

Tension meter mostly used for the knitting machines

Model PT-100-L

Special Features Model PT-100-L:

- ✚ Multifunctional instrument:
 - Tension Meter
 - Yarn speed meter
 - Length to determine the yarn consumption of a single feeder for one or more (max. 10 revolutions) machine cycles of a circular knitting machine

Length measurement -

2 operation modes:

- „Manual“ (without external Sensor):
The instrument works as long as the operator presses the button
- „Auto“ (with magnet sensor):
Sensor and magnet are supplying a start/stop signal for a user-defined number of machine revolutions (1 to 10)

1st
IN TENSION
METERS
WORLDWIDE

Specifications

Model PT-100 and PT-100-L

Calibration:	SCHMIDT factory procedure
Accuracy:	± 1.5 % FS* and ± 1 digit, Length measuring ± 0.5 % FS*; 1 digit
Overrange (approx.):	10% FS*, without accuracy guarantee
Overload protection:	200 %
Measuring principle:	Strain gauge bridge
Measuring units:	cN, grs switchable m, in, m/min, in/min (only PT-100-L)
Display update rate:	2 times/sec
Damping:	Selectable electronic damping (moving averaging)
Display:	LCD 3 ½ digits, 9 mm high
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	LiPo accumulator (~ 40 h continuous use, charging time 3½ h) and AC adapter 100 - 240 V with adapters (EU/USA/UK)
Auto power off:	Automatically after 3 minutes of non use
Housing material:	Aluminium
Housing dimensions:	141 x 36 x 22 mm (L x W x H)
Weight, net (gross):	approx. 170 g (approx. 500 g)

* FS = Full Scale

3IN1

- Tension Meter
- Yarn Speed Meter
- Yarn Consumption Meter

Hand tension meter
with low wight

CE

Model PT-100-L

Actual size

with sensor for
measuring yarn
consumption

Accessories

Model PT-100-L

PT-S

Sensor with cable and Magnet (only PT-100-L)

Model DTMX

For applications requiring additional process data,
such as ISO 9000 certified quality management systems

The DTMX model also provides:

- Built-in Data Logger
- Statistical evaluation
- Interfaces for data printer and PC connection

Additional features model DTMX:

- + Memory for up to 100 tension values plus MIN, MAX, PEAK values;
 - automatic calculation of average and standard deviation;
 - all these data values can be recalled in the display or downloaded to a printer or Personal Computer.
- + 2 Memory modes: Continuous storage or on-demand storage
- + Analog and serial interfaces
- + Material selector switch for textile and wire applications (Tex and Wire) assures highest accuracy
- + Calibration to customer supplied material is available (up to four different material calibrations)

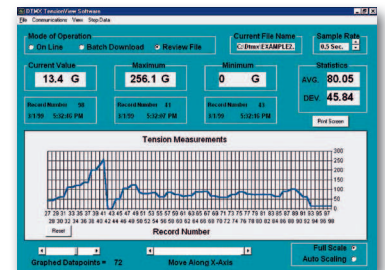


fig. 4: Model DTMX provides detailed process data and analysis (for software see page C 9)

Model DTMX-200

Actual size

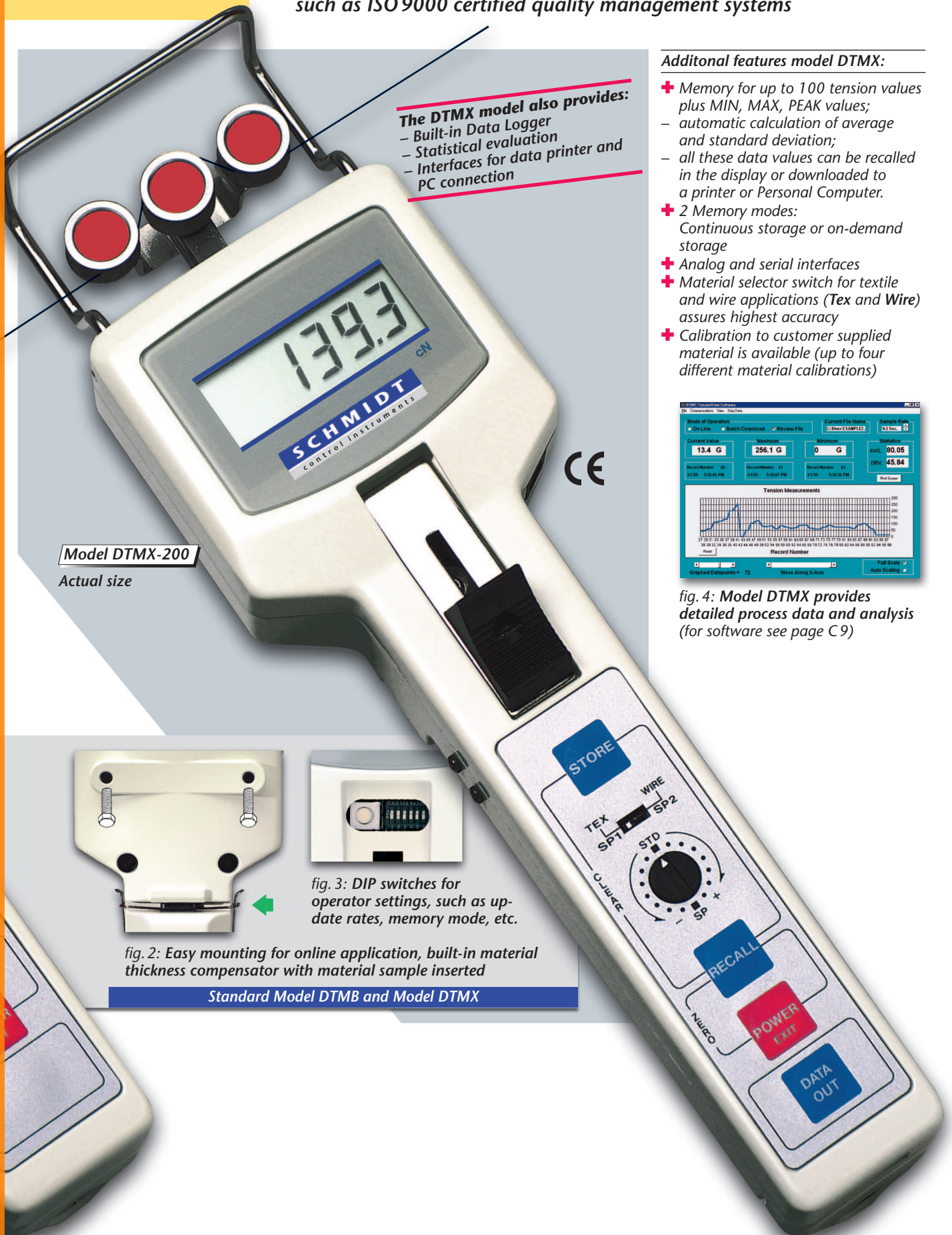


fig. 2: Easy mounting for online application, built-in material thickness compensator with material sample inserted



fig. 3: DIP switches for operator settings, such as up-date rates, memory mode, etc.

Standard Model DTMB and Model DTMX



Model DTMB

Available Models	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material** Polyamid (PA)-Monofil	Textile Industry Applications e.g. yarn count	Wire Industry Applications e.g. soft-annealed copper wire	Material thickness compensator included
DTMB-200	0.1 - 200.0	65	0.12 mm Ø	max. 200 tex	max. 0.15 mm Ø	
DTMB-500	0.1 - 500.0	65	0.12 + 0.20 mm Ø	20 - 500 tex	0.05 - 0.25 mm Ø	✓
DTMB-1000	50 - 1000	65	0.20 + 0.40 mm Ø	50 - 1000 tex	0.10 - 0.40 mm Ø	✓
DTMB-2000	200 - 2000	65	0.40 + 0.70 mm Ø	300 - 2000 tex	0.30 - 0.60 mm Ø	✓
DTMB-2500	250 - 2500	116	0.40 + 0.70 mm Ø	400 - 2500 tex	0.30 - 0.60 mm Ø	✓
DTMB-5000	500 - 5000	116	0.60 + 1.20 mm Ø	800 - 5000 tex	0.40 - 1.00 mm Ø	✓
DTMB-10 K	1.00 - 10.00 daN	116	0.80 + 1.40 mm Ø	1500 - 10000 tex	0.70 - 1.20 mm Ø	✓
DTMB-20 K-L	2.00 - 20.00 daN	216***	1.20 + 1.80 mm Ø	2500 - 20000 tex	1.00 - 1.70 mm Ø	✓
DTMB-50 K-L	5.00 - 50.00 daN	216***	Steel rope 1.5 mm Ø (7 x 7 x 0.2)	6000 - 50000 tex	1.40 - 2.00 mm Ø	✓

Other measuring head widths available on request. Other units of measure available – g or kg.

* Depending on model, either width of filament guide or outer distance between outside guide rollers

** Suitable for 95 % of applications (see also chart on page 9)

*** deviating measuring head width 285 mm with Code V1

Guide Rollers

Model DTMB

V-grooved

	Line Speed V _{max} ... m / min	Roller Material
Standard	2000	Hardcoated aluminium
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE 1	1000	Ceramic
Code ASY	1000	Hardcoated aluminum
Code ASYB	1000	Tempered steel for tire cord
asymmetrical groove		– Gauge is without filament guide –
Code V 1	1000	Hardcoated aluminium (only for ranges 20 daN and higher)

U-grooved

Code U	2000	Hardcoated aluminium
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Optional Accessories

Model DTMB

Code L

Special lever

(standard for DTMB -20 K and DTMX-50 K)
– recommended for DTMB-10 K –

Additional Equipment

Model DTMB

DTM-AC

AC adapter 100 VDC - 240 VAC, 50 - 60 Hz
with adapters (EU, USA, UK)

Special calibration using customer supplied samples is available:
Please supply a sample of at least 5 m in length.

→ see page F →

Model DTMX-50 K-L-V1

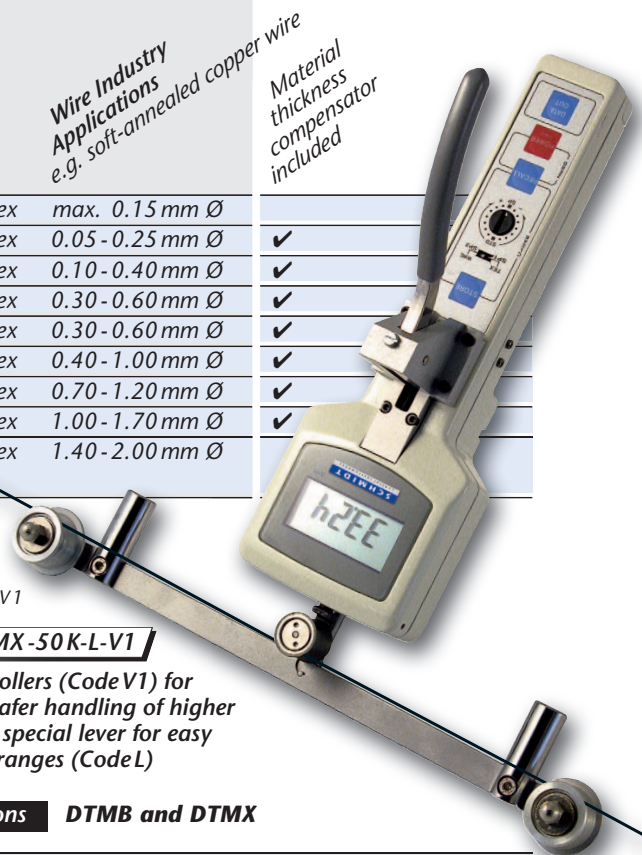
with guide rollers (Code V1) for better and safer handling of higher tension and special lever for easy use at high ranges (Code L)

Specifications

DTMB and DTMX

Calibration:	According to SCHMIDT factory procedure
Accuracy:	10 % to 90 % of range: ± 0.5 % FS* and ± 1 digit
Remaining range and other calibration material:	± 3 % FS* and ± 1 digit or better
Overrange (approx.):	15 % FS*, without accuracy guarantee
Overload protection:	100 %
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.2 mm max.
Signal processing:	Digital
Measuring frequency:	62 measurements / sec
Converter:	12 bit A/D
Display:	4-digit LCD, 12 mm high
Display update rate:	0.5 – 1 – 2 or 4 seconds selectable
Memory:	Last, MIN, MAX, PEAK values
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	4 size AA batteries 1.5 V (about 20 hours of continuous use)
Housing material:	Die-cast aluminium
Housing dimensions:	235 x 76 x 45 mm (L x W x H)
Weight, net (gross):	Up to Model-10 K 680 g (1500 g) (approx.)
	Model-20 K-L and higher 1000 g (2200 g)

* FS = Full Scale



Model DTMX

Available Models		Tension Ranges	Measuring Head	SCHMIDT Calibration Material**		SCHMIDT Wire Calibration Material***		Material thickness compensator included
MODEL	cN	mm	Width*	Position Tex	Applications	Position Wire	Applications	
				Polyamid (PA)-Monofil	e.g. yarn count	Soft-annealed copper wire	e.g. soft-annealed copper wire	
DTMX-200	0.1 - 200.0	65	0.12 mm Ø	max. 200 tex		0.10 mm Ø	max. 0.15 mm Ø	
DTMX-500	0.1 - 500.0	65	0.12 + 0.20 mm Ø	20 - 500 tex		0.16 + 0.25 mm Ø	0.05 - 0.25 mm Ø	✓
DTMX-1000	50 - 1000	65	0.20 + 0.40 mm Ø	50 - 1000 tex		0.25 + 0.40 mm Ø	0.10 - 0.40 mm Ø	✓
DTMX-2000	200 - 2000	65	0.40 + 0.70 mm Ø	300 - 2000 tex		0.40 + 0.60 mm Ø	0.30 - 0.60 mm Ø	✓
DTMX-2500	250 - 2500	116	0.40 + 0.70 mm Ø	400 - 2500 tex		0.40 + 0.60 mm Ø	0.30 - 0.60 mm Ø	✓
DTMX-5000	500 - 5000	116	0.60 + 1.20 mm Ø	800 - 5000 tex		0.60 + 1.00 mm Ø	0.40 - 1.00 mm Ø	✓
DTMX-10 K	1.00 - 10.00 daN	116	0.80 + 1.40 mm Ø	1500 - 10000 tex		0.70 + 1.20 mm Ø	0.70 - 1.20 mm Ø	✓
DTMX-20 K-L	2.00 - 20.00 daN	216****	1.20 + 1.80 mm Ø	2500 - 20000 tex		Steel rope 1.5 mm Ø	1.00 - 2.00 mm Ø	✓
						Steel rope 2.0 mm Ø		
DTMX-50 K-L	5.00 - 50.00 daN	216****	Steel rope 1.5 mm Ø (7 x 7 x 0.2)	6000 - 50000 tex		Steel rope 2.0 mm Ø (7 x 7 x 0.25)	1.80 - 2.20 mm Ø	

Other measuring head widths available on request. Other units of measure available – g or kg.

* Depending on model, either width of filament guide or outer distance between outside guide rollers
 ** Suitable for 95 % of applications (see also chart on page 9) – PA = Polyamide Monofilament
 *** Accuracy: $\pm 3\%$ Full Scale (FS) and ± 1 digit
 **** deviating measuring head width 285 mm with Code V1

Guide Rollers same as Model DTMB

Optional Accessories Model DTMX

→ see page F →

Code L Special lever – recommended for DTMX-10 K – (standard for DTMX-20 K and DTMX-50 K)

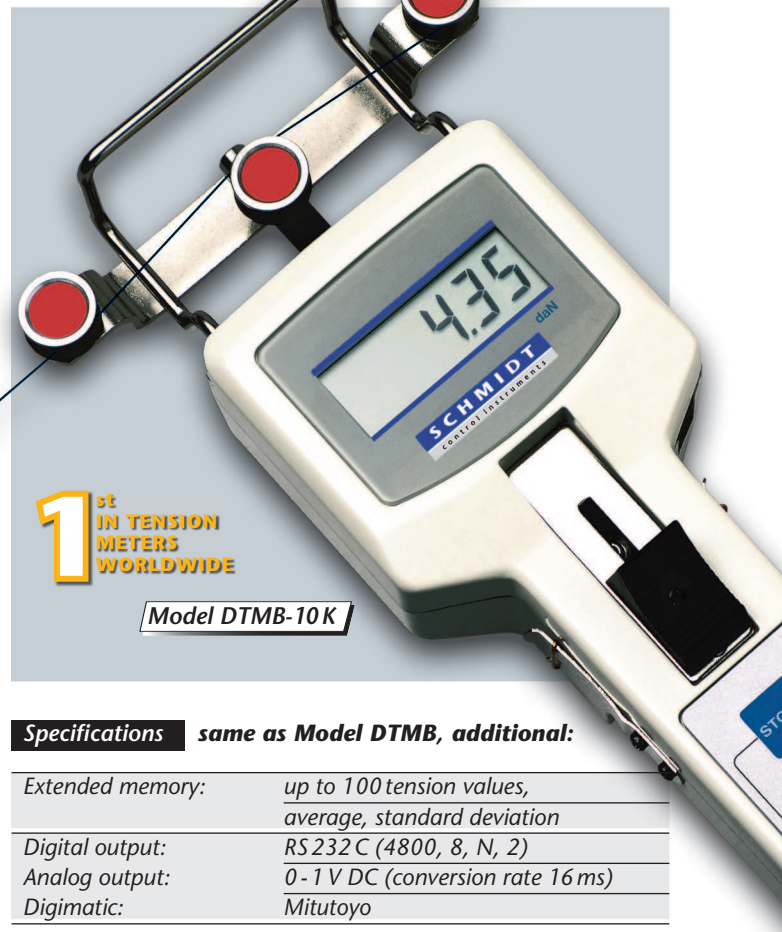
Additional Equipment Model DTMX

DTM-AC	AC adapter 100 - 240 VAC, 50 - 60 Hz with 3 adapters (EU, USA, UK)
DTMX-P-230	battery powered, charger for 115 V AC Data printer with RS 232, rechargeable
DTMX-CA	battery powered, charger for 230 V AC Connecting cable for analog signal (1.5 m long)
DTMX-CP	Connecting cable for printer RS 232 (2 m long)
DTMX-CC	Connecting cable for PC RS 232 (2 m long)
DTMX-P2	»Tension View« software (WIN'95 and higher)



fig. 1: Connecting cable analog, printer and PC, AC adapter

Special calibration using customer supplied samples is available:
 Please supply a sample of at least 5 m in length.



Specifications same as Model DTMB, additional:

Extended memory:	up to 100 tension values, average, standard deviation
Digital output:	RS 232 C (4800, 8, N, 2)
Analog output:	0 - 1 V DC (conversion rate 16 ms)
Digimatic:	Mitutoyo

Model DTMX for Storing and Analyzing the Measured Data

Versatile and state-of-the-art: The DTMX model can be used as a data logger for up to 100 measured values. You can choose between two memory modes:

1. Continuous Mode: The STORE key starts continuous datalogging of up to 100 tension values.

2. On-Demand Mode: A tension value is stored each time the STORE key is pressed.

From the measured data, the DTMX automatically calculates maximum, minimum, average, and standard deviation values. The stored data are retained in memory even after the tension meter is turned off.

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A

The stored tension values and statistical data can be recalled to the DTMX display whenever they are desired.



B

All stored data can be downloaded over the serial interface to a printer (optionally available) or to a Personal Computer. The data printout is ideal for ISO 9000 quality reports.

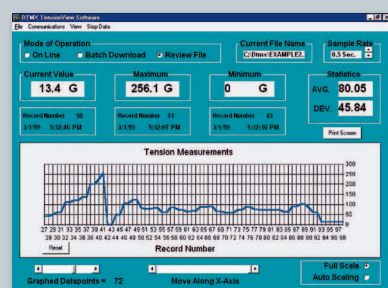
Continuous online data acquisition and analysis:



A

Poll Command:

You can download single tension values over the serial interface to a PC. For this purpose, the DTMX supports several communications programs, such as Windows terminal.



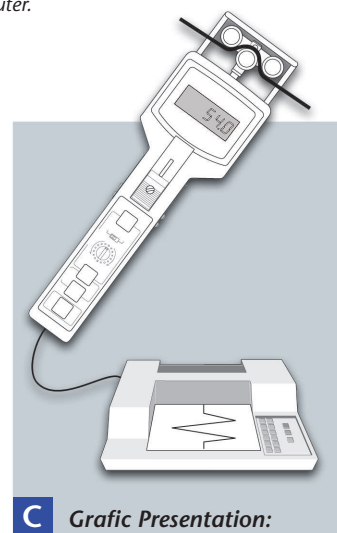
B

Software (optional equipment):

The DTMX can be mounted online for continuous tension monitoring. It can be connected to a PC using the RS 232 output. Using the program »Tension View« following basic functions are available:

- + Real time tension display
- + Graphical X-Y chart (reading no. – tension value)
- + Long time recording using operator set time span and sampling time
- + Analyzing and printing of all stored data (graphs and numeric reports)

Please ask for additional information!



C

Grafic Presentation:

The DTMX tension meter provides a 0-1 V DC analog output that can be connected to a line recorder. This permits continuous data analysis over longer periods of time.

Special purpose models feature large rollers to minimize bending of materials like fiber optics, carbon and technical fibers

Fragile filaments such as fiber optics and other technical fibers may require large roller diameters and a wide roller spacing.

Special features:

- + Large, V-grooved guide rollers with 32 mm groove diameter, ball-bearing mounted
 - + Large bending radius assures gentle handling of the material being measured
 - + Special guides on the bracket assembly permit easy material acquisition
 - Standard features same as Models DTMB respectively DTMX
- Note:** These models do not have a built-in material thickness compensator

Models DTFB, DTFX, DTLB, DTLX

Available Models

MODEL		Tension Ranges CN	Measuring Head Width* mm	SCHMIDT Calibration Material**
DTFB-200	DTFX-200	2.0 - 200.0	140	PA: 0.12 mm Ø
DTFB-500	DTFX-500	5.0 - 500.0	140	PA: 0.20 mm Ø
DTFB-1000	DTFX-1000	50 - 1000	140	PA: 0.30 mm Ø
DTLB-2000	DTLX-2000	200 - 2000	185	Ø 2.6 mm***
DTLB-5000	DTLX-5000	400 - 5000	235	Ø 3.4 mm***
DTLB-10K	DTLX-10K	1.00 - 10.00 daN	235	Ø 3.4 mm***

Other units of measure available, such as g.

* Outer distance between outside guide rollers

** Suitable for 95 % of applications (see also chart on page 9)

PA = Polyamide Monofilament

*** Cu wire with insulation

Guide Rollers

DTFB, DTFX

V-grooved	Line Speed Vmax. ... m/min	Roller Material
Standard	4000	Hardcoated aluminium
Code T	4000	Plastic (PVC) red (Same dimensions as standard roller)

DTLB, DTLX

V-grooved		
Standard	4000	Hardened-steel roller
U-grooved		
Code R1	4000	Hardened-steel roller (radius R5)

Additional Equipment - Specifications same as DTMB or DTMX
(see page C 7)

Models DTFB, DTFX



Large guide rollers minimize material deflection

Model DTFX-1000

Model DTLB-10K-L

for fibre optic cables and buffer tubes up to 8 mm Ø max.

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