

LC 481/LC 491

Absolute Sealed Linear Encoder

with Single-Field Scanning

Specifications

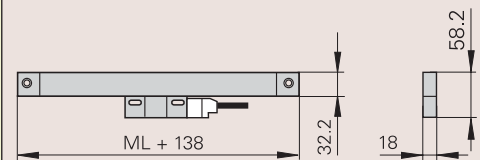
Connecting Elements and Cables

Dimensions

Electrical Connection



Mechanical design



Absolute position values LC 481
 LC 491 F
 LC 491 M

EnDat
 Serial interface – Fanuc 01
 Mitsubishi High Speed Serial Interface

Incremental signals
 only with LC 481

~ 1 V_{pp}
 Signal period 20 μm

Measuring lengths

70 to 2040 mm

Special features







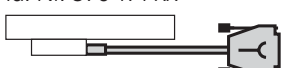
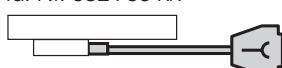
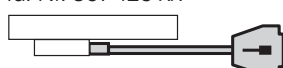
- With single-field scanning**
- Insensitive to contamination
 - High traversing speed
 - High positioning accuracy



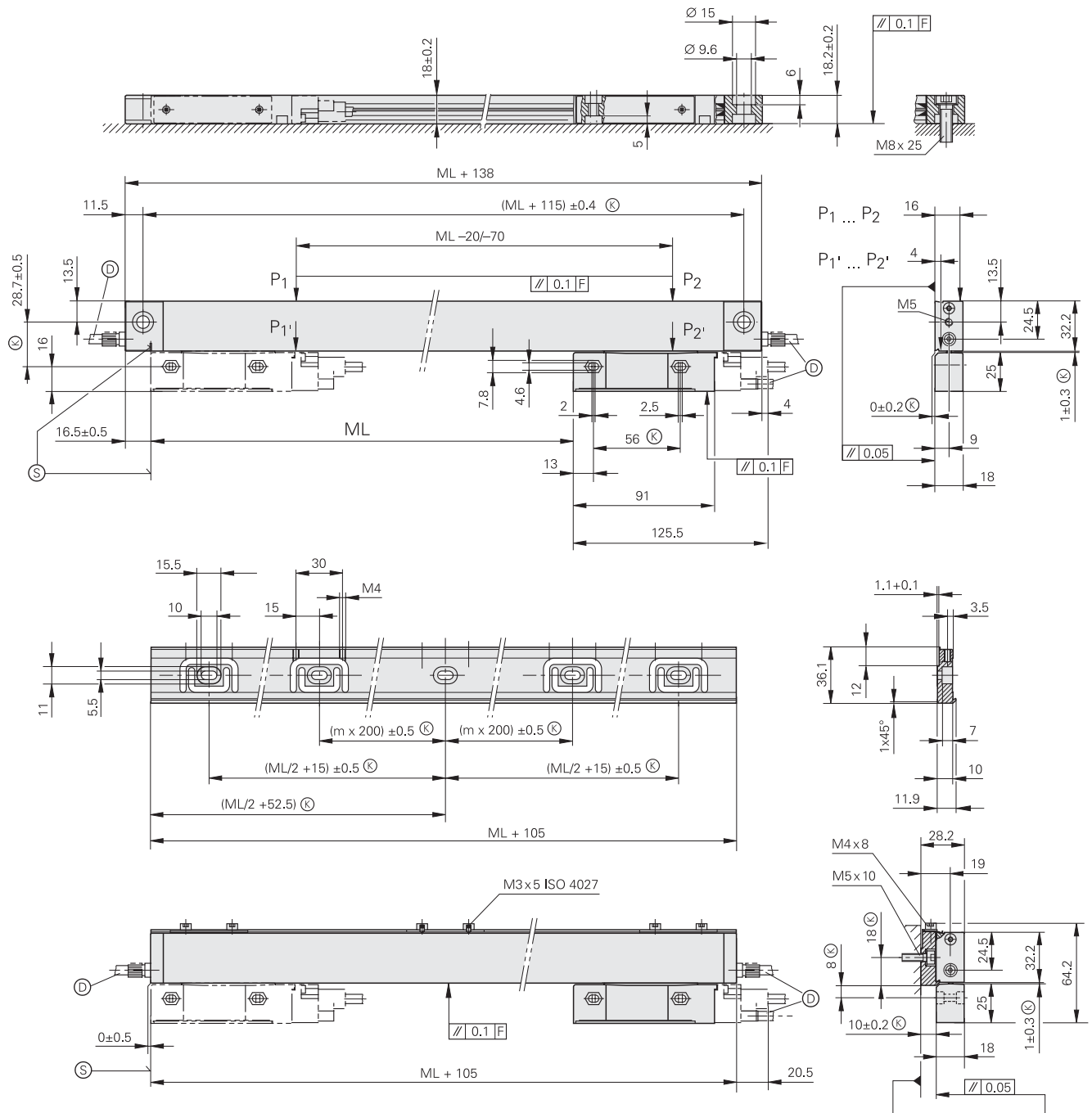
Specifications	LC 481	LC 491F	LC 491M
Measuring standard Thermal expansion coefficient	DIADUR glass scale with absolute track and incremental track <i>Without mounting spar:</i> approx. $8 \cdot 10^{-6} \text{ K}^{-1}$; <i>With mounting spar:</i> approx. $9 \cdot 10^{-6} \text{ K}^{-1}$		
Accuracy grade*	$\pm 5 \mu\text{m}$; $\pm 3 \mu\text{m}$		
Measuring length ML* in mm Mounting spar* recommended	70 120 170 220 270 320 370 420 470 520		
Only with mounting spar	570 620 720 770 820 920 1020 1140 1240		
Max. traversing speed mechanical	180 m/min		
Vibration 55 to 2000 Hz	<i>Without mounting spar:</i> $\leq 100 \text{ m/s}^2$ (IEC 60068-2-6) <i>With mounting spar:</i> $\leq 200 \text{ m/s}^2$ (IEC 60068-2-6)		
Shock 11 ms Acceleration in measuring direction	$\leq 300 \text{ m/s}^2$ (IEC 60068-2-27) $\leq 100 \text{ m/s}^2$		
Required moving force	$\leq 5 \text{ N}$		
Protection IEC 60529	IP 53 when installed according to mounting instructions IP 64 with use of compressed air		
Operating temperature	0 to 50 °C (32 to 122 °F)		
Weight	<i>Encoder:</i> 0.2 kg + 0.5 kg/m measuring length; <i>Mounting track:</i> 0.9 kg/m		
Power Supply	5 V \pm 5 % at encoder/max. 300 mA (without load); remote sensing possible		
Absolute position values*	EnDat interface	Serial interface – Fanuc 01	Mitsubishi High Speed Serial Interface
Incremental signals/Signal period Cutoff frequency –3 dB	$\sim 1 \text{ V}_{\text{PP}}/20 \mu\text{m}$ $\geq 150 \text{ kHz}$	–	–
Measuring step	Approx. $0.02 \mu\text{m}$ ¹⁾	<i>Accuracy $\pm 3 \mu\text{m}$:</i> 0.01 μm ; <i>Accuracy $\pm 5 \mu\text{m}$:</i> 0.05 μm	
Electrical Connection Max. cable length with HEIDENHAIN cable	Separate adapter cable (1 m/3 m/6 m/9 m) connectable to mounting block Available on request		

* Please indicate when ordering

¹⁾ After 1024-fold interpolation of the incremental signals

Connecting elements and cables	LC 481	LC 491F	LC 491M
Adapter cable complete With coupling (male) 17-pin Cable length 1 m/3 m/6 m/9 m Cable diameter 6 mm	Id. Nr. 369 129-xx 	Id. Nr. 337 439-xx 	
Connecting cable complete With connector (female) 17-pin Cable diameter 8 mm	With D-sub connector (fem.) 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 connector (female) Cable diameter 8 mm	Id. Nr. 309 778-xx 	–	
Adapter cable complete Cable diameter 6 mm	With D-sub connector (fem.) Id. Nr. 370 474-xx 	With Fanuc connector Id. Nr. 532 759-xx 	With Mitsubishi connector Id. Nr. 367 425-xx 

Dimensions


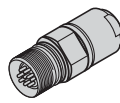
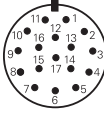

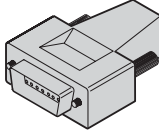
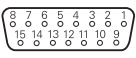






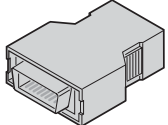


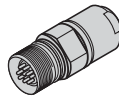
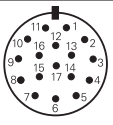



- ⊖ = Mounting without spar
- ⊕ = Mounting with spar
- F = Machine guideway
- P = Gauging points for alignment
- ⊗ = Required mating dimensions
- ⊙ = Compressed air inlet
- Ⓢ = Beginning of measuring length (ML)


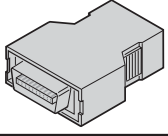
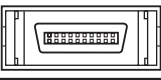

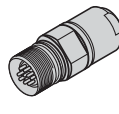
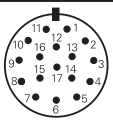



Mounting spar

ML	m
70 ... 520	0
570 ... 920	1
1020 ... 1340	2
1440 ... 1740	3
1840 ... 2040	4

Electrical Connection

LC 481 17-pin HEIDENHAIN coupling   					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
	Up	Sensor Up	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 491 F 20-pin Fanuc connector   					17-pin HEIDENHAIN coupling   				
	Power supply					Absolute position values			
	9	18/20	12	14	16	1	2	5	6
	7	1	10	4	-	14	17	8	9
	Up	Sensor Up	0V	Sensor 0V	Shield	Serial Data	Serial Data	Request	Request
	Brown/Green	Blue	White/Green	White	-	Gray	Pink	Violet	Yellow

LC 491 M 20-pin Mitsubishi connector   					17-pin HEIDENHAIN coupling   				
	Power supply					Absolute position values			
	20	19	1	11	6	16	7	17	
	7	1	10	4	14	17	8	9	
	Up	Sensor Up	0V	Sensor 0V	Serial Data	Serial Data	Request Frame	Request Frame	
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow	

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For more information

- Brochure: *Sealed Linear Encoders*
- Technical Information: *Single-Field Scanning*