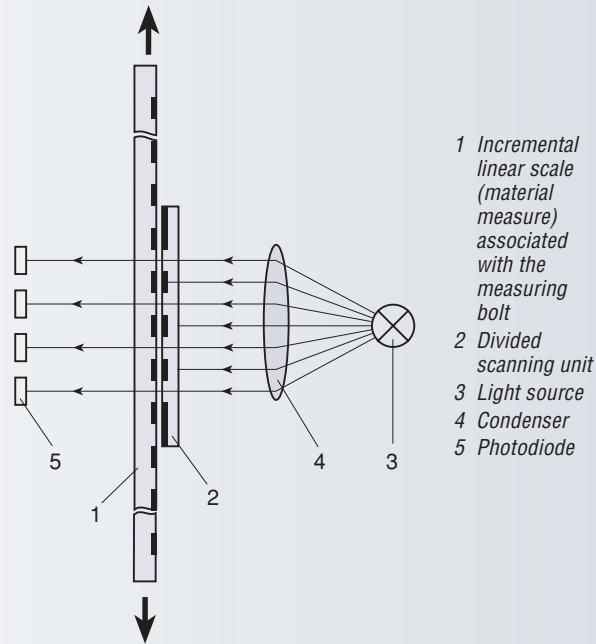


**The way they work**

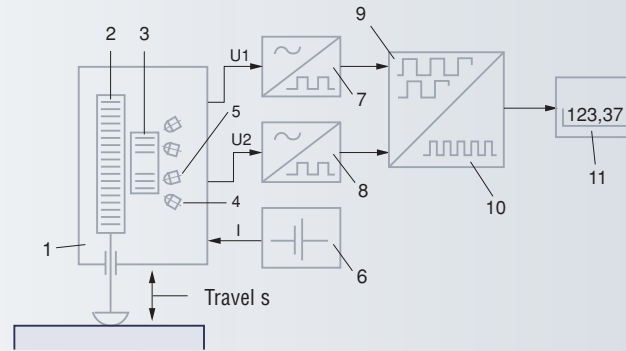
All electronic length measuring systems shown in this part of our catalogue work on the basis of value sensors in the form of digital probes with axial displacement. These probes generate the digital capture of measured physical quantities (i.e. measurands), which are changing as the incremental linear scale lying in front of the scanning unit and fitted with a reticle is moved. Divisions on both features are identical. The opto-electronic detection of these changes uses transmitted light.

Optical material measures are made up of quality glass gratings with a number of divisions distributed over the entire length. These divisions consist alternately of lines and blanks, which represent each individual increment. The distance from line to line or blank to blank is the dividing period, e.g. 20 µm or 40 µm.

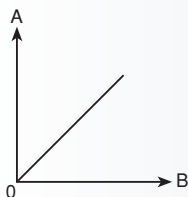
As the gratings of both the scale and reticle are moved in relation to one another, the opaque divisions on the scanning reticle are covered alternately by the lines and blanks on the linear scale, which serves as material measure. This provides a bright/dark information, which is then converted into electrical signals. After their analogue/digital conversion, these signals are shown on the computing counter as the sum of counting impulses equal to the amount of changes of the measured quantity. So as to increase the resolution that results from the dividing periods, the probe signals are split by the electronics (interpolation).



- 1 Incremental linear scale (material measure) associated with the measuring bolt
- 2 Divided scanning unit
- 3 Light source
- 4 Condenser
- 5 Photodiode



- 1 Probe housing
- 2 Linear scale divided into increments
- 3 Divided reticle
- 4 Light source
- 5 Photodiodes
- 6 Power supply
- 7 Conversion of U1 signal
- 8 Conversion of U2 signal
- 9 Signal scanning
- 10 Multiple evaluation of the signal (interpolation) plus direction discriminator
- 11 Numerical display



Typical linearity where digital capture of the measurands is based on incremental linear scales.  
 A Counting impulses  
 B Travel



TG Computing Counter



DIN 32876 Part 2

Up/down counter with one probe input

LC display with illuminated colour background for value classification with green, amber and red.

37 x 37 mm display size. 6 decades plus minus sign

0,001 mm and 0,0005 mm or 0,00001 in.

For probes from another maker with dividing periods of 10 µm = 0,0002 instead of 0,0005 mm or of 2 µm = 0,0001 instead of 0,0005 mm

9 x 4,5 mm

According to chosen tolerance range

40 mm scale length

25

20 keys available for entering values and selecting functions. Power supply 5 Vdc (measuring system).

Output: ± 5 ± 1 % Vdc depending on selected tolerance range.

Max. excess voltage: 25% in relation to ± 5 Vdc

Output impedance: < 100 Ω

Resolution: 12 bits

RS 232, bidirectional

Power supply: 7 Vdc. Power consumption: 0,3 A

10 °C to 40 °C

-10 °C to 50 °C

80%

IP40 (IEC 60529)

Continued on next page

# TESA TG Digital Measuring System

Ideal for long measuring travels – Incremental probes with a 30 or 60 mm measuring span – Numerical display to 0,001 or 0,0005 mm – Analogue display with illuminated colour background for value classification – Value storage – PRESET function – To name just a few.



## TESA TG - C 10 or TG - C 11 Computing Counter



04630004

**TESA TG - C10 computing counter**

Up/down computing counter with numerical display\*, resolution to 0,001 and 0,0005 mm or 0,00001 in. Features 1 probe input. Also with value classification and value storage capabilities. RS 232 data output.

04630009

**TESA TG - C10 computing counter (HEIDENHAIN)**

Same execution as above, but compatible with HEIDENHAIN probe MT-1201/2501 only\*.

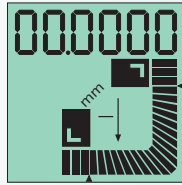
Each unit is supplied with the following accessories:

**04761054** 1 mains adapter 110 to 240 Vac, 50 to 60 Hz, 6,6 Vdc, 750 mA

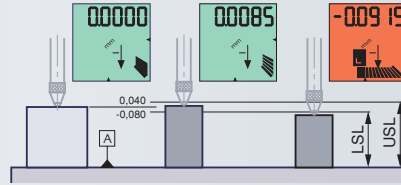
**04761055** 1 EU adapter cable

\* Compatible with equivalent HEIDENHAIN probes with same connector shape and signal.

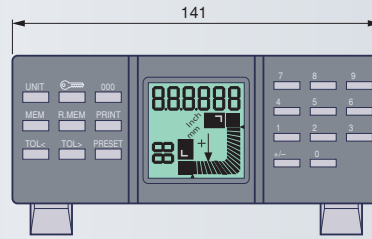
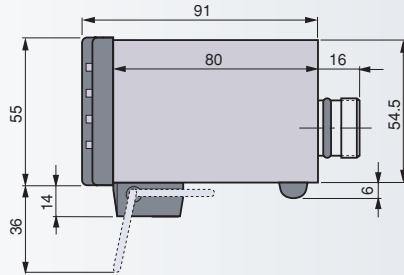
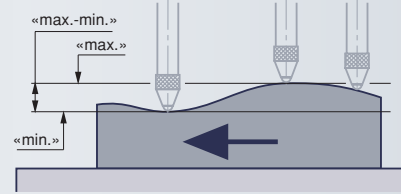




Input of the lower and upper specification limits (LSL and USL)



Digital capture of both extreme values «max.» and «min.» along with the difference between «max.-min.» in dynamic measurement



EN 50081-1,  
EN 50081-2,  
EN 50082-1,  
EN 50082-2

TG - C10  
≈ 650 g

Shipping packaging

Identification number

Declaration of conformity



### TESA TG 30 and TG 60 Digital Probes



#### Digital Probes\*

Axial probes with incremental glass scale

**04630006** **TESA TG 30**  
30 mm measuring span

**S46060525** **TESA TG 30**  
30 mm measuring span. Also with rubber bellow.

**04630007** **TESA TG 60**  
60 mm measuring span

Each probe is supplied with the following item:

**01960005** 1 Retract lever for the measuring bolt

\* Compatible with equivalent HEIDENHAIN probes with same connector shape and signal.



TG probe



- DIN 32876 Part 2
- Axial probe usable in any position. Measuring bolt guided on a plain bearing.
- Probe insert with M2,5 mounting thread.
- Measuring bolt retraction:
  - mechanical retraction, see under standard accessories
  - pneumatic retraction, see table
- 4,3 mm dia. x 3 m cable.
- Max. cable extension 10 m.

Incremental glass scale

0,002%/ °C

10°C to 40°C

-10°C to 50°C

80%, non-condensing

IP54\* (IEC 60529)  
\*probe housing only

5 ± 10% Vdc

Output signal ± 11 µApp, sinusoidal

Shipping packaging

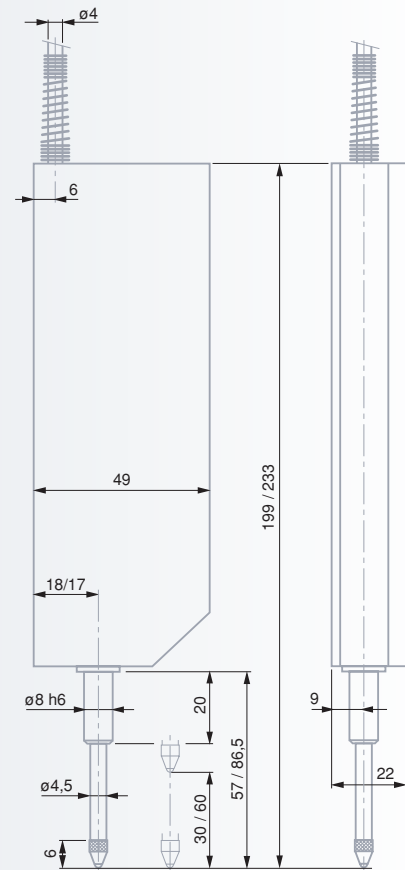
Identification number

Inspection report

Declaration of conformity

TESA electronic probes		TG 30	TG 60
	mm	30	60
	mm	30,4	60,4
	µm	20	40
	µm	1,0	2,0
	µm	1,0	1,0
	µm	1,0	1,0
	Close to		
	– lower stop of the measuring bolt*	N 0,85 N ± 0,15	N 0,90 N ± 0,20
	– upper stop of the measuring bolt*	N 1,10 N ± 0,20	N 1,45 N ± 0,25
	Force hysteresis*	N 0,1	N 0,15
	Max. transverse force	N 2,0	N 2,0
	Pneumatic retraction of the measuring bolt by vacuum or air pressure		
	Position of use		**
	– vertical	bar 0,55 ÷ 0,70	bar 0,60 ÷ 0,75
	– horizontal	bar 0,42 ÷ 0,57	bar 0,52 ÷ 0,67
	– vertical (in suspension)	bar 0,30 ÷ 0,45	bar 0,45 ÷ 0,60
		m/s 1,4	m/s 2,0
	Moved mass	g 350 g 28	g 365 g 27

\* Applicable with the probe used in vertical position with downward oriented measuring bolt, as well as in static measuring.  
\*\* TG 60 cannot be used with compressed air.

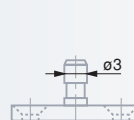


Optional accessories

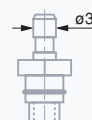
		<b>Connectors for lifting the measuring bolt by vacuum</b>
01960009		Suitable for TESA TG 30 (No. 04630006)
01960008		Suitable for TESA TG 60 (No. 04630007)
		<b>Connector for lifting the measuring bolt by air pressure</b>
01960010		Suitable for TESA TG 30 (No. 04630006)



01960009



01960008



01960010



## TESA- $\mu$ HITE Height Gauge

Compact design providing ease of handling and versatility – Made for workpiece inspection close to the production area. Specially suited for measuring those parts which often vary in both their type and their shape.

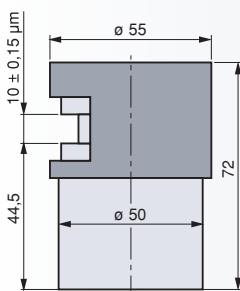
Motor-driven measuring bolt ensuring a constant measuring force at each probing point.

Easy-to-use control panel, which includes all the capabilities to make your measurements easier.

No	=				
		mm		in	
<b>00730049</b>	<b>TESA-<math>\mu</math>HITE height gauge</b>	0 ÷ 160		0 ÷ 6.3	
<i>Consisting of the following components</i>					
<b>00760203</b>	<b>1 TESA measuring stand, with granite measuring table, 200 x 300 x 50 mm</b>				
<b>00730054</b>	<b>1 TESA-<math>\mu</math>HITE electronic measuring system</b>				
<i>Including:</i>					
No	=				
		mm		in	
<b>00730050</b>	<b>1 TESA-<math>\mu</math>HITE value sensor</b>	100		4	
<b>00760204</b>	<b>1 Control panel. Connected to TESA-<math>\mu</math>HITE</b>			0,001 0,0001	0.0001 0.00001
<b>00760191</b>	<b>1 Connecting cable TESA-<math>\mu</math>HITE to Control panel</b>				
<b>00760195</b>	<b>1 Probe insert holder, axial for probe inserts with a M2,5 thread</b>				
<b>03510002</b>	<b>1 Probe insert with a 3 mm dia. tungsten carbide ball tip</b>				
<b>00760197</b>	<b>1 Probe insert with a 5 mm dia. tungsten carbide ball tip and offset point</b>				
<b>00760192</b>	<b>1 Master piece for determining probe constant, 10 mm/0.39370 in</b>				
<b>04761054</b>	<b>1 Mains adapter, 110 to 240 Vac/50 to 60 Hz</b>				
<b>04761055</b>	<b>1 Cable EU for mains adapter</b>				
<b>038407</b>	<b>1 Suited plastic case</b>				

### Accuracy

No				
	$\mu$ m	in	$\mu$ m	in
Position of the contact point relative to the axis of the measuring bolt				
– coaxial	1,0	0.00005	0,5	0.00002
– offset	2,0	0.0001	1,0	0.00004
With used the standard accessory.				



For further details, see pages M-19 to M-24.

