Version ZE8/2015

SCHMIDT
control instruments

Language

SCHMIDT offers the worldwide largest selection of Tension Meters

made in Germany

A Selection of Tension Meters

The overview of most popular tension meters will help you to find them in our catalog.

Z Series
Page A 1 - A 2

DX2 Series
Page A 3 - A 11

DN Series
Page A 13 - A 15

TEN Series
Page A 16

Q Series
Page B 1

PT Series
Page C 1 - C 2

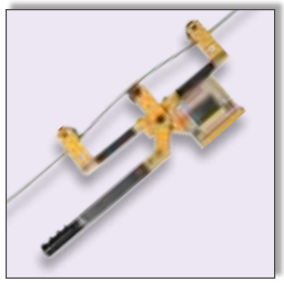
ZE Series
Page C 3 - C 4

DTM Series
Page C 5 - C 12

ET Series
Page C 13 - C 14

KXE Series
Page C 15

RTM Series
Page C 16



CTM Series
Page C 17 - C 18

TS Series
Page D 2 - D 6

MZ Series
Page D 7 - D 8

FS Series
Page D 9 - D 12

SF Series
Page D 15 - D 16

SCHMIDT control instruments

Applications

MODEL	Page	Narrow web machines	Tensioning	Braiding	Sewing	Open end spinning	Polyester spinning	Raschel knitting	Circular knitting	Warpers	Sizing	Carbon winders	Winding	Texturizing	Weaving (loom only)	Warping	Twisting	Strip winding	Wire EDM	Wire drawing	Extruders	Fine wire drawing	Fiber optics / Buffer tubes	Winding and coiling	Stranders
Hand-held, mechanical																									
ZF2	A2					●		●	●	●			●	●		●	●					●		●	
ZD2	A2							●		●	●		●			●	●					●		●	
DX2	A3			●	●					●	●		●			●	●		●	●	●	●		●	●
DXE	A5			●		●		●			●		●	●			●					●		●	
DXV	A6					●		●			●		●	●			●					●		●	
DXP	A6						●							●											
DXF/DXL	A7																				●		●	●	
DXK	A8														●										
MKM	A12		●		●																				
DXB	A9	●										●						●							
DXR	A10	●																●							
DXT	A10	●																●							
DN1	A13			●						●	●		●			●	●		●	●	●			●	●
Stationary, mechanical																									
Q	B1			●	●			●		●	●		●				●					●		●	
MK	B2												●				●					●		●	
DX2S	B2			●				●					●				●			●	●	●		●	●
DXES	B2					●		●		●	●		●	●			●					●			
DXFS	B2																						●		
DXBS	B2	●																●							
DXTS	B2	●																●							
Hand-held, electronic																									
PT	C1								●																
ZEF	C3					●		●	●	●	●		●	●		●	●					●		●	
ZED	C4							●		●	●		●			●	●		●			●		●	
DTMB	C5			●	●					●	●		●			●	●		●	●	●	●		●	●
DTMX	C6			●	●					●	●		●			●	●		●	●	●	●		●	●
DTEB/DTEX	C10			●	●	●		●			●		●	●		●	●					●		●	
DTVB/DTVX	C10					●		●			●		●	●		●	●					●		●	
DTFB/DTFX	C11																						●		
DTLB/DTLX	C11																				●		●		
DTBB/DTBX	C12	●										●						●							
ETB/ETX	C13				●	●		●		●	●		●			●	●								
ETPB/ETPX	C14					●	●							●											
MST	A12		●		●																				
KXE	C15														●										
Stationary, electronic																									
TS1/FS1	D2/D9			●	●			●		●	●		●			●	●		●	●	●	●		●	●
TSP/FSP	D3/D10					●	●							●											
TSH/FSH	D4/D10																			●	●		●	●	●
TSL/FSL	D5/D11																					●	●	●	●
TSF	D5																						●		
TSB1/FSB1	D6/D11	●										●						●							
TSB2	D6	●										●						●							
MZ	D7/D8	●						●	●	●	●	●	●			●	●	●				●		●	
		TEXTILE																**WIRE**							

This table is for guidance only and does not claim to be exhaustive.

Subject to change without notice.

Please visit us in the WorldWideWeb!

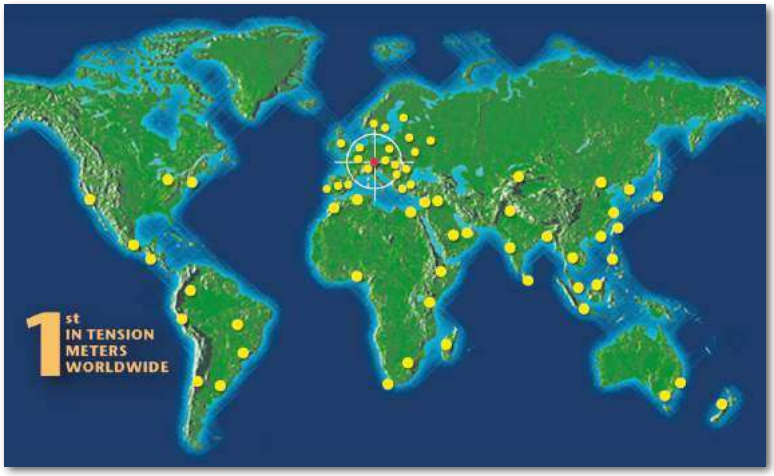
www.hans-schmidt.com

We solve tension-measuring problems. More than 60 years. Worldwide.

In 1948, the founder of the company Mr. Hans Schmidt started selling and distributing yarns and textile machinery.
He became aware of the importance which the control of tension had for production processes, and soon developed and constructed a 3-Roller Tension Meter which featured one measuring roller and two guiding rollers. This ingenious principle of operation has been proved to be the best method for tension measuring.

MORE THAN 60 YEARS

The 3-roller measuring system has become the hallmark of all SCHMIDT tension meters and remains unsurpassed in its efficiency even today.
Since 1962, the company's headquarter is in Waldkraiburg, located near Munich, Germany.



In reponse to today's needs, involving new advanced materials and stricter production standards, SCHMIDT offers a large selection of tension meters and ranges to satisfy those requirements.

Competition is constantly changing. Higher efficiency requirements and continuous quality control make monitoring of tension more important than ever. If, for instance, the winding tension of a ***copper wire*** *is too high, the wire diameter will decrease, resulting in a change in the electrical resistance. With* ***natural fibers****, excessive fiber tension leads to a change in characteristic.*
With ***synthetic fibers****, this results in irreversible molecular shifts, which may cause the fabric to dye unevenly.*

The inevitable consequence is a product of poor quality.

SCHMIDT tension meters help you to eliminate tension-related defects.

Today, more than 180.000 SCHMIDT tension meters are used worldwide.

SCHMIDT offers the worldwide largest selection of Tension Meters:

- 20 different series,
- 67 models and more than
- 2000 possible variations ...

Wherever precision and superior quality are essential in producing and processing

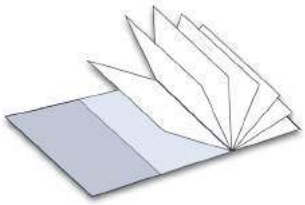
- Threads
- Yarns
- Fibers
- Carbon fibers
- Split tapes
- Rovings
- Wires
- Cables
- EDM wires
- Steel Cord
- Sawing wires
- Fiber optics
- Tapes & narrow fabrics
- Foil strips
- Films, etc.

SCHMIDT tension meters are indispensable in production monitoring, quality control, automation, and process engineering.

Take benefit of our experience!

Mailing address:
HANS SCHMIDT & CO GMBH
P.O.B. 1154
84464 Waldkraiburg, Germany
Shipping address:
HANS SCHMIDT & CO GMBH
Schichtstrasse 16
84478 Waldkraiburg, Germany
Phone:
int. +49 (0) 8638 / 9410-0
Fax:
int. + 49 (0) 8638 / 4825
e-mail:
info@hans-schmidt.com
Internet:
www.hans-schmidt.com

Contents



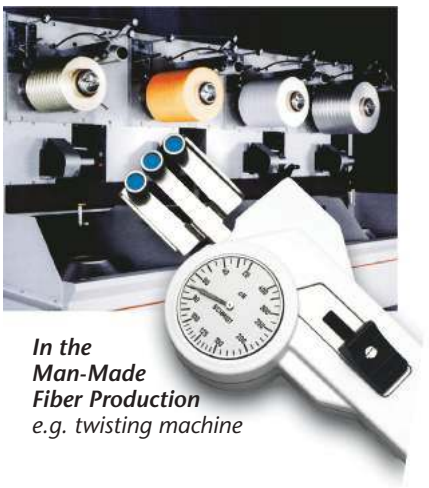
SCHMIDT Tension Meters are used throughout the world in a wide variety of typical as well as special applications. A few samples are shown below.

Should you need customized solutions to your measuring problem, please contact us. We will be glad to design a model for your special application.

1st IN TENSION METERS WORLDWIDE®

***In the Wire Industry** e.g. for wire drawing or winding machines*

***In the Optical Fiber Production** e.g. winding machine*



***In the Man-Made Fiber Production** e.g. twisting machine*

***In the Textile Industry** Online tension sensor to control the bobbin creel*

***In the Knitting Industry** exact adjusting of yarn feeders of circular knitting machines*

In the Wire EDM Industry
The correct adjusted tension is the condition for best exact cuts

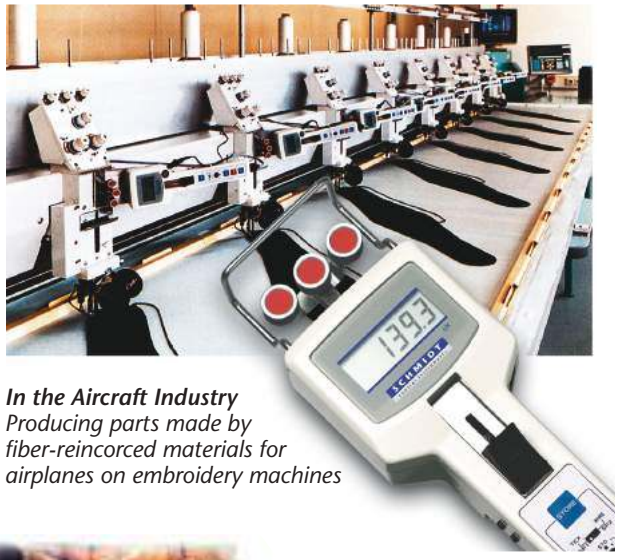
In the Construction Industry
For measuring pretensioned non-moving ropes, tower guy wires, overhead lines, etc.

In the Automotive Industry
producing tires (tyre cord) and Airbag-fabrics

In the Fiber Producing Industry
e.g. for winding machines

In Future Technology
processing carbon fibers and NAV

SCHMIDT Tension Meters are used throughout the world.

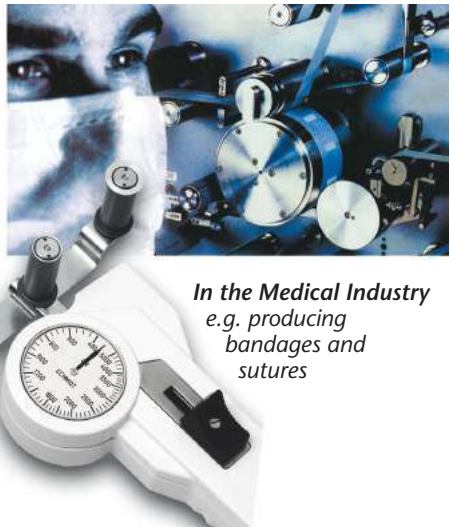


In the Aircraft Industry
Producing parts made by fiber-reincorced materials for airplanes on embroidery machines

In Satellite Technology
Before launching accurately tension setting of the cables holding the solar panels

1st IN TENSION METERS WORLDWIDE®

For Technical Fibers
Producing harvesting nets and protection nets with warpknitting machines

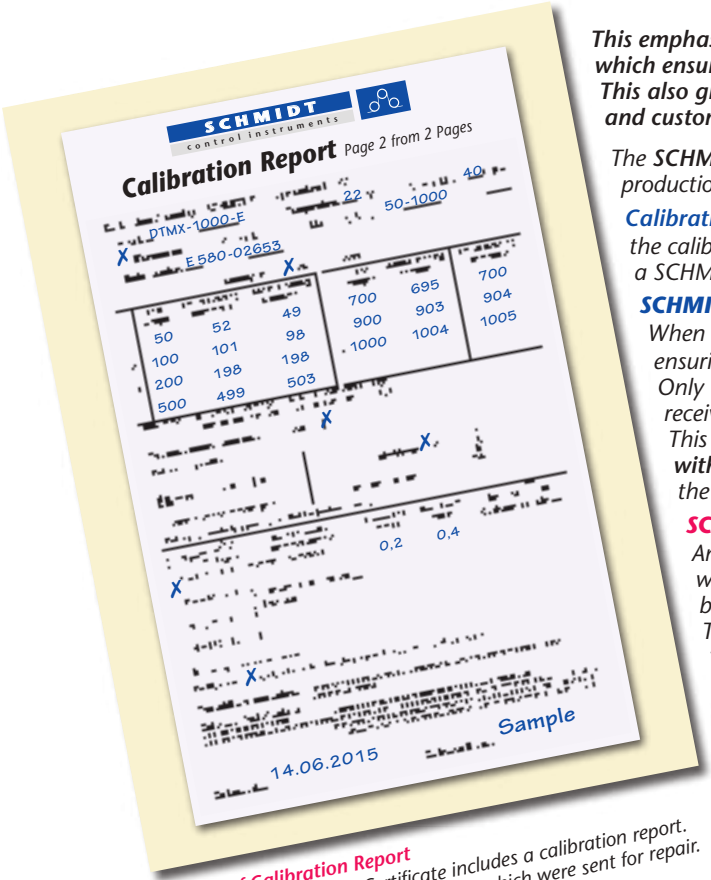


In the Medical Industry
e.g. producing bandages and sutures

In Telecommunications
Continuous tension monitoring is essential in the production and processing of copper wires and optic fibers

In the Sewing Industry
For adjusting yarn break on industrial sewing machines e. g. production of airbags

*HANS SCHMIDT & Co GmbH was the first tension meter manufacturer to be certified according to International Standard **DIN EN ISO 9001**.*


SCHMIDT control instruments

Calibration Report Page 2 from 2 Pages

DTMX-1000-E

E580-02653

50-1000

14.06.2015

Sample

Sample of Calibration Report
The optional Inspection Certificate includes a calibration report. It can be ordered also for instruments which were sent for repair.

This emphasizes our continuous commitment to quality which ensures that our staff produces the highest quality products. This also gives you the confidence in a company in which quality and customer service has the highest priority.

*The **SCHMIDT Quality Management** covers the area of design, development, production, installation and maintenance of our tension meters.*

***Calibration Standards:** Since there are no international standards for the calibration of tension meters, we have established and documented a SCHMIDT Standard which is accepted worldwide.*

SCHMIDT Quality Control

*When completed, each instrument undergoes an extensive final quality check ensuring proper operation as well as a **final calibration verification**. Only those instruments meeting our strict quality regulations receive the **SCHMIDT Quality Seal**. This is also confirmed in a **Certificate of Compliance with the order 2.1** which is supplied free of charge with the instrument.*

QUALITY..... .....CHECKED BY SCHMIDT

SCHMIDT Inspection Certificate 3.1

*An **Inspection Certificate** according to European Standard EN 10204, which includes a **Calibration Report**, is optionally available. The Calibration Report shows the measured values compared to the standards. This verification of the calibration is performed prior to shipment.*

*The **Calibration Label** is fixed on the instrument, indicating the calibration date. ISO 9000 – certified companies frequently require such an **Inspection Certificate** to verify inspection of their measuring, inspection and test equipment.*

*Our **Inspection Certificate** according to EN 10204 is the European equivalent to the test reports of other international organizations, such as NIST (USA) or JAL (Asia).*

***Delivery includes:** Tension meter (with carrying case if hand-held model), Certificate of Compliance with the order 2.1, operating instructions in English or German as requested*

1st IN TENSION METERS WORLDWIDE®

***Warranty:** SCHMIDT tension meters are subject to stringent quality checks. We therefore guarantee all our tension meters for 12 months. Improper use, abuse and parts subjected to wear (e.g. guide rollers) are excluded from coverage.*

SCHMIDT
control instruments

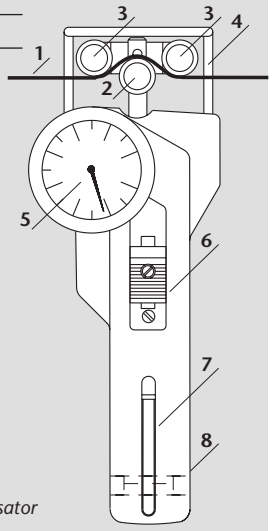
General Information on SCHMIDT Tension Meters

1st IN TENSION METERS WORLDWIDE®

Operating elements DX2:

✚ *All SCHMIDT tension meters feature the 3-roller measuring system. The center measuring roller is deflected by the tension of the measured material. This measuring principle assures highest accuracy and repeatability.*

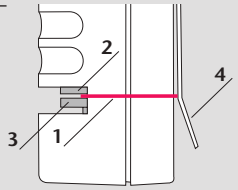
✚ *All rollers are equipped with precision ball bearings.*



1 Measured material
2 Measuring roller (center guide roller)
3 Outer guide rollers
4 Filament guide
5 Scale
6 Thumbpiece
7 Sample holder clip
8 Material thickness compensator

Material thickness compensator:

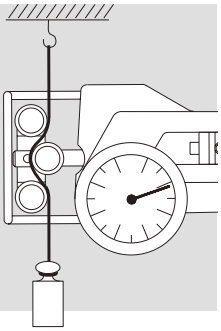
✚ *SCHMIDT hand-held tension meters are equipped, if necessary, with a material thickness compensator. This exclusive feature is only found on SCHMIDT tension meters and minimizes any error caused by changing material diameters.*



1 Material sample 2+3 two Discs 4 Sample holder clip

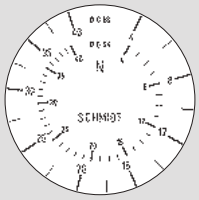
SCHMIDT calibration:

✚ *To ensure highest precision, each tension meter is individually calibrated according to the SCHMIDT factory procedure. For calibration a known weight is suspended from the standard calibration material, vertically, as shown in the figure.*
This method is accepted – worldwide – as the industry standard.

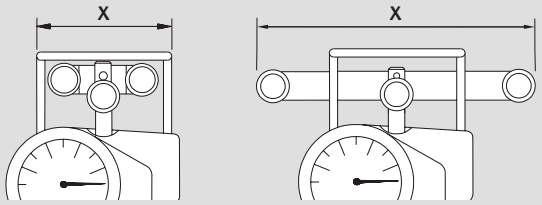


Special scale for customer materials:

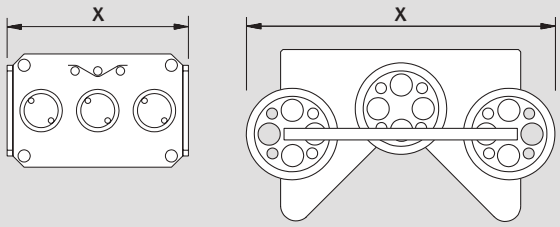
✚ *Special calibration to customer-supplied material is optionally available. This takes into account the customer material's rigidity and diameter, if it differs significantly from the SCHMIDT calibration material. Special calibration to two different materials is optionally available.*



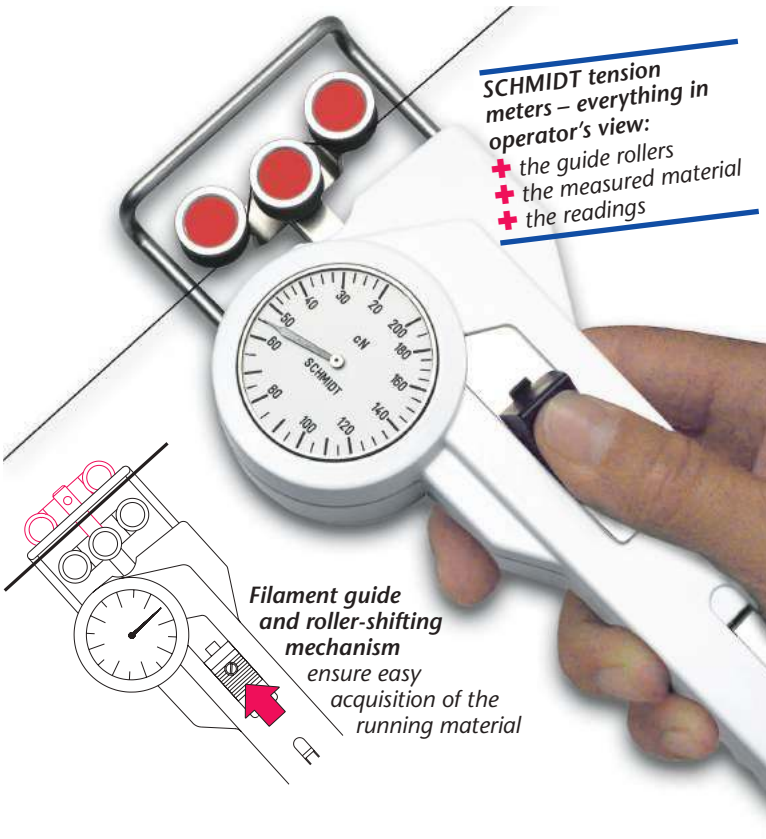
Measuring head width on hand-held instruments:



Measuring head width on online sensors:



✚ *The width of the measuring head varies with the model design and the tension range. Dimension »X« defines the minimum access space required along the material path. It is determined by the width of the filament guide, the distance between the two outer guide rollers, or the outside dimensions of the front plate, whichever is the largest.*



Subject to change without notice.

Guidelines for selecting the right SCHMIDT Tension Meter

1. Select the desired model:

According to your desired use:
- Hand-held or stationary model
- Mechanical or electronic model

According to application:
Selection Guide → see page G →

2. Determine the appropriate tension range:

Recommendations for typical textile and wire applications:

Tension Range* up to	SCHMIDT Calibration Material**	Textile Industry e.g. yarn count max.	Wire Industry e.g. copper wire, soft-annealed
20 cN	Filament: 25 tex	25 tex	max. 0.05 mm Ø
50 cN	PA: 0.12 mm Ø	50 tex	max. 0.08 mm Ø
120 cN	PA: 0.12 mm Ø	120 tex	max. 0.13 mm Ø
200 cN	PA: 0.12 mm Ø	200 tex	max. 0.17 mm Ø
300 cN	PA: 0.20 mm Ø	300 tex	max. 0.20 mm Ø
400 cN	PA: 0.20 mm Ø	400 tex	0.10 - 0.25 mm Ø
500 cN	PA: 0.20 mm Ø	500 tex	0.10 - 0.25 mm Ø
1000 cN	PA: 0.30 mm Ø	1000 tex	0.10 - 0.40 mm Ø
1500 cN	PA: 0.30 mm Ø	1500 tex	0.15 - 0.50 mm Ø
2000 cN	PA: 0.50 mm Ø	2000 tex	0.30 - 0.60 mm Ø
3500 cN	PA: 0.80 mm Ø	3500 tex	0.35 - 0.80 mm Ø
5000 cN	PA: 0.80 mm Ø	5000 tex	0.40 - 1.00 mm Ø
8000 cN	PA: 1.00 mm Ø	8000 tex	0.50 - 1.10 mm Ø
10 daN	PA: 1.00 mm Ø	10000 tex	0.70 - 1.20 mm Ø
20 daN	PA: 1.50 mm Ø	20000 tex	1.20 - 1.70 mm Ø
30 daN	PA: 1.50 mm Ø	20000 tex	1.50 - 2.00 mm Ø
50 daN	Steel rope:	30000 tex	1.50 - 2.50 mm Ø
50 daN	1.50 mm Ø (7 x 7 x 0.20)		

* Tension measured in N (Newton):
1 cN = 1.02 g = 0.01 N; 1 daN = 1.02 kg = 10 N;

** Calibration with standard materials – such as polyamide monofilament (PA) – according to the SCHMIDT factory procedure has been proved to provide the best results for 95 % of all industrial applications.

Note: We recommend selecting the tension range twice the tension you intend to measure. This has the advantage that you can measure higher than expected values. It also facilitates reading the measured tension on analog scales.

If your material to be measured differs in kind and diameter:
Please contact us for assistance to determine the right tension range and model. For this purpose a material sample of 5 m should be supplied.

A wide variety of roller types are offered depending on the material to be measured:

unsymmetrical cross sections

flexible, with small diameters

sensitive materials

flexible, with large diameters

tapes and bands

3. Select the guide rollers according to the following criteria:

- Roller shape V-grooved or with asymmetrical groove…
- Roller shape U-grooved with radius or cylindrical…
- Roller material (hardcoated aluminium, plastic, steel, etc.)…
- Max. line speed of the measured material…

→ see page F →

4. Required accessories: → see page F →

– Adjustable damping – Special lever – Memory pointer

5. Special custom-made designs: on request

- Special tension ranges
- Customized measuring head widths for applications with limited access space
- Customized distance between the two outer rollers to minimize material deflection
- Calibration for material path other than vertical
- Calibration to different units, such as **g** or **kg**

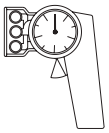
6. Calibration using customer-supplied material:

This is recommended when the material to be measured differs significantly from the SCHMIDT calibration material in diameter, rigidity or shape etc. For this purpose a material sample of about 5 m should be supplied.

7. Inspection Certificate and Calibration Reports:

These Quality Certificates are optionally available and are recommended especially for ISO 9000 certified companies.

If you need assistance … Should you need any help in selecting your tension meter, please contact us directly, or the service department of your machinery supplier. In any case, please furnish the following information:
- → Description of application and machinery
- → Description of the material to be measured (Ø, type, characteristics, etc.)
- → Line speed of the material
- → Recommended or estimated tension
- → Maximum measuring head width or available access space
- → If necessary, submit a material sample of about 5 m



SCHMIDT
control instruments

Z SERIES

10 Tension ranges
from 1 - 5 cN to 20 - 300 cN

Economical low tension measuring instruments for checking fibers, yarns and fine wires

Model ZF2-12
Actual size

Model ZD2-100
Actual size

Special features:

- Light weight
- Large, easy to read scale (54 mm Ø)
- Filament guide and roller shifting mechanism ensure easy acquisition of the running material

Standard features:

- Everything in operator's view:
  – the guide rollers
  – the measured material
  – the readings
- Ball-bearing mounted, V-grooved guide rollers
- Each instrument is individually calibrated for highest accuracy
- Housing made of high-strength plastic
- Inspection Certificate with calibration report optionally available

Slim filament guide with small guide rollers – ideal for limited access space

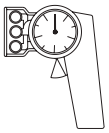
With bigger rollers for universal use

ZF2-5

ZF2-10

ZF2-12

1st IN TENSION METERS WORLDWIDE®



SCHMIDT control instruments

Model ZF2

Most popular tension meter in the textile industry with small rollers!

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZF2-5	1 - 5	43	Filament: 25 tex
ZF2-10	1 - 10	43	Filament: 25 tex
ZF2-12	1 - 12	43	Filament: 25 tex
ZF2-20	2 - 20	43	Filament: 25 tex
ZF2-30	3 - 30	43	PA: 0.12 mm Ø
ZF2-50	5 - 50	43	PA: 0.12 mm Ø
ZF2-100	10 - 100	43	PA: 0.12 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
* *Width of filament guide*
** *Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

V-grooved	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	900	Hard-coated aluminium
Code K	2000	Hard-coated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

Specifications

ZF2 Series	
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale or ±1 graduation on scale
Scale diameter:	54 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Plastic (POM)
Housing dimensions:	157 x 85 x 32 mm (L x W x H)
Weight, net (gross):	approx. 200 g (600 g)

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

Model ZD2

Universal tension meter for a variety of applications in the textile and wire industries

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZD2-30	3 - 30	63	PA: 0.12 mm Ø
ZD2-50	5 - 50	63	PA: 0.12 mm Ø
ZD2-100	10 - 100	63	PA: 0.12 mm Ø
ZD2-150	20 - 150	63	PA: 0.12 mm Ø
ZD2-200	20 - 200	63	PA: 0.12 mm Ø
ZD2-300	20 - 300	63	PA: 0.20 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
* *Width of filament guide*
** *Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

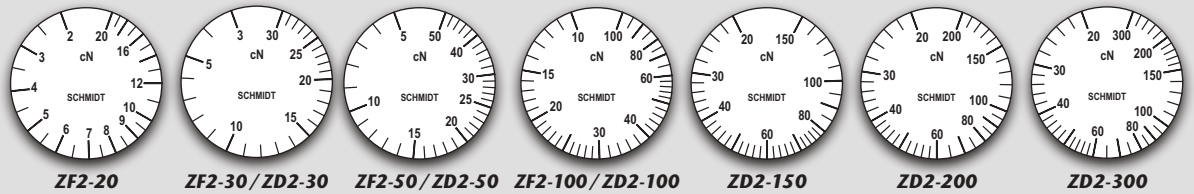
Guide Rollers

→ see page F →

V-grooved	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model ZD2-100 and higher ranges)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code CE 2	1000	Aluminium ceramic-coated

Specifications

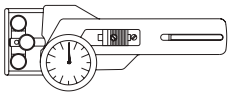
ZD2 Series	
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale or ±1 graduation on scale
Scale diameter:	54 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Plastic (POM)
Housing dimensions:	157 x 85 x 32 mm (L x W x H)
Weight, net (gross):	approx. 220 g (620 g)



SCHMIDT scales are manufactured according to the most stringent quality requirements. Printed scales are not used. Instead, each scale is individually marked for the instrument involved. This ensures highest quality. Our special procedure makes it possible to provide tension meters fine tuned to a specific tension range, or calibrated to custom supplied material, or units of measure such as g.

Model with tension range + *Code for guide rollers (if not standard)* = *Complete Order No.*

To place an order
please indicate the complete model number, e.g.: **ZD2-100** + **K** = **ZD2–100–K**



SCHMIDT
control instruments

DX SERIES

12 Tension ranges
from 10 - 50 cN to 5 - 20 daN

Universal tension meters for most industrial applications

Model DX2-200
Actual size

Best selling tension meter
★★★ worldwide ! ★★★

fig. 1: **Adjustable damping (Code A) to provide steady tension readings** *(see page F)*

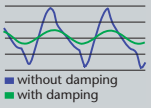
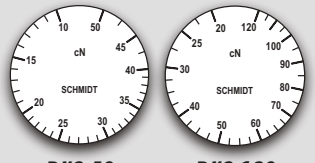
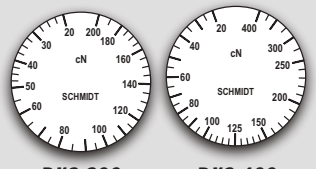
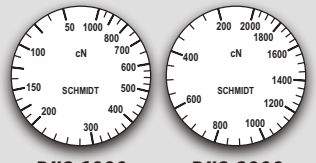


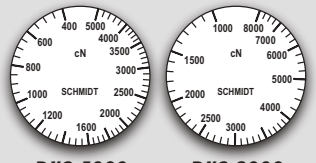
fig. 2: **Special finger support located on the rear side of the housing**

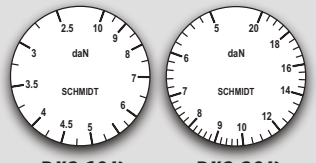
fig. 3: **Material thickness compensator with material sample inserted**

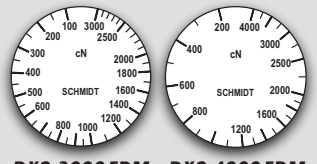












SCHMIDT scales are manufactured according to the most stringent quality requirements. Printed scales are not used. Instead, each scale is individually marked for the instrument involved. This ensures highest quality. Our special procedure makes it possible to provide tension meters fine tuned to a specific tension range, or calibrated to customer supplied material, or units of measure such as g or kg.

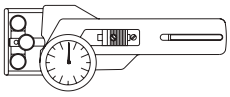
Special features:

- ✚ *Built-in material thickness compensator improves accuracy for changing diameters on DX2-1000 and higher ranges*
- ✚ *Special finger support reduces the effort to move the outer roller assembly*
- ✚ *Filament guide and roller shifting mechanism ensure easy acquisition of the running material*
- ✚ *Custom-built configurations and special calibration are available*
- ✚ *Built-in mounting holes permit fixed installation for continuous tension measurement*

Standard features:

- ▮ *Everything in operator's view:*
  – the guide rollers
  – the measured material
  – the readings
- ▮ *Ball-bearing mounted, V-grooved guide rollers*
- ▮ *Each instrument is individually calibrated for highest accuracy*
- ▮ *41 mm Ø scale*
- ▮ *Rugged aluminium housing*
- ▮ *Inspection Certificate with calibration report optionally available*

SCHMIDT control instruments



Model DX2

Please ask for additional informations!

Model DX2-2000-EDM
Wire EDM version (Code EDM)

1st IN TENSION METERS WORLDWIDE®

Model DX2-10 K-L
with special lever (Code L) for easy use on higher tension ranges

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**	Material thickness compensator included
DX2-50	10 - 50	66	PA: 0.12 mm Ø	
DX2-120	20 - 120	66	PA: 0.12 mm Ø	
DX2-200	20 - 200	66	PA: 0.12 mm Ø	
DX2-400	20 - 400	66	PA: 0.20 mm Ø	
DX2-1000	50 - 1000	66	PA: 0.30 mm Ø	✔
DX2-2000	200 - 2000	116	PA: 0.50 mm Ø	✔
DX2-5000	400 - 5000	116	PA: 0.80 mm Ø	✔
DX2-8000	1000 - 8000	116	PA: 1.00 mm Ø	✔
DX2-10 K	2.5 - 10 daN	116	PA: 1.00 mm Ø	✔
DX2-20 K-L	5 - 20 daN	216	PA: 1.50 mm Ø	✔

Other tension ranges and 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 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model DX2-120 and higher ranges)
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 2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium*
Code ASYB asymmetrical groove	1000	tempered steel for tire cord* (for Model DX2-120 and higher ranges)
		*Gauge without filament guide
U-grooved		
Code U	2000	Hard-coated aluminium

Optional Accessories

→ see page F →

Code A	**Air damping** (Model DX2-120 to DX2-5000 only)
Code L	**Special lever** (standard for Model DX2-20 K) – recommended for Model DX2-10 K –
Code M	**Memory pointer** (DX2-120 and higher ranges)
Code EDM	**Version for electro discharging machines** **Model DX2-2000-EDM:** 50 - 2000 cN **Model DX2-3000-EDM:** 100 - 3000 cN **Model DX2-4000-EDM:** 200 - 4000 cN

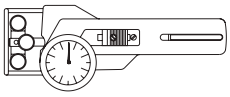
Specifications

	DX Series
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale or ±1 graduation on scale
Scale diameter:	41 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Die-cast aluminium
Housing dimensions:	188 x 85 x 45 mm (L x W x H)
Weight, net (gross):	up to DX2-10 K approx. 470 g (1000 g) DX2-20 K-L approx. 580 g (2000 g)

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

To place an order please indicate the complete model number, e.g.:

Model with tension range	+	Code for guide rollers (if not standard)	+	Code for accessory	=	Complete Order No.
DX2-400	+	H	+	A–M	=	DX2–400–H–A–M



SCHMIDT control instruments

Model DXE

Special tension meter for limited access space

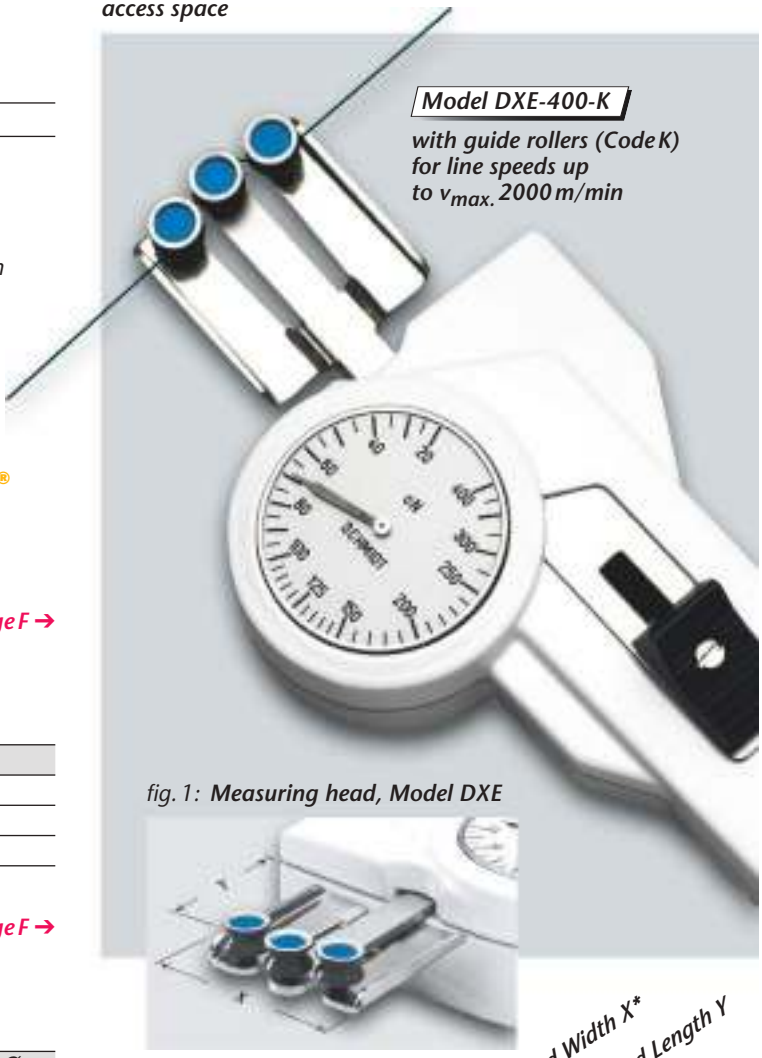
Special purpose models feature small measuring heads, where access space is limited or where filaments run close together

These tension meters are recommended where the standard Model DX2 cannot be used.

Special features:

- ✚ Turned-up outer finger edges guide the running filament into the roller grooves
- ✚ Small, ball-bearing mounted, V-grooved guide rollers (Models DXE and DXV)
- ✚ Model DXP features ceramic pins for applications with high line speeds or texturizing machines
- ✚ Special calibration using customer supplied samples is available (Models DXE and DXV only)
- ▮ Apart from that the instruments relate to model DX2; **Note:** The below models do not include a material thickness compensator

1st IN TENSION METERS WORLDWIDE®



Model DXE-400-K
with guide rollers (Code K) for line speeds up to $v_{max.}$ 2000 m/min

fig. 1: **Measuring head, Model DXE**

Guide Rollers

→ see page F →

Models DXE, DXV

V-grooved	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	900	Hard-coated aluminium
Code K	2000	Hard-coated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

Guide Pins

→ see page F →

Model DXP

V-grooved	Line Speed $v_{max.}$ ... m/min	Pin Material
Standard	6000	Aluminium-oxide ceramic 5.2 mm Ø

Optional Accessories

→ see page F →

Models DXE, DXV, DXP

Code A	**Air damping** (Model -120 and higher ranges)
Code M	**Memory pointer** (Model -120 and higher ranges)

Specifications

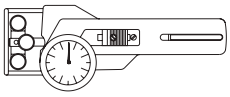
same as Model DX2 (see page A 4)

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

Available Models

MODEL	Tension Ranges cN	Measuring Head Width X* approx. mm	Measuring Head Length Y approx. mm	SCHMIDT Calibration Material**
DXE-50	10 - 50	38	47	PA: 0.12 mm Ø
DXE-120	20 - 120	38	47	PA: 0.12 mm Ø
DXE-200	20 - 200	38	47	PA: 0.12 mm Ø
DXE-400	20 - 400	38	47	PA: 0.20 mm Ø
DXE-1000	50 - 1000	36	47	PA: 0.30 mm Ø
DXE-2000	200 - 2000	36	47	PA: 0.50 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
* *Width of bracket assembly*
** *Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament



SCHMIDT control instruments

Model DXV

This special design provides easier reading when the standard design makes dial reading difficult

fig. 2: **Measuring head, Model DXV**

Available Models

MODEL	Tension Ranges cN	Measuring Head Width X* approx. mm	Measuring Head Length Y approx. mm	SCHMIDT Calibration Material**
DXV-50	10-50	40	42	PA: 0.12 mm Ø
DXV-120	20-120	40	42	PA: 0.12 mm Ø
DXV-200	20-200	40	42	PA: 0.12 mm Ø
DXV-400	20-400	40	42	PA: 0.20 mm Ø
DXV-1000	50-1000	40	42	PA: 0.30 mm Ø
DXV-1500	150-1500	40	42	PA: 0.30 mm Ø
DXV-2000	200-2000	40	42	PA: 0.50 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
** Width of bracket assembly*
*** Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Model DXP

Non-rotating ceramic pins permit line speeds up to $v_{max.}$ 6000 m/min

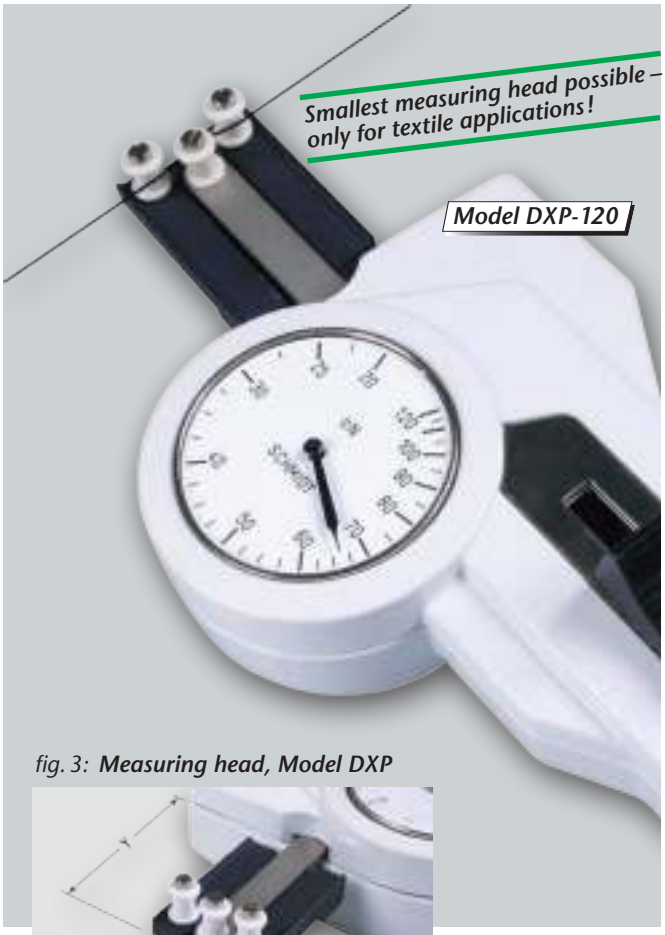


fig. 3: **Measuring head, Model DXP**

Available Models

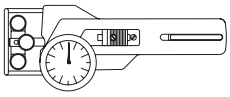
MODEL	Tension Ranges cN	Measuring Head Width X* approx. mm	Measuring Head Length Y approx. mm	SCHMIDT Calibration Material**
DXP-50	10-50	27	44	PA: 0.12 mm Ø
DXP-120	20-120	27	44	PA: 0.12 mm Ø
DXP-200	20-200	27	44	PA: 0.12 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
** Width of bracket assembly*
*** Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Model with tension range + *Code for guide rollers (if not standard)* + *Code for accessory* = *Complete Order No.*

To place an order please indicate the complete model number, e.g.:

DXE-400 + **K** + **A–M** = **DXE–400–K–A–M**



SCHMIDT control instruments

Special purpose tension meter features large rollers and a wide roller spacing to minimize the bending of the material

Special features:

- ✚ Large, V-grooved guide rollers, ball-bearing mounted
  DXF: 32 mm Ø, **DXL:** 29.5 mm Ø
- ✚ Large bending radius assures gentle handling of the material being measured
- ▮ Apart from that the instruments relate to model DX2;
  Note: These models do not have a built-in material thickness compensator

Model DXF, DXL

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
DXF-120	20 - 120	140	PA: 0.12 mm Ø
DXF-200	20 - 200	140	PA: 0.12 mm Ø
DXF-400	20 - 400	140	PA: 0.20 mm Ø
DXF-1000	50 - 1000	140	PA: 0.30 mm Ø
DXL-2000	200 - 2000	235	Buffer tube Ø 2.5 mm
DXL-5000	400 - 5000	235	Buffer tube Ø 2.5 mm
DXL-10 K	2.5 - 10 daN	288	Buffer tube Ø 2.5 mm

Other tension ranges available on request. Other units of measure available, such as g.
* Outer distance between outside guide rollers
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers → see page F →

Model DXF	Line Speed vmax. ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminium
Code T	4000	Plastic (PVC) red (Same dimensions as standard roller)
Model DXL		
V-grooved		
Standard	4000	Hardened steel
U-grooved		
Code R1	4000	Hard chrome-plated steel (radius R 5)
flat		
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

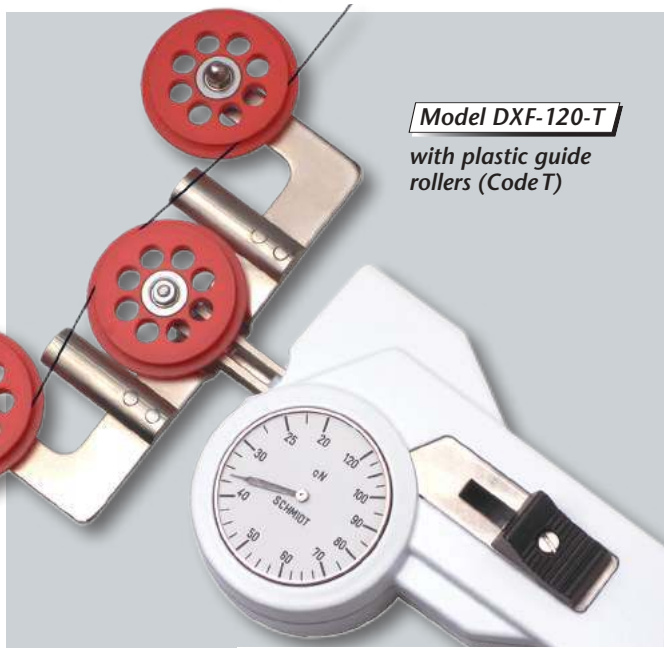
Optional Accessories → see page F →

Code A	**Air damping** (available for Models -400 to -5000)
Code M	**Memory pointer**

Specifications **same as Model DX2** (see page A 4)

Model DXF

For fragile filaments such as optical fibers, glass fibers, single carbon fibers etc., up to max. 1.5 mm Ø

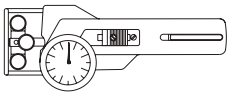


Model DXF-120-T
with plastic guide rollers (Code T)

Model DXL

For fiber optics, buffer tubes, fibers, cables, ropes, up to max. 8 mm Ø

Model DXL-5000



SCHMIDT control instruments

Tension meter for measuring warp threads on weaving machines

Model DXK

Model DXK measures the warp thread tension while the weaving machine is not running. We recommend always measuring the same number of ends, such as 5 or 10 ends (repeat of pattern) or only a single end at a time. During measurement make sure that the ends are not pulled or pressed out of their alignment.

Special features:

- ✚ *Width of the sensing pin 10 mm*
- ✚ *Reference frame (15 x 17 cm) assures a stable, perpendicular position*
- ▮ *Apart from that the instrument relates to model DX2;* ***Note:*** *This model does not have a built-in material thickness compensator.*

Available Models

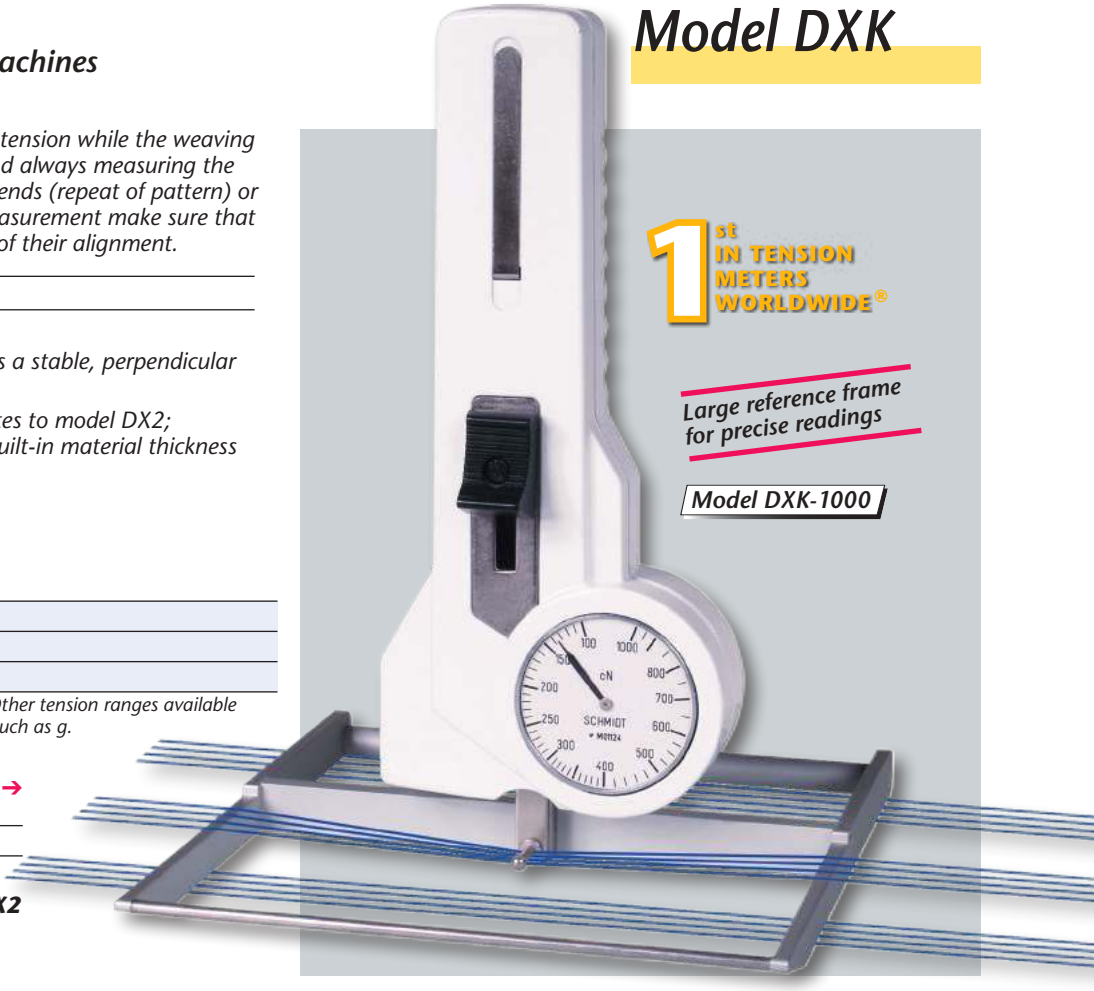
MODEL	Tension Ranges cN
DXK-300	20 - 300
DXK-1000	100 - 1000
DXK-2000	200 - 2000

SCHMIDT calibration material textile ribbon. Other tension ranges available on request. Other units of measure available, such as g.

Optional Accessories → see page F →

Code **M**	Memory pointer

Specifications ***same as Model DX2*** *(see page A 4)*



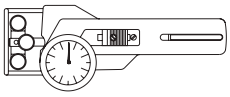
Screen Printing Tension Meter

Model FT

Synthetic mesh always looses tension in time. Correct mesh tension is one of the most important conditions for accurate, reproduceable and high quality screen printing.

Special features:

- ✚ *To be used for synthetic and steel meshes*
- ✚ *Warpwise or weftwise measuring is possible*
- ✚ *2 adjustible markers to set limits (MIN, MAX)*
- ✚ *Measuring range 6 - 50 N/cm*
- ✚ *Protected precision dial gauge*
- ✚ *Depth of indentation max. 1 mm*
- ✚ *Measuring force 2.1 - 3.0 N*
- ✚ *According DIN EN16611*
- ✚ *Inspection Certificate with calibration report optionally available*



SCHMIDT control instruments

Special purpose tension meter for measuring all kinds of tapes and bands, such as textile ribbons, films, foils, fiber bunches, etc.

Special features:

- ✚ Dual-flanged outer guide rollers with various widths, from 7 mm to 100 mm (single-flanged rollers optional)
- ✚ Special calibration is available
- ▮ Apart from that the instrument relates to model DX2; **Note:** This model does not include a filament guide and material thickness compensator

When selecting the instrument for your specific application, please keep in mind that:

1. Rollers of different widths are not interchangeable by the user
2. The roller width should correspond with the width of the material to be measured. Otherwise incorrect measuring results may occur and the instrument may be damaged

SCHMIDT has the solution to any tension measuring problem! Please contact us to discuss your application requirements.

To assist you in selecting the right tension meter for your specific application, please furnish:

– Kind and dimensions of the material to be measured
– Expected tension range
– Material sample of about 5 m

1st IN TENSION METERS WORLDWIDE®

Models DXB, DXR, DXT

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	1000	Hard-coated aluminium (Exception: 7 mm rollers are made of nickel-plated steel)

Other roller materials (nickel-plated steel or plastic), as well as special coatings (anti-adhesive or carbon fibres - NAV optimized) are available on request.

Optional Accessories

→ see page F →

Code A	**Air damping** (available for Models -400 to -5000) – not available for Model DXR –
Code L	**Special lever** (Standard for Models -20 K and higher) – recommended for -10 K Models –
Code M	**Memory pointer** – not available for DXB-50 and DXT-50 –

Specifications **same as Model DX2** (see page A 4)

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

Model DXB

Cylindrical rollers pointing toward the operator

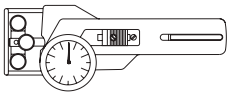
Model DXB-5000-30
Version with 30 mm tape rollers

Available Models

MODEL	Tension Ranges cN	Measuring Head Width** mm	Roller Widths mm
DXB-50	10 - 50	55	7
DXB-120	20 - 120	55	7, 10, 15, 20, 30
DXB-200	20 - 200	55	7, 10, 15, 20, 30
DXB-400	20 - 400	55	7, 10, 15, 20, 30
DXB-1000	100 - 1000	55	7, 10, 15, 20, 30, 36, 41, 50
DXB-2000	200 - 2000	117	7, 10, 15, 20, 30, 36, 41, 50
DXB-5000	400 - 5000	117	7, 10, 15, 20, 30, 36, 41, 50
DXB-10 K	2.5 - 10 daN	117	7, 10, 15, 20, 30, 36, 41
DXB-20 K-L	5 - 20 daN	167	7, 10, 15, 20, 30

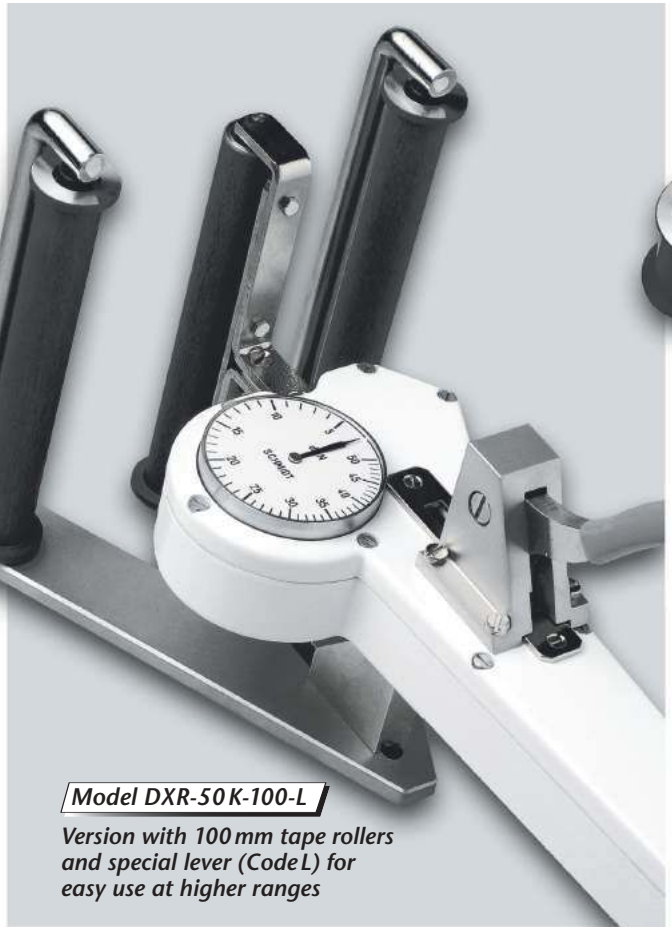
Other tension ranges, measuring head widths, and material path calibrations available on request. Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outer distance between outside guide rollers

SCHMIDT control instruments



Model DXR

With heavy-duty bracket and special roller support



Model DXR-50K-100-L

Version with 100 mm tape rollers and special lever (Code L) for easy use at higher ranges

Available Models

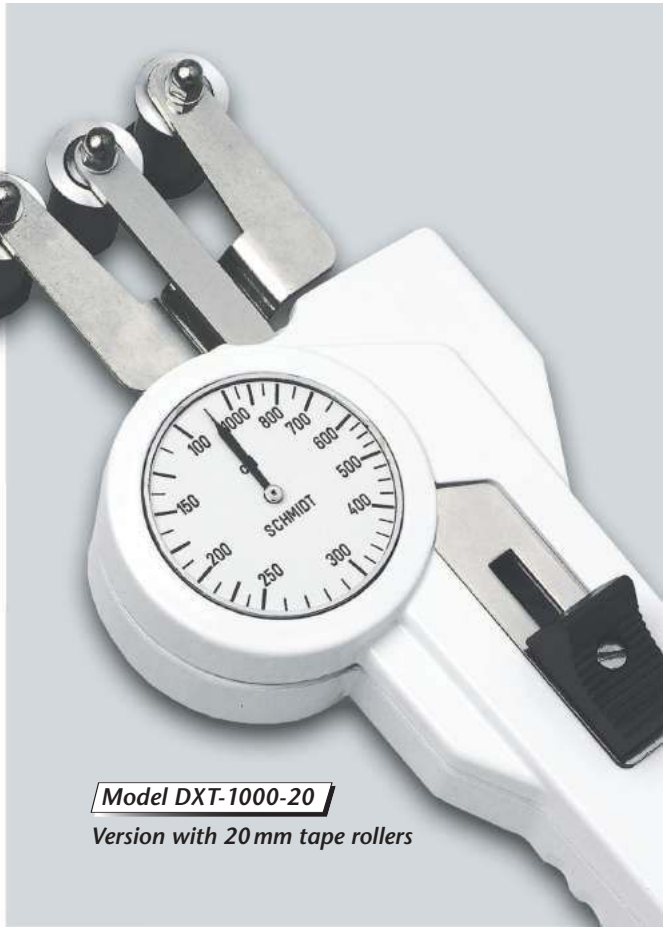
MODEL	Tension Ranges cN	Measuring Head Width ** mm	Roller Widths mm
DXR-2000	200 - 2000	125	50, 100
DXR-5000	400 - 5000	125	50, 100
DXR-10K-L	2.5 - 10 daN	125	50, 100
DXR-20K-L	5 - 20 daN	200	50, 100
DXR-30K-L	5 - 30 daN	200	50, 100
DXR-50K-L	5 - 50 daN	200	50, 100

Other tension ranges and other measuring head widths available on request. Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outer distance between outside guide rollers

Note: Standard equipment of Models DXR-10K to DXR-50K includes special lever (Code L).

Model DXT

Cylindrical rollers pointing away from the operator



Model DXT-1000-20

Version with 20 mm tape rollers

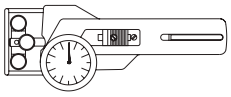
Available Models

MODEL	Tension Ranges cN	Measuring Head Width ** mm	Roller Widths mm
DXT-50	10 - 50	57	7
DXT-120	20 - 120	57	7, 10, 15, 20, 30
DXT-200	20 - 200	57	7, 10, 15, 20, 30
DXT-400	20 - 400	57	7, 10, 15, 20, 30
DXT-1000	100 - 1000	57	7, 10, 15, 20, 30, 36, 41, 50
DXT-2000	200 - 2000	117	7, 10, 15, 20, 30, 36, 41, 50
DXT-5000	400 - 5000	117	7, 10, 15, 20, 30, 36, 41, 50
DXT-10K	2.5 - 10 daN	117	7, 10, 15, 20, 30
DXT-20K-L	5 - 20 daN	117	7, 10, 15, 20

Other tension ranges, measuring head widths, and material path calibrations available on request. Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outer distance between outside guide rollers

To place an order please indicate the complete model number, e.g.:

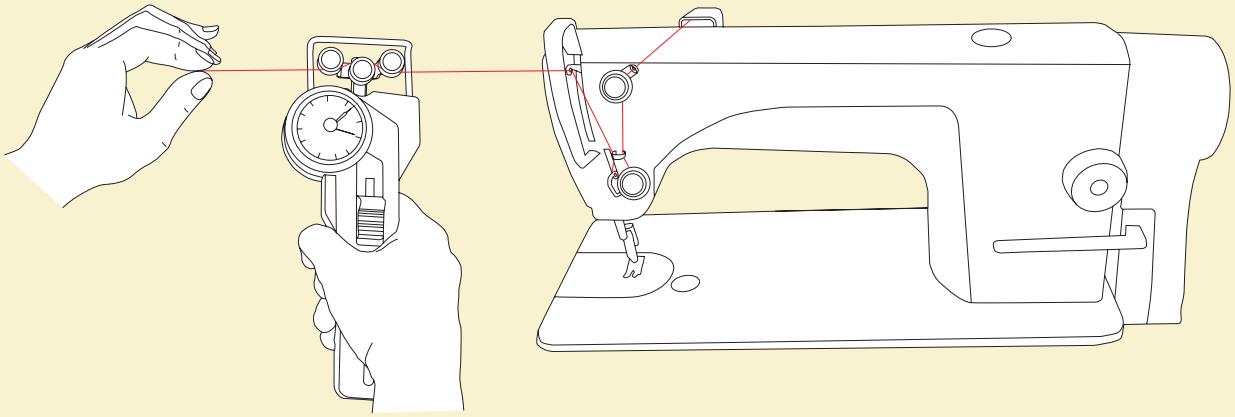
Model with tension range	+	Roller width in mm	+	Code for accessory	=	Complete Order No.
DXB-1000	+	**20**	+	**A**	=	**DXB–1000–20–A**



SCHMIDT control instruments

Tension meter for measurement at sewing machines

Besides strength and the kind of stich the tension of the upper and lower thread is important for the solidity and the image of the seam. Tension determines the stitching length.



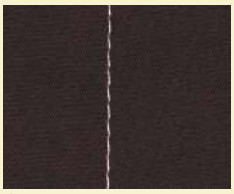


fig. 1

Fig. 1: ***Seam with correct adjusted thread tension***

fig. 2: ***Too much yarn results in not sufficient linkage of the seam with the used material***

fig. 2

DX SERIES

For measuring the upper and under thread of non-operating machines DX2 series is recommended. The tension meter is used after the yarn break and the thread unwinded by hand.

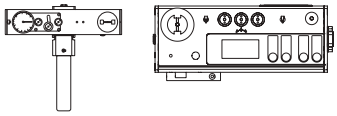
Most used model:

DX2-400, DX2-1000 and DX2-2000; these tension meters are often equipped with a memory pointer code M, to read the measuring value after finishing the measurement.

Further tension meters for measuring the thread tension at sewing machines

Recommended Models

ZE	*see page C 3*
DT	*see page C 5*
ET	*see page C 13*
Q	*see page B 1*
TS	*see page D 2*



SCHMIDT control instruments

Tension Meter for measuring the tension of sewing machines and yarn breaks

These models can be used for measuring the upper and lower thread. These unique instruments exist out of a tension meter (with anlog or digital display) with an integrated motorized take-up fixture with constant speed of thread. Also yarn breaks and bobbin creels can be adjusted under constant conditions (speed of the thread).

Mechanical tension meter with motorized take-up fixture

Model MKM

3 Tension ranges from 10 - 50 cN to 50 - 400 cN

Special features:

- Motorized take-up wheel for constant take-up speed (~ 8 m/min respectively ~ 15 m/min) for similar conditions
- Handle can be reversed for using the instrument comfortable in all positions

Standard features:

- Motor rechargeable battery operated
- Ball-bearing mounted, V-grooved guide rollers
- Weight, net (gross): approx. 650 g (1250 g)
- Inspection Certificate with calibration report optionally available
- Apart from that the instrument relates to model MK

Available Models

MODEL	Tension Ranges cN	Take-up Speed m/min	SCHMIDT Calibration Material*
MKM-50	10 - 50	15	PA: 0.12 mm Ø
MKM-100	10 - 100	15	PA: 0.12 mm Ø
MKM-400	50 - 400	8	PA: 0.20 mm Ø

* Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Electronic tension meter with motorized take-up fixture

Model MST

3 Tension ranges from 1 - 500 cN to 1 - 2000 cN

Special features:

- Motorized take-up fixture to have constant speed of the thread (v = 8 m/min)
- Storage of AVG, last, MIN, MAX, PEAK-MAX and PEAK-MIN values as well as statistical analysis (average value) during a user-selected period
- Special fixture to determine shuttle tension
- Section-cup base for positioning the unit on sewing machine table when tension is measured
- Connection to PC using »Tension Inspect« Software optional

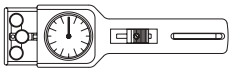
Standard features:

- Battery or mains-operated (MST-2000 only mains-operated)
- Zero setting by using the "Zero" button before measurement
- Output signal (option): analog 0 - 2 VDC
  digital RS 232
- Weight, net (gross): approx. 780 g (2000 g)
- Inspection Certificate with calibration report optionally available

Available Models

MODEL	Tension Ranges cN	SCHMIDT Calibration Material*
MST-500	1 - 500	PA: 0.20 mm Ø
MST-1000	1 - 1000	PA: 0.30 mm Ø
MST-2000	1 - 2000	PA: 0.50 mm Ø

* Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

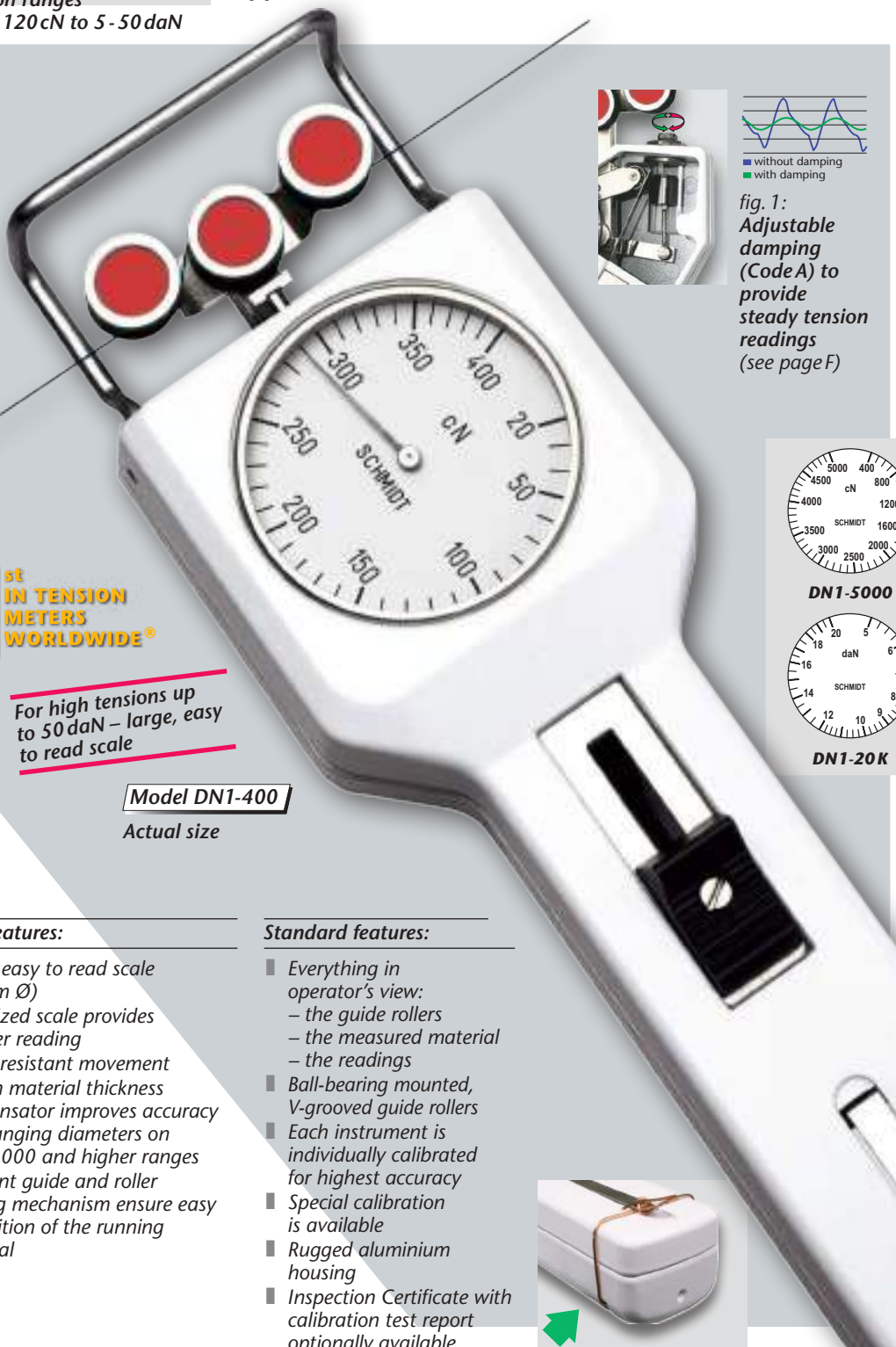


SCHMIDT
control instruments

DN SERIES

12 Tension ranges from 20 - 120 cN to 5 - 50 daN

Durable tension meters for a wide range of applications in the textile, fiber and wire industries



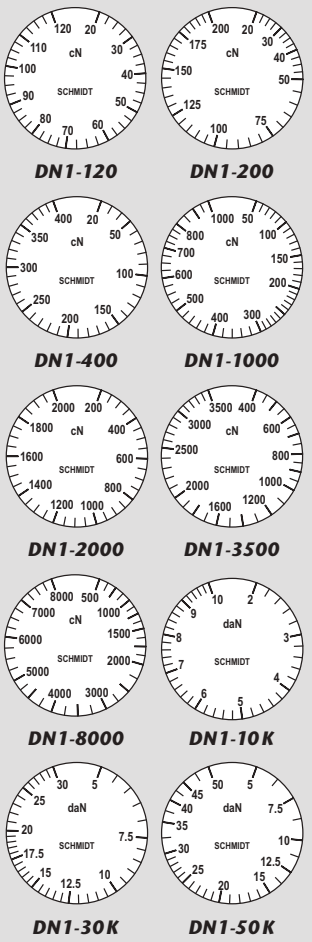
1st IN TENSION METERS WORLDWIDE®

For high tensions up to 50 daN – large, easy to read scale

Model DN1-400

Actual size

fig. 1: ***Adjustable damping (Code A) to provide steady tension readings*** *(see page F)*



SCHMIDT scales are manufactured according to the most stringent quality requirements. Printed scales are not used. Instead, each scale is individually marked for the instrument involved. This ensures highest quality. Our special procedure makes it possible to provide tension meters fine tuned to a specific tension range, or calibrated to customer supplied material, or units of measure such as g or kg.

Special features:

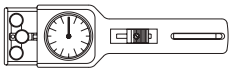
- ✚ *Large, easy to read scale (54 mm Ø)*
- ✚ *Linearized scale provides a better reading*
- ✚ *Shock-resistant movement*
- ✚ *Built-in material thickness compensator improves accuracy for changing diameters on DN1-1000 and higher ranges*
- ✚ *Filament guide and roller shifting mechanism ensure easy acquisition of the running material*

Standard features:

- ▮ *Everything in operator's view:*
  – the guide rollers
  – the measured material
  – the readings
- ▮ *Ball-bearing mounted, V-grooved guide rollers*
- ▮ *Each instrument is individually calibrated for highest accuracy*
- ▮ *Special calibration is available*
- ▮ *Rugged aluminium housing*
- ▮ *Inspection Certificate with calibration test report optionally available*

fig. 2: ***Material thickness compensator with material sample inserted***

Subject to change without notice.



SCHMIDT control instruments

Model DN1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT-Calibration Material**	Material thickness compensator included
DN1-120	20 - 120	65	PA: 0.12 mm Ø	
DN1-200	20 - 200	65	PA: 0.12 mm Ø	
DN1-400	20 - 400	65	PA: 0.20 mm Ø	
DN1-1000	50 - 1000	65	PA: 0.30 mm Ø	✔
DN1-2000	200 - 2000	116	PA: 0.50 mm Ø	✔
DN1-3500	400 - 3500	116	PA: 0.80 mm Ø	✔
DN1-5000	400 - 5000	116	PA: 0.80 mm Ø	✔
DN1-8000	500 - 8000	116	PA: 1.00 mm Ø	✔
DN1-10K	2 - 10 daN	116	PA: 1.00 mm Ø	✔
DN1-20K-L	5 - 20 daN	216***	PA: 1.50 mm Ø	✔
DN1-30K-L	5 - 30 daN	265***	PA: 1.50 mm Ø	
DN1-50K-L	5 - 50 daN	265***	Steel rope: 1.50 mm Ø (7 x 7 x 0.20)	

Other tension ranges and 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 11)
PA = Polyamide Monofilament
*** Deviating measuring head width 285 mm with Code V1

Guide Rollers

→ see page F →

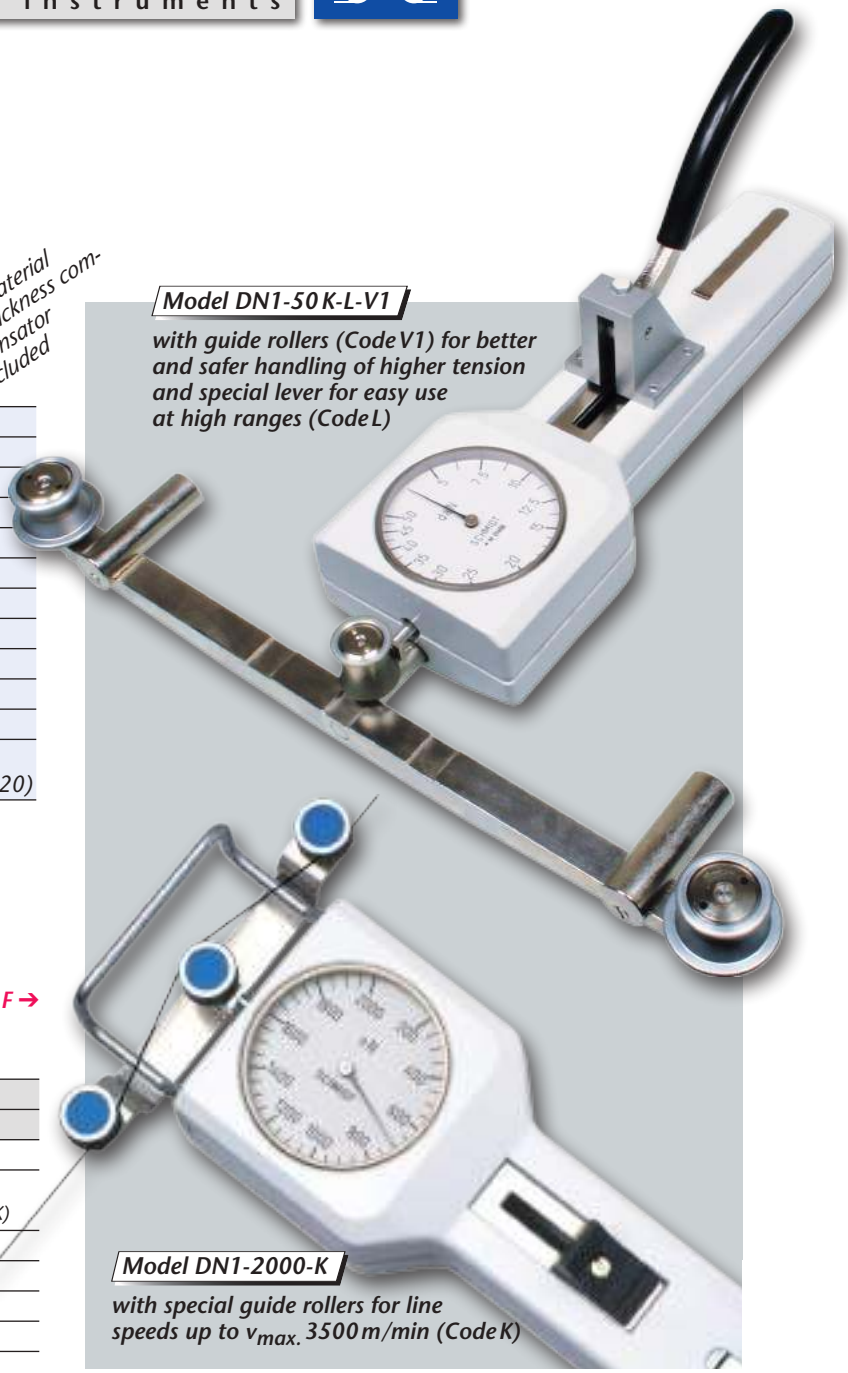
	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
	1000	Model DN1-30K and DN1-50K
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (not available for DN1-30K and DN1-50K)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord – Gauge without filament guide –
Code V1	1000	Hard-coated aluminium* *only for DN1-20K up to DN1-50K
U-grooved		
Code U	2000	Hard-coated aluminium

Optional Accessories

→ see page F →

Code A	**Air damping** (Models DN1-120 to DN1-5000 only)
Code L	**Special lever** (standard for DN1-20K and higher ranges) – recommended for DN1-10K –

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



Model DN1-50K-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)

Model DN1-2000-K
with special guide rollers for line speeds up to $v_{max.}$ 3500 m/min (Code K)

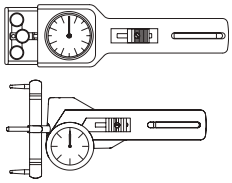
Specifications

	DN Series
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale or ±1 graduation on scale
Scale diameter:	54 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Die-cast aluminium
Housing dimensions:	220 x 74 x 42 mm (L x W x H)
Weight, net (gross):	up to DN1-10K approx. 700 g (1200 g)
(approx.)	DN1-20K-L and higher ranges 900 g (2200 g)

Model with tension range
Code for guide rollers (if not standard)
Code for accessory
Complete Order No.

To place an order please indicate the complete model number, e.g.:

DN1-400 + **ST** + **A** = **DN1–400–ST–A**

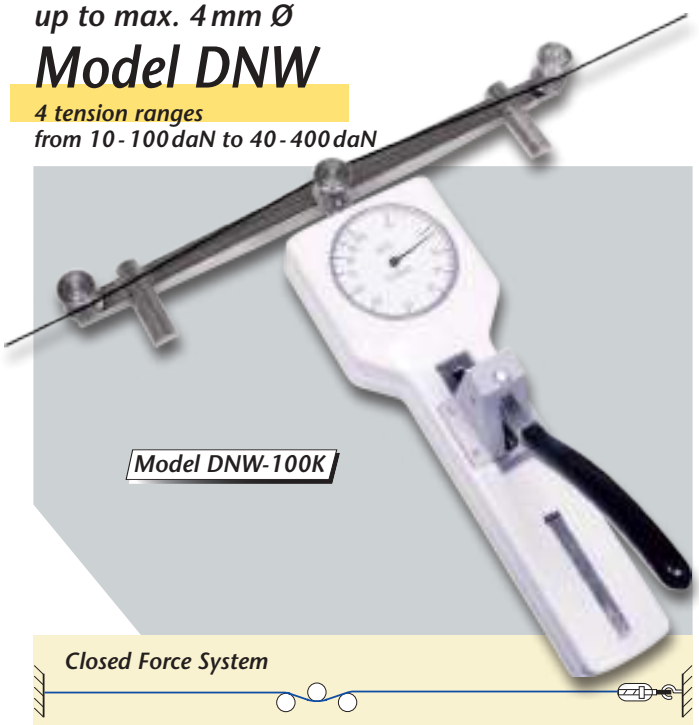


SCHMIDT control instruments

Tension meter for measuring pretensioned ropes up to max. 4 mm Ø

Model DNW

4 tension ranges
from 10 - 100 daN to 40 - 400 daN



Closed Force System

Special features:

- ✚ Can be used only for pretensioned, non-moving ropes
- ✚ Calibration is done using a closed force system
- ✚ Due to the material path the max. error is approx. 3 % FS (full scale)
- ✚ Special lever reduces the force to extend outer rollers to capture the material to be measured
- ▮ Apart from that the instrument relates to model DN1, but no thickness compensator

Available Models

MODEL	Tension Ranges daN	Measuring Head Width* mm	SCHMIDT Calibration Material**
DNW-100K	10 - 100	265	steel rope 2 mm Ø
DNW-200K	20 - 200	265	steel rope 2 mm Ø
DNW-300K	30 - 300	265	steel rope 3 mm Ø
DNW-400K	40 - 400	265	steel rope 4 mm Ø

* Outer distance between outside guide rollers
** SCHMIDT calibration material twisted steel rope

Guide Rollers

→ see page F →

V-grooved	Roller Material
Standard asymmetrical groove	Tempered steel

Tension meter for measuring pretensioned ropes, wires etc., up to max. 2 mm Ø

Model DXH

3 tension ranges
from 400 - 5000 cN to 5 - 20 daN

Special features:

- ✚ Fixed hooks as guide pins
- ✚ Useable for application areas with limited access space
- ✚ Calibration is done in an open force system using a free hanging weight
- ✚ If the instrument is used in a closed force system the accuracy is worse, depending on the fixing length
- ▮ Apart from that the instrument relates to model DX2, but no thickness compensator

Available Models

MODEL	Tension Ranges cN	Measuring Head Width mm	SCHMIDT Calibration Material*
DXH-5000	400 - 5000	116	PA: 0.8 mm Ø
DXH-10K	2.5 - 10 daN	116	PA: 1.0 mm Ø
DXH-20K-L	5 - 20 daN	116	PA: 1.5 mm Ø

Other tension ranges and measuring head widths on request.
Other units of measure available – g or kg.
** SCHMIDT calibration material Polyamide Monofilament PA (see chart on page 11)

SCHMIDT control instruments

Model TEN

11 tension ranges
from 0.5 cN - 3 cN to 50 - 170 cN

Small, compact tension meter for measuring fibers and threads

Special features:

- 2-roller measuring system
- Small, handy design
- Large enlacement of thread for stable readings when tension fluctuates rapidely

Standard features:

- Ball-bearing mounted, V-grooved guide rollers
- Aluminium housing

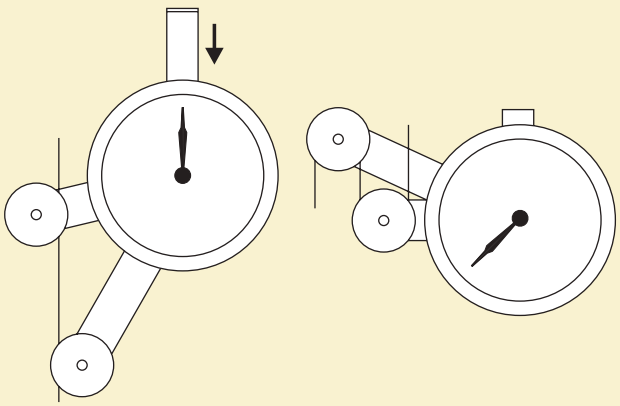
Available Models

Model	Tension Ranges cN
TEN-3K	0.5 - 3
TEN-5K	1 - 5
TEN-10K	2 - 10
TEN-12K	2 - 12
TEN-20K	5 - 20
TEN-30K	5 - 30
TEN-50K	10 - 50
TEN-60K	10 - 60
TEN-70K	10 - 70
TEN-120K	20 - 120
TEN-170K	50 - 170

Model TEN-12K
Actual size

fig1.:
a stationary model is available on request

The instrument is designed for one-hand use. To thread in, place the yarn between the two guide rollers. Push and hold the key button at the instrument. The outer roller will be turned up and the instrument is ready for measuring. The measured value will be displayed at the analog display.



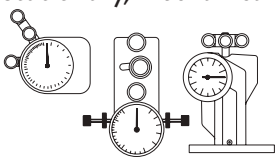
Initial position ***Measuring position***

Guide Rollers

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	900	Aluminium black colored

Specifications

	TEN Series
Accuracy:	±2 % full scale up to 20 cN or ±5 % full scale for higher 20 cN
Scale diameter:	40 mm
Temperature range:	10 - 50 °C
Air humidity:	85 % RH, max.
Housing material:	Aluminium
Housing dimensions:	87 x 57 x 26 mm (L x W x H)
Weight, net (gross):	approx. 150 g (approx. 260 g)



SCHMIDT control instruments

Stationary tension meters for continuous tension measurement applications

Special features:

- ✚ Easy online mounting with screws
- ✚ User-set MIN and MAX limits alert operator to out-of-tolerance conditions (This feature is not available for Model Q)

Note: Stationary tension meters do not include a filament guide and material thickness compensator

Model Q

Tension meter with large, easy to read scale (54 mm Ø)

Models Q, MK, DX2S

Guide Rollers

→ see page F →

Model Q, MK

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	1000	Hard-coated aluminium
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel (Model -100 and higher)

Model DX2S

V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminum
Code H	5000	Plasma-coated aluminium (for Model DX2S-120 and higher ranges)
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 CE1	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord (for Model DX2S-120 and higher ranges)
U-grooved		
Code U	2000	Hard-coated aluminum

Optional Accessories

→ see page F →

Models MK, DX2S

Code A	**Air damping** **MK:** Model MK-100 and higher ranges **DX2S:** Models DX2S-120 to -5000 only
Code D	**Tension-detecting screw contacts** Adjustable MIN and MAX contacts trigger a signal, as soon as MIN or MAX tension value is reached

Available Models

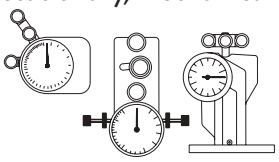
MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
Q-10	2-10	65	PA: 0.12 mm Ø
Q-20	2-20	65	PA: 0.12 mm Ø
Q-30	3-30	65	PA: 0.12 mm Ø
Q-50	5-50	65	PA: 0.12 mm Ø
Q-100	10-100	65	PA: 0.12 mm Ø
Q-200	20-200	65	PA: 0.12 mm Ø
Q-300	20-300	65	PA: 0.20 mm Ø
Q-500	50-500	85	PA: 0.20 mm Ø
Q-1000	50-1000	85	PA: 0.30 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.
* Outer distance between outside guide rollers
** SCHMIDT calibration material Polyamide Monofilament PA (see chart on page 11)

Specifications

Q Series	
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale (FS) or ±1graduation on scale
Scale diameter:	54 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Chill-cast aluminium
Housing dimensions:	78 x 62 x 27 mm (L x W x H)
Weight, net (gross):	approx. 300 g (400 g)

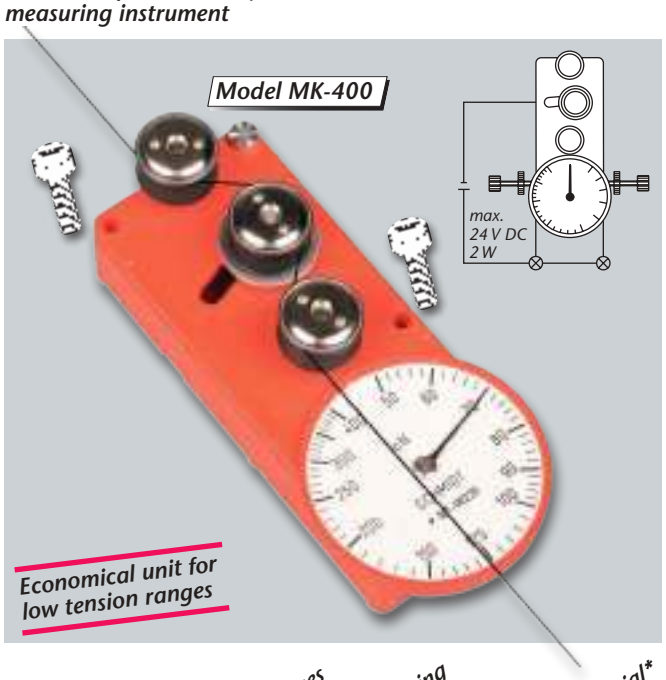
Special calibration using customer supplied samples is available: Please supply a sample of at least 5 m in length.



SCHMIDT control instruments

Model MK

Small, compact and easy to install measuring instrument



Available Models

MODEL	Tension Ranges cN	Measuring Head Width mm	SCHMIDT Calibration Material*
MK-12	3-12	56	PA: 0.12 mm Ø
MK-20	5-20	56	PA: 0.12 mm Ø
MK-30	5-30	56	PA: 0.12 mm Ø
MK-50	10-50	56	PA: 0.12 mm Ø
MK-100	10-100	56	PA: 0.12 mm Ø
MK-250	20-250	56	PA: 0.12 mm Ø
MK-300	20-300	56	PA: 0.20 mm Ø
MK-400	50-400	56	PA: 0.20 mm Ø

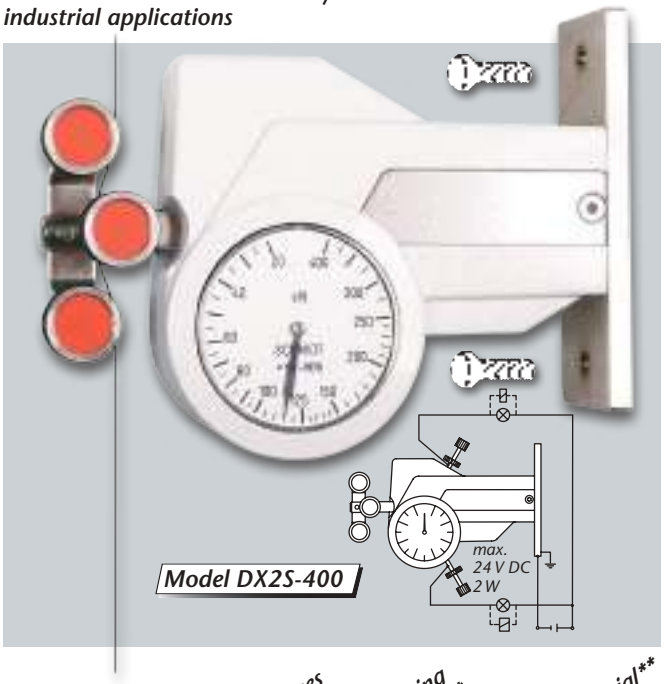
Other tension ranges available on request. Other units of measure available, such as g.
** Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Specifications **MK Series**

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale (FS) or ±1 graduation on scale
Scale diameter:	41 mm
Temperature range:	10-45 °C
Air humidity:	85 % RH, max.
Housing material:	Plastic (Makrolon)
Housing dimensions:	96 x 44 x 23 mm (L x W x H)
Weight, net (gross):	approx. 80 g (200 g)

Model DX2S

Versatile tension meter for many industrial applications



Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
DX2S-50	10-50	54	PA: 0.12 mm Ø
DX2S-120	20-120	54	PA: 0.12 mm Ø
DX2S-200	20-200	54	PA: 0.12 mm Ø
DX2S-400	20-400	54	PA: 0.20 mm Ø
DX2S-1000	50-1000	54	PA: 0.30 mm Ø
DX2S-2000	200-2000	116	PA: 0.50 mm Ø
DX2S-5000	400-5000	116	PA: 0.80 mm Ø
DX2S-8000	1000-8000	116	PA: 1.00 mm Ø
DX2S-10K	2.5-10 daN	116	PA: 1.00 mm Ø
DX2S-20K	5-20 daN	216	PA: 1.50 mm Ø

Other tension ranges, measuring head widths, and material path calibrations available on request. Other units of measure available – g or kg.
** Outer distance between outside guide rollers*
*** Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Specifications **same as Model DX2** *(see page A 4)*

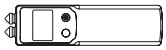
The following models of the DX series are available as stationary models for fixed installation:

Model DXE → Model DXES **Model DXF → Model DXFS**
Model DXB → Model DXBS **Model DXT → Model DXTS**

Model with tension range + *Code for guide rollers (if not standard)* + *Code for accessory* = *Complete Order No.*

To place an order please indicate the complete model number, e.g.:

DX2S-400 + **K** + **A** = **DX2S–400–K–A**



SCHMIDT control instruments

PT SERIES

Tension range
from 0.5 - 100 cN

Special features
Model PT-100 and PT-100-L:

- Easy threading of the material to be measured using the cone shaped guide rollers and turning the instrument by 180°
- Automatic »Zero setting« independent to measuring position
- Tension meter can be used for right and left hand use
- Adjustable electronic damping to provide steady tension readings
- Switchable measuring units cN or grs
- The average reading of a series of measurement can be displayed
- LiPo accumulator

Standard features

- Tension meter with small, compact aluminium housing
- Ball-bearing mounted, V-grooved guide rollers
- Tension meter with easy to read LCD display
- CE proofed, interference resistance about static charge
- Inspection Certificate with calibration report optionally available

Economical low tension measuring instruments for checking fibers, threads, yarns etc.

Model PT-100

Model PT-100
Actual size

CE

For fast measurings on circular knitting machines

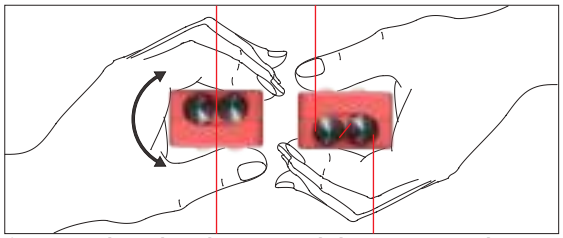


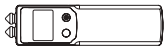
fig. 1: **To thread in the material the instrument has to be turned by 180°**

Guide Rollers	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium

→ see page F →

Available Models MODEL	Measuring Range Tension cN	Measuring Range Speed m/min	Measuring Range Length m	Measuring Head Width* mm	SCHMIDT Calibration Material**
PT-100	0.5 - 100.0	---	---	24	PA: 0.20 mm Ø
PT-100-L	0.5 - 100.0	0 - 1999	0 - 1999	24	PA: 0.20 mm Ø

* Outer distance between outside guide rollers
** Suitable for 95 % of applications (see also chart on page 11) PA = Polyamide Monofilament



SCHMIDT control instruments

Model PT-100-L

Tension meter mostly used for knitting machines

Special Features Model PT-100-L:

✚ Multifunctional instrument:
– Tension Meter
– Yarn Speed Meter
– Length Meter 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®

3IN1

- Tension Meter
- Yarn Speed Meter
- Yarn Consumption Meter

Multifuctional tension meter with low weight

CE

Model PT-100-L
Actual size

with sensor for measuring yarn consumption

Specifications	Model PT-100 and PT-100-L
Calibration:	According to 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:	5 % 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

Accessories	Model PT-100-L (includes delivery)
PT-S	Sensor with cable (3.50 m), magnet and clamping angle

SCHMIDT control instruments

ZE SERIES

4 Tension ranges from 0.5 - 50 cN to 1 - 500 cN

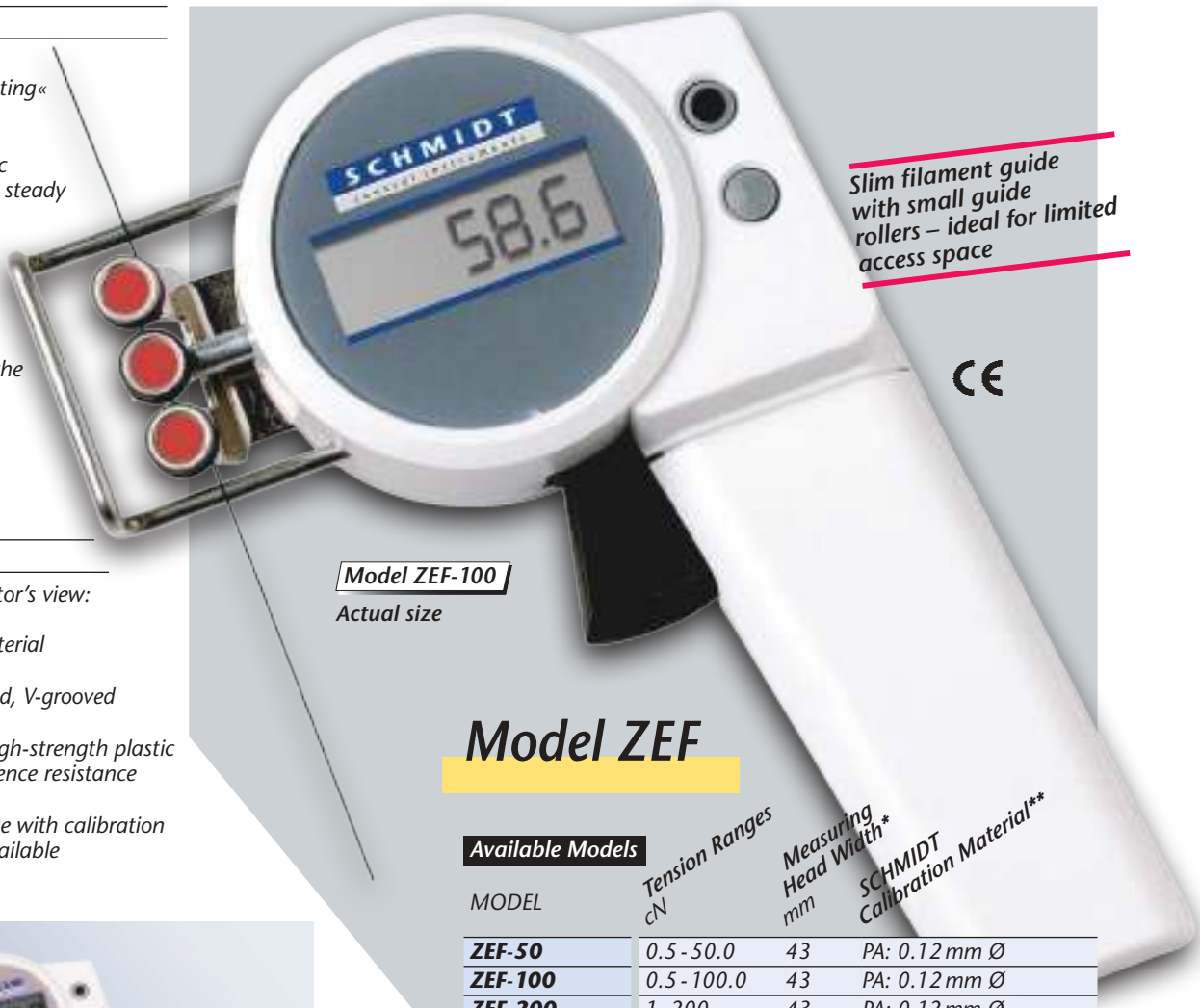
Economical low tension measuring instruments for checking fibers, yarns and fine wires

Special features:

- Simple handling
- Automatic »Zero setting« independent to measuring position
- Adjustable electronic damping to provide steady tension readings
- Easy to read LCD display
- Filament guide and roller shifting mechanism ensure easy acquisition of the running material
- Light weight
- LiPo accumulator

Standard features:

- Everything in operator's view:
  – the guide rollers
  – the measured material
  – the readings
- Ball-bearing mounted, V-grooved guide rollers
- Housing made of high-strength plastic
- CE proofed, interference resistance about static charge
- Inspection Certificate with calibration report optionally available



Model ZEF-100
Actual size

Slim filament guide with small guide rollers – ideal for limited access space

Model ZEF

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZEF-50	0.5 - 50.0	43	PA: 0.12 mm Ø
ZEF-100	0.5 - 100.0	43	PA: 0.12 mm Ø
ZEF-200	1 - 200	43	PA: 0.12 mm Ø

* Width of filament guide
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

V-grooved	Line Speed Vmax. ... m/min	Roller Material
Standard	900	Hard-coated aluminium
Code K	2000	Hard-coated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

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

fig. 1: **Model ZEF-100-T with easy running plastic rollers to measure Spandex (Lycra) filaments**

SCHMIDT control instruments

Universal tension meter for a variety of applications in the textile and wire industries

With bigger rollers for universal use

Model ZED-500
Actual size

1st IN TENSION METERS WORLDWIDE®

Model ZED

Specifications	Model ZEF and ZED
Calibration:	SCHMIDT factory procedure
Accuracy:	± 1 % FS* and ± 1 digit, typical ± 0.5 % FS*
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	100 %
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Display:	3-digit LCD, 10 mm high Model ZEF-50,ZEF-100: 3½-digit LCD
Display update rate:	2 times / sec
Damping:	Selectable electronic damping (moving averaging)
Signal processing:	digital
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	LiPo accumulator (about 80 h continous use, charging time approx. 3 ½ h) and AC Adapter with adapters (EU/USA/UK)
Housing material:	Plastic (POM)
Housing dimensions:	157 x 85 x 32 mm (L x W x H)
Weight, net (gross):	approx. 200 g (600 g)

* FS = Full Scale

Available Models

MODEL	Tension Range cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZED-200	1 - 200	63	PA: 0.20 mm Ø
ZED-500	1 - 500	63	PA: 0.20 mm Ø

* Width of filament guide
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

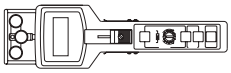
V-grooved	Line Speed vmax. ... m/min	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code **CE2**	1000	Aluminium ceramic-coated

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

Model with tension range + *Code for guide rollers (if not standard)* = *Complete Order No.*

To place an order
please indicate the complete model number, e.g.:

ZEF-200 + **K** = **ZEF–200–K**



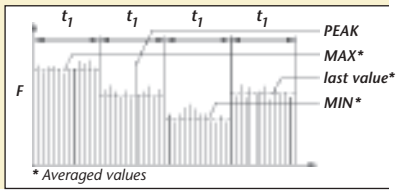
SCHMIDT control instruments

DT SERIES

9 Tension ranges from 0 - 200 cN to 5 - 50 daN

Special features Models DTMB and DTMX:

- Microprocessor controlled for highest accuracy
- Reliable strain gauge measuring principle
- Selectable update rates (0.5 – 1 – 2 or 4 seconds) to provide steady readings when tensions fluctuate (electronic damping)
- Measuring frequency: 62 measurements / second
- The display shows averaged values calculated during the update interval t_1
- Recall of measured MIN, MAX and PEAK values



- Zero adjustment feature permits use of the tension meter in various measuring positions, maintaining highest accuracy
- Calibration to customer supplied material is available (up to two different material calibrations)
- Built-in material thickness compensator improves accuracy for changing diameters on Models -500 cN and higher ranges
- Built-in mounting holes permit fixed installation for online use

Standard features Models DTMB and DTMX:

- Everything in operator's view:
  – the guide rollers
  – the measured material
  – the readings
- Filament guide and roller shifting mechanism ensure easy acquisition of the running material
- Ball-bearing mounted, V-grooved guide rollers
- Rugged aluminium housing
- Battery operated (AC adapter for continuous operation available)
- CE approved (tested for electromagnetic compatibility)
- Inspection Certificate with calibration report optionally available

Electronic tension meters providing detailed process data and analysis. Available in two models: DTMB and DTMX

Model DTMB

Model DTMB:
The basic unit for easy use, for many applications

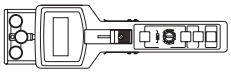
Model DTMB-1000-H

Actual size with special high speed guide rollers for line speeds up to $v_{max.}$ 5000 m/min (Code H)

1st IN TENSION METERS WORLDWIDE®

fig. 1: **Field adjustment function for fine tuning of the calibration for materials which differ from factory standard calibration material; the displayed value can be increased or decreased in ± 1.5 % increments**

Standard Model DTMB and Model DTMX



SCHMIDT control instruments

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

Model DTMX-200
Actual size

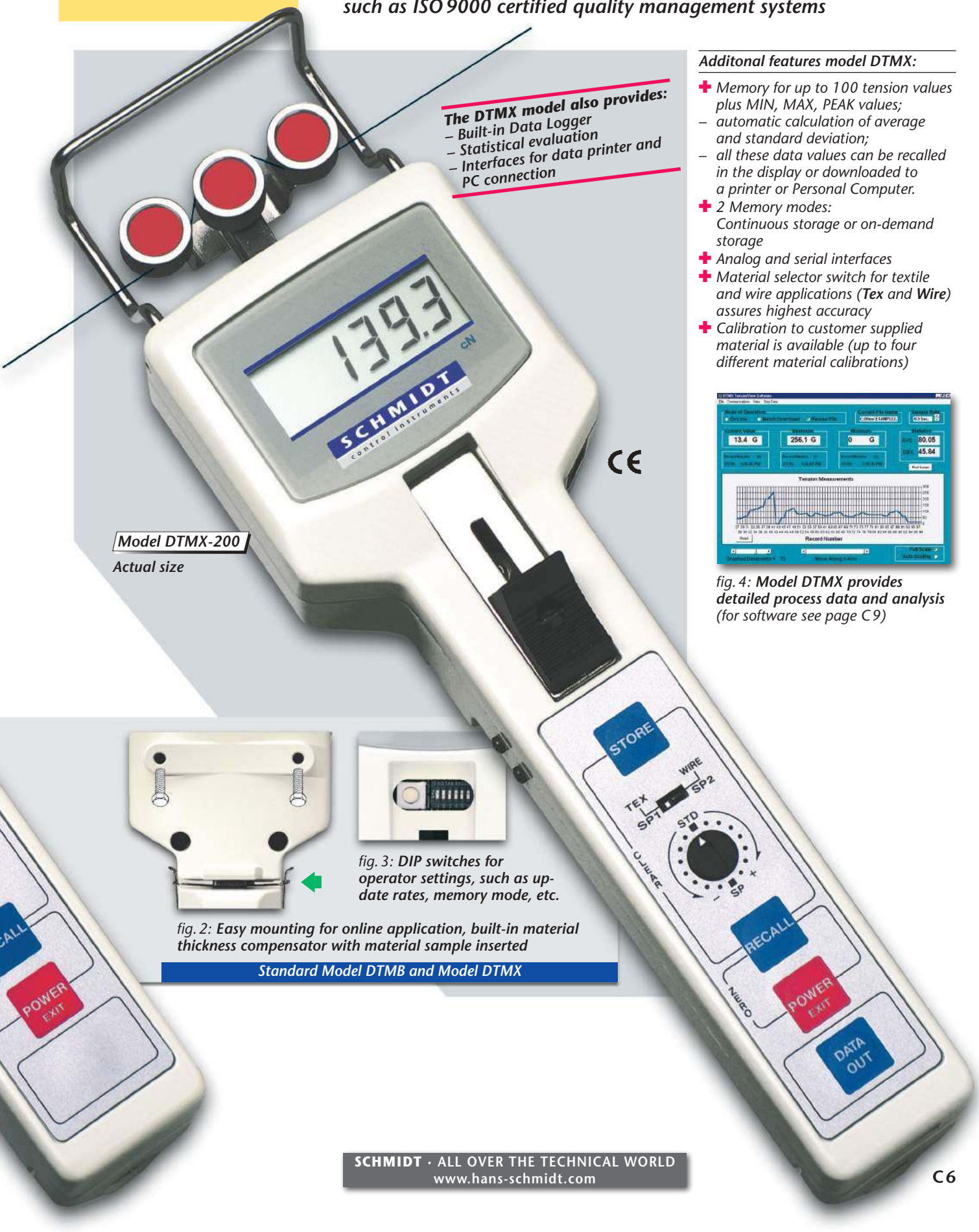


fig. 3: ***DIP switches for operator settings, such as update rates, memory mode, etc.***

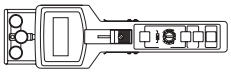
fig. 2: ***Easy mounting for online application, built-in material thickness compensator with material sample inserted***

Standard Model DTMB and Model DTMX

Additonal 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)*



SCHMIDT control instruments

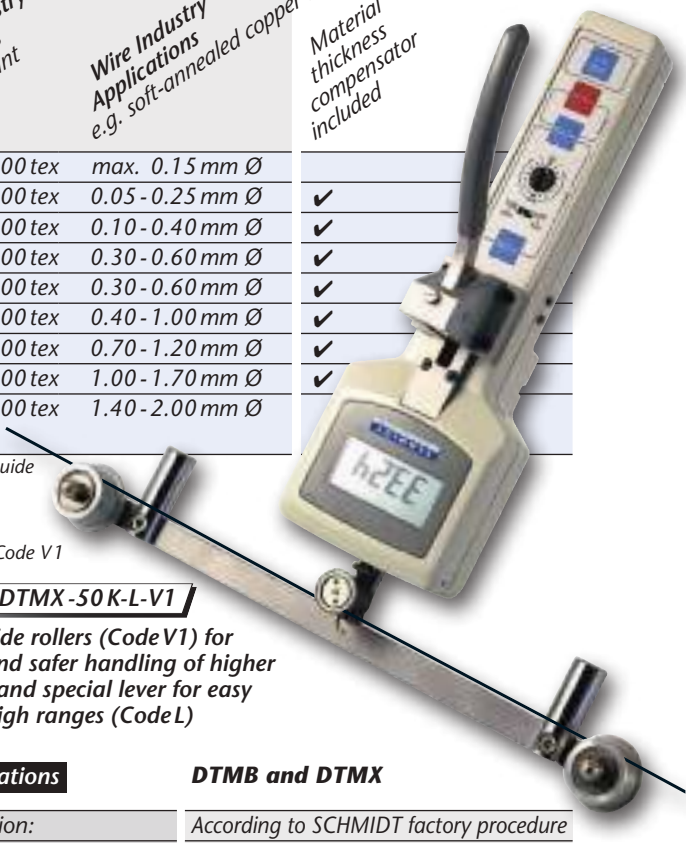
Model DTMB

Available Models

MODEL	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-10K	1.00 - 10.00 daN	116	0.80 + 1.40 mm Ø	1500 - 10000 tex	0.70 - 1.20 mm Ø	✔
DTMB-20K-L	2.00 - 20.00 daN	216***	1.20 + 1.80 mm Ø	2500 - 20000 tex	1.00 - 1.70 mm Ø	✔
DTMB-50K-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 11)
*** deviating measuring head width 285 mm with Code V1



Model DTMX-50K-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)

Guide Rollers

→ see page F →

Model DTMB

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated 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 CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminum
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord – Gauge is without filament guide –
Code V1	1000	Hard-coated aluminium (only for ranges 20 daN and higher)
U-grooved		
Code U	2000	Hard-coated aluminium

Optional Accessories

Model DTMB

→ see page F →

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

Additional Equipment

Model DTMB

K50100	AC adapter 100 V DC - 240 V AC, 50 - 60 Hz with adapters (EU, USA, UK)

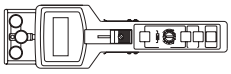
Special calibration using customer supplied samples is available:
Please supply a sample of at least 5 m in length.

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:	Up to Model-10K 680 g (1500 g)
Weight, net (gross): (approx.)	approx. 200 g (600 g) Model-20K-L and higher 1000 g (2200 g)

* FS = Full Scale



SCHMIDT control instruments

Model DTMX

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material** Position Tex Polyamid (PA)-Monofil	Textile Industry Applications e.g. yarn count	SCHMIDT Calibration Material*** Position Wire Soft-annealed copper wire	Wire Industry Applications e.g. soft-annealed copper wire	Material thickness compensator included
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-10K	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-20K-L	2.00 - 20.00 daN	216***	1.20 + 1.80 mm Ø	2500 - 20000 tex	Steel rope 1.5 mm Ø Steel rope 2.0 mm Ø	1.00 - 2.00 mm Ø	✔
DTMX-50K-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 11) – PA = Polyamide Monofilament
*** Accuracy: ± 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**

K50100	AC adapter 100 V DC - 240 V AC, 50 - 60 Hz with adapters (EU, USA, UK)
K50022	Data printer with RS 232, rechargeable battery powered, charger for 115 V AC
K50001	Data printer with RS 232, rechargeable battery powered, charger for 230 V AC
EK0671	Connecting cable for analog signal (1.5 m long)
EK0670	Connecting cable for printer RS 232 (2 m long)
EK0672	Connecting cable for PC RS 232 (2 m long)
EBG510	Adapter from RS 232 to USB
DTMX-P2	»Tension View« software (WIN'95 and higher)

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

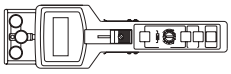
Special calibration using customer supplied samples is available:
Please supply a sample of at least 5 m in length.

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 with tension range + Code for guide rollers (if not standard) + Code for accessory = Complete Order No.

To place an order please indicate the complete model number, e.g.: **DTMX-5000** + **H** + **L** = **DTMX–5000–H–L**



SCHMIDT control instruments

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.

1st IN TENSION METERS WORLDWIDE®

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:***

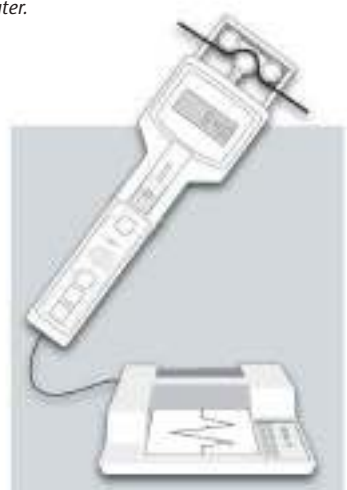
You can download single tension values over the serial interface to a PC. For this purpose, the DTMX supports several communications programs, such as Windows terminal.

*»**Tension View**« (WIN'95 and higher) to connect the DTMX to a PC; all datas are stored in an EXCEL file (.xls).*

B ***Software (optional equipment):***

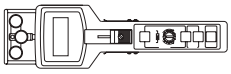
The DTMX can be mounted online for continuous tension monitoring. It can be connected to a PC using the RS 232 output.
*Using the programm »**Tension View**« following basic functions are available:*

- *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)*



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.



SCHMIDT control instruments

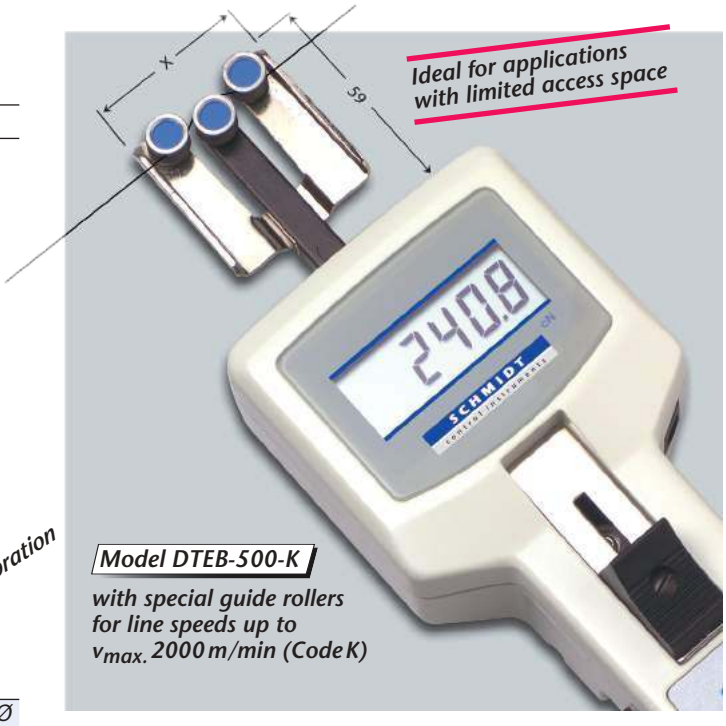
Special purpose models feature small measuring heads, where access space is limited or where filaments run close together

These tension meters are recommended where the standard Models DTMB and DTMX cannot be used.

Special features:

- Turned-up outer finger edges guide the running filament into the roller grooves
- Length of measuring head approx. 59 mm
- Small, ball-bearing mounted, V-grooved guide rollers
- SCHMIDT calibration with Polyamide Monofilament (PA)
- Special calibration using customer supplied samples is available
- Apart from that the instruments relate to model DTMB and DTMX
  Note: The below models do not include a material thickness compensator

Models DTEB, DTEX



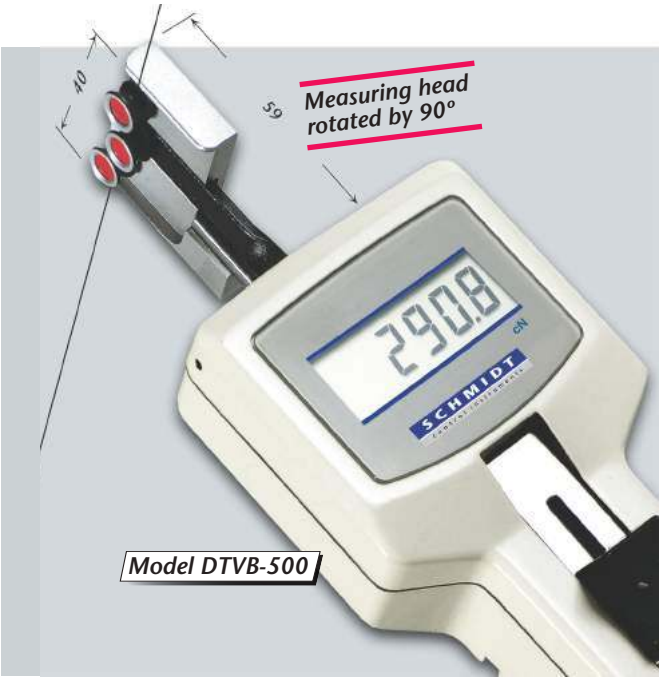
Models DTEB, DTEX, DTVB, DTVX

Available Models

MODEL		Tension Ranges cN	Measuring Head Width X* mm	SCHMIDT Calibration Material**
DTEB-200	**DTEX-200**	2.0 - 200.0	38	PA: 0.12 mm Ø
DTEB-500	**DTEX-500**	5.0 - 500.0	38	PA: 0.20 mm Ø
DTEB-1000	**DTEX-1000**	50 - 1000	36	PA: 0.30 mm Ø
DTEB-2000	**DTEX-2000**	200 - 2000	36	PA: 0.50 mm Ø
DTVB-200	**DTVX-200**	2.0 - 200.0	40	PA: 0.12 mm Ø
DTVB-500	**DTVX-500**	5.0 - 500.0	40	PA: 0.20 mm Ø
DTVB-1000	**DTVX-1000**	50 - 1000	40	PA: 0.30 mm Ø
DTVB-2000	**DTVX-2000**	200 - 2000	40	PA: 0.50 mm Ø

Other units of measure available, such as g.
* *Width of bracket assembly*
** *Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Models DTVB, DTVX



Guide Rollers

→ see page F →

V-grooved	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	900	Hard-coated aluminium
Code K	2000	Hard-coated aluminium

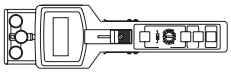
Additional Equipment **Specifications** **same as DTMB or DTMX** *(see page C 7)*

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

Model with tension range + *Code for guide rollers (if not standard)* = *Complete Order No.*

To place an order
please indicate the complete model number, e.g.:

DTEX-2000 + **T** = **DTEX–2000–T**



SCHMIDT control instruments

Special purpose tension meter with large roller diameter and centre distance for minimized material deflection

Special features:

- Large, V-grooved guide rollers, ball-bearing mounted
  DTFB, DTFX: 32 mm Ø
  DTLB, DTLX: 29.5 mm Ø
- Large bending radius assures gentle handling of the material being measured
- Special guides on the bracket assembly permit easy material acquisition
- Apart from that the instruments relate to model DTMB and 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 11)
PA = Polyamide Monofilament
*** Copper wire rope with isolation

Guide Rollers → see page F →

DTFB, DTFX

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminium
Code **T**	4000	Plastic (PVC) red (Same dimensions as standard roller)

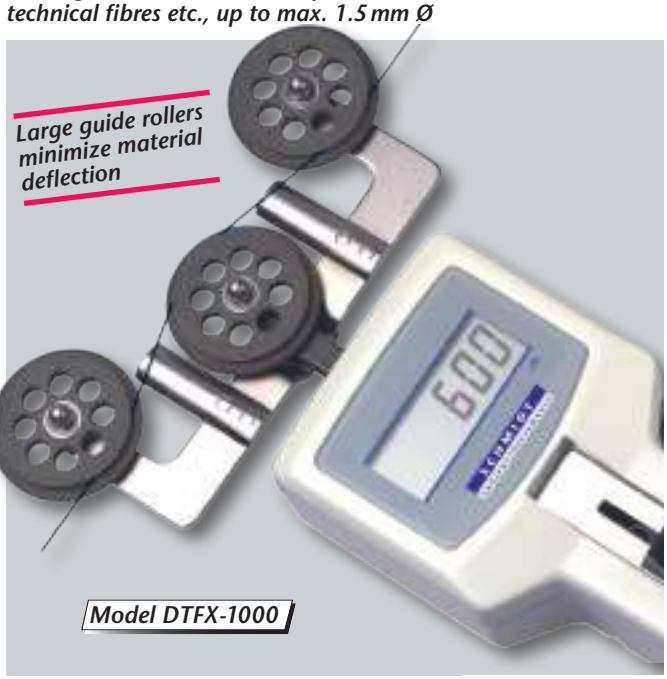
DTLB, DTLX

V-grooved		
Standard	4000	Hardened steel
U-grovved		
Code **R1**	4000	Hard crome-plated steel (radius R 5)

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

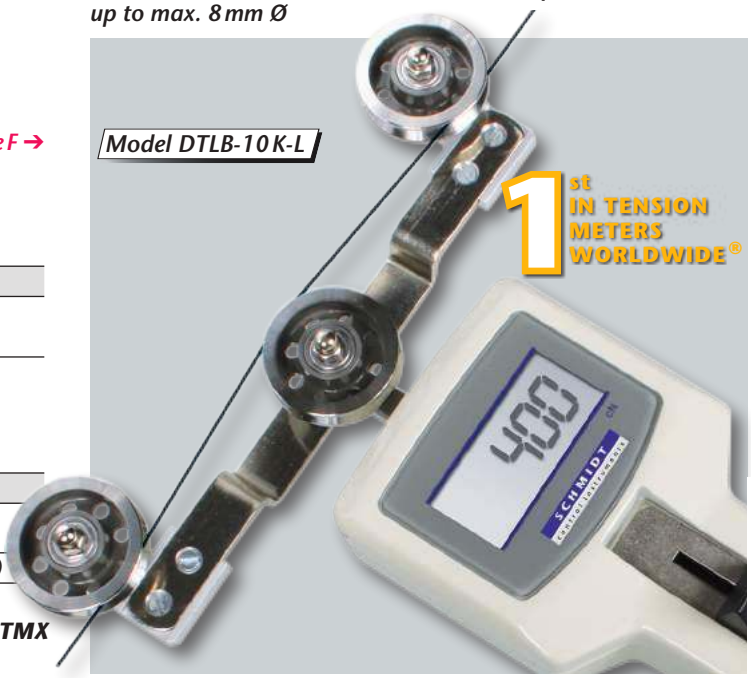
Model DTFB, DTFX

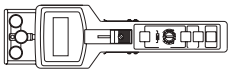
For fragile filaments such as optical fibres, carbon and technical fibres etc., up to max. 1.5 mm Ø



Model DTLB, DTLX

For buffer tubes, cables, fibre strands and ropes, etc., up to max. 8 mm Ø





SCHMIDT control instruments

Models DTBB, DTBX

Special purpose tension meters for measuring all kinds of tapes and bands, such as textile ribbon, films, foils, fiber bunches, etc.

Special features:

- ✚ *Dual-flanged outer guide rollers with various widths, from 7 mm to 30 mm (single-flanged rollers optional)*
- ✚ *Custom-built configurations and special calibrations are available*
- ▮ *Apart from that the instruments relate to model DTMB and DTMX*
  Note: *These models do not include a filament guide and material thickness compensator*

When selecting the instrument for your specific application, please keep in mind that:

1. *Rollers of different widths are not interchangeable by the user*
2. *The roller width should correspond with the width of the material to be measured. Otherwise incorrect measuring results may occur and the instrument may be damaged*

To assist you in selecting the right tension meter for your specific application, please furnish:

– *Kind and dimensions of the material to be measured*
– *Expected tension range*
– *Material sample of about 5 m*

Model DTBB-5000-20
Version with 20 mm tape rollers

Models DTBB, DTBX

Available Models

MODEL	Tension Ranges cN	Measuring Head Width** mm	Roller Widths mm
DTBB-200	2.0 - 200.0	55	7, 10, 15, 20, 30
DTBB-500	5.0 - 500.0	55	7, 10, 15, 20, 30
DTBB-1000	50 - 1000	55	7, 10, 15, 20, 30
DTBB-2000	200 - 2000	55	7, 10, 15, 20, 30
DTBB-2500	250 - 2500	117	7, 10, 15, 20, 30
DTBB-5000	500 - 5000	117	7, 10, 15, 20, 30
DTBB-10K	1.00 - 10.00 daN	117	7, 10, 15, 20
DTBB-20K-L	2.00 - 20.00 daN	217	7, 10, 15
DTBB-50K-L	5.00 - 50.00 daN	217	7, 10
DTBX-200	2.0 - 200.0	55	7, 10, 15, 20, 30
DTBX-500	5.0 - 500.0	55	7, 10, 15, 20, 30
DTBX-1000	50 - 1000	55	7, 10, 15, 20, 30
DTBX-2000	200 - 2000	55	7, 10, 15, 20, 30
DTBX-2500	250 - 2500	117	7, 10, 15, 20, 30
DTBX-5000	500 - 5000	117	7, 10, 15, 20, 30
DTBX-10K	1.00 - 10.00 daN	117	7, 10, 15, 20
DTBX-20K-L	2.00 - 20.00 daN	217	7, 10, 15
DTBX-50K-L	5.00 - 50.00 daN	217	7, 10

Other measuring head widths available on request.
Other units of measure available – g or kg.
* *SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width*
** *Outer distance between outside guide rollers*

Guide Rollers → see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	1000	Hard-coated aluminium (Exception: 7 mm rollers are made of nickel-plated steel)

Other roller materials (nickel-plated steel or plastic), as well as special coatings (anti adhesive or carbon fibres - NAV optimized) are available on request.

Optional Accessories → see page F →

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

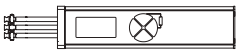
Additional Equipment **Specifications** ***same as DTMB or DTMX*** *(see page C 7)*

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

Model with tension range + *Roller width in mm* + *Code for accessory* = *Complete Order No.*

To place an order please indicate the complete model number, e.g.:

DTBB-10K + **10** + **L** = **DTBB–10K–10–L**

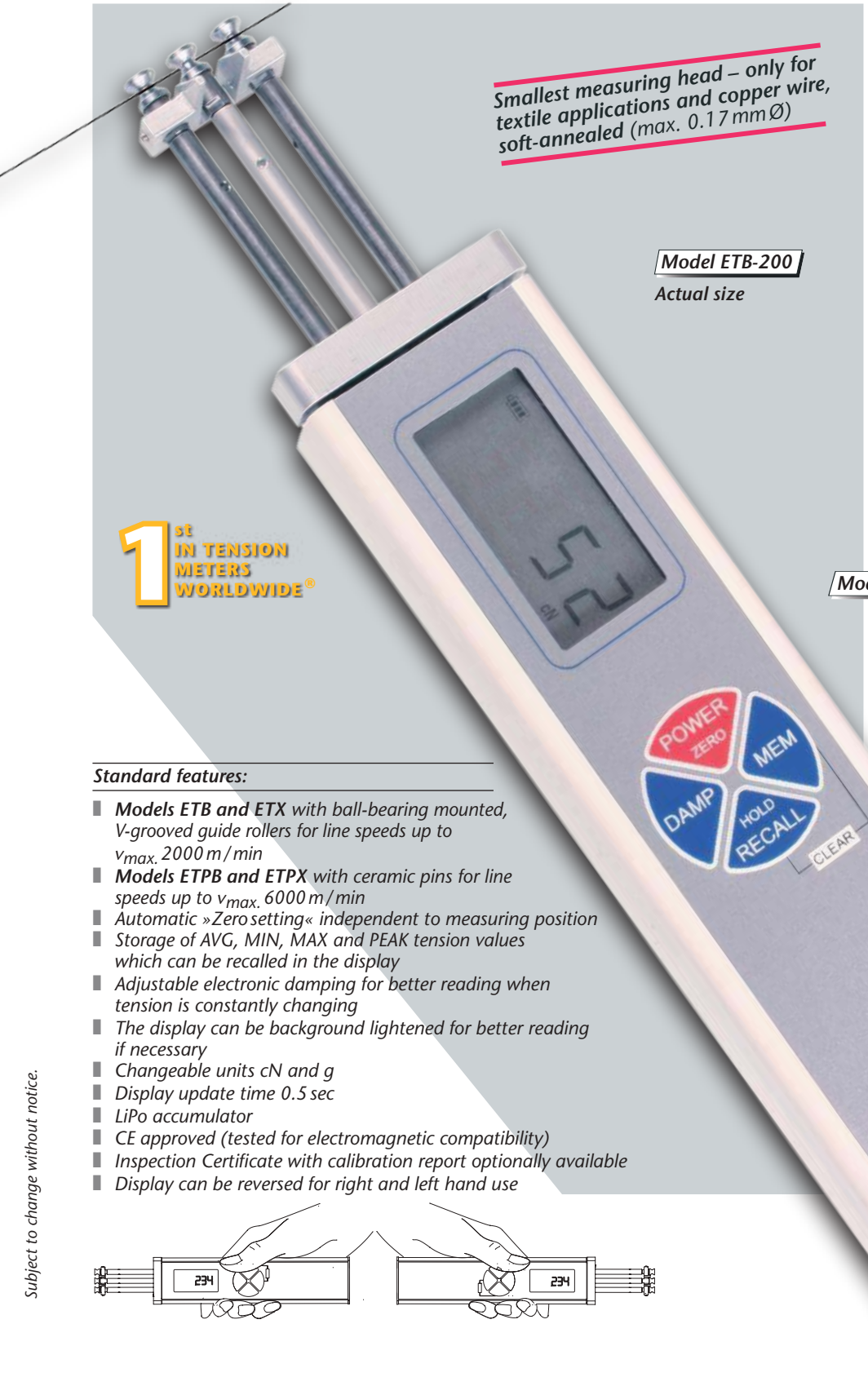


SCHMIDT
control instruments

ET SERIES

3 Tension ranges
from 0.5 - 100 cN to 2 - 500 cN

Electronic tension meters for hard to reach and limited access space applications. Available in two models: ETB (Basic unit) and ETX (with memory and output)



Model ETB-200
Actual size

Special features Models ETX and ETPX

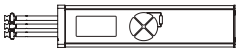
- ✚ *USB interfaces for connection to a PC*
- ✚ *Memory of max. 4000 tension values split up to 255 series of measurements and statistics (Last, AVG, MIN, MAX, MIN_{Peak} and MAX_{Peak})*
- ✚ *4 different memory modes:*
- – ***Mode S:** only statistics*
- – ***Mode L:** statistics plus 10 displayed values of each series of measurements*
- – ***Mode C:** statistics plus 4000 displayed values split up to 255 series*
- – ***Mode F:** as **c** plus higher sampling rate of max. 100 Hz*
- ✚ ***Delivery includes:** tension meter, connecting cable for PC and Software »Tension Inspect 3«*

Models ETPB and ETPX

fig. 1: ***Model ETPB with ceramic pins for line speeds up to $v_{max.}$ 6000 m/min***

Standard features:

- ***Models ETB and ETX** with ball-bearing mounted, V-grooved guide rollers for line speeds up to $v_{max.}$ 2000 m/min*
- ***Models ETPB and ETPX** with ceramic pins for line speeds up to $v_{max.}$ 6000 m/min*
- *Automatic »Zero setting« independent to measuring position*
- *Storage of AVG, MIN, MAX and PEAK tension values which can be recalled in the display*
- *Adjustable electronic damping for better reading when tension is constantly changing*
- *The display can be background lightened for better reading if necessary*
- *Changeable units cN and g*
- *Display update time 0.5 sec*
- *LiPo accumulator*
- *CE approved (tested for electromagnetic compatibility)*
- *Inspection Certificate with calibration report optionally available*
- *Display can be reversed for right and left hand use*



SCHMIDT
control instruments

Model ET

With ball-bearing mounted, V-grooved guide rollers

Available Models

MODEL		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 100 m/min
ETB-100	**ETX-100**	0.5 - 100.0	24	PA: 0.20 mm Ø
ETB-200	**ETX-200**	2 - 200	24	PA: 0.20 mm Ø
ETB-500	**ETX-500**	2 - 500	24	PA: 0.20 mm Ø

* Outer distance between outside guide rollers
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Aluminium hard chromed

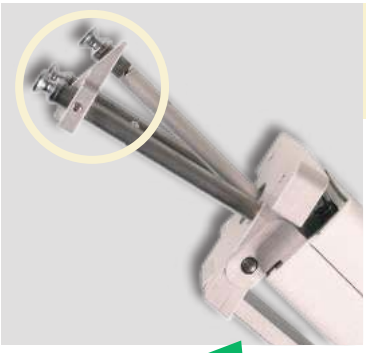
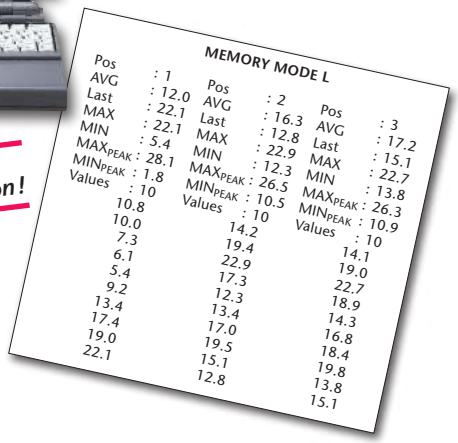


fig. 2:
Filament guide for easy material acquisition of running filaments;

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

fig. 3:
Models ETX and ETPX series can be connected to PC for monitoring or downloading stored data



Please ask for additional information!

Model ETP

With ceramic pins for line speeds up to $v_{max.}$ 6000 m/min

Available Models

MODEL		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 60 m/min
ETPB-100	**ETPX-100**	0.5 - 100.0	22	PA: 0.20 mm Ø
ETPB-200	**ETPX-200**	2 - 200	22	PA: 0.20 mm Ø
ETPB-500	**ETPX-500**	2 - 500	22	PA: 0.20 mm Ø

* Outer distance between outside ceramic pins
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Pins

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Pin Material
V-grooved		
Standard	6000	Aluminium-oxide ceramic

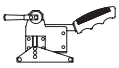
Specifications — **Models ETB, ETPB, ETX, ETPX**

Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 0.5 % FS* und ± 1 Digit typical ± 0.5 % FS*
Units	cN or g
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	200 %
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Signal processing:	Digital, 24 bit A/D converter
Damping:	adjustable electronic damping (Moving averaging)
Sampling rate:	approx. 1 kHz (Internal only)
Display update time:	2 times/sec
Display:	LCD 4 digit, 11 mm high (back-lit)
Memory:	Last, Average, MAX, MIN, MAX_{Peak}, MIN_{Peak}
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	LiPo accumulator (60 h continuous use, charging time 3 ½ h) and mains adapter 100 - 240 V AC, 3 adapters (EU, US, UK)
Housing material:	Aluminium frame profile with plastic outer casing (PVC)
Housing dimensions:	197 x 58 x 47 mm (L x W x H)
Weight, net (gross):	approx. 340 g (1250 g)

* FS = Full Scale

Models ETX and ETPX additional:

Output signal digital:	USB
Memory:	max. 4000 values
Communication frequency:	max. 100 readings/sec



SCHMIDT control instruments

Model KXE

2 Tension ranges from 0.50 - 20.00 daN to 0.5 - 50.0 daN

Tension meter for measuring the tension of warp threads on out of operation and running weaving machines

Special features:

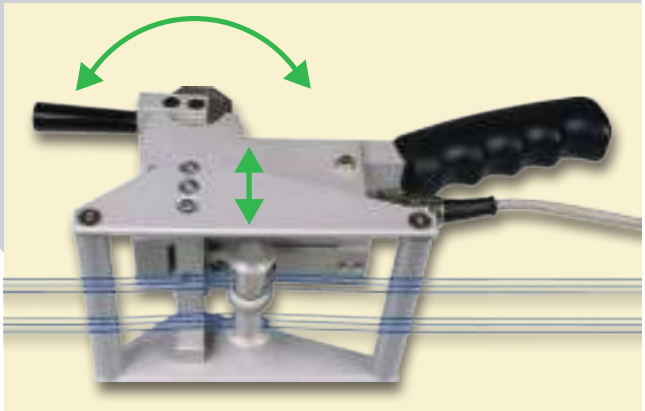
- Portable measuring head with 100 mm roller width to measure yarn groups of 50 mm width
- The sensor can easily be engaged or disengaged also while the machine is running
- Measurements can be made over the total width of the loom
- 4 different memory modes can be selected by the operator
- Storage of AVG, last, MIN, MAX, PEAK-MAX and PEAK-MIN tension values during an operator set measuring period
- Adjustable electronic damping for better reading when tension is constantly changing
- Connection to a PC (USB output) used software »Tension Inspect 3«

Standard features:

- Output signal: digital USB
- LiPo accumulator
- Inspection Certificate with calibration report optionally available
- Apart from that the instrument relates to model ETX

Available Models

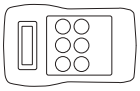
MODEL	Tension Ranges daN	SCHMIDT Calibration Material
KXE-20K	0.50 - 20.00	fabric tape
KXE-50K	0.5 - 50.0	fabric tape



Swivel the lever in direction to the handle to move the measuring roller downwards. Hold the measuring head over the yarn group, so that it runs parallel to the measuring feeler and the support rollers. Shove the measuring roller through the yarn group, turn the measuring head by 90° and swivel the lever forwards, to upward the measuring roller in measuring postition.

Specifications — **Model KXE (measuring head)**

Measuring Rollers:	2 x 22 mm ball bearing mounted rollers total 50 mm
Width of outer rollers:	100 mm, ball bearing mounted
Frame height adjustment:	24 mm
Housing material:	Anodized aluminium
Dimensions frame:	108 x 138 mm
Weight, net:	approx. 1000 g



SCHMIDT control instruments

RTM SERIES

Tension range from 10 - 800 Hz

Belt tension meter (Trummeter) to dertermine the static tension of flat, V and ribbed belts or pretensioned ropes

Special features:

- The readings can be displayed as frequency (Hz) or strand force (N or lbf)
- The belt tension meter includes a display unit as well as a plug in probe for one-hand operation and a probe with cable for limited access space
- Measuring principle: red LED light source to determine vibration in Hz
- Readings unaffected by nearby magnetic fields or noise
- For determinating the spring force in Newton, 2 parameters are needed. Thereby the following restrictions are obtained:
  - free strand length 9.99 m
  - belt mass up to 9.999 kg/m
- Display menu in several user selectable languages
- Manufacturer`s calibration report is included

Standard features:

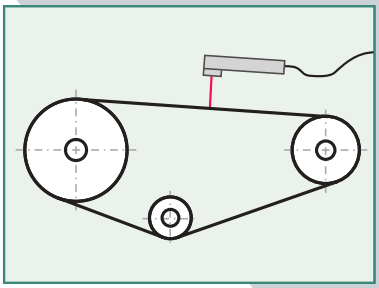
- Battery operated
- Easy and save operation
- Rugged, compact plastic housing
- Microprocessor controlled
- Measurement with highest precision

Available Models

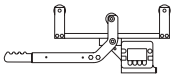
MODEL	Measuring Range cN
RTM-400	10 - 800 Hz

Specifications

Measuring range:	10 - 800 Hz
Indicator error:	± 1 Hz
Total error:	< 5 %
Display:	LCD
Measuring units:	N or lb, Hz
Sensing distance:	3 - 20 mm (recommended)
Temperature ranges:	+ 10 °C up to + 50 °C
Power supply:	9 V battery
Housing:	Plastic (ABS)
Dimensions:	126 x 80 x 37 (LxWxH)
Weight, net (gross):	170 g (660 g)



The instrument measures the natural frequency of a taut belt and displays the frequency in Hertz or tension in Newton. For measuring the non-moving belt must be tapped to oscillate.



SCHMIDT control instruments

Cable tension meter to measure the tension of pretensioned, non-moving ropes, cables, tower guy wires, zip lines, overhead lines, elevator ropes etc. up to 25.4 mm Ø

Model CTM

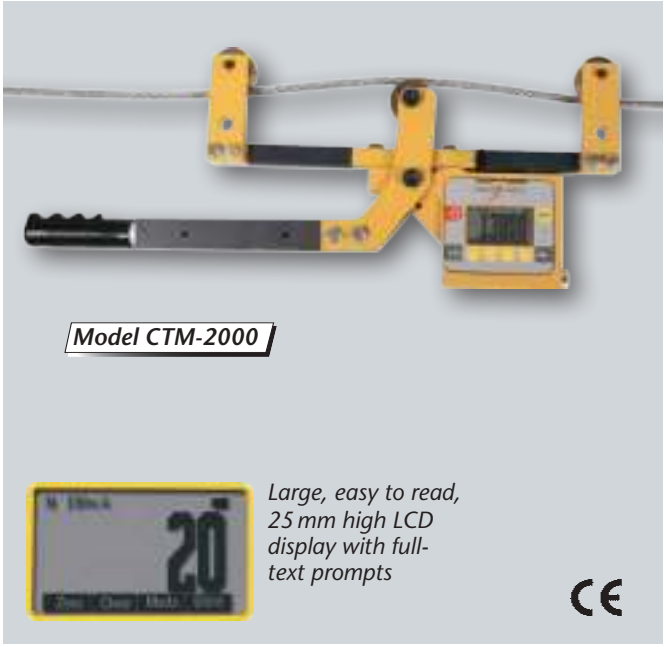
2 Tension ranges up to 9 kN and 45 kN

Special features:

- For rope diameters from 4.75 - 25.4 mm
- Depending to the wire Ø a suitable guide roller must be used
- Changeable units kN, lbf, kgf
- Easy to use - load cell and display integrated in one housing
- The tension reading is quickly shown in the display, no conversion sheets are required
- Large, easy to read LCD display with backlight
- Calibration for one rope is free of charge; up to 20 calibrations of unique wire size and types can be stored
- RS 232 interface for data transfer to PC
- Internal memory. Readings can be transfered to a PC after finishing the work

Standard features:

- Portable and rugged - designed for outdoor use
- For quick checks – easy to use
- CE approved
- Battery operation



Model CTM-2000

Large, easy to read, 25 mm high LCD display with full-text prompts

CE

Available Models

MODEL	Tension Ranges kN	Tension Ranges lbf	Tension Ranges kgf
CTM-2000	9	2000	900
CTM-10000	45	10000	4500

Calibration:

The calibration for one sample is free of charge, more will be charged. For calibration send us product details as kind of material, diameter and construction dimensions. If we do not have the rope ourself available we need 5 m sample wire from you.

Specifications

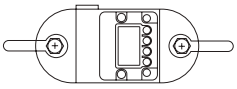
	Model CTM
Measuring range:	up to 45 kN
Accuracy:	± 3 % FS* calibrated to specific wire specimen
Measuring unit:	N, lbf, kgf switchable
Loading error:	Cable elongation of only 2 mm
Material diameter:	4.75 - 25.4 mm
Display:	LCD 25 mm high, full text prompts
Number of calibrations:	Up to 20 calibrations can be stored
Memory	Saves readings for a later data transfer to PC
Output signal:	2 Batteries, size AA
Temperature range:	-20 °C up to +60 °C
Dimensions:	61 x 24 x 8 cm (L x W x H)
Weight, net (gross):	approx. 5.7 kg (approx. 9.5 kg)

*FS = full scale

Guide Rollers

U-grooved	Rope Diameter mm	Rope Diameter inch
CTM-SH-L	4.75 - 6.35	3/16 - 1/4
CTM-SH-P	4.75 - 12.7	3/16 - 1/2
CTM-SH-S	6.35 - 19.05	1/4 - 3/4
CTM-SH-T	12.7 - 25.4	1/2 - 1

Delivery includes one roller set (as requested). Additional roller sets can be ordered optional



SCHMIDT
control instruments

***Dynamometer - Crane Scale** to display the force between 2 attached shackles or to determine tension of pretensioned ropes or a rope with a suspended weight.*

Model EDJunior

4 Tension ranges up to 100 kN

Special features EDJunior:

- *Changeable units N, lbf, kgf*
- *Displays the actuale tension force and saves a peak value*
- *The tension reading is quickly shown in the display*
- *Large, easy to read LCD display with backlight*
- *IP 55 protected*
- *Rugged housing made of NL 2024 aluminium alloy (EDJR-1T, EDJR-2T and EDJR-5T) or E 4340 steel alloy (EDJR-10T)*
- *Manufacturer`s calibration report is included*

Available Models

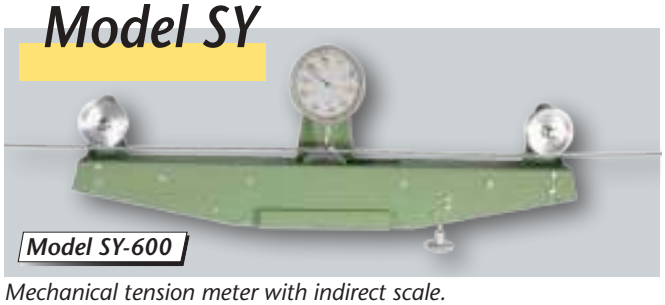
MODEL	Tension Ranges kN	Tension Ranges lbf	Tension Ranges kgf
EDJR-1T	10	2500	1000
EDJR-2T	20	5000	2000
EDJR-5T	50	10000	5000
EDJR-10T	100	25000	10000

Model EDJR-2T

CE

Specifications	***Model EDJunior***
Measuring range:	*up to 100 kN*
Accuracy:	*0.2 % full scale*
Repeatability:	*0.2 % full scale*
Proof Load:	*150 % full scale*
Overload protection:	*200 % full scale*
Display:	*LCD 26 mm high, full text prompts*
Anzeigeintervall:	*2 times / sec*
Power supply:	*2 Batteries, size C*
Temperature range:	*-20° C up to 60° C*

Model SY



Model SY-600

Mechanical tension meter with indirect scale.
For ropes up to 20 mm Ø, max. 3000 kg

Ask for additonal information

Specifications	***Model SY***
Measuring range:	*200 - 1500 kg or 400 - 3000 kg*
Scale diameter:	*100 mm*
Rollers:	*Aluminium, Ø 65 mm*
Housing material:	*Aluminium*

Subject to change without notice.

SCHMIDT
control instruments

Continuous measurement and data logging

Online Tension Measuring Systems

Depending on the application, SCHMIDT online tension sensors can be supplied on it`s own or as part of a complete system:

A Tension System 3-Roller Sensor only

- for use with customer supplied indicators and closed loop control units
  or
- customer must supply regulated DC power source

→ **Customer Signal Processing: for example closed loop control**

0001...0010
0100...1000
0001...0010

Analog output *0-1 V DC (standard)* *0-10 V, 4-20 mA, mV/V (optional)*

Digital output *RS 232, RS 422 or USB (optional)*

Software *(optional equipment):*

»Tension Inspect 3« *(WIN XP and higher)*

The series TS and FS can be used for continuous tension monitoring. The sensor can be connected using RS 232, RS 422 or USB to a PC.
The readings of max. 32 sensors can be transfered as real time values to a PC, displayed and stored as a CSV file using the program „Tension Inspect 3".

Please ask for additional information!

B Complete Tension System 3-Roller Sensor only

- sensor and display unit provide continuous tension readings
- the analog output signal can be used for recording and control purposes

→ **Customer Signal Processing: for example closed loop control**

Analog output *0-10 V DC (standard)*

Digital output *RS 232 or RS 422 (optional)*

0001...0010
0100...1000
0001...0010

We provide the best solution. Please contact our technical department to discuss your applications.

1st IN TENSION METERS WORLDWIDE®

Main Features:

- Real time tension display (tension and time)
- Long time recording using operator set time span
- Adjustable sampling rate
- Analyzing and printing of all stored data with time (graphs and numeric report)

C Tension System 1-Roller Sensor only

- replacing an existing reversing point
- external amplifier with analog outputs
- available with guide roller

→ **Customer Signal Processing: for example closed loop control**

Analog output *0-1 V DC (standard)* *0-10 V DC or* *4-20 mA or* *mV/V (optional)*

SCHMIDT online sensors and indicators:

*For the **continuous measurement** of the running line tensions of threads and yarns, wires, cables, optic and carbon fibers and similar materials, SCHMIDT offers a wide variety of sensors using different guide rollers and frontplate dimensions.*

Measuring principle 3-Roller Tension System:
3-roller measuring system, consisting of two outer guide rollers and a middle measuring roller. The tension of the measured material slightly deflects the measuring roller.
This deflection (up to 0.5 mm) is measured by a load cell.
The built-in amplifier then generates an analog output signal which is proportional to the measured tension.

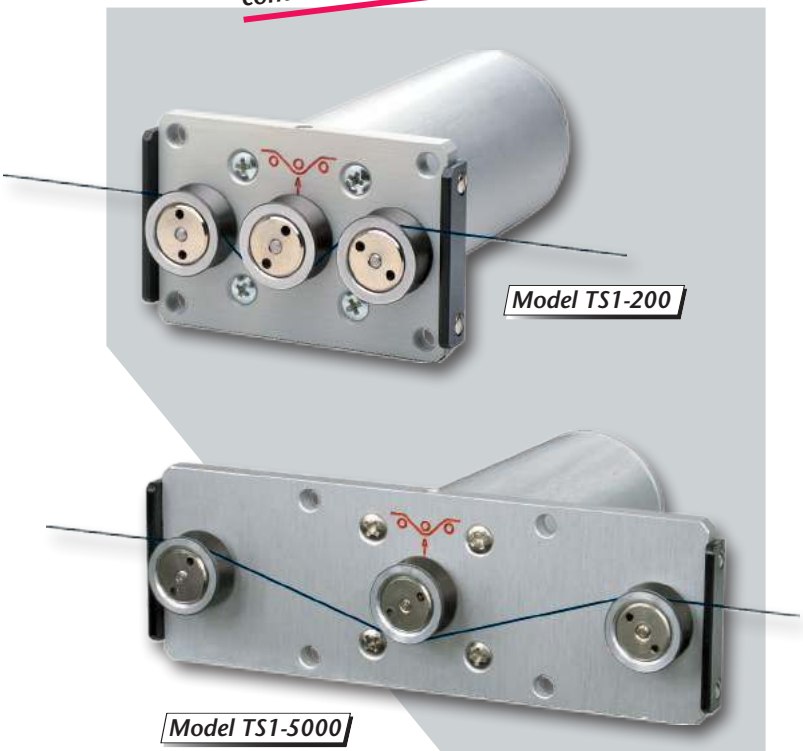
Measuring principle 1-Roller Tension System:
In combination with 2 outer reference guiding points the sensor builds a force triangle. The entry and exit angle must be constant. The sensor uses strain gauges and supplies an output signal in V or mV.

SCHMIDT control instruments

TS SERIES

Sensors for many applications

Universal sensor for continuous measurement



Model TS1-200

Model TS1-5000

Special features:

- ✚ Best accuracy ±1 % FS (Full Scale)
- ✚ Various output signals, analog or digital
- ✚ Mechanical overload protection
- ✚ Easy calibration by operator
- ✚ With or without integrated amplifier
- ✚ Wide variety of custom designed sensors are available

Standard features:

- Ball-bearing mounted, V-grooved guide rollers
- Rugged aluminium housing
- Power supply: + 15 ... 24 V DC (1-phase, regulated)
- Inspection Certificate with calibration report optionally available

Specifications → see page D 14 →

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

Universal online tension sensor for yarns, fibers, thin wires, etc.

Model TS 1

10 Tension ranges from 0 - 50 cN to 0 - 50 daN

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
TS1-50	0 - 50	64	PA: 0.12 mm Ø
TS1-100	0 - 100	64	PA: 0.12 mm Ø
TS1-200	0 - 200	64	PA: 0.12 mm Ø
TS1-500	0 - 500	64	PA: 0.20 mm Ø
TS1-1000	0 - 1000	64	PA: 0.30 mm Ø
TS1-2000	0 - 2000	124	PA: 0.50 mm Ø
TS1-5000	0 - 5000	124	PA: 0.80 mm Ø
TS1-10 K	0 - 10 daN	124	PA: 1.00 mm Ø
TS1-20 K	0 - 20 daN	224	PA: 1.50 mm Ø
TS1-50 K	0 - 50 daN	224	Steel rope 1.50 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available – g or kg.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers → see page F →

	Line Speed Vmax. ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model TS1-100 and higher ranges)
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 CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium*
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord*
U-grooved		
Code U	2000	Hard-coated aluminium*

* Measuring head width 124 mm for Model TS1-500 and higher ranges

Output Signal

Standard	Analog output signal 0 - 1 V DC
Code A2	Analog output signal 0 - 10 V DC
Code A3	Current output signal 4 - 20 mA
Code A10	Analog DMS output mV/without amplifier
Code 232	Output signal digital RS 232, analog 0 - 1 V DC (Communication frequency max. 100 readings/sec)
Code 232H*	Output signal digital RS 232, analog 0 - 1 V DC (Communication frequency max. 500 readings/sec)

* for Model TS1-200 and higher ranges

To place an order please indicate the complete model number, e.g.:

Model with tension range	+	Code for guide rollers (if not standard)	+	Code for output signal / power supply (if not standard)	=	Complete Order No.
TS1-1000	+	**T**	+	**A3**	=	**TS1–1000–T–A3**

SCHMIDT control instruments

Special tension sensors with ceramic pins for yarns and fibers at high speed

Model TSP

4 Tension ranges from 0 - 50 cN to 0 - 500 cN

For line speeds up to $v_{max.}$ 6000 m/min

Model TSP-500

Special features:

- ✚ Non-rotating, exchangeable ceramic pins
- ✚ Suitable only for yarns and fibers
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 300 m/min
TSP-50	0 - 50	64	PA: 0.12 mm Ø
TSP-100	0 - 120	64	PA: 0.12 mm Ø
TSP-200	0 - 200	64	PA: 0.12 mm Ø
TSP-500	0 - 500	64	PA: 0.20 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Pins

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Pin Material
Standard	6000	Aluminium-oxide ceramic 5.2 mm Ø

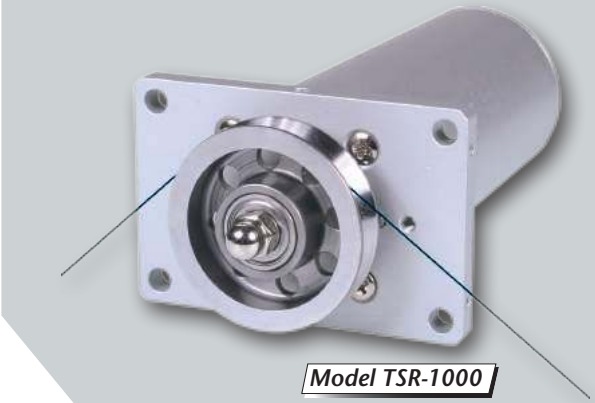
1st IN TENSION METERS WORLDWIDE®

Tension sensor - single roller system - for installation at an existing deviating pully

Model TSR

4 Tension ranges from 0 - 1000 cN to 0 - 20 daN

For thin wires and ropes



Model TSR-1000

Special features:

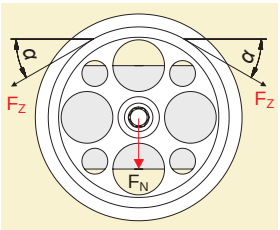
- ✚ Guide rollers 30 or 70 mm Ø, made of aluminium or steel
- ✚ Entry angle and exit angle α_{min} 20° (must be constant)
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Nominal Load N
TSR-10N	0 - 10
TSR-20N	0 - 20
TSR-50N	0 - 50
TSR-100N	0 - 100

Guide Rollers

V-grooved	Line Speed $v_{max.}$ ... m/min	Roller Diameter in mm	Roller Material
Standard	4000	30	Hardened steel
Code F	4000	70	Hard-coated aluminium
Code FB	4000	70	Tempered steel



For determine the tension range, please send us the following information:

- Line tension F_Z
- In- and outcoming angle α
- Mounting position
- Desired guide roller
- Application

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

Output Signal **Power Supply** **Specifications** ***Models TSP and TSR same as Model TS1*** *(see page D 2 and D 14)*

SCHMIDT control instruments

Tension sensor for flexible wire, cable, plastic tubing and other materials up to 8 mm Ø

Model TSH

6 Tension ranges from 0 - 1000 cN to 0 - 50.00 daN

Hardened guide rollers for heavy-duty applications and minimized material deflection

Model TSH-5000

Special features:

- ✚ Guide rollers 30 mm Ø, available with V- or U-groove
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
TSH-1000	0 - 1000	150	PA: 0.30 mm Ø
TSH-2000	0 - 2000	150	PA: 0.50 mm Ø
TSH-5000	0 - 5000	200	PA: 0.80 mm Ø
TSH-10K	0 - 10 daN	200	PA: 1.00 mm Ø
TSH-20K	0 - 20 daN	250	PA: 1.50 mm Ø
TSH-50K	0 - 50 daN	250	Steel rope 1.50 mm Ø (7 x 7 x 0.20)

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel
U-grooved		
Code **R1**	4000	Hard crome-plated steel (radius R 5)
flat		
Code **B6**	2000	Hardened steel, width 6 mm
Code **B10**	2000	Hardened steel, width 10 mm

Tension sensor for wires, ropes and cables up to max. 10 mm Ø

Model TSW

3 Tension ranges from 0 - 20 daN to 0 - 100 daN

Big guide rollers 60 mm Ø, minimizes material deflection

Model TSW-100K

Special features:

- ✚ Guide rollers 60 mm Ø, available with V- or U-groove
- ✚ Depending to the material to be measured the dimensions of the sensor can be modified
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges daN	Measuring Head Width* mm	SCHMIDT Calibration Material*
TSW-20K	0 - 20	550	steel rope 1.5 mm Ø (7 x 7 x 0.25)
TSW-50K	0 - 50	550	steel rope 1.5 mm Ø (6 x 7 x 0.30)
TSW-100K	0 - 100	550	steel rope 1.5 mm Ø (6 x 7 x 0.50)

Other tension ranges available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate

Guide Rollers

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminum max. wire diameter 5 mm
U-grooved		
Code **R2**	2000	Hard-coated aluminum (Radius R 5)
Code **R3**	2000	Hard-coated aluminum (Radius R 8)

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

Output Signal **Power Supply** **Specifications** ***Models TSH and TSW same as Model TS1*** *(see page D 2 and D 14)*

To place an order please indicate the complete model number, e.g.:

Model with tension range	+	Code for guide rollers (if not standard)	+	Code for output signal / power supply (if not standard)	=	Complete Order No.
TSH-1000	+	R1	+	A3	=	TSH–1000–R1–A3

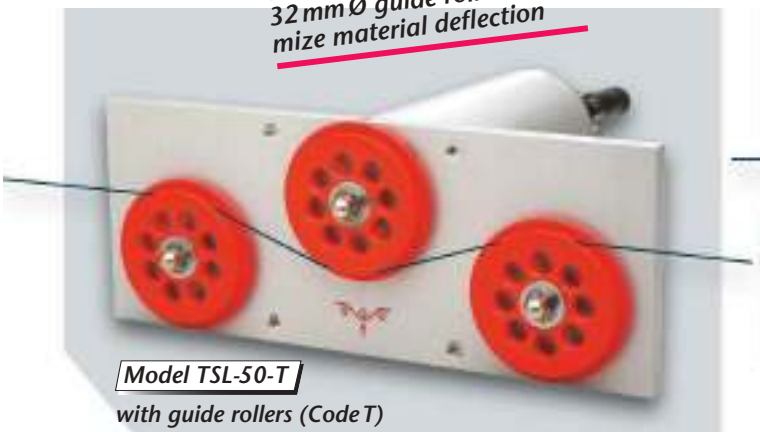
SCHMIDT control instruments

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

Model TSL

5 Tension ranges from 0 - 50 cN to 0 - 1000 cN

32 mm Ø guide rollers minimize material deflection



Model TSL-50-T with guide rollers (Code T)

Special features:

- ✚ Gentle handling of sensitive material during measurement
- ✚ Extremly light weight, low inertia guide rollers
- ✚ Best suitable for low tension ranges
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
TSL-50	0 - 50	150	PA: 0.12 mm Ø
TSL-100	0 - 100	150	PA: 0.12 mm Ø
TSL-200	0 - 200	150	PA: 0.12 mm Ø
TSL-500	0 - 500	150	PA: 0.20 mm Ø
TSL-1000	0 - 1000	150	PA: 0.30 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

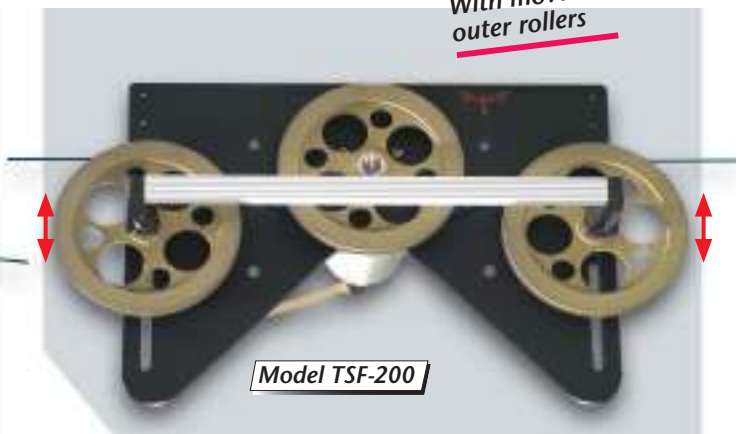
→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminum
U-grooved		
Code T	4000	Plastic (PVC) red (same dimensions as standard roller)

Model TSF

6 Tension ranges from 0 - 100 cN to 0 - 5000 cN

With movable outer rollers



Model TSF-200

Special features:

- ✚ Large bending radius for gentle handling of sensitive material
- ✚ Ball-bearing mounted, V-Grooved guide rollers with 70 mm Ø
- ✚ The outer rollers can be moved downwards to minimize contact in case of non-measurements
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
TSF-100	0 - 100	270	PA: 0.12 mm Ø
TSF-200	0 - 200	270	PA: 0.12 mm Ø
TSF-500	0 - 500	270	PA: 0.20 mm Ø
TSF-1000	0 - 1000	270	PA: 0.30 mm Ø
TSF-2000	0 - 2000	270	PA: 0.50 mm Ø
TSF-5000	0 - 5000	270	PA: 0.80 mm Ø

Other tension ranges available on request.
Other units of measure available, such as g.
* Outer distance between outside guide rollers
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	5000	Hard-coated aluminum

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

Output Signal **Power Supply** **Specifications** ***Models TSL and TSF same as Model TS1*** *(see page D 2 and D 14)*

SCHMIDT control instruments

1st IN TENSION METERS WORLDWIDE®

Online sensors for continuous measuring of low or high tensions of textile ribbons, films, foils, fiber bunches, etc.

Model TSB1

8 Tension ranges from 0 - 100 cN to 0 - 20 daN

Max. width of material to be measured 30 mm

Model TSB1-500-20
Version with 20 mm tape rollers

Special features:

- ✚ Dual-flanged outer guide rollers with various widths, from 7 mm to 30 mm
- ✚ The roller width should correspond with the width of the material to be measured.
- – Apart from that the instrument relates to model TS1

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
TSB1-100	0 - 100	60	7, 10, 15, 20
TSB1-200	0 - 200	60	7, 10, 15, 20
TSB1-500	0 - 500	60	7, 10, 15, 20
TSB1-1000	0 - 1000	60	7, 10, 15, 20, 30
TSB1-2000	0 - 2000	120	7, 10, 15, 20, 30
TSB1-5000	0 - 5000	120	7, 10, 15, 20, 30
TSB1-10K	0 - 10 daN	120	7, 10, 15, 20
TSB1-20K	0 - 20 daN	220	7, 10, 15, 20

Other tension ranges and measuring head widths available on request.
Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outside dimensions of front plate

Model TSB2

8 Tension ranges from 0 - 500 cN to 0 - 100 daN

Cylindrical rollers with special supports for higher tension ranges

Model TSB2-50K-50
Version with 50 mm tape rollers

This model is custom-built to your specific application requirements.

Please submit the following details:
- – Description of application
- – Expected tension range
- – Kind and dimensions of the material to be measured

Available Models

MODEL	Tension Ranges* cN	Roller Widths mm
TSB2-500	0 - 500	20, 30, 36, 41, 50, 100
TSB2-1000	0 - 1000	20, 30, 36, 41, 50, 100
TSB2-2000	0 - 2000	20, 30, 36, 41, 50, 100
TSB2-5000	0 - 5000	20, 30, 36, 41, 50, 100
TSB2-10K	0 - 10 daN	15, 20, 30, 36, 41, 50, 100
TSB2-20K	0 - 20 daN	15, 20, 30, 36, 41, 50, 100
TSB2-50K	0 - 50 daN	15, 20, 30, 36, 41, 50, 100
TSB2-100K	0 - 100 daN	15, 20, 30, 36, 41, 50, 100

Other tension ranges available on request.
Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
Standard	1000	Hard-coated aluminum, 13 mm Ø (Exception: 7 mm rollers are made of nickel-plated steel)

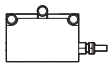
Other roller materials (nickel-plated steel or plastic), as well as special coatings (anti adhesive or carbon fibres - NAV optimized) are available on request.

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

Output Signal **Power Supply** **Specifications** **Models TSB1 and TSB2 same as Model TS1** (see page D 2 and D 14)

To place an order please indicate the complete model number, e.g.:

Model with tension range	+	Code for guide rollers (if not standard)	+	Code for output signal / power supply (if not standard)	=	Complete Order No.
TSB1-1000	+	10	+	A3	=	TSB1–1000–10–A3



SCHMIDT control instruments

MZ SERIES

Online tension sensors for small tensions

Special features:

- ✚ Slim, compact housing, only 18 mm width
- ✚ 2 diferent designs with diffrent material path:
  MAZ Series: gently material path above the 3 rollers
  MBZ Series: material path warpping all 3 rollers
- ✚ Integrated amplifier with various output signals

Standard features:

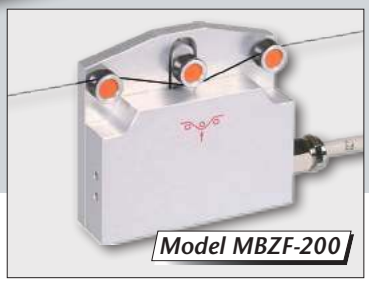
- ▮ Aluminium housing
- ▮ Supplied with a 2 m shield cable

Compact sensor for continuous tension measurement

Model MAZF, MBZF

3 Tension ranges from 0 - 100 cN to 0 - 500 cN

Model MAZF-200
with 7.4 mm Ø guide rollers



Model MBZF-200

Space saving mounting of MZ series by using an optional rail

Tension sensor for yarns, fibers, textile ribbons, very fine wires, films, foils etc.

Model MAZD, MBZD

3 Tension ranges from 0 - 100 cN to 0 - 500 cN

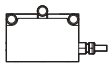
Model MAZD-200
with 12.5 mm Ø guide rollers

Model MBZD-200

Model MBZB

3 Tension ranges from 0 - 100 cN to 0 - 500 cN

Model MBZB-200
with 10 mm tape rollers



SCHMIDT control instruments

Model MAZF, MBZF, MAZD, MBZD

Available Models

MODEL		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
MAZF-100	**MBZF-100**	0 - 100	70	PA: 0.12 mm Ø
MAZF-200	**MBZF-200**	0 - 200	70	PA: 0.12 mm Ø
MAZF-500	**MBZF-500**	0 - 500	70	PA: 0.20 mm Ø
MAZD-100	**MBZD-100**	0 - 100	70	PA: 0.12 mm Ø
MAZD-200	**MBZD-200**	0 - 200	70	PA: 0.12 mm Ø
MAZD-500	**MBZD-500**	0 - 500	70	PA: 0.20 mm Ø

Other units of measure available – g.
* Outside dimensions of the housing
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Model MBZB

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
MBZB-100	0 - 100	70	7, 10
MBZB-200	0 - 200	70	7, 10
MBZB-500	0 - 500	70	7, 10

Other units of measure available – g.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outside dimensions of the housing

Output Signal

Standard	Analog output signal 0 - 1 V DC
Code A2	Analog output signal 0 - 10 V DC
Code A10	Analog DMS output signal mV / V without amplifier

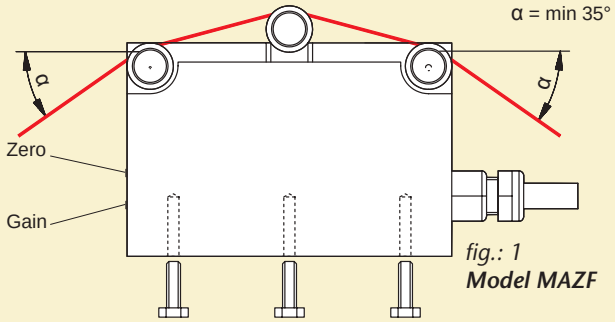


fig.: 1
Model MAZF

Guide Rollers

→ see page F →

Model MAZF, MBZF

	Line Speed Vmax. ... m / min	Roller Material
V-grooved		
Standard	900	Hard-coated aluminium
Code K	2000	Hard-coated aluminium

Model MAZD, MBZD

V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium

Model MBZB

Standard	1000	Hard-coated aluminium (Exception: 7 mm rollers are made of nickel-plated steel)

Other roller materials (nickel-plated steel or plastic), as well as special coatings (anti-adhesive or carbon fibres - NAV optimized) are available on request.

1st IN TENSION METERS WORLDWIDE®

Compact sensor for continuous tension measurement

Specifications

Calibration:	SCHMIDT factory procedure
Accuracy:	± 2 % full scale (FS) and ± 1 Digit Other calibration material: ± 3 % full scale (FS) or better
Overload protection:	100 % of tension range
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	max. 0.5 mm
Signal processing:	analog
Output signal:	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC, mV/V
Output:	Shielded cable (2 m) with bare leads
Damping (f_G):	Standard (analog): 30 Hz
Temperature drift:	better ± 0.05 % FS/°C
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	+ 15 ... 24 V DC, 21 mA (regulated); Code A10: max. + 5 V, max. 20 mA
Housing material:	Aluminium
Housing dimensions	70 x 55 x 17 mm (L x W x H)
Weight, net:	Approx. 100 g

To place an order
please indicate the complete model number, e.g.:

Model with tension range	+	Code for guide rollers (if not standard)	+	Code for output signal / power supply (if not standard)	=	Complete Order No.
MAZF-500	+	**K**	+	**A2**	=	**MAZF–500–K–A2**

SCHMIDT control instruments

FS SERIES

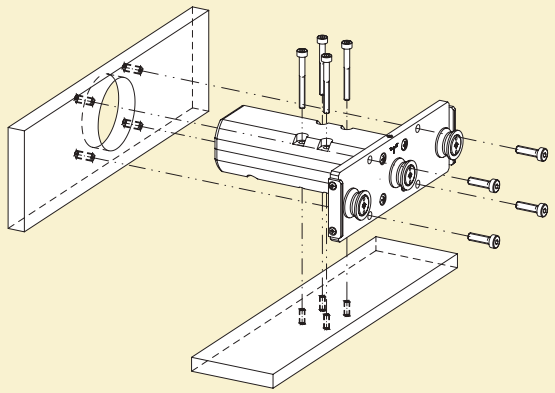
Economic sensor
for many applications

Universal sensor for continuous measurements

Model FS1-50

Special features:

- Accuracy ±1.5 % full scale or better
- Output signal: analog (voltage or current)
  digital (USB, RS 232, RS 422)
- Mechanical overload protection
- Easy calibration by operator
- Universal mounting possibility - easy to install housing, mounting or cylindrical hole mounting



Standard features:

- Ball-bearing mounted, V-grooved guide rollers
- Rugged aluminium housing
- Power supply: + 15 ... 24 V DC (1-phase, regulated)
- Inspection Certificate with calibration report optionally available

Specifications → see page D 14 →

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

Tension sensor for yarns, fibers and thin ropes

Model FS 1

10 Tension ranges from 0 - 50 cN to 0 - 50 daN

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
FS 1-50	0 - 50	64	PA: 0.12 mm Ø
FS 1-100	0 - 100	64	PA: 0.12 mm Ø
FS 1-200	0 - 200	64	PA: 0.12 mm Ø
FS 1-500	0 - 500	64	PA: 0.20 mm Ø
FS 1-1000	0 - 1000	64	PA: 0.30 mm Ø
FS 1-2000	0 - 2000	124	PA: 0.50 mm Ø
FS 1-5000	0 - 5000	124	PA: 0.80 mm Ø
FS 1-10 K	0 - 10 daN	124	PA: 1.00 mm Ø
FS 1-20 K	0 - 20 daN	224	PA: 1.50 mm Ø
FS 1-50 K	0 - 50 daN	224	Steel rope 1.50 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available – g or kg.
** Outside dimensions of front plate*
*** Suitable for 95 % of applications (see also chart on page 11)*
PA = Polyamide Monofilament

Guide Rollers → see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model FS 1-100 and higher ranges)
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 2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium*
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord*
U-grooved		
Code U	2000	Hard-coated aluminium*

** Measuring Head Width 124 mm for Model FS 1-500 and higher ranges*

Output Signal

Standard	Analog output signal 0 - 1 V DC
Code A 2	Analog output signal 0 - 10 V DC
Code A 3	Current output signal 4 - 20 mA
Code 422*	Output signal digital RS 422
Code USB*	Output signal digital USB
Code 232*	Output signal digital RS 232

**more Information see page D 12*

SCHMIDT control instruments

Special tension sensor with ceramic pins for yarns and fibers at high speed

Model FSP

5 Tension ranges from 0 - 50 cN to 0 - 1000 cN

For line speeds up to $v_{max.}$ 6000 m/min

Model FSP-200

Special features:

- ✚ Non-rotating, exchangeable ceramic pins
- ✚ Suitable only for yarns and fibers
- – Apart from that the instrument relates to FS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 300 m/min
FSP-50	0 - 50	64	PA: 0.12 mm Ø
FSP-100	0 - 100	64	PA: 0.12 mm Ø
FSP-200	0 - 200	64	PA: 0.12 mm Ø
FSP-500	0 - 500	64	PA: 0.20 mm Ø
FSP-1000	0 - 1000	64	PA: 0.30 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Pins

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Pin Material
Standard	6000	Aluminium-oxide ceramic 5.2 mm Ø

1st IN TENSION METERS WORLDWIDE®

Tension sensor for flexible wire, cable, plastic tubing and other materials up to 8 mm Ø

Model FSH

6 Tension ranges from 0 - 1000 cN to 0 - 50.00 daN

Hardened guide rollers for heavy-duty applications and minimized material deflection

Model FSH-5000

Special features:

- ✚ Guide rollers 30 mm Ø, available with V- or U-groove
- ✚ For custom designs contact our technical department.
- – Apart from that the instrument relates to FS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
FSH-1000	0 - 1000	150	PA: 0.30 mm Ø
FSH-2000	0 - 2000	150	PA: 0.50 mm Ø
FSH-5000	0 - 5000	200	PA: 0.80 mm Ø
FSH-10 K	0 - 10 daN	200	PA: 1.00 mm Ø
FSH-20 K	0 - 20 daN	250	PA: 1.50 mm Ø
FSH-50 K	0 - 50 daN	250	Steel rope 1.50 mm Ø (7 x 7 x 0.20)

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel
U-grooved		
Code **R 1**	4000	Hard crome-plated steel (radius R 5)
flat		
Code **B6**	2000	Hardened steel, width 6 mm
Code **B10**	2000	Hardened steel, width 10 mm

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

Output Signal **Power Supply** **Specifications** ***Models FSP and FSH same as Model FS1*** *(see page D 9 and D 14)*

To place an order please indicate the complete model number, e.g.:

Model with tension range		Code for guide rollers (if not standard)		Code for output signal / power supply (if not standard)		Complete Order No.
FSH-1000	+	**U**	+	**A 3**	=	**FSH–1000–U–A3**

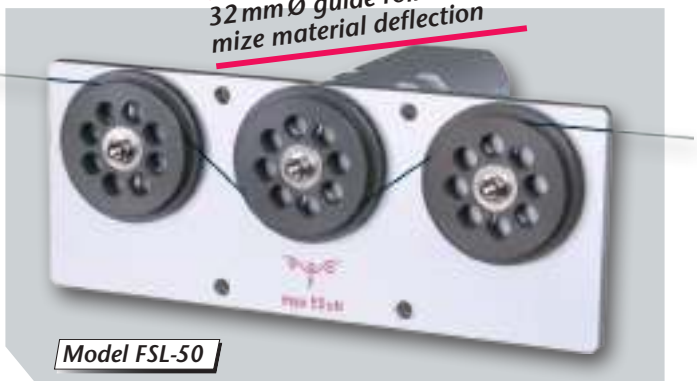
SCHMIDT control instruments

Tension sensor for minimize bending of materials like fiber optics, carbon and technical fibers

Model FSL

5 Tension ranges from 0 - 50 cN to 0 - 1000 cN

32 mm Ø guide rollers minimize material deflection



Model FSL-50

Special features:

- ✚ Gentle handling of sensitive material during measurement
- ✚ Extremly light weight, low inertia guide rollers
- ✚ Best suitable for low tension ranges
- – Apart from that the instrument relates to model FS1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
FSL-50	0 - 50	150	PA: 0.12 mm Ø
FSL-100	0 - 100	150	PA: 0.12 mm Ø
FSL-200	0 - 200	150	PA: 0.12 mm Ø
FSL-500	0 - 500	150	PA: 0.20 mm Ø
FSL-1000	0 - 1000	150	PA: 0.30 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

	Line Speed vmax. ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminum
Code T	4000	Plastic (PVC) red (same dimensions as standard roller)

→ see page F →

Tension sensor for textile ribbons, films, foils, fiber bunches, etc.

Model FSB1

8 Tension ranges from 0 - 100 cN to 0 - 20 daN

Max. width of material to be measured 30 mm

Model FSB1-500-20
Version with 20 mm tape rollers

Special features:

- ✚ Dual-flanged outer guide rollers with various widths, from 7 mm to 30 mm
- ✚ The roller width should correspond with the width of the material to be measured.
- – Apart from that the instrument relates to model FS1

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
FSB1-100	0 - 100	60	7, 10, 15, 20
FSB1-200	0 - 200	60	7, 10, 15, 20
FSB1-500	0 - 500	60	7, 10, 15, 20
FSB1-1000	0 - 1000	60	7, 10, 15, 20, 30
FSB1-2000	0 - 2000	120	7, 10, 15, 20, 30
FSB1-5000	0 - 5000	120	7, 10, 15, 20, 30
FSB1-10K	0 - 10 daN	120	7, 10, 15, 20
FSB1-20K	0 - 20 daN	220	7, 10, 15, 20

Other tension ranges and measuring head widths available on request.
Other units of measure available – g or kg.
* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width
** Outside dimensions of front plate

Guide Rollers

	Line Speed vmax. ... m/min	Roller Material
Standard	1000	Hard-coated aluminum, 13 mm Ø (Exception: 7 mm rollers are made of nickel-plated steel)

→ see page F →

Other roller materials (nickel-plated steel or plastic), as well as special coatings (ceramic, anti adhesive or carbon fibres - NAV optimized) are available on request.

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

Output Signal **Power Supply** **Specifications** ***Models FSL and FSB1 same as Model FS1*** *(see page D 9 and D 14)*

SCHMIDT control instruments

Model FS-Digital

Digital output for all sensors of series FS

Special features Code USB:

- USB output, max. 500 readings/sec
- Output plug: socket USB typ B
- No external power supply is required

Special features Code 232:

- RS 232 output, max. 200 readings/sec
- Output plug: socket Sub D9
- External power supply + 15 ... 24 V DC required

Special features Code 422:

- RS 422 output, communication frequency depending to the number of sensors connected, max. 200 readings/sec
- To connect several sensors to a PC or one sensor over a long distance (max. 1000 m)
- Up to 32 sensors with different design and range can be connected in series
- Individual addressing of each sensor
- Calibration by operator, analog adjustment
- Control lamp shows readiness of working
- External power supply + 15 ... 24 V DC required

Special features software »Tension Inspect 3«:

- Readings in real time (Tension in dependency of time)
- Diagramm-zooming function
- Readings can be stored as CSV file
- HTML report

Requirement: „XP" and higher, processor Intel „Atom" or better

The digital output is available for all models for series FS:
e. g. FS1-1000-422, FSH-5000-USB, FSL-200-232

Model FSL-200-422

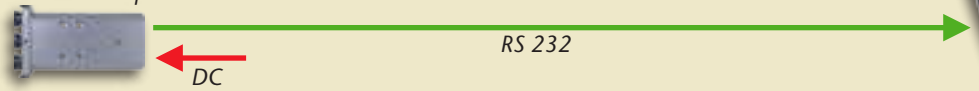
Output FS-422: 2 x RJ45

Bigger housing than model FS

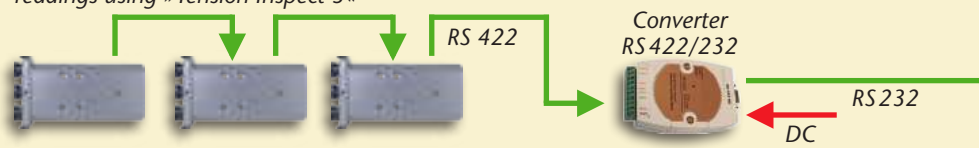
WiFi (optional)

A FS-USB: Connection to a PC using USB output, display and storage of readings using »Tension Inspect 3«

B FS-232: Connection to a PC using RS 232, display and storage of readings using »Tension Inspect 3«



C FS-422: Connecting up to 32 sensors in series to a PC using RS 422 output, display and storage of readings using »Tension Inspect 3«



Model with tension range | Code for guide rollers (if not standard) | Code for output signal / power supply (if not standard) | Complete Order No.

To place an order
please indicate the complete model number, e.g.:

FSL-500	+	T	+	USB	=	FSL-500-T-USB

SCHMIDT control instruments

SC SERIES

Tension indicator with data analysis for one sensor

SCHMIDT indicators are available for all SCHMIDT tension sensors.

SC Series Standard features

- *For sensors with output signal 0 - 1 -V*
- *For sensors <u>without</u> amplifier the special designed display unit SC-PMD with integrated amplifier can be used*
- *Connection for one sensor*
- *Power supply for connected sensor*
- *Sensor calibration adjustment (Zero and Gain)*
- *Analog output 0 - 10 V DC*
- *Dotmatrix LCD display*
- *User-set damping for output signal and display*
- *Software »Tension Inspect 3« for displaying and saving readings on a PC (optional)*
- *CE certified with sensor connected*

Wifi

Special model for max. 4 sensors

Ask for additional information

CE

Model SC-PM

Special features:

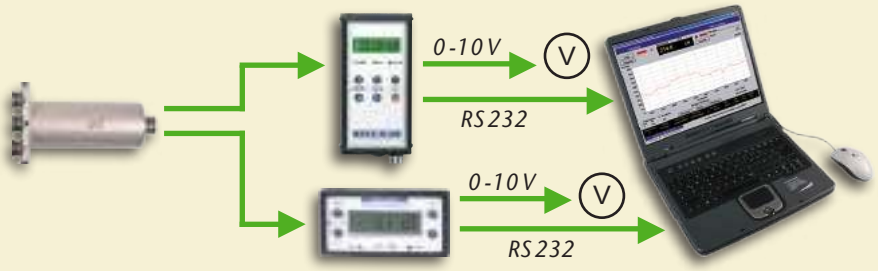
- ✚ *Panel-mount digital display*
- ✚ *Output 0 - 10 V analog (option: RS232, RS422 or current)*
- ✚ *MIN and MAX limits with color-coded indicators and open collector*
- ✚ *Calibration for 3 different materials can be saved*

Model SCD-1

Special features:

- ✚ *Desktop indicator*
- ✚ *Output 0 - 10 V analog, RS 232 digital,*
- ✚ *MIN- MAX-limits with color-coded indicators and open collector output*
- ✚ *Power supply through seperate AC adapter*

Connecting example of indicators for displaying and saving the readings on a PC



Model SCV-1

Strain gauge amplifier for sensor without integrated amplifier

CE

Special features:

- ✚ *Connection for one Sensor*
- ✚ *DIN-Rail housing (17.5 mm) for convenient snap-in installation*
- ✚ *Output signal: 0 - 1 V DC (optional 0 - 10 V DC or 4 - 20 mA)*
- ✚ *Sensor calibration adjustment (zero and gain)*
- ✚ *CE certified with sensor connected*

Output Signal

Standard	*Analog output 0 - 1 V DC*
Code A 2	*Analog output 0 - 10 V DC*
Code A 3	*Current output 4 - 20 mA*

Specifications → *see page D 14* →

Connection of strain gauge amplifier

SCHMIDT control instruments

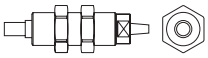
Online Sensors

Specifications	TS SERIES	FS SERIES
Calibration:	According to SCHMIDT factory procedure	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale and ± digit or Other calibration material: ± 3 % FS* or better	±1.5 % full scale and ± digit or Other calibration material: ± 3 % FS* or better
Overload protection:	100 % of range	100 % of range
Measuring principle:	Strain gauge bridge	Strain gauge bridge
Meas. roller deflection:	0.5 mm max.	0.5 mm max.
Signal processing:	Analog (Option: digital)	Analog (Option: digital)
Output signal:	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC, 4 - 20 mA, mV/V (analog) Option: RS 232 (digital)	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC, 4 - 20 mA (analog) Option: USB, RS 422 (digital)
Output plug:	Female diode plug bayonet cap	Female M9 sub-miniatur connector
Damping (f_g):	Standard: 30 Hz (other values on request)	Standard: 30 Hz (other values on request)
Temperature drift:	Less than ± 0.05 % FS*/°C	Less than ± 0.05 % FS*/°C
Temperature range:	10 - 45 °C	10 - 45 °C
Air humidity:	85 % RH, max.	85 % RH, max.
Power supply:	+ 15 ... 24 V DC, 21 mA (regulated); max. 50 mA for Code 232: 40 mA, Code 232H: 60 mA Code A10: max. + 5 V DC, max. 20 mA	+ 15 ... 24 V DC, 21 mA (regulated); Code A3: 50 mA, Code 422: 50 mA, Code 232: 40 mA
Housing material:	Aluminium	Aluminium
Weight, net (gross):	up to TS1-1000 approx. 250 g (400 g) TS1-2000 - TS1-10K approx. 280 g (430 g) TS1-20K and TS1-50K approx. 330 g (500 g)	Up to FS1-1000 approx. 250 g (350 g) FS1-2000 to FS1-10K approx. 280 g (380 g) FS1-20K and FS1-50K approx. 330 g (500 g) Up to FS1-1000-422 approx. 350 g (450 g) FS1-2000-422 to FS1-10K-422 approx. 400 g (500 g) FS1-20K-422 to FS1-50K-422 approx. 470 g (630 g)
Delivery includes:**	Tension Sensor with transport packaging	Tension Sensor with transport packaging

* FS = Full Scale; **plug and cable are not included

Display Units

Specifications	SC-PM	SC-PMD	SCD-1	SCV-1
Digital display:	8 digit LCD with user-set tension range		8 digit LCD with user-set tension range	
Height of digit:	12mm height of digit:		12 mm	
Units of measure:	cN, daN, g or kg, depending on range		cN, daN, g or kg, selectable	
Damping (f_g):	Electronic adjustable		Electronic adjustable	
Output signal:	0 - 10 V DC (option: RS 232, RS 422, 4 - 20 mA)		0 - 10 V DC, RS 232	0 - 1 V DC Option: 0 - 10 V DC, 4 - 20 mA
Amplifier integrated:	no	yes	no	yes
Input signal:	0 - 1 V DC	mV/V	0 - 1 V DC	mV/V
Exit hub:	Terminal strip		2 x Mini-DIN (PS 2)	Terminal strip
Power supply sensor:	Yes		Yes	no
Power supply:	15 ... 24 V DC, 100 mA		15 ... 24 V DC, 100 mA	15 ... 24 V DC, 50 mA
AC adapter:			External 100 - 240 V AC, 50 - 60 Hz, with 3 adapters (EU/USA/UK)	
Alarm output:	30 V DC, 20 mA, open collector		30 V DC, 20 mA, 2 x open collectors	
Housing:	Plastic		Aluminium (with wall mounting facility)	Plastic
Dimensions (L x W x H):	120 x 95 x 48 mm		182 x 85 x 34 mm	90 x 56 x 18 mm
Cutout required:	92 x 44 mm			DIN top hat rail box
Weight, net (gross):	Approx. 300 g (1000 g)		Approx. 300 g (1000 g)	Approx. 53 g



SCHMIDT control instruments

Series SF

Different tension ranges up to max. 2000 N

Special features:

- Precision DMS sensor with best accuracy
- High overload protection
- Direct, axial force application
- The adjustable axial mounting depth enables an acurate positioning of the guide roller
- Rugged, stainless steel housing
- Output signal mV/V without integrated amplifier
- Supplied with a 5 m shielded cable with bare leads, optional available with plug connection
- Required power supply max. + 10 V DC regulated
- Easy mounting of SCHMIDT rollers or customer provided rollers
- Special design for explosive areas on request

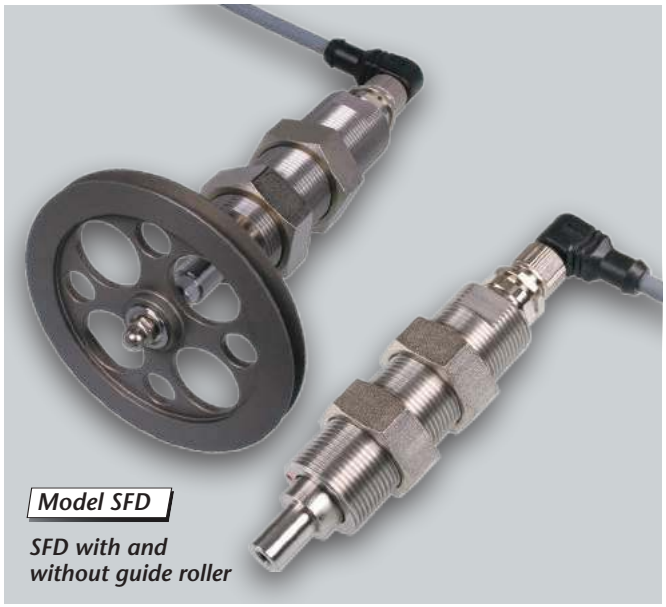
Tension indicator and amplifier see page D 13

Model SFD

6 tension ranges from 0 - 10 N up to 500 N

Special features:

- Threded housing with lock-nuts permits easy mounting and simple alignment at a deviating point
- 10 times overload protection, max. 2000 N
- Two mounting screws wrench size 32
- Axle journal with Ø 10 mm for guide rollers
- IP 54 protected



Model SFD

SFD with and without guide roller

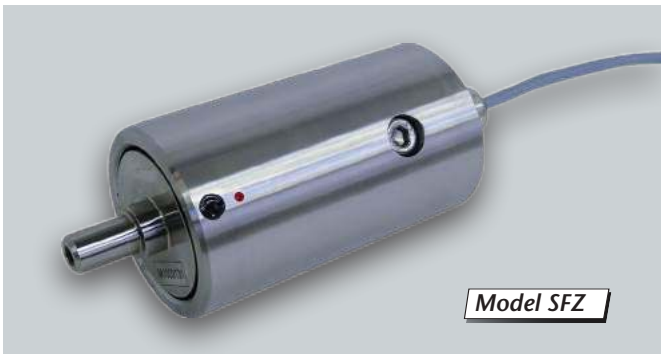
Tension sensor - single roller system - for installation at an existing deviating pully

Model SFZ

8 tension ranges from 0 - 25 N up to 630 N

Special features:

- Easy mounting by using a mounting hole (Ø 50 mm)
- 10 times overload protection, max. 3200 N
- Axle journal with Ø 10 mm for guide rollers (15 and 17 mm optional)
- Different mounting devices optional available
- IP 67 protected, optional IP 54



Model SFZ

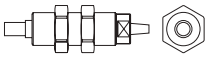
Model SFK

8 tension ranges from 0 - 10 N up to 2000 N

Special features:

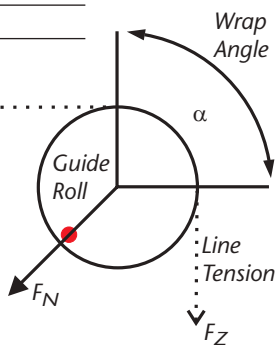
- Easy mounting by using a mounting hole (Ø 30 mm)
- 10 times overload protection, max. 2000 N
- Axle journal with Ø 10 mm for guide rollers (15 and 17 mm optional)
- Clamping device SFK-KV optional available
- IP 52 protected

Model SFK



SCHMIDT control instruments

Calculation of the tension range:



α Wrap Angle	Resultant Force Multiplier
30°	0.5 x (Line Tension)
60°	1.0 x (Line Tension
90°	1.4 x (Line Tension)
180°	2.0 x (Line Tension)

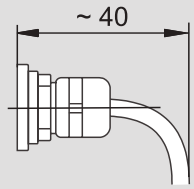
F_N = Multiplier x F_Z

Recommended wrapping angle 20 ... 180°

Available Models

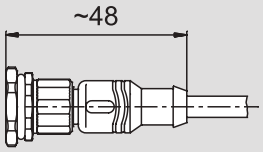
MODEL	Nominal Force N	MODEL	Nominal Force N	MODEL	Nominal Force N
SFZ-10	10	**SFK-25**	25	**SFD-10**	10
SFZ-20	20	**SFK-40**	40	**SFD-20**	20
SFZ-50	50	**SFK-63**	63	**SFD-50**	50
SFZ-100	100	**SFK-100**	100	**SFD-100**	100
SFZ-200	200	**SFK-160**	160	**SFD-200**	200
SFZ-500	500	**SFK-250**	250	**SFD-500**	500
SFZ-1000	1000	**SFK-400**	400		
SFZ-2000	2000	**SFK-630**	630		

Cable Connection



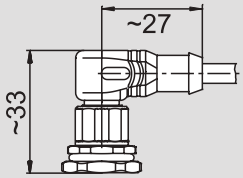
Code T (Standard)

Axial output with screwed cable gland and open ends. Cable length 5 m



Code N2

Axial output with straight plug connection M12 and open ends. Cable length 5 m



Code S2

Axial output with right-angled plug connection M12 and open ends. Cable length 5 m

Axle Journal

	Axle Ø in mm	Suitable Bearing
A (Standard)	10 f7	6000 / 6300
B	15 f7	6002 / 6302 (only SFZ and SFK)
C	17 f7	6003 / 6303 (only SFZ and SFK)

Options

Code R	A radial output in combination with Code T, N2, and S2 is optional available for model SFZ and SFK
Code P	Model with less protection class IP 54 (only SFZ)

The sensor can be mounted at an existing deviating point. It is important that the entry angle and exit angle is constant.

Specifications

	Model SFZ	Model SFD	Model SFK
Accuracy:	0.5 % full scale or better		
Overload protection:	10 times (max. 3200 N)	10 times (max. 2000 N)	10 times (max. 2000 N)
Max. operation force:	160 % of nominal load, overload protection afterwards		
Max. lateral force:	max. 100 % of nominal load		
Output signal:	up to 20 N: 1 mV/V from 50 N: 1.5 mV/V	1 mV/V	1.5 mV/V
Power supply:	max. + 10 V DC, regulated	max. + 10 V DC, regulated	max. + 10 V DC, regulated
Temperature range:	-10 ... + 70° C	-10 ... + 70° C	-10 ... + 70° C
Bridge resistor:	700 Ω	350 Ω	350 Ω

see www.hans-schmidt.com

Model with tension range | Axle journal | Cable connection/ Options | Complete Order No.

To place a order:
please indicate the complete model number e.g.

SFZ-50 + **A** + **N2** = **SFZ-50-A-N2**

SCHMIDT control instruments

If our standard instruments cannot be used we try to modify our standard models according your demand profile. Please inform us about your application requirements.

Tension Meter for hand-held use

Model DX2
With splash water protector, as far as possible nickel-plated components are used

Model DX2
With extension handle and ceramic pins to reach critical measuring positions

Model DX2
With extended measuring head for difficult to reach measuring positions

Model ET
With small guide rollers for special material path

Model DXX
With big rollers and high range up to 80 daN using a unique rope catching system

Model DXR
With small, both-sided ball bearing mounted rollers for high tensions up to 50 daN

Model DTMB
With extended measuring feeler for difficult to reach measuring positions

Model DTBB
Equipped with tape rollers with big flanges for better material control

Tension Meter for online use

Model TSB1
With wide special guide rollers made of stainless steel

Model TS1
Sensor with non-rotating ceramic pin and outside rollers, as well as fiber guide plates

Model TSF
Tape roller with big Ø for fragile materials to be measured, as fiber optics or glass fiber strands

Model TSB
1-roller-system with anti adhesive coating, e. g. scotch tape foils

Model TSB2
Crank handle to open or close the sensor, as well as non-rotating ceramic tape roller

Model TSH
Special designed guide rollers with special coating for carbon fibers CFK

Model TS1
with additional guide roller to prevent the wire to jump of the roller

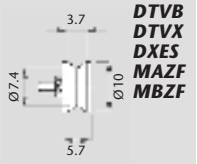
Model TSB2
With non-rotating ceramic pins for cellulose acetat

SCHMIDT control instruments

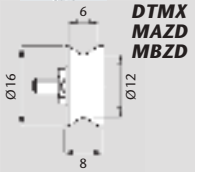
SCHMIDT Guide Roller Dimensions

Standard *All dimensions are given in mm*

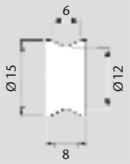
Standard Model
ZF2 DXE DXV ZEF DTEB DTEX DTVB DTVX DXES MAZF MBZF



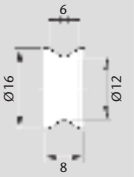
Standard Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX MAZD MBZD



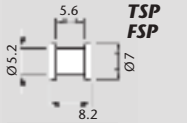
Standard Model
Q MK MKM (DN1)



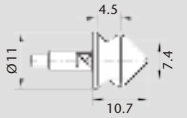
Standard Model
TS1 FS1



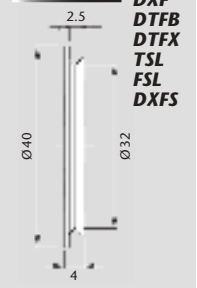
Standard Model
DXP TSP FSP



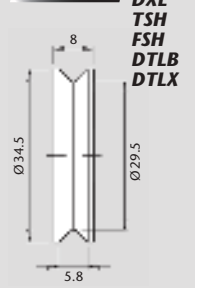
Standard Model
PT



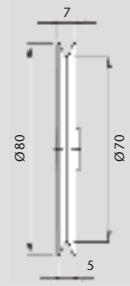
Standard Model
DXF DTFB DTFX TSL FSL DXFS



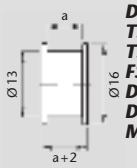
Standard Model
DXL TSH FSH DTLB DTLX



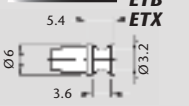
Standard Model
TSF



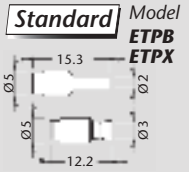
Tape rollers Model
a from 7 mm to 100 mm
DXB DXR DXT DTBB DTBX TSB1 TSB2 FSB1 DXBS DXTS MBZD



Standard Model
ETB ETX

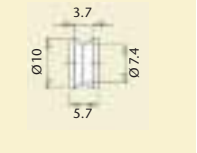


Standard Model
ETPB ETPX

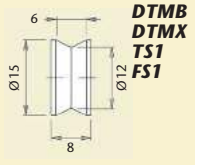


Optional *All dimensions are given in mm*

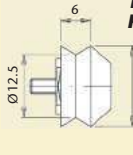
Code T Model
Plastic (POM) black
Code W
Nickel-plated steel
ZF2 DXE DXV ZEF DTEB DTEX DXES



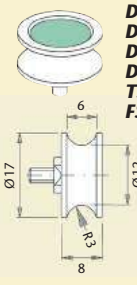
Code T Model
Plastic (POM) black
Code W
Nickel-plated steel
ZD2 DX2 Q MK DN1 DX2S ZED DTMB DTMX TS1 FS1



Code H Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX TS1 FS1



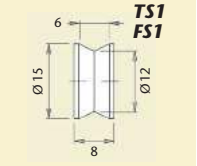
Code U Model
DX2 DN1 DX2S DTMB DTMX TS1 FS1



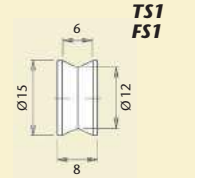
Code K Model
up to $V_{max.}$ 2000 m/min
Special rollers for high line speeds
ZF2 DXE DXV ZEF DTEB DTEX DTVB DTVX MAZF MBZF

up to $V_{max.}$ 3500 m/min Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX TS1 FS1 MAZD MBZD

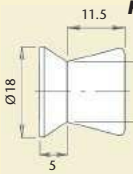
Code CE2 Model
ZD2 DX2 DN1 DX2S DTMB DTMX TS1 FS1



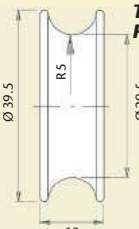
Code ST Model
Code B
ZD2 DX2 DN1 DX2S DTMB DTMX TS1 FS1



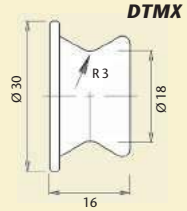
Code ASY Model
Code ASYB
DX2 DN1 DX2S DTMB DTMX TS1 FS1



Code R1 Model
DXL DTLB DTLX TSH FSH



Code V1 Model
DN1 DTMB DTMX



We have a wide range of guide rollers. Please ask for our roller catalog!
Beside the standard rollers, we also offer rollers with different geometry, special coating e. g. ceramic coating or anti adhesive coating or rollers made of special material like e. g. stainless steel.

Optional Accessories

Code A **Air Damping**

This adjustable mechanical air dashpot is recommended for applications in which great fluctuations of the measured tension occur, as in spooling and winding machines. This assures steady tension readings on the scale.

Code L
Special Lever

Facilitates acquisition of the running material when measuring high tensions. Reduces force necessary to extend outer rollers: Recommended for tension ranges of 10 daN and higher.

Code M **Memory Pointer**

Retains the highest measured value (PEAK). Available for mechanical tension meters (Series DX only).

Subject to change without notice.

Request Your Free Catalog Today!

MORE THAN 60 YEARS

Mailing address:
HANS SCHMIDT & CO GMBH
P.O.B. 1154
84464 Waldkraiburg
Germany

Shipping address:
HANS SCHMIDT & CO GMBH
Schichtstrasse 16
84478 Waldkraiburg
Germany

Phone:
int. +49 (0) 8638 / 9410-0

Fax:
int. + 49 (0) 8638 / 4825

e-mail:
info@hans-schmidt.com

Internet:
www.hans-schmidt.com