

# TENSION METER

**\*\* Code 1830I\_LMQST \*\***

Tension meter with measuring head as small as possible for textiles applications only. 3 Tension ranges from 0.3 – 100.0 cN to 2.0 – 500.0 cN. Hand-held unit with ceramic pins up to max. **6000 m/min.**

Electronic tension meter for hard to reach and limited access space applications. Available in two versions: **Basic unit** or **with memory and outputs unit.**

## Special Features

- Tension meter with guide rollers mounted on long shafts to reach into tightest places.
- Hand-held instrument with non-rotating ceramic pins (outer pins V-grooved) for line speed max. 6000 m/min.
- Coloured, backlight TFT display with 3 different display modes:
  - numeric.
  - numeric with live bargraph.
  - numeric with graph (time-tension).
- The display rotates in 90° steps for better reading.
- Automatic “Zero-Setting” in each measuring position using a special sensor technique.
- Selectable units of measurement: cN, g, N and lb.
- Very high data sampling rate (internal 1 kHz).
- Storage of MIN, MAX, last reading, average and standard deviation per measuring interval.
- User-set MIN and MAX alarms with indication of TFT display if reading is out of limits.
- Adjustable electronic damping for better reading when tension fluctuates.
- 3 separate calibration material memory locations for custom calibrations.
- Calibration adjustment for fine tuning of the calibration if material differs from the used calibration material.
- Menu set-up in English or German language.



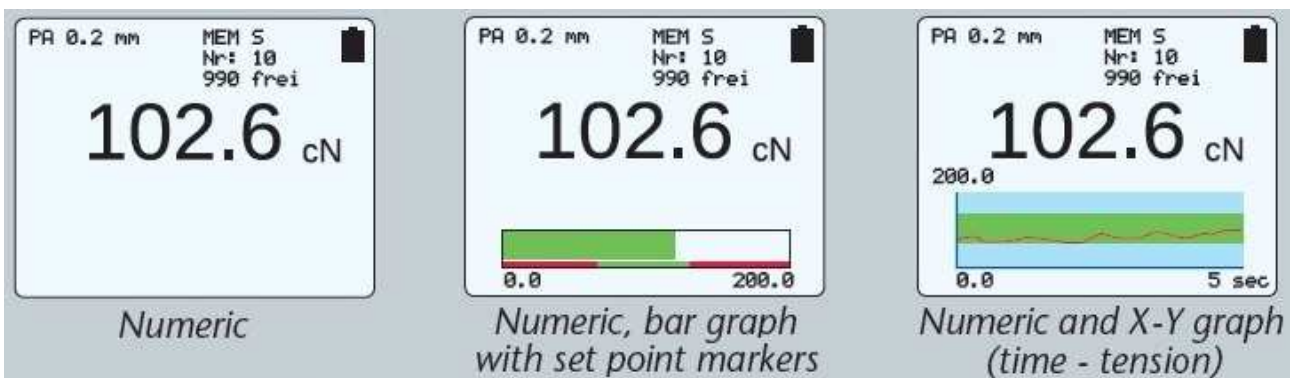
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User friendly TFT full-text display.  
Some functions can be password protected.



TFT display with 3 selectable display modes



Depending to the measuring position the TFT display is automatically rotating in 90° steps

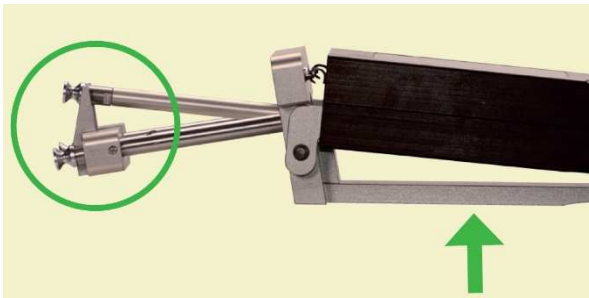
## Standard Features

- Rugged aluminium housing.
- LiPo accumulator (approx. 20 hours continuous operation) with AC adapter.
- CE certified, interference resistant against static electrifications.
- Certificate of Compliance with the order 2.1 according EN 10204 is included.
- Filament guide for easy material acquisition of running filaments.

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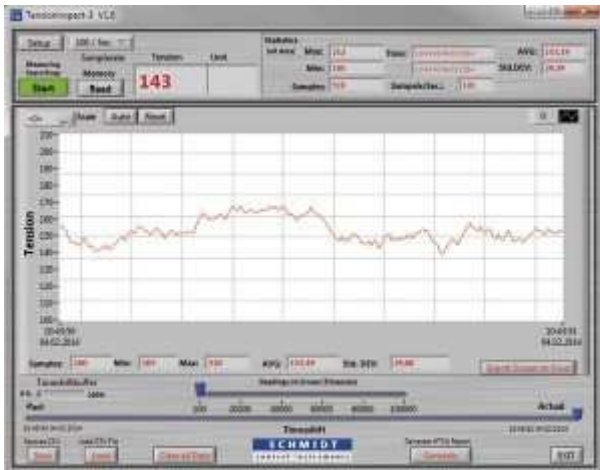


If required, the filament guide can be unscrewed.  
The two outer rollers can be tilted upwards using the lever on the rear side.

## Additional Special Features for unit with memory and outputs

The tension meter with memory and outputs can be connected to a PC using the USB interface to monitor readings constantly on a PC.

- Memory for 60.000 readings.
- 5 different memory modes can be selected by the operator:
  - **Mode S:** only statistical values per series are displayed.
  - **Mode H:** storage of the X-Y-diagram for reviewing after finishing a series of measurement.
  - **Mode C:** continuous logging over a user set time and max. 999 series of measurement (2 Hz).
  - **Mode F:** as C with higher sampling rate (200 Hz).
  - **Mode D:** storage of single readings and statistic.
- Software Tension Inspect 3 for displaying real-time readings on a PC.



**TENSION INSPECT 3** Software to display and save readings on a PC (Win XP and higher; 32 bit and 64 bit).

### Features:

- Real-time reading.
- The readings are also shown in a X-Y-diagram (time/date-tension).
- For data analysing the buffered diagram can be zoomed and scaled.
- Recording of the buffered readings as CSV-file (on user request).
- Download of values to Excel.

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Model with memory and outputs can be connected to a PC with the USB cable. With the software SW-TI3 »**Tension Inspect 3**« readings can be displayed, statistically analysed and saved. For more information see “**Standard Accessories for unit with memory and outputs**”

## Available models

Model (ETPB)	Model (ETPX)	Tension Range	Resolution	Measuring Head Width*	Calibration**with running filament
Basic	with memory and outputs	cN	cN	mm	approx. 60 m/min
<b>1830I</b>	<b>1830Q</b>	0.3 - 100.0	0.1 cN	22	PA: 0.20 mm Ø
<b>1830L</b>	<b>1830S</b>	2.0 – 200.0	0.1 cN	22	PA: 0.20 mm Ø
<b>1830M</b>	<b>1830T</b>	2.0 – 500.0	0.1 cN	22	PA: 0.20 mm Ø

\* Outer distance between outside guide rollers

\*\* Suitable for 95 % of applications - PA = Polyamide Monofilament



**inspection Certificate 3.1** according DIN EN 10204 including a calibration report is optional available.



**USB AC adapter with 4 adapters** (EU/USA/UK/AUS-NZ) for 100 – 240 V AC and USB cable for loading the accumulator



**Delivery includes** Tension meter with carrying case, USB AC adapter with 4 adapters (EU/USA/UK/AUS-NZ), USB cable, a screwdriver and flat wrench, operating instruction in German or English (as requested), Certificate of Compliance with the order 2.1 according EN 10204 free of charge.

Tension meter with memory and outputs includes additionally software »**Tension Inspect 3**«

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## Specifications

<b>Calibration:</b>	According factory procedure
<b>Accuracy:</b>	$\pm 1$ % full scale $\pm 1$ digit or better (typical $\pm 0.5$ % full scale)
<b>Memory for material curves:</b>	1 for company calibration plus 3 for customized calibrations
<b>Measuring units:</b>	cN, g, N or lb, switchable
<b>Resolution:</b>	0.1 cN
<b>Overrange:</b>	Approx. 10 % full scale, without accuracy guarantee
<b>Overload protection:</b>	200 % full scale
<b>Measuring principle:</b>	Strain gauge bridge
<b>Measuring roller deflection:</b>	Max. 0.5 mm
<b>Signal processing:</b>	Digital
<b>Damping:</b>	Adjustable electronic damping (averaging)
<b>Sampling rate internal:</b>	approx. 1 kHz
<b>Sampling rate:</b>	200 Hz, 2 Hz: AVG, MIN, MAX
<b>Display:</b>	Colour-TFT 128 x 160
<b>3 different displays:</b>	Numeric, Numeric with bargraph, X-Y diagram (time-tension)
<b>Display update rate:</b>	Approx. 2 times per second
<b>Memory:</b>	Last, average, MAX and MIN
<b>Cal. Adjustment:</b>	$\pm 10$ steps in 1% increment
<b>Auto power off:</b>	Approx. 3 minutes of non-use
<b>Temperature coefficient:</b>	Gain: less than $\pm 0.01$ % full scale/ $^{\circ}$ C
<b>Temperature range:</b>	+10 – +45 $^{\circ}$ C
<b>Air humidity:</b>	85 % RH, max.
<b>Auto power off:</b>	Approx. after 3 minutes of non-use
<b>Power supply:</b>	LiPo accumulator (approx. 20 h continuous use, charging time approx. 3.5 h), USB AC adapter 100...240 V AC with 4 adapters (EU/USA/UK/AUS-NZ)
<b>Housing material:</b>	Aluminium
<b>Housing dimensions:</b>	182 x 54 x 41 mm (L x W x H)
<b>Weight, net (gross):</b>	Approx. 310 g (1220 g)
<b>Additional specifications of model version with memory and outputs</b>	
<b>Output signal digital:</b>	USB
<b>Memory:</b>	Max. 60.000 at 999 measuring periods
<b>Memory Modes:</b>	5 memory modes with statistical evaluation and PEAK capture
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