

SCHMIDT offers the worldwide largest selection of Tension Meters



MORE THAN

75

YEARS

 made
in
Germany



A Selection of Tension Meters

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



Z Series
Page A1 - A2



DX Series
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Q Series
Page B1



PT Series
Page C1 - C2



ZE Series
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ET Series
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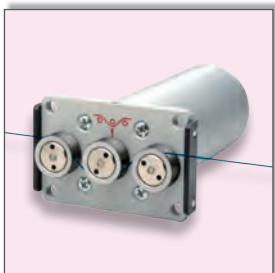
KXE Series
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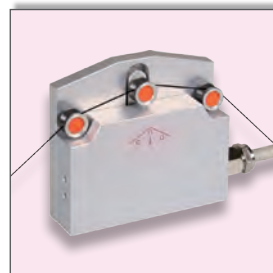
RTM Series
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Applications

MODEL	Page	Narrow web machines	Tensioning	Braiding	Sewing	Open end spinning	Polyester spinning	Raschel knitting	Circular knitting	Warpers	Sizing	Carbon winders	Winding	Texturizing	Weaving (loom only)	Warping	Twisting	Strip winding	Wire EDM	Wire EDM	Extruders	Fine drawing	Fiber optics	wire drawing	Buffer tubes	Winding and coiling	Stranders
Hand-held, mechanical																											
ZF2	A2																										
ZD2	A2																										
DX2	A3																										
DXE	A5																										
DXV	A6																										
DXP	A6																										
DXF/DXL	A7																										
DXK	A8																										
MKM	A12																										
DXB	A9																										
DXR	A10																										
DXT	A10																										
DN1	A13																										
Stationary, mechanical																											
Q	B1																										
MK	B2																										
DX2S	B2																										
DXES	B2																										
DXFS	B2																										
DXBS	B2																										
DXTS	B2																										
Hand-held, electronic																											
PT	C1																										
ZEF	C3																										
ZED	C4																										
DTS	C5																										
DTX	C6																										
DTSB/DTXB	C10																										
DTSL/DTXL	C11																										
DTSE/DTXE	C12																										
DTSF/DTXF	C12																										
ETB/ETX	C13																										
ETPB/ETPX	C14																										
MST	A12																										
KXE	C15																										
Stationary, electronic																											
TS1/FS1/MZ1	D2/D8/D18																										
FSP	D12																										
TSH/FSH/MZH	D4/D10/D19																										
TSL/FSL	D6/D11																										
TSF/TSF1	D6/D7																										
TSB1/FSB1	D5/D11																										
MZB1	D19																										
TSB2	D5																										
MZ	D16-17																										

T E X T I L E

W I R E

Subject to change without notice.

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

Please visit us in the World Wide Web!

**We solve tension-measuring problems.
More than 75 years. Worldwide.**

In 1948, the founder of the company, Mr. Hans Schmidt, started selling and distributing yarns and textile machinery.

He became aware of the importance which the control of tension had for production processes and soon developed and constructed a 3-Roller Tension Meter which featured one measuring roller and two guiding rollers. This ingenious principle of operation has been proved to be the best method for tension measuring.

MORE THAN
75
YEARS

The 3-roller measuring system has become the hallmark of all SCHMIDT tension meters and remains unsurpassed in its efficiency even today.

Since 1962, the company's headquarter is in Waldkraiburg, located near Munich, Germany.



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

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

With **synthetic fibers**, this results in irreversible molecular shifts, which may cause the fabric to dye unevenly.

The inevitable consequence is a product of poor quality.

SCHMIDT Tension Meters help you to eliminate tension-related defects.



Today, more than 195.000 SCHMIDT tension meters are used worldwide.





SCHMIDT offers the worldwide largest selection of Tension Meters:

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

Wherever precision and superior quality are essential in producing and processing

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

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

Take benefit of our experience!

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www.hans-schmidt.com

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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 for your measuring problem, please contact us. We will be glad to design a model for your special application.

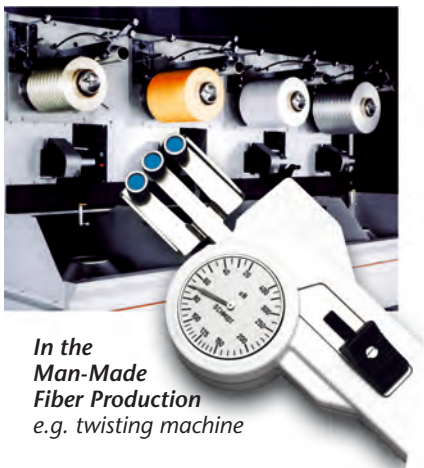
1st IN TENSION METERS WORLDWIDE®



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



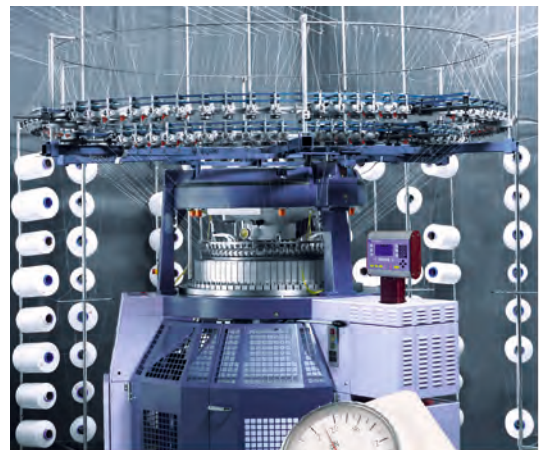
In the Optical Fiber Production e.g. winding machine



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

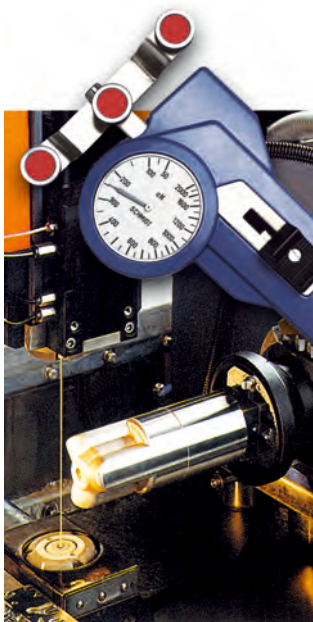


In the Textile Industry Online tension sensor to control the bobbin creel



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





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



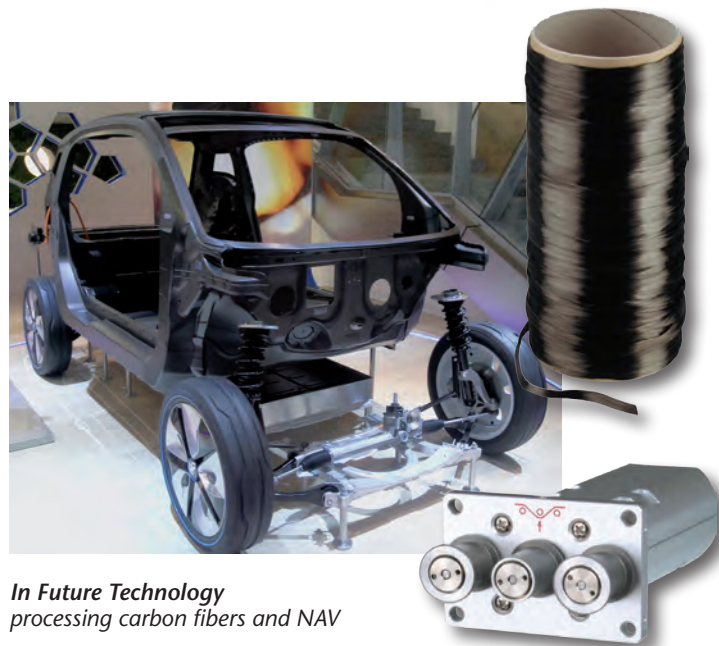
In the Construction Industry
For measuring pretensioned non-moving ropes, tower guy wires, overhead lines, etc.



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



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



In Future Technology
processing carbon fibers and NAV

SCHMIDT Tension Meters are used throughout the world.



In the Aircraft Industry
producing parts made by fiber-reinforced 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®



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



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



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



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

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.

Because of the very low request for this certificate and the very high costs for the procedure of the certification we decided not to make this certification again. Of course we will work according our quality handbook and the regulations of ISO 9001 furthermore in order to keep our quality standard

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.



SCHMIDT Inspection Certificate 3.1

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

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

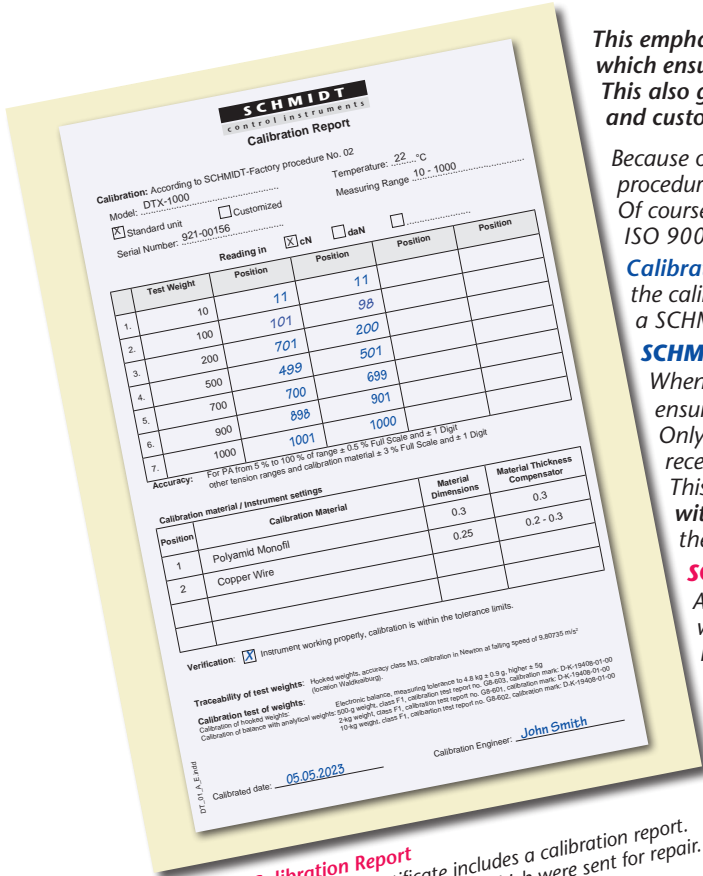
Our **Inspection Certificate** according to EN 10204 is the European equivalent to the test reports of other international organizations, such as NIST (USA) or JAL (Asia).



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

1st IN TENSION METERS WORLDWIDE®

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



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





General Information on SCHMIDT Tension Meters

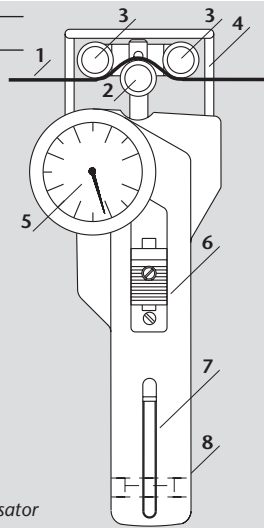
1st IN TENSION METERS WORLDWIDE®

Operating elements DX2:

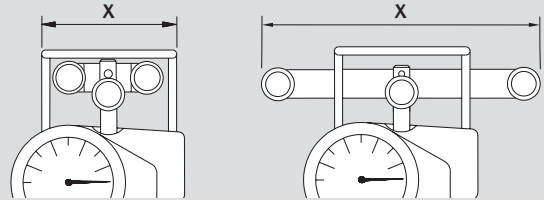
+ All SCHMIDT Tension Meters feature the 3-roller measuring system. The center measuring roller is deflected by the tension of the measured material. This measuring principle assures highest accuracy and repeatability.

+ All rollers are equipped with precision ball bearings.

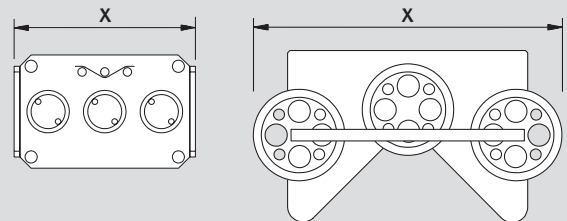
- 1 Measured material
- 2 Measuring roller (center guide roller)
- 3 Outer guide rollers
- 4 Filament guide
- 5 Scale
- 6 Thumbpiece
- 7 Sample holder clip
- 8 Material thickness compensator



Measuring head width on hand-held instruments:



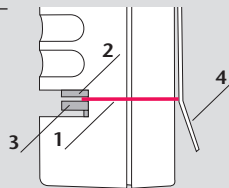
Measuring head width on online sensors:



+ 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.

Material thickness compensator:

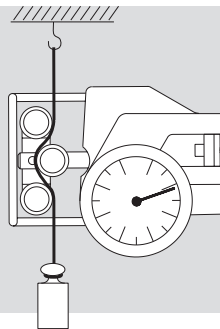
+ SCHMIDT hand-held tension meters are equipped, if necessary, with a material thickness compensator. This exclusive feature is only found on SCHMIDT tension meters and minimizes any error caused by changing material diameters.



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

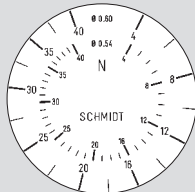
SCHMIDT calibration:

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



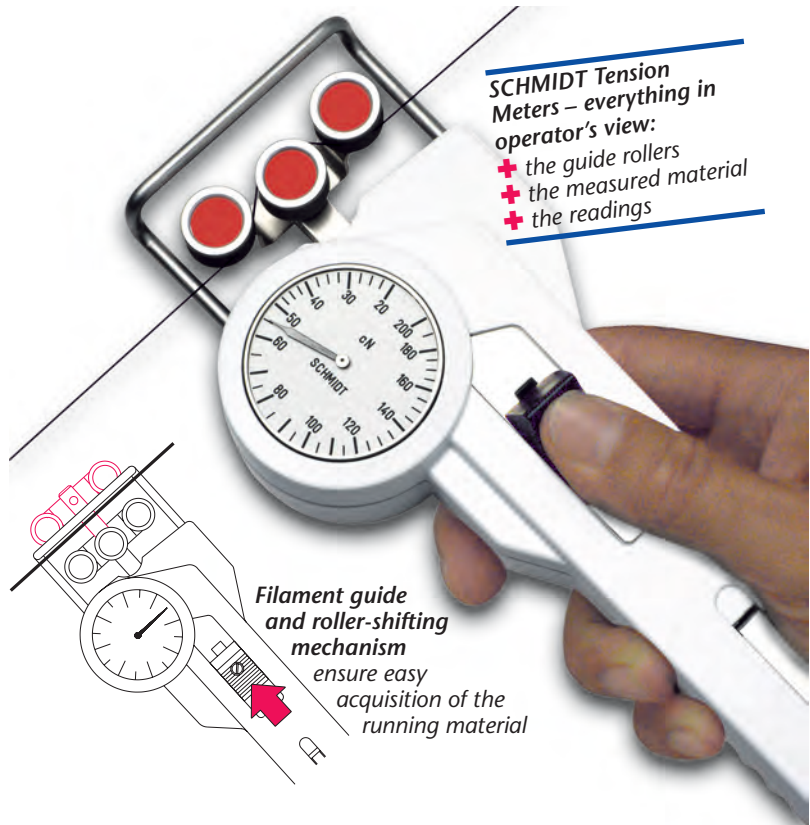
Special scale for customer materials:

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



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



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 3 →

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 - 1.20 mm Ø
10 daN	PA: 1.00 mm Ø	10000 tex	0.70 - 1.40 mm Ø
20 daN	PA: 1.50 mm Ø	20000 tex	1.20 - 2.0 mm Ø
30 daN	PA: 1.50 mm Ø	30000 tex	1.50 - 2.50 mm Ø
50 daN	Steel rope: 1.50 mm Ø (7x7x0.20)	50000 tex	1.50 - 3.0 mm Ø
60 daN	Steel rope: 2.0 mm Ø (7x7x0.30)	60000 tex	1.80 - 3.5 mm Ø

* Tension measured in N (Newton):

1 cN = 1.02g = 0.01 N; 1 daN = 1.02kg = 10 N;

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

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

■ **If your material to be measured differs in kind and diameter:**

Please contact us for assistance to determine the right tension range and model. For this purpose a material sample of 5 m should be supplied.

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

unsymmetrical cross sections



flexible, with small diameters



sensitive materials



flexible, with large diameters



tapes and bands



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

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

→ see page E →

4. Required accessories:

- Adjustable damping – Special lever – Memory pointer

5. Special custom-made designs:

on request

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

6. Calibration using customer-supplied material:

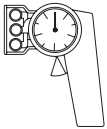
This is recommended when the material to be measured differs significantly from the SCHMIDT calibration material in diameter, rigidity or shape etc. For this purpose a material sample of about 5 m should be supplied.

7. Inspection Certificate and Calibration Reports:

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

If you need assistance ... Should you need any help in selecting your tension meter, please contact us directly, or the service department of your machinery supplier. In any case, please furnish the following information:

- Description of application, machinery, picture
- Kind of tension meter
- 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



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

Special features:

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

Standard features:

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

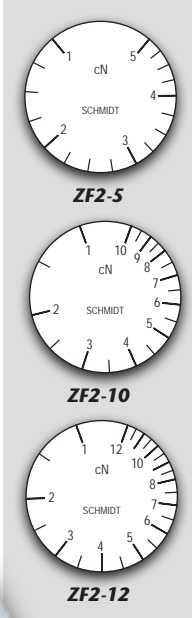
Slim filament guide with small guide rollers – ideal for limited access space

With bigger rollers for universal use



Model ZF2-12

Model ZD2-100

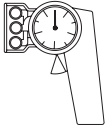


ZF2-5

ZF2-10

ZF2-12

1st IN TENSION METERS WORLDWIDE®



Model ZF2

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

Available Models

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

Other tension ranges available on request. Other units of measure available, such as g.

* Width of filament guide

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Rollers

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

→ see page G →

Specifications

ZF2 Series

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

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

Model ZD2

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

Available Models

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

Other tension ranges available on request. Other units of measure available, such as g.

* Width of filament guide

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Rollers

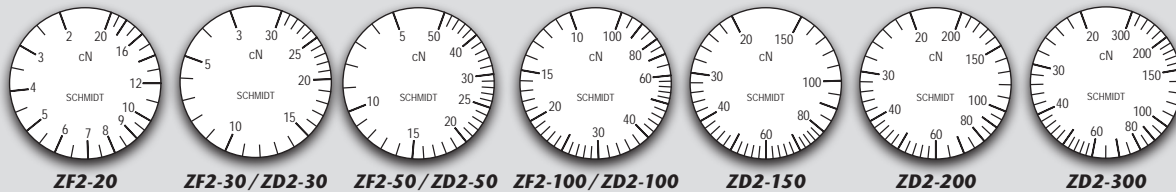
V-grooved	Line Speed V _{max} ... m/min	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model ZD2-100 and higher ranges)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code CE2	1000	Aluminium ceramic-coated

→ see page G →

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.

To place an order

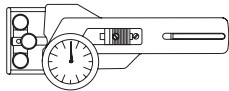
please indicate the complete model number, e.g.:

Model with tension range

Code for guide rollers
(if not standard)

Complete Order No.

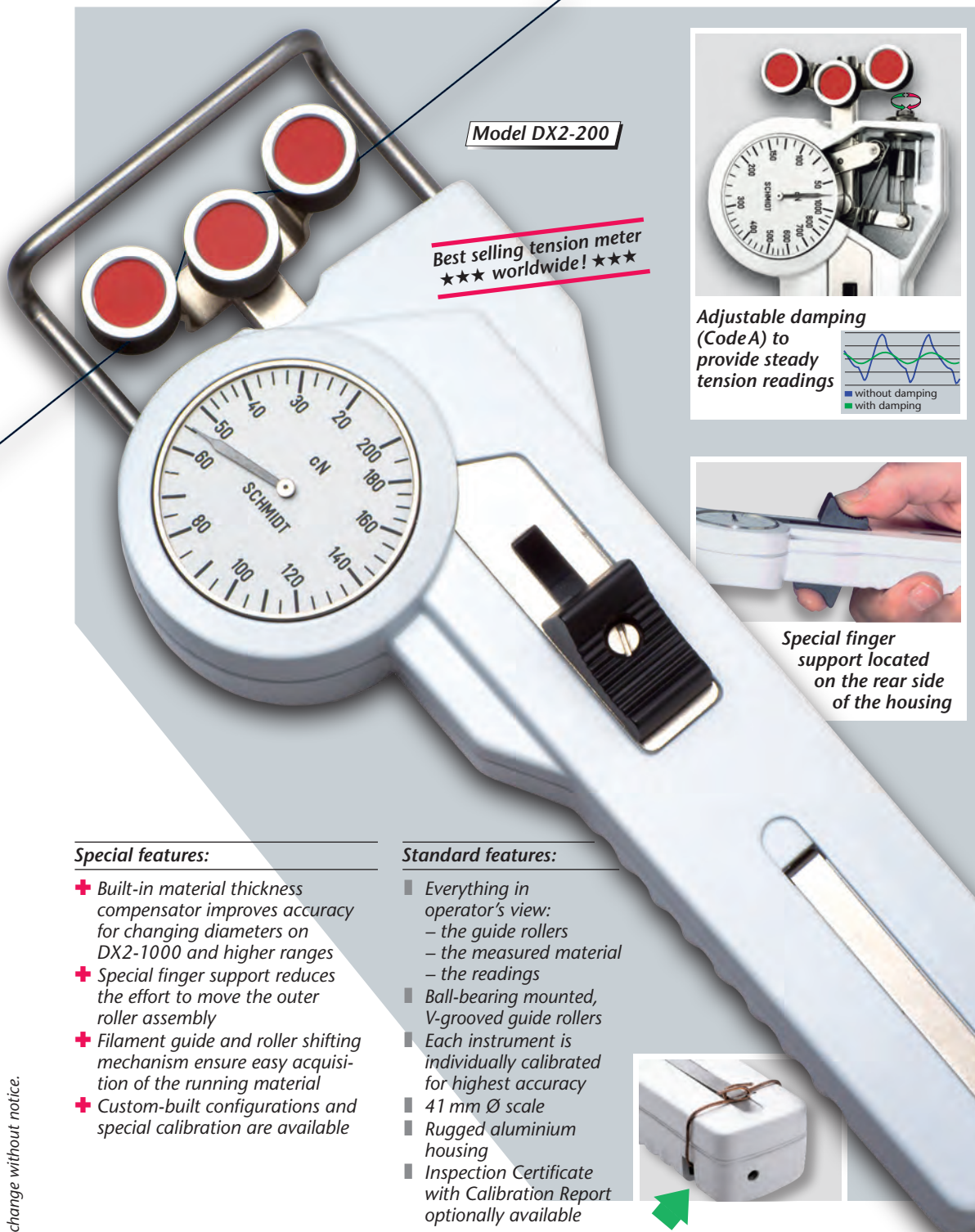
ZD2-100 + **K** = **ZD2-100-K**



DX SERIES

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

Universal tension meters
for most industrial applications



Model DX2-200

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



Adjustable damping
(Code A) to
provide steady
tension readings



Special finger
support located
on the rear side
of the housing

Special features:

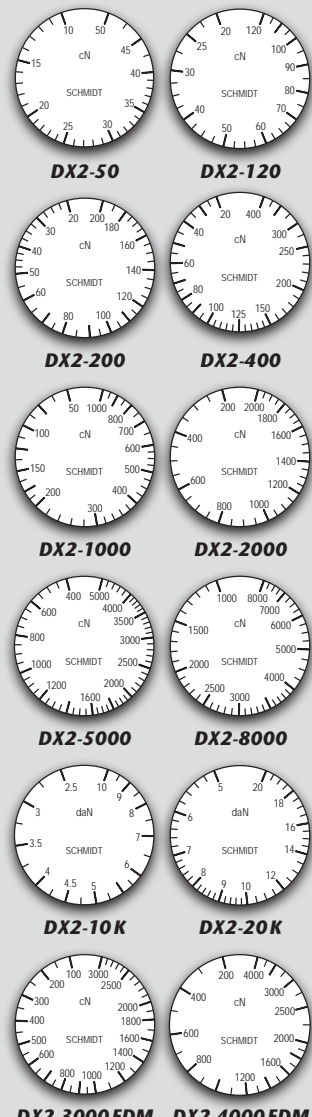
- + Built-in material thickness compensator improves accuracy for changing diameters on DX2-1000 and higher ranges
- + Special finger support reduces the effort to move the outer roller assembly
- + Filament guide and roller shifting mechanism ensure easy acquisition of the running material
- + Custom-built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

Standard features:

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

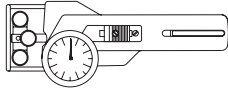


Material thickness
compensator with material
sample inserted



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

Subject to change without notice.



Model DX2

Please ask for additional informations!

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**	Material thickness com- pensator 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 11)

PA = Polyamide Monofilament

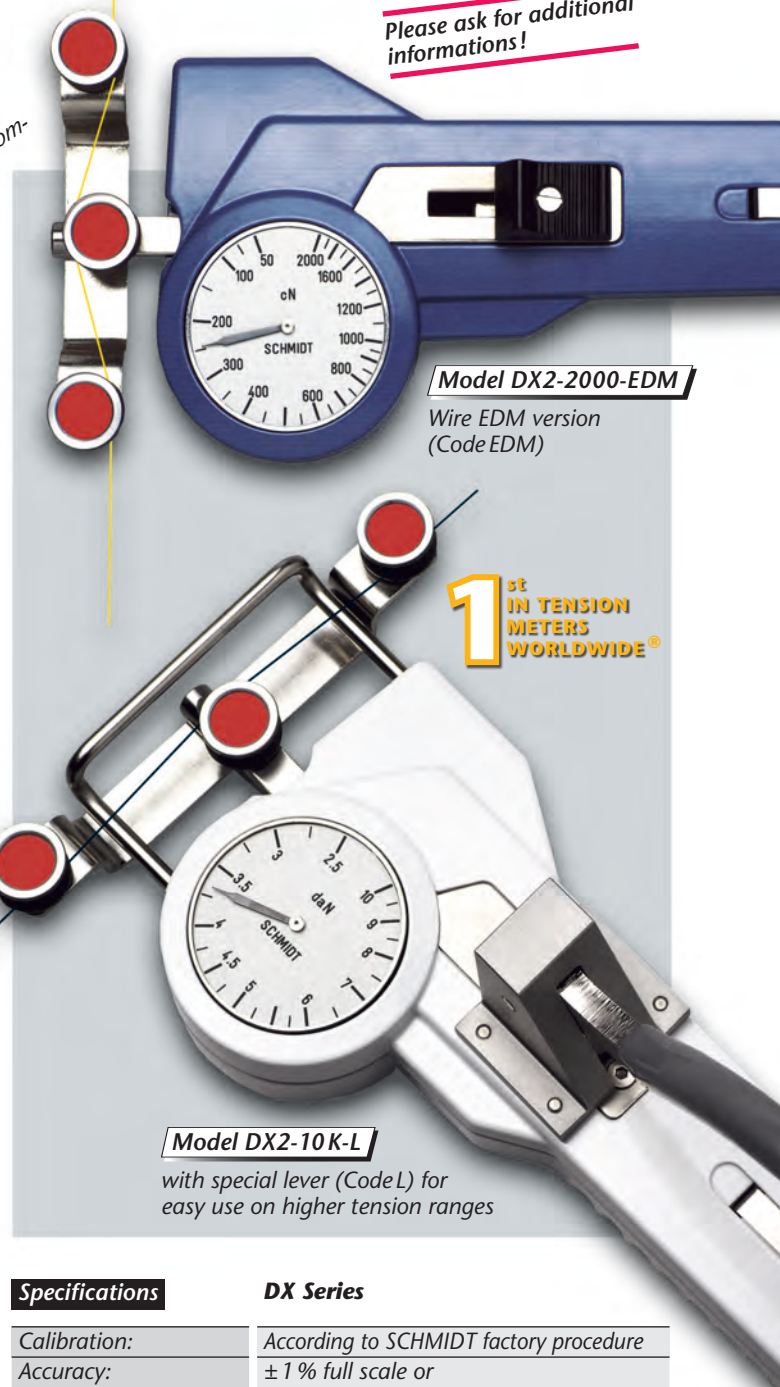
Guide Rollers

	Line Speed v_{max} ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model DX2-120 and higher ranges)
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium*
Code ASYB asymmetrical groove	1000	tempered steel for tire cord* (for Model DX2-120 and higher ranges)
		*Gauge without filament guide
U-grooved		
Code U	2000	Hard-coated aluminium

→ see page G →

Optional Accessories

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



Specifications

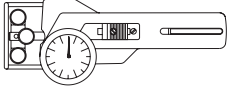
	DX Series
Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 1 % full scale or ± 1 graduation on scale
Scale diameter:	41 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Housing material:	Die-cast aluminium
Housing dimensions:	188 x 85 x 45 mm (LxWxH)
Weight, net (gross):	Up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

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

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

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

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



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

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

Special features:

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

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Guide Rollers

→ see page G →

Models DXE, DXV

V-grooved

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

Guide Pins

→ see page G →

Model DXP

V-grooved

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

Optional Accessories

Models DXE, DXV, DXP

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

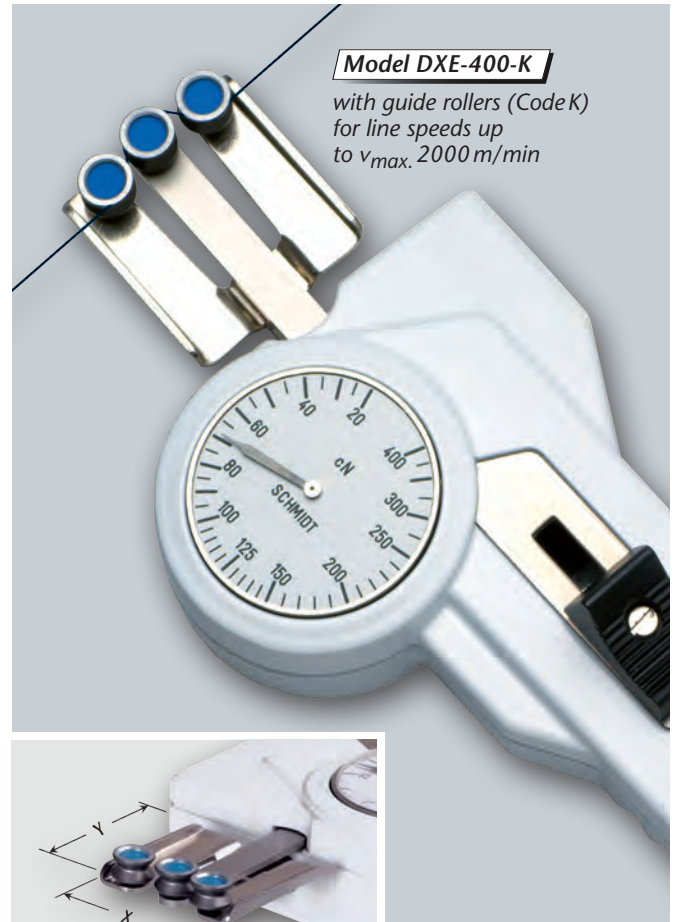
Specifications

same as Model DX2 (see page A4)

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

Model DXE

Special tension meter for limited access space



Model DXE-400-K

with guide rollers (Code K) for line speeds up to v_{max} 2000 m/min



Measuring head, Model DXE

Available Models

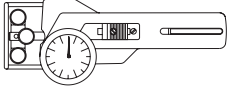
MODEL	Tension Ranges cN	Measuring Head Width X* approx. mm	Measuring Head Length Y approx. mm	SCHMIDT Calibration Material**
DXE-50	10 - 50	38	47	PA: 0.12 mm Ø
DXE-120	20 - 120	38	47	PA: 0.12 mm Ø
DXE-200	20 - 200	38	47	PA: 0.12 mm Ø
DXE-400	20 - 400	38	47	PA: 0.20 mm Ø
DXE-1000	50 - 1000	36	47	PA: 0.30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

Other tension ranges available on request. Other units of measure available, such as g.

* Width of bracket assembly

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament



Model DXV

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



Measuring head, Model DXV

Model DXP

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



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**
DXV-50	10-50	40	42	PA: 0.12 mm Ø
DXV-120	20-120	40	42	PA: 0.12 mm Ø
DXV-200	20-200	40	42	PA: 0.12 mm Ø
DXV-400	20-400	40	42	PA: 0.20 mm Ø
DXV-1000	50-1000	40	42	PA: 0.30 mm Ø
DXV-1500	150-1500	40	42	PA: 0.30 mm Ø
DXV-2000	200-2000	40	42	PA: 0.50 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.

* Width of bracket assembly

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament

Available Models

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

Other tension ranges available on request. Other units of measure available, such as g.

* Width of bracket assembly

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament

Model with tension range

Code for guide rollers
(if not standard)

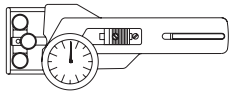
Code for accessory

Complete Order No.

To place an order

please indicate the complete model number, e.g.:

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



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

Special features:

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

Model DXF, DXL

Available Models

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

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

Guide Rollers

Model DXF

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

→ see page G →

Model DXL

V-grooved	Line Speed v _{max.} ... m/min	Roller Material
Standard	4000	Hardened steel (max. Ø 4 mm)
U-grooved		
Code R1	4000	Hard chrome-plated steel (Ø 3-9 mm)
Tape roller		
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

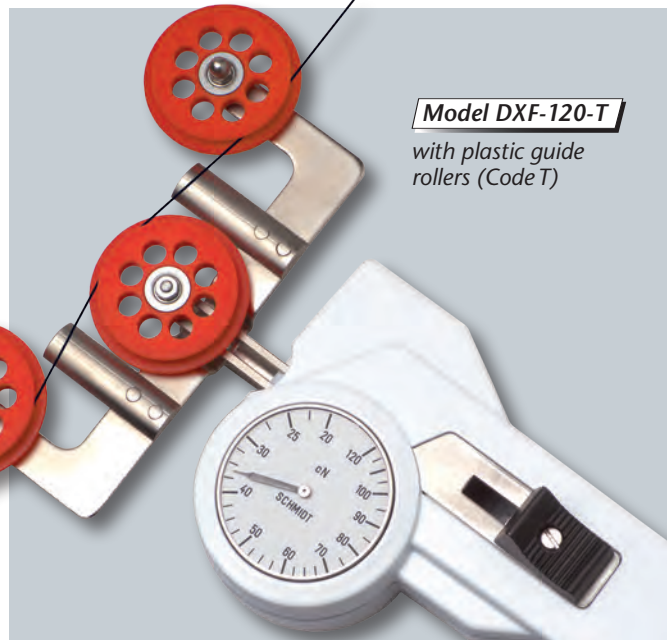
Optional Accessories

Code A	Air damping (available for Models -400 to -5000)
Code L	Special lever – recommended for -10K Models
Code M	Memory pointer

Specifications same as Model DX2 (see page A4)

Model DXF

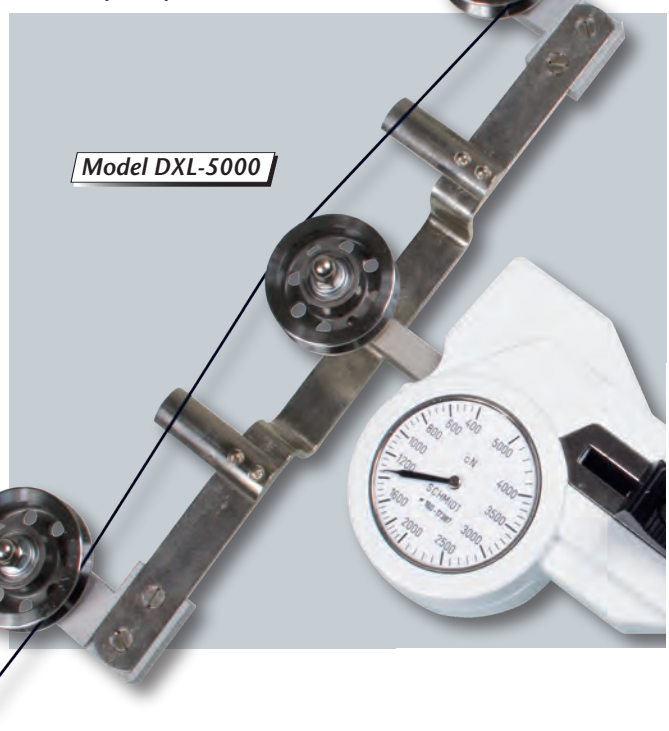
For fragile filaments such as optical fibers, glass fibers, single carbon fibers etc., up to max. 1.5 mm Ø



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

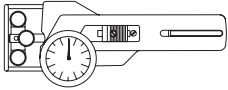
Model DXL

For fiber optics, buffer tubes, fibers, cables, ropes, up to max. 10 mm Ø



Model DXL-5000

Subject to change without notice.



Tension meter for measuring warp threads on weaving machines

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

Special features:

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

Available Models

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

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

Optional Accessories

Code M Memory pointer

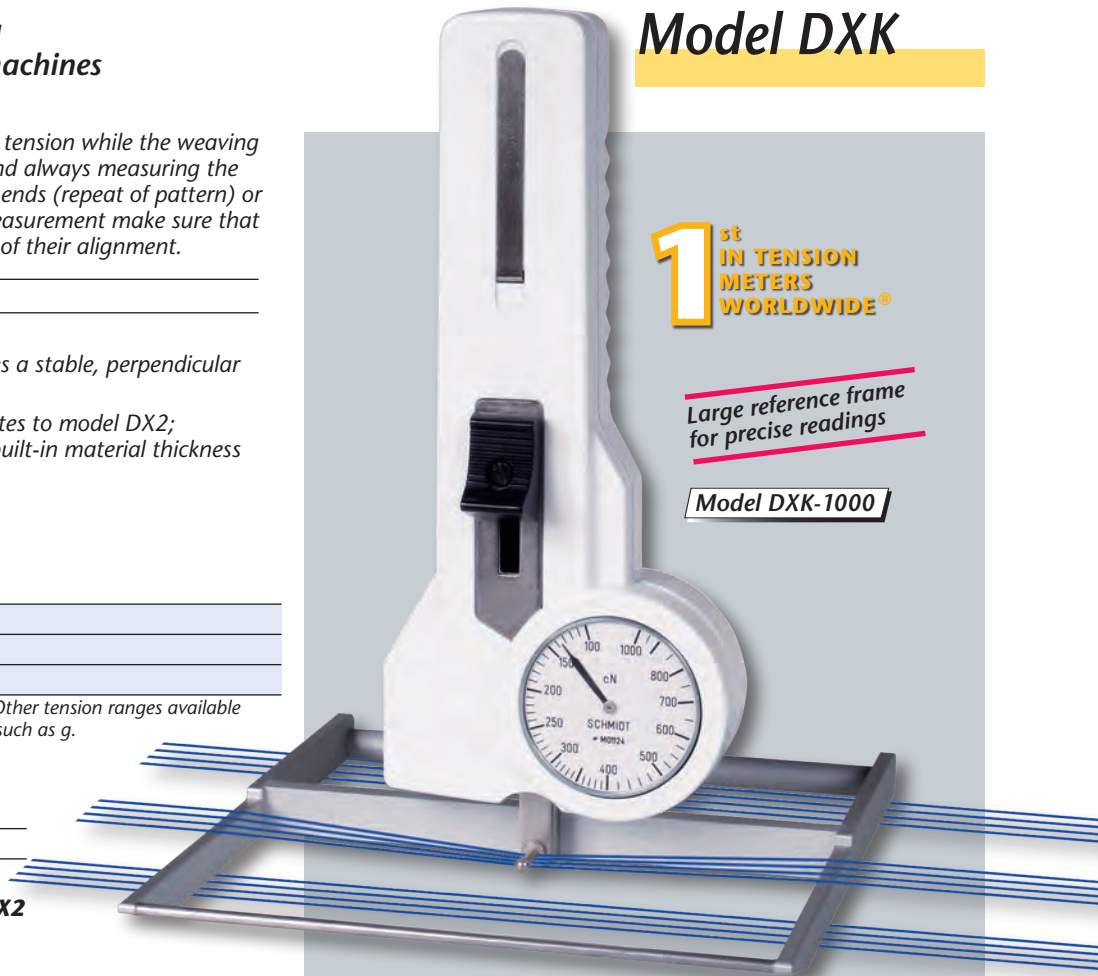
Specifications same as Model DX2
(see page A4)

Model DXK

1st
IN TENSION
METERS
WORLDWIDE®

Large reference frame
for precise readings

Model DXK-1000



Screen Printing Tension Meter

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

Special features:

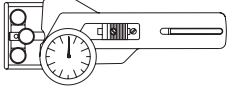
- + To be used for synthetic and steel meshes
- + Warpwise or weftwise measuring is possible
- + 2 adjustable markers to set limits (MIN, MAX)
- + Measuring range 6 - 50 N/cm
- + Protected precision dial gauge
- + Depth of indentation max. 1 mm
- + Measuring force 2.1 - 3.0 N
- + According DIN EN 16611
- + Calibration Certificate with Calibration Report optionally available



Model FT

Model FT





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

Special features:

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

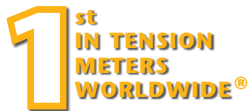
When selecting the instrument for your specific application, please keep in mind that:

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

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

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

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



Models DXB, DXR, DXT

Guide Rollers

Line Speed
 v_{max} ... m/min
Roller Material

→ see page G →

Standard	1000	Hard-coated aluminium
-----------------	------	-----------------------

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

Optional Accessories

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

Specifications

same as Model DX2 (see page A4)

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

Model DXB

Cylindrical rollers pointing toward the operator



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

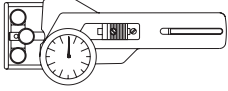
Available Models

MODEL	Tension Ranges cN	Measuring Head Width** mm		Roller Widths mm
		mm	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-10K	2.5 - 10 daN	117	7, 10, 15, 20, 30, 36, 41	
DXB-20K-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



Model DXR

With heavy-duty bracket and special roller support



Model DXR-50K-100-L

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

Model DXT

Cylindrical rollers pointing away from the operator



Model DXT-1000-20

Version with 20 mm tape rollers

Available Models

MODEL	Tension Ranges cN	Measuring Head Width** mm	Roller Widths mm
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).

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 horizontal lying; material textile ribbon or film,

depending on tension range and roller width

** Outer distance between outside guide rollers

Model with tension range

Roller width in mm

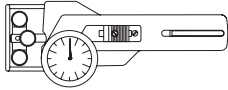
Code for accessory

Complete Order No.

To place an order

please indicate the complete model number, e.g.:

DXB-1000 + **20** + **A** = **DXB-1000-20-A**



Tension meter for measurement at sewing machines

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

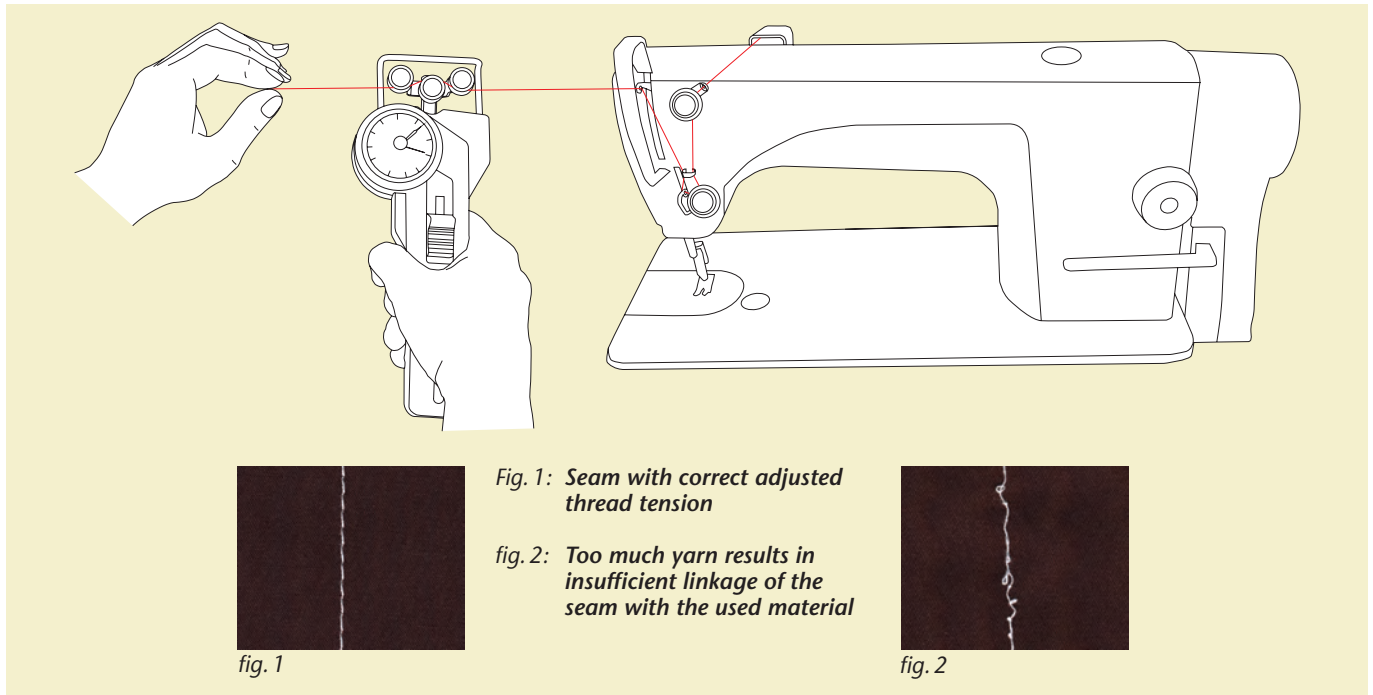


fig. 1

Fig. 1: Seam with correct adjusted thread tension



fig. 2

fig. 2: Too much yarn results in insufficient linkage of the seam with the used material

DX SERIES

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

Most used model:

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

Further tension meters for measuring the thread tension at sewing machines

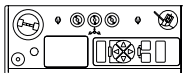


Tension meter DX2 with memory pointer Code M



Recommended Models

ZF2	see page A 1
DT	see page C 5
ET	see page C 13
Q	see page B 1
TS	see page D 2



Model MST

3 Tension ranges
from 1 - 200.0 cN to 1 - 2000 cN

Special features:

- + Integrated electronic tension meter
- + Motorized take up-fixture to have constant speed of thread 9 m/min
- + Coloured, backlight TFT-display with 3 different display modes:
 - numeric
 - numeric with live bargraph
 - numeric with graph (time-tension)
 see page C 15
- + Special fixture to determine shuttle tension
- + Vacuum base for positioning the unit on the working plate (height adjustment)
- + USB interface
- + Memory for 60.000 readings
- + Adjustable electronic damping for better reading when tension fluctuates
- + Software Tension Inspect (optional) see page C 9

Standardmerkmale:

- Battery or mains operation
- Rugged aluminium housing
- CE certified, interference resistant against static electrifications
- Optionally available: Inspection Certificate 3.1 with calibration report

Specifications

Calibration:	According SCHMIDT factory procedure
Accuracy:	± 1 % FS* and ± 1 digit, typical ± 0.5 % FS*
Memory for material curves:	1 for SCHMIDT calibration plus 3 free customized calibrations
Overrange:	Approx. 10% FS*, without accuracy guarantee
Overload protection:	200% FS*
Memory:	60.000 values at 999 measuring periods
Memory mode:	5 memory modes with statistical evaluation and PEAK capture
3 display modes:	numeric numeric with bargraph X-Y Diagramm (time - tension)

Electronic tension meter with motorized take-up fixture for sewing machines for adjusting the yarn brakes at constant speed



Available Models

MODEL

Tension Ranges
cN

SCHMIDT
Calibration Material*

MODEL	Tension Ranges cN	SCHMIDT Calibration Material*
MST-200	1 - 200.0	PA: 0.12 mm Ø
MST-500	1 - 500.0	PA: 0.20 mm Ø
MST-1000	1 - 1000	PA: 0.30 mm Ø
MST-2000	1 - 2000	PA: 0.50 mm Ø

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

Output signal:	USB
Damping:	Adjustable electronic damping (averaging)
Vacuum base:	Adjustable height for measuring position above working plate 120 to 220 mm
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	Li-Ion battery (approx. 2h continuous use), charging time approx. 2 1/2 h, AC adapter 100 - 240 V AC, adapter (EU, USA, UK)
Housing material:	Aluminium
Housing dimensions:	208 x 80 x 106 mm (L x W x H)
Weight, device (base):	Approx. 840 g (500 g)

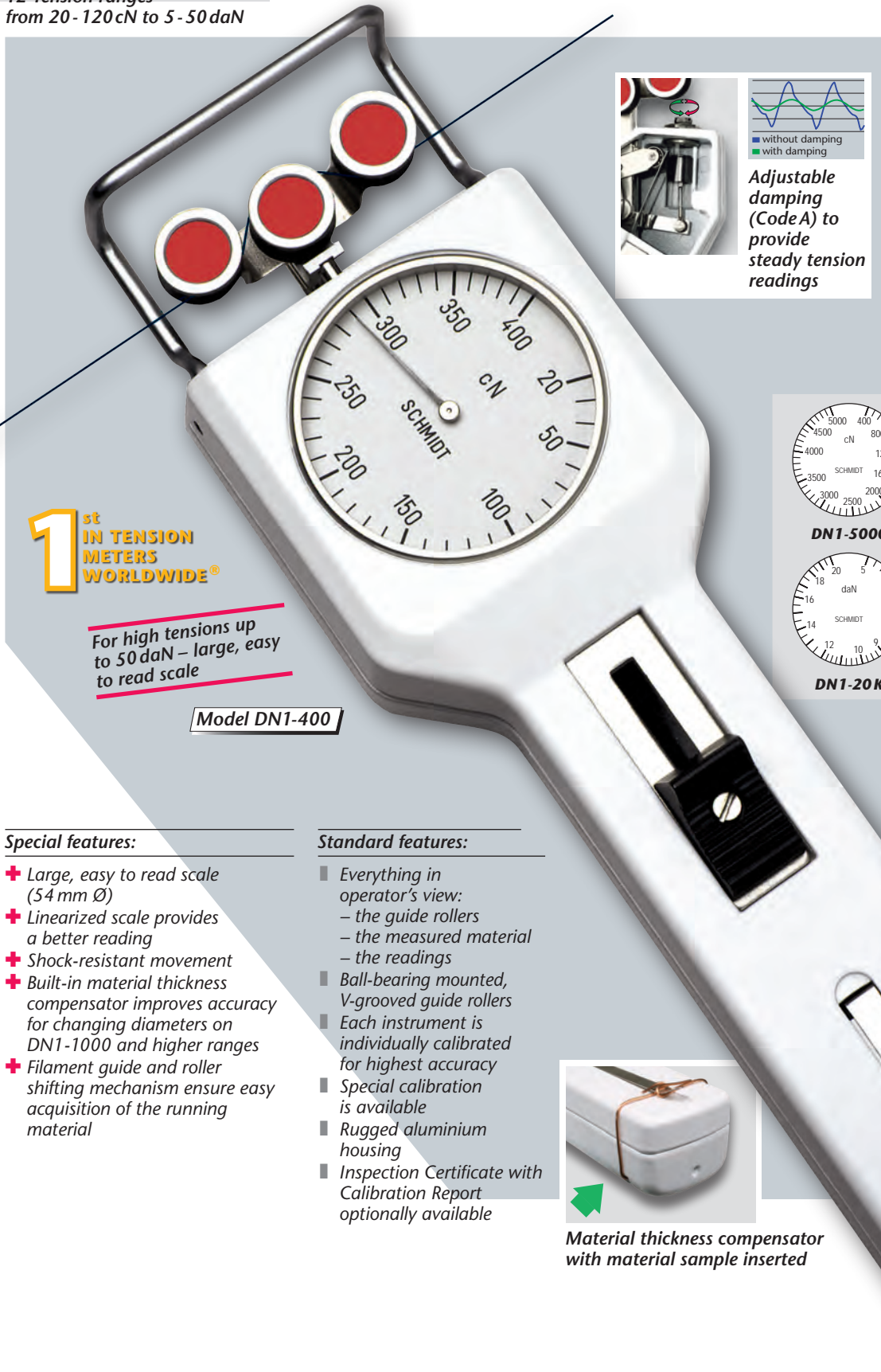
* FS = Full Scale



DN SERIES

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

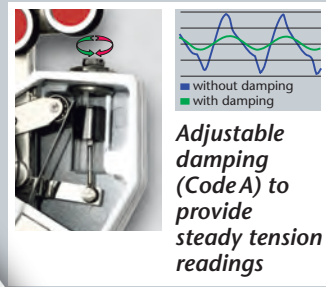
Durable tension meters for a wide range of applications in the textile, fiber and wire industries



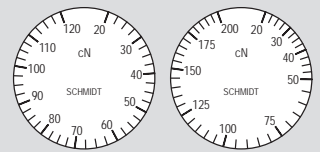
1st IN TENSION METERS WORLDWIDE®

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

Model DN1-400

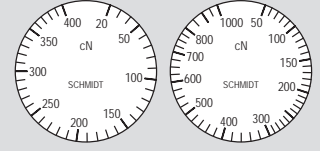


Adjustable damping (Code A) to provide steady tension readings



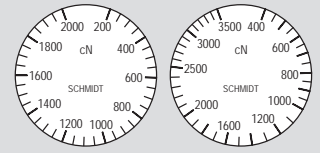
DN1-120

DN1-200



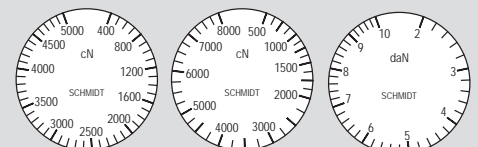
DN1-400

DN1-1000



DN1-2000

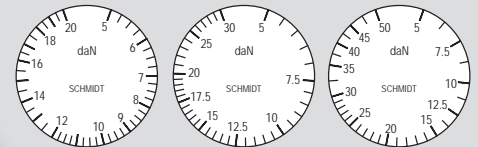
DN1-3500



DN1-5000

DN1-8000

DN1-10K



DN1-20K

DN1-30K

DN1-50K

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

Special features:

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

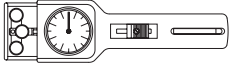
Standard features:

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



Material thickness compensator with material sample inserted

Subject to change without notice.



Model DN1

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT- Calibration Material**	Material thickness com- pensator 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 11)
PA = Polyamide Monofilament

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

Guide Rollers

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

Optional Accessories

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

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

Model DN1-50K-L-V1

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

Model DN1-2000-K

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

Specifications

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

Model with tension range

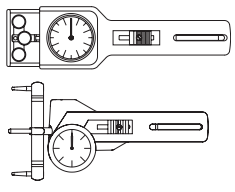
Code for guide rollers
(if not standard)

Code for accessory

Complete Order No.

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

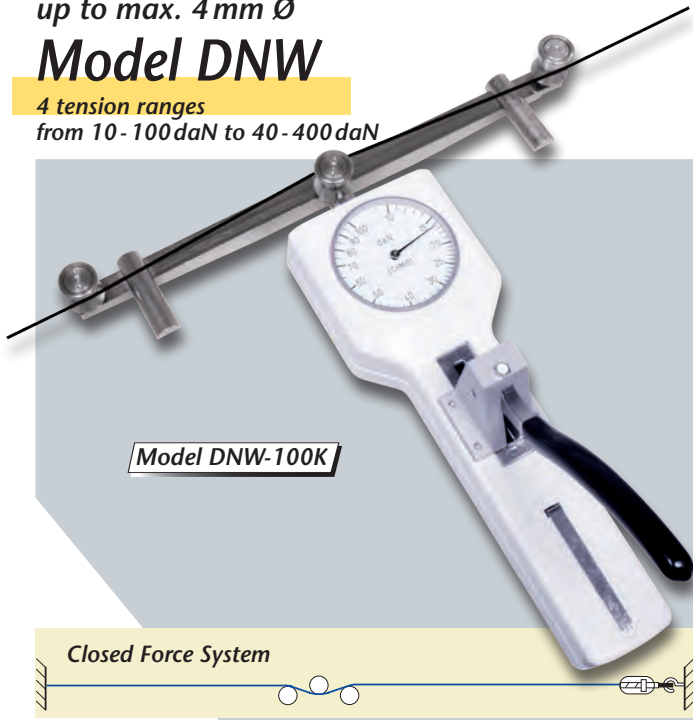
DN1-400 + **ST** + **A** = **DN1-400-ST-A**



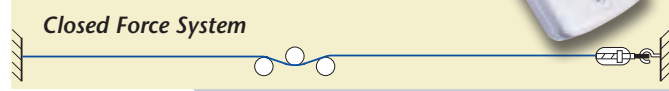
Tension meter for measuring pretensioned ropes up to max. 4 mm Ø

Model DNW

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



Model DNW-100K



Special features:

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

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

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

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

Model DXH

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



Model DXH-10K

Special features:

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

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

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

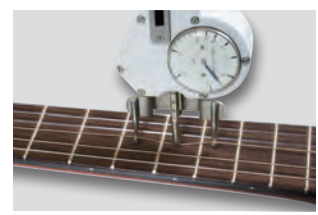
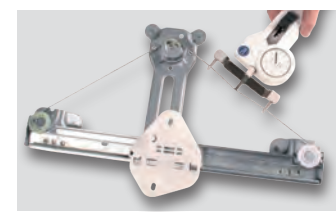
Guide Rollers

Asymmetrical Groove

Roller Material

Standard Tempered steel

→ see page G →



Subject to change without notice.



Model TEN

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

Special features:

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

Standard features:

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

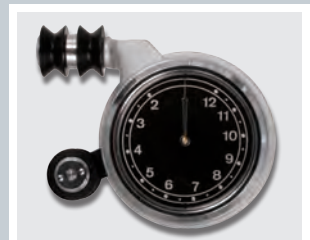
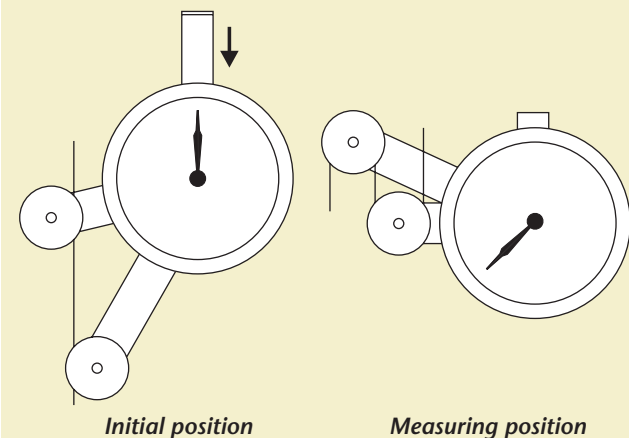
Available Models

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

Small, compact tension meter for measuring fibers and threads



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



A stationary model is available on request (TEN-XX-S)

Guide Rollers

V-grooved

Standard

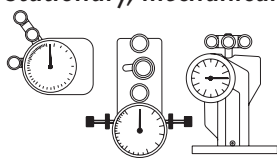
Line Speed
 $v_{max.} \dots m/min$
Roller Material

900 Aluminium black colored

Specifications

TEN Series

Accuracy:	± 7% full scale up to 10 cN or ± 5% full scale up to 30 cN or ± 2% full scale for higher 30 cN
Scale diameter:	40 mm
Temperature range:	10 - 50 °C
Air humidity:	85 % RH, max.
Housing material:	Aluminium
Housing dimensions:	87 x 57 x 26 mm (L x W x H)
Weight, net (gross):	Approx. 150 g (260 g)



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

Models Q, MK, DX2S

Guide Rollers

Model Q, MK

V-grooved

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

→ see page G →

Model DX2S

V-grooved

Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
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 1	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium
Code ASYB asymmetrical groove	1000	Tempered steel for tire cord (for Model DX2S-120 and higher ranges)

U-grooved

Code U	2000	Hard-coated aluminium
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Optional Accessories

Model MK

Code D	Tension-detecting screw contacts Adjustable MIN and MAX contacts trigger a signal, as soon as MIN or MAX tension value is reached
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Model DX2S

Code A	Air damping (DX2S-120 to DX2S-5000)
--------	-------------------------------------

Model Q

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



Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
Q-10	2 - 10	65	PA: 0.12 mm Ø
Q-20	2 - 20	65	PA: 0.12 mm Ø
Q-30	3 - 30	65	PA: 0.12 mm Ø
Q-50	5 - 50	65	PA: 0.12 mm Ø
Q-100	10 - 100	65	PA: 0.12 mm Ø
Q-200	20 - 200	65	PA: 0.12 mm Ø
Q-300	20 - 300	65	PA: 0.20 mm Ø
Q-500	50 - 500	65	PA: 0.20 mm Ø
Q-1000	50 - 1000	116	PA: 0.30 mm Ø

Other tension ranges available on request. Other units of measure available, such as g.

* Outer distance between outside guide rollers

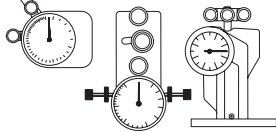
** SCHMIDT calibration material Polyamide Monofilament PA (see chart on page 11)

Specifications

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)

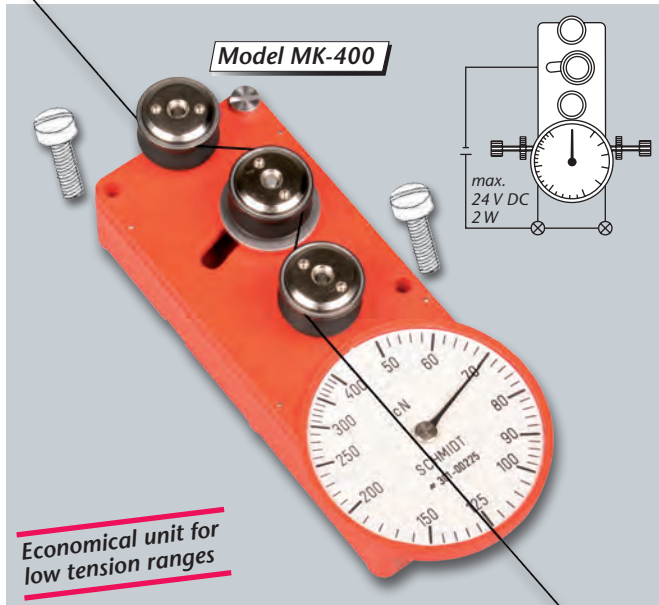
Q Series

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



Model MK

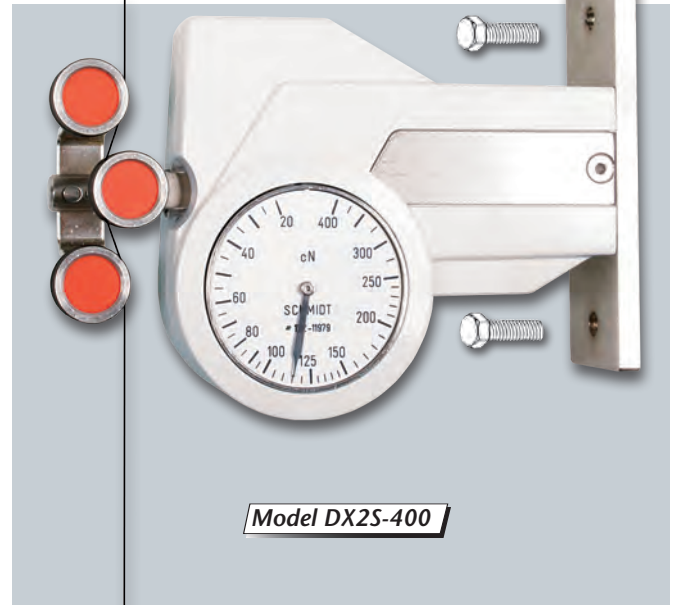
Small, compact and easy to install measuring instrument



Economical unit for low tension ranges

Model DX2S

Versatile tension meter for many industrial applications



Model DX2S-400

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

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

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

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

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

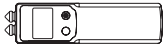
Specifications same as Model DX2 (see page A4)

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**



PT SERIES

Tension range
0.5 - 100 cN

Special features

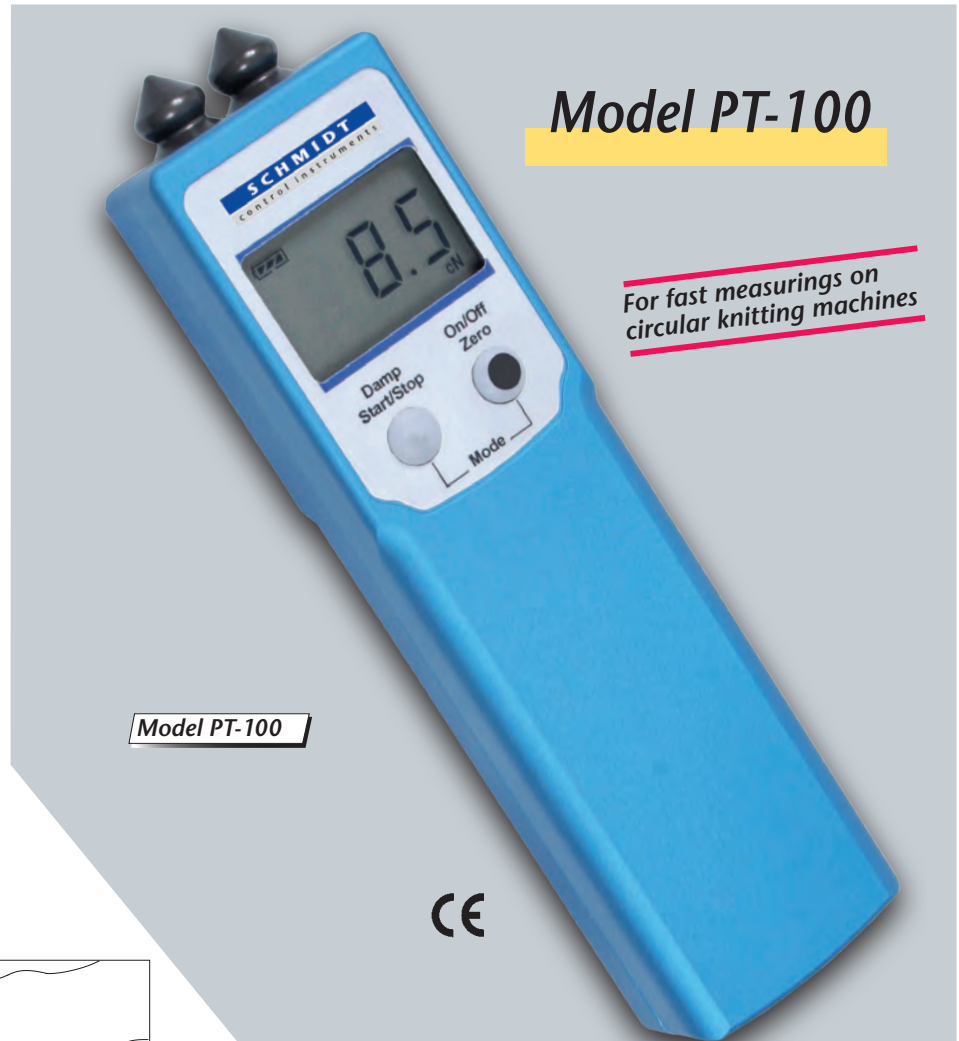
Model PT-100 and PT-100-L:

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

Standard features

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

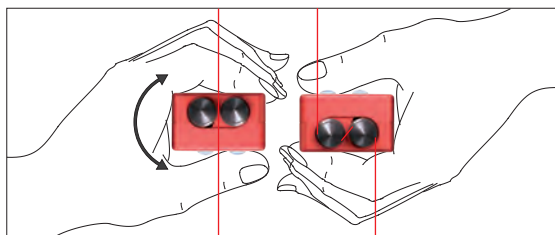
Economical low tension measuring instruments
for checking fibers, threads, yarns etc.



Model PT-100

For fast measurements on
circular knitting machines

Model PT-100



To thread in the material the instrument has to be turned by 180°

Guide Rollers

V-grooved

Standard

Line Speed
v_{max}: ... m/min

Roller Material

→ see page G →

2000

Hard-coated aluminium

Available Models

MODEL

Measuring Range
Tension
cN

Measuring Range
Speed*
m/min

Measuring Range
Length*
m

Measuring
Head Width**
mm

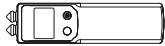
SCHMIDT
Calibration Material***

PT-100	0.5 - 100.0	---	---	24	PA: 0.20 mm Ø
PT-100-L	0.5 - 100.0	0 - 1999	0 - 1999	24	PA: 0.20 mm Ø

* Speed and length measurement is only possible with a thread tension higher than 10 cN

** Outer distance between outside guide rollers

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



Model PT-100-L

Tension meter mostly used for
knitting machines

Special Features Model PT-100-L:

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

Length measurement - 2 operation modes:

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

1st IN TENSION
METERS
WORLDWIDE®



3IN1

- Tension Meter
- Yarn Speed Meter
- Yarn Consumption Meter

Multifunctional tension
meter with low weight

Model PT-100-L

with sensor and
magnet for measuring
yarn consumption

CE

Specifications

Model PT-100 and PT-100-L

Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 1.5 % FS* and ± 1 digit (not length and speed measurement)
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	200 %
Measuring principle:	Strain gauge bridge
Measuring units:	cN, g switchable m, in, m/min, in/min (only PT-100-L)
Display update rate:	2 times/sec
Damping:	Selectable electronic damping (moving averaging)
Display:	LCD 3 ½ digits, 9 mm high
Temperature range:	10 - 45 °C
Air humidity:	5 % RH, max.
Power supply:	LiPo accumulator (~ 40 h continuous use, charging time 3 ½ h) and AC adapter 100 - 240 V with adapters (EU/USA/UK)
Auto power off:	Automatically after 3 minutes of non use
Housing material:	Aluminium
Housing dimensions:	141 x 36 x 22 mm (LxWxH)
Weight, net (gross):	Approx. 170 g (500 g)

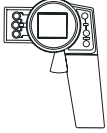
* FS = Full Scale

Accessories

Model PT-100-L (includes delivery)

PT-S

Sensor with cable (3.50 m), magnet and
clamping angle



ZE SERIES

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

Special features

- + Coloured, backlight TFT-display with 3 different displays modes:
 - numeric
 - numeric with live bargraph
 - numeric with graph (time-tension)
- + The display rotates in 90° steps for better reading
- + Automatic „Zero-Setting“ in each measuring position using a special sensor technique
- + Selectable units of measurement: cN, g, N, lb
- + LiPo battery (approx. 25 h continuous use) with AC adapter
- + Storage of MIN, MAX, last reading, average and standard deviation per measuring interval
- + User-set MIN and MAX alarms with indication on display, if reading is out of limits
- + Adjustable electronic damping for better reading, if tension fluctuates
- + 3 separate calibration material memory locations for custom calibrations
- + Menu set-up in English, German Spanish, Portuguese or French language

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



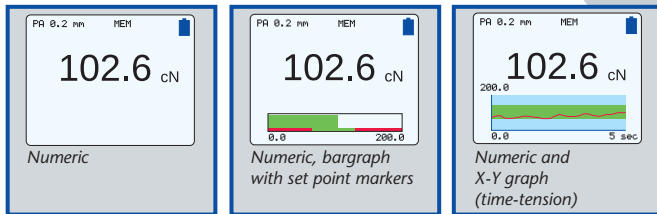
Model ZEF-100

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

Model ZEF

A display with many possibilities

TFT-Display with 3 different display modes



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



Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZEF-50	0.5 - 50.0	43	PA: 0.12 mm Ø
ZEF-100	0.5 - 100.0	43	PA: 0.12 mm Ø
ZEF-200	1 - 200.0	43	PA: 0.12 mm Ø

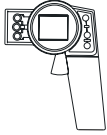
* Width of filament guide
** Suitable for 95% of applications (see also chart on page 11)
PA = Polyamide Monofilament

Guide Rollers

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

→ see page G →

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



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

Standard features:

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

1st IN TENSION METERS WORLDWIDE®



Model ZED-200

**With bigger rollers
for universal use**

Specifications

Model ZEF and ZED

Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 1 % FS* and ± 1 Digit typical ± 0.5 % FS*
Units	cN, g, N or lb, switchable
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	200 % FS*
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Damping:	Adjustable electronic damping (Moving averaging)
Sampling rate internal:	Approx. 1 kHz
Sampling rate:	250 Hz (250 readings/sec)
Display update time:	2 times/sec
Display:	Colour-TFT 128 x 160
3 display modes:	Numeric Numeric + bargraph Numeric + graph (time-tension)
Memory:	Last, AVG, MIN, MAX, STD
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	LiPo accumulator (about 25 h continuous use, charging time approx. 3 ½ h) and AC Adapter with adapters (EU/USA/UK)
Housing material:	Plastic (POM)
Housing dimensions:	157 x 130 x 33 mm (L x W x H)
Weight, net (gross):	Approx. 200 g (600 g)

* FS = Full Scale

Model ZED

Available Models

MODEL	Tension Range cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
ZED-200	1 - 200.0	63	PA: 0.20 mm Ø
ZED-500	1 - 500	63	PA: 0.20 mm Ø

* Width of filament guide

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

Guide Rollers

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

→ see page G →

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

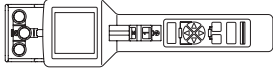
Model with tension range

Code for guide rollers
(if not standard)

Complete Order No.

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

ZEF-200 + **K** = **ZEF-200-K**



DT SERIES

12 Tension ranges
from 1 - 200 cN to 0.6 - 60 daN

Special features

Models DTMB and DTMX:

- + Large, backlight LCD-display with 3 different displays:
 - numeric,
 - numeric with live load bar,
 - numeric with graph (time-tension)
- + The display rotates in 90° steps for better reading (see page C 9)
- + New, unique, force reduced material catching system
- + Thickness compensator to reach highest accuracy: the diameter of the material to be measured can be set with a wheel and will be displayed in the screen (not available for all models)
- + Automatic „Zero-Setting“ in each measuring position using a special sensor technique
- + High speed data sampling (internal 8 kHz) and recording of MIN-, MAX-, LAST-reading, PEAKS, AVG and standard deviation
- + Programmable MIN- and MAX-alarms - indication in the display, if reading is out of limits
- + Material memory locations for customer made calibrations: 4 model DTS and 9 model DTX
- + Cal. adjustment for fine tuning of the calibration, if material differs from the used calibration material
- + Flexible menu set-up to meet operators demand
- + Menu set-up in english or german language
- + Selectable units of measurement: cN, daN, g, kg, N, lb
- + Rubberized handle provides a secure hold in the operators' hand

Standard features

Models DTS and DTX:

- 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
- LiPo Accu (approx. 40 h continuous use) with AC adapter
- CE approved (tested for electromagnetic compatibility)
- Inspection Certificate with calibration report optionally available

Electronic tension meters providing detailed process data and analysis. Two models available: DTS (basic unit) and DTX (with memory and output)

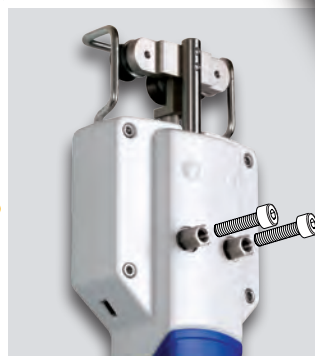
Model DTS

Model DTS:
The basic unit for easy use, for many applications, without interface

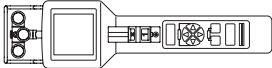


Model DTS-1000

1st IN TENSION METERS WORLDWIDE®



Easy mounting for online applications (Code MH)
Optional for DT series



Model DTX

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



The DTX model also provides:
 - Large internal memory
 - Statistical evaluation
 - Interface for PC connection

Model DTX-5000

Wifi
(optional)

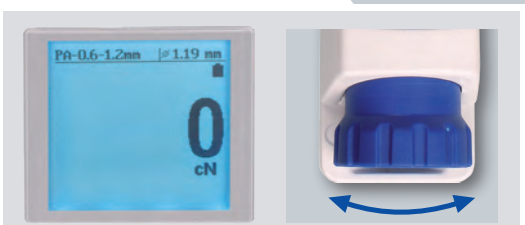


Additional features model DTX:

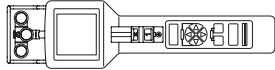
- + USB interface (1000 readings/sec)
- + Memory for 60.000 readings
- + 5 different memory modes:
 - Mode S:** statistics only
 - Mode H:** storage of the X-Y-diagram for reviewing after finishing a series of measurement (e.g. short time spooling)
 - Mode C:** continuous logging over a user set time and different series of measurement (2 Hz)
 - Mode F:** fast, continuous logging over a user set time and different series of measurement (1000 Hz)
 - Mode D:** storage of single readings and statistic
- + Factory-provided calibration with PA Monofilament and Cu wire
- + 9 Material memory locations for customer made calibrations
- + Wi-Fi modul for wireless communication with a PC (optional)
- + **Delivery includes:** tension meter, USB-cable, and software »Tension Inspect 3«



Model DTX for data acquisition and evaluation (Software see page C9)



Thickness compensator: The display shows the adjusted material diameter
 Standard for model DTS and DTX (see page C7/C8)



Model DTS

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
DTS-200	1 - 200.0	66	0.12 mm Ø	max. 200 tex	max. 0.15 mm Ø	
DTS-500	1 - 500.0	66	0.12 + 0.20 mm Ø	max. 500 tex	0.05 - 0.25 mm Ø	✓
DTS-1000	10 - 1000	66	0.20 + 0.40 mm Ø	max. 1000 tex	0.10 - 0.40 mm Ø	✓
DTS-2000	20 - 2000	66	0.40 + 0.70 mm Ø	max. 2000 tex	0.30 - 0.60 mm Ø	✓
DTS-2500	25 - 2500	116	0.40 + 0.70 mm Ø	max. 2500 tex	0.30 - 0.70 mm Ø	✓
DTS-4000	40 - 4000	66	0.50 + 0.90 mm Ø	max. 4000 tex	0.35 - 0.90 mm Ø	✓
DTS-5000	50 - 5000	116	0.60 + 1.20 mm Ø	max. 5000 tex	0.40 - 1.00 mm Ø	✓
DTS-10K	0.1 - 10.00 daN	116	0.80 + 1.40 mm Ø	max. 10000 tex	0.70 - 1.40 mm Ø	✓
DTS-20K	0.2 - 20.00 daN	166	1.20 + 1.80 mm Ø	max. 20000 tex	1.00 - 2.00 mm Ø	✓
DTS-30K	0.3 - 30.00 daN	216	1.40 + 2.20 mm Ø	max. 30000 tex	1.20 - 2.50 mm Ø	✓
DTS-50K	0.5 - 50.00 daN	216	Steelrope 1.5 mm Ø (7x7x0.2)	max. 50000 tex	1.40 - 3.00 mm Ø	
DTS-60K-V1	0.6 - 60.00 daN	280	Steelrope 2.0 mm Ø (7x7x0.3)	max. 60000 tex	1.80 - 3.50 mm Ø	

Other measuring head widths available on request.

* Depending on model, either width of filament guide or outer distance between outside guide rollers
** Suitable for 95% of applications (see also chart on page 11)

Guide Rollers

Model DTS	Line Speed v _{max} ... m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium
Code T	1000	Plastic (POM) black
Code W	1000	Nickel-plated steel
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE2	1000	Aluminium ceramic-coated
Code V1	1000	Hard-coated aluminium (only for tension range 60 daN)
asymmetrical groove		(not for tension range 200 cN)
Code ASY	1000	Hard-coated aluminium
Code ASYB	1000	Tempered steel for tire cord – Gauge is without filament guide –
U-grooved		
Code U	2000	Hard-coated aluminium (not for tension range 200 cN)

→ see page G →

Specifications

Calibration:	According to SCHMIDT factory procedure
Accuracy:	5% to 100% of range: ± 0.5% FS* and ± 1 digit or better
Remaining range and other calibration material:	± 3% FS* and ± 1 digit or better
Memory for material curves:	1 for SCHMIDT calibration plus 4 for customized calibrations
Measuring units:	Force: cN, daN, g, kg, N or lb Thickness: mm or inch
Overrange:	Approx. 10% FS*, without accuracy guarantee
Overload protection:	100% FS*
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.2 mm max.
Signal processing:	Digital, 16 bit A/D converter
Measuring frequency:	Max. 1 kHz (1000 measurings/sec)
Display:	Graphic LCD
3 different displays:	Numeric, Numeric + bargraph, Numeric + X-Y-diagram (time tension)
Display update rate:	2 times per second
Memory:	MIN, MAX, PEAKS, AVG, STD and LAST
Thickness compensation:	Max. 2.5 mm (not for all models)
Temperature range:	10 - 45 °C
Air humidity:	85% RH, max.
Power supply:	LiPo accumulator (about 40 hours of continuous use)
Housing material:	Die-cast aluminium
Housing dimensions:	265 x 78.5 x 46 mm (L x W x H)
Weight, net (gross):	Up to Model-50K 875 g (1550 g) DTS-60K-V1 1040 g (2700 g)

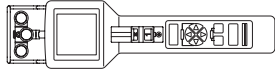
* FS = Full Scale

Optional Accessories

Model DTS

Code MH	Mounting thread for online use
---------	--------------------------------

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



Model DTX

Available Models

Model	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material** Polyamid (PA)-Monofil Textile Industry Applications e.g. yarn count	SCHMIDT Calibration Material*** Soft-annealed copper wire Wire Industry Applications e.g. soft-annealed copper wire	Material thickness compensator included
DTX-200	1 - 200.0	66	0.12 mm Ø max. 200 tex	0.10 mm Ø max. 0.15 mm Ø	
DTX-500	1 - 500.0	66	0.12 + 0.20 mm Ø max. 500 tex	0.16 + 0.25 mm Ø 0.05 - 0.25 mm Ø	✓
DTX-1000	10 - 1000	66	0.20 + 0.40 mm Ø max. 1000 tex	0.25 + 0.40 mm Ø 0.10 - 0.40 mm Ø	✓
DTX-2000	20 - 2000	66	0.40 + 0.70 mm Ø max. 2000 tex	0.40 + 0.60 mm Ø 0.30 - 0.60 mm Ø	✓
DTX-2500	25 - 2500	116	0.40 + 0.70 mm Ø max. 2500 tex	0.40 + 0.60 mm Ø 0.30 - 0.70 mm Ø	✓
DTX-4000	40 - 4000	66	0.50 + 0.80 mm Ø max. 4000 tex	0.50 + 0.80 mm Ø 0.35 - 0.90 mm Ø	✓
DTX-5000	50 - 5000	116	0.60 + 1.20 mm Ø max. 5000 tex	0.60 + 1.00 mm Ø 0.40 - 1.00 mm Ø	✓
DTX-10K	0.1 - 10.00 daN	116	0.80 + 1.40 mm Ø max. 10000 tex	0.80 + 1.20 mm Ø 0.70 - 1.40 mm Ø	✓
DTX-20K	0.2 - 20.00 daN	166	1.20 + 1.80 mm Ø max. 20000 tex	Steel rope 1.5 mm Ø 1.00 - 2.00 mm Ø	✓
DTX-30K	0.3 - 30.00 daN	216	1.40 + 2.00 mm Ø max. 30000 tex	Steel rope 1.5 mm Ø 1.20 - 2.50 mm Ø	✓
DTX-50K	0.5 - 50.00 daN	216	Steel rope 1.5 mm Ø max. 50000 tex (7x7x0.2)	Steel rope 2.0 mm Ø 1.40 - 3.00 mm Ø (7x7x0.3)	
DTX-60K-V1	0.6 - 60.00 daN	280	Steel rope 2.0 mm Ø max. 60000 tex (7x7x0.3)	Steel rope 2.5 mm Ø 1.80 - 3.50 mm Ø (7x7x0.4)	

Other measuring head widths available on request.

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

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

*** Accuracy: ±3% full scale and ±1 digit

Guide Rollers same as Model DTS

Standard Accessories Model DTX

SW-TI3 »Tension Inspect 3« software (Windows 7 and higher), incl. USB cable

Optional Accessories Model DTX

Code MH Mounting thread for online use
Code WL Wi-Fi modul for wireless data transfer (no worldwide approval)

Specifications

Output signal:	USB
Memory:	60.000 values at 255 measuring periods
Memory for material curves:	2 for SCHMIDT calibration plus 9 for customized calibrations
Memory modes:	5 memory modes with statistical evaluation
Digimatic:	

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



Model DTX-1000-WL
with Wi-Fi Modul optional

Model with tension range

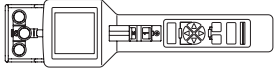
Code for guide rollers
(if not standard)

Code for accessory

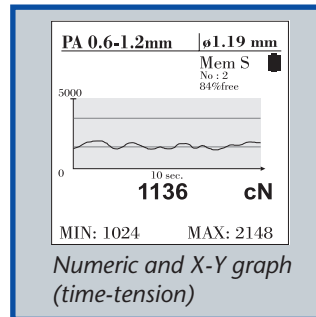
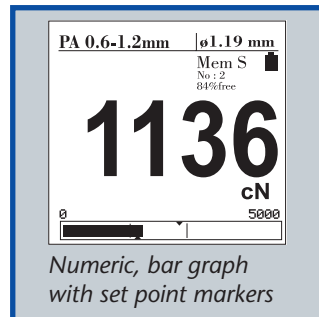
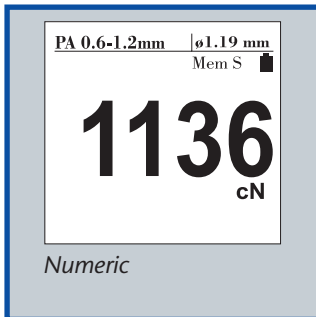
Complete Order No.

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

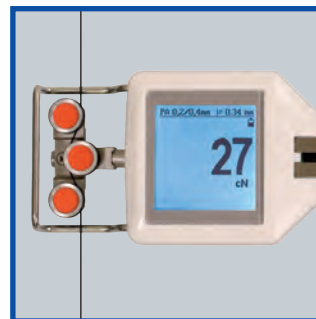
DTX-5000 + **H** + **WL** = **DTX-5000-H-WL**



DT series: a display with many possibilities



Large LCD-display with
3 selectable display modes



Depending to the measuring
position the LCD display is
automatically rotating in 90°
steps, to have the best view
at the display

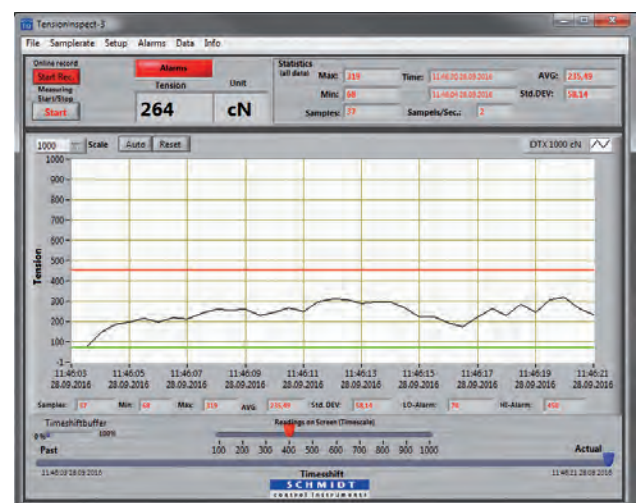
1st IN TENSION
METERS
WORLDWIDE®

Model DTX for storing and analyzing the measured data with the software »Tension Inspect 3«

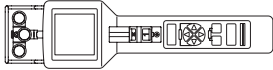
»Tension Inspect 3« - Software to display and store on a PC. The series DTX can be connected to a PC using the USB output or the optional Wi-Fi modul

Features:

- Real-time reading
- The readings are also shown in a X-Y- diagram (time/date-tension) with zoom function
- Recording of the buffered readings as CSV-file
- Online recording with automatic storage of the readings as CSV file
- 2 different statistics:
 - a) statistic of all recorded values
 - b) statistic of the buffered diagram readings
- Adjustable set-points with protocol
- Timeshift function for subsequent detailed data viewing of the diagram
- Reloading and displaying of stored readings (PC file and memory of DTX)
- Creating of a HTML report
- Download of values to Excel
- Printing of stored values using Excel functions



This software can be use for all other SCHMIDT Tension Meters



Special purpose tension meter 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 41 mm (single-flanged rollers optional)
- Apart from that the instruments relate to model DTS and DTX
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:

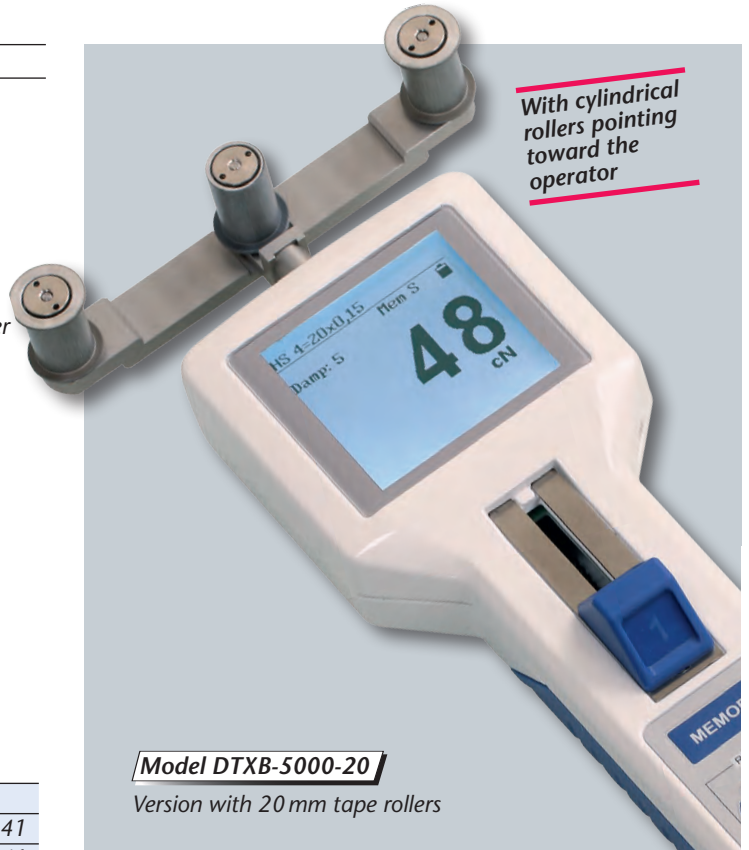
- Kind and dimensions of the material to be measured
- Expected tension range
- Material sample of about 5 m

Models DTSB, DTXB

Available Models	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
DTSB-500	5.0 - 500.0	55	7, 10, 15, 20
DTSB-1000	50 - 1000	55	7, 10, 15, 20, 30, 41
DTSB-2000	100 - 2000	55	7, 10, 15, 20, 30, 41
DTSB-2500	150 - 2500	117	7, 10, 15, 20, 30, 41
DTSB-4000	200 - 4000	55	7, 10, 15, 20, 30, 41
DTSB-5000	250 - 5000	117	7, 10, 15, 20, 30, 41
DTSB-10K	0.5 - 10.00 daN	117	7, 10, 15, 20, 30
DTSB-20K	1.0 - 20.00 daN	167	7, 10, 15, 20, 30
DTSB-30K	1.5 - 30.00 daN	217	7, 10, 15
DTSB-50K	2.5 - 50.00 daN	217	7, 10
DTXB-500	5.0 - 500.0	55	7, 10, 15, 20
DTXB-1000	50 - 1000	55	7, 10, 15, 20, 30, 41
DTXB-2000	100 - 2000	55	7, 10, 15, 20, 30, 41
DTXB-2500	150 - 2500	117	7, 10, 15, 20, 30, 41
DTXB-4000	200 - 4000	55	7, 10, 15, 20, 30, 41
DTXB-5000	250 - 5000	117	7, 10, 15, 20, 30, 41
DTXB-10K	0.5 - 10.00 daN	117	7, 10, 15, 20, 30
DTXB-20K	1.0 - 20.00 daN	167	7, 10, 15, 20, 30
DTXB-30K	1.5 - 30.00 daN	217	7, 10, 15
DTXB-50K	2.5 - 50.00 daN	217	7, 10

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

Models DTSB, DTXB



Guide Rollers	Line Speed V _{max} ... m/min	Roller Material
Standard	1000	Hard-coated aluminium

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

→ see page G →

Optional Accessories	
Code MH	Mounting thread for online use
Code WL	Wi-Fi modul for wireless data transfer (only model DTXB; no worldwide approval)

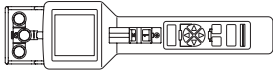
Specifications same as DTS or DTX (see page C7 and C8)

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** + **MH** = **DTBB-10K-10-MH**



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

Special features:

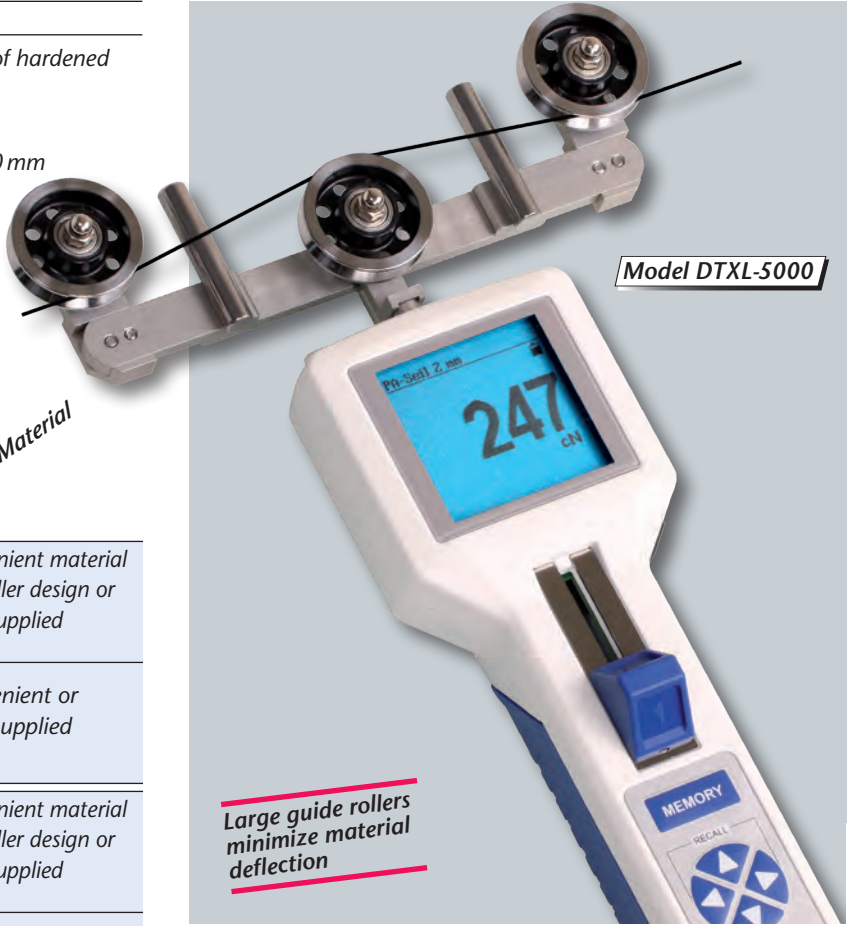
- + Large, ball-bearing mounted guide rollers, made of hardened steel with large groove diameter
 - V-grooved for material with max. 4 mm Ø
 - U-grooved for material with 3 up to 15 mm Ø
 - Tape grooved for material with max. width of 10 mm
- + Large bending radius assures gentle handling of the material being measured
- + Special guides on the bracket assembly permit easy material acquisition
- Apart from that the instruments relate to model DTS and DTX
 Note: These models do not have a built-in material thickness compensator

Available Models	Tension Ranges CN	Measuring Head Width* mm	SCHMIDT Calibration Material
DTSL-2500	150-2500	185	with convenient material
DTSL-5000	250-5000	185	for each roller design or
DTSL-10K	1.00-10.00 daN	235	customer supplied
DTSL-20K	2.00-20.00 daN	235	material
DTSL-50K-R4	5.00-50.00 daN	226	with convenient or
DTSL-50K-R5	5.00-50.00 daN	226	customer supplied
DTSL-60K-R4	6.00-60.00 daN	276	material
DTSL-60K-R5	6.00-60.00 daN	276	
DTXL-2500	150-2500	185	with convenient material
DTXL-5000	250-5000	185	for each roller design or
DTXL-10K	1.00-10.00 daN	235	customer supplied
DTXL-20K	2.00-20.00 daN	235	material
DTXL-50K-R4	5.00-50.00 daN	226	with convenient or
DTXL-50K-R5	5.00-50.00 daN	226	customer supplied
DTXL-60K-R4	6.00-60.00 daN	276	material
DTXL-60K-R5	6.00-60.00 daN	276	

* Outer distance between outside guide rollers

Model DTSL, DTXL

For buffer tubes, cables, fibre strands, ropes, tapes etc., up to max. 15 mm Ø, as well as 10 mm width



Model DTXL-5000

Guide Rollers

→ see page G →

	Line Speed v _{max} ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel (max. Ø 4 mm)
U-grooved		
Code R1	4000	Hard chrome-plated steel (Ø 3-9 mm)
Code R4*	1000	Hardened steel (Ø 8-11 mm)
Code R5*	1000	Hardened steel (Ø 12-15 mm)
Tape roller		*accuracy ±5% full scale and ±1 digit
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

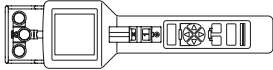


Model DTXL-50K-R5

with guide rollers
Code R4

Optional Accessories Specifications same as DTS or DTX
(see page C7 and C8)

Subject to change without notice.



Special purpose tension meter with large roller diameter and centre distance or small measuring head where access space is limited

Special features DTSF and DTXF:

- + Large, V-grooved guide rollers, ball-bearing mounted 32 mm Ø
- + Large bending radius assures gentle handling of the material being measured
- + Special guides on the bracket assembly permit easy material acquisition

Special features DTSE and DTXE:

- + Turned-up outer finger edges guide the running filament into the roller grooves
 - + Length of measuring head approx. 64 mm
 - + Small, ball-bearing mounted, V-grooved guide rollers
 - Apart from that the instruments relate to model DTS and DTX
- Note:** These models do not have a material thickness compensator

Models DTSE, DTXE, DTSF, DTXF

Available Models		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
MODEL				
DTSF-200	DTXF-200	1.0-200.0	140	PA: 0.12 mm Ø
DTSF-500	DTXF-500	1.0-500.0	140	PA: 0.20 mm Ø
DTSF-1000	DTXF-1000	10-1000	140	PA: 0.30 mm Ø
DTSF-2000	DTXF-2000	20-2000	140	PA: 0.50 mm Ø
DTSE-200	DTXE-200	1.0-200	36	PA: 0.12 mm Ø
DTSE-500	DTXE-500	1.0-500	36	PA: 0.20 mm Ø
DTSE-1000	DTXE-1000	10-1000	36	PA: 0.30 mm Ø
DTSE-2000	DTXE-2000	20-2000	36	PA: 0.50 mm Ø

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

Guide Rollers

DTSE, DTXE	Line Speed v _{max.} ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminium
Code T	4000	Plastic (PVC) red (Same dimensions as standard roller)

DTSE, DTXE

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

Optional Accessories **Specifications** **same as DTS or DTX**
(see page C7 and C8)

Model DTSF, DTXF

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



Model DTSE, DTXE

These tension meters are recommended where the standard models DTS and DTX cannot be used



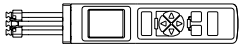
Model with tension range

Code for guide rollers
(if not standard)

Complete Order No.

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

DTXL-2500 + **B10** = **DTXL-2500-B10**



ET SERIES

5 Tension ranges
from 0.5 - 100 cN to 3 - 2000 cN

Electronic tension meters for hard to reach and limited access space applications. Two models available: ETB (basic unit) and ETX (with memory and output)

Special features ET series

- + Coloured, backlight TFT-display with 3 different displays modes:
 - numeric
 - numeric with live bargraph
 - numeric with graph (time-tension)
- + The display rotates in 90° steps for better reading
- + Automatic „Zero-Setting“ in each measuring position using a special sensor technique
- + Selectable units of measurement: cN, g, N, lb
- + Very high data sampling rate (internal 1 kHz)
- + Storage of MIN, MAX, last reading, average and standard deviation per measuring interval
- + User-set MIN and MAX alarms with indication on display, if reading is out of limits
- + Adjustable electronic damping for better reading, if tension fluctuates
- + 3 separate calibration material memory locations for custom calibrations
- + Calibration adjustment for fine tuning of the calibration if material differs from the used calibration material
- + Menu set-up in English or German language

Smallest measuring head – only for textile applications and copper wire, soft-annealed (max. 0.5 mm Ø)

Model ETB-200

1st IN TENSION METERS WORLDWIDE®



The Models ETB and ETX with tension range 1000 cN and 2000 cN are equipped with bigger guide rollers.

Standard features:

- Models ETB and ETX with ball-bearing mounted, V-grooved guide rollers for line speeds up to v_{max} 2000 m/min
- Models ETPB and ETPX with ceramic pins for line speeds up to v_{max} 6000 m/min
- Filament guide for easy material acquisition of running filaments
- Aluminium housing
- LiPo accumulator (approx. 20 hours continuous operation) with AC adapter
- CE approved (tested for electromagnetic compatibility)
- Inspection Certificate with Calibration Report optionally available



Additional features ETX and ETPX

- + USB interfaces (200 readings/sec)
- + Memory for 60.000 tension values
- + 5 different memory modes:
 - **Mode S:** statistics only
 - **Mode H:** storage of the X-Y-diagram for reviewing after finishing a series of measurement
 - **Mode C:** continuous logging over a user set time and max. 999 series of measurement (2 Hz)
 - **Mode F:** as C with higher sampling rate of max. 200 Hz
 - **Mode D:** storage of single readings and statistic
- + **Software** »Tension Inspect 3« for displaying real-time readings on PC

Model ETX/ETPX offers additionally:
- Large memory
- USB output

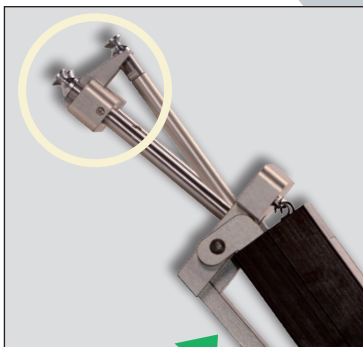
Model ETB-200
With ceramic pins



Functions of the software see page C9.



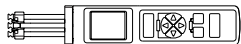
User-friendly TFT full-text display
Some functions can be password protected.



Filament guide for easy material acquisition of running filaments.
If required, the filament guide can be unscrewed.

The two outer rollers can be tilted upwards using the lever on the rear side.





Model ET

With ball-bearing mounted,
V-grooved guide rollers

Available Models

MODEL

Available Models		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 100 m/min
ETB-100	ETX-100	0.5 - 100.0	24	PA: 0.20 mm Ø
ETB-200	ETX-200	2.0 - 200.0	24	PA: 0.20 mm Ø
ETB-500	ETX-500	2.0 - 500.0	24	PA: 0.20 mm Ø
ETB-1000	ETX-1000	3 - 1000	38	PA: 0.30 mm Ø***
ETB-2000	ETX-2000	3 - 2000	38	PA: 0.50 mm Ø***

* Outer distance between outside guide rollers

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

*** Calibration is conducted with static filament

Guide Rollers

V-grooved

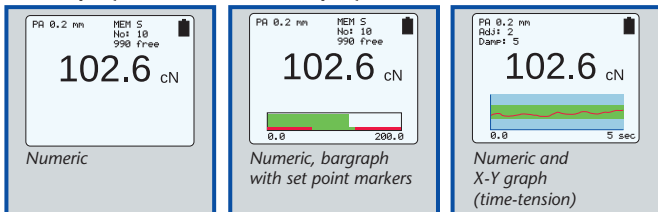
Standard	Line Speed v _{max} : ... m/min	Roller Material
Standard	2000	Aluminium hard chromed (up to 500 cN)
Standard	2000	Hard-coated aluminium (from 1000 cN)

→ see page G →

1st
IN TENSION
METERS
WORLDWIDE®

A display with many possibilities

TFT-Display with 3 different display modes



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



Model ETP

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

Available Models

MODEL

Available Models		Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration** with running filament approx. 60 m/min
ETPB-100	ETPX-100	0.5 - 100.0	22	PA: 0.20 mm Ø
ETPB-200	ETPX-200	2.0 - 200.0	22	PA: 0.20 mm Ø
ETPB-500	ETPX-500	2.0 - 500.0	22	PA: 0.20 mm Ø

* Outer distance between outside ceramic pins

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Pins

V-grooved

Standard	Line Speed v _{max} : ... m/min	Pin Material
Standard	6000	Aluminium-oxide ceramic

→ see page G →

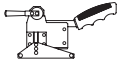
Specifications

Specifications	Models ETB, ETPB, ETX, ETPX
Calibration:	According to SCHMIDT factory procedure
Accuracy:	± 1 % FS* and ± 1 Digit typical ± 0.5 % FS*
Units	cN, g, N or lb, switchable
Overrange (approx.):	10 % FS*, without accuracy guarantee
Overload protection:	200 % FS*
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Damping:	Adjustable electronic damping (Moving averaging)
Sampling rate internal:	Approx. 1 kHz
Sampling rate:	Max. 200 Hz (200 readings/sec)
Display update time:	2 times/sec
Display:	Colour-TFT 128 x 160
3 display modes:	Numeric Numeric + bargraph Numeric + graph (time-tension)
Memory:	Last, AVG, MIN, MAX, STD
Temperature range:	10 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	LiPo accumulator (20 h continuous use) and mains adapter 100 - 240 VAC
Housing material:	Aluminium
Housing dimensions:	182 x 54 x 41 mm (L x W x H)
Weight, net (gross):	Approx. 310 g (1220 g)

* FS = Full Scale

Models ETX and ETPX additional:

Output signal digital:	USB
Memory:	Max. 60.000 at 999 measuring periods
Memory modes:	5 memory modes with statistical evaluation and PEAK capture



Model KXE

Tension range
0.50 - 20.00 daN

Special features:

- + Portable measuring head with 100 mm roller width to measure yarn groups of 50 mm width
- + The sensor can easily be engaged or disengaged also while the machine is running
- + Measurements can be made over the total width of the loom
- + 4 different memory modes can be selected by the operator
- + Storage of AVG, LAST, MIN, MAX, PEAK-MIN and PEAK-MAX tension values during an operator set measuring period
- + Adjustable electronic damping for better reading when tension is constantly changing
- + Output signal: digital USB
- + Delivery includes: tension meter, USB cable, and software »Tension Inspect 3«

Standard features:

- LiPo accumulator
- Inspection Certificate with Calibration Report optionally available

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



Model KXE-20K



Available Models

MODEL

Tension Ranges
daN

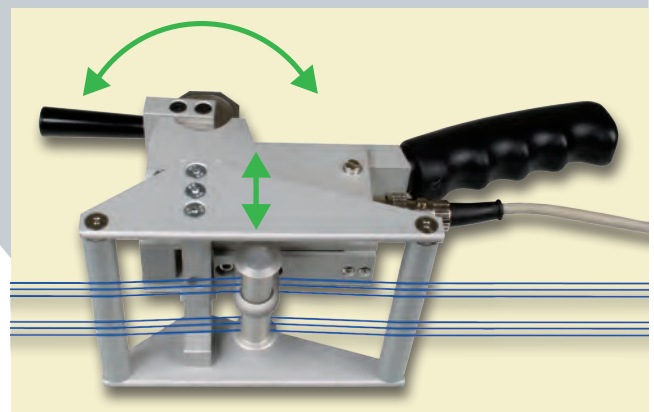
SCHMIDT
Calibration
Material

KXE-20K	0.50 - 20.00	fabric tape
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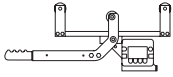
Specifications

Model KXE (measuring head)

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



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



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

Model CTM

2 Tension ranges up to 10 kN and 45 kN

Special features:

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

Standard features:

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



Model CTM-2000

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



Available Models	Tension Ranges		
	kN	lbf	kgf
CTM-2000	10	2000	1000
CTM-10000	45	10000	4500

Specifications	Model CTM
Measuring range:	Up to 45 kN
Accuracy:	± 3% FS* calibrated to specific wire specimen
Measuring unit:	N, lbf, kgf switchable
Loading error:	Rope elongation of only 2 mm
Material diameter:	4.75 - 25.4 mm
Display:	LCD 25 mm high, full text prompts
Number of calibrations:	Up to 20 calibrations can be stored
Memory	Saves readings for a later data transfer to PC
Output signal:	RS-232
Power supply:	2 Batteries, size AA
Temperature range:	-20°C up to +60°C
Dimensions:	61 x 24 x 8 cm (LxWxH)
Weight, net (gross):	Approx. 5.7 kg (11 kg)

*FS = full scale

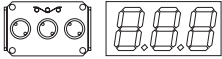
Calibration:

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



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

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



Continuous measurement
and data logging

Online Tension Measuring Systems

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

A Tension System 3-Roller Sensor only

- + For use with customer supplied indicators and closed loop control units
or
- + Customer must supply regulated DC power source
- Customer Signal Processing:
for example closed loop control



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

Digital output
RS-232, RS-422,
USB or Wi-Fi
(optional)

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



Software (optional equipment):

»Tension Inspect 3« (WIN 7 and higher) SCHMIDT tension sensors can be used for continuous tension monitoring. The sensor can be connected using RS-232, RS-422, USB or Wi-Fi to a PC. The readings of max. 24 sensors can be transferred as real time values to a PC, displayed and stored as a CSV file using the program »Tension Inspect 3«.
(see page C9)

B Complete Tension System 3-Roller Sensor only

- + Sensor and display unit provide continuous tension readings
- + The analog output signal can be used for recording and control purposes
- Customer Signal Processing:
for example closed loop control



Possible output signals (partly optional)



Analog output
0-10V DC
4-20mA

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

Digital output
USB, CAN-Bus, RS-232
or RS-422

C Tension System 1-Roller Sensor only

- + Replacing an existing reversing point
- + External amplifier with analog outputs
- + Available with guide roller
- Customer Signal Processing:
for example closed loop control

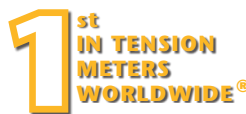


Analog output
0-1V DC (standard)
0-10V DC, 4-20mA or
mV/V (optional)

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

Digital output
RS-232, RS-422,
USB or Wi-Fi (optional)

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



SCHMIDT Online Sensors and Indicators:

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

Measuring principle 3-Roller Tension System:

3-roller measuring system, consisting of two outer guide rollers and a middle measuring roller. The tension of the measured material slightly deflects the measuring roller.

This deflection (up to 0.5 mm) is measured by a load cell. The built-in amplifier then generates an analog output signal which is proportional to the measured tension.

Measuring principle 1-Roller Tension System:

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

Main Features:

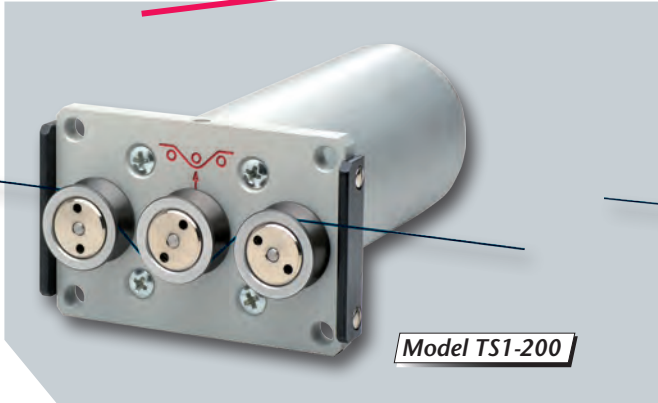
- + Real time tension display (tension and time)
- + Long time recording using operator set time span
- + Adjustable sampling rate
- + Analyzing and printing of all stored data with time (graphs and numeric report)



TS SERIES

Sensors for many applications

Universal sensor for
continuous measurement



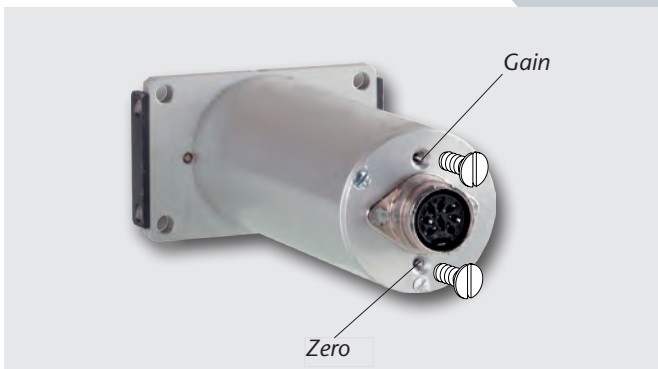
Model TS1-200

Special features:

- + Easy to install e. g. on existing machines
- + Best accuracy $\pm 1\%$ FS (Full Scale)
- + Mechanical overload protection
- + Various analog output signals
- + With or without integrated amplifier
- + Depending to the application a wide range of different guide rollers are available
- + Easy calibration on customer sample by operator
- + Wide variety of custom designed sensors are available

Standard features:

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

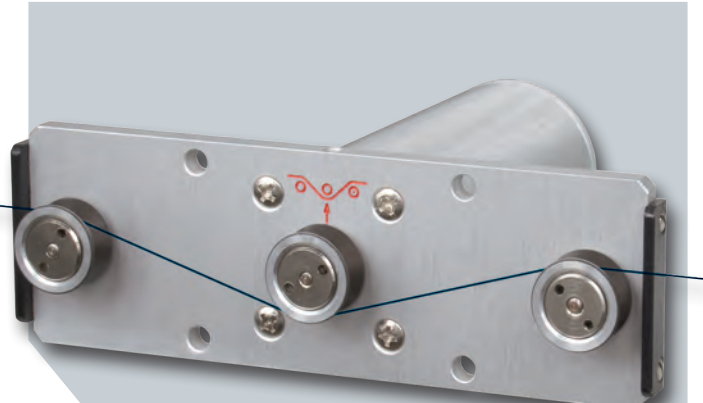


Zero and Gain adjustment used for calibration on customer sample

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

Model TS1

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



Model TS1-5000

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 11)

PA = Polyamide Monofilament

Specifications

→ see page D13 →

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

Subject to change without notice.



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

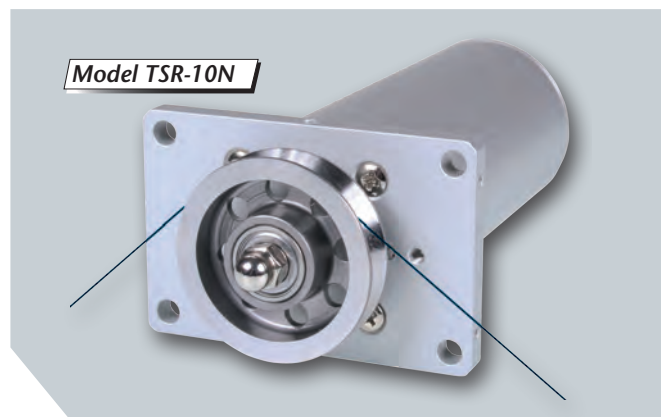
Model TSR

5 Tension ranges from 0-10 N to 0-200 N

For thin wires and ropes



Model TS1-5000-ASY
with guide rollers
Code ASY



Model TSR-10N

Special features:

- + Entry angle and exit angle $\alpha_{min} 20^\circ$ (must be constant)
- Apart from that the instrument relates to model TS1

Available Models

MODEL	Nominal Load (Fn) N	MODEL	Nominal Load (Fn) N
TSR-10N	0 - 10	TSR-100N	0 - 100
TSR-20N	0 - 20	TSR-200N	0 - 200
TSR-50N	0 - 50		

Guide Rollers

V-grooved

	Line Speed $v_{max.} \dots m/min$	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium (for Model TS1-100 and higher ranges)
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium*
Code ASYB	1000	Tempered steel for tire cord*

U-grooved

Code U	2000	Hard-coated aluminium*
---------------	------	------------------------

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

Guide Rollers

V-grooved

	Line Speed $v_{max.} \dots m/min$	Roller Diameter mm	Roller Material
Standard	4000	30	Hardened steel, max. 4 mm \varnothing
Code R1	4000	30	Hard-chrome plated steel
Code F	4000	70	Hard-coated aluminium
Code FB	4000	70	Tempered steel

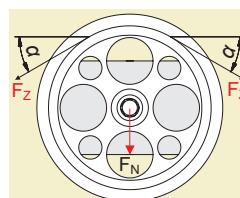
Tape roller

Code B6	2000	30	Hardened steel, width 6 mm
Code B10	2000	30	Hardened steel, width 10 mm

Output Signal

Standard	Analog output signal 0 - 1 V DC
Code A2	Analog output signal 0 - 10 V DC
Code A3	Current output signal 4 - 20 mA
Code A10	Analog DMS output mV/without amplifier

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



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

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

Output Signal Power Supply Specifications

Models TSR same as Model TS1 (see page D2, D3 and D13)

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

TS1-1000 + T + A3 = TS1-1000-T-A3

Model with tension range

Code for guide rollers
(if not standard)

Code for output signal/
power supply
(if not standard)

Complete Order No.



Tension sensor for flexible wire, cable, plastic tubing and other materials
up to 15 mm Ø or 10 mm width

Model TSH

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

Special features:

- + Large, ball-bearing mounted guide rollers, made of hardened steel with large groove diameter
 - V-grooved for material with max. 4 mm Ø
 - U-grooved for material with 3 up to 15 mm Ø
 - Tape grooved for material with max. width of 10 mm
- + Depending to the material to be measured the dimensions of the sensor can be modified
- + For custom designs contact our technical department.
- Apart from that the instrument relates to model TS1

Available Models

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

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.

* Outside dimensions of front plate

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

Guide Rollers

	Line Speed v_{max} : ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel (max. Ø 4 mm)
U-grooved		
Code R1	4000	Hard chrome-plated steel (Ø 3 - 9 mm)
Code R4	1000	Hardened steel (Ø 8 - 11 mm)*
Code R5	1000	Hardened steel (Ø 12 - 15 mm)*
		*(only for Model TSH-50K)
Tape rollers		
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

→ see page G →



Model TSH-5000



Model TSH-1000-B10

with guide roller
Code B10

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

Output Signal **Power Supply** **Specifications** **Models TSH same as Model TS1** (see page D2, D3 and D13)



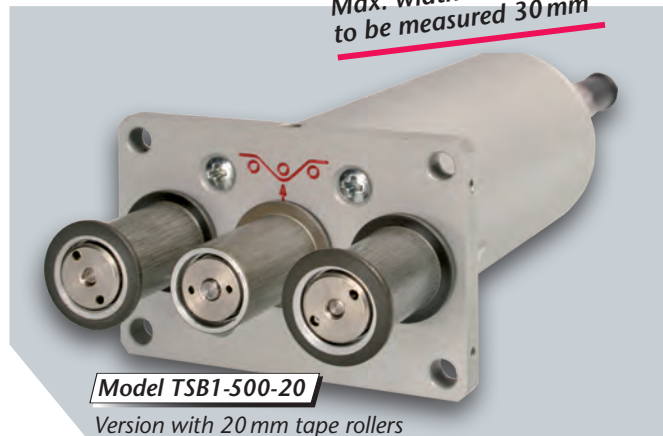
Online sensors for continuous measuring of low or high tensions of textile ribbons, films, foils, fiber bunches etc.

1st IN TENSION METERS WORLDWIDE®

Model TSB1

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

Max. width of material to be measured 30 mm



Model TSB1-500-20

Version with 20 mm tape rollers

Special features:

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

Available Models

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

Other tension ranges and measuring head widths available on request.

Other units of measure available – g or kg.

* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width

** Outside dimensions of front plate

Guide Rollers

Line Speed
 v_{max} ... m/min
Roller Material

Standard	1000	Hard-coated aluminum, 13 mm Ø
-----------------	------	-------------------------------

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

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

Output Signal

Power Supply

Specifications

Models TSB1 and TSB2 same as Model TS1 (see page D2, D3 and D13)

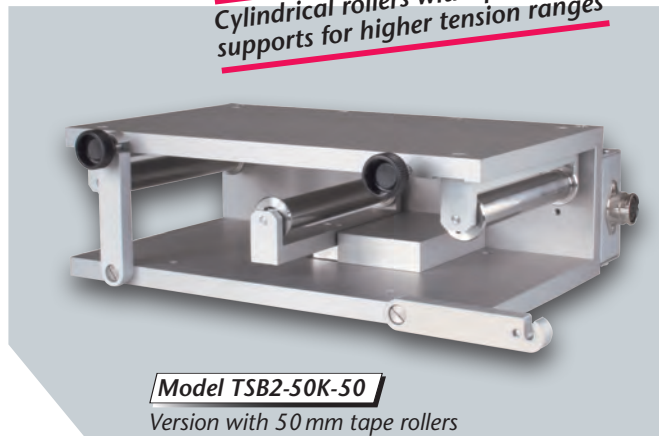
To place an order please indicate the complete model number, e.g.:

TSB1-1000 + **10** + **A3** = **TSB1-1000-10-A3**

Model TSB2

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

Cylindrical rollers with special supports for higher tension ranges



Model TSB2-50K-50

Version with 50 mm tape rollers

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

Please submit the following details:

- Description of application
- Expected tension range
- Kind and dimensions of the material to be measured

Available Models

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

Other tension ranges available on request.

Other units of measure available – g or kg.

* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width

→ see page G →

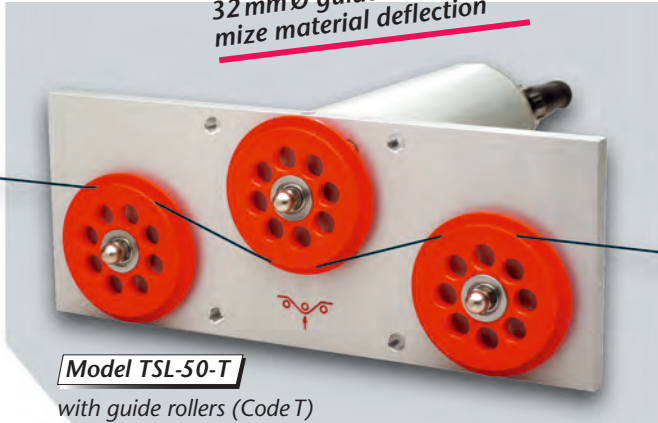


Special tension sensors feature large rollers to minimize bending of materials like fiber optics, single carbon fibers and technical fibers etc.

Model TSL

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

32 mm Ø guide rollers minimize material deflection



Special features:

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

Available Models

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

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.

* Outside dimensions of front plate

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

Guide Rollers

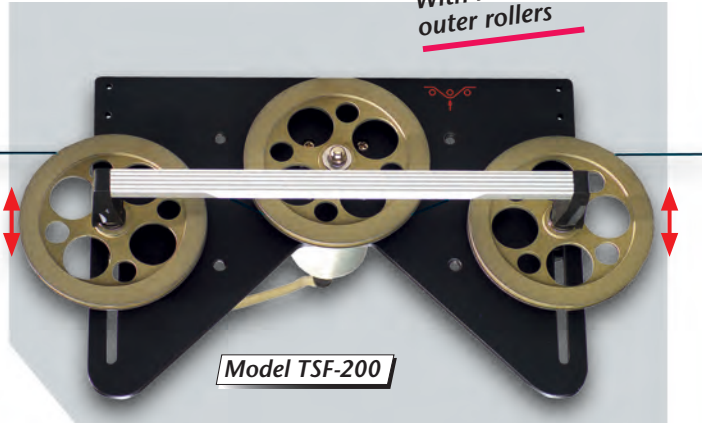
	Line Speed v_{max} ... m/min	Roller Material
V-grooved		
Standard	4000	Hard-coated aluminum
Code T	4000	Plastic (PVC) red (same dimensions as standard roller)

→ see page G →

Model TSF

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

With movable outer rollers



Special features:

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

Available Models

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

Other tension ranges available on request.

Other units of measure available, such as g.

* Outer distance between outside guide rollers

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

Guide Rollers

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

→ see page G →

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 D2, D3 and D13)

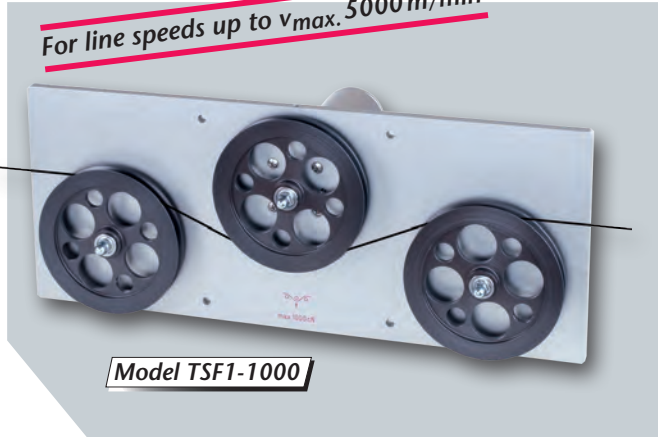


Special tension sensor feature large rollers to minimize bending of materials, max. 2 mm Ø

Model TSF1

7 Tension ranges from 0 - 100 cN to 0 - 10 daN

For line speeds up to v_{max} 5000 m/min



Model TSF1-1000

Special features:

- + Large bending radius for gentle handling of sensitive material
- + Ball-bearing mounted, V-Grooved guide rollers with 70 mm Ø
- Apart from that the instrument relates to model TS1

Available Models	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material*
MODEL			

TSF1-100	0 - 100	300	PA: 0.12 mm Ø
TSF1-200	0 - 200	300	PA: 0.12 mm Ø
TSF1-500	0 - 500	300	PA: 0.20 mm Ø
TSF1-1000	0 - 1000	300	PA: 0.30 mm Ø
TSF1-2000	0 - 2000	330	PA: 0.50 mm Ø
TSF1-5000	0 - 2000	330	PA: 0.80 mm Ø
TSF1-10K	0 - 10 daN	330	PA: 1.00 mm Ø

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.

* Depending on model, either outside dimensions of front plate or outer distance between outside guide rollers

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

Guide Rollers

Line Speed
 v_{max} ... m/min
Pin Material

→ see page G →

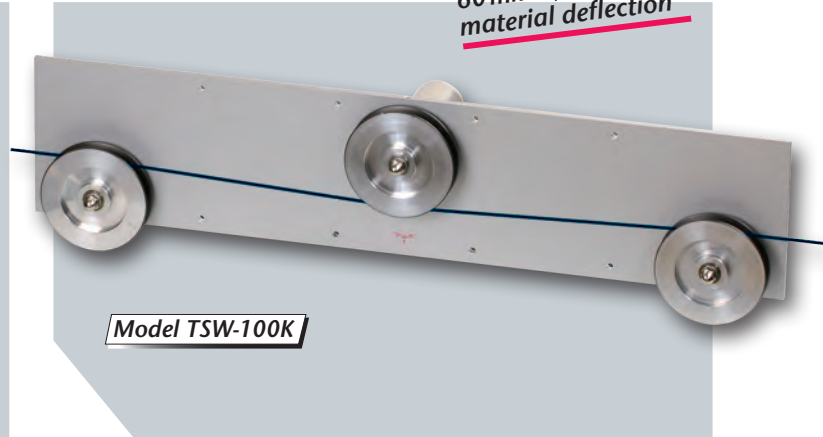
Standard	5000	Hard-coated aluminum
Code FB	5000	Tempered steel (for Model TSF1-2000 and higher ranges)

Tension sensor for wires, ropes and cables up to max. 14 mm Ø

Model TSW

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

Big guide rollers
60 mm Ø, minimizes
material deflection



Model TSW-100K

Special features:

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

Available Models	Tension Ranges daN	Measuring Head Width* mm	SCHMIDT Calibration Material*
MODEL			

TSW-20K	0 - 20	550	steel rope 1.5 mm Ø (7 x 7 x 0.20)
TSW-50K	0 - 50	550	steel rope 3 mm Ø (6 x 7 x 0.30)
TSW-100K	0 - 100	550	steel rope 4 mm Ø (6 x 7 x 0.50)

Other tension ranges available on request.
Other units of measure available, such as g.

* Outside dimensions of front plate

Guide Rollers

Line Speed
 v_{max} ... m/min
Roller Material

→ see page G →

V-grooved		
Standard	2000	Hard-coated aluminum max. wire diameter 5 mm
U-grooved		
Code R2	2000	Hard-coated aluminum (Radius R5)
Code R3	2000	Hard-coated aluminum (Radius R8)

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 TSF1 and TSW same as Model TS1 (see page D2, D3 and D13)

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.

TSW-100K + **R3** + **A3** = **TSW-100K-R3-A3**



FS SERIES

Economic sensor
for many applications

Universal sensor for
continuous measurements



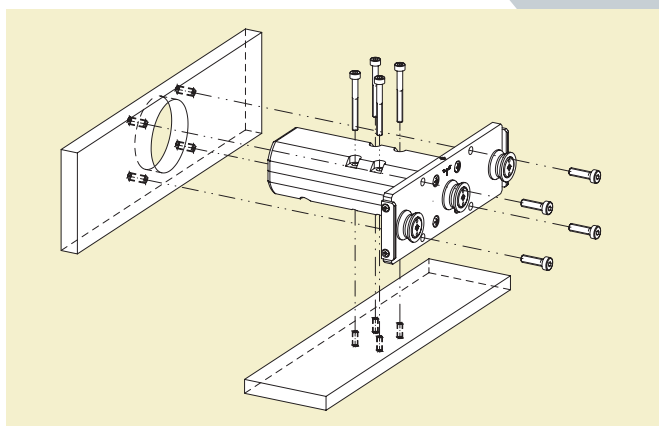
Model FS1-50

Special features:

- + Accuracy $\pm 1.5\%$ full scale or better
- + Output signal: analog (voltage or current)
digital (USB, RS-232, RS-422)
- + Mechanical overload protection
- + Depending to the application a wide range of different guide rollers are available
- + Easy calibration by operator
- + Easy installation using thru holes in housing body or front plate

Standard features:

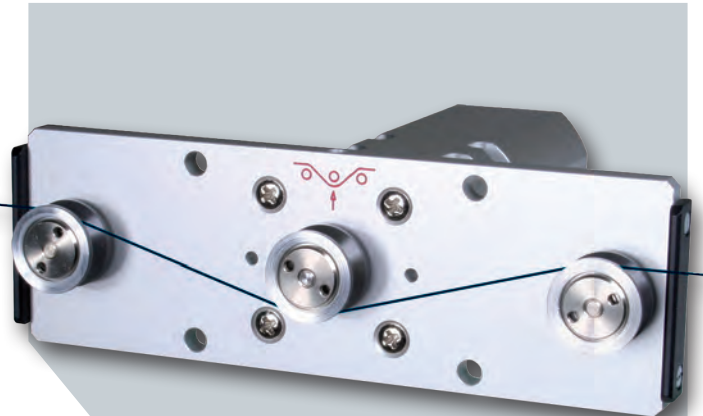
- Ball-bearing mounted, V-grooved guide rollers
- Rugged aluminium housing
- Power supply: +15 ... 24 V DC (1-phase, regulated)
- Inspection Certificate with Calibration Report optionally available



Tension sensor for yarns, fibers and
thin ropes

Model FS1

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



Model FS1-10K

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
FS1-50	0-50	64	PA: 0.12 mm Ø
FS1-100	0-100	64	PA: 0.12 mm Ø
FS1-200	0-200	64	PA: 0.12 mm Ø
FS1-500	0-500	64	PA: 0.20 mm Ø
FS1-1000	0-1000	64	PA: 0.30 mm Ø
FS1-2000	0-2000	124	PA: 0.50 mm Ø
FS1-5000	0-5000	124	PA: 0.80 mm Ø
FS1-10K	0-10 daN	124	PA: 1.00 mm Ø
FS1-20K	0-20 daN	224	PA: 1.50 mm Ø
FS1-50K	0-50 daN	224	Steelrope 1.50 mm Ø

Other tension ranges and measuring head widths available on request.

Other units of measure available – g or kg.

* Outside dimensions of front plate

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Specifications

→ see page D13 →

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

Subject to change without notice.



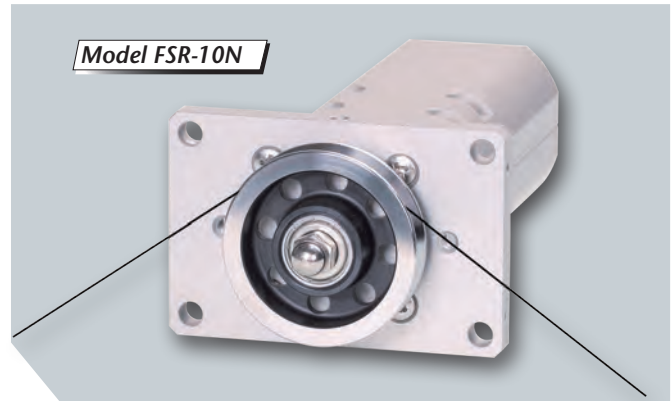
Tension sensor - single roller system - for installation at an existing deviating pulley

Model FSR

6 Tension ranges from 0-10 N to 0-500 N

For thin wires and ropes

Guide Rollers	Line Speed v_{max} ... m/min	Roller Material	→ see page G →
V-grooved			
Standard	2000	Hard-coated aluminium	
Code K	3500	Hard-coated aluminium	
Code H	5000	Plasma-coated aluminium (for Model FS1-100 and higher ranges)	
Code ST	1000	Hardened steel	
Code B	1000	Tempered steel for tire cord	
Code CE2	1000	Aluminium ceramic-coated	
Code ASY	1000	Hard-coated aluminium*	
Code ASYB	1000	Tempered steel for tire cord*	
asymmetrical groove			
U-grooved			
Code U	2000	Hard-coated aluminium*	
* Measuring head width 124 mm for Model FS1-500 and higher ranges			

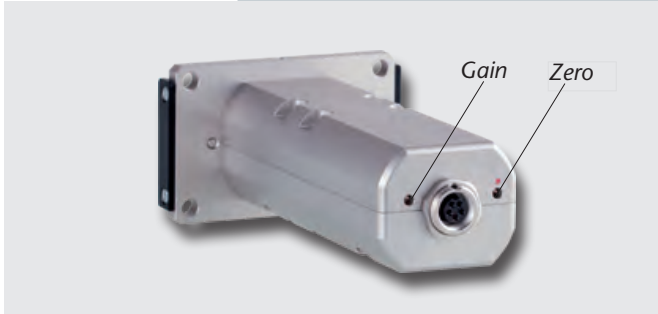


Special features:

- + Entry angle and exit angle $\alpha_{min} 20^\circ$ (must be constant)
- ▣ Apart from that the instrument relates to model FS1

Available Models

MODEL	Nominal Load (FN) N	MODEL	Nominal Load (FN) N
FSR-10N	0-10	FSR-100N	0-100
FSR-20N	0-20	FSR-200N	0-200
FSR-50N	0-50	FSR-500N	0-500



Zero and Gain adjustment used for calibration on customer sample

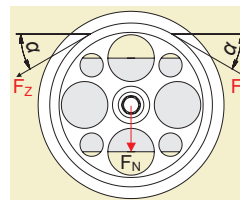
Output Signal

Standard	Analog 0-1 V DC
Code A2	Analog 0-10 V DC
Code A3	Current 4-20 mA
Code 422*	Digital RS-422
Code USB*	Digital USB
Code 232*	Digital RS-232
Code WL*	Digital wireless (no worldwide approval)

* for model FS1-100 and higher - more information see page D14 - D15

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

Guide Rollers	Line Speed v_{max} ... m/min	Roller Diameter mm	Roller Material	→ see page G →
V-grooved				
Standard	4000	30	Hardened steel, max. 4 mm Ø	
Code R1	4000	30	Hard-chrome plated steel (R5)	
Code F	4000	70	Hard-coated aluminium	
Code FB	4000	70	Tempered steel	
Tape rollers				
Code B6	2000	30	Hardened steel, width 6 mm	
Code B10	2000	30	Hardened steel, width 10 mm	



For determine the nominal load, please send us the following information:

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

Output Signal Power Supply Specifications

Models FSR same as Model FS1 (see page D8, D9 and D13)

Model with tension range

Code for guide rollers
(if not standard)

Code for output signal/
power supply
(if not standard)

Complete Order No.

To place an order

please indicate the complete model number, e.g.:

FS1-1000 + U + A3 = FS1-1000-U-A3



Tension sensor for flexible wire, cable, plastic tubing and other materials
up to 15 mm Ø or 10 mm width

Model FSH

7 Tension ranges from 0 - 1000 cN
to 0 - 100.00 daN

Special features:

- + Large, ball-bearing mounted guide rollers, made of hardened steel with large groove diameter
 - V-grooved for material with max. 4 mm Ø
 - U-grooved for material with 3 up to 15 mm Ø
 - Tape grooved for material with max. width of 10 mm
- + For custom designs contact our technical department.
- Apart from that the instrument relates to FS1

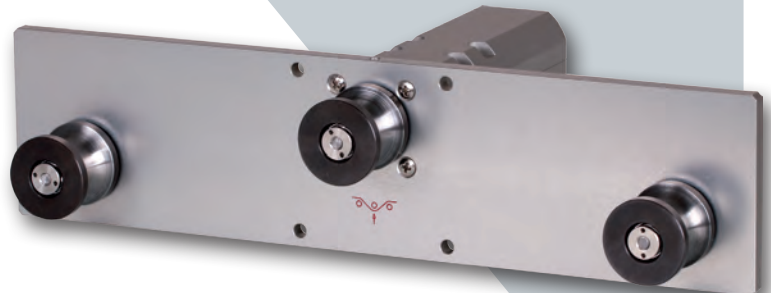
Available Models	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
FSH-1000	0-1000	150	PA: 0.30 mm Ø
FSH-2000	0-2000	150	PA: 0.50 mm Ø
FSH-5000	0-5000	200	PA: 0.80 mm Ø
FSH-10K	0-10 daN	200	PA: 1.00 mm Ø
FSH-20K	0-20 daN	250	PA: 1.50 mm Ø
FSH-50K	0-50 daN	250	Steel rope 1.50 mm Ø (7 x 7 x 0.20)
FSH-100K	0-100 daN	250	Steel rope 3 mm Ø (6 x 7 x 0.30)

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.

* Outside dimensions of front plate

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

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



Model FSH-50K-R4

with guide rollers
Code R4

Guide Rollers

	Line Speed v_{max} : ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel (max. Ø 4 mm)
U-grooved		
Code R1	4000	Hard chrome-plated steel (Ø 3-9 mm)
Code R4	1000	Hardened steel (Ø 8-11 mm)*
Code R5	1000	Hardened steel (Ø 12-15 mm)*
		*(for Model FSH-50K and higher)
Tape rollers		
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

→ see page G →

1st IN TENSION
METERS
WORLDWIDE®

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 FSH same as Model FS1** (see page D8, D9 and D13)



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

Model FSL

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

32 mm Ø guide rollers minimize material deflection



Model FSL-50

Special features:

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

Available Models

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

Other tension ranges and measuring head widths available on request.

Other units of measure available, such as g.

* Outside dimensions of front plate

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Rollers

Line Speed
 v_{max} m/min
Roller Material

→ see page G →

V-grooved

Standard	4000	Hard-coated aluminum
Code T	4000	Plastic (PVC) red (same dimensions as standard roller)

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

Model FSB1

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

Max. width of material to be measured 30 mm



Model FSB1-500-20

with 20 mm tape rollers

Special features:

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

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
FSB 1-100	0 - 100	60	7, 10, 15, 20
FSB 1-200	0 - 200	60	7, 10, 15, 20
FSB 1-500	0 - 500	60	7, 10, 15, 20
FSB 1-1000	0 - 1000	60	7, 10, 15, 20, 30
FSB 1-2000	0 - 2000	120	7, 10, 15, 20, 30
FSB 1-5000	0 - 5000	120	7, 10, 15, 20, 30
FSB 1-10K	0 - 10 daN	120	7, 10, 15, 20
FSB 1-20K	0 - 20 daN	220	7, 10, 15, 20

Other tension ranges and measuring head widths available on request.

Other units of measure available - g or kg.

* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width

** Outside dimensions of front plate

Guide Rollers

Line Speed
 v_{max} m/min
Roller Material

→ see page G →

Standard	1000	Hard-coated aluminum, 13 mm Ø
-----------------	------	-------------------------------

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

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

Output Signal

Power Supply

Specifications

Models FSL and FSB1 same as Model FS1 (see page D8, D9 and D13)

Model with tension range

Code for guide rollers
(if not standard)

Code for output signal/
power supply
(if not standard)

Complete Order No.

To place an order

please indicate the complete model number, e.g.:

FSL-1000 + **T** + **USB** = **FSL-1000-T-USB**

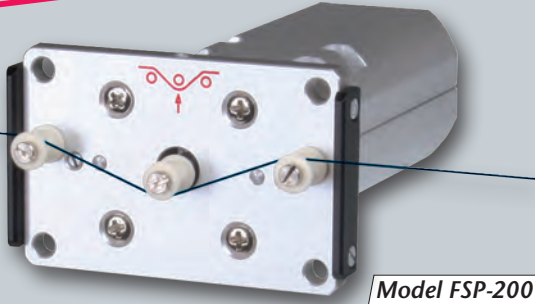


Special tension sensor with ceramic pins for yarns and fibers at high speed

Model FSP

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

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



Model FSP-200

Special features:

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

Available Models

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

Other tension ranges and measuring head widths available on request.

Other units of measure available, such as g.

* Outside dimensions of front plate

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Pins

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

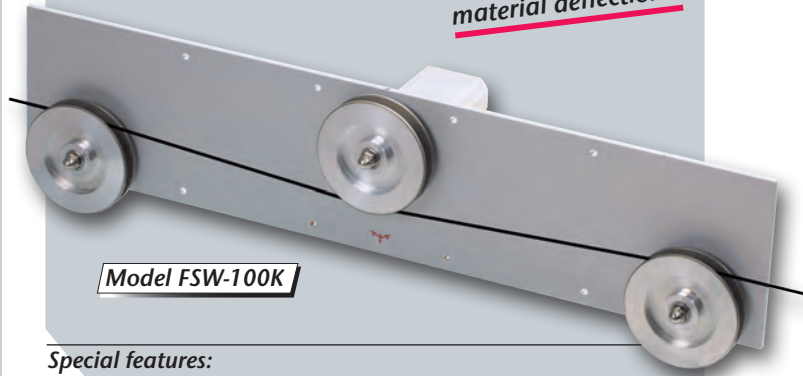
→ see page G →

Tension sensor for wires, ropes and cables up to max. 14 mm Ø

Model FSW

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

Big guide rollers 60 mm Ø, minimizes material deflection



Model FSW-100K

Special features:

- + Guide rollers 60 mm Ø, available with V- or U-groove
- + Depending to the material to be measured the dimensions of the sensor can be modified
- Apart from that the instrument relates to model FS1

Available Models

MODEL	Tension Ranges daN	Measuring Head Width* mm	SCHMIDT Calibration** Material*
FSW-20K	0 - 20	550	steel rope 1.5 mm Ø (7x7x0.20)
FSW-50K	0 - 50	550	steel rope 3 mm Ø (6x7x0.30)
FSW-100K	0 - 100	550	steel rope 4 mm Ø (6x7x0.50)
FSW-200K	0 - 200	550	steel rope 4 mm Ø (6x7x0.50)

Other tension ranges available on request.

Other units of measure available, such as g.

* Outside dimensions of front plate

Guide Rollers

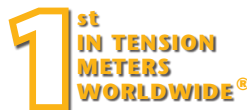
	Line Speed v_{max} m/min	Roller Material
V-grooved		
Standard	2000	Hard-coated aluminum max. wire diameter 5 mm
U-grooved		
Code R2	2000	Hard-coated aluminum (Radius R5)
Code R3	2000	Hard-coated aluminum (Radius R8)

→ see page G →

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

Output Signal **Power Supply** **Specifications**

Models FSP and FSW same as Model FS1 (see page D8, D9 and D13)





Online Sensors

TS SERIES

FS SERIES

Specifications

Calibration:	According to SCHMIDT factory procedure	According to SCHMIDT factory procedure
Accuracy:	± 1 % full scale and ± digit or Other calibration material: ± 3 % FS* or better	± 1.5 % full scale and ± digit or Other calibration material: ± 3 % FS* or better
Overload protection:	100 % FS*	100 % FS*
Measuring principle:	Strain gauge bridge	Strain gauge bridge
Meas. roller deflection:	0.5 mm max.	0.5 mm max.
Signal processing:	Analog	Analog (Option: digital)
Output signal:	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC, 4 - 20 mA or mV/V (analog)	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC or 4 - 20 mA (analog) Option: USB, RS-232, RS-422 or Wi-Fi (digital)
Output plug:	Female diode plug bayonet cap	Female M9 sub-miniatur connector
Damping (fg):	Standard: 30 Hz (other values on request)	Standard: 30 Hz (other values on request)
Temperature drift:	Less than ± 0.05 % FS*/°C	Up to FS1-200 less than ± 0.2 % FS*/°C From FS1-500 less than ± 0.05 % FS*/°C
Temperature range:	10 - 45 °C	10 - 45 °C
Air humidity:	85 % RH, max.	85 % RH, max.
Power supply:	+ 15 ... 24 V DC, 21 mA (regulated); Code A3: 50 mA, Code A10: max. + 5 VDC, max. 20 mA	+ 15 ... 24 V DC, 21 mA (regulated); Code A3: 50 mA, Code 422: 50 mA, Code 232: 40 mA
Housing material:	Aluminium	Aluminium
Weight, net (gross):	Up to TS1-1000 approx. 250 g (400 g) TS1-2000 - TS1-10K approx. 280 g (430 g) TS1-20K and TS1-50K approx. 330 g (500 g)	Up to FS1-1000 approx. 250 g (350 g) FS1-2000 to FS1-10K approx. 280 g (380 g) FS1-20K and FS1-50K approx. 330 g (500 g) Up to FS1-1000-422 approx. 350 g (450 g) FS1-2000-422 to FS1-10K-422 approx. 400 g (500 g) FS1-20K-422 to FS1-50K-422 approx. 470 g (630 g)
Delivery includes:**	Tension Sensor with transport packaging * FS = Full Scale; **plug and cable are not included	Tension Sensor with transport packaging

Online Sensors

Models MZ1, MZH, MZB1

Specifications

Calibration:	According to SCHMIDT factory procedure	Damping (fg):	Standard: 30 Hz (other values on request)
Accuracy:	± 1.5 % full scale and ± 1 digit or better Other calibration material: ± 3 % FS* or better	Temperature drift:	Less than ± 0.05 % FS*/°C
Overload protection:	100 % FS*	Temperature range:	10 - 45 °C
Measuring principle:	Strain gauge bridge	Air humidity:	85 % RH, max.
Meas. roller deflection:	0.5 mm max.	Power supply:	+ 15 ... 24 V DC, 21 mA (regulated); Code A3: 50 mA, Code 422: 50 mA Code 232: 40 mA
Signal processing:	Analog, (Option: digital)	Housing material:	Aluminium
Output signal:	Standard: 0 - 1 V DC (analog) Option: 0 - 10 V DC, 4 - 20 mA (analog) Option: USB, RS-232, RS-422 (digital)	Weight, net (gross):	MZ1 and MZB1 approx. 420 g (580 g) Up to MZH-2000 approx. 560 g (700 g) MZH-5000 / MZH-10K approx. 600 g (750 g) MZH-20K to MZH-100K approx. 640 g (800 g)
Output plug:	Female M9 sub-miniatur connector		
Delivery includes:**	Tension Sensor with transport packaging * FS = Full Scale; **plug and cable are not included		



Model FS-Digital

Digital output for all sensors of series FS

A Special features Code USB:

- + USB output, max. 500 readings/sec
- + Output plug: socket USB typ B
- + No external power supply is required
- + Max. cable length 3 m, optional up to 10 m

B Special features Code 232:

- + RS-232 output, max. 200 readings/sec
- + Output plug: socket Sub D9
- + External power supply + 15 ... 24 VDC required
- + Max. cable length 3 m

C Special features Code 422:

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

D Online tension sensor with Wi-Fi data communication

Wherever measuring values cannot be transferred using a cable, SCHMIDT offers a new, economic solution - Wi-Fi data communications (no worldwide approval)

Typical applications:

- Process data acquisition in modern production process, e. g. Industry 4.0
- Machines, where a tension sensor is mounted on rotating parts e. g. stranding machines
A digital Wi-Fi transmission can replace the data transfer by using slip-rings.

Solution:

- The integrated Wi-Fi modul ensures wireless data communication to a control panel, display or computer.
- For rotating applications we equip our online series FS with a new electronic centrifugal force compensation system. Therefor gravity forces can be compensated. Data transfer take place by Wi-Fi. The tension control is multichannel capable, max. 8 sensors
To clarify important parameters please contact us!

Tension Inspect multichannel

With the software »Tension Inspect 3«, the readings can be transferred with real-time information to a PC and saved as CSV file (see page C 9).
»Tension Inspect 3« is available for 4, 8, 12...or 24 sensors.



Model FS1-200-422



Output FS-USB: USB



Output FS-232: RS-232



Output FS-422: RJ45

**Bigger housing
than model FS**

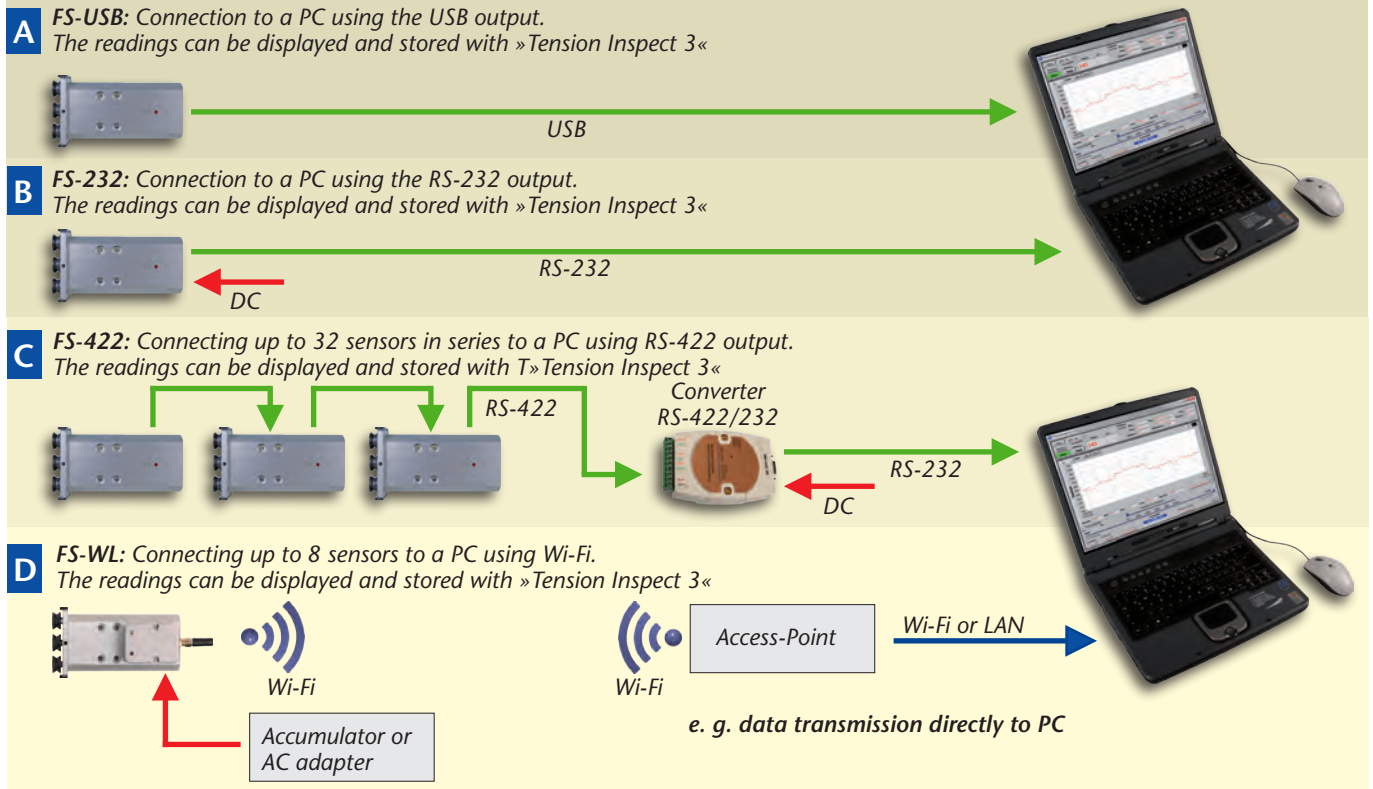


Tension Inspect 3 (see page C 9)



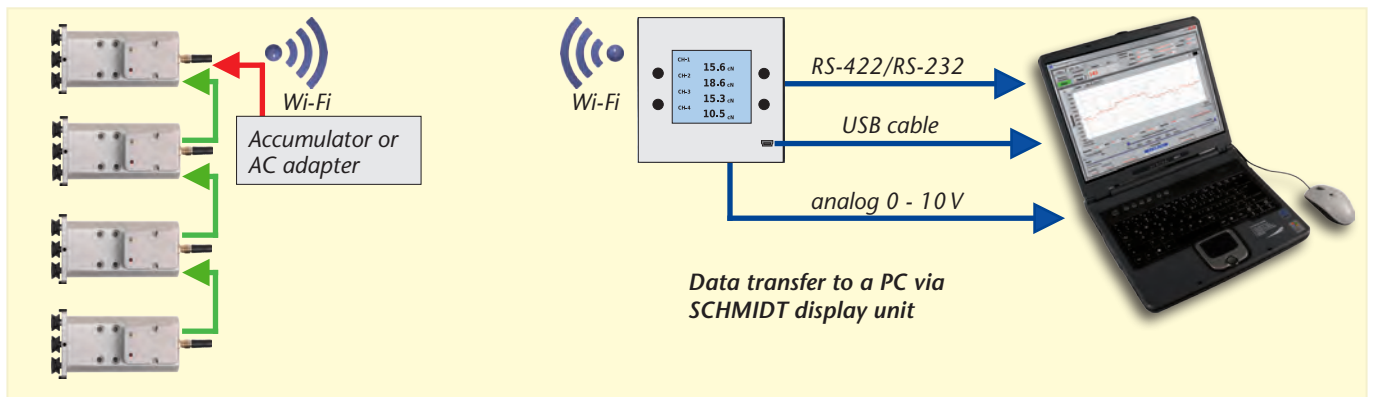
The digital output is available for all models for series FS: e. g. FSL-1000-422, FSH-5000-USB, FSL-200-232, FSB1-500-WL

FS Digital - overview of connections



Multichannel system:

- Max. 8 Sensors with Wi-Fi - Direct signal transfer to a PC
- Max. 4 Sensors with Wi-Fi-data transfer to a SCHMIDT display unit SC-PM4 via Wi-Fi; these can be connected to a controller or a PC (analog and digital output)



Model with tension range

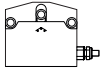
Code for guide rollers
(if not standard)

Code for output signal /
power supply
(if not standard)

Complete Order No.

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

FSL-1000 + T + USB = FSL-1000-T-USB



MZ SERIES

Online tension sensors for small tensions

Special features:

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

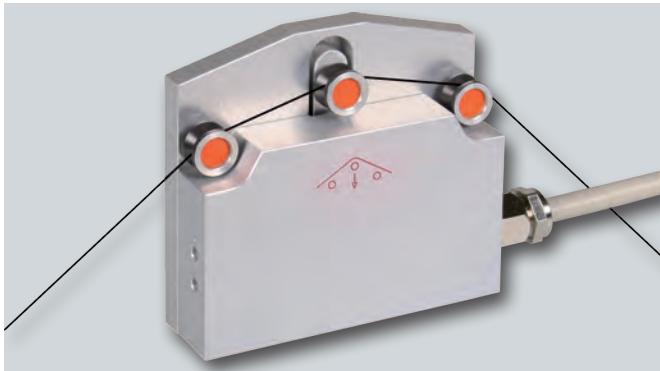
Standard features:

- Aluminium housing
- Supplied with a 2 m shield cable

Compact sensor for
continuous tension
measurement

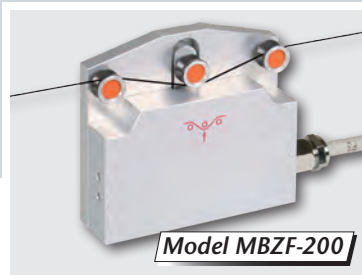
Model MAZF, MBZF

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



Model MAZF-200

with 7.4 mm Ø
guide rollers



Model MBZF-200

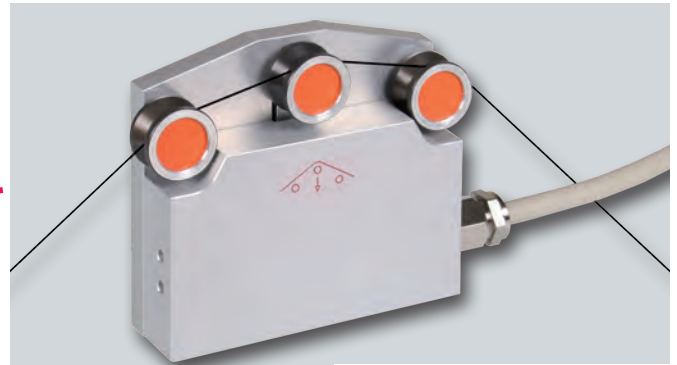


Space saving mounting of MZ series by using an optional rail

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

Model MAZD, MBZD

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



Model MAZD-200

with 12 mm Ø
guide rollers



Model MBZD-200

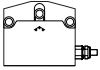
Model MBZB

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



Model MBZB-200-10

with 10 mm tape rollers



Model MAZF, MBZF, MAZD, MBZD

Available Models

MODEL	Tension Ranges cN	Measuring Head Width * mm	SCHMIDT Calibration Material **
MAZF-100 MBZF-100	0-100	70	PA: 0.12 mm Ø
MAZF-200 MBZF-200	0-200	70	PA: 0.12 mm Ø
MAZF-500 MBZF-500	0-500	70	PA: 0.20 mm Ø
MAZD-100 MBZD-100	0-100	70	PA: 0.12 mm Ø
MAZD-200 MBZD-200	0-200	70	PA: 0.12 mm Ø
MAZD-500 MBZD-500	0-500	70	PA: 0.20 mm Ø
MAZD-1000 MBZD-1000	0-1000	70	PA: 0.30 mm Ø

Other units of measure available – g.

* Outside dimensions of the housing

** Suitable for 95% of applications (see also chart on page 11)

PA = Polyamide Monofilament

Model MBZB

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width ** mm	Roller Widths mm
MBZB-100	0-100	70	7, 10
MBZB-200	0-200	70	7, 10
MBZB-500	0-500	70	7, 10
MBZB-1000	0-1000	70	7, 10

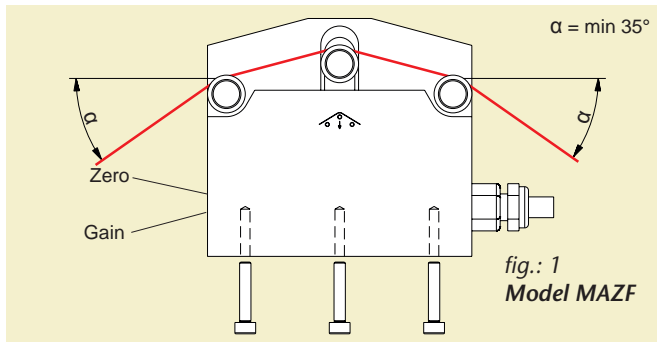
Other units of measure available – g.

* SCHMIDT calibration material textile ribbon or film, depending on tension range and roller width

** Outside dimensions of the housing

Output Signal

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



Guide Rollers

Model MAZF, MBZF

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

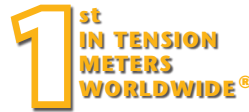
Model MAZD, MBZD

V-grooved	Line Speed v _{max} ... m/min	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium

Model MBZB

Standard	1000	Hard-coated aluminium
-----------------	------	-----------------------

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



Compact sensor for
continuous tension
measurement

Specifications

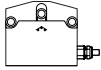
Calibration:	SCHMIDT factory procedure
Accuracy:	± 2 % FS* and ± 1 Digit Other calibration material: ± 3 % FS* or better
Overload protection:	100 % FS*
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	Max. 0.5 mm
Signal processing:	Analog
Output signal:	Standard: 0-1 V DC (analog)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

* FS = Full Scale

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

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

MAZF-500 + **K** + **A2** = **MAZF-500-K-A2**

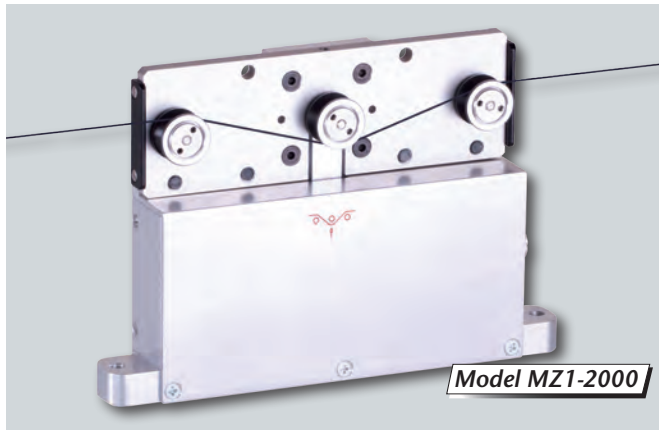


Online sensors with compact,
rectangular housing

Model MZ1

4 Tension ranges from 0 - 1000cN to 0 - 10 daN

Sensor suitable for narrow,
parallel running material



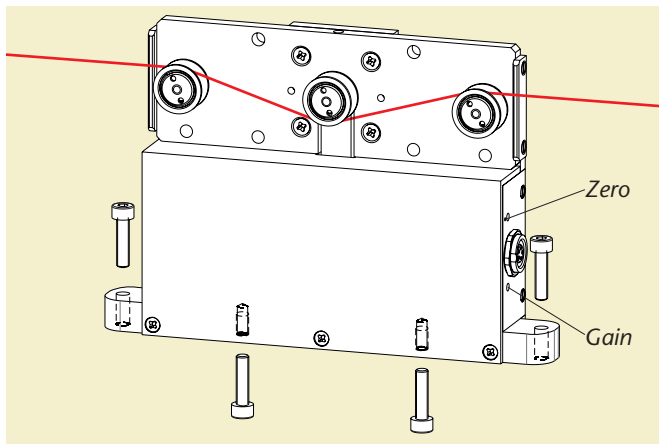
Model MZ1-2000

Special features:

- + Small, compact housing
- + Easy to install e.g. on existing machines
- + Best accuracy $\pm 1.5\%$ FS (Full Scale)
- + Various analog output signals
- + Depending to the application a wide range of guide rollers are available
- + Easy calibration on customer sample by the operator

Standard features:

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



Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
MZ1-1000	0 - 1000	124	PA: 0.30 mm Ø
MZ1-2000	0 - 2000	124	PA: 0.50 mm Ø
MZ1-5000	0 - 5000	124	PA: 0.80 mm Ø
MZ1-10K	0 - 10 daN	124	PA: 1.00 mm Ø

Other units of measure available – g or kg.

* Outside dimensions of front plate

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Rollers

V-grooved	Line Speed v_{max} ... m/min	Roller Material
Standard	2000	Hard-coated aluminium
Code K	3500	Hard-coated aluminium
Code H	5000	Plasma-coated aluminium
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE2	1000	Aluminium ceramic-coated
Code ASY	1000	Hard-coated aluminium
Code ASYB	1000	Tempered steel for tire cord
asymmetrical groove		
U-grooved		
Code U	2000	Hard-coated aluminium

→ see page G →

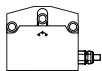
Output Signal

Standard	Analog 0 - 1 V DC
Code A2	Analog 0 - 10 V DC
Code A3	Current 4 - 20 mA
Code 422	Digital RS-422
Code USB	Digital USB
Code 232	Digital RS-232

Specifications

→ see page D13 →

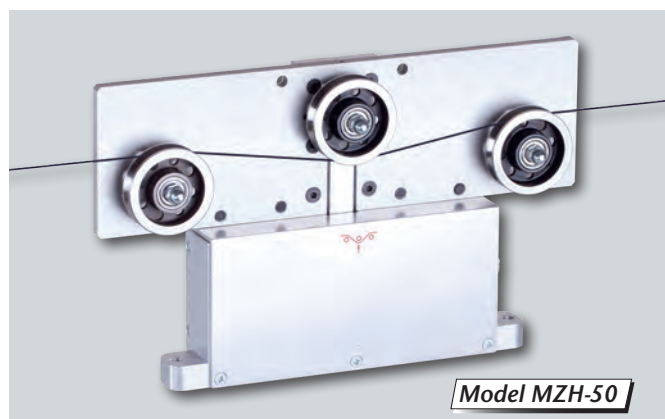
Special calibration using customer supplied samples is available:
Please supply a sample of at least 5 m in length.



Online sensors with compact,
rectangular housing

Model MZH

8 Tension ranges from 0 - 1000 cN to 0 - 100 daN



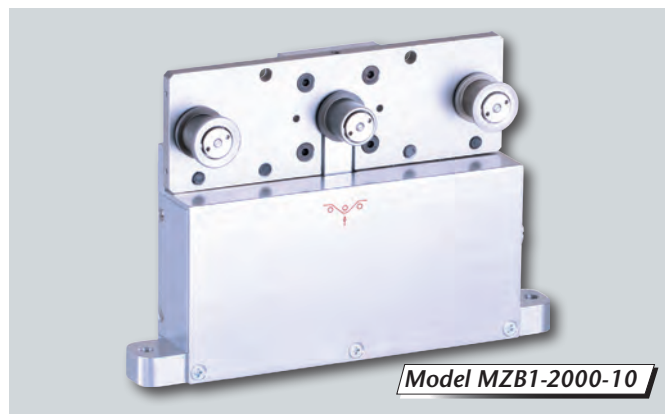
Model MZH-50

Special features:

- + Different guide rollers with large diameter and different geometry, depending on the application
- + Ideal sensor for material with diameters more than 1 mm
- + Due to the design of the sensor, it is particularly gentle on the material to be measured
- Apart from that the instrument relates to MZ1

Model MZB1

4 Tension ranges from 0 - 1000 cN to 0 - 10 daN



Model MZB1-2000-10

Special features:

- + Small, compact housing
- + The roller width should correspond with the width of the material to be measured
- Apart from that the instrument relates to MZ1

Sensor suitable for narrow,
parallel running material

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	SCHMIDT Calibration Material**
MZH-1000	0 - 1000	150	PA: 0.30 mm Ø
MZH-2000	0 - 2000	150	PA: 0.50 mm Ø
MZH-5000	0 - 5000	200	PA: 0.80 mm Ø
MZH-10K	0 - 10 daN	200	PA: 1.00 mm Ø
MZH-20K	0 - 20 daN	250	PA: 1.50 mm Ø
MZH-50K	0 - 50 daN	250	Steel rope 1.50 mm Ø (7 x 7 x 0.20)
MZH-100K	0 - 100 daN	250	Steel rope 3 mm Ø (6 x 7 x 0.30)

Other units of measure available – g or kg.

* Outside dimensions of front plate

** Suitable for 95 % of applications (see also chart on page 11)

PA = Polyamide Monofilament

Guide Rollers

	Line Speed v _{max} : ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened steel (max. 4 mm Ø)
U-grooved		
Code R1	4000	Hard chrome-plated steel (3 - 9 mm Ø) (for Model MZH-5000 and higher)
Code R4	1000	Hardened steel (8 - 11 mm Ø)*
Code R5	1000	Hardened steel (12 - 15 mm Ø)* (for Model MZH-50K and higher)
Tape rollers		
Code B6	2000	Hardened steel, width 6 mm
Code B10	2000	Hardened steel, width 10 mm

→ see page G →

Available Models

MODEL	Tension Ranges cN	Measuring Head Width* mm	Roller Widths mm
MZB1-1000	0 - 1000	120	7, 10, 15, 20
MZB1-2000	0 - 2000	120	7, 10, 15, 20
MZB1-5000	0 - 5000	120	7, 10, 15, 20
MZB1-10K	0 - 10 daN	120	7, 10, 15, 20

Other units of measure available – g or kg.

* Outside dimensions of front plate

** SCHMIDT calibration material textile ribbon or film,
depending on tension range and roller width

Specifications

→ see page D13 →

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.:

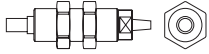
MZH-1000 + B6 + A3 = MZH-1000-B6-A3

Model with tension range

Code for guide rollers
(if not standard)

Code for output signal /
power supply
(if not standard)

Complete Order No.



Series SF

Different tension ranges
up to max. 2000 N

Special features:

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

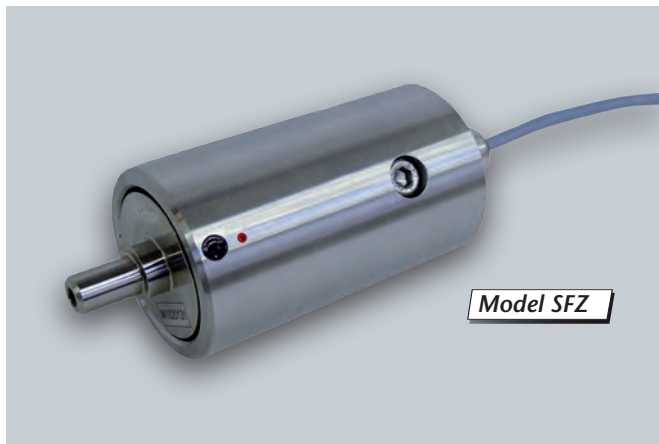
Tension indicator
and amplifier
page D 22 - D 23

Model SFZ

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

Special features:

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



Model SFZ

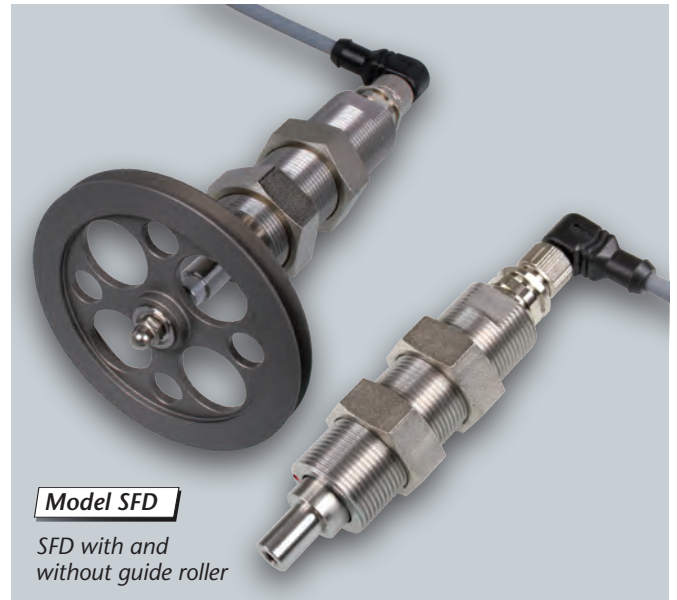
Tension sensor - single roller system - for
installation at an existing deviating pulley

Model SFD

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

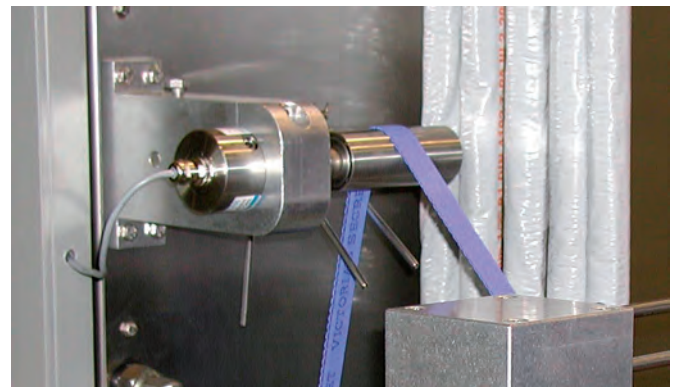
Special features:

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

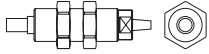


Model SFD

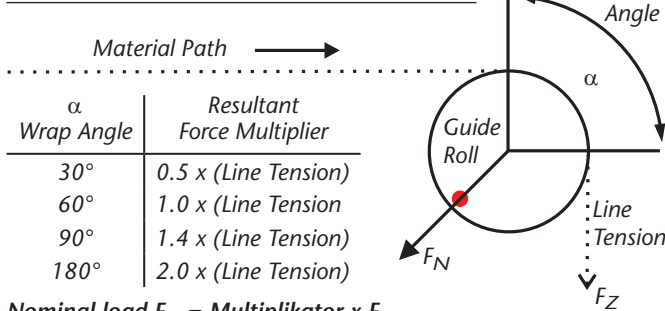
SFD with and
without guide roller



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



Calculation of the tension range:



Nominal load $F_N = \text{Multiplikator} \times F_Z$

Recommended wrapping angle 20... 180°

Available Models

MODEL	Nominal Load N	MODEL	Nominal Load N
SFZ-10	10	SFD-10	10
SFZ-20	20	SFD-20	20
SFZ-50	50	SFD-50	50
SFZ-100	100	SFD-100	100
SFZ-200	200	SFD-200	200
SFZ-500	500	SFD-500	500
SFZ-1000	1000		
SFZ-2000	2000		

Cable Connection

Code T (Standard)
Axial output with screwed cable gland and open ends. Cable length 5 m

Code N2
Axial output with straight plug connection M12 and open ends. Cable length 5 m

Code S2
Axial output with right-angled plug connection M12 and open ends. Cable length 5 m

Axle Journal

Axle Journal	Axle \varnothing - in mm	Suitable Bearing
A (Standard)	10 f7	6000/6300
B	15 f7	6002/6302 (only SFZ)
C	17 f7	6003/6303 (only SFZ)

Options

Options	Model SFZ
Code R	A radial output in combination with Code T, N2, and S2 is optional available
Code P	Model with less protection class IP 54
SFZ-AN	Flange for mounting the sensor (stainless steel)
SFZ-KB	Clamping block for mounting the sensor (aluminium alloy)

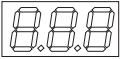
Specifications

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

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

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

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



SC SERIES

Tension indicator with data analysis for one sensor

SCHMIDT indicators are available for all SCHMIDT tension sensors.

SC Series Standard features

- For sensors with output signal 0 - 1 V
- For sensors *without* amplifier the special designed display unit *SC-PMD* with integrated amplifier can be used
- Connection for one sensor
- Power supply for connected sensor
- Sensor calibration adjustment (Zero and Gain)
- User-set damping for output signal and display
- CE certified with sensor connected
- Software »Tension Inspect 3« for displaying and saving readings on a PC - optional (see page C9)

Model SCV-1

Strain gauge amplifier for sensor without integrated amplifier Code A10



Model SC-PM/SC-PMD

Special features:

- + Panel-mount digital display
- + TFT display (3 display modes)
- + Output USB, RS-422 (option: 0 - 10 V, CAN-Bus or 4 - 20 mA)
- + MIN- and MAX-limits with color-coded indicators and open collector
- + Calibration of 3 different materials can be saved
- + Power supply through separate AC adapter or customer side

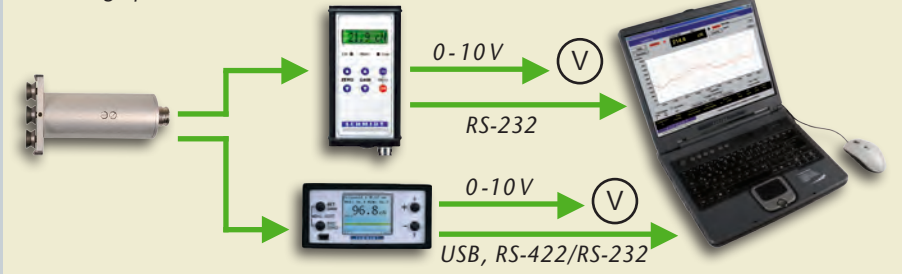


Model SCD-1

Special features:

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

Connecting options of indicators to a controller or a PC



Special features:

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

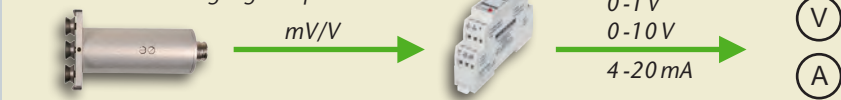
Output Signal

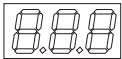
Standard	Analog output 0 - 1 V DC
Code A2	Analog output 0 - 10 V DC
Code A3	Current output 4 - 20 mA

Specifications

→ see page D23 →

Connection of strain gauge amplifier

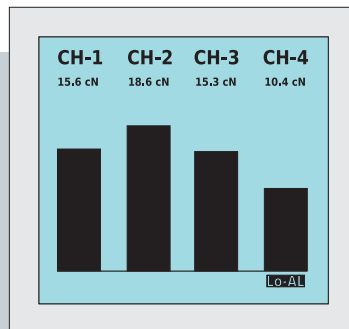




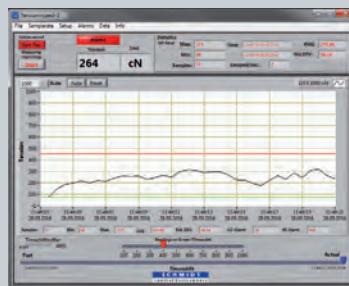
Model SC-PM4/SC-PMD4

Special features:

- + For connecting max. 4 sensors with different tension ranges
- + Panel mount display unit
- + LCD Display with 2 display modes:
 - readings with alarm control
 - bar graph, reading and alarm control
- + Output signal: USB and RS-422, optional analog 0 - 10V DC
- + 4 material curves can be calibrated and stored per channel
- + MIN and MAX limits with open collector output for each channel
- + Password protected set-up menu



Display with bar graphs



Software »Tension Inspect«

Tension indicator with data analysis for max. 4 sensor

Standard features
Model SC-PM4 and SC-PMD4

- For sensors without amplifier (Code A 10) the special designed display unit SC-PMD4 with integrated amplifier can be used
- Power supply for connected sensor
- Selectable measuring units
- User-set damping for output signal and display
- With AC adapter or customized power supply
- CE certified with sensor connected
- Software »Tension Inspect 3« for displaying and saving readings on a PC - optional (see page C 9)



Specifications	SC-PM	SC-PMD	SCD-1	SCV-1	SC-PM4	SC-PMD4
Digital display:	TFT		8 digit LCD		Graphical display	
Height of digit:			12 mm			
Units of measure:	cN, daN, g or kg		cN, daN, g or kg		cN, daN, g, kg, lb or oz	
Damping (f _g):	Electronic adjustable		Electronic adjustable		Electronic adjustable	
Output signal:	USB and RS-422 Option: 0 - 10V DC, CAN-Bus, 4 - 20 mA		0 - 10V DC, RS-232	0 - 1 V DC Option: 0 - 10V DC, 4 - 20 mA	USB and RS-422 Option: 0 - 10V DC	
Amplifier integrated:	no <input type="checkbox"/> yes <input checked="" type="checkbox"/>		no	yes	no <input type="checkbox"/> yes <input checked="" type="checkbox"/>	
Input signal:	0 - 1 V DC <input type="checkbox"/> mV/V <input checked="" type="checkbox"/>		0 - 1 V DC	mV/V	0 - 1 V <input type="checkbox"/> mV/V <input checked="" type="checkbox"/>	
Exit hub:	Terminal strip		2 x Mini-DIN (PS 2)	Terminal strip	Terminal strip	
Power supply:	15 ... 24 V DC, 100 mA		15 ... 24 V DC, 100 mA	15 ... 24 V DC, 50 mA	30 V DC, 200 mA	
AC adapter:			100-240V AC, 50-60Hz, with 3 adapters (EU/USA/UK)			
Alarm output:	30 V DC, 20 mA, open collector		30 V DC, 20 mA, 2 x open collectors		30 V DC, 20 mA, open collectors	
Housing:	Plastic		Aluminium	Plastic	Plastic	
Dimensions (L x W x H):	120 x 95 x 48 mm		182 x 85 x 34 mm	90 x 56 x 18 mm	110 x 90 x 90 mm	
Cutout required:	92 x 44 mm			DIN top hat rail box	91.5 x 91.5 mm	
Weight, net (gross):	Approx. 200 g (300 g)		Approx. 300 g (1000 g)	Approx. 53 g	Approx. 300 g (700 g)	



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

Tension Meter for hand-held use



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



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



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



Model DTSE
with fixed ceramic-pins



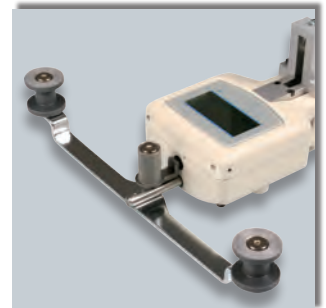
Model DXX
With big rollers and high range up to 80 daN using a unique rope catching system



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



Model DTS
With smaller measuring head width



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

Tension Meter for online use



Model TSB1
With wide special guide rollers made of stainless steel



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



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



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



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



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

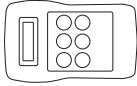


Model TS1
With additional guide roller to prevent the wire to jump of the roller



Model TSB2
With non-rotating ceramic pins for cellulose acetat

Subject to change without notice.



RTM SERIES

Tension range from 10 - 800 Hz

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

Special features:

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

Standard features:

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

Available Models

MODEL

Measuring Range
CN

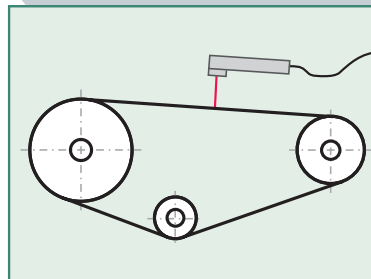
RTM-400 10 - 800 Hz

Specifications

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

With Plug in probe for one-hand operation and probe with cable for limited access space

Model RTM-400



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



SCHMIDT Guide Roller Dimensions

Standard All dimensions are given in mm

<p>Standard</p> <p>MODEL ZF2 DXE DXV ZEF DTSE DTXE DXES MAZF MBZF</p>	<p>Standard</p> <p>MODEL ZD2 DX2 DN1 DX2S ZED DTS DTX MAZD MBZD MZ1</p>	<p>Standard</p> <p>MODEL Q MK MKM DN1-30K-L DN1-50K-L</p>	<p>Standard</p> <p>MODEL TS1 FS1</p>
<p>Standard</p> <p>MODEL DXF DXFS DTSF DTXF TSL FSL</p>	<p>Standard</p> <p>MODEL DXL DTSL DTXL TSR TSH FSH FSR MZH</p>	<p>Standard</p> <p>MODEL TSF TSF1</p>	<p>Tape rollers a from 7 mm to 100 mm</p> <p>MODEL DXB DXR DXT DTSB DTXB TSB1 TSB2 FSB1 DXBS DXTS MBZB MZB1</p>

Optional All dimensions are given in mm

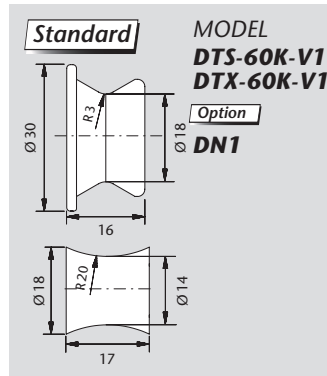
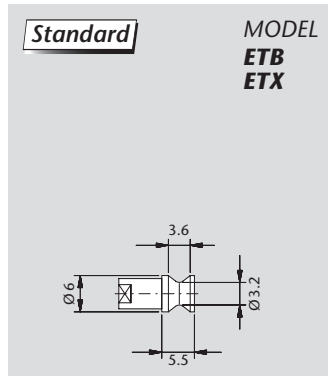
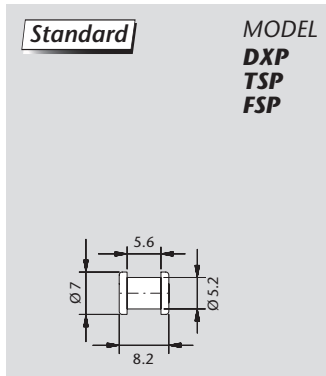
<p>Code T Plastic (POM) black</p> <p>Code W Nickel-plated steel</p> <p>MODEL ZF2 DXE DXV ZEXS ZEF</p>	<p>Code T Plastic (POM) black</p> <p>Code W Nickel-plated steel</p> <p>MODEL ZD2 DX2 Q MK DN1 DX2S ZED DTS DTX TS1 FS1 MZ1</p>	<p>Code H</p> <p>MODEL ZD2 DX2 DN1 DX2S ZED DTS DTX TS1 FS1 MAZD MBZD MZ1</p>	<p>Code U</p> <p>MODEL DX2 DN1 DX2S DTS DTX TS1 FS1 MZ1</p>
<p>Code CE2 Aluminium ceramic-coated</p> <p>MODEL ZD2 DX2 DN1 DX2S DTS DTX TS1 FS1 MZ1</p>	<p>Code ST</p> <p>Code B</p> <p>MODEL ZD2 DX2 DN1 DX2S DTS DTX TS1 FS1 MZ1</p>	<p>Code ASY</p> <p>Code ASYB</p> <p>MODEL DX2 DN1 DX2S DTS DTX TS1 FS1 MZ1</p> <p>Standard DNW</p>	<p>Code R1</p> <p>MODEL DXL DTSL DTXL TSR TSH FSR FSH</p>

Subject to change without notice.



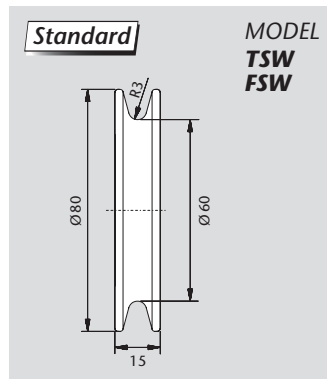
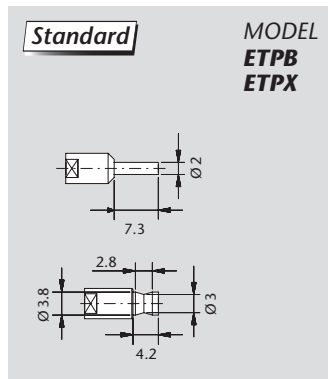
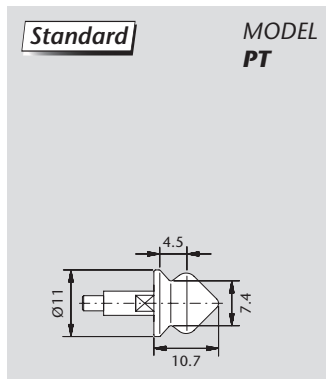
SCHMIDT Guide Roller Dimensions

Standard All dimensions are given in mm

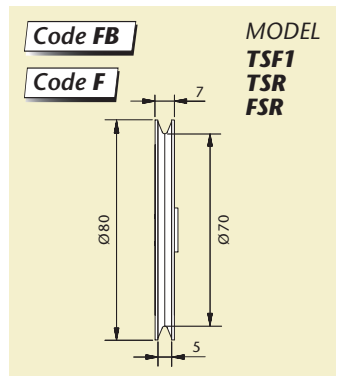
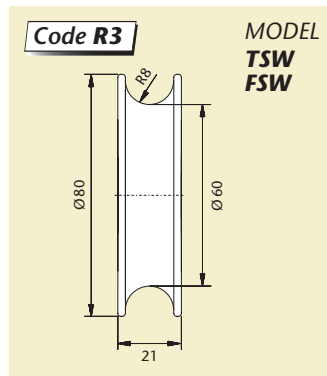
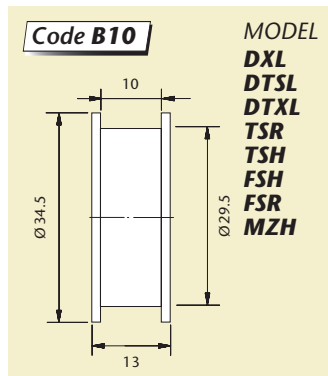
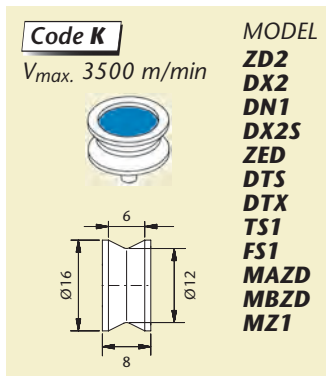
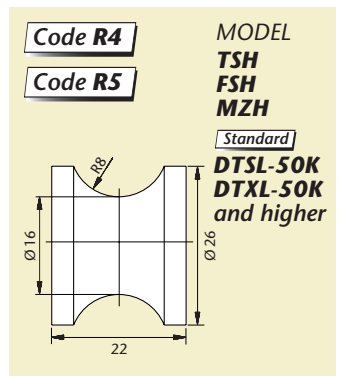
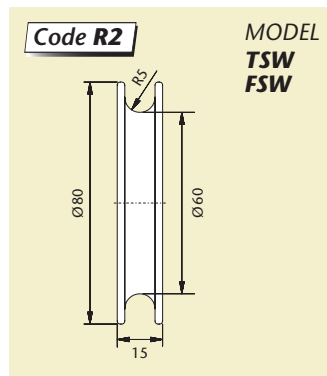
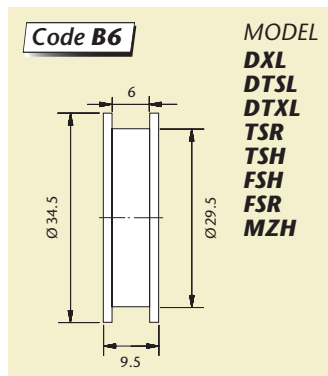
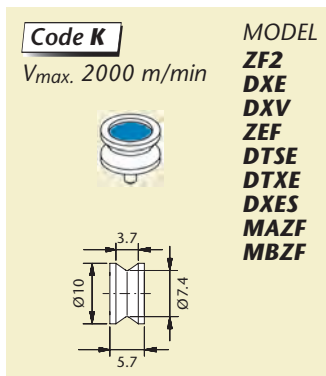


We have a wide range of guide rollers. please visit us at www.hans-schmidt.com

Beside the standard rollers, we also offer rollers with different geometry, special coating e. g. ceramic coating or anti adhesive coating or rollers made of special material like e. g. stainless steel.



Optional All dimensions are given in mm



Version E15/2023

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