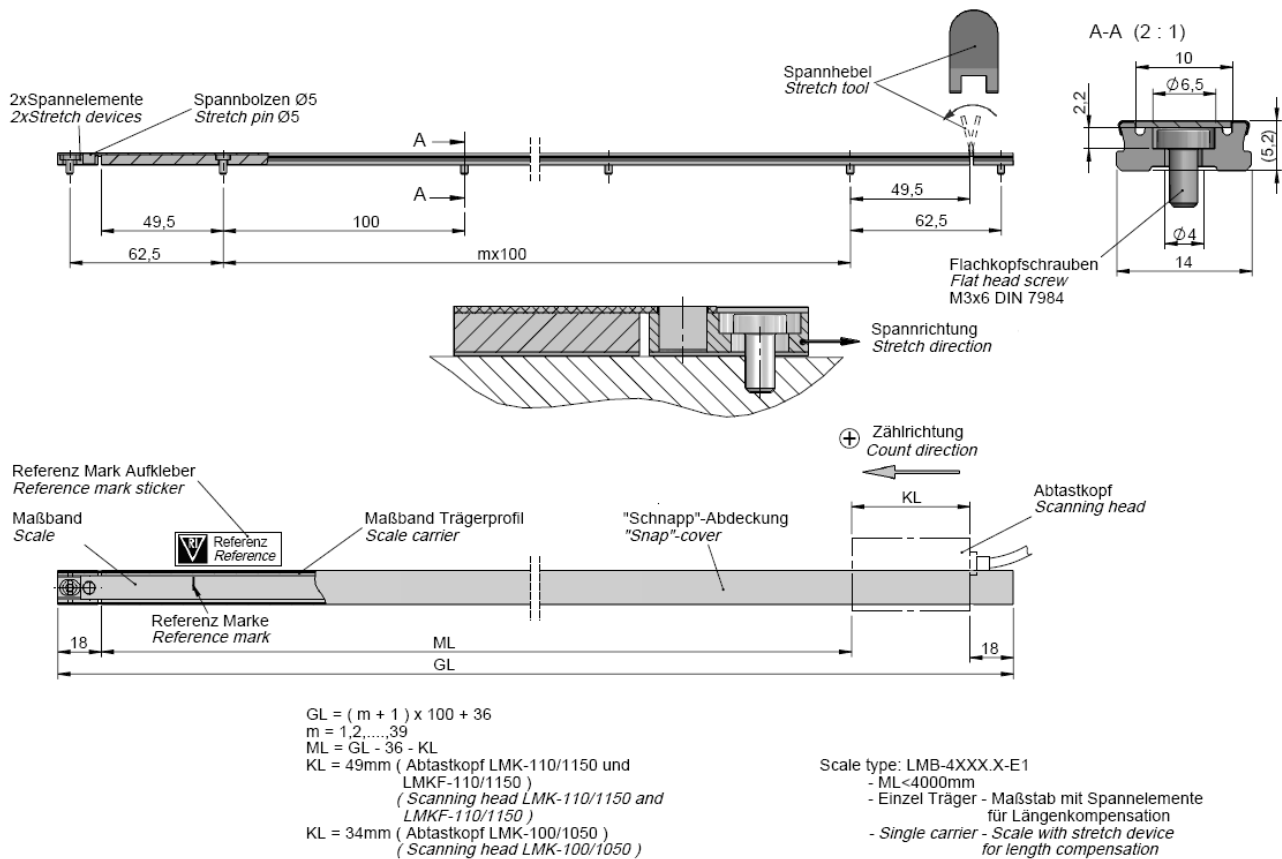
Possible combinations reading head / scale

		Scale type			
		500 µm		1000µm	
		LMB-4050	LMB-4150	LMB-400	LMB-410
Type of scanning head			LMKF-1150		LMKF-110
			LMK-1150		LMK-110
		LMK-1050		LMK-100	

LMB-400

Single section carrier, type E1

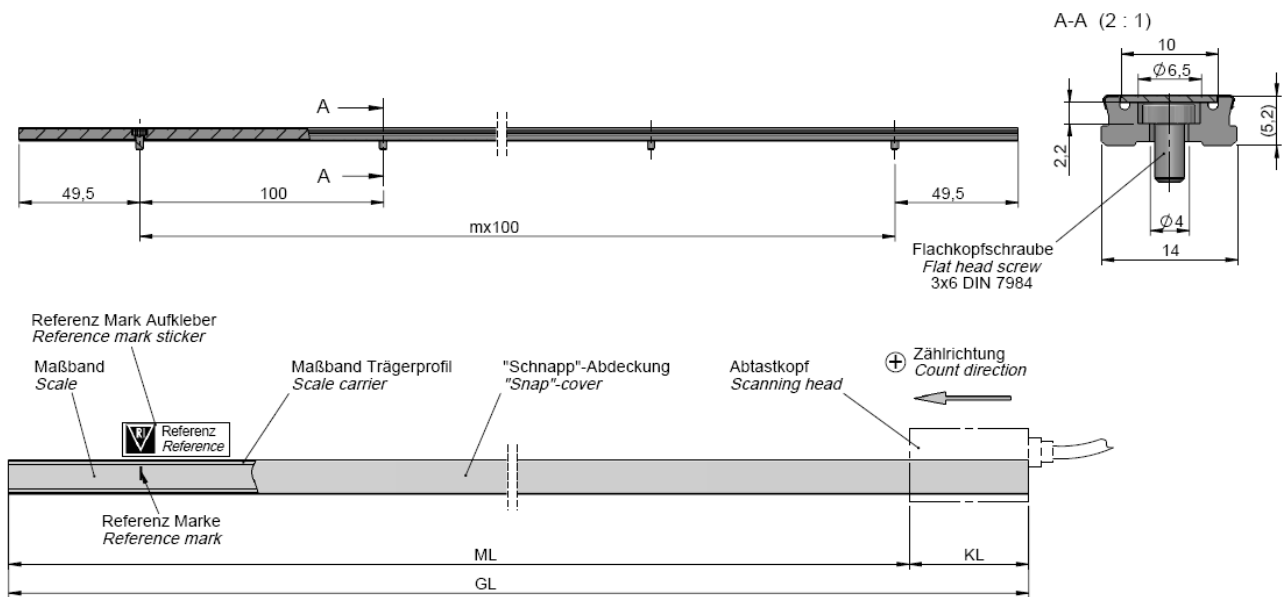
- Single carrier, measuring length up to 4000mm
- Possibility of length compensation to achieve maximum absolute accuracy by tensioning the scale
- Available for 500µm and 1000µm scale pitch
- Can be combined with all non guided AMOSIN® scanning heads



LMB-400

Single section carrier, type E2

- Single carrier, measuring length up to 4000mm
- Scale loose mounted on the carrier
- No possibility for mechanical length compensation (can be done on the CNC)
- Available for 500µm and 1000µm scale pitch
- Can be combined with all non guided AMOSIN® scanning heads



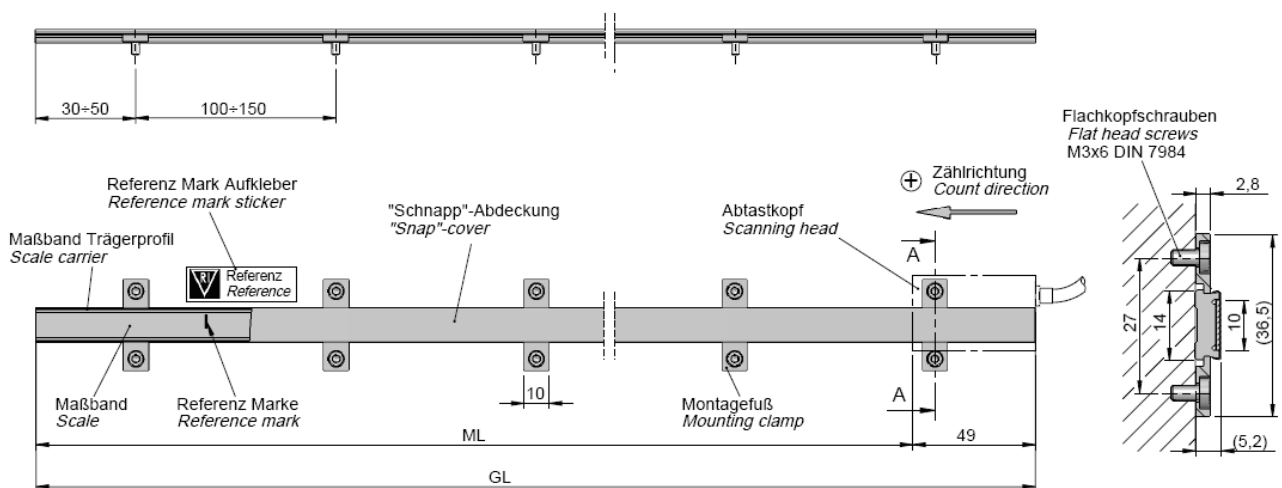
$GL = (m + 1) \times 100$
 $m = 1, 2, \dots, 39$
 $ML = GL - KL$
 $KL = 49\text{mm}$ (Abtastkopf LMK-110/1150 und LMKF-110/1150)
 (Scanning head LMK-110/1150 and LMKF-110/1150)
 $KL = 34\text{mm}$ (Abtastkopf LMK-100/1050)
 (Scanning head LMK-100/1050)

Scale type : LMB-4.XXX.X-E2
 - ML < 4000mm
 - Maßstab lose ohne Spannelemente
 (keine Längenkompensation möglich)
 - Scale not tensioned
 (no length compensation possible)

LMB-400

Single section carrier, type E3

- Single carrier, measuring length up to 4000mm
- No length compensation necessary.
Scale spot welded on the carrier compensated in length
- Fixing with mounting clamps
- Available for 500µm and 1000µm scale pitch
- Can be combined with all non guided AMOSIN® scanning heads



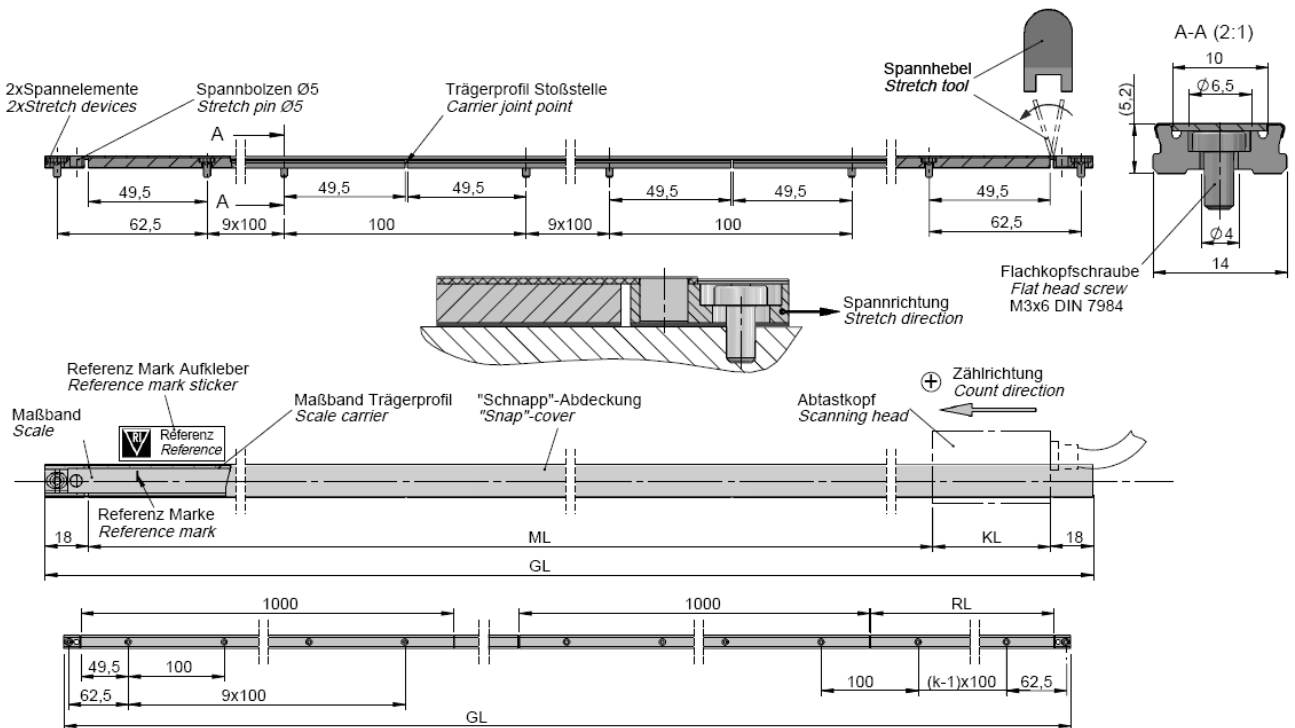
GL = m x 100
 m = 1, 2, 3, ..., 40
 ML = GL - 49
 KL = 49mm (Abtastkopf LMK-110/1150 und
 LMKF-110/1150)
 (Scanning head LMK-110/1150 and
 LMKF-110/1150)
 KL = 34mm (Abtastkopf LMK-100/1050)
 (Scanning head LMK-100/1050)

Scale type :LMB-4XXX.X-E3
 - Maßstab - Punktgeschweiß auf Trägerprofil längencompensiert
 Scale spot welded on carrier with compensated length
 - Montage über Spannpratzen
 Fixing over Mounting clamps
 - ML < 4000mm
 - Profil ohne Bohrungen
 Profil without mounting holes

LMB-400

Multiple section carrier, type M1

- Multiple carriers in 1000mm modules
- No limitation in measuring length
- Possibility of length compensation to achieve maximum absolute accuracy by tensioning the scale
- Available for 500µm and 1000µm scale pitch
- Can be combined with all non guided AMOSIN® scanning heads



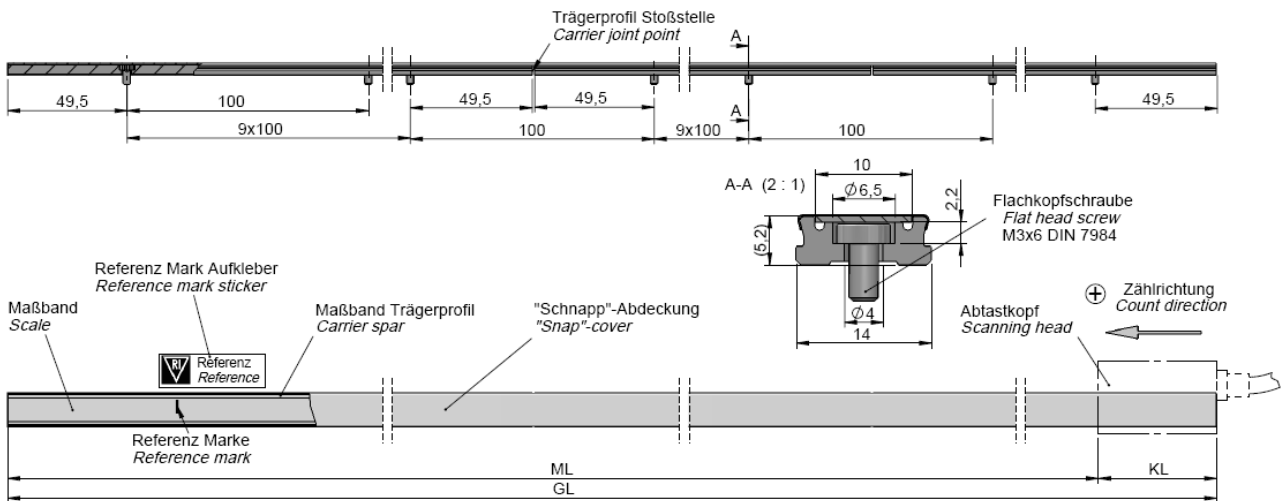
$GL = n \times 1000 + RL + 36$
 $ML = GL - 85$
 $RL = k \times 100$
 $n = 1, 2, 3, \dots, 30$
 $k = 2, 3, \dots, 9$
 $KL = 49\text{mm}$ (Abtastkopf LMK-110/1150 und LMKF-110/1150)
 (Scanning head LMK-110/1150 and LMKF-110/1150)
 $KL = 34\text{mm}$ (Abtastkopf LMK-100/1050)
 (Scanning head LMK-100/1050)

Scale type : LMB-4XXX.X-M1
 - ML > 4000mm - Messlänge
 - ML-measuring length
 - Mehrträger - Profilssegmente von 1000mm
 - Multiple carriers - carrier elements of 1000mm
 - Maßstab mit Spannelemente für Längenkompensation
 - Scale with stretch device for length compensation

LMB-400

Multiple section carrier, type M2

- Multiple carriers in 1000mm modules
- No limitation in measuring length
- Scale loose mounted on the carrier
- No possibility for mechanical length compensation (can be done on the CNC)
- Available for 500µm and 1000µm scale pitch
- Can be combined with all non guided AMOSIN® scanning heads



$$GL = n \times 1000 + RL$$

$$ML = GL - 49$$

$$RL = k \times 100$$

$$n = 1, 2, 3, \dots, 30$$

$$k = 2, 3, \dots, 9$$

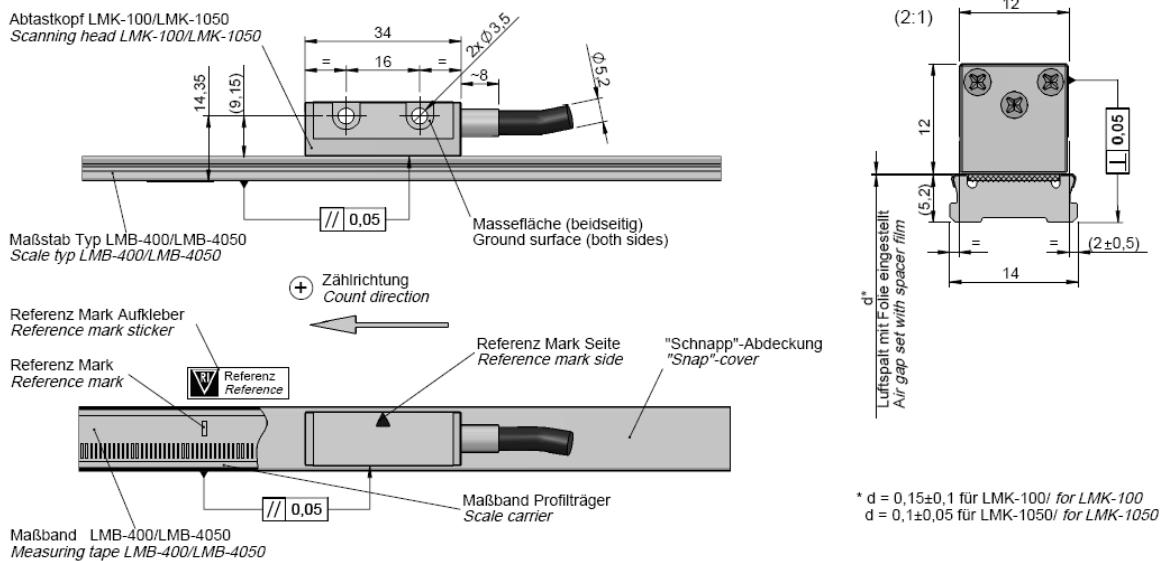
$$KL = 49\text{mm (Abtastkopf LMK-110/1150 und LMKF-110/1150)}$$

$$KL = 34\text{mm (Abtastkopf LMK-100/1050)}$$

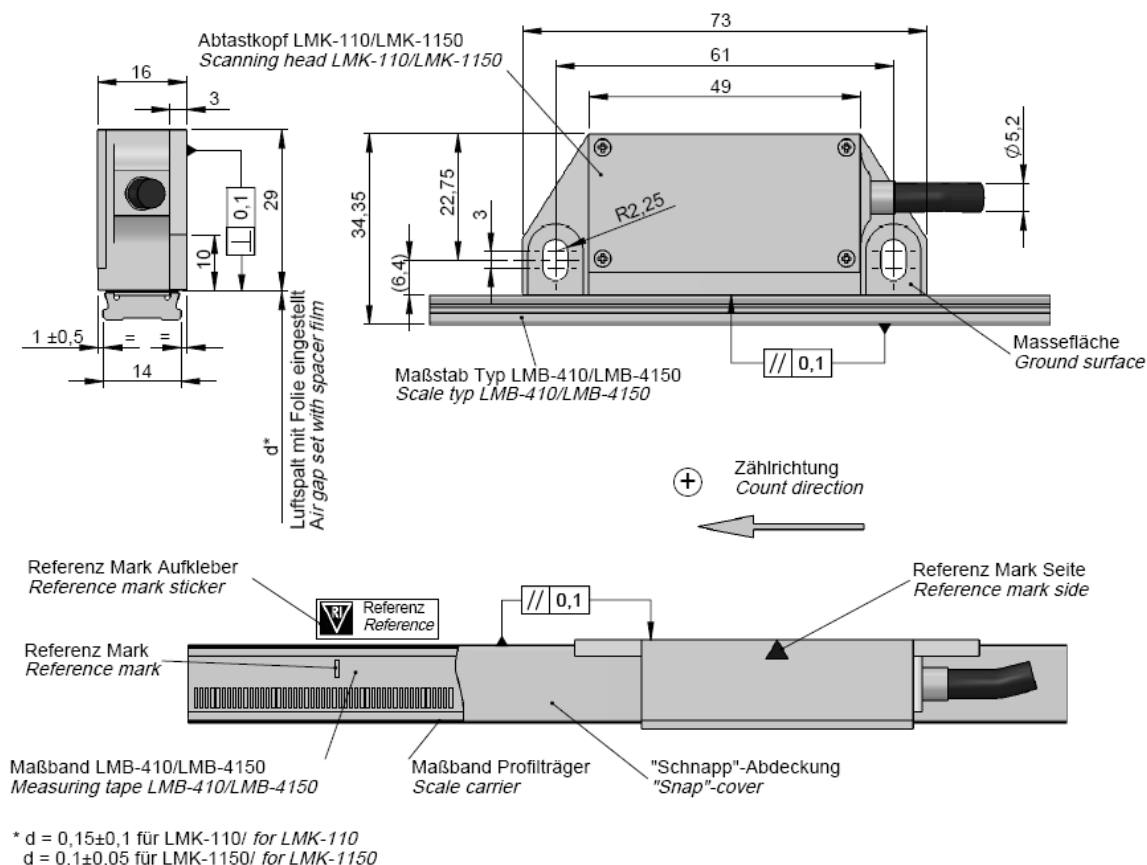
Scale type: LMB-4.XXX.X-M2

- ML > 4000mm
- Mehrträger - Profilstegmente von 1000mm
- Multiple carriers - Carrier elements of 1000mm
- Maßstab lose ohne Spannelemente (keine Längenkompensation möglich)
- Scale free without stretch device (no length compensation possible)

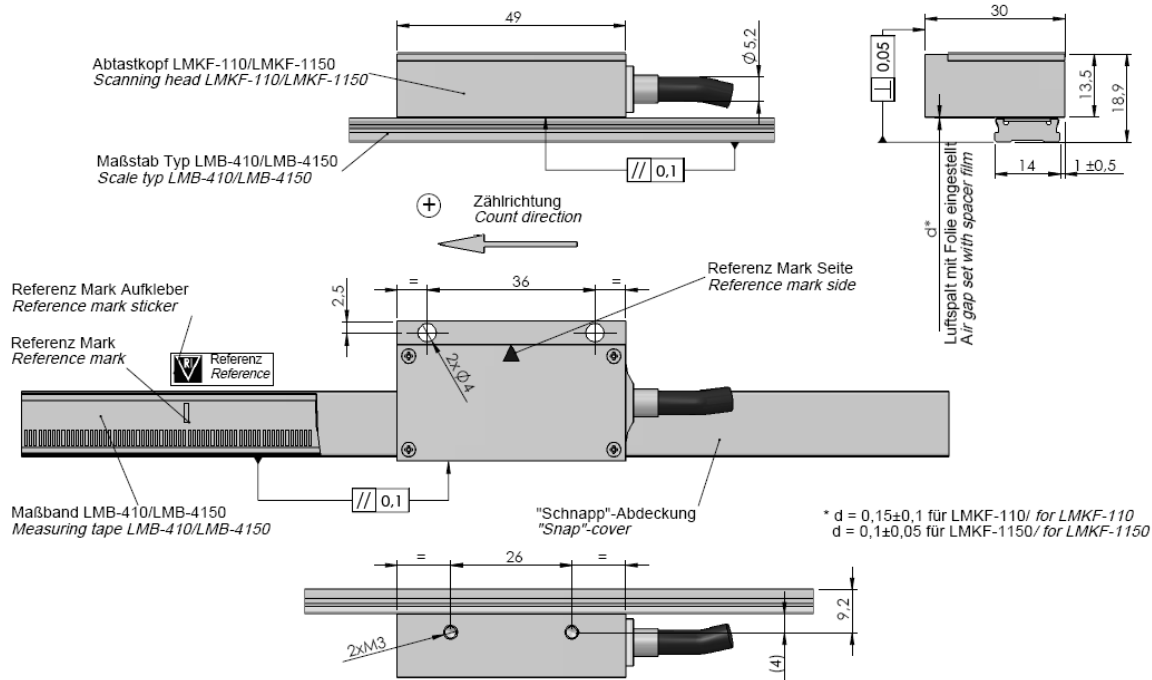
Assembly drawing LMK-100/LMK-1050



Assembly drawing LMK-110/LMK-1150

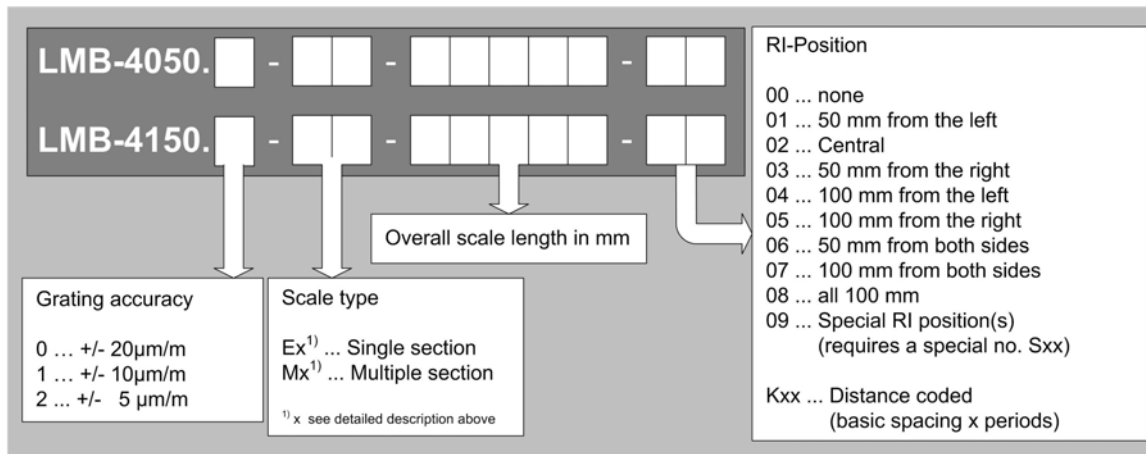


Assembly drawing LMKF-110/LMKF-1150



Ordering code

for scales with 500µm pitch

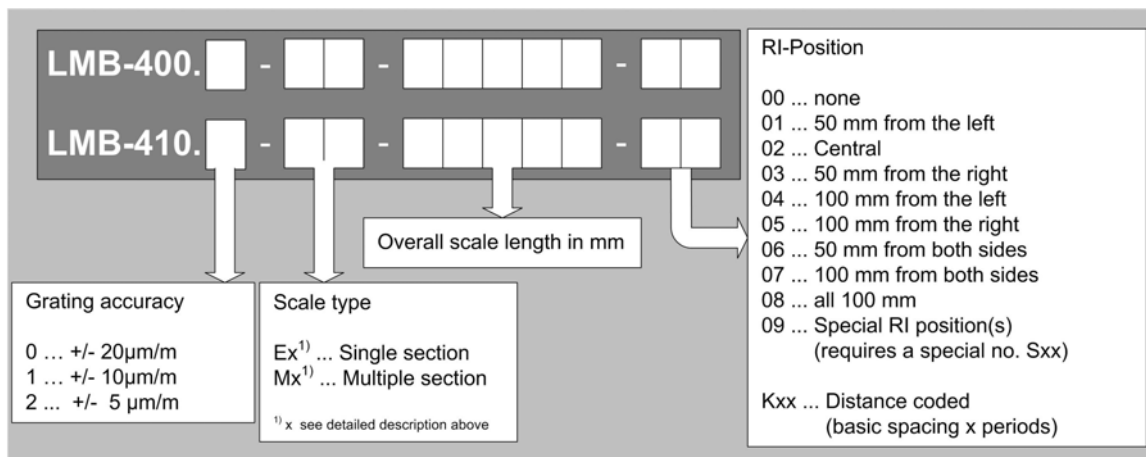


LMB-4050 for measuring head LMK-1050

LMB-4150 for measuring head LMK-1150 or LMKF-1150

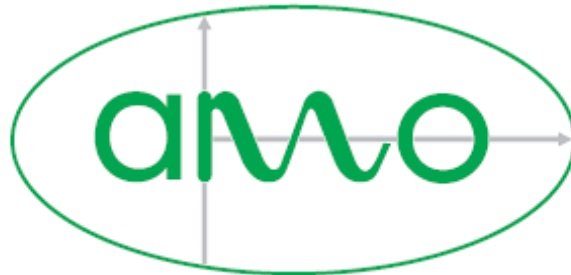
Ordering code

for scales with 1000µm pitch



LMB-400 for measuring head LMK-100

LMB-410 for measuring head LMK-110 or LMKF-110



AMO GmbH

A-4963 St. Peter am Hart, Nöfing 4

Tel.: +43 7722 658 56-0

Fax: +43 7722 658 56-11

e-mail: office@amo.at

www.amo-gmbh.com



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