MAGNESCALE

digital gauge

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14.03.19

Series DT, Series U

Key-Features:

- Measurement ranges: 12, 32 mm (DT Series)
- Measurement ranges: 12, 30, 60 mm (U Series)
- Resolution up to 1 µm
- Linearity up to 2 µm
- Output signal A/B, TTL-Linedriver, EIA-422 with MT14
- USB (2.0 FS) interface with MT30 - free evaluation software for download
- Protection class up to IP64
- Spring loaded and pneumatic versions
- Resistant against water and oil
- Life cycle up to 30 million strokes

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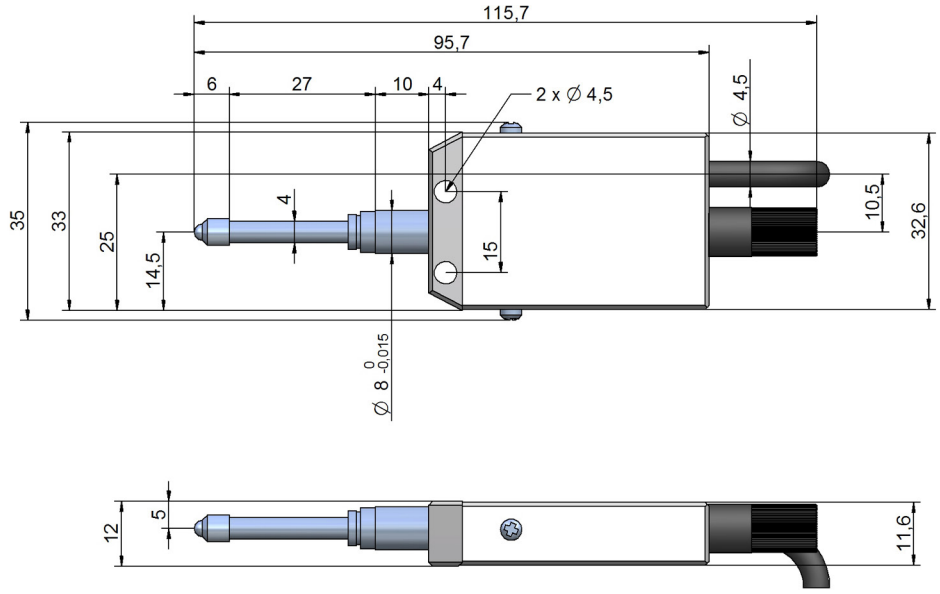
DIGITAL GAUGES DT12, DT512

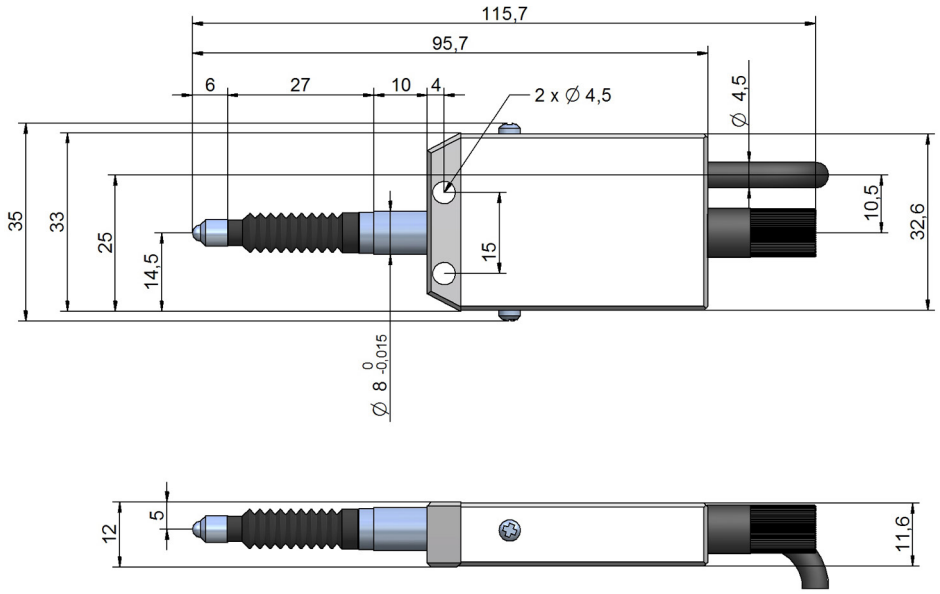
Model		DT12N	DT12P	DT512N	DT512P
Measurement range	[mm]	12			
Resolution	[µm]	5		1	
Linearity (20°C)	[µm]	10		6	
Displacement speed max.	[m/min]	depending on the unit to be connected: 1 channel displays (e.g. LT10A-105): 100 / 2 channel displays (e.g. LT11A-201): 80			
Rod principle		Spring push-out			
Reference point		none			
Working temperature	[°C]	0...50			
Storage temperature	[°C]	-10...60			
Measuring force	[N]	0.8 ±0.5	1.7 or less	0.8 ±0.5	1.7 or less
Protection class *		-	IP64	-	IP64
Weight	[g]	75	80	75	80
Life cycle		up to 30 million strokes			
Feeler		Steel ball tip ø3 mm, screw M2,5			
Cable length	[m]	2			
compatible display		LT10A		LT11A	

*Excluding the interpolation box and connector

DT12N, DT512N



DT12P, DT512P

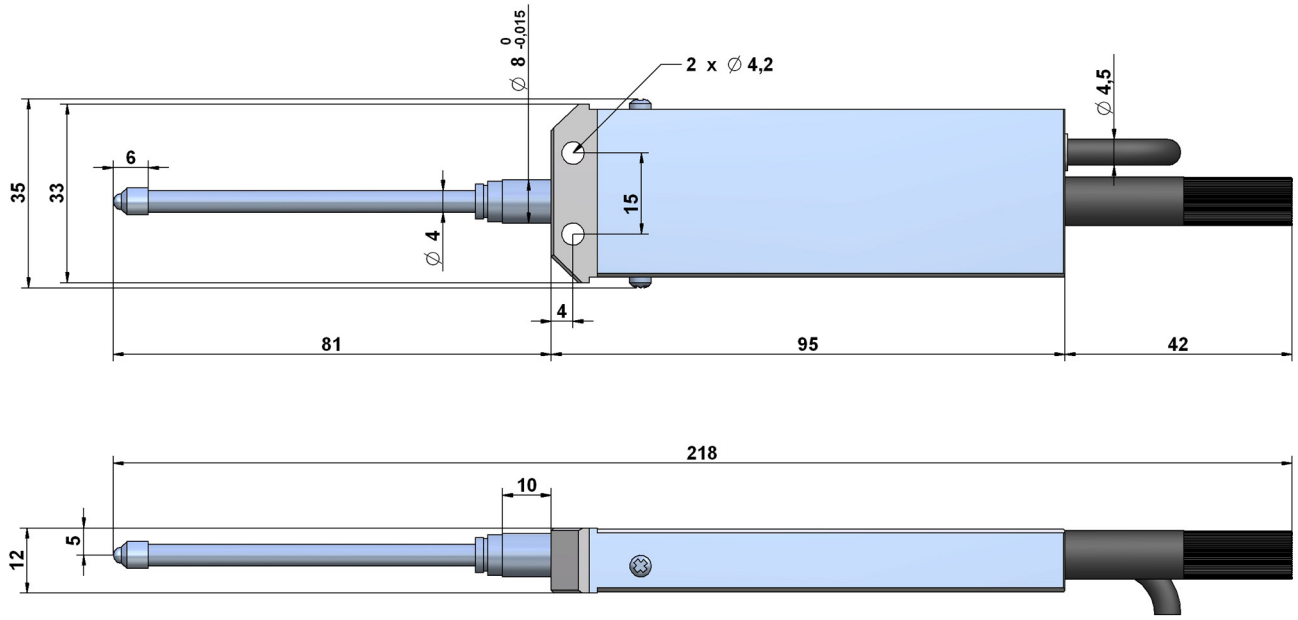


DIGITAL GAUGE DT32

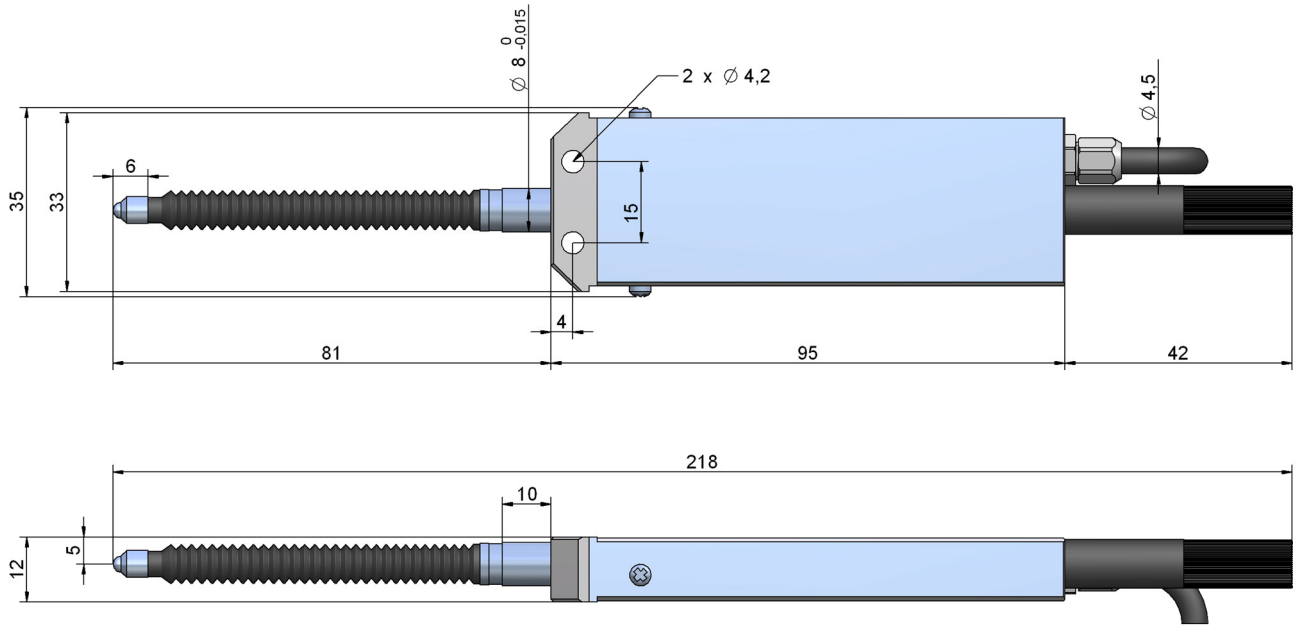
Model		DT32N	DT32NV	DT32P	DT32PV
Measurement range	[mm]	32			
Resolution	[µm]	5			
Linearity (20°C)	[µm]	10			
Displacement speed max.	[m/min]	depending on the unit to be connected: 1 channel displays (e.g. LT10A-105): 100 / 2 channel displays (e.g. LT10A-205): 80			
Rod principle		spring push-out	Pneumatic push	spring push-out	Pneumatic push
Reference point		none			
Working temperature	[°C]	0...50			
Storage temperature	[°C]	-10...60			
Measuring force	[N]	1.3 ±0.8		2.9	9
Protection class *		-		IP64	
Weight	[g]	appox. 120	appox. 140	appox. 120	appox. 140
Life cycle		up to 30 million strokes			
Feeler		Steel ball tip ø3 mm, screw M2,5			
Cable length	[m]	2			
compatible display		LT10A			

*Excluding the interpolation box and connector

DT32N

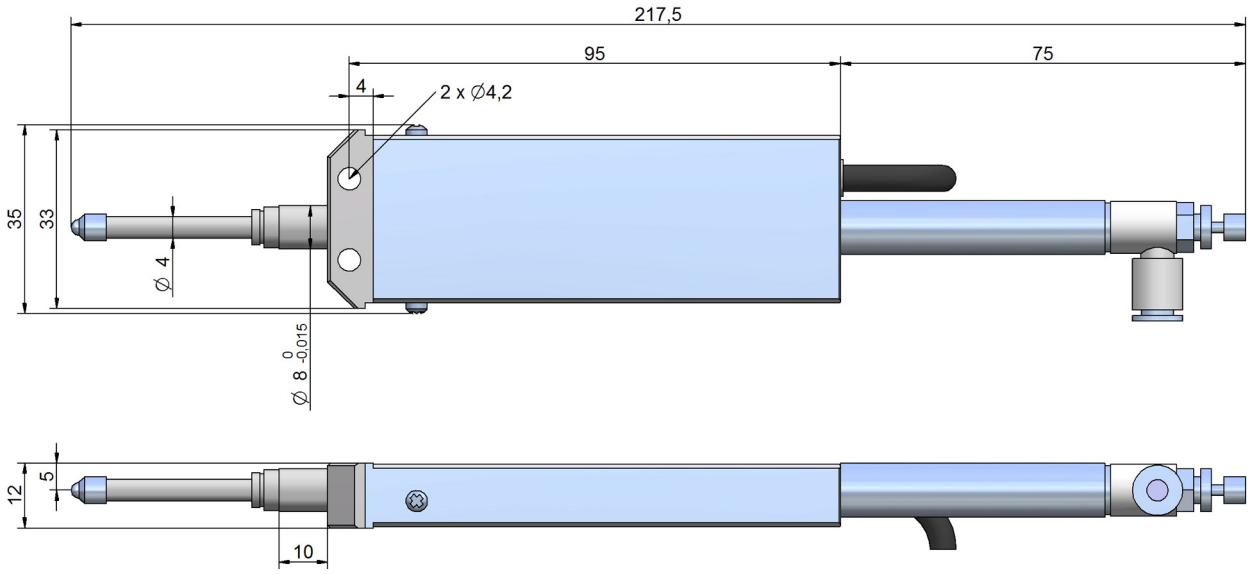


DT32P

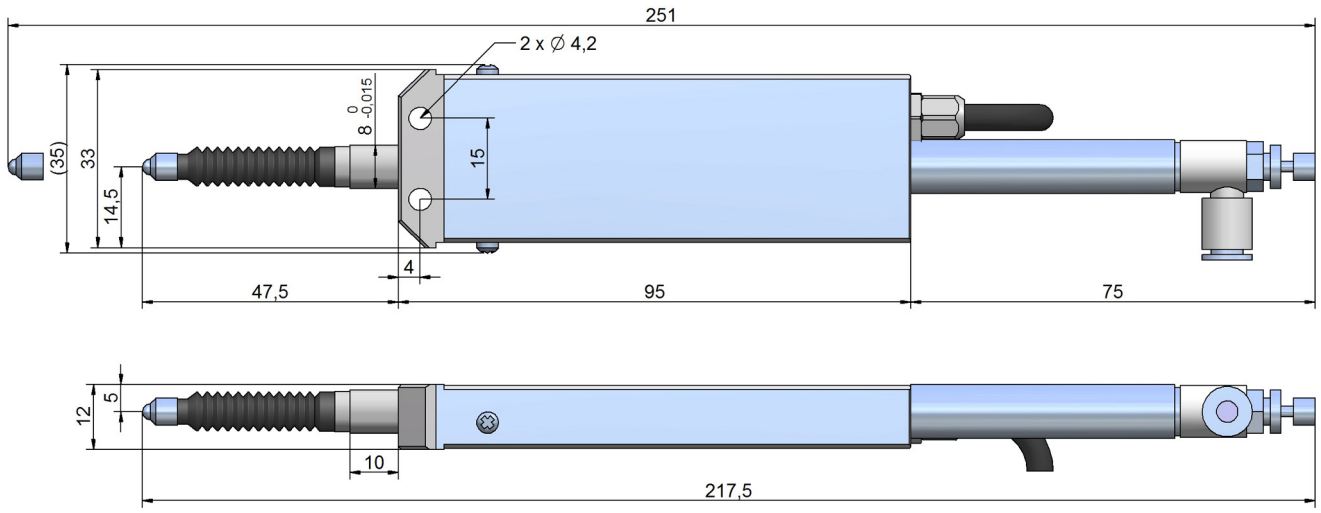


DIGITAL GAUGE DT32

DT32NV

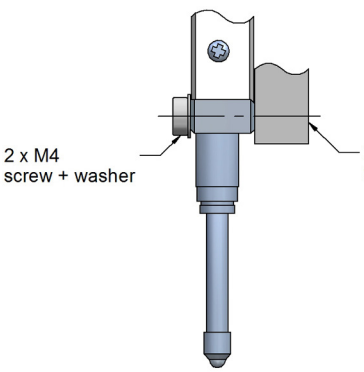


DT32PV

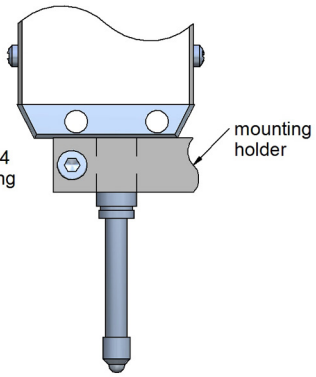


INSTALLATION INSTRUCTION

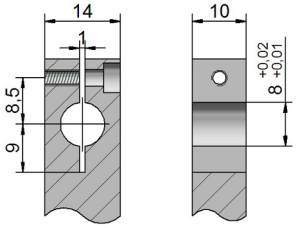
Mounting method using mounting hole



Mounting method using holder



Mounting holder dimensions and tolerance



INTERPOLATOR MT14

Using the interpolator unit MT14 the digital gauges of the series DT12, DT32 and DT512 can directly be connected to PLCs etc.

		MT14
Resolution	[µm]	MT14-01: 1 / MT14-05: 5 / MT14-10: 10
Displacement speed max.	[m/min]	100
Output signal		Voltage-differential line driver output (compliant with EIA-422)
Working temperature	[°C]	0...50
Storage temperature	[°C]	-10...60
Supply	[VDC]	5, ±5 %
Consumption	[W]	1.2 (when output load of 120 Ω is connected)
Weight	[g]	approx. 90

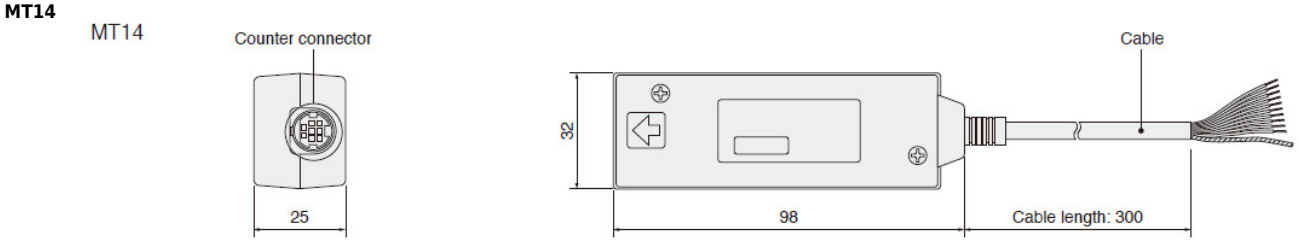
Description	Cable color
+ 5 V	red
0 V	white
0 V	brown
0 V	black
A	yellow
A -	blue
B	grey
B -	orange
alarm	purple
alarm -	green
FG	shield

0 V and the shield (FG) are connected with a capacitor.

Phase difference for phase A/B output in depending on the displacement speed v [m/min]			
MT14-01	**MT14-05**	**MT14-10**	**Phase difference [µs]**
0 < v ≤ 2.5	0 < v ≤ 12.5	0 < v ≤ 25	20
2.5 < v ≤ 6.25	12.5 < v ≤ 31.25	25 < v ≤ 62,5	8
6.25 < v ≤ 12	31.25 < v ≤ 60	62.5 < v ≤ (100)*	5
12 < v ≤ 24	60 < v ≤ (100)*		2.5
24 < v ≤ 60			1
60 < v ≤ (100)*			0.5

* An alarm is output at a traveling velocity of 100 to 115 m/min. The sampling frequency of the output signal is 120 µs.

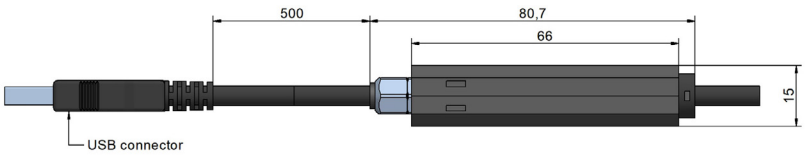
MT14



INTERPOLATOR MT30

Using the interpolator unit MT30 the digital gauges DT12, DT32 and DT512 can be connected to the USB port of a PC.

Model		**MT30-01**	**MT30-05**
Resolution	[µm]	1	5
Connectable digital gauge		DT512	DT12, DT32
Accuracy (20°C)	[µm]	6	10
Protection class		IP40	
Vibration resistance	m/s^2	100 (20Hz to 2kHz)	
Impact resistance	m/s^2	1000 (11 ms)	
Communication interface		USB2.0FS	
Power supply	[VDC]	5 ± 5%	
Power consumption	[mA]	120 max.	
Operating temperature	[°C]	0...50	
Storage temperature	[°C]	-10...60 (90% RH or less)	
Power supply	[VDC]	5, ±5 %	
Mass	[g]	approx. 50	
Cable length	[m]	Gauge <=> Interpolator: 0,3, Interpolator <=> USB: 0,5	
System requirement		CPU: Intel Core i3 or higher; RAM: 1 GB or higher; OS: Windows7, Windows10 (32 bit/64 bit)	



USB SOFTWARE

With the free basic software tool the measuring values ca be read out and saved in an excel or csv file.

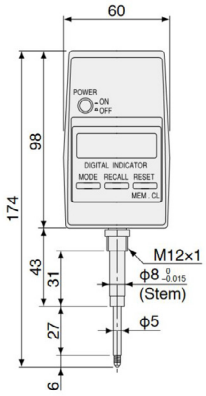
- Up to 8 gauges can be connected
- Easy to operate and setup
- Comparator function
- Calibration (Reset) function
- Scaling function
- Available in various languages
- Compatible with Windows 7/8/10 (XP possible)

DIGITAL GAUGE U

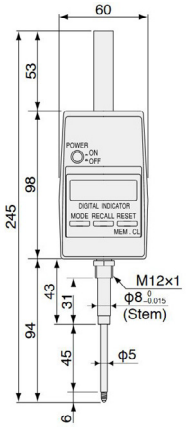
Model		U12B	U30B	U60B
Measurement range (MR)	[mm]	12	30	60
MR when using air release DZ173	[mm]	12	30	32
Resolution	[µm]	1		
Linearity (20°C)	[µm]	2		3
Measurement force (20°C)	[N]	1.3 or less	1.5 or less	2.2 or less
Display		LCD Display, 6 digits, minus display		
Displacement speed maximal	[m/s]	0.4		
Reference point		none		
Working temperature	[°C]	0...40		
Storage temperature	[°C]	-10...50		
Supply *	[VDC]	6 VDC ±10 % (with DC IN jack) 6 to 9 VDC ±10 % (with data connector used)		
Consumption	[W]	1		
Feeler		Carbide ball tip, Mounting screw M2.5		
Weight	[g]	appox. 190	appox. 230	appox. 300
Included in delivery		Instruction Manual, lift lever, and dedicated spanner		

* Power supply unit AC-K02 please order separately

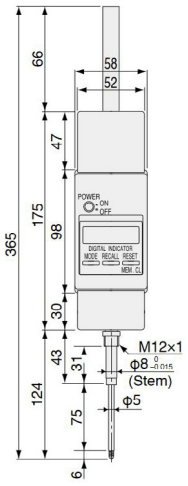
U12B



U30B



U60B

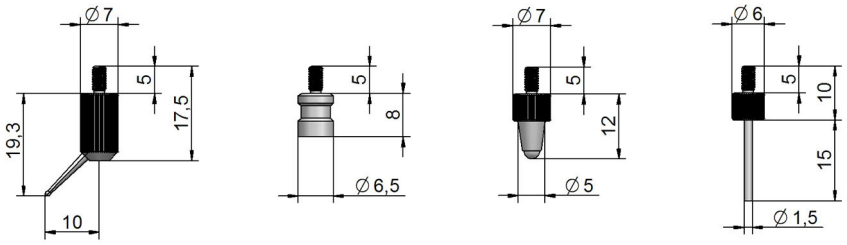


Accessory: Stand DZ521

ACCESSORIES DT SERIES

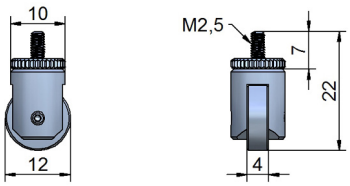
Feeler Set DZ5100:

1. Off-center contact point: ø1,0 mm steel ball
2. Flat carbide contact point ø 6,5 mm
3. Plastic ball contact point ø3,0 mm, nylon ball
4. Pin contact point ø1,5 mm



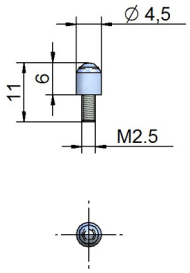
Roller DZ100:

Tolerance <3 µm/turn



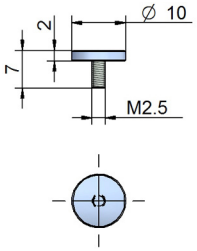
Tastkopf-01 *

Tastkopf-01: steel (standard)
Taskopf-01-HM: cemented carbide
Tastkopf-01-R: ruby
Tastkopf-01-K: ceramics

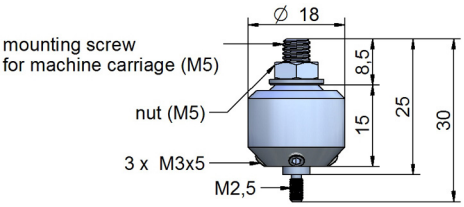


Tastkopf-02

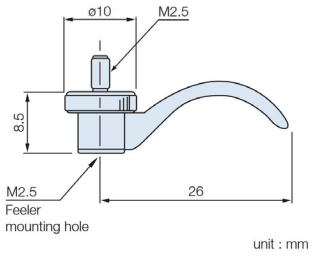
Tastkopf-02: steel
Tastkopf-02-HM: cemented carbide



Coupling DZ191:



Lift lever DZ161

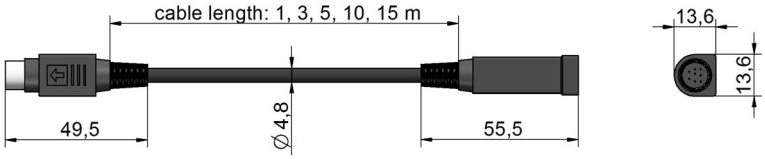


*** Material of the feeler balls:**

steel: for standard applications
ruby: much harder and wear resistant than steel, non-conductive, for all applications except for measuring on aluminium and cast iron
ceramics: comparable to ruby, best choice for measuring on aluminium and cast iron

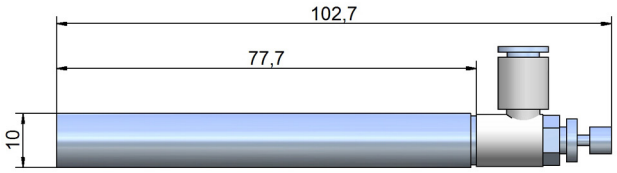
Extension cable CK-T (high flex): CK-T12 (1 m), CK-T13 (3 m), CK-T14 (5 m), CK-T15 (10 m), CK-T16 (15 m)

Extension cable CE08: CE08-01 (1 m), CE08-03 (3 m), CE08-05 (5 m), CE08-10 (10 m), CE08-15 (15 m)



ACCESSORIES DT SERIES

Airlifter DZ176



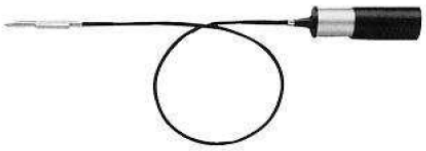
Measuring range	[mm]	0...12
Digital gauge		DT12, DT512
Air pressure	[kPa]	250...700
Working temperature	[°C]	0...50
Storage temperature	[°C]	-10...60
Weight	[g]	41
life cycle		up to 30 million strokes

Mode of operation:

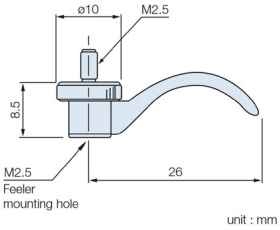
- Use an air tube with an outer diameter of 4mm.
- The supply air should be cleaned by using a filter.
- Without the airlifter a spring inside of the sensor pushes the rod outwards.
- With the airlifter installed the rod will be pulled inside by a stronger spring inside of the airlifter.
- When air is supplied the rod will be pushed out again and the measurement can begin.
- The rod retraction speed can be adjusted by the speed controller mounted on the DZ176.

ACCESSORIES U SERIES

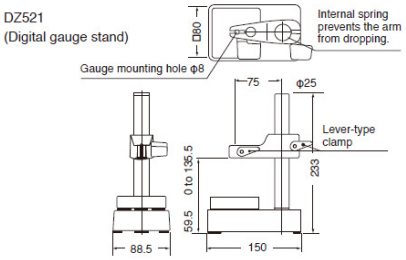
Air release DZ173



Lift lever DZ161 (included in delivery)



Stand DZ521



DISPLAYS

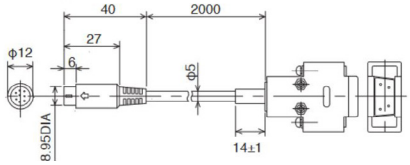
	LT10A		LT11A	
Suitable gauges	DT12, DT32		DT512	
Standard (without interface)	LT10A-105 (1 channel model)	LT10A-205 (2 channel model)	LT11A-101 (1 channel model)	LT11A-201 (2 channel model)
With BCD interface	LT10A-105B (1 channel model)	LT10A-205B (2 channel model)	LT11A-101B (1 channel model)	LT11A-201B (2 channel model)
With RS232 interface	LT10A-105C (1 channel model)	LT10A-205C (2 channel model)	LT11A-101C (1 channel model)	LT11A-201C (2 channel model)
LCD Display	5 digits		5 digits	
Resolution	5/ 10 µm, selectable		1/ 5/ 10 µm, selectable	
ADD/ SUB-Function	-	model LT10-2xx: A+B, A-B, B-A	-	model LT11-2xx: A+B, A-B, B-A
Working temperature	0...+40 °C		0...+40 °C	
Storage temperature	-10...+50°C		-10...+50°C	
Weight	220 g to 270 g (depending on the model)			
Consumption	1.8 W to 4 W (depending on the model)			
Supply	9.0 to 26,4 VDC			

Key Features

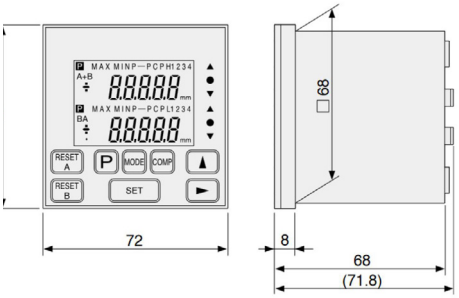
- Resolution : selectable
- Suitable for panel mounting
- Direct interfacing from display unit to PLC or computer
- Current values, maximum, minimum, peak-to-peak values and GO/NO GO evaluation included as standard functions.
- ADD/SUB function (2-channel model)
- Full lineup for various applications

Connection cable DZ252 for LT Display with RS232 interface
for connection to a PC, RS232 card, etc.

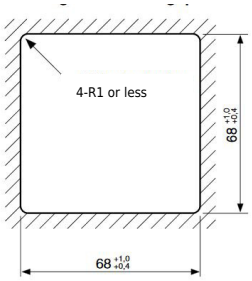
DZ252 cable for RS232C (for LT and U series),
round 8-pin male <—> D-sub 9-pin female



LT10A, LT11A



Panel cut-out



ORDER CODE DIGITAL GAUGE

DT12 □

N	Spring push out, IP40
P	Spring push out, IP64

DT512 □

N	Spring push out, IP40
P	Spring push out, IP64

DT32 □

N	Spring push out, IP40
P	Spring push out, IP64
NV	Pneumatic push out, IP40
PV	Pneumatic push out, IP64

U □ **B**

12	Measurement range 12 mm
30	Measurement range 30 mm
60	Measurement range 60 mm

ORDER CODE DISPLAY

LT10A – □ □

---	without interface
B	BCD-interface
C	RS232C-interface

105	1-channel-display
205	2-channel-display

LT11A – □ □

---	without interface
B	BCD-interface
C	RS232C-interface

101	1-channel-display
201	2-channel-display

ORDER CODE INTERPOLATOR

MT30 – □

01	Resolution 1 µm
05	Resolution 5 µm

MT14 – □

01	Resolution 1 µm
05	Resolution 5 µm
10	Resolution 10 µm

ACCESSORIES

Accessories	
DZ100	Roller
DZ176	Air lifter
DZ191	Coupling
DZ5100	Feeler Set
DZ161	Feeler Set
DZ252	RS232 cable (for LT..C Display), Sub-D connector
Tastkopf-01	Standard (included in delivery)
Tastkopf-01-HM	Cemented carbide ball
Tastkopf-01-R	Ruby ball
Tastkopf-01-K	Ceramics ball
Tastkopf-02	Steel plate
Tastkopf-02-HM	Cemented carbide plate
Accessories for Series U	
AC-K02	Power supply unit
DZ173	Air lifter
DZ521	Stand
DZ5100	Feeler Set

Connection cable	
CE08-1	1 m, extension cable
CE08-3	3 m, extension cable
CE08-5	5 m, extension cable
CE08-10	10 m, extension cable
CE08-15	15 m, extension cable
CK-T12	1 m, high flex extension cable
CK-T13	3 m, high flex extension cable
CK-T14	5 m, high flex extension cable
CK-T15	10 m, high flex extension cable
CK-T16	15 m, high flex extension cable
USB-extension cable	
CE38-01	1 m, USB
CE38-02	2 m, USB
CE38-04	4 m, USB

Subject to change without prior notice.

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