Online Tension Measuring Systems

Continuous measurement and data logging

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

A Tension System 3-Roller Sensor only

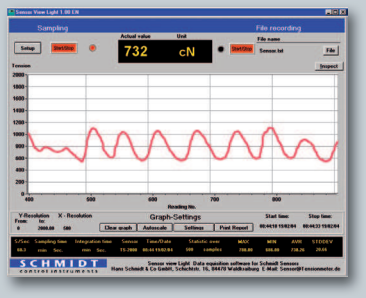
- for use with customer supplied indicators and closed loop control units
  or
- customer must supply regulated DC power source

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

Analog output
0-1 V DC
(standard)
0-10 V
(optional)

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

Digital output
RS 232 or RS 422
(optional)



Software (optional equipment):

»**Sensor View**« (WIN'95 and higher WIN 7 only 32 Bit)

The series TS can be mounted online for continuous tension monitoring.
The sensor can be connected to a PC using RS 232 or RS 422 (optional) output.
*With the programm »**Sensor View**« the tension reading of max. 32 TS sensors can be transfered to a PC. All datas are stored in an EXCEL file (.xls).*

Please ask for additional information!

B Complete Tension System 3-Roller Sensor only

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

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

Analog output
0-10 V DC
(standard)

Digital output
RS 232 or RS 422
(optional)

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

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

1st IN TENSION METERS WORLDWIDE

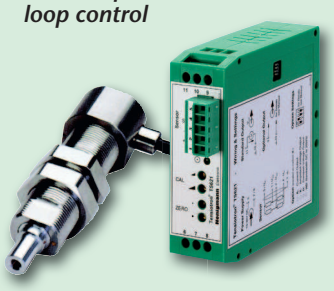
Main Features:

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

C Tension System 1-Roller Sensor only

- replacing an existing reversing point
- external amplifier with analog outputs
- available with or without guideroller

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



Analog output
0-10 V DC
(standard)

For more see page G

SCHMIDT Online-sensors and display units:

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

Measuring principle 3-Roller 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 angle of contact has to be stable. The sensor uses straingauges and supplies a output signal in mV or V (with integrated amplifior).

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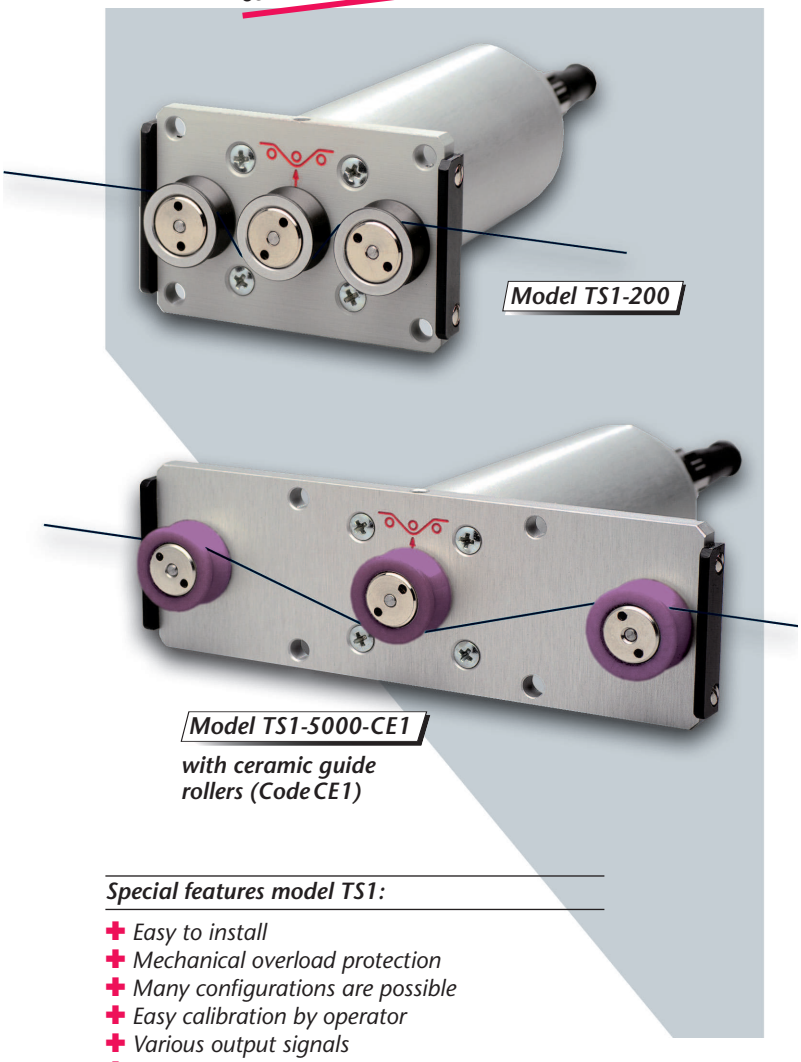
TS SERIES

Sensors for many applications

Universal sensor for continuous measurement



Model TS1-200

Model TS1-5000-CE1
with ceramic guide rollers (Code CE1)

Special features model TS1:

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

Standard features model TS1:

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

Specifications → see page D 7 →

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

Universal Online Tension Sensor for yarns, fibers, thin wires, etc.

Model TS1

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

Available Models

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

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

Guide Rollers → see page F →

	Line Speed v max. ... m / min	Roller Material
V-grooved		
Standard	2000	Hardcoated aluminium
Code K	3500	Hardcoated aluminium
Code H	5000	Plasma-coated aluminium (for Model TS1-100 and higher ranges)
Code T	1000	Plastic (POM) black
Code ST	1000	Hardened steel
Code B	1000	Tempered steel for tire cord
Code CE1	1000	Ceramic
Code ASY	1000	Hardcoated aluminium
Code ASYB	1000	Tempered steel for tire cord
asymmetrical groove		for Model TS1-500* and higher ranges
		* Measuring Head Width 124 mm
U-grooved		
Code U	2000	Hardcoated aluminium

Output Signal (Supplied with diode connector)

Standard	Output signal 0 - 1 V DC
Code A2	Output signal 0 - 10 V DC
Code A3	Output signal 4 - 20 mA DC
Code 232	Output signal digital RS 232, analog 0 - 1 V DC (Communication frequency max. 100 readings / sec)
Code 232H*	Output signal digital RS 232, analog 0 - 1 V DC (Communication frequency max. 500 readings / sec)

* Available only for selected ranges. Please contact us.

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.:

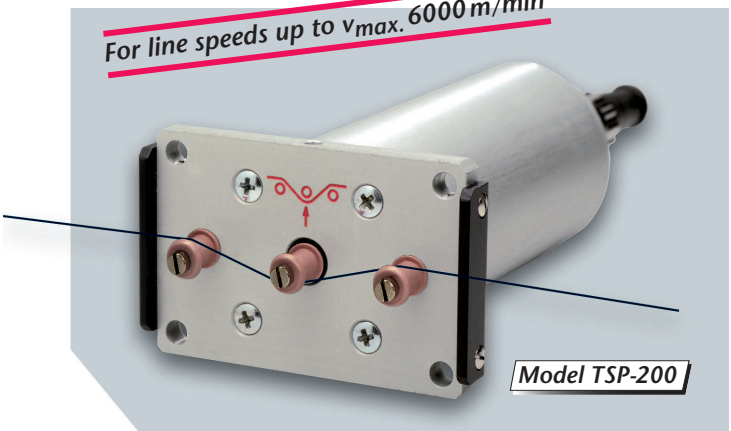
TS1-1000 + **ASY** + **A3** = **TS1–1000–ASY–A3**

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

Model TSP

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

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



Model TSP-200

Special features model TSP:

- ✚ Non-rotating, exchangeable ceramic pins
- ✚ Suitable only for yarns and fibers
- – TSP standard features same as Model TS 1

Available Models

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

Other tension ranges and measuring head widths available on request.
Other units of measure available, such as g.
* Outside dimensions of front plate
** Suitable for 95 % of applications (see also chart on page 9)
PA = Polyamide Monofilament

Guide Pins

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Pin Material
Standard	6000	AL-Oxide ceramic 5 mm Ø

1st IN TENSION METERS WORLDWIDE

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

Model TSH

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

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

Model TSH-5000

Special features model TSH:

- ✚ Guide rollers 30 mm Ø, available with V- or U-groove
- ✚ TSH standard features same as Model TS 1. Custom designs available – contact our technical department.

Available Models

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

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

Guide Rollers

→ see page F →

	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	4000	Hardened-steel
U-grooved		
Code **R1**	4000	Hardened-steel (radius R 5)

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

Output Signal / Power Supply · Specifications **Models TSP and TSH same as Model TS 1** (see page D 2 and D 7)

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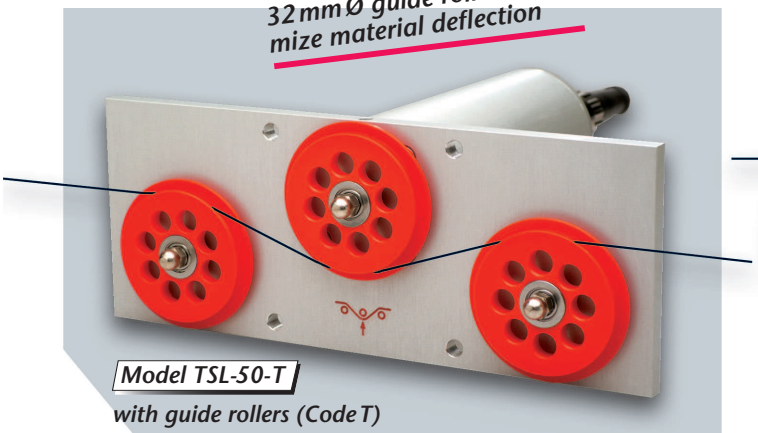
Special tension sensors feature large rollers to minimize bending of materials like fiber optics, carbon and technical fibers

Model TSL

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

32 mm Ø guide rollers minimize material deflection



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

Special features model TSL:

- ✚ Gentle handling of sensitive material during measurement
- ✚ Extremly leight weight, low inertia guide rollers
- ✚ Best suitable for low tension ranges
- – TSL standard features same as Model TS 1

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 9)
PA = Polyamide Monofilament

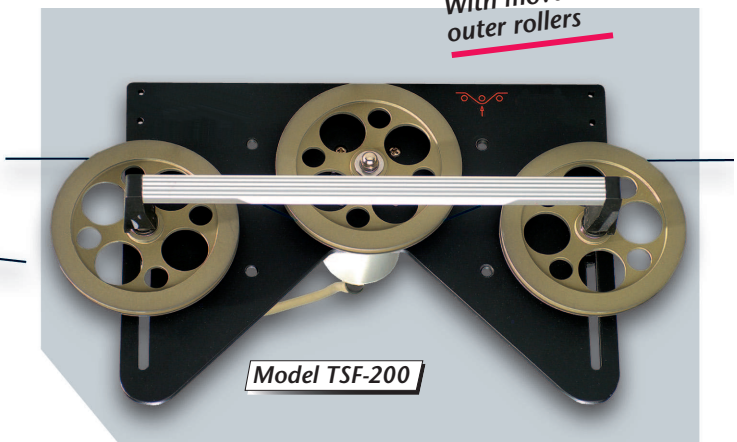
Guide Rollers → see page F →

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

Model TSF

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

With movable outer rollers



Model TSF-200

Special features model TSF:

- ✚ Large bending radius for gentle handling of sensitive material
- ✚ Ball-bearing mounted, V-Grooved guide rollers with 70 mm Ø
- ✚ The outer rollers can be moved downwards to minimize contact in case of non-measurements
- – TSF standard features same as Model TS 1

Available Models

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

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

Guide Rollers → see page F →

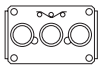
	Line Speed $v_{max.}$ ... m/min	Roller Material
V-grooved		
Standard	5000	Hardcoated aluminium

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 TS 1*** *(see page D 2 and D 7)*

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

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



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

1st IN TENSION METERS WORLDWIDE

Model TSB 1

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

Max. width of material to be measured 20 mm

Model TSB1-500-20

Special features model TSB1:

- ✚ Dual-flanged outer guide rollers with various widths, from 7 mm to 20 mm
- ✚ The roller width should correspond with the width of the material to be measured.
- – TSB1 standard features same as Model TS1

Available Models

MODEL	Tension Ranges* cN	Measuring Head Width** mm	Roller Widths mm
TSB 1-100	0 - 100	60	7, 10, 15, 20
TSB 1-200	0 - 200	60	7, 10, 15, 20
TSB 1-500	0 - 500	60	7, 10, 15, 20
TSB 1-1000	0 - 1000	60	7, 10, 15, 20
TSB 1-2000	0 - 2000	120	7, 10, 15, 20

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

Guide Rollers

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

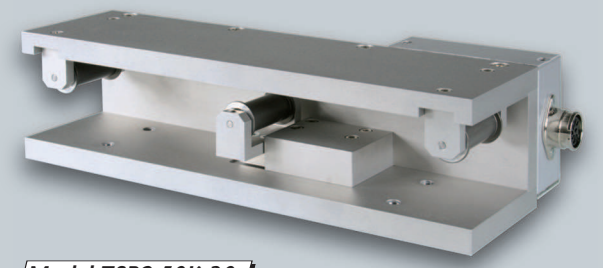
→ see page F →

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

Model TSB 2

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

Cylindrical rollers with special supports for higher tension ranges



Model TSB2-50K-30

Customized configuration

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

Please submit the following details:
- – Description of application
- – Expected tension range
- – Kind and dimensions of the material to be measured
- – Material sample of about 5 m

Available Models

MODEL	Tension Ranges* cN	Roller Widths mm
TSB 2-1000	0 - 1000	30, 36, 41, 50, 100
TSB 2-2000	0 - 2000	30, 36, 41, 50, 100
TSB 2-5000	0 - 5000	10, 15, 20, 30, 36, 41, 50, 100
TSB 2-10 K	0 - 10 daN	10, 15, 20, 30, 36, 41, 50, 100
TSB 2-20 K	0 - 20 daN	10, 15, 20, 30, 36, 41, 50, 100
TSB 2-50 K	0 - 50 daN	10, 15, 20, 30, 36, 41, 50, 100

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

Guide Rollers

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

→ see page F →

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 TSB 1 and TSB 2 same as Model TS1*** *(see page D 2 and D 7)*

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Universal Online Tension Sensor
for yarns, fibers, thin wires, etc.

Model LTS

more info

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

LTS SERIES

Sensors for low-cost applications

please ask for additional information!

Special features:

- Easy to install
- Mechanical overload protection
- Different output signals:
  Analog: 0-1 V DC (standard)
  Code A2: 0-10 V (optionally)
  Digital: Code 422: RS 422 for several sensors connected in series
- Easy calibration by operator
- According to the application a wide range of different models are available, which differ in the roller geometry and material, e. g. LTS, LTSH; LTSL and LTSB

1st IN TENSION METERS WORLDWIDE

Standard feature:

- Ball-bearing mounted, V-grooved guide rollers
- Power supply: +12 ... 24 V DC (1-phase, regulated)
- Inspection Certificate with calibration report optionally available

Model LTS-422

Model LTSH

mit 30 mm large guide rollers
for wires, thin ropes and cables up to 8 mm Ø

Available Models

MODEL	Measuring Range	Guide Rollers (page D2)
LTS	0-100 cN up to 0-20 daN	see TS1
LTSH	0-1000 cN up to 0-20 daN	see TSH
LTSL	0-100 cN up to 0-1000 cN	see TSL
LTSB	0-100 cN up to 0-2000 cN	see TSB

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

Output Signal

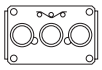
Standard	Output signal 0-1 V DC
Code A 2	Output signal 0-10 V DC
Code A 3	Output signal 4-20 mA DC
Code 422	Output signal digital RS 422
Code 422 A	Output signal RS 422 and 0-1 V DC

A *LTS with standard output for connecting a display unit, Option: Display and downloading readings on a PC*

B *LTS with Code 422; max. 32 sensors can be connected in line to a PC*

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.
LTS-1000	+	ASY	+	A 3	=	LTS–1000–ASY–A3



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control instruments

Online sensors

TS SERIES

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

Specifications

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

* FS = Full Scale

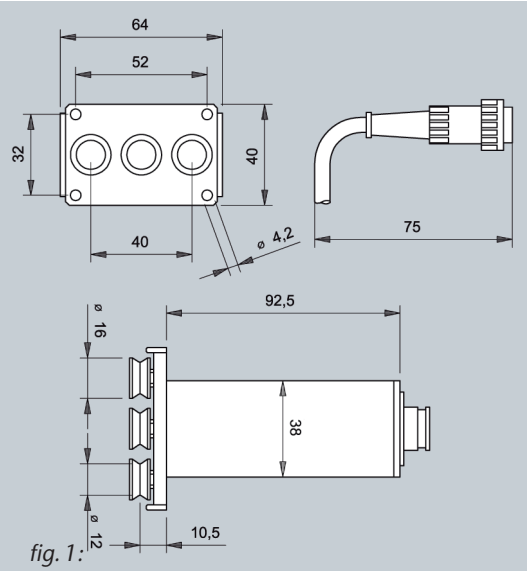

fig. 1:
Dimensions in mm of Series TS shown on Model TS1-1000
(Dimensional drawings of all models available on request)

Online sensors

LTS SERIES

Models LTS, LTSH, LTSL, LTSB

1st IN TENSION METERS WORLDWIDE

Specifications

Calibration:	According to SCHMIDT factory procedure
Accuracy:	±1 % FS* and ±1 digit
	Other calibration material:
	±3 % FS* or better
Overload protection:	100 % of range
Measuring principle:	Strain gauge bridge
Measuring roller deflection:	0.5 mm max.
Signal processing:	Analog (Option: digital)
Output signal:	Standard: 0-1 V DC (analog)
	Option: 0-10 V DC, 4-20 mA (analog)
	Option: RS 422 (digital)
Damping (f_g):	Standard (analog): 30 Hz (others on request)
	Standard (digital): customer flexible adjustable
Temperature drift:	Less than ±0.05 % FS*/°C
Temperature range:	10-45 °C
Air humidity:	85 % RH, max.
Power supply:	Analog: +12 ... 24 V DC, 21 mA (regulated)
	Digital: +12 ... 24 V DC, 50 mA (regulated)
Housing material:	Aluminium
Weight, net (gross):	e.g. Model TS1-100 approx. 300 g (800 g)
Delivery includes (Standard): (Cable length – see price list)	If sensor is ordered only: 1 diode male connector
	If sensor and display unit is ordered:
	1 connecting cable for each sensor

* FS = Full Scale

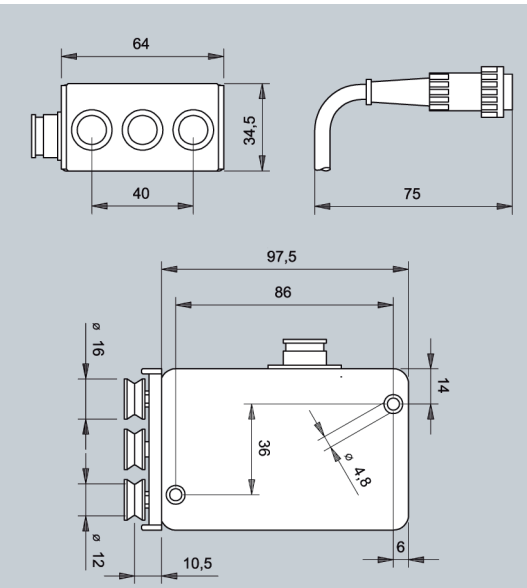

fig. 2:
Dimensions in mm of Series LTS shown on Model LTS-1000
(Dimensional drawings of all models available on request)

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control instruments

SC SERIES

Digital display units with data analysis for one sensor

SCHMIDT display units 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 units SC-PMD and SCD-1D with integrated amplifier can be used
- Connection for one sensor
- Power supply for connected sensor
- Sensor calibration adjustment (Zero and Gain)
- Analog output 0 - 10 V DC
- Dotmatrix LCD display
- User-set damping for output signal and display
- Software »Tension Inspect« for displaying and saving readings on a PC (optional)
- CE certified with sensors connected

CE

Model SC-PM

more info

Special features:

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

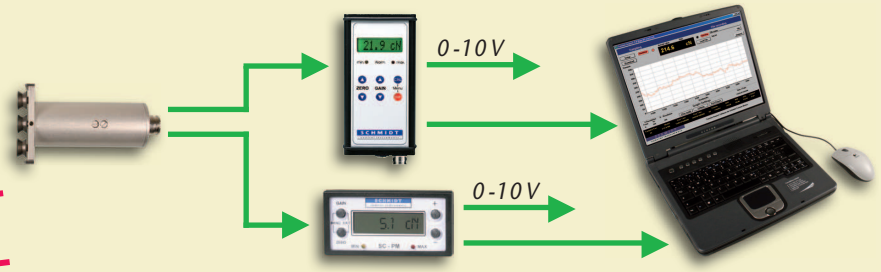
Model SCD-1

more info

Special features:

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

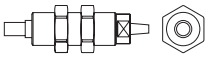
Connecting example for display units for displaying and saving the readings on a PC



Ask for additonal information

Specifications

	Model SC-PM	Model SC-PMD	Model SCD-1	Model SCD-1D
Digital display:	8 digit LCD with user-set tension range		8 digit LCD with user-set tension range	
Height of digit:	12mm		12 mm	
Units of measure:	cN, daN, g or kg, depending on range		cN, daN, grs or kg, selectable	
Damping (f_G) adjustable to:	electronic adjustable		electronic adjustable	
Output signal:	0 - 10 V DC (option: RS 232, RS 422, 4 - 20 mA)		0 - 10 V DC, RS 232	
Amplifier:	no	yes	no	yes
Exit hub:	Terminal strip		2 x Mini-DIN (PS 2)	
Voltage output for sensor:	yes		yes	
Power supply:	12 ... 24 V DC, 100 mA		12 ... 24 V DC, 100 mA	
AC adapter:			External AC adapter 100 - 240 V AC, 50 - 60 Hz, with 3 adapters (EU/USA/UK)	
Alarm output:	30 V DC, 10 mA, open collector		35 V DC, 20 mA, 2 x open collectors	
Housing:	Plastic		Aluminium (with wall mounting facility)	
Dimensions (L x W x H):	120 x 95 x 48 mm		182 x 85 x 34 mm	
Cutout required:	92 x 44 mm			
Weight, net (gross):	approx. 300 g (1000 g)		approx. 300 g (1000 g)	



Series RFS®

15 tension ranges
from 0 - 1 N up to 0 - 1000 N

Two models: - RFS without integrated amplifier more info
- RFSE with integrated amplifier more info

Special features for model RFS and RFSE:

- Overload protection up to 800 %
- High precision sensor with best accuracy
- High mechanical stiffness of the load cell enables measurement with virtually no excursion
- Independent of the force introduction point, not affected by lever arm action
- A huge number of rollers with different geometry and different materials are available on request - send us your demand profile

Model RFSE

RFSE with integrated amplifier

Additonal features model RFSE

- Integrated amplifier
- Power supply 20 ... 24 V DC
- Output signal: - Analog: 0 ... 10 V (standard)
  - Code 20: 0 ... 20 mA
  - Code 24: 4 ... 20 mA

Standard features model RFS and RFSE

- Rugged, stainless steel housing
- Threaded housing (M 25) with lock-nuts permits easy mounting and simple alignment
- Depending to the used guide roller different bearing journals are available
- Supplied with 3 m shielded cable with open ends; other lengths optional available

For ribbons and wovens the model RFS cab be used as a tape tension meter with one or two RFS installed. Inform us about your application!

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

Model RFS

RFS with and without guide roller

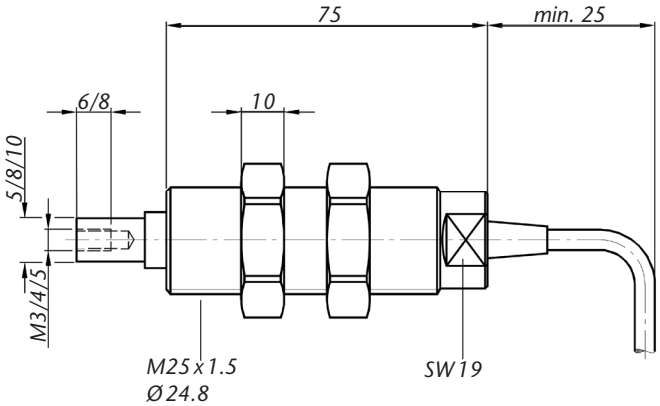
Ask for additional Information!

Options

- Seal gas protection
- Vacuum design
- Cylindrical sensor housing

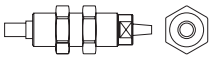
Model SK122

For higher ranges up to 20 kN other models e. g. SK122 are available. Ask for further information including your demand profile!

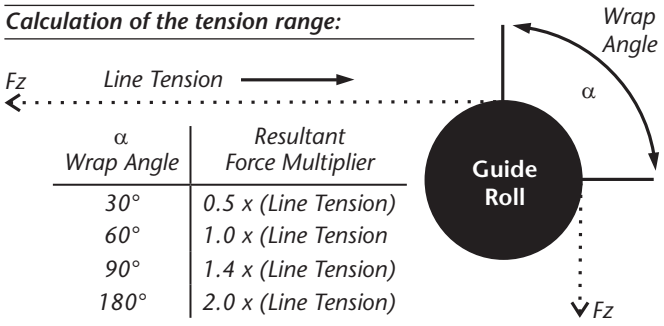


D *Hand-Held, mechanical*
RFS Series

SCHMIDT
control instruments



Calculation of the tension range:



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

Recommended wrapping angle 20 ... 180°

Output Signal

Standard	Analog 1.5 mV/V (nur RFS)
Standard	Analog 0 - 10 V DC (nur RFSE)
Code 20	Current 0 ... 20 mA (only RFSE)
Code 24	Current 0 ... 24 mA (only RFSE)

Connection Types

Code 0	Connecting cables with open ends
Code S	Connecting cables with 6-pole plug

Available Models

MODEL		Tension Ranges N	Bearing journal Ø mm
RFS-2	**RFSE-2**	2	5, 8 or 10
RFS-5	**RFSE-5**	5	5, 8 or 10
RFS-10	**RFSE-10**	10	5, 8 or 10
RFS-20	**RFSE-20**	20	5, 8 or 10
RFS-30	**RFSE-30**	30	5, 8 or 10
RFS-40	**RFSE-40**	40	5, 8 or 10
RFS-50	**RFSE-50**	50	8 or 10
RFS-60	**RFSE-60**	60	8 or 10
RFS-100	**RFSE-100**	100	8 or 10
RFS-200	**RFSE-200**	200	8 or 10
RFS-300	**RFSE-300**	300	8 or 10
RFS-400	**RFSE-400**	400	8 or 10
RFS-500	**RFSE-500**	500	10
RFS-600	**RFSE-600**	600	10
RFS-1000	**RFSE-1000**	1000	10

Specifications

Accuracy:	±0.5 % Full Scale or better
Measuring roller deviation:	0.07 mm
Sensor output:	1.5 mV/V (RFS), 0 ... 10 V
Power supply:	10 V, max. 12 V DC (RFS)
	20 ... 28 V DC (RFSE)

More details on request

Amplifier and display units

for model RFS

Sensor RFS without amplifier can be connected to different amplifiers.

General function:

- Required power 24 V DC
- Temperature and long time stability
- Provides a well-regulated power supply for sensor excitation
- Zero and gain adjustment

Special features display unit DPM 502:

more info

- ✚ LED-Display, 3 ½ digit
- ✚ freely scalable
- ✚ front-side operation
- ✚ 24 V DC power supply

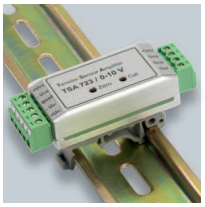
Additional Equipment

TS 621	Universal amplifier
TS 621-HD	Amplifier for high-frequency output
TSA 723	Small compact amplifier
DPM 502	LED-display, 3 ½ digit, power 24 V AC

Special features model TS 621:

more info

- ✚ Galvanic isolation (power and measuring signal)
- ✚ Output: Analog 0 - 10 V
  Option: - 0 - 10 V with filter 0.5 ... 20 Hz
  - 0/4 ...20 mA
  - Second analog output with selectable amplifications factor 2x ... 5x
  - High frequency output 40 kHz



Special features model TSA 723:

- ✚ Small, compact design
- ✚ Output signal: analog 0 - 10 V
- ✚ Option: 0 ... 20 mA
  4 ... 20 mA

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

Model with tension range	Bearing journal Ø in mm	cable length in m (standard 3 m)	connection types	Output signal (if not standard)	Complete Ordern No.
RFSE-5	+ 8	+ 3	+ S	+ 20	= RFSE-5-8-3-S-20