



HEIDENHAIN

SALES & SERVICE:

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Product Information

LC 182

LC 192

Absolute Linear Encoders



September 2005

LC 182/LC 192

- Absolute linear encoders
- High positioning accuracy and traversing speed through single-field scanning
- High vibration rating
- Horizontal mounting possible

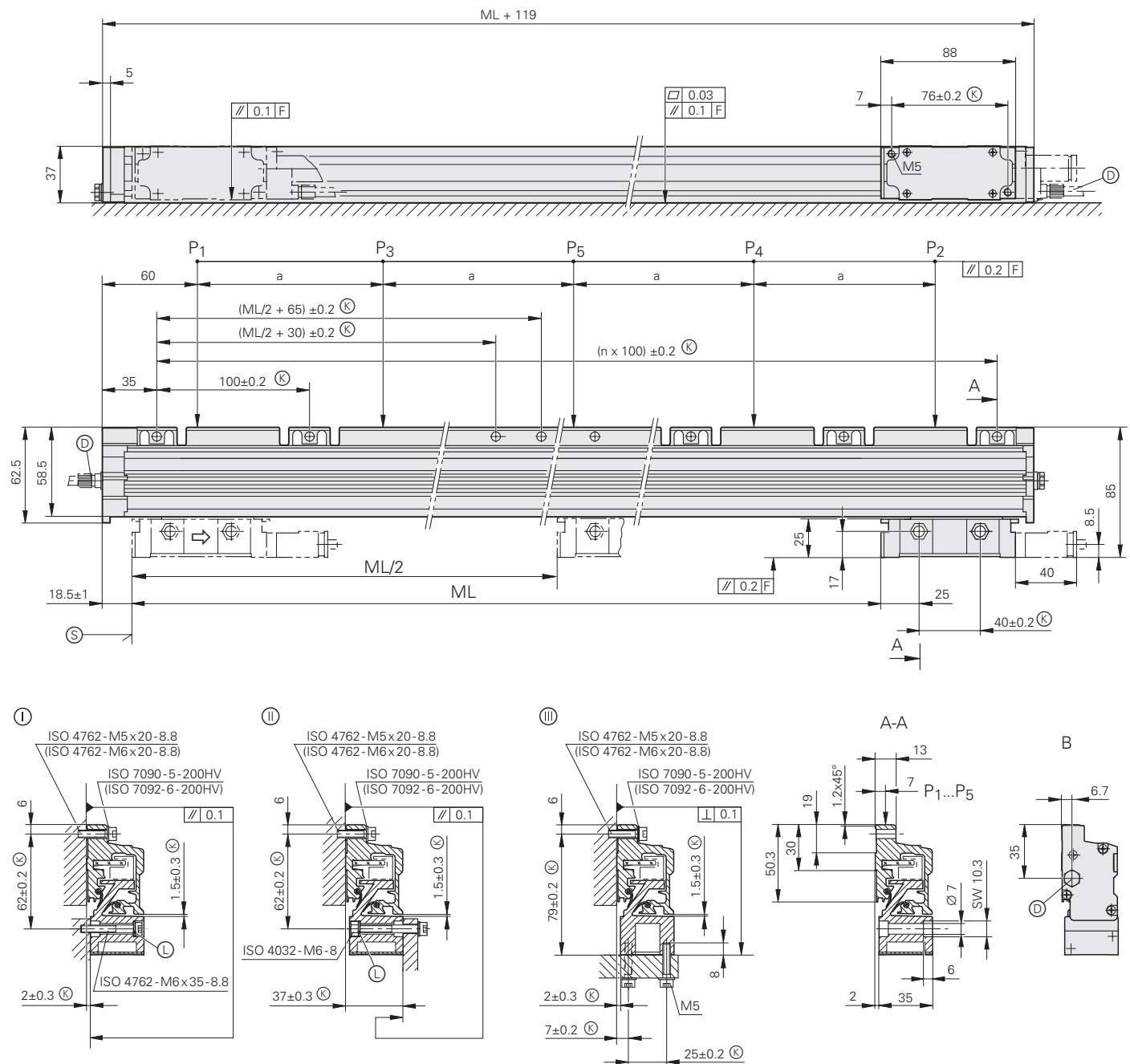
Dimensions in mm



Tolerancing ISO 8015

ISO 2768 - m H

< 6 mm: ± 0.2 mm



- ①, ②, ③ = Mounting options
 F = Machine guideway
 P = Gauging points for alignment
 (K) = Required mating dimensions
 (D) = Compressed air inlet

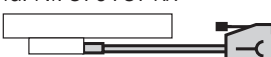
- ⑤ = Beginning of measuring length (ML)
 (L) = Serrated washer D10.0/6.4 (accessory)
 ⇨ = Direction of scanning unit motion for output signals in accordance with interface description

ML	P _n
≤ 840 mm	P ₁ ...P ₂
≤ 1740 mm	P ₁ ...P ₃
≤ 3040 mm	P ₁ ...P ₄
≤ 4240 mm	P ₁ ...P ₅

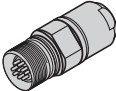
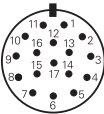
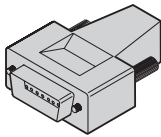
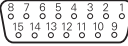
Specifications	LC 182	LC 192F	LC 192M
Measuring standard Expansion coefficient	DIADUR glass scale with absolute track and incremental track $\alpha_{\text{therm}} \approx 8 \cdot 10^{-6} \text{ K}^{-1}$		
Accuracy grade*	$\pm 3 \text{ }\mu\text{m}$ (up to measuring length 3040); $\pm 5 \text{ }\mu\text{m}$		
Measuring length ML* in mm	140 240 340 440 540 640 740 840 940 1040 1140 1240 1340 1440 1540 1640 1740 1840 2040 2240 2440 2640 2840 3040 3240 3440 3640 3840 4040 4240		
Absolute position values	EnDat 2.1	Serial interface – Fanuc 01	Mitsubishi high-speed serial interface
Measuring step	Approx. $0.02 \text{ }\mu\text{m}^{1)}$	<i>Accuracy $\pm 3 \text{ }\mu\text{m}$:</i> $0.01 \text{ }\mu\text{m}$; <i>Accuracy $\pm 5 \text{ }\mu\text{m}$:</i> $0.05 \text{ }\mu\text{m}$	
Calculation time t_{cal}	< 1 ms	–	
Incremental signals Grating period/signal period Cutoff frequency –3 dB	$\sim 1 \text{ V}_{\text{PP}}$ $20 \text{ }\mu\text{m}$ $\geq 150 \text{ kHz}$	–	
Power supply	$5 \text{ V} \pm 5 \text{ } \%$ / < 300 mA without load; remote sensing possible		
Electrical connection Max. cable length	Separate adapter cable (1 m/3 m/6 m/9 m) connectable to mounting block Upon request		
Traversing speed	$\leq 180 \text{ m/min}$		
Required moving force	$\leq 4 \text{ N}$		
Vibration 55 to 2000 Hz Shock 11 ms Acceleration	$\leq 200 \text{ m/s}^2$; <i>starting from measuring length 3240:</i> $\leq 150 \text{ m/s}^2$ (IEC 60 068-2-6) $\leq 300 \text{ m/s}^2$ (IEC 60 068-2-27) $\leq 100 \text{ m/s}^2$ in measuring direction		
Operating temperature	0 to $50 \text{ }^{\circ}\text{C}$		
Protection IEC 60529	IP 53 when installed correctly; IP 64 with compressed air from DA 300		
Weight	0.4 kg + 3.3 kg/m measuring length		

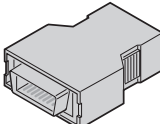
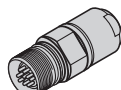
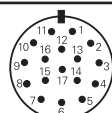
* Please indicate when ordering

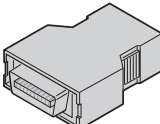
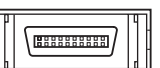
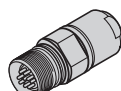
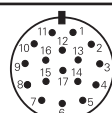
¹⁾ After 1024-fold interpolation of the incremental signals

Connecting elements and cables	LC 182	LC 192F	LC 192M
Adapter cable complete with M23 coupling (male), 17-pin Cable length 1 m/3 m/6 m/9 m Cable diameter 6 mm	Id. Nr. 369 124-xx 	Id. Nr. 343 421-xx 	
Connecting cable complete with M23 connector (female), 17-pin Cable diameter 8 mm	With D-sub connector (female) Id. Nr. 332 115-xx 	With Fanuc connector Id. Nr. 534 855-xx 	With Mitsubishi connector Id. Nr. 344 625-xx 
Connecting cable with one connector with M23 connector (female) Cable diameter 8 mm	Id. Nr. 309 778-xx 	–	
Adapter cable complete Cable diameter 6 mm	With D-sub conn. (female) for HEIDENHAIN controls Id. Nr. 370 737-xx 	With Fanuc connector Id. Nr. 532 571-xx 	With Mitsubishi connector Id. Nr. 368 724-xx 

Electrical Connection

LC 182 17-pin coupling M23   					15-pin D-sub connector, female, for HEIDENHAIN controls and IK 220   								
	Power supply					Incremental signals				Absolute position values			
	7	1	10	4	11	15	16	12	13	14	17	8	9
	1	9	2	11	13	3	4	6	7	5	8	14	15
	U _P	Sensor U _P	0V	Sensor 0V	Inside shield	A+	A-	B+	B-	DATA	DATA	CLOCK	CLOCK
	Brown/Green	Blue	White/Green	White	/	Green/Black	Yellow/Black	Blue/Black	Red/Black	Gray	Pink	Violet	Yellow

LC 192 F 20-pin Fanuc connector   						17-pin coupling M23   			
	Power supply					Absolute position values			
	9	18/20	12	14	16	1	2	5	6
	7	1	10	4	–	14	17	8	9
	U _P	Sensor U _P	0V	Sensor 0V	Shield	Serial Data	Serial Data	Request	Request
	Brown/Green	Blue	White/Green	White	–	Gray	Pink	Violet	Yellow

LC 192 M 20-pin Mitsubishi connector   					17-pin coupling M23   			
	Power supply				Absolute position values			
	20	19	1	11	6	16	7	17
	7	1	10	4	14	17	8	9
	U _P	Sensor U _P	0V	Sensor 0V	Serial Data	Serial Data	Request Frame	Request Frame
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

Shield on housing; **U_P** = power supply voltage

Sensor: The sensor line is connected internally with the corresponding power line

Vacant pins or wires must not be used.

HEIDENHAIN

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