DIGITAL LENGTH GAUGES

Content:

Series MT 12 / MT 25

Key-Features:

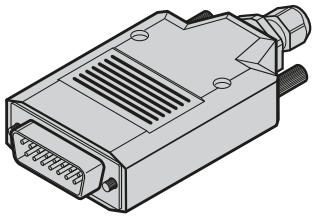
- *Measurement range up to 25 mm*
- *Linearity 0.2 µm*
- *TTL or 1 Vpp*
- *IP50 or IP64*
- *Spring guide*
- *Plunger actuation by measured object or pneumatic*
- *Working temperature: +10 °C to +40 °C*

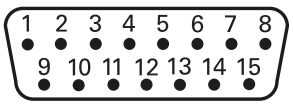
TECHNICAL DATA

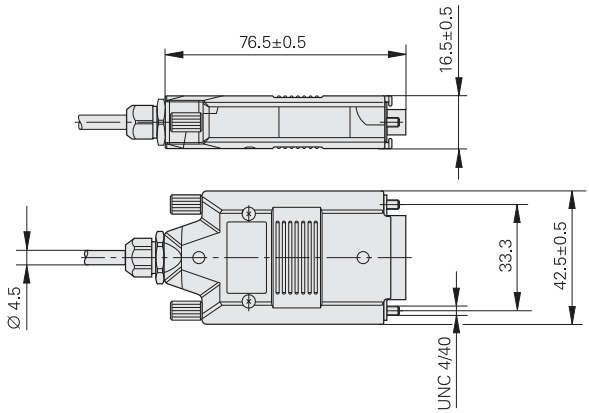
Mechanical data		**MT 1271**	**MT 2571**	**MT 1287**	**MT 2587**
Measuring range	[mm]	12	25	12	25
Plunger actuation		By cable or measured object		Pneumatic	
Position of plunger at rest		Extended		Retracted	
Measuring standard		DIADUR phase grating on Zerodur glass ceramic; grating period 4 µm			
System accuracy	[µm]	±0.2			
Position error per signal period	[µm]	≤ ±0.02			
Repeatability	[µm]	0.03	0.09	0.03	0.09
Short-range accuracy typically	[µm]	0.3	0.04	0.3	0.04
Reference mark	[mm]	approx. 1.7 below upper stop			
Working pressure	[bar]	-		0.9 to 1.4	
Radial force	[N]	≤ 0.8 (mechanically permissible)			
Fastening		Clamping shank Ø 8h6			
Operating orientation		any			
Vibration 55 Hz to 2000 Hz	[m/s²]	≤ 100 (EN 60 068-2-6)			
Shock 11 ms	[m/s²]	≤ 1000 (EN 60 068-2-27)			
Working temperature	[°C]	+10 to +40; reference temperature +20			
Protection class EN 60 529		IP50		IP64	
Mass without cable	[g]	100	180	110	190

Electrical data		**MT 1271**	**MT 2571**	**MT 1287**	**MT 2587**
Interface		TTL		1 Vpp	
Integrated interpolation		10-fold		-	
Signal period	[µm]	0.2		2	
Mech. permissible traversing speed	[m/min]	≤ 30			
Edge separation a at scanning frequency*/traverse speed 50 kHz ≤ 6 m/min 25 kHz ≤ 3 m/min	[µs]	 ≥ 0.98 -	 - ≥ 0.98	-	
Electrical connection		Cable 1.5 m with D-sub connector (male), (interface electronics integrated in connector), 15-pin			
Voltage supply		5 VDC ±0.5 V/< 160 mA (without load)		5 VDC ±0.25 V/< 130 mA	

ELECTRICAL CONNECTION





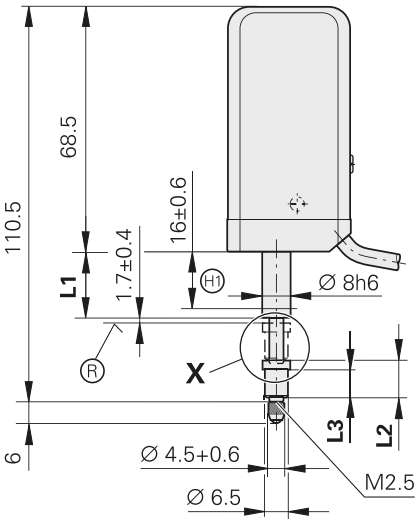


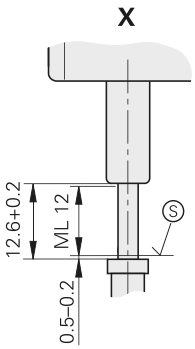
	Voltage supply				**Incremental signals**						**Other signals**		
Sub-D-Connector (male), 15-pin	4	12	2	10	1	9	3	11	14	7	13	5/6/8	15
Signals TTL	Up	Sensor Up	0 V	Sensor 0 V	Ua1	$\overline{\text{Ua1}}$	Ua2	$\overline{\text{Ua2}}$	Ua0	$\overline{\text{Ua0}}$	$\overline{\text{UaS}}$	n.c.	n.c.
Signals 1 Vpp	Up	Sensor Up	0 V	Sensor 0 V	A+	A-	B+	B-	R+	R-	n.c.	n.c.	n.c.

Shield on housing; Up = Power supply
Sensor: The sensor line is connected in the encoder with the corresponding power line.
Vacant pins or wires must not be used.

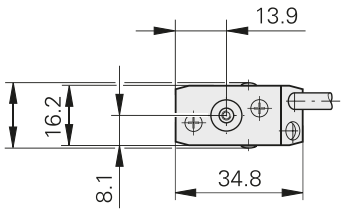
TECHNICAL DRAWING

MT 12

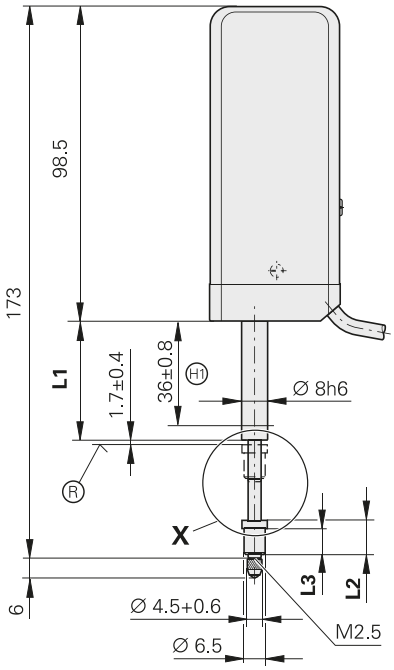


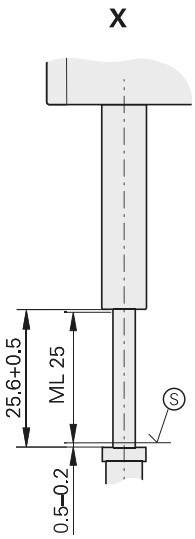


	MT 1271	MT1287
L1	18.5	22
L2	10.1	6.2
L3	8.1	4.2

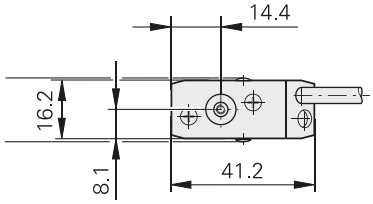


MT 25

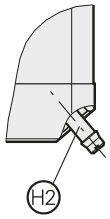




	MT 2571	MT 2587
L1	37	41
L2	10.1	6.2
L3	8.1	4.2



MT 1287
MT 2587

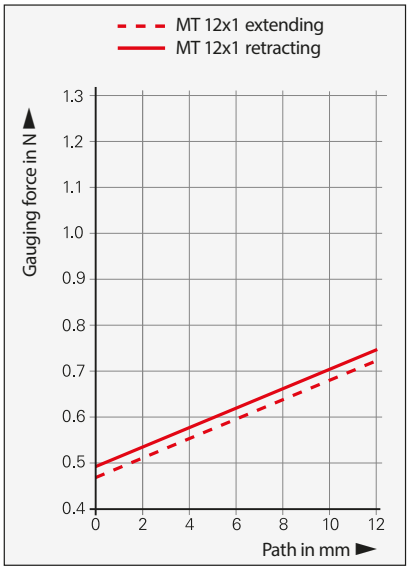


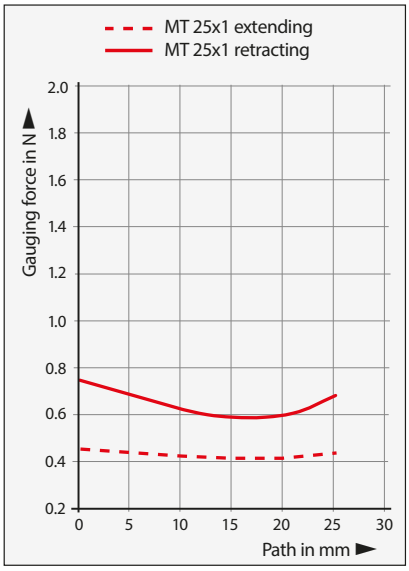
mm

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

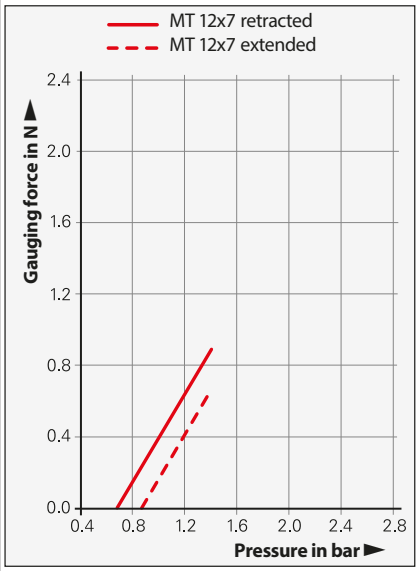
Ⓡ = Reference mark position
Ⓢ = Beginning of measuring length
Ⓗ1 = Clamping area
Ⓗ2 = Air connection for 2 mm tube

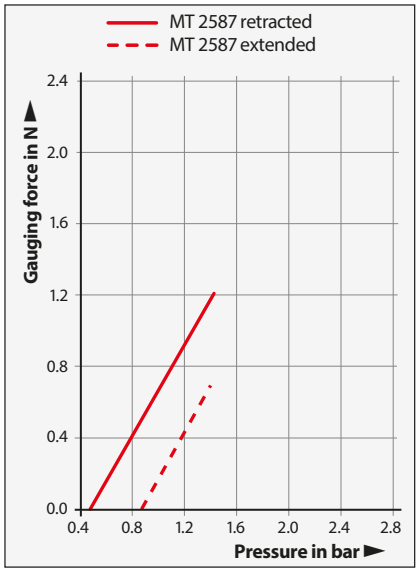
GAUGING FORCE / PATH DIAGRAM





GAUGING FORCE / PRESSURE DIAGRAM





The diagrams apply for the horizontal operating orientation, except for special variants. The following compensation values are to be taken into account for other operating orientations.

Type	Operating orientation vertical upward	Operating orientation vertical downward
MT 1271	-0.13 N	+0.13 N
MT 1287	-0.13 N	+0.13 N
MT 2571	-0.17 N	+0.17 N
MT 2587	-0.19 N	+0.19 N

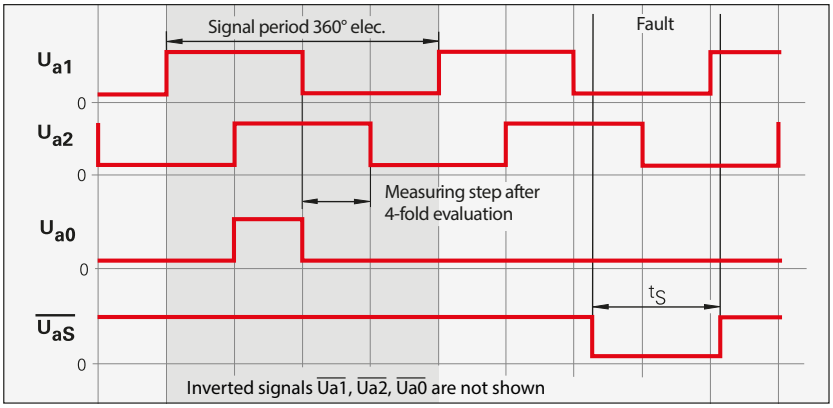
INCREMENTAL SIGNAL TTL

WayCon encoders with TTL interface incorporate electronics that digitize sinusoidal scanning signals with or without interpolation.

The incremental signals are transmitted as the square-wave pulse trains Ua1 and Ua2, phase-shifted by 90° elec. The reference mark signal consists of one or more reference pulses Ua0, which are gated with the incremental signals. In addition, the integrated electronics produce their inverted signals $\overline{Ua1}$, $\overline{Ua2}$ and $\overline{Ua0}$ for noise-proof transmission. The illustrated sequence of output signals - with Ua2 lagging Ua1 - applies to the direction of motion shown in the dimension drawing.

The fault detection signal $\overline{UaS}$ indicates fault conditions such as an interruption in the supply lines, failure of the light source, etc.

The distance between two successive edges of the incremental signals Ua1 and Ua2 through 1-fold, 2-fold or 4-fold evaluation is one measuring step.

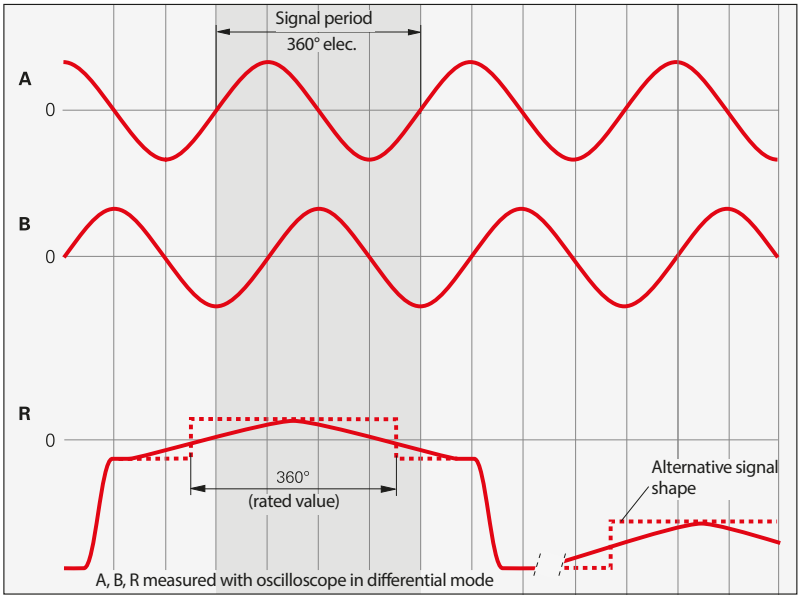


INCREMENTAL SIGNAL 1 Vpp

WayCon encoders with 1 Vpp interface provide voltage signals that can be highly interpolated.

The sinusoidal incremental signals A and B are phase-shifted by 90° elec. and have amplitudes of typically 1 Vpp. The illustrated sequence of output signals - with B lagging A - applies for the direction of motion shown in the dimension drawing.

The reference mark signal R has an unambiguous assignment to the incremental signals. The output signal might be somewhat lower next to the reference mark.



MODELS

MT 1271 / 331666-06	Measurement range 12 mm, TTL
MT 2571 / 331667-07	Measurement range 25 mm, TTL

MT 1287 / 376990-01	Measurement range 12 mm, 1 Vpp, pneumatic
MT 2587 / 376992-01	Measurement range 25 mm, 1 Vpp, pneumatic