

РЕМСТАНМАШ
ТЕХНОЛОГИИ ДЛЯ ПРОИЗВОДСТВА

ООО «РемСтанМаш»

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Product Information

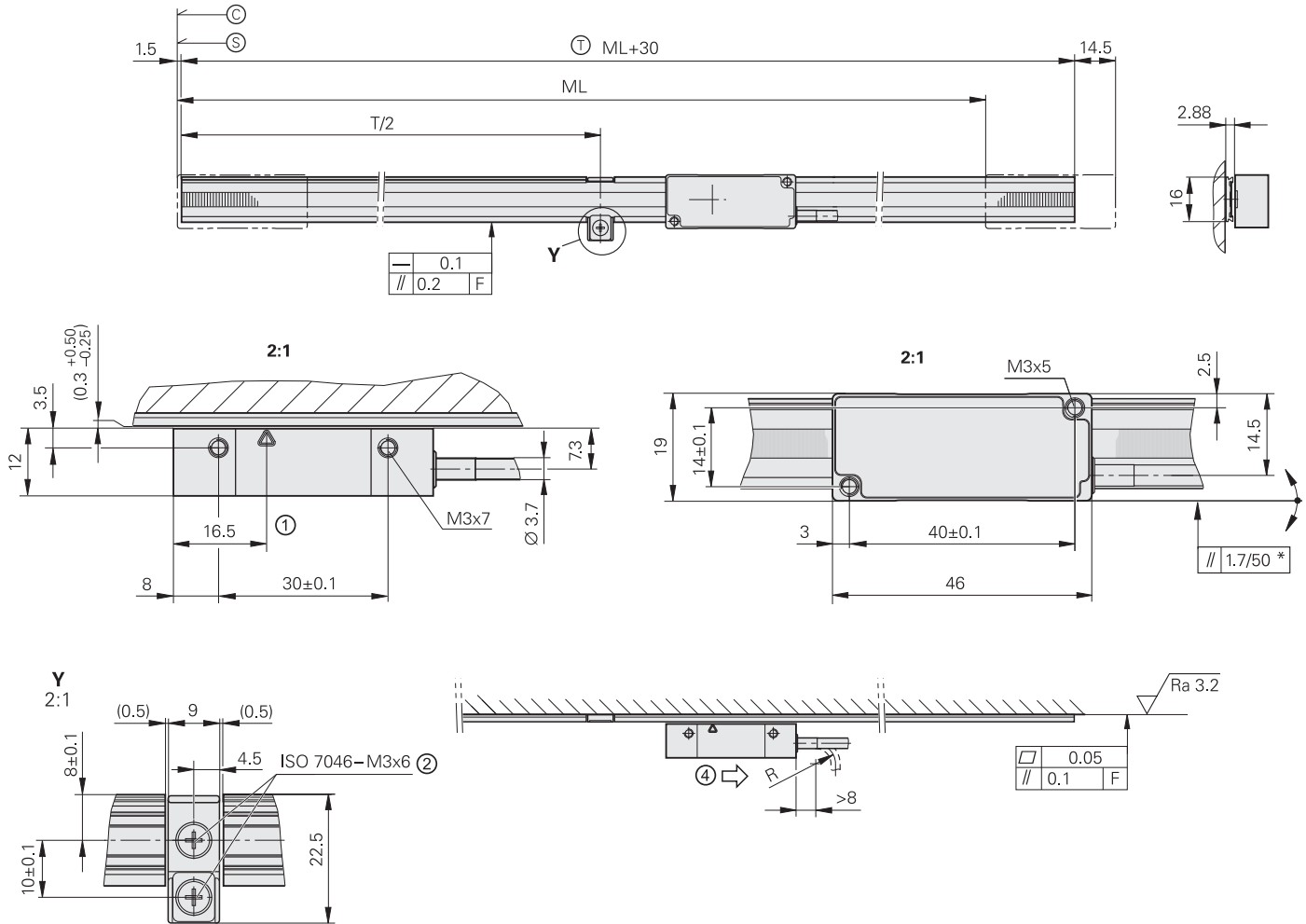
LIC 2100

Absolute Exposed
Linear Encoders

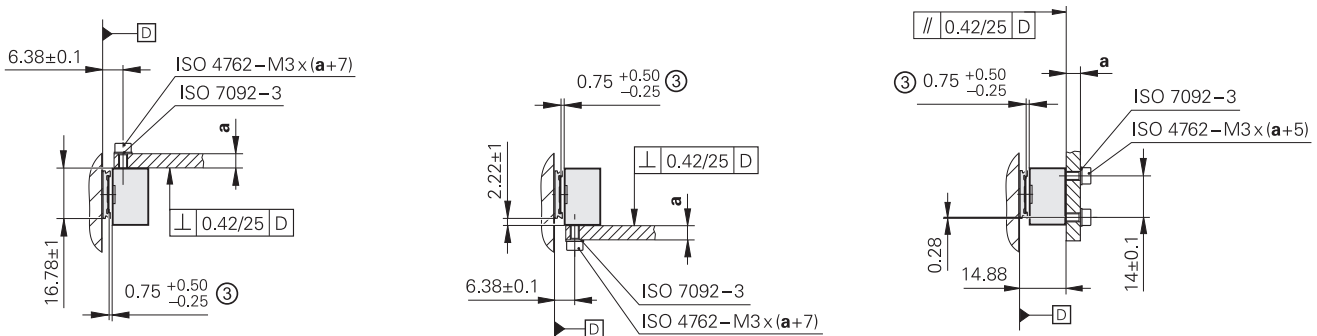
LIC 2117, LIC 2197

Absolute linear encoders for measuring lengths of up to 3 m

- Measuring step of 100 nm or 50 nm
- Steel scale tape is inserted into the aluminum extrusions and fastened at center
- Made up of a linear scale and scanning head



Mounting possibilities for scanning head



mm

 Tolerancing ISO 8015
 ISO 2768 - m H
 < 6 mm: ±0.2 mm

- F = Machine guideway
- * = Max. change during operation
- Ⓒ = Code start value: 100 mm
- Ⓔ = Beginning of measuring length ML
- Ⓓ = Carrier length
- 1 = Optical centerline
- 2 = M3 threaded hole for mating; depth: 5 mm
- 3 = Mounting clearance between scanning head and scale tape
- 4 = Direction of scanning unit motion for output signals as per interface description



Linear scale	LIC 2107
Measuring standard Coefficient of linear expansion	Steel scale tape with absolute track $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$
Accuracy grade	$\pm 15 \mu\text{m}$
Measuring length ML* in mm	120 320 520 770 1020 1220 1520 2020 2420 3020 (measuring lengths greater than 6020 mm upon request)
Mass Scale tape Scale tape carrier	20 g/m 70 g/m

Scanning head	LIC 211	LIC 219F	LIC 219M	LIC 219P	LIC 219Y	
Interface	EnDat 2.2	Fanuc serial interface αi	Mitsubishi high-speed interface	Panasonic serial interface	Yaskawa serial interface	
Ordering designation*	EnDat22	Fanuc05	Mit03-4	Mit02-2	Pana01	YEC07
Measuring step*	0.1 μm (100 nm) 0.05 μm (50 nm)					
Calculation time t_{cal} Clock frequency	$\leq 5 \mu\text{s}$ $\leq 16 \text{ MHz}$	– –				
Traversing speed ¹⁾	$\leq 600 \text{ m/min}$					
Interpolation error	$\pm 2 \mu\text{m}$					
Electrical connection*	Cable, 1 m or 3 m, with 8-pin M12 coupling (male) or 15-pin D-sub connector (male)					
Cable length (with HEIDENHAIN cable)	$\leq 100 \text{ m}$	$\leq 50 \text{ m}$	$\leq 30 \text{ m}$	$\leq 50 \text{ m}$		
Supply voltage	DC 3.6 V to 14 V					
Power consumption ¹⁾ (max.)	At 3.6 V: $\leq 700 \text{ mW}$ At 14 V: $\leq 800 \text{ mW}$	At 3.6 V: $\leq 850 \text{ mW}$ At 14 V: $\leq 950 \text{ mW}$				
Current consumption (typical)	At 5 V: 75 mA (without load)	At 5 V: 95 mA (without load)				
Vibration 55 Hz to 2000 Hz Shock 6 ms	$\leq 500 \text{ m/s}^2$ (EN 60068-2-6) $\leq 1000 \text{ m/s}^2$ (EN 60068-2-27)					
Operating temperature	$-10 \text{ }^\circ\text{C}$ to $70 \text{ }^\circ\text{C}$					
Mass Scanning head Connecting cable Connecting element	$\leq 18 \text{ g}$ (without cable) 20 g/m M12 coupling: 15 g; D-sub connector: 32 g					

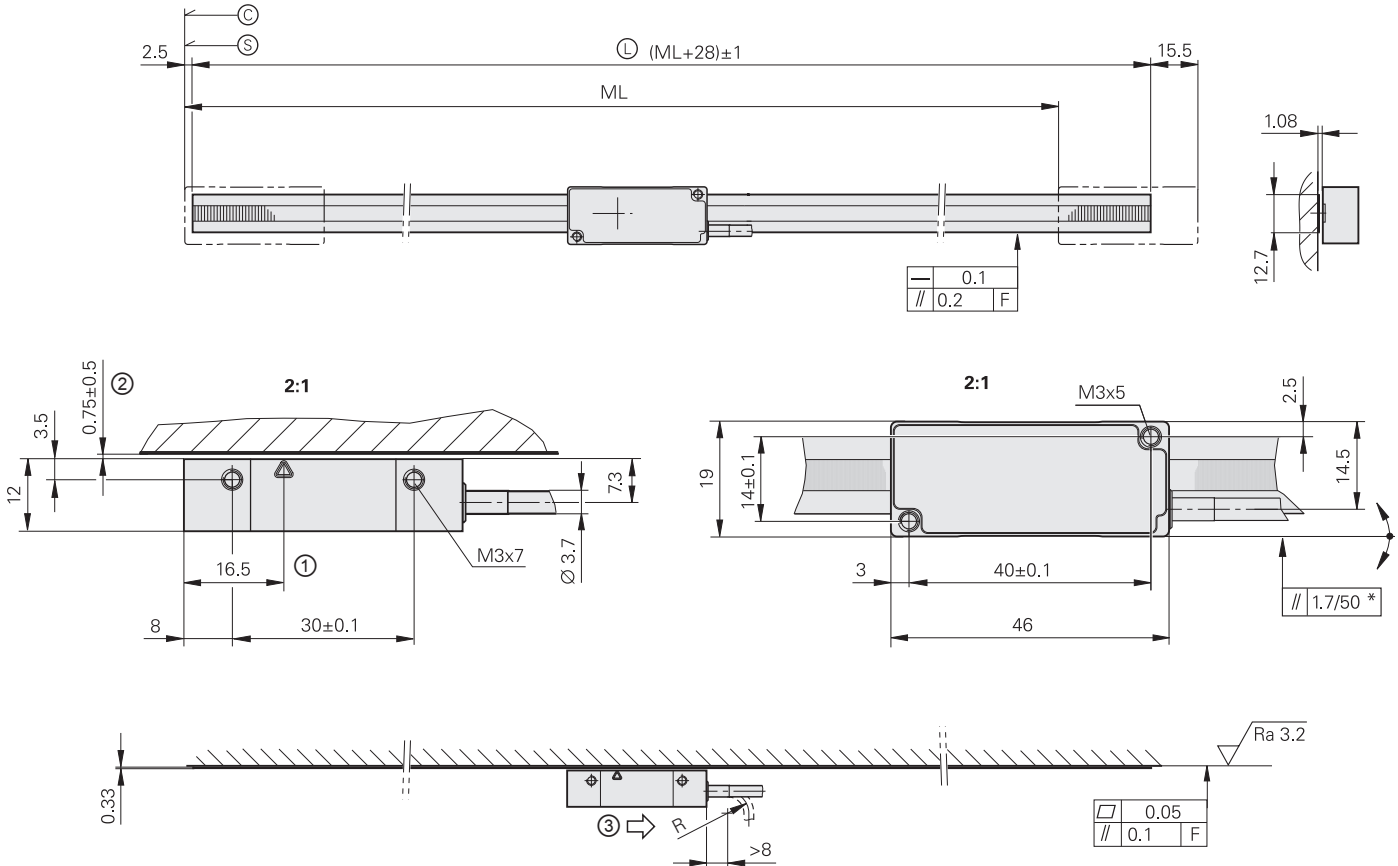
* Please select when ordering

¹⁾ See *General electrical information* in the *Interfaces of HEIDENHAIN Encoders* brochure

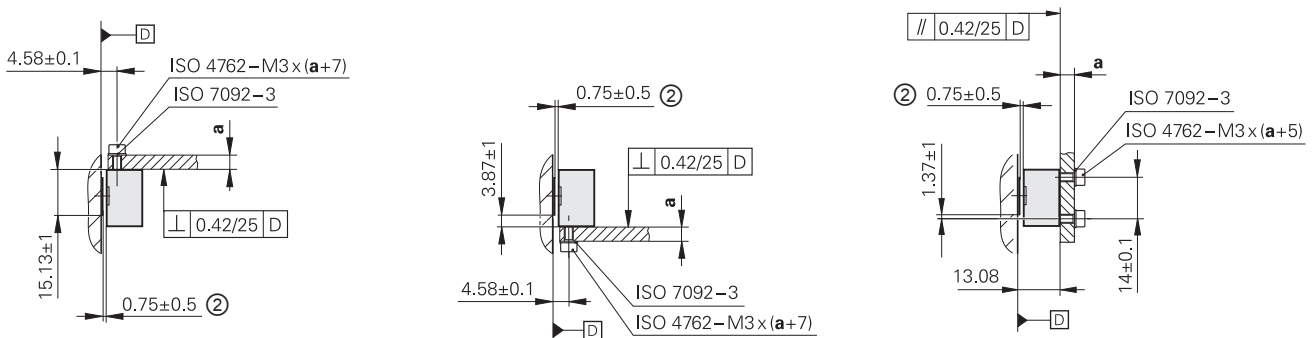
LIC 2119, LIC 2199

Absolute linear encoders for measuring lengths of up to 3 m

- Measuring step of 0.1 μm or 0.05 μm
- Steel scale tape is adhesively bonded to mounting surface
- Made up of a linear scale and scanning head



Mounting possibilities for scanning head



mm

 Tolerancing ISO 8015
 ISO 2768 - m H
 < 6 mm: ± 0.2 mm

- F = Machine guideway
- * = Max. change during operation
- Ⓒ = Code start value: 100 mm
- Ⓔ = Beginning of measuring length ML
- Ⓕ = Scale tape length
- 1 = Optical centerline
- 2 = Mounting clearance between scanning head and scale tape
- 3 = Direction of scanning unit motion for output signals as per interface description



Linear scale	LIC 2109					
Measuring standard Coefficient of linear expansion	Steel scale tape with absolute track $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$					
Accuracy grade	$\pm 15 \mu\text{m}$					
Measuring length ML* in mm	120 320 520 770 1020 1220 1520 2020 2420 3020 (measuring lengths greater than 6020 mm upon request)					
Mass	20 g/m					
Scanning head	LIC 211	LIC 219F	LIC 219M		LIC 219P	LIC 219Y
Interface	EnDat 2.2	Fanuc serial interface αi	Mitsubishi high-speed interface		Panasonic serial interface	Yaskawa serial interface
Ordering designation*	EnDat22	Fanuc05	Mit03-4	Mit02-2	Pana01	YEC07
Measuring step*	0.1 μm (100 nm) 0.05 μm (50 nm)					
Calculation time t_{cal} Clock frequency	$\leq 5 \mu\text{s}$ $\leq 16 \text{ MHz}$	– –				
Traversing speed ¹⁾	$\leq 600 \text{ m/min}$					
Interpolation error	$\pm 2 \mu\text{m}$					
Electrical connection*	Cable, 1 m or 3 m, with 8-pin M12 coupling (male) or 15-pin D-sub connector (male)					
Cable length (with HEIDENHAIN cable)	$\leq 100 \text{ m}$	$\leq 50 \text{ m}$	$\leq 30 \text{ m}$		$\leq 50 \text{ m}$	
Supply voltage	DC 3.6 V to 14 V					
Power consumption ¹⁾ (max.)	At 3.6 V: $\leq 700 \text{ mW}$ At 14 V: $\leq 800 \text{ mW}$	At 3.6 V: $\leq 850 \text{ mW}$ At 14 V: $\leq 950 \text{ mW}$				
Current consumption (typical)	At 5 V: 75 mA (without load)	At 5 V: 95 mA (without load)				
Vibration 55 Hz to 2000 Hz Shock 6 ms	$\leq 500 \text{ m/s}^2$ (EN 60068-2-6) $\leq 1000 \text{ m/s}^2$ (EN 60068-2-27)					
Operating temperature	$-10 \text{ }^\circ\text{C}$ to $70 \text{ }^\circ\text{C}$					
Mass	Scanning head	$\leq 18 \text{ g}$ (without cable)				
	Connecting cable	20 g/m				
	Connecting element	M12 coupling: 15 g; D-sub connector: 32 g				

* Please select when ordering





¹⁾ See *General electrical information* in the *Interfaces of HEIDENHAIN Encoders* brochure

Electrical connection

Adapter cables and connecting cables

You can find connecting cables for EnDat, Fanuc, Mitsubishi, and Panasonic in the *Exposed Linear Encoders* brochure.

Yaskawa

PUR adapter cable $4 \times (2 \times 0.14 \text{ mm}^2)$		Ø 4.5 mm
With 15-pin D-sub connector (female) and 6-pin Yaskawa connector (female)		808976-xx
PUR adapter cable $(4 \times 0.09 \text{ mm}^2) + (4 \times 0.16 \text{ mm}^2)$		Ø 4.5 mm
With 8-pin M12 connector (female) and 6-pin Yaskawa connector (female)		1269882-xx
PUR connecting cable $2 \times (2 \times 0.09 \text{ mm}^2) + 2 \times (2 \times 0.16 \text{ mm}^2)$; $A_p = 2 \times 0.16 \text{ mm}^2$		Ø 6 mm
With 8-pin M12 connector (female) and free cable end		1129581-xx
With 8-pin angled M12 connector (female) and free cable end (unstripped)		1133799-xx

Ap: Cross section of power supply lines

Pin layout


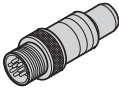


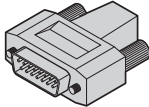
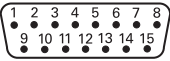



You can find pin layouts for EnDat, Fanuc, Mitsubishi, and Panasonic in the *Exposed Linear Encoders* brochure.

Yaskawa

HEIDENHAIN encoders with the code letter F after the model designation are suitable for connection to Yaskawa controls and drive systems.

- Ordering designation: YEC07

Yaskawa pin layout

8-pin M12 coupling					15-pin D-sub connector			
								
	Power supply				Serial data transfer			
	8	2	5	1	3	4	7	6
	4	12	2	10	5	13	8	15
	U_P	Sensor U _P	0V	Sensor 0V	Vacant ¹⁾	Vacant ¹⁾	Data	Data
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

Cable shield connected to housing; **U_P** = Power supply voltage

Sensor: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

¹⁾ Required for adjustment/testing with the PWM 21

HEIDENHAIN

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This product information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the product information document valid when the contract is made.



More information:

Comply with the requirements described in the following documents to ensure the correct operation of the encoder:

- Brochure: *Exposed Linear Encoders* 208960-xx
- Brochure: *Cables and Connectors* 1206103-xx
- Brochure: *Interfaces of HEIDENHAIN Encoders* 1078628-xx
- Technical information document: *EnDat* 383942-18