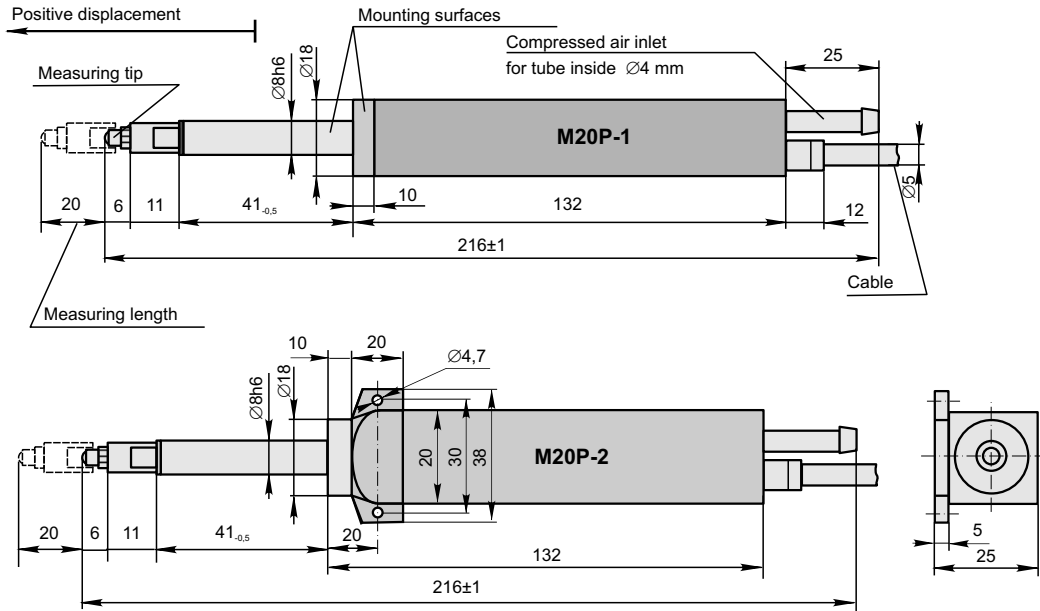
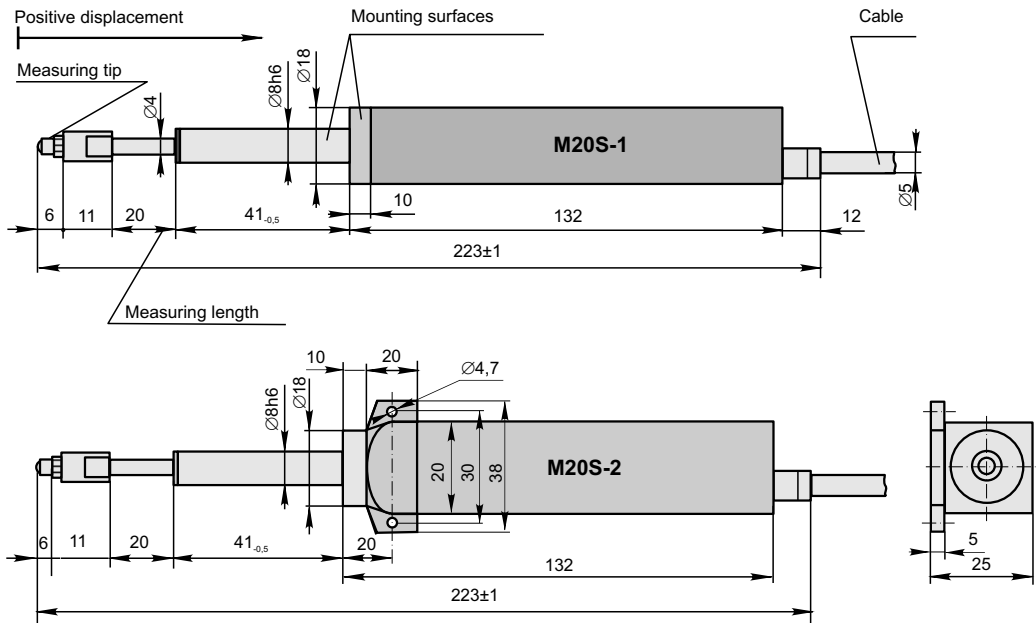


■ Overall dimensions

■ M20P



■ M20S



■ Mechanical data

◆ Measuring length (ML), mm	
- M15	15
- M20	20
◆ Accuracy (at 20°C±5°C), µm:	
- version A	±2; ±1 (on option)
- version F, resolution 5,0 µm	±5
- version F, resolution 1,0 µm, 0,5 µm	±2; ±1 (on option)
◆ Grating period, µm	20
◆ Reference marks (RI)	
- S1, mm	3 from the beginning of ML
- S2, mm	3 from the end of ML
- S3, mm	3 from the both ends of ML
◆ Max. measuring speed, m/min	60
◆ Compressed air pressure (M15P, M20P), kPa	100...160 (on option)
◆ Measuring force for M15P, M20P, N	0,1...0,30
◆ Measuring force for M20S, N	0,3...1,2 (on option)
◆ Max. radial load, N	0,3
◆ Purity of compressed air, %	99,95
◆ Material and shape of measuring tip	
- standard	steel ball Ø3 mm
- on option	changeable, with steel or ruby ball
◆ Protection IEC 529	
- housing	IP64
- plunger	IP50
◆ Weight without cable, kg	
- M15P	0,08
- M20P	0,1
- M20S	0,15
◆ Operating temperature, °C	+10...+50
◆ Storage temperature, °C	-20...+70
◆ Relative humidity, %, without condensation of moisture	80
◆ Permissible vibration (55...2000 Hz), m/s ²	≤ 80
◆ Permissible shock (t=11ms), m/s ²	≤ 200



Photoelectric Length Gauges Model M15 - M20

(M15P-A, M15P-F, M20P-1-A, M20P-1-F, M20P-2-A, M20P-2-F, M20S-1-A, M20S-1-F, M20S-2-A, M20S-2-F)

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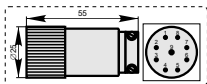
Electrical Data

Version	A 	F 
◆ Power supply	+5 V ±5% / < 90 mA	+5 V ±5% / < 120 mA
◆ Light source	LED	LED
◆ Resolution (after 4-fold dividing in subsequent electronics)	5,0; 1,0; 0,5 or 0,1 μm depends on external subdividing electronics	5,0; 1,0; 0,5; 0,1 μm
◆ Incremental signals	Two sinusoidal I ₁ and I ₂ Amplitude at 1 kΩ load: - I ₁ = 7-16 μA - I ₂ = 7-16 μA	Square-wave U ₁ , U ₂ and its inverted $\overline{U_1}$, $\overline{U_2}$, Signal levels at 20 mA load current: - low "0" ≤ 0,5 B - high "1" ≥ 2,4 B
◆ Reference signal	Quasi-triangle I ₀ . Signal magnitude at 1 kΩ load: - I ₀ = 2-8 μA	Square-wave U ₀ and its inverted $\overline{U_0}$ Signal levels at 20 mA load current: - low "0" ≤ 0,5 B - high "1" ≥ 2,4 B
◆ Maximum operating frequency, kHz	50	500 kHz
◆ Direction of signals - pneumatic gauges (P), plunger moves out - spring gauges (S), plunger moves in	I ₁ lags I ₂ I ₁ lags I ₂	U ₁ lags U ₂ U ₁ lags U ₂
◆ Standard cable length, m	1, without connector	1, without connector
◆ Recommended max. cable length to subsequent electronics, m	5	5
◆ Cable diameter, mm	5	5

Accessories

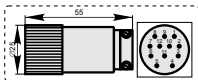
C9

9-pin round connector only for version A



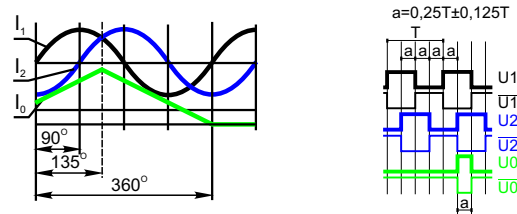
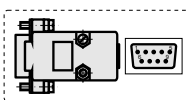
C12

12-pin round connector only for version F

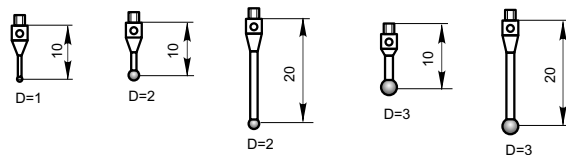


D9

9-pin flat connector for versions A and F



Changeable measuring tips M 2,5:
D - diameter of ball - steel (1; 2 mm); ruby (3 mm)



Order form

M20P - X - XX - XX - XX / X

Version by output signals and resolutions:
A - Sine wave
F50 - TTL, resolution 5 μm
F10 - TTL, resolution 1 μm
F05 - TTL, resolution 0,5 μm
F01 - TTL, resolution 0,1 μm

Reference marks:
N - none RI
S1 - 3 mm from the beginning of ML
S2 - 3 mm from the end of ML
S3 - 3 mm from both ends of ML

Accuracy:
01 - ±1 μm
02 - ±2 μm
05 - ±5 μm

Cable length:
01 - 1m
02 - 2m
03 - 3m
... - ...

Type of connector:
W - without connector
C9 - round, 9 pins
C12 - round, 12 pins
D9 - flat, 9 pins

M15

