SCHMIDT
control instruments

Version ZE4/2004

SCHMIDT offers the worldwide largest selection of Tension Meters

Z Series

DX Series

ZE Series

DN Series

DT Series

ET Series

TS Series

SC Series

Please visit us in the WorldWideWeb!

www.tensionmeter.de

We solve tension-measuring problems. More than 50 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.

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 eliminate tension-related defects.

Today, more than 150.000 SCHMIDT tension meters are used worldwide.

Click to select the desired product group ...

Click for the desired series ...

... you will find detailed, latest information for the product you are looking for!

www.hans-schmidt.com

SCHMIDT
control instruments

SCHMIDT offers the worldwide largest selection of Tension Meters:

- **11 different series,**
- **42 models and more than**
- **2000 possible variations ...**

Wherever precision and superior quality are essential in producing and processing

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

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

Take benefit of our experience!

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Internet:
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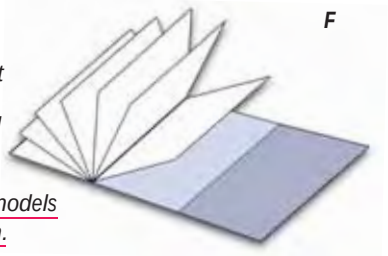
www.hans-schmidt.com

Contents

On the application guide fold out page, you will find suggestions for our different models, grouped according to their application in the textile and wire industries. This makes it easy to select the models that suit your specific application.



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.

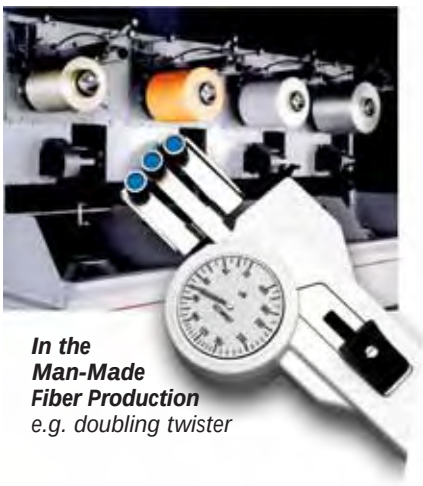
Should you need customized solutions to your measuring problem, please contact us. We will be glad to design a model for your special application.

In Wire EDM Technology *for machines to remachine profiled cutting tools*

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

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

1st IN TENSION METERS WORLDWIDE



In the Man-Made Fiber Production *e.g. doubling twister*

In 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 Technology
the correct adjusted tension is the condition for best exact cuts cutting tools

In Industries
processing carbon fibers

In the Automotive Industry
producing tires and Airbag-fabrics

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

Currency Printing and Letter Sorting
precise adjustment of the transport belt ensures that the product is not damaged during transport

In Industries
producing filters and tapes etc.

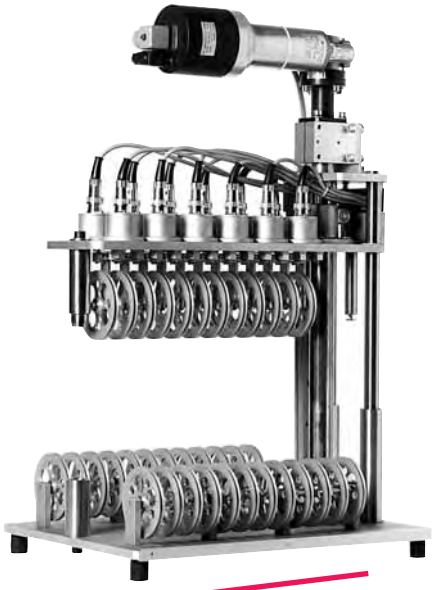
SCHMIDT Tension Meters are used throughout the world.

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

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

1st IN TENSION METERS WORLDWIDE



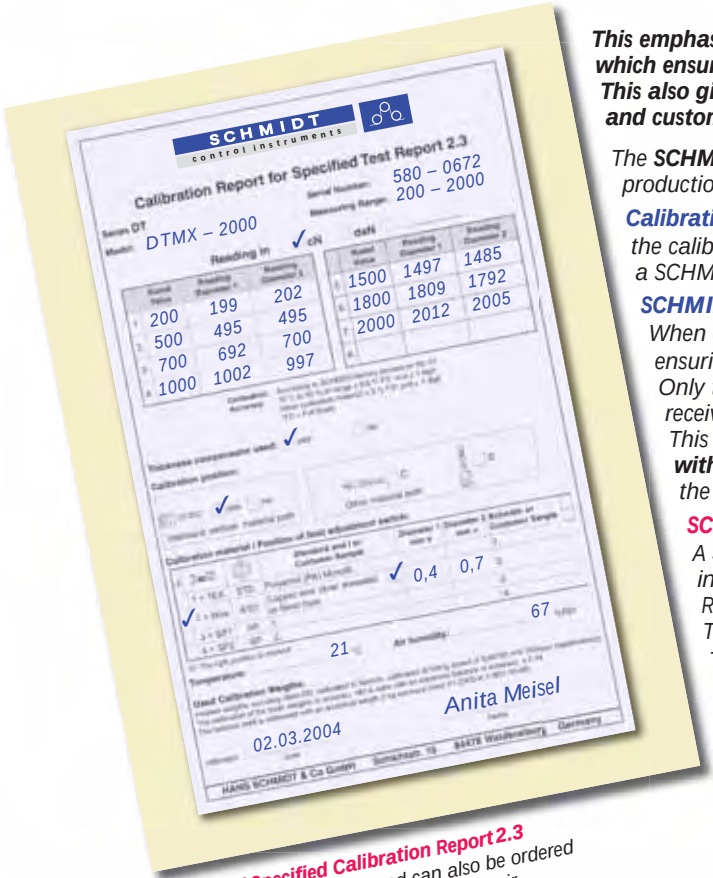
SCHMIDT custom-made configuration

In Optic Fiber Producing Industry
the above illustration shows a motor-operated measuring unit designed to measure automatically the tensions of 12 optic fibers simultaneously

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

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



Sample of Specified Calibration Report 2.3
This is optional available and can also be ordered for instruments which were send 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 Specific Test Report 2.3

*A **Specific Test Report** 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 a **Specific Test Report** to verify inspection of their measuring, inspection and test equipment. Our **Specific Test Report** 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), 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.*

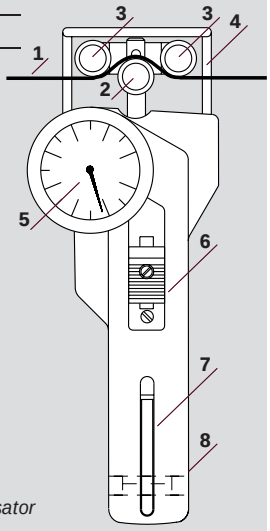
General Information on SCHMIDT Tension Meters

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.*

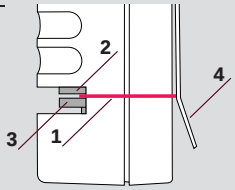
✚ *All rollers are equipped with precision ball bearings.*



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:

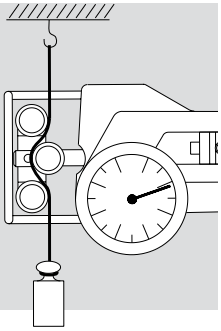
✚ *SCHMIDT hand-held tension meters are equipped, if necessary, with a material thickness compensator. This exclusive feature is only found on SCHMIDT tension meters and minimizes any error caused by changing material diameters.*



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

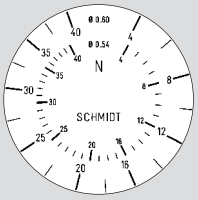
SCHMIDT calibration:

✚ *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.

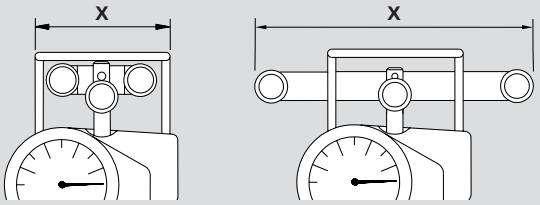


Special scale for customer materials:

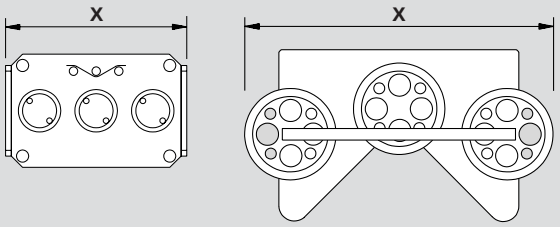
✚ *Special calibration to customer-supplied material is optionally available. This takes into account the customer material's rigidity and diameter, if it differs significant from the SCHMIDT calibration material. Special calibration to two different materials is optionally available.*



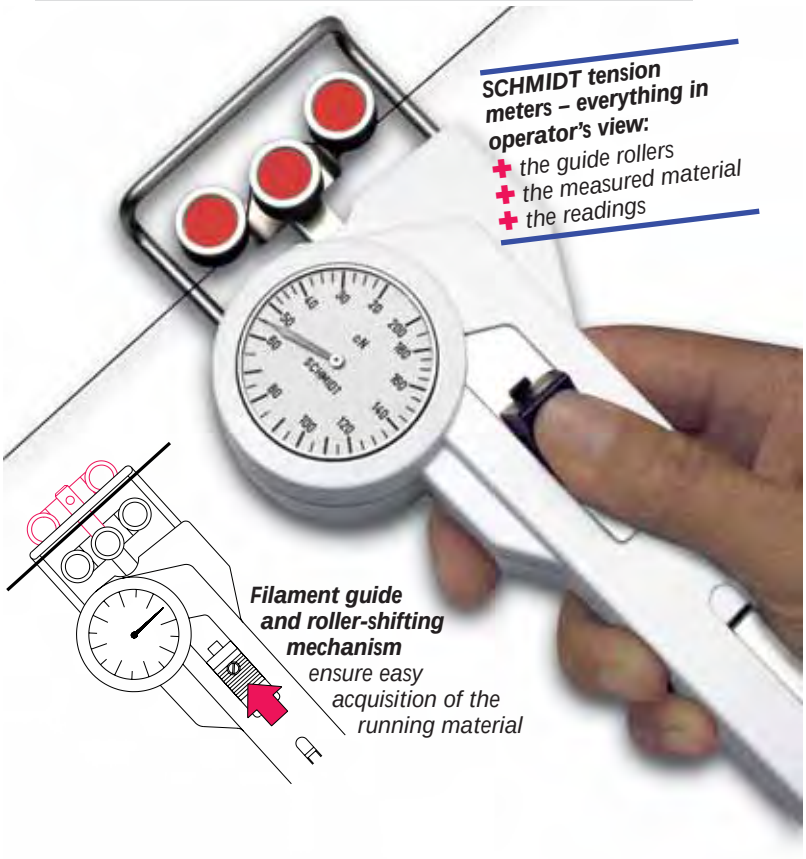
Measuring head width on hand-held instruments:



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.*



SCHMIDT tension meters – 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*

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 F →

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	30000 tex	1.50 - 2.00 mm Ø
50 daN	Steel rope: 1.50 mm Ø (7 x 7 x 0.20)	50000 tex	1.50 - 2.50 mm Ø

* 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.

Photography by BASF Fibres Europe

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 E →

4. Required accessories: → see page E →

– 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**

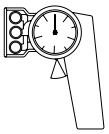
6. Calibration using customer-supplied material:

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. Specific Test 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
- Specific Test Report with calibration report optionally available

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

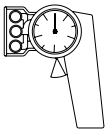
With bigger rollers for universal use

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 9)
PA = Polyamide Monofilament

Guide Rollers

→ see page E →

V-grooved	Line Speed m/min ... max.	Roller Material
Standard	900	Hardcoated aluminium (No. R10010)
Code K	2000	Hardcoated 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 9)
PA = Polyamide Monofilament

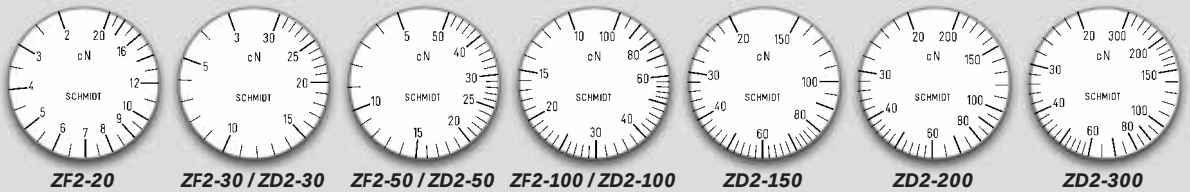
Guide Rollers

→ see page E →

V-grooved	Line Speed m/min ... max.	Roller Material
Standard	2000	Hardcoated aluminium (No. R10003)
Code K	3500	Hardcoated 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	1000	Ceramic

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)

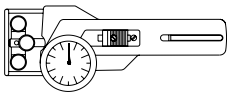


SCHMIDT scales are manufactured according to the most stringent quality requirements. Printed scales are not used. Instead, each scale is individually marked for the instrument involved. This ensures highest quality. Our special procedure makes it possible to provide tension meters fine tuned to a specific 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

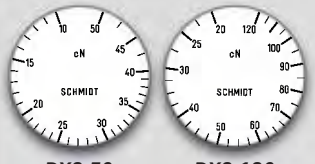
DX SERIES

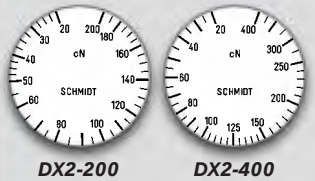
12 Tension ranges from 10-50 cN to 5-20 daN

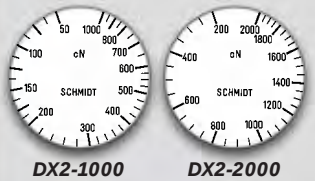
Universal tension meters for most industrial applications

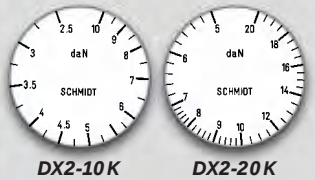
fig. 1: **Adjustable damping (Code A) to provide steady tension readings** *(see page E)*

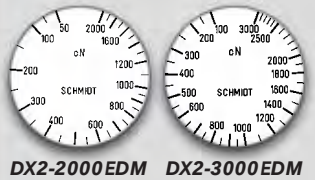
fig. 2: **Special finger support located on the rear side of the housing**











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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*

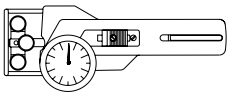
Standard features:

- ▮ *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*
- ▮ *Specific Test Report with calibration report optionally available*

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

Subject to change without notice.

SCHMIDT
control instruments



Model DX2

Please ask for additional informations!

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	✔
DX2-10K	2.5-10 daN	116	PA: 1.00 mm Ø	✔
DX2-20K-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 9)*
PA = Polyamide Monofilament

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

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

Guide Rollers

→ see page E →

	Line Speed m / min ... max.	Roller Material
V-grooved		
Standard	2000	Hardcoated aluminium (No. R10003)
Code K	3500	Hardcoated 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	1000	Ceramic
Code ASY asymmetrical groove	1000	Hardcoated aluminium – Gauge without filament guide – (for Model DX2-120 and higher ranges)
U-grooved		
Code U	2000	Hardcoated aluminium

Optional Accessories

→ see page E →

Code A	**Air damping** (Model DX2-120 to DX2-5000 only)
Code L	**Special lever** (standard for Model DX2-20K – recommended for Model DX2-10K –)
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

Specifications

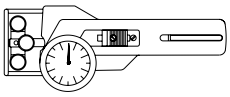
	DX Series
Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1% full scale or ±1 graduation on scale
Scale diameter:	41 mm
Temperature range:	10-45 °C
Air humidity:	85% RH, max.
Housing material:	Die-cast aluminium
Housing dimensions:	188 x 85 x 45 mm (L x W x H)
Weight, net (gross):	up to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

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.:

DX2-400 + **H** + **A–M** = **DX2–400–H–A–M**



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 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)*
- ▮ *Standard features same as Model DX2*
  Note: *The below models do not include a material thickness compensator*

1st IN TENSION METERS WORLDWIDE

Model DXE

Special tension meter for limited access space

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

Guide Rollers → see page E →

Models DXE, DXV

V-grooved	Line Speed m/min ... max.	Roller Material
Standard	900	Hardcoated aluminium (No. R10010)
Code K	2000	Hardcoated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

Guide pins → see page E →

Model DXP

V-grooved	Line Speed m/min ... max.	Pin Material
Standard	6000	Oxide ceramic 4 mm Ø (No. R12056)

Optional Accessories → see page E →

Models DXE, DXV, DXP

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

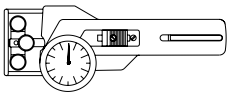
Specifications **same as Model DX2** *(see page A 4)*

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	38	47	PA: 0.30 mm Ø
DXE-2000	200 - 2000	38	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 9)*
PA = Polyamide Monofilament



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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	38	38	PA: 0.12 mm Ø
DXV-120	20-120	38	38	PA: 0.12 mm Ø
DXV-200	20-200	38	38	PA: 0.12 mm Ø
DXV-400	20-400	38	38	PA: 0.20 mm Ø
DXV-1000	50-1000	40	38	PA: 0.30 mm Ø
DXV-1500	150-1500	40	38	PA: 0.30 mm Ø
DXV-2000	200-2000	40	38	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 9)*
PA = Polyamide Monofilament

Model DXP

Non-rotating ceramic pins permit line speeds up to 6000 m / min

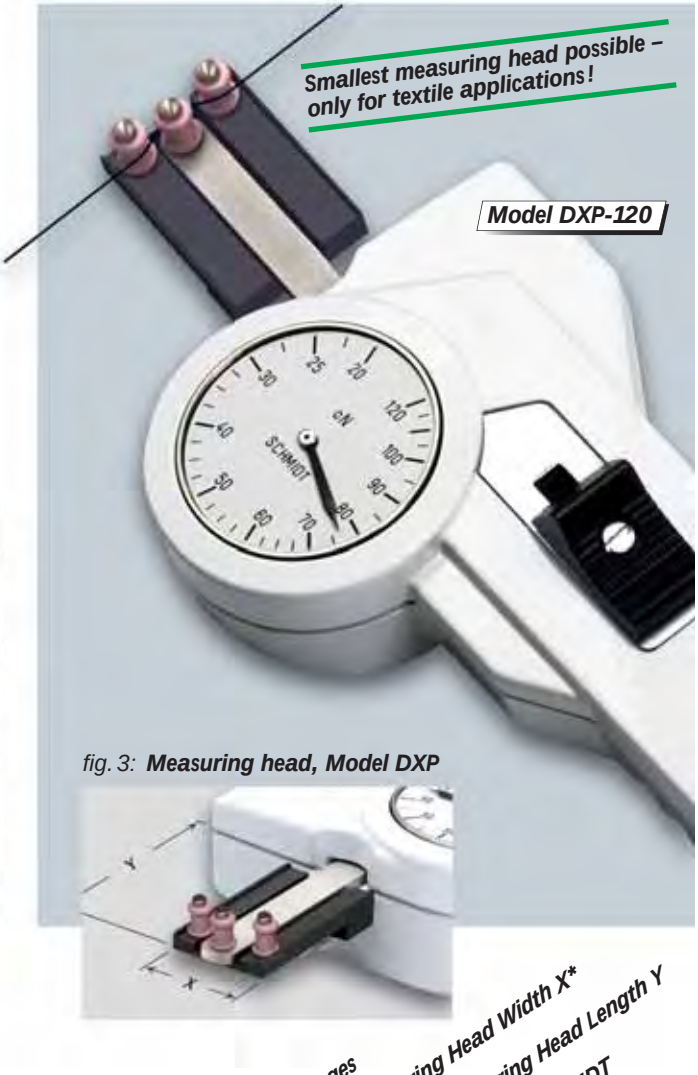


fig. 3: **Measuring head, Model DXP**

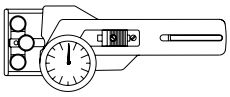
Available Models

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 9)*
PA = Polyamide Monofilament

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.
DXE-400	+	K	+	A–M	=	DXE–400–K–A–M



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Model DXF

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

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

Special features:

- ✚ Large, V-grooved guide rollers with 32 mm groove diameter, ball-bearing mounted
- ✚ Large bending radius assures gentle handling of the material being measured
- ▮ Standard features same as Model DX2
  Note: These models do not have a built-in material thickness compensator

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

Large guide rollers minimize material deflection

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

Model DXL-5000
for fiber optic cables and buffer tubes up to 8 mm Ø max.

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	On customer sample only
DXL-5000	400 - 5000	235	On customer sample only
DXL-10 K	2.5 - 10 daN	288	On customer sample only

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 9)
PA = Polyamide Monofilament

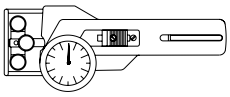
Guide Rollers → see page E →

	Line Speed m / min ... max.	Roller Material
Model DXF		
V-grooved		
Standard	4000	Hardcoated aluminium (No. R 12021)
Code T	4000	Plastic (PVC) red
		(Same dimensions as standard roller)
Model DXL		
V-grooved		
Standard	4000	Hardened-steel roller (No. R 10006)
U-grooved		
Code R1	4000	Hardened-steel roller (radius R 5)

Optional Accessories → see page E →

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

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



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 (34 mm optionally available)*
- ✚ *Reference frame assures a stable, perpendicular position*
- ▮ *Standard features same as Model DX2 – **Note:** This model does not have a built-in material thickness compensator.*

Available Models

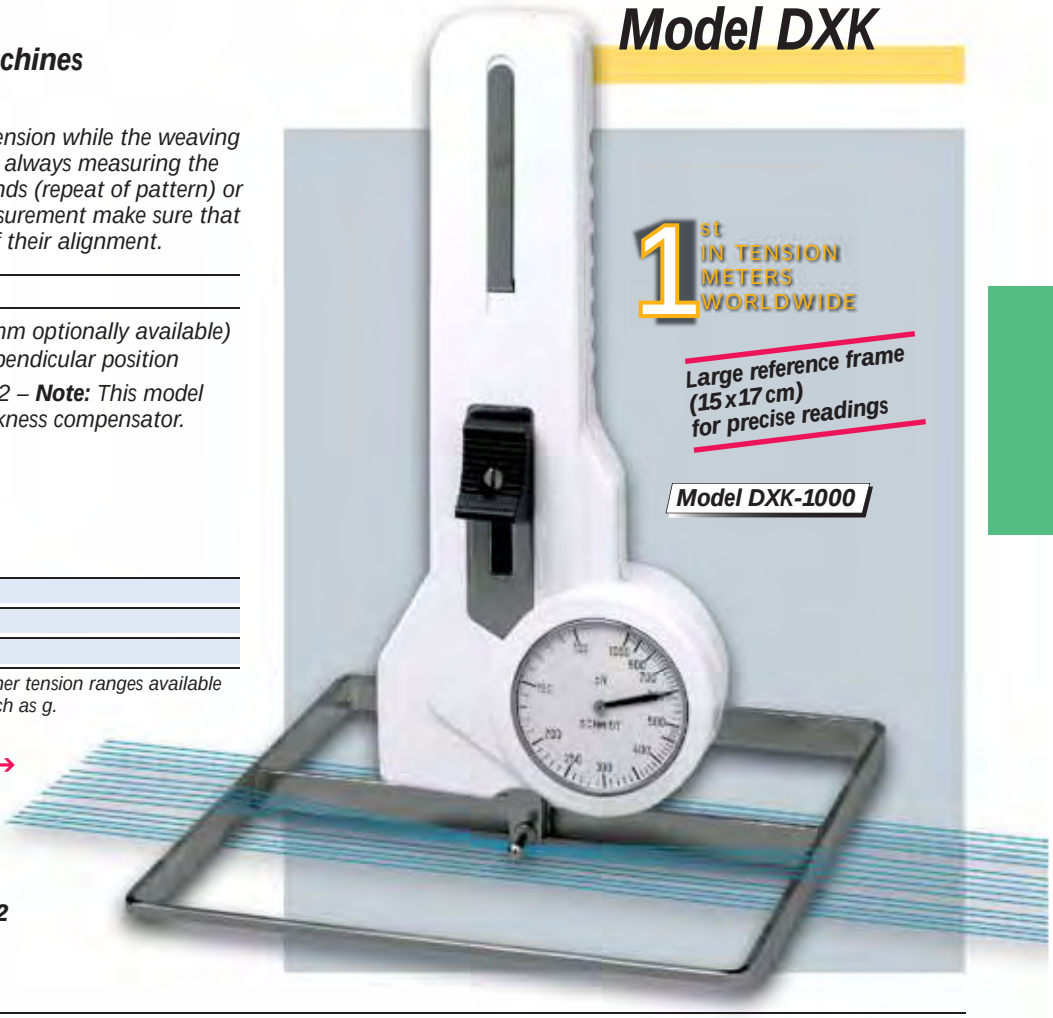
MODEL	Tension Ranges cN
DXK-300	20 - 300
DXK-1000	100 - 1000
DXK-2000	200 - 2000

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

Optional Accessories → see page E →

Code A	**Air damping**
Code M	**Memory pointer**

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



Mechanical tension meter with take-up wheel, for example for setting yarn tension devices

Special features:

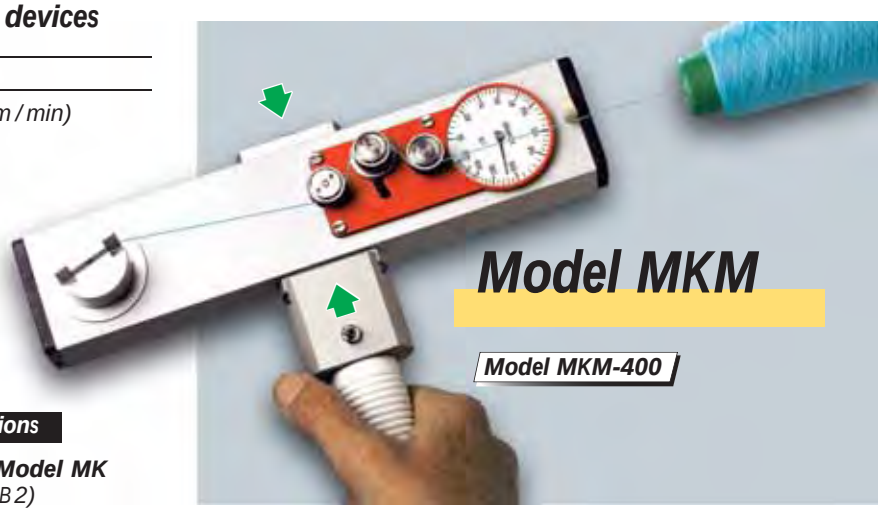
- ✚ *Motorized take-up wheel (take-up speed ~ 16 m / min)*
- ✚ *Handle can be reversed*
- ▮ *Battery operated*
- ▮ *Power supply: 9 V E-block*
- ▮ *Weight, net (gross): approx. 650 g (1250 g)*

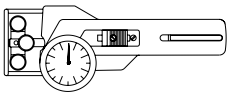
Available Models

MODEL	Tension Ranges cN
MKM-50	10 - 50
MKM-100	10 - 100
MKM-400	50 - 400

Specifications

same as Model MK
(see page B 2)





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
- ▮ Standard features same as 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	Line Speed m / min ... max.	Roller Material	→ see page E →
Standard	1000	Hardcoated aluminium	
		(Exception: 7 mm rollers are made of nickel-plated steel)	
Other roller materials (nickel-plated steel or plastic) are available on request.			

Optional Accessories		→ see page E →
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.

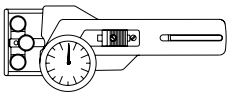
Model DXB

Cylindrical rollers pointing toward the operator

Model DXB-5000-30
Version with 30 mm rollers

Available Models	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



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control instruments

Model DXR

With heavy-duty bracket and special roller support

Model DXR-50K-100-L
Version with 100 mm 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 rollers

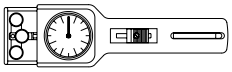
Available Models

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

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

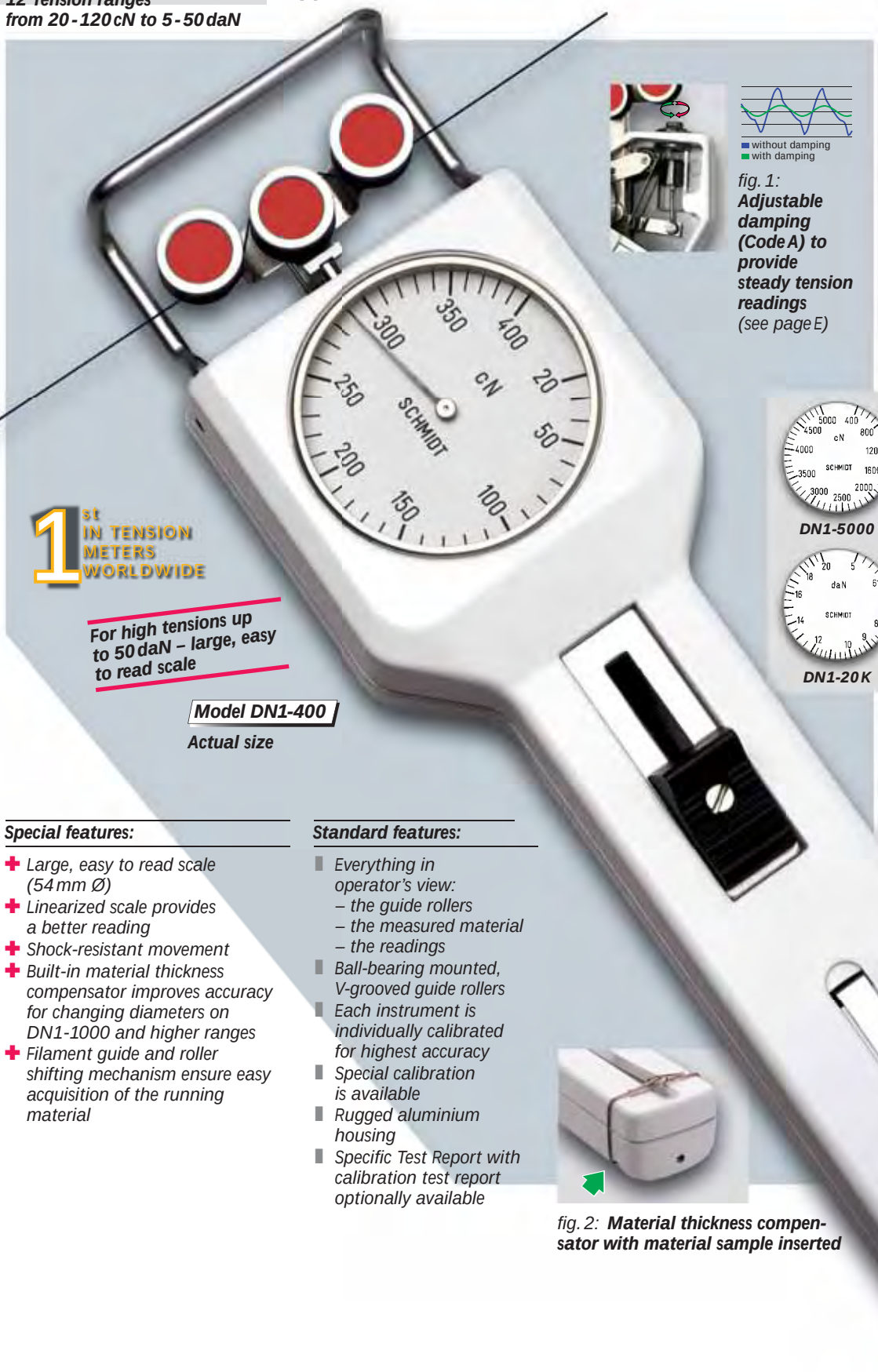
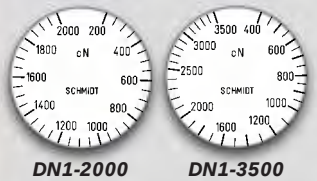


fig. 1: ***Adjustable damping (Code A) to provide steady tension readings*** *(see page E)*



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 or kg.

Special features:

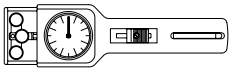
- ✚ *Large, easy to read scale (54 mm Ø)*
- ✚ *Linearized scale provides a better reading*
- ✚ *Shock-resistant movement*
- ✚ *Built-in material thickness compensator improves accuracy for changing diameters on DN1-1000 and higher ranges*
- ✚ *Filament guide and roller shifting mechanism ensure easy 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*
- ▮ *Specific Test Report 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 (7x7x0.20)	

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 9)*
PA = Polyamide Monofilament

Guide Rollers

→ see page E →

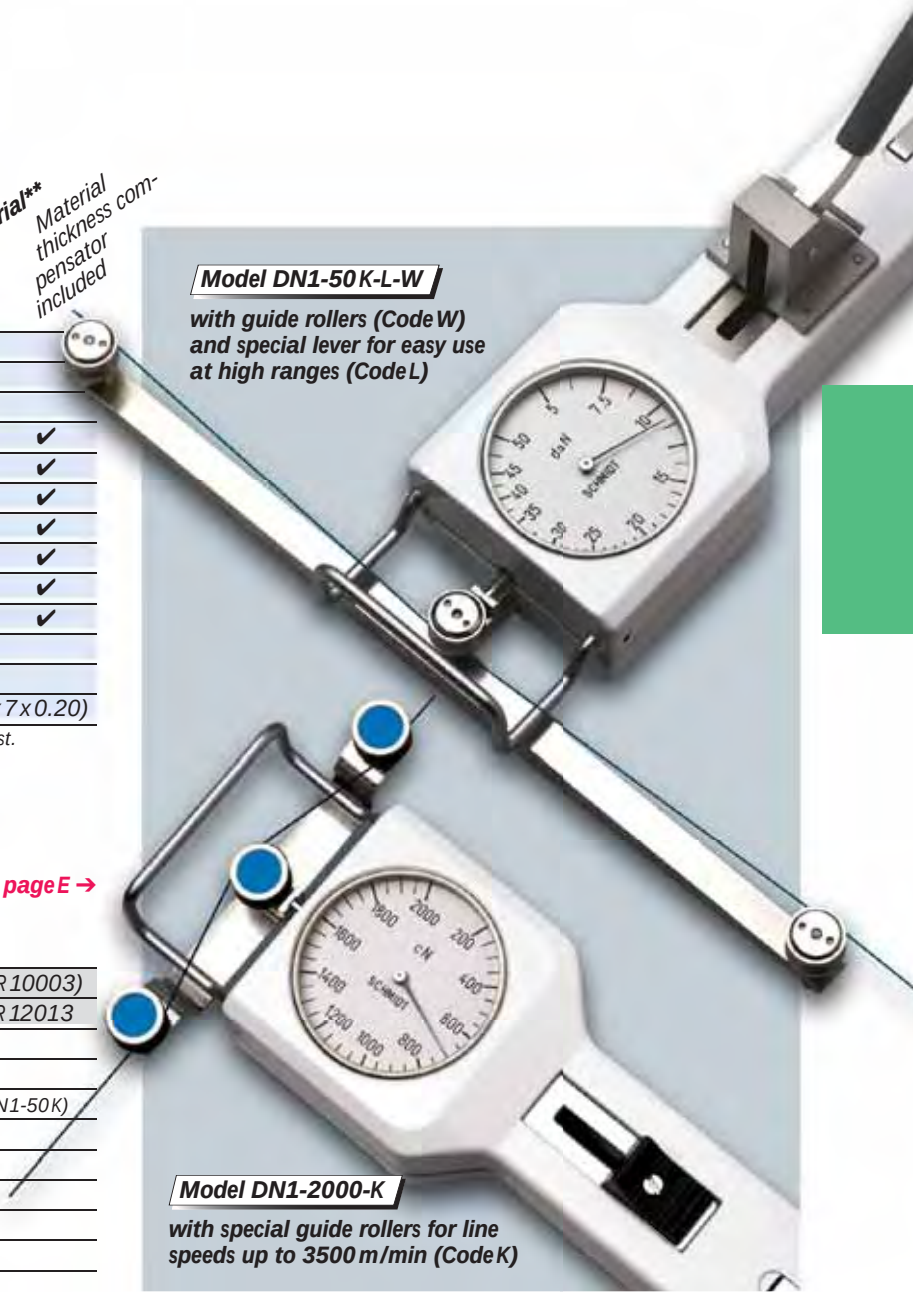
	Line Speed m/min ... max.	Roller Material
V-grooved		
Standard	2000	Hardcoated aluminium (No. R10003) Model DN1-30K and DN1-50K: No. R12013
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium (not available for DN1-30K and DN1-50K)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE	1000	Ceramic
Code ASY asymmetrical groove	1000	Hardcoated aluminium – Gauge without filament guide –
U-grooved		
Code U	2000	Hardcoated aluminium

Optional Accessories

→ see page E →

Code A	**Air damping** (Models DN1-120 to DN1-2000 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-W
with guide rollers (Code W) and special lever for easy use at high ranges (Code L)

Model DN1-2000-K
with special guide rollers for line speeds up to 3500 m/min (Code K)

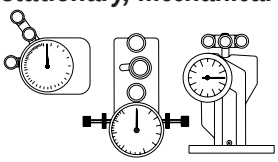
Specifications — DN Series

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1% full scale (FS) 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): (approx.)	up to DN1-10K approx. 700 g (1200 g) 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

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 E →

Models Q, MK

V-grooved	Line Speed m/min ... max.	Roller Material
Standard	1000	Hardcoated aluminium (No. R12013)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel (Model -100 and higher)

Model DX2S

V-grooved		
Standard	2000	Hardcoated aluminium (No. R10003)
Code K	3500	Hardcoated 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 CE	1000	Ceramic
Code ASY asymmetrical groove	1000	Hardcoated aluminium (for Model DX2S-120 and higher ranges)
U-grooved		
Code U	2000	Hardcoated aluminum

Optional Accessories

→ see page E →

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 (for Model DX2S consult factory)

Available Models

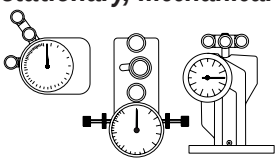
MODEL	Tension Ranges cN	MODEL	Tension Ranges cN
Q-10	2-10	**Q-200**	20-200
Q-20	2-20	**Q-300**	20-300
Q-30	3-30	**Q-500**	50-500
Q-50	5-50	**Q-1000**	50-1000
Q-100	10-100		

Other tension ranges available on request. Other units of measure available, such as g. SCHMIDT calibration material Polyamide Monofilament PA (see chart on page 9)

Specifications — Q Series

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale (FS) or ±1 graduation 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)

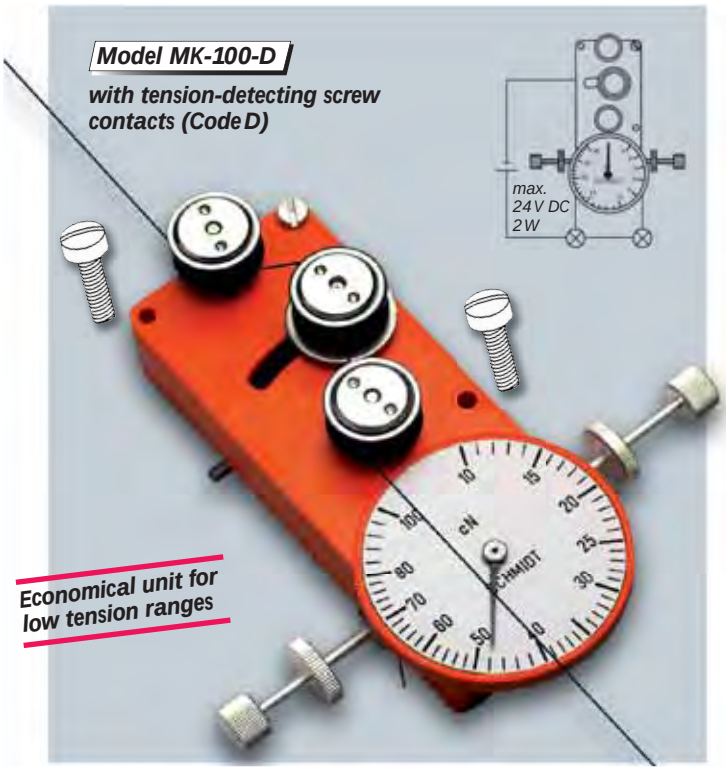
Special calibration using customer supplied samples is available: Please supply a sample of at least 5 m in length.



SCHMIDT control instruments

Model MK

Small, compact and easy to install measuring instrument



Available Models

MODEL	Tension Ranges cN	MODEL	Tension Ranges cN
MK-12	3-12	**MK-250**	20-250
MK-20	5-20	**MK-300**	20-300
MK-30	5-30	**MK-400**	50-400
MK-50	10-50		
MK-100	10-100		

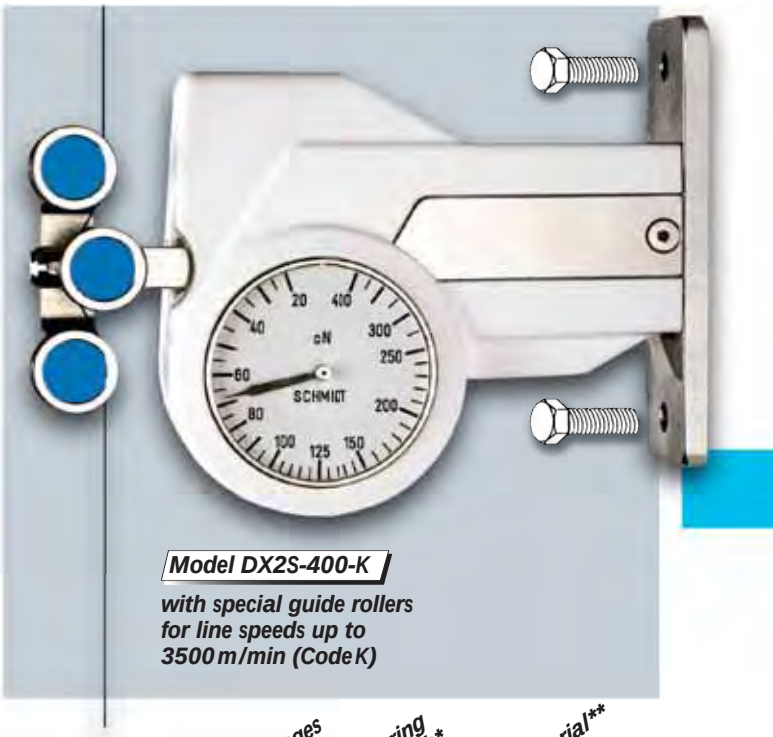
Other tension ranges available on request. Other units of measure available, such as g. SCHMIDT calibration material Polyamide Monofilament PA (see chart on page 9)

Specifications **MK Series**

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % full scale (FS) or
	±1graduation 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-10 K	2.5-10 daN	116	PA: 1.00 mm Ø
DX2S-20 K	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 9)*
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**

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.
DX2S-400	+	K	+	A	=	DX2S-400-K-A

SCHMIDT
control instruments

ZE SERIES

3 Tension ranges
from 0.5 - 100 cN to 1 - 500 cN

Special features:

- Simple handling
- »Zero setting« using a push button for measurement in different measuring positions
- 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
- Battery operated

Standard features:

- Everything in operator's view:
  – the guide rollers
  – the measuring material
  – the readings
- Ball-bearing mounted, V-grooved guide rollers
- Housing made of high-strength plastic
- Specific Test Report with calibration report optionally available

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

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

CE

Model ZEF-100
Actual size

Model ZEF

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
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 9)
PA = Polyamide Monofilament

Guide Rollers

→ see page E →

V-grooved	Line Speed m / min ... max.	Roller Material
Standard	900	Hardcoated aluminium (No. R 10010)
Code K	2000	Hardcoated aluminum
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

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-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:	2 size AAA batteries 1.5 V (about 30 hours of continuous use)
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

Model ZED

Available Model

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

* Width of filament guide
** Suitable for 95 % of applications (see also chart on page 9)
PA = Polyamide Monofilament

Guide Rollers → see page E →

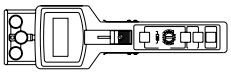
V-grooved	Line Speed m / min ... max.	Roller Material
Standard	2000	Hardcoated aluminium (No. R 10003)
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

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

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

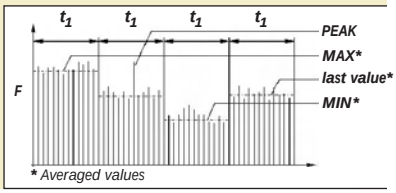
DT SERIES

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

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

Standard features
Model DTMB and Model 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

- 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)
- Immune to interference and damage due to electronic discharging
- Specific Test Report with calibration report optionally available

Model DTMB

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

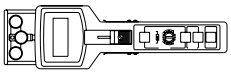
Model DTMB-1000-H

Actual size with special high speed guide rollers for line speeds up to 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

DTMX special features:

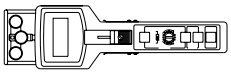
- ✚ *Memory for up to 100 tension values plus MIN, MAX, PEAK values;*
- – *automatic calculation of average and standard deviation;*
- – *all these data values can be recalled in the display or downloaded to a printer or Personal Computer.*
- ✚ *2 Memory modes: Continuous storage or on-demand storage*
- ✚ *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 7)*

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



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 9)*

Guide Rollers

→ see page E →

Model DTMB

	Line Speed m / min ... max.	Roller Material
V-grooved		
Standard	2000	Hardcoated aluminium (No. R 10003)
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE	1000	Ceramic
Code ASY asymmetrical groove	1000	Hardcoated aluminum – Gauge is without filament guide –
U-grooved		
Code U	2000	Hardcoated aluminium

Optional Accessories Model DTMB

→ see page E →

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

Additional Equipment Model DTMB

DTM-AC-115	AC adapter 6 V DC for 115 V AC
DTM-AC-230	AC adapter 6 V DC for 230 V AC

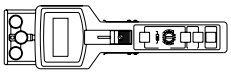
Special calibration using customer supplied samples is available:
Please supply a sample of at least 5 m in length.

Model DTMX-20K-L
with special lever for easy use at high ranges (Code L)

Specifications DTMB and DTMX

Calibration:	According to SCHMIDT factory procedure
Accuracy:	10 % to 90 % of range: ± 0.5 % FS* and ± 1 digit
Remaining range and other calibration material:	± 3 % FS* and ± 1 digit or better
Overrange (approx.):	15% FS*, without accuracy guarantee
Overload protection:	100 %
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.2 mm max.
Signal processing:	Digital
Measuring frequency:	62 measurements / sec
Converter:	12 bit A / D
Display:	4-digit LCD, 12 mm high
Display update rate:	0.5 – 1 – 2 or 4 seconds selectable
Memory:	Last, MIN, MAX, PEAK values
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	4 size AA batteries 1.5 V (about 20 hours of continuous use)
Housing material:	Die-cast aluminium
Housing dimensions:	235 x 76 x 45 mm (L x W x H)
Weight, net (gross): (approx.)	Up to Model -10K 680 g (1500 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 9) – PA = Polyamide Monofilament
*** Accuracy: ± 3 % Full Scale (FS) and ± 1 dgit

Guide Rollers **same as Model DTMB**

Optional Accessories **Model DTMX** → see page E →

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

Additional Equipment **Model DTMX**

DTM-AC-115	AC adapter 6 V DC for 115 V AC
DTM-AC-230	AC adapter 6 V DC for 230 V AC
DTMX-P-115	Data printer with RS 232, rechargeable battery powered, charger for 115 V AC
DTMX-P-230	Data printer with RS 232, rechargeable battery powered, charger for 230 V AC
DTMX-CA	Connecting cable for analog signal (1.5 m)
DTMX-CP	Connecting cable for printer RS 232 (2 m)
DTMX-CC	Connecting cable and adapter for printer and PC connection RS 232 (2 m)
DTMX-P1	»Meterboss« software (DOS 3.0 and higher)
DTMX-P2	»Tension View« software (WIN'95 and higher)

fig. 1: **Analog / serial connecting cables, adapter plug, AC adapter**

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

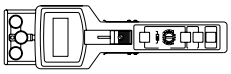
Specifications **same as Model DTMB, plus:**

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**



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.*

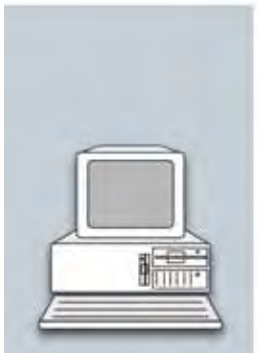
From the measured data, the DTMX automatically calculates maximum, minimum, average, and standard deviation values. The stored data are retained in memory even after the tension meter is turned off.

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.*

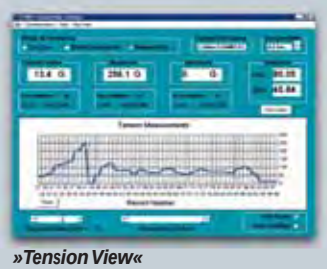
Continuous online data acquisition and analysis:



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 a Windows terminal.

»Meterboss«
DOS 3.0 and higher) to connect max. 12 DTMX



»Tension View«
(WIN'95 and higher) to connect max. 8 DTMX; all datas are stored in an EXCEL file (.xls).

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

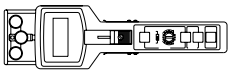
The DTMX can be mounted online for continuous tension monitoring. It can be connected to a PC using the RS 232 output. Two programms (Meterboss and Tension View) with following basic functions are available:

- *Real time tension display*
- *Long time recording using operator set time span and sampling time*
- *Analyzing and printing of all stored data (graphs and numeric reports)*

Please ask for additional information!

C ***Grafic Presentation:***

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



SCHMIDT
control instruments

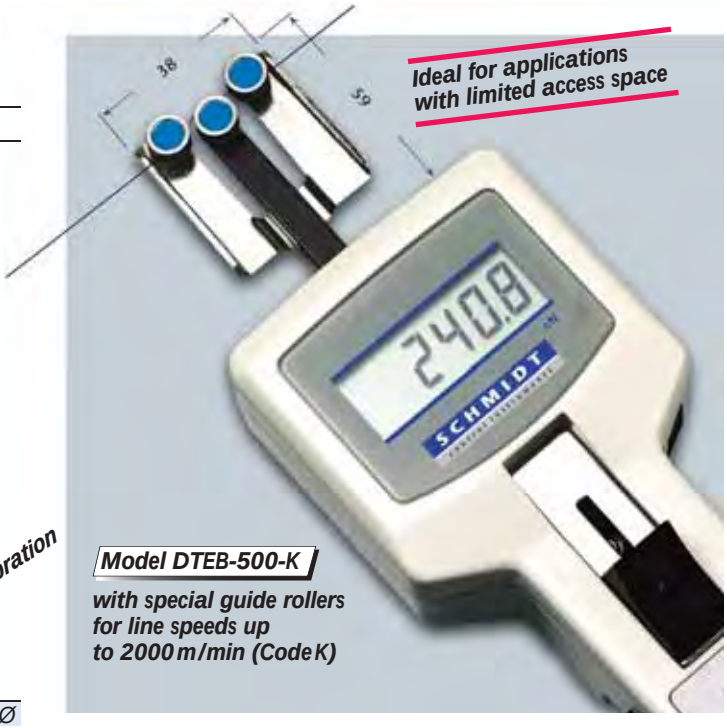
Special purpose models feature small measuring heads, where access space is limited or where filaments run close together

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*
- ▮ *Standard features same as Model DTMB and DTMX respectively*
  ***Note:** The below models do not include a material thickness compensator*

Models DTEB, DTEX



Ideal for applications with limited access space

Model DTEB-500-K
with special guide rollers for line speeds up to 2000 m/min (Code K)

Models DTEB, DTEX, DTVB, DTVX

Available Models

MODEL		Tension Ranges cN	Measuring Head Width* 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	38	PA: 0.30 mm Ø
DTEB-2000	**DTEX-2000**	200 - 2000	38	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 9)*
PA = Polyamide Monofilament

Models DTVB, DTVX

Measuring head rotated by 90°

Model DTVB-500

Guide Rollers → *see page E* →

V-grooved	Line Speed m / min ... max.	Roller Material
Standard	900	Hardcoated aluminium (No. R 10010)
Code K	2000	Hardcoated aluminium
Code T	450	Plastic (POM) black
Code W	450	Nickel-plated steel

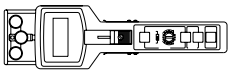
Additional Equipment · Specifications **same as DTMB or DTMX** *(see page C 5)*

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**



Models DTFB, DTFX

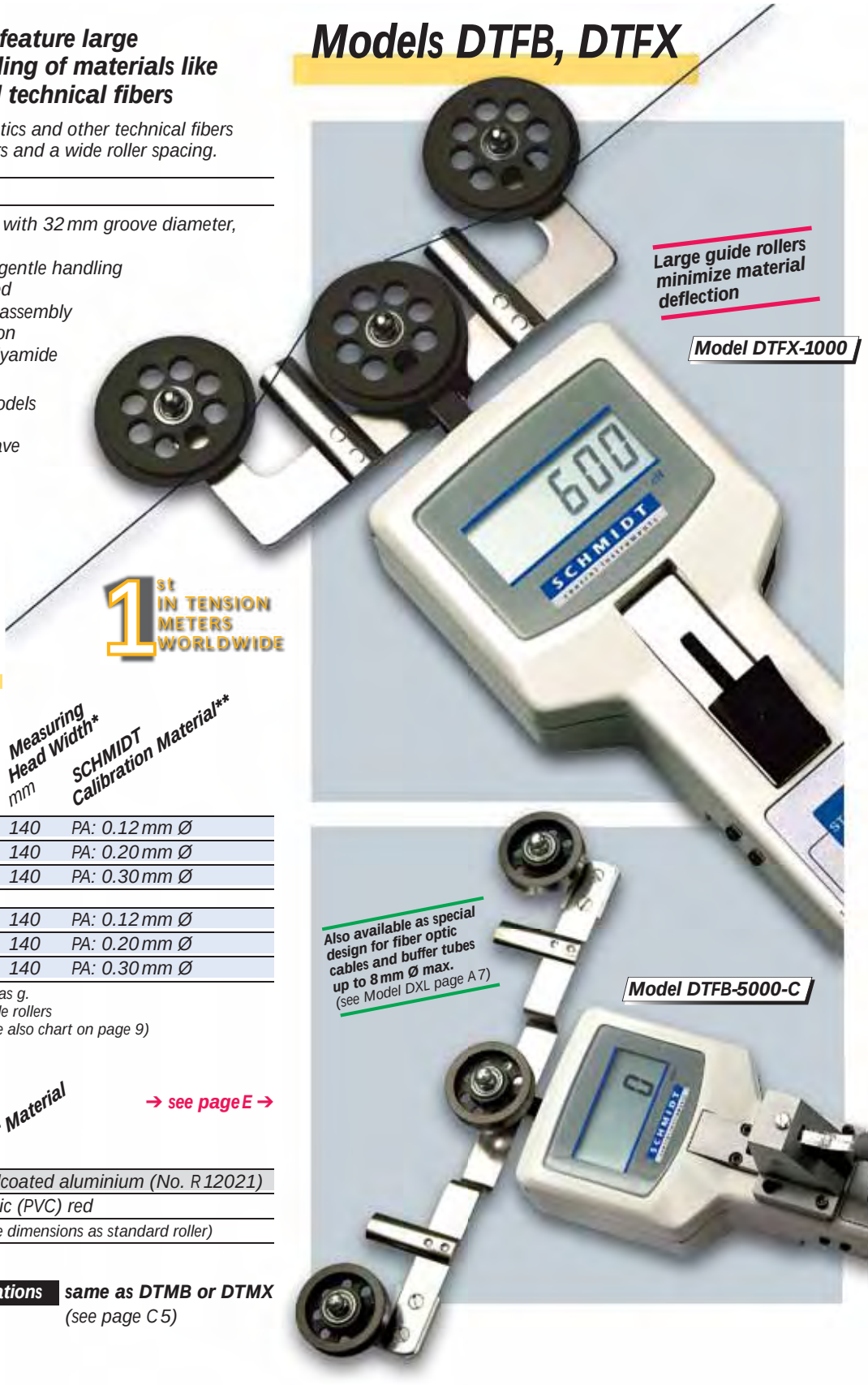
Special purpose models feature large rollers to minimize bending of materials like fiber optics, carbon and technical fibers

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

Special features:

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

Please contact us to discuss your application requirements.



Models DTFB, DTFX

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
DTFB-200	2.0 - 200.0	140	PA: 0.12 mm Ø
DTFB-500	5.0 - 500.0	140	PA: 0.20 mm Ø
DTFB-1000	50 - 1000	140	PA: 0.30 mm Ø
DTFX-200	2.0 - 200.0	140	PA: 0.12 mm Ø
DTFX-500	5.0 - 500.0	140	PA: 0.20 mm Ø
DTFX-1000	50 - 1000	140	PA: 0.30 mm Ø

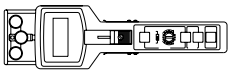
Other units of measure available, such as g.
* *Outer distance between outside guide rollers*
** *Suitable for 95 % of applications (see also chart on page 9)*
PA = Polyamide Monofilament

Guide Rollers → see page E →

V-grooved	Line Speed m / min ... max.	Roller Material
Standard	4000	Hardcoated aluminium (No. R 12021)
Code T	4000	Plastic (PVC) red (same dimensions as standard roller)

Additional Equipment · Specifications **same as DTMB or DTMX** *(see page C 5)*

Subject to change without notice.



SCHMIDT
control instruments

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 20 mm (single-flanged rollers optional)
- ✚ Custom-built configurations and special calibration are available
- ▮ Standard features same as Models DTMB respectively 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

Models DTBB, DTBX

Model DTBB-5000-20
Version with 20 mm 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
DTBB-500	5.0 - 500.0	55	7, 10, 15, 20
DTBB-1000	50 - 1000	55	7, 10, 15, 20
DTBB-2000	200 - 2000	55	7, 10, 15, 20
DTBB-2500	250 - 2500	117	7, 10, 15, 20
DTBB-5000	500 - 5000	117	7, 10, 15, 20
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
DTBX-500	5.0 - 500.0	55	7, 10, 15, 20
DTBX-1000	50 - 1000	55	7, 10, 15, 20
DTBX-2000	200 - 2000	55	7, 10, 15, 20
DTBX-2500	250 - 2500	117	7, 10, 15, 20
DTBX-5000	500 - 5000	117	7, 10, 15, 20
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

	Line Speed m/min ... max.	Roller Material
Standard	1000	Hardcoated aluminium
		(Exception: 7 mm rollers are made of nickel-plated steel)

Other roller materials (nickel-plated steel or plastic) are available on request.

→ see page E →

Optional Accessories

→ see page E →

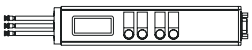
Code L	**Special lever** (standard for Models -20K and -50K) – recommended for -10K Models –

Additional Equipment · Specifications **same as DTMB or DTMX** (see page C 5)

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	+	Roller width in mm	+	Code for accessory	=	Complete Order No.
DTBB-10K	+	10	+	L	=	DTBB-10K-10-L



SCHMIDT
control instruments

ET SERIES

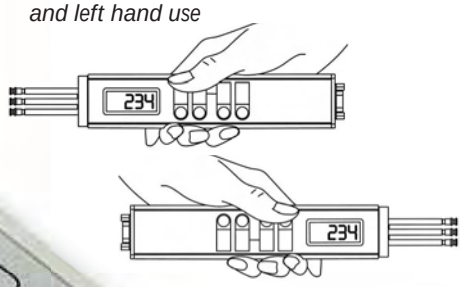
3 Tension ranges
from 0.5 - 100 cN to 1 - 500 cN

Electronic tension meters for hard to reach and limited access space applications

fig. 1: **Model ET2P with ceramic pins for line speeds up to 6000 m/min**

Special features:

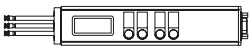
- Storage of MIN, MAX and PEAK tension values which can be recalled or downloaded to a PC
- Adjustable electronic damping for better reading when tension is constantly changing
- Analog and RS 232 output signal to be used for line recorder or PC
- Display can be reversed for right and left hand use



Standard features:

- »Zero setting« using a push button for measurement in different measuring positions
- Changeable units cN and g
- Guide rollers are mounted on long shafts to reach into tightest places
- **Model ET2** with ball-bearing mounted, V-grooved guide rollers for line speeds up to 2000 m / min
- **Model ET2P** with ceramic pins for line speeds up to 6000 m / min
- Microprocessor controlled for highest accuracy
- Battery operated
- Specific Test Report with calibration report optionally available

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.



SCHMIDT
control instruments

With ball-bearing mounted, V-grooved guide rollers

Model ET2

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 100 m/min
ET2-100	0.5 - 100.0	24	PA: 0.20 mm Ø
ET2-200	1 - 200	24	PA: 0.20 mm Ø
ET2-500	1 - 500	24	PA: 0.20 mm Ø

* Outer distance between outside guide rollers
** Suitable for 95 % of applications
PA = Polyamide Monofilament

Guide Rollers

V-grooved	Line Speed m/min ... max.	Roller Material
Standard	2000	Aluminium, hard chromed (No. R 10017)

→ see page E →

With ceramic pins for line speeds up to 6000 m/min

Model ET2P

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 60 m/min
ET2P-100	0.5 - 100.0	22	PA: 0.20 mm Ø
ET2P-200	1 - 200	22	PA: 0.20 mm Ø
ET2P-500	1 - 500	22	PA: 0.20 mm Ø

* Outer distance between outside guide pins
** Suitable for 95 % of applications
PA = Polyamide Monofilament

Guide Pins

V-grooved	Line Speed m/min ... max.	Pin Material
Standard	6000	Oxide ceramic – Complete set (No. R 50020)

→ see page E →

Additional Equipment — **Models ET2 and ET2P**

ET2-CA	Connecting cable for analog signal
ET2-CC	Connecting cable for PC, RS 232, 2 m
ET2-P1	**»Tension Inspect«** Software (WIN´95 and higher)
ET2-AKKU	Rechargeable 9 V battery (NiCd)
ET2-AC-115	Battery charger for 115 V AC
ET2-AC-230	Battery charger for 230 V AC

fig. 4:
The ET2 series can be connected to PC for monitoring or downloading stored data

Please ask for additional information!

Specifications — **Model ET2 and ET2P**

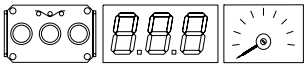
Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 1 % FS* and ± 1 digit, typical ± 0.5 % FS*
Units:	cN or g
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	200 %
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Signal processing:	Digital, 12 bit A/D converter
Damping:	adjustable electronic damping (Moving averaging)
Sampling rate:	approx. 5 kHz (Internal only)
Display update time:	approx. 2 times/sec
Display:	LCD 4 digit, 11 mm high
Memory:	Last, Average, MAX, MIN, MAX_{Peak}, MIN_{Peak}
Outpt signal analog:	0 – 2 V DC (linearized)
Output signal digital:	RS 232 (9600, 8, N, 1)
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	9 V E block, e.g. long-life 9 V lithium (approx. 80 hours of continuous use)
Housing material:	Aluminium frame profile with plastic outer casing (PVC)
Housing dimensions:	230 x 62 x 46 mm (L x W x H)
Weight, net (gross):	approx. 380 g (1050 g)

* FS = Full Scale

Model with tension range — *Complete Order No.*

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

ET2-200 = **ET2–200**



Online Tension Measuring Systems

SCHMIDT Online-sensors and display units:

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 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.

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

flexible, with small diameters

flexible, with large diameters

sensitive materials

tapes and bands

unsymmetrical cross sections

Depending on the application, SCHMIDT Online Tension Sensors can be supplied alone or as part of a complete system:

A SCHMIDT as sensor only

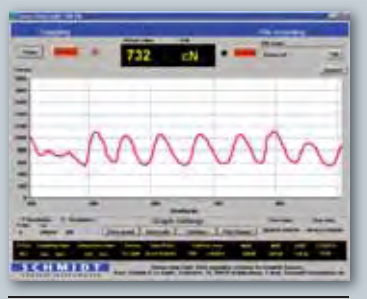
- for use with customer supplied indicators and closed loop control units
  or
- customer must supply regulated DC power source

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

Analog output 0-1 V DC (standard)

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

Digital output RS232 or RS422 (optional)



Software (optional equipment):

»Sensor View« (WIN'95 and higher)

The series TS can be mounted online for continuous tension monitoring. The sensor can be connected to a PC using RS232 or RS422 (optional) output.

With the programm **»Sensor View«** the tension reading of max. 15 TS sensors can be transfered to a PC. All datas are stored in an EXCEL file (.xls).

Please ask for additional information!

B Complete SCHMIDT Online Tension System

- 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)

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

1st IN TENSION METERS WORLDWIDE

Main Features:

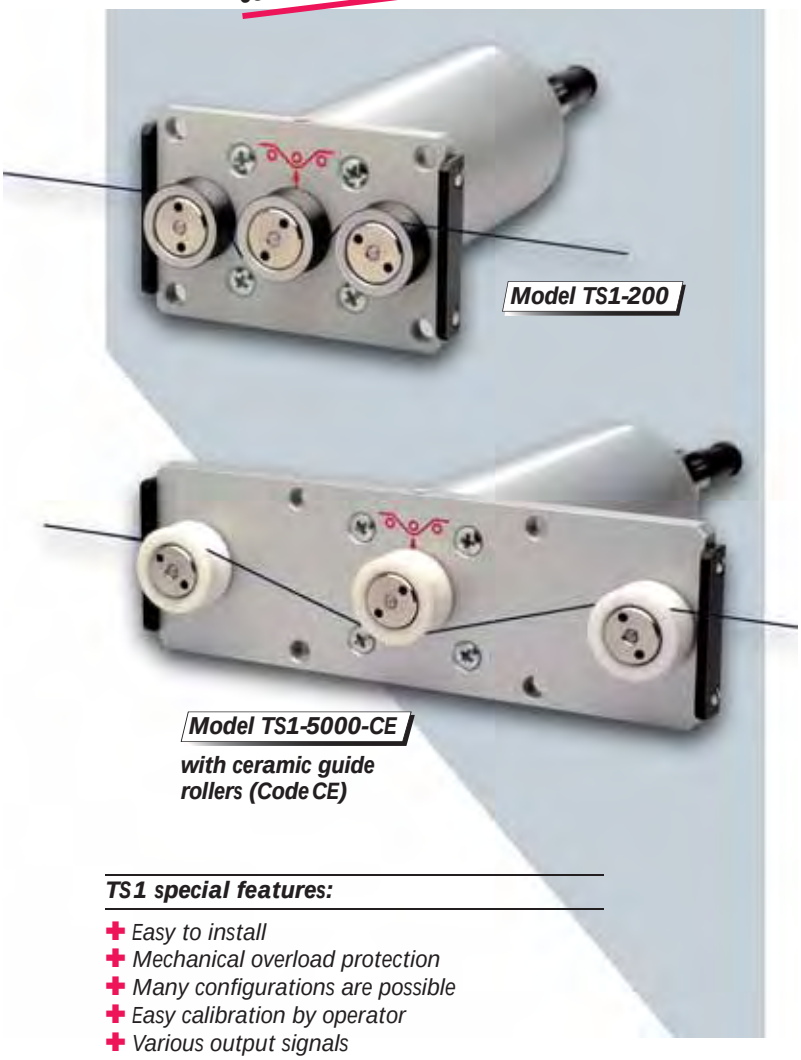
- Real time tension display
- Long time recording using operator set time span and sampling rate
- Analyzing and printing of all stored data with time (graphs and numeric report)
- Zero setting and calibration of the sensor using PC

SCHMIDT
control instruments

TS SERIES

Sensors for many applications

Universal sensor for continuous measurement



Model TS1-200

Model TS1-5000-CE
with ceramic guide rollers (Code CE)

TS1 special features:

- ✚ Easy to install
- ✚ Mechanical overload protection
- ✚ Many configurations are possible
- ✚ Easy calibration by operator
- ✚ Various output signals
- ✚ Wide variety of roller types can be specified

TS1 standard features:

- Ball-bearing mounted, V-grooved guide rollers
- Rugged aluminium housing
- Power supply: +12 ... 24 V DC (1-phase, regulated)
- Specific Test Report with calibration report optionally available

Specifications → see page D 7 →

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 TS1

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
TS1-10K	0-10 daN	124	PA: 1.00 mm Ø
TS1-20K	0-20 daN	224	PA: 1.50 mm Ø
TS1-50K	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 9)
PA = Polyamide Monofilament

Guide Rollers → see page E →

	Line Speed m / min ... max.	Roller Material
V-grooved		
Standard	2000	Hardcoated aluminium (No. R 10008)
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium (for Model TS1-100 and higher ranges)
Code T	1000	Plastic (POM) black
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE	1000	Ceramic
Code ASY asymmetrical groove	1000	Hardcoated aluminium for Model TS1-500* and higher ranges
U-grooved		* Measuring Head Width 124 mm
Code U	2000	Hardcoated aluminium

Output Signal (Supplied with diode connector)

Standard	Output signal 0-1 V DC
Code A 2	Output signal 0-10 V DC
Code A 3	Output signal 4-20 mA DC
Code A 5	Output signal digital RS 232, analog 0-1 V DC (Sampling time max. 4800 / sec)
Code A 6	Output signal digital RS 422, analog 0-1 V DC
Code A 7	Output signal digital RS 232, analog 0-1 V DC (Sampling time max. 25000 / sec) Available only for selected ranges. Please contact us.

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	+	ASY	+	A 3	=	TS1-1000-ASY-A3

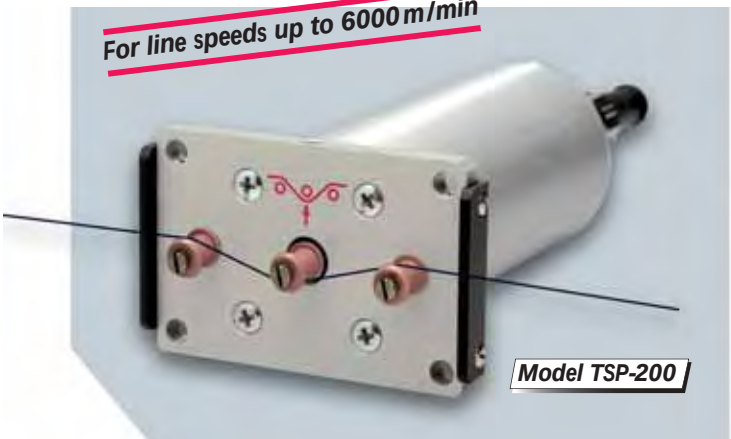
SCHMIDT
control instruments

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 6000 m/min



Model TSP-200

TSP special features:

- ✚ Non-rotating, exchangeable ceramic pins
- ✚ Suitable only for yarns and fibers
- – TSP standard features same as 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	0-100	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 9)
PA = Polyamide Monofilament

Guide Pins

→ see page E →

	Line Speed m/min ... max.	Pin Material
Standard	6000	Oxide ceramic 4 mm Ø (No. K09001)

1st IN TENSION METERS WORLDWIDE

Tension sensors 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

TSH special features:

- ✚ Guide rollers 30 mm Ø, available with V- or U-groove
- ✚ TSH standard features same as Model TS1. Custom designs available – contact our technical department.

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	150	PA: 0.80 mm Ø
TSH-10 K	0-10 daN	200	PA: 1.00 mm Ø
TSH-20 K	0-20 daN	250	PA: 1.50 mm Ø
TSH-50 K	0-50 daN	250	Steel rope 1.50 mm Ø (7x7x0.20)

Other tension ranges and measuring head widths available on request.
Other units of measure available – g or kg.
* Outer distance between outside guide rollers or outside dimensions of front plate
** Suitable for 95% of applications (see also chart on page 9)
PA = Polyamide Monofilament

Guide Rollers

→ see page E →

	Line Speed m/min ... max.	Roller Material
V-grooved		
Standard	4000	Hardened-steel roller (No. R10006)
U-grooved		
Code R1	4000	Hardened-steel roller (radius R5)

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 TSH same as Model TS1** (see page D2 and D7)

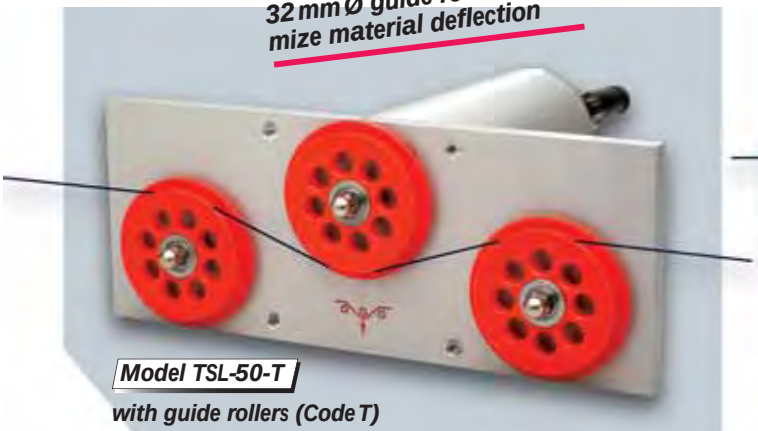
SCHMIDT
control instruments

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)

TSL special features:

- ✚ Gentle handling of sensitive material during measurement
- ✚ Extremly leight weight, low inertia guide rollers
- ✚ Best suitable for low tension ranges
- – TSL standard features same as Model TS1

Available Models

MODEL	Tension Ranges cN	Messkopfbreite* mm	SCHMIDT-Justierung**
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 9)
PA = Polyamide Monofilament

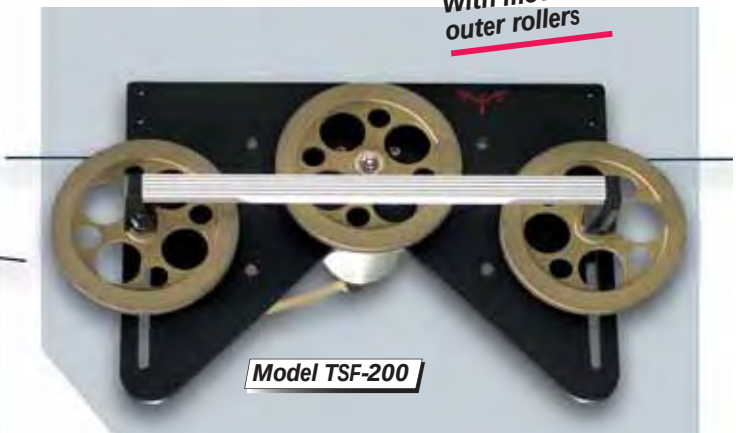
Guide Rollers → see page E →

	Line Speed m / min ... max.	Roller Material
V-grooved		
Standard	4000	Hardcoated aluminum (No. R 12021)
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

TSF 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
- – TSF standard features same as 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 9)
PA = Polyamide Monofilament

Guide Rollers → see page E →

	Line Speed m / min ... max.	Roller Material
V-grooved		
Standard	5000	Hardcoated aluminium (No. R 12045)

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 7)

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.
TSL-500	+	T	+	A2	=	TSL-500-T-A2

SCHMIDT
control instruments

1st IN TENSION METERS WORLDWIDE

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

Model TSB1

5 Tension ranges from 0-100 cN to 0-2000 cN

Max. width of material to be measured 20 mm

Model TSB1-500-20

TSB1 special features:

- ✚ *Dual-flanged outer guide rollers with various widths, from 7 mm bis 20 mm*
- ✚ *The roller width should correspond with the width of the material to be measured.*
- – *TSB1 standard features same as 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
TSB1-2000	0-2000	120	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 m/min ... max.	Roller Material
Standard	1000	Hardcoated aluminum, 13 mm Ø (Exception: 7 mm rollers are made of nickel-plated steel)

Other roller materials (nickel-plated steel or plastic) are available on request.

→ see page E →

Model TSB2

6 Tension ranges from 0-1000 cN to 0-50 daN

Cylindrical rollers with special supports for higher tension ranges

Model TSB2-2000-41

Custom-made configuration

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*
- – *Material sample of about 5 m*

Available Models

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

	Line Speed m/min ... max.	Roller Material
Standard	1000	Hardcoated aluminium, 13 mm Ø

→ see page E →

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 7)*

SCHMIDT control instruments

SC SERIES

Digital or analog display units with data analysis for one or several sensors

SCHMIDT display units are available for all SCHMIDT tension sensors.

SC and SCB Series standard features:

- Power supply to connected sensor
- Sensor calibration adjustment for each sensor
- Analog output 0 - 10 V DC, 3½ digit LED
- User-set damping for output signal and display
- CE certified with sensors connected

Specifications

→ see page D 7 →

Model SC-TD

Special features:

- Connection for 1 sensor
- Panel-mount digital display
- MIN and MAX limits with relay output
- Selectable output signal: voltage or current

Model SC-1

Special features:

- Connection for 1 sensor
- Small, compact housing
- Power supply using AC adapter
- Wall-mounting possible

Model SC-3

Special features:

- For up to three sensors
- Analog output with different ranges
- Digital display using channel select switch
- Power supply through separate AC adapter
- Wall-mounting possible

Model SCB-D

Special features:

- Expandable for connecting up to 8 sensors: 1 LED and 1 analog output signal 0 - 10 V DC for each sensor
- 19" table-top housing with plug-in modules
- 16 adjustable damping values (f_G) for analog output and display

Model SCB-D1 with digital display for one sensor

Expansion modules (plug-in units):

Model SCB-A
Analog display

Model SCB-M1
User-set MIN and MAX limits with relay output, 3½ digit LED display, LED trend display and material break detection with relay output

Model SCB-D2
Digital displays for two sensors

Model SCB-XX
Display unit with 1 LED display for 4, 8 or 12 tension sensors with same range; select-switch to select the desired sensor to be displayed; other technical data same as Model SCB-D.

To order, e.g. unit for 4 sensors: Model SCB-4

fig. 1: **Model SCB-A**

fig. 2: **Model SCB-M1**

fig. 3: **Model SCB-D2**

fig. 4: **Model SCB-4**

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

Model		Code for expansion		Complete Order No.
SCB	+	D2	=	SCB-D2

SCHMIDT
control instruments

Online sensors

TS SERIES

Specifications

Models TS1, TSP, TSH, TSL, TSF, TSB1, TSB2

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % FS* and ±1 digit
	Other calibration material:
	±3 % FS* or better
Overload protection:	100 % of range
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Signal processing:	Analog (Option: digital)
Output signal:	Standard: 0-1 V DC (analog)
	Option: 0-10 V DC, 4-20 mA (analog)
	Option: RS 232 or RS 422 (digital)
Damping (f_g):	Standard: 30 Hz (other values on request)
Temperature drift:	Less than ±0.05 % FS*/°C
Temperature range:	10-45 °C
Air humidity:	85 % RH, max.
Power supply:	+12 ... 24 V DC, 21 mA
	(regulated)
Housing material:	Aluminium
Weight, net (gross):	e.g. Model TS1-100 approx. 300 g (800 g)
Delivery includes:	If sensor is ordered only: 1 diode male connector
(Cable length – see pricelist)	If sensor and display unit is ordered:
	1 connecting cable for each sensor

* FS = Full Scale

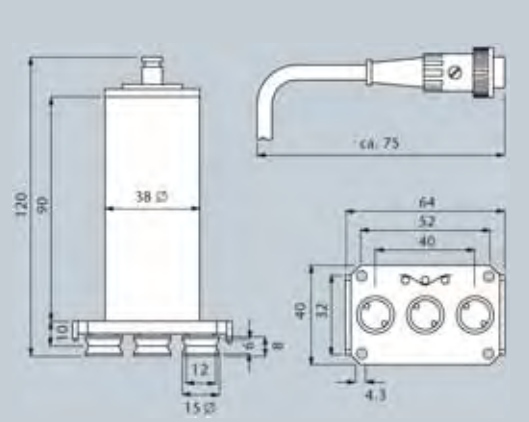


fig. 1:
Dimensions in mm of TS1 and measuring head shown on Model TS1-1000
(Dimensional drawings of all models available on request)

1st IN TENSION METERS WORLDWIDE

Display units

SC SERIES

Specifications

	Model SC-TD	Model SC-1	Model SC-3	SCB-D / SCB-XX
Digital display:	3½ digit LED	3½ digit LED	3½ digit LED	3½ digit LED
	with user-set tension range	with user-set tension range	with user-set tension range	with user-set tension range
Height of digit:	14.4 mm	10 mm	10 mm	11 mm
Units of measure:	cN oder daN	cN, daN or V	cN, daN or V	cN or daN
	depending on range	selectable	selectable	depending on range
Damping (f_g) adjustable to:	1 or 40 Hz	1.6, 3.3, 15, 330 Hz	1.6, 3.3, 15, 330 Hz	0.34 Hz to 500Hz
Output signal:	4-20 mA, 0-10 V DC	0-10 V DC	0-10 V DC	0-10 V DC
Voltage output for sensor:	yes	yes	yes	yes
Power supply:	Standard: 230 V / 50 Hz	9 ... 15 V DC / AC	9 ... 15 V DC / AC	Standard: 230 V / 50 Hz
	or 115 V / 60 Hz*	250 mA	700 mA	or 115 V / 60 Hz*
	35 mA			30 VA
AC adapter:		External (230 V or 115 V)*	External (230 V or 115 V)*	
Relay output:	1 A / 250 V AC / 30 V DC			Make contact
	Break contact			(only Model SCB-M1)
Housing:	Plastic	Aluminium	Aluminium	19" Table-top housing
				Aluminium
Dimensions (L x W x H):	96 x 48 x 103 mm	182 x 85 x 34 mm	199 x 109 x 34 mm	235 x 132 x 305 mm
Cutout required:	96 x 48 mm			
Weight, net (gross):	approx. 400 g (1000 g)	approx. 300 g (1000 g)	approx. 500 g (1200 g)	approx. 4000 g (6000 g)

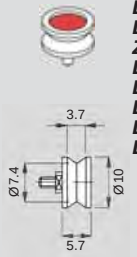
* Standard 230 V, if 115 V is required please specify

SCHMIDT control instruments

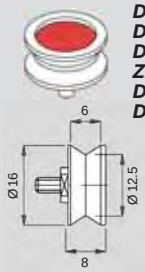
SCHMIDT Guide Roller Dimensions

Standard *All dimensions are given in mm*

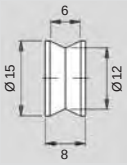
R 10010 Model
ZF2 DXE DXV ZEF DTEB DTEX DTVB DTVX DXES



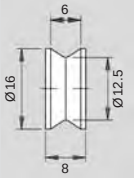
R 10003 Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX



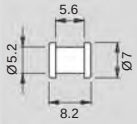
R 12013 Model
Q MK MKM (DN1)



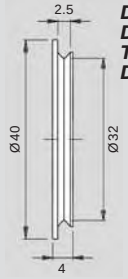
R 10008 Model
TS1



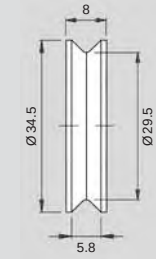
K 09001 Model
DXP TSP



R 12021 Model
DXF DTFB DTFX TSL DXFS

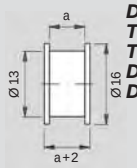


R 10006 Model
DXL TSH

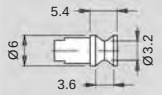


R 12045 Model
TSF

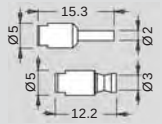
Tape rollers Model
DXB DXR DXT DTBB DTBX TSB1 TSB2 DXBS DXTS
a from 7 mm to 100 mm



R 10017 Model
ET2



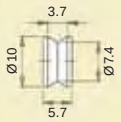
R 50020 Model
ET2P



Optional *All dimensions are given in mm*

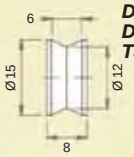
Code T Model
Plastic (POM) black
ZF2 DXE DXV ZEF DTEB DTEX DXES

Code W
Nickel-plated steel

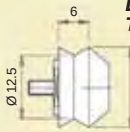


Code T Model
Plastic (POM) black
ZD2 DX2 Q MK DN1 DX2S ZED DTMB DTMX TS1

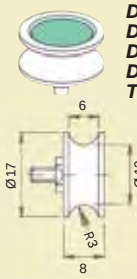
Code W
Nickel-plated steel



Code H Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX TS1



Code U Model
DX2 DN1 DX2S DTMB DTMX TS1

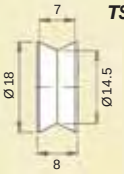


Code K Model
ZF2 DXE DXV ZEF DTEB DTEX DTVB DTVX

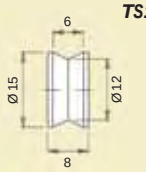
2000 m/min
Special rollers for high line speeds
3500 m/min

Model
ZD2 DX2 DN1 DX2S ZED DTMB DTMX TS1

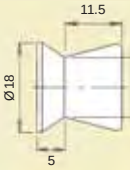
Code CE Model
ZD2 DX2 DN1 DX2S DTMB DTMX TS1



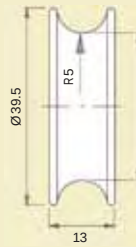
Code ST Model
Code B
ZD2 DX2 DN1 DX2S DTMB DTMX TS1



Code ASY Model
DX2 DN1 DX2S DTMB DTMX TS1



Code R1 Model
DXL TSH



For custom designed tension meters we also supply special rollers

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).

SCHMIDT control instruments

Applications

MODEL	Page	Narrow web machines	Tensioning	Braiding	Sewing	Open end spinning	Polyester spinning	Raschel knitting	Circular knitting	Warpers	Sizing	Pirn 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	A4			●	●			●		●	●	●	●			●	●		●	●	●	●		●	●
DXE	A5					●		●		●	●	●	●	●			●								
DXV	A6					●		●		●	●	●	●	●			●								
DXP	A6						●							●											
DXF/DXL	A7																								
DXK	A8														●										
MKM	A8		●																						
DXB	A9	●																●						●	
DXR	A10	●																●						●	
DXT	A10	●																●						●	
DN1	A12			●	●			●		●	●	●	●			●	●		●	●	●			●	●
Stationary, mechanical																									
Q	B1			●				●		●	●	●	●				●					●		●	
MK	B2												●				●					●		●	
DX2S	B2			●						●	●		●				●			●	●	●		●	●
DXES	B2					●		●		●	●	●	●	●			●								
DXFS	B2																					●			
DXBS	B2	●																●						●	
DXTS	B2	●																●						●	
Hand-held, electronic																									
ZEF	C2					●		●	●	●	●	●	●	●		●	●					●		●	
ZED	C2							●		●	●	●	●			●	●		●			●		●	
DTMB	C3			●	●		●			●	●	●	●			●	●		●	●	●			●	●
DTMX	C4			●	●		●			●	●	●	●			●	●		●	●	●			●	●
DTEB	C8					●		●		●	●	●	●	●		●	●								
DTEX	C8					●		●		●	●	●	●	●		●	●								
DTVB	C8					●		●		●	●	●	●	●			●								
DTVX	C8					●		●		●	●	●	●	●			●								
DTFB	C9																					●			
DTFX	C9																					●			
DTBB	C10	●																●						●	
DTBX	C10	●																●						●	
ETM	C12				●	●				●	●	●	●	●		●	●								
ETMP	C12					●	●							●											
Stationary, electronic																									
TS1	D2			●						●	●		●							●	●	●		●	●
TSP	D3									●						●									
TSH	D3																			●	●		●	●	●
TSL	D4			●									●				●			●	●	●	●	●	●
TSF	D4																						●		
TSB1	D5	●																●						●	
TSB2	D5	●																●						●	

TEXTILE **WIRE**

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

Subject to change without notice.

Tension meters for special applications

Please ask for additional information!

Series 136

For dependable and exact measurement of tension even where thick materials (max.30 mm) like wires, cables and buffer tupes etc. are used. Unique measuring technique, where all three rollers run on the same side of the measuring material. The sensor is pushed against the material and measures carefully without material deflection and independent to diameters or material stiffness.

Special features:

- *Easy material threading*
- *Minimizes material deflection*
- *3 Tension ranges – one sensor*

Standard features:

- *Ranges up to 500 daN*
- *Suitable as hand-held and online gauge*
- *Analog or digtal display available*

Model D 485

Model 136.3

Series RF

Tension sensor suitable for many applications. The sensor can be used as single roller system replacing existing guiderollers.

Special features:

- *Tension ranges from 0 - 100 cN up to 0 - 100 daN*
- *Overload protection up to 500 %*
- *Rugged stainless steel housing*
- *High resolution*
- *Mounting possibility of customer or SCHMIDT guide rollers*
- *A wide variety of V-grooved and cylindrical rollers are available*

Series RFS
without amplifier (Output mV/V): external amplifiers and display are available

Series RFSE
with integrated amplifier (Output 0-10 V)

Model RFS

Model RFS with guide roller

Model RFSE

Series RTM

For measuring the static tension of transmission belts as e.g. timing or vee belts. The instrument measures the frequency of a taut belt and displays the frequency in Hz or tension in Newton. For meauring the static belt has to be tapped to oscillate.

Special features:

- *Hand-held instrument*
- *Measuring range 10 - 300 Hz*
- *Display error ± 1 Hz*
- *Total error < 5 %*
- *Battery operated*

Model RTM

Series TEN

For measuring tension of fibers and filaments only.

Special features:

- *Compact mechanical tension meter with 2 rollers*
- *12 measuring ranges up to 170 g (cN)*

Series MST

For measuring and adjusting the tension of sewing machines to get best and highest quality stitched seams.

Special features:

- *Integrated tension meter (max. 500 cN)*
- *Motorized take-up fixture to have constant speed (12 m / min)*
- *Base for positioning the unit on a work plate*
- *Battery operated*

Operating elements same as Series ET2.

Subject to change without notice.

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