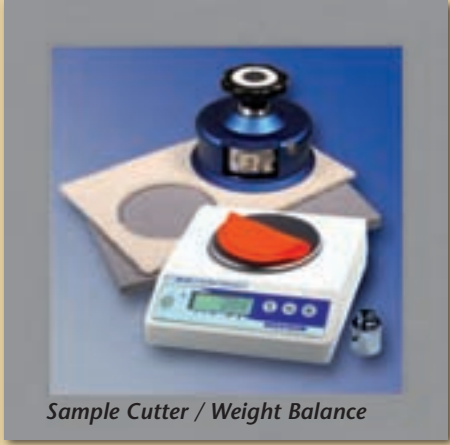
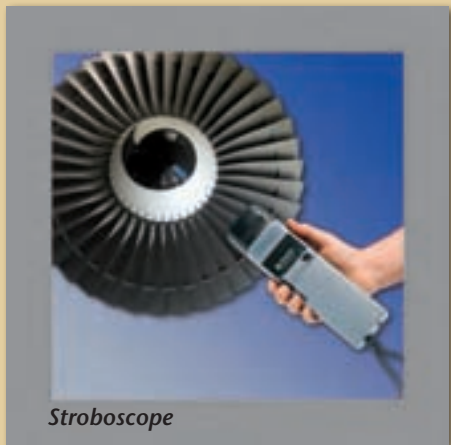


SCHMIDT control instruments – over 60 years all over the world.

Our Product Lines



Please visit us in the WorldWideWeb!

www.hans-schmidt.com

*We solve measuring problems. Take advantage of our experience!
SCHMIDT control instruments are indispensable in production monitoring,
quality control, automation and process engineering in a wide variety of
industrial applications.*

We are Partner of many Industries

- Aircraft & Aeronautic
- Automotive
- Beverage Industry
- Cosmetic Industry
- Engine Construction
- Electronic Production
- Food Industry
- Medical Engineering
- Pharma Industry
- Packing Industry
- Plastic Industry
- Research
- Textile Industry
- Wire and Cable Industry

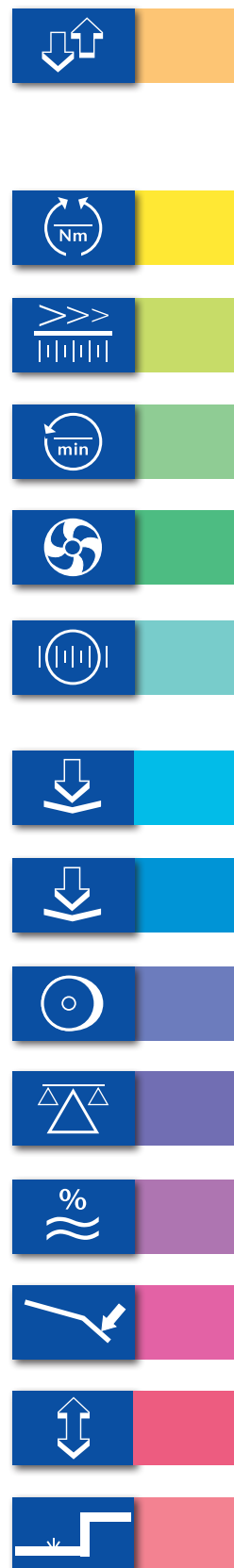


**SCHMIDT – more than 60 years
all over the world wherever precision
and superior quality are essential
in production and processing**

Product Directory

Section

A	Force Gauges and Test Stands	A1 – A17
	<ul style="list-style-type: none"> ■ Force gauges with analog and digital display ■ Attachments, cables, grips ■ Horizontal and vertical test stands ■ Universal testing machine (force displacement) ■ Wire terminal tester 	
B	Torque Meters	B1 – B3
	<ul style="list-style-type: none"> ■ Cap torque meters ■ Torque meters with separate sensor for mobile use 	
C	Speed- and Length Meters	C1 – C2
	<ul style="list-style-type: none"> ■ Universal yarn speed tachometer ■ Yarn consumption meters for circular knitting machines 	
D	Tachometers	D1 – D3
	<ul style="list-style-type: none"> ■ Electronic hand-held tachometers for contact or /and non-contact use 	
E	Stroboscopes	E1 – E7
	<ul style="list-style-type: none"> ■ For measuring revolutions and for inspection of moving objects 	
F	Thickness Gauges	F1 – F8
	<ul style="list-style-type: none"> ■ Analog or digital for static measurements ■ Analog or digital for moving objects (e.g. wires) ■ Digital gauges according standards 	
G	Shore Durometers	G1 – G2
	<ul style="list-style-type: none"> ■ To measure the hardness of rubbers, elastomers, plastic, thermoplastic etc. 	
H	Yarn Package Hardness Testers	H
	<ul style="list-style-type: none"> ■ To measure winding hardness of textile bobbins 	
I	Sample Cutter	I
	<ul style="list-style-type: none"> ■ For fabric, paper etc. cut outs 	
J	Area Weight Balance	J
	<ul style="list-style-type: none"> ■ To determine the area weight g / m² of fabric 	
K	Textile Moisture Meter	K1 – K2
	<ul style="list-style-type: none"> ■ To determine the moisture of yarn, fabric etc. 	
L	Bending Stiffness Tester	L
	<ul style="list-style-type: none"> ■ To determine stiffness of different materials 	
M	Elongation Tester	M
	<ul style="list-style-type: none"> ■ To determine the elongation of fabric 	
N	Maintenance Instruments	N
	<ul style="list-style-type: none"> ■ Leak-detect for checking leakages 	



This brochure informs of our extensive range of measuring instruments.



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

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

Phone:
 int. +49 (0) 86 38 / 9410-0

Fax:
 int. +49 (0) 86 38 / 4825

e-mail:
 info@hans-schmidt.com

Internet:
 www.hans-schmidt.com



Index:



Force Gauges A 2

■ Typical applications

Selection Guide

Model	Analog	Digital	Max. Range	USB	RS 232	Analog	Digimatic	External Sensor	Page
PS	X		500 N						A 3
FB	X		500 N						A 4
PSH	X		3000 N						A 4
FGJN		X	500 N						A 5
FGP		X	1000 N	X	X	X			A 5
DS2		X	1000 N		X	X	X		A 6
ZTS		X	5000 N	X	X	X	X		A 7
ZTA		X	5000 N	X	X	X	X		A 7
ZTS-DPU		X	20 kN	X	X	X	X	X	A 8
ZTA-DPU		X	20 kN	X	X	X	X	X	A 8

Physical Therapy Force Gauge A 9

Standard Attachments A 10

Accessories A 10

■ Cables, software, handle

Special Attachments A 11

■ Grip selection

Horizontal Test Stands A 12

- Manual series SH
- Motorized series ML, MH
- Peeling tester for emboss tapes, films etc., model IPT200

Vertical Test Stands A 13 – A 14

- Manual series MSF, KV, HV, SV
- Motorized series MX, MX2, EMX

Universal Testing Machines for force and displacement A 15 – A 16

- Series FSA
- Series ZPM

Wire Pull Tester A 17

Torque Meters B 1 – B 3

- Torque meter with separate sensor - series HTG
- Cap torque meter - manual series DTX
- Cap torque meter - motorized series MTS

Subject to change without notice.



Force Gauges

Force Gauges, Test Stands and Attachments to measure compression, tension (push and pull) and peeling forces

Applications:

- Pull-off force values of electrical leads, crimped terminals, connectors etc.
- Switch, keyboard contact pressure
- Test Wire-Wrap on clip connection
- Test of strength of various circuit components as transistors etc.
- Testing shear load of components mounted on circuits
- Compression and tensile strength testing of springs, plastic, foils and films
- Glas, ceramic, pills crush strength
- Brake, clutch pedal operating pressure
- Adhesive bond of glues, stickers etc.
- Needle penetration force
- Plastic, cardboard box breaking strength
- Paste materials, fruit firmness
- Measures torque of screws, torque-wrenches etc.
- Measures torque of bottles caps



Pop test:
Measurement of can opening force.



Adhesion test:
Adhesion test of PCB and adhesive tapes.



Break-down test:
Tension break-down test of wire.



Bending test:
Ceramic, glass, plastic and raw materials.



Compression / Tension:
Simple testing of springs.



Contact point test:
Measurement of contact point operating force.



Extension test:
Tension test of rubber and raw materials.



Hardness test:
Drugs, pills, fruits, lip-sticks, paste materials.



Pull test of terminal



Test of key switch operating force:
Telephone, car stereo key board, remote control.



Test of electronic components strength:
Resistor, condenser, capacitor & etc.



Insertion / Withdrawal test:
Measurement of connector insertion and withdrawal force.



Application Industries:

- Aircraft
- Automotive
- Electronics
- Precision
- Plastics & Chemicals
- Machinery & Manufacturing
- Business equipment
- Medical and Health
- Textile
- Sport goods
- Foods
- Toys

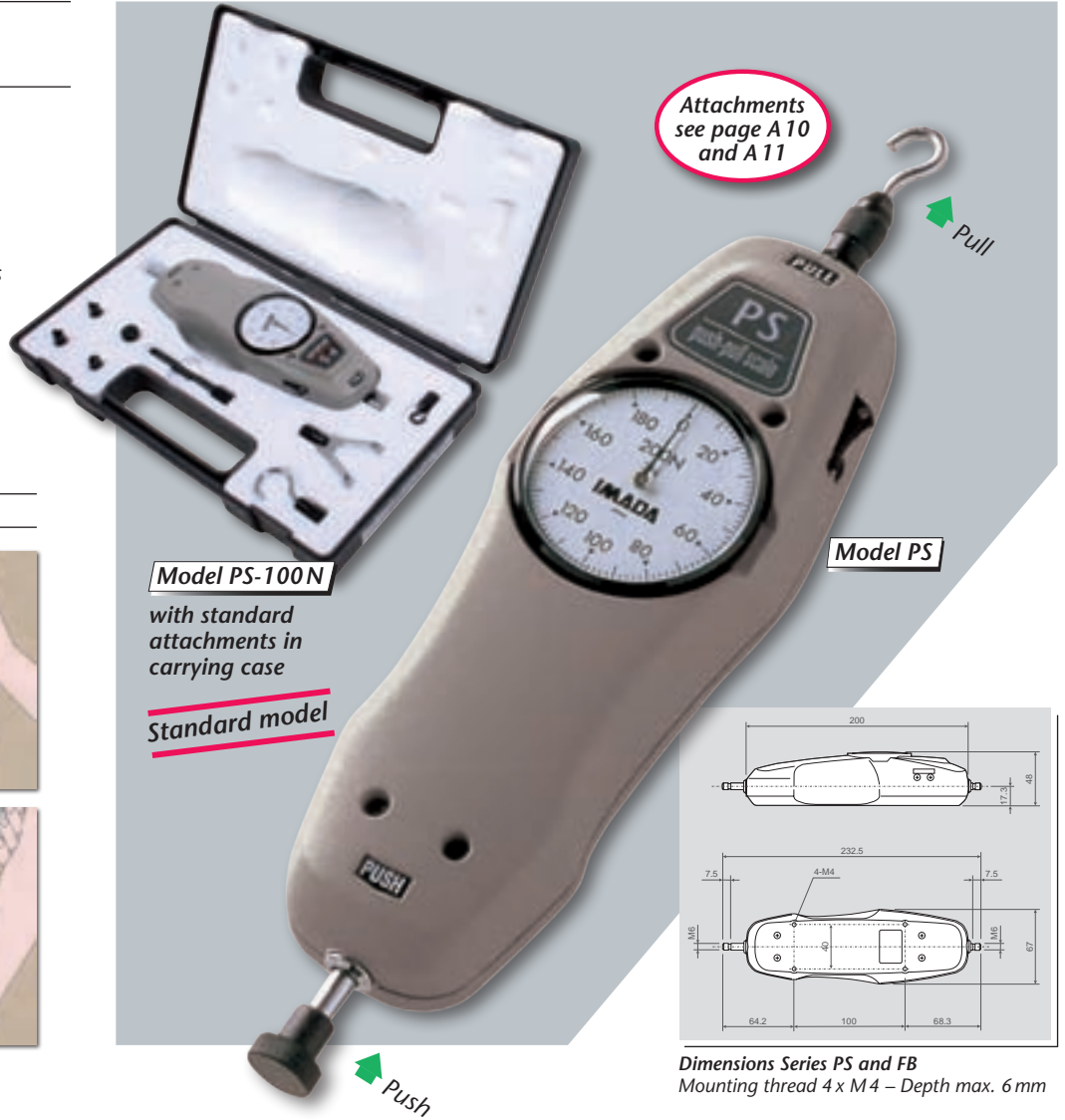
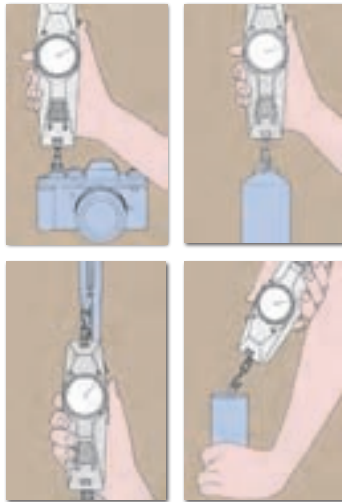
PS Series

High precision model for accurate measurements

Standard features for all mechanical Imada Force Gauges:

- Easy to use
- Ergonomic rugged die-cast aluminium housing
- Easy to read dial
- Real Time and Peak Force display
- Peak Hold function captures transient values and peaks
- Zero Tare Ring to zero the gauge in each position
- Facilities for mounting on test stands

Application examples:



Available Models	Capacity	Resolution
PS-10N	0 - 10 N	0.1 N
PS-20N	0 - 20 N	0.2 N
PS-30N	0 - 30 N	0.25 N
PS-50N	0 - 50 N	0.5 N
PS-100N	0 - 100 N	1 N
PS-200N	0 - 200 N	2 N
PS-300N	0 - 300 N	2.5 N
PS-500N	0 - 500 N	5 N

Other units as Kgf and lbf are available on request.

Specifications

Specifications	Series PS
Displacement:	10 mm
Accuracy:	± 0.1 % FS*
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Housing dimensions:	235 x 65 x 50 mm (LxWxH)
Weight, net (gross):	approx. 530g (1000g)

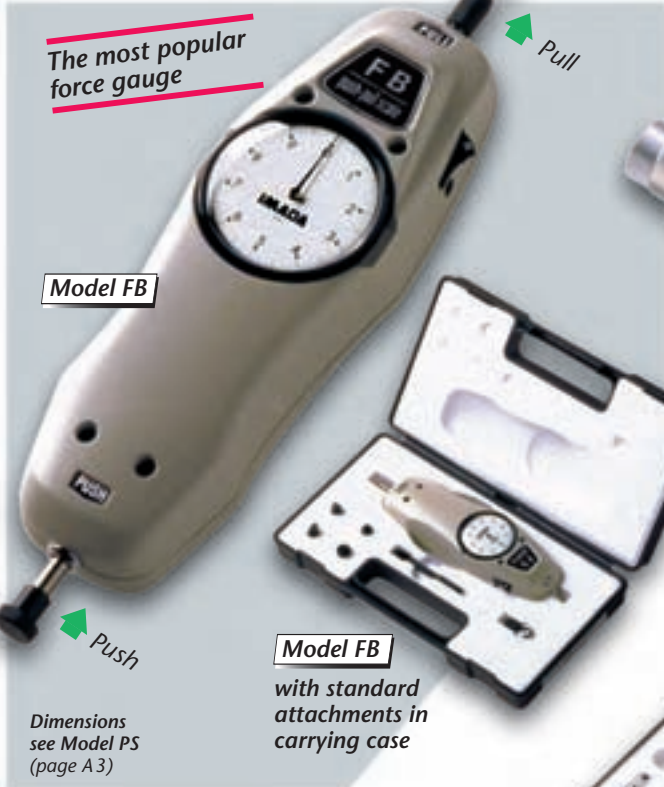
Delivery includes: Force gauge, standard attachments, carrying case, manufacturer's calibration report

* FS = Full Scale

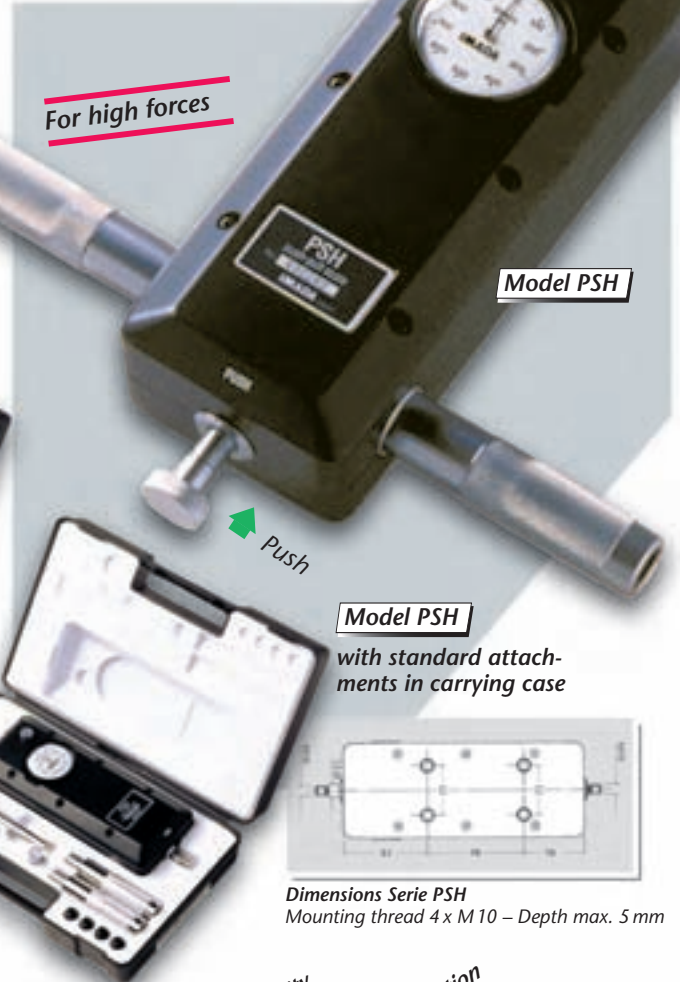


FB Series

Economic model for a wide variety of applications



PSH Series



Available Models	Capacity	Resolution
FB-10 N	0 - 10 N	0.1 N
FB-20 N	0 - 20 N	0.2 N
FB-30 N	0 - 30 N	0.25 N
FB-50 N	0 - 50 N	0.5 N
FB-100 N	0 - 100 N	1 N
FB-200 N	0 - 200 N	2 N
FB-300 N	0 - 300 N	2.5 N
FB-500 N	0 - 500 N	5 N

Attachments see page A 10 and A 11

Available Models	Capacity	Resolution
PSH-1000 N	0 - 1000 N	10 N
PSH-2000 N	0 - 2000 N	20 N
PSH-3000 N	0 - 3000 N	25 N

Other units as Kgf and lbf are available on request.

Other units as Kgf and lbf are available on request.

Specifications	Series FB
Displacement:	10 mm
Accuracy:	± 0.3 % FS*
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Housing dimensions:	235 x 65 x 50 mm (LxWxH)
Weight, net (gross):	approx. 530 g (1000 g)

Delivery includes: Force gauge, standard attachments, carrying case, manufacturer's calibration report

* FS = Full Scale

Specifications	Series PSH
Displacement:	10 mm
Accuracy:	± 0.1 % FS*
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Housing dimensions:	285 x 95 x 63 mm (LxWxH)
Weight, net (gross):	approx. 3100 g (4000 g)

Delivery includes: Force gauge, standard high-capacity attachments, carrying case, manufacturer's calibration report

* FS = Full Scale



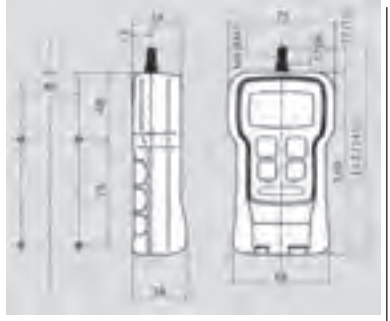
Gauges for a wide variety of applications

Standard features for all digital FG series Force Gauges:

- User switchable units:
FGJN: N and Kgf (gf)
FGP: N, Kgf (gf) and lbf (ozf)
- Selectable Real Time or Peak Modes
- Display can be reversed for inverted use
- High measuring frequency 1000 Hz
- 200% overload protection
- Small, compact, rugged die-cast aluminium housing
- Facilities for mounting on test stands



Model FGJN



Dimensions Series FGJN and FGP:
Mounting thread 4 x M4 – Depth max. 6 mm
Dimensions in bracket: Model FGP-0.2 and Model FGP-0.5

FGJN Series

Basic Unit without interface

FGP Series

The universal unit which meets all requirements

Additional features:

- + Output (USB, RS 232 C, analog)
- + Overload output signal
- + Storage of 1000 readings for continuous measuring; 100 readings for single measurement



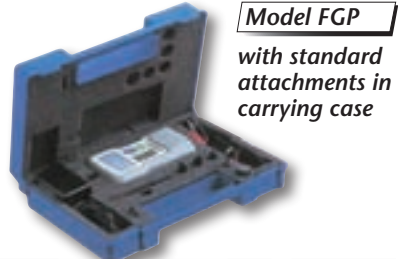
TorieomonUSB

Software for data-transfer and storage in an Excel file 100 readings/s

Available Models	Capacity	Resolution
FGJN-2	0 - 20.00 N	0.01 N
FGJN-5	0 - 50.00 N	0.01 N
FGJN-20	0 - 200.0 N	0.1 N
FGJN-50	0 - 500.0 N	0.1 N
FGP-0.2	0 - 2.000 N	0.001 N
FGP-0.5	0 - 5.000 N	0.001 N
FGP-1	0 - 10.00 N	0.01 N
FGP-2	0 - 20.00 N	0.01 N
FGP-5	0 - 50.00 N	0.01 N
FGP-10	0 - 100.0 N	0.1 N
FGP-20	0 - 200.0 N	0.1 N
FGP-50	0 - 500.0 N	0.1 N
FGP-100	0 - 1000 N	1 N

attachments see page A 11

Other units as Kgf and lbf are available on request.



Model FGP
with standard attachments in carrying case



»C« Series (steel)

Small Hook	Flat Tip	Conical Tip	Chisel Tip	Notched Tip	Extension Shaft
C-1	C-2	C-3	C-4	C-5	C-6

Specifications

Series FGJN / FGP

Displacement:	0.5 mm
Accuracy:	FGJN: ± 0.3 % FS* ± 1 digit FGP: ± 0.2 % FS* ± 1 digit
Display:	4 digit LCD, 12 mm high
Overload capacity:	200 % FS*, display flashes beyond 120 % FS*
Zero adjustment:	10 % FS*
Sampling rate:	internal max. 1000 Hz
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	Rechargeable NiMH battery pack and/or 100... 240 V AC adapter
Housing dimensions:	147 x 75 x 38 mm (L x W x H)
Weight, net (gross):	approx. 450 g (1000 g)

For FGP Series

Output signal:	USB, RS 232 C, analog ± 1 V DC, overload signal: open collector (DC 30 V, 5 mA)
----------------	---

Delivery includes: Force gauge, standard attachments, AC adapter, USB connecting cable (series FGP only), carrying case, certificate of compliance with the order

* FS = Full Scale

Subject to change without notice.



The economic standard model

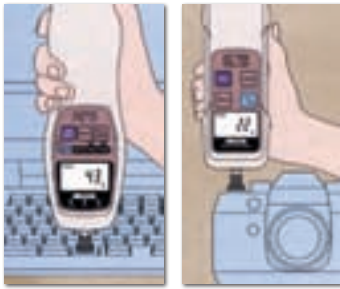
DS2 Series

Economic model for all branches of industry

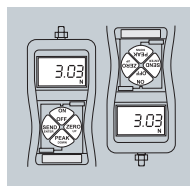
Standard features for all digital Imada Force Gauges:

- User selectable units: N, kgf (gf) and lbf (ozf)
- High display update rate
- Selectable Real Time or Peak Modes
- Easy to read digital display
- »Zero Set« to zero the gauge in all operating positions
- 200% overload protection
- Ergonomically-designed, rugged die-cast aluminium housing
- Facilities for mounting on test stands
- Operates on rechargeable battery and/or AC adapter

Application examples:



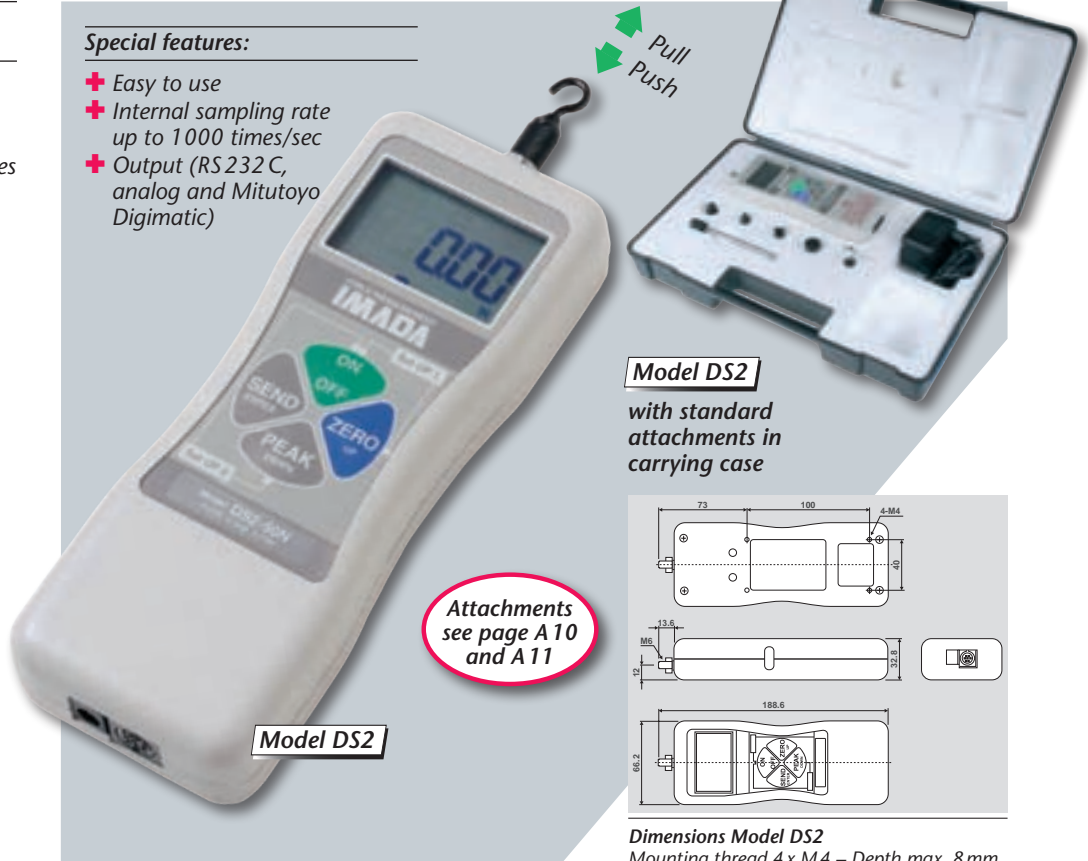
Display can be reversed for inverted use; e.g. on test stands



Available Models	Capacity	Resolution
DS2-2N	0 - 2.000 N	0.001 N
DS2-5N	0 - 5.000 N	0.001 N
DS2-20N	0 - 20.00 N	0.01 N
DS2-50N	0 - 50.00 N	0.01 N
DS2-200N	0 - 200.0 N	0.1 N
DS2-500N	0 - 500.0 N	0.1 N
DS2-1000N	0 - 1000 N	1 N

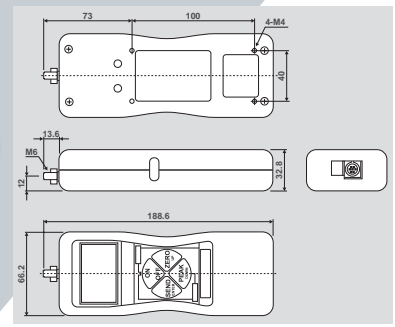
Special features:

- + Easy to use
- + Internal sampling rate up to 1000 times/sec
- + Output (RS 232 C, analog and Mitutoyo Digimatic)



Model DS2

with standard attachments in carrying case



Dimensions Model DS2
Mounting thread 4 x M4 – Depth max. 8 mm

Specifications

	Model DS2
Displacement:	0.2 mm**
Accuracy:	± 0.2 % FS* ± 1 digit
Display:	4 digit, 14 mm high
Overload capacity:	200 % FS*, > 5 N 150 % FS* display flashes beyond 110 % FS*
Zero adjustment:	10 % FS*
A/D Converter:	16 bit
Output signal:	RS 232 C (8, 1, N, 19200), analog ± 1 V DC, Mitutoyo Digimatic
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Power supply:	Rechargeable NiMH battery pack and/or 230 V AC Adapter
Housing dimensions:	188 x 66 x 33 mm (LxWxH)
Weight, net (gross):	approx. 430 g (1300 g)

Delivery includes: Force gauge, standard attachments, AC adapter, carrying case, manufacturer's calibration report

* FS = Full Scale

** = 0.5mm for Model DS2-2N and DS2-5N

ZT Series

Model ZTS with USB, RS232, analog and digimatic output up to 5000 N
Model ZTA with additional features up to 5000 N

Special features:

- + Extremely high internal sampling rate (2000 times/sec) for fast measurements and best Peak capture
- + OLED display is highly visible in dark locations
- + Storage of 1000 readings which can be recalled on the display or transferred to a PC for simple data analysis (reading, time, date, limits) using the Software »ZT-Logger« free of charge
- + The header- and footline of the display can be set up by the operator (time, date, force transition etc.)
- + Programmable high/low set-points for go/no-go testing with color-coded indicators in the LED display and relais outputs
- + Real Time: to display current values
- + Peak Modes: to capture the peak force achieved during a test
- + Damping rate, display functions, auto power off, etc. are adjustable by the operator
- + Selectable languages for the display (english, german and 6 other languages)
- + Overload alarm and output signal

Special features model ZTA in comparison to model ZTS

- + In combination with a test stand with length measurement Code FA - force and displacement values can be displayed or shown as graph including data analyse on a PC using software »Force Recorder Professional«
- + Displayed readings and stored readings can be transferred to a USB flash drive (100 readings/sec)
- + 1st and 2nd Peak values can be captured before load value drops



Model ZTS-500

Model ZTS

with standard attachments in carrying case

Specifications

Model ZTS and ZTA

Accuracy:	± 0.2 % FS* ± 1 digit
Selectable units:	N, Kg (gf), lbf (ozf)
Display:	OLED, 4 digit; update 10 times/sec
Overload capacity:	200 % FS* (display flashing beyond 110 % FS*)
Memory:	Internal memory for max. 1000 values recallable peak, tension and compression
Setpoints:	Min, Max (programmable), with output signal ZTA: 4 setpoints
Output signal:	USB, RS 232 C (8, 1, N, 19200) Mitutoyo Digimatic, analog ± 2 V DC, Open collector Comperator 3x (+NG, Ok, -NG), overload signal
Temperature range:	0 - 40 °C
Air humidity:	80 % RH, max.
Power supply:	Rechargeable NiMH battery pack (approx. 8 hours continuous use) and/or 100...240 V AC adapter with two adapters (EU/USA)
Dimensions:	up to 1000 N: 191 x 75 x 34 mm (L x W x H) from 2500 N: 221 x 83 x 44.5 mm (L x W x H)

Available Models

Available Models		Capacity	Resolution
ZTS-2	ZTA-2	0 - 2.000 N	0.001 N
ZTS-5	ZTA-5	0 - 5.000 N	0.001 N
ZTS-20	ZTA-20	0 - 20.00 N	0.01 N
ZTS-50	ZTA-50	0 - 50.00 N	0.01 N
ZTS-100	ZTA-100	0 - 100.0 N	0.1 N
ZTS-200	ZTA-200	0 - 200.0 N	0.1 N
ZTS-500	ZTA-500	0 - 500.0 N	0.1 N
ZTS-1000	ZTA-1000	0 - 1000 N	1 N
ZTS-2500	ZTA-2500	0 - 2500 N	1 N
ZTS-5000	ZTA-5000	0 - 5000 N	1 N

Delivery includes: Force gauge, standard attachments, AC adapter, carrying case, manufacturer's calibration report, USB cable 1.5 m, CD-ROM with driver and simple software for communication and data logging »ZT-Logger« – **Model ZTA additional: USB adapter**

* FS = Full Scale

Subject to change without notice.

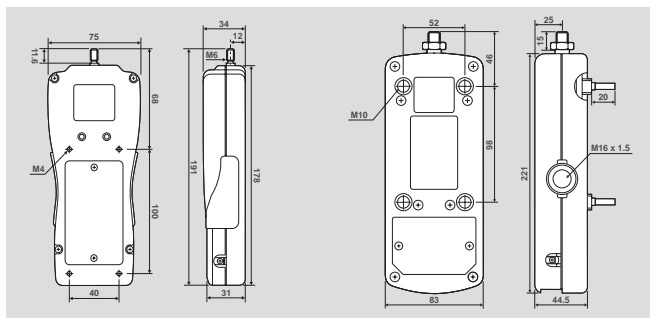
Model ZTS / ZTA

For measuring high forces
from 2500N up to 5000N



Model ZTS-DPU / ZTA-DPU

With separate remote load sensor



Dimensions model ZTS, ZTA
measuring range up to 1000 N
Mounting thread 4x M4
Depth max. 5 mm

Dimensions model ZTS, ZTA
measuring range 2500N/5000N
Mounting thread 4x M4
Depth max. 5 mm

Available Models

		Capacity	Resolution
ZTS-2-DPU	ZTA-2-DPU	0 - 2.000 N	0.001 N
ZTS-5-DPU	ZTA-5-DPU	0 - 5.000 N	0.001 N
ZTS-20-DPU	ZTA-20-DPU	0 - 20.00 N	0.01 N
ZTS-50-DPU	ZTA-50-DPU	0 - 50.00 N	0.01 N
ZTS-100-DPU	ZTA-100-DPU	0 - 100.0 N	0.1 N
ZTS-200-DPU	ZTA-200-DPU	0 - 200.0 N	0.1 N
ZTS-500-DPU	ZTA-500-DPU	0 - 500.0 N	0.1 N
ZTS-1000-DPU	ZTA-1000-DPU	0 - 1000 N	1 N
ZTS-2000-DPU	ZTA-2000-DPU	0 - 2000 N	1 N
ZTS-5000-DPU	ZTA-5000-DPU	0 - 5000 N	1 N
ZTS-10K-DPU*	ZTA-10K-DPU*	0 - 10 kN	10 N
ZTS-20K-DPU*	ZTA-20K-DPU*	0 - 20 kN	10 N

*No standard attachments are included with model ZTS/ZTA-10K-DPU and higher. These models do not have measuring shaft, but there is a female thread in place of a measuring shaft.

Physical Therapy & Strength Testing Kits

Model RZTA-1000 with USB, RS 232, Digimatic and analog output

Model RDS-1000 with RS 232, Digimatic and analog output

Model RFB-750 mechanical, analog force gauge

Force gauges for determination of muscle strength, useable for numerous applications in rehabilitation and physical therapy

Special features Model RZTA-1000 - Laboratory Instrument to meet the highest demands:

(specifications same as model ZTA-1000, → see page A 7 →)

- + Max. range 1000 N
- + 2 selectable display modes: Real Time and Peak Mode
- + Highest sampling rate 2000 Hz
- + Storage of 1000 readings
- + Programmable high/low set points with color-coded LED display
- + USB output, connecting cable and Software Force Recorder

Special features Model RDS-1000 - most used economic model with basic functions:

(specifications same as model DS2-1000, → see page A 6 →)

- + Max. range 1000 N
- + 2 selectable display modes: Real Time and Peak Mode
- + Internal sampling rate up to 1000 Hz
- + Programmable high/low set points with ↑↓ indication in the display

Special features Model RFB-750 - for quick and easy use:

(specifications same as model FB-500, → see page A 4 →)

- + Max. range 750 N
- + 2 selectable display modes: Real Time and Peak Mode



Model RZTA-1000
with handle
and curved pad



Model RFB-750
analog force gauge
with standard
accessories



Model RDS-1000

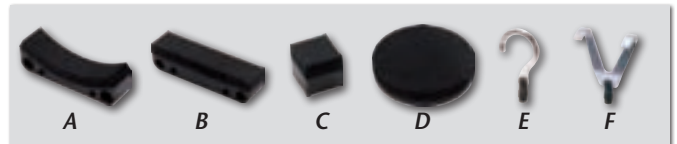
Available Models	Capacity	Output signal
RZTA-1000	0 - 1000 N	USB, RS 232, Digimatic, analog
RDS-1000	0 - 1000 N	RS 232, Digimatic, analog
RFB-750	0 - 750 N	none



Measuring the arm muscle strength with the curved pad



Measuring the leg muscle strength with the curved pad



Delivery includes following attachments:

- A: Curved pad, e. g. for arms and legs (MED-R80)
- B: Rectangular pad, e. g. for arms and legs (MED-100-25)
- C: Square pad, e. g. for face or tongue (MED-25-25)
- D: Round pad, e. g. for back (MED-D80)
- E: Large hook, e. g. doors, wagons, cartons (S-7)
- F: Y-hook, e. g. doors, wagons, cartons (S-8)

Delivery includes: Force gauge, 6 inserts (A-F), handle, AC-adaptor, manufacturer's calibration report and operating manual in English



Standard Attachments

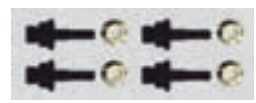


Small Hook	Flat Tip	Conical Tip 85°	Chisel Tip 85°	Notched Tip 90°	Extension Shaft	Large Hook* <i>*not included in delivery with series FB and DS2</i>	Y-Hook* A-8*	Small Hook	Flat Tip	Conical Tip 85°	Chisel Tip 85°	Notched Tip 85°	Extension Shaft	Handles
A-1	A-2 Ø 13 mm	A-3	A-4	A-5	A-6 80 mm	A-7*	A-8*	B-1	B-2 Ø 23 mm	B-3	B-4	B-5	B-6 100 mm	B-7
S-1	S-2 Ø 16 mm	S-3	S-4	S-5	S-6 100 mm	S-7*	S-8*							

»A« Series (aluminium M6) attachments are supplied for models with capacities up to 100 N

»S« Series (steel M6) attachments are supplied for models with capacity from 100 N to 1000 N

»B« Series (steel M10) attachments are supplied for models PSH, ZTS, ZTA with capacity > 1000 N



4x Mounting bolts M10 to M6 B-8

Accessories

Connecting cables

Available for all digital force gauges with output:

for RS-232 C for connection to PC
Model CB-203: Sub D9 female for model DS2
Model CB-208: Sub D9 female for models ZTS, ZTA, HTGS, HTGA, DTXS and DTXA

for connection to a line recorder
Model CB-101: For models DS2
Model CB-108: for models ZTS, ZTA, HTGS, HTGA, DTXS and DTXA

for connection to Mitutoyo evaluation units
Model CB-301: For model DS2
Model CB-308: For models ZTS, ZTA, HTGS, HTGA, DTXS and DTXA

for connection of extern units
Model CB-808 For model ZTS, ZTA, HTGS, HTGA, DTXS und DTXA
Model CB-908: With open ends for model ZTS, ZTA, HTGS, HTGA, DTXS and DTXA

for stands series MX
Model CB-508: Force control for models ZTS, ZTA

for stands series MX2 and EMX
Model CB-518: Force control for models ZTS and ZTA
Model CB-706: With open ends, customized in/output signal for EMX and MX2-CN

Optional handles

Imada's mechanical and digital force gauges can easily be fitted with a handle. This ensures safe and consistent measuring conditions. Please contact us!



Software

Requirements:
 Windows XP/Vista/7 (32 Bit/64 Bit)
 CPU: Pentium 4 (1 GHz or more), 2GB RAM

Only for model DS2:
ZLink 3
 Data acquisition using RS-232 C output
 ■ Data transfer 50 data/sec
 ■ Displays the actual reading
 ■ Data storage as CSV file

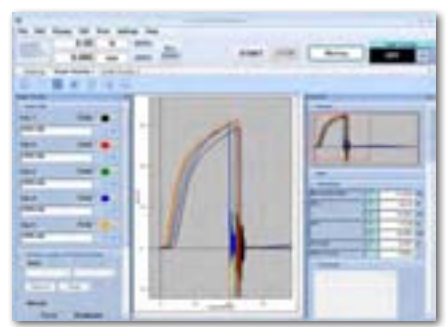
Only for model IPT200:
ZPRecorder
 Data acquisition using USB connection
 ■ Data transfer 1000 data/sec
 ■ Data storage as graph (force-time) and CSV file
 ■ Comparison of 5 graphs

Only for model ZTS, ZTA, HTGS, HTGA, DTXS and DTXA
Force Recorder (Light/Standard/Professional)
 ■ 3 versions with different features

Version:	Light	Standard	Professional
Graph type:	Force-time	Force-time	Force-time Force-displacement with FSA test stand
Data transfer:	2000 Data/s	2000 Data/s	2000 Data/s
Graph overlaying function:	no	yes	yes
Trigger function:	no	yes	yes
Point marking:	no	yes	yes
Border line function:	no	yes	yes
Graph editing:	yes	yes	yes
Statistics output:	yes	yes	yes
Comment function:	yes	yes	yes
Description:	no	yes	yes
Print:	yes	yes	yes

Printer

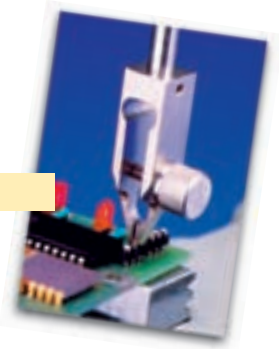
Model DP-1 VR:
 To print stored values using Mitutoyo Digimatic output





Special Attachments

We offer a wide selection of various attachments for any application required:



Penetrating Pin Gauges Series PG

Length: 20 mm

To check the hardness of clay-like materials, the burst strength of plastic coverings, skins etc.

Model PG-2: outer Ø 2 mm
Model PG-3: outer Ø 3 mm
Model PG-4: outer Ø 4 mm
Model PG-5: outer Ø 5 mm

Max. capacity:
PG-2/PG-3: 100 N
PG-4/PG-5: 200 N

Jacob's Chucks Series GC

For fixing shafts, rigid rods and small wires.

Model GC-5:
for Ø 0.5 to 5 mm
Max. capacity: 500 N

Model GC-15:
for Ø 2 to 13 mm
Max. capacity: 1000 N



Coefficient of friction tester Model COF-10N

For analysis surface conditions of paper and printed matter and coefficient of friction measurement of various materials.

Model COF-10N:
Max. capacity: 10 N
Including software with graphics

Pin Grip Model CP-150N

For gripping small diameter wires, pins, filaments etc.

Model CP-150N:
for Ø 0 to 3.2 mm
Max. capacity: 150 N

Wedge Grip Model KC

Self-tightening by spring force for tensile tests of thick materials up to 10 mm; serrated jaws, width 15 mm;

Model KC-100:
for materials up to 10 mm thickness
Max. capacity: 500 N

Fine Point Grips Series FP

For fine wires up to max. Ø 0.5 mm.

Model FP-50:
Width of jaw: 1 mm
Weight: 19 g
Max. capacity: 100 N

Model FP-51:
Width of jaw: 1 mm
Weight: 8 g
Max. capacity: 50 N

Tape Grip Series GC

Self-tightening »buckle-type« mechanism ensures slip-free operation. For testing rubber, paper, films etc. up to 2 mm thickness; serrated jaw.

Max. capacity: 500 N

Model GC-60: for materials with 20 mm width
Model GC-100: for materials with 50 mm width

Attachment for pull test QFP45-100N

Table and Grip Series LF
For pull down and shear tests of electronic components

Model QFP45-100N:
45° table, hook and x-y stage

Model TIP-90-100N:
90° table, shear hook and x-y stage

Fine Point Grips Series SC

For testing small to medium diameter wires, small components, ribbon tapes (max. opening width 1 mm).

Model SC-3:
Width of jaw: 3 mm
Max. capacity: 100 N

Model SC-8:
Width of jaw: 8 mm
Max. capacity: 150 N

Wire Wrapping Grip Model GC

For measuring the strength of wires, filaments, fibres etc. Wrapping a sample avoids breaking at the gripping point.

Model GC-30:
Max. capacity: 500 N

Bend Test Stand Model GA

Test the bend strength of rods, strips etc. of max. 40 mm width.

Model GA-10:
Max. capacity: 500 N

Model GA-5000:
Max. capacity: 5000 N
Mounting screw: M 10

Film Grips Series FC

Use these spring loaded film grips to check tensile strength of thin film samples up to 2 mm thickness; serrated jaws.

Max. capacity: 500 N

Model FC-20:
Width of jaw: 20 mm

Model FC-40:
Width of jaw: 40 mm

Peeling Attachments Series GT

To measure the peeling force of laminated materials or electronic components on circuit boards etc.

Model GT-10:
Pull test peeling

Model GT-20:
Push test peeling

Compression jig

For measurement of many kinds of compression force and breaking strength a variety of shapes and sizes are designed for jigs.

Flat Chucks Series GC

Squared serrated face, heavy-duty flat grip for many applications.

Model GC-1100:
Grip dimensions: 20x20 mm (WxH)
max. opening width: 10 mm
max. capacity: 1000 N

Model GC-1200:
Grip dimensions: 20x20 mm (WxH)
max. opening width: 20 mm
max. capacity: 1000 N

Model GC-5000:
Grip dimensions: 29x37.5 mm (WxH)
max. opening width: 30 mm
max. capacity: 5000 N
Mounting thread: M 10

Cam Grip Model GR

Eccentrically mounted, serrated roller grips allow for self-tightening of thin material.

Model GR-30:
width of chuck: 50 mm
max. opening width: 2 mm
max. capacity: 500 N

Model GR-2000:
width of chuck: 50 mm
max. opening width: 4 mm
max. capacity: 2000 N
Mounting thread: M 10

Wedge Grips Model KC

Spring loaded jaws automatically close on the specimen and tighten as tension is applied. For testing wires, stripes, tapes and films.

Model KC-1001:
Width of chuck: 10 mm
max. opening width: 3.5 mm
Grip dimensions: 10x15 mm (WxH)
max. capacity: 1000 N

Model KC-5000:
Width of chuck: 23.8 mm
max. opening width: 6 mm
Grip dimensions: 23,8x26 mm (WxH)
max. capacity: 5000 N
Mounting screw: M 10

For more grips visit www.hans-schmidt.com

Some grips require an adapter coupling from M 6 shaft to M 10.
In case of order please mention force gauge model and range.
For the grips we can supply detailed drawings and additional specifications. Please ask us.

Subject to change without notice.



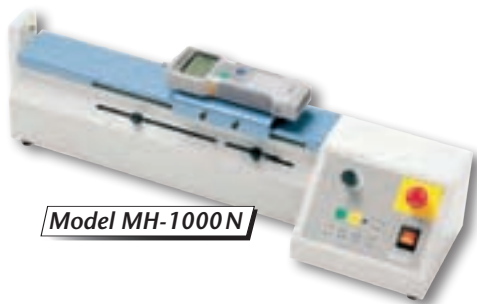
Horizontal Test Stands

The test stands assure consistent, identical measuring conditions for a wide range of applications. All Imada force gauges can easily be mounted to these stands.

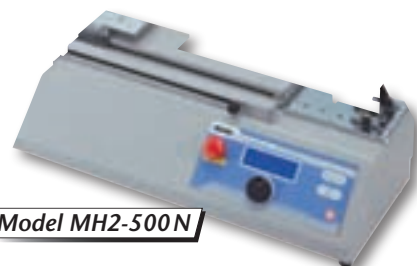
For grips see page A 11



Model SH-1000N



Model MH-1000N



Model MH2-500N

180° Peeling Tester



Model IPT200-5N

Motorized Test Stand IPT200 Series

to determine peeling force of emboss tapes, stickers, films etc.

Special features model IPT200:

- With integrated load cell DPU
- Sample width: 8 - 88 mm
- including software with graphics

Special features MX series:

- Table for sample height adjustable:
- Max. sample length
SH-1000N: 250 mm
SH-3000N: 355 mm

For compression and tension test

Special features model MH2-500N and MH-1000N:

- Speed controlled: to enable force controlled testing and conditional overload prevention (only with ZT series)
- Manual operation: The carriage is moving as long as switch is pressed. It stops when travel limits are reached
- Single cycle mode: Carriage travels up and down once within the limits (only MH-1000N)
- Cycle mode: Carriage travels up and down within the limits, numbers of cycle can be set.
- Jog mode: Moves the cross head exactly 0.01 mm (only MH2-500N)
- Endurance tests: Setting number of cycle and time period to keep force.
- LCD display with many functions (only MH2-500N): digital setting of travel speed and traveling distance

Specifications	SH-1000N	SH-3000N	Typ MH2-500N	MH-1000N	IPT200
Max. capacity:	1000 N	3000 N	500 N	1000 N	5, 20 oder 50 N
Stroke:*	300 mm	370 mm	275 mm	300 mm	200 mm
Travel speed in mm/min:	1.2 mm**	0.6 mm**	10 - 300	6 - 180	120, 300, 500 1000, 1500
Power supply:	-	-			
Weight net:	15 kg	22 kg	14 kg	14 kg	11 kg
Dimensions in mm:	560x265x220	696x285x225	554x220x219	700x195x210	710x300x126

Attachment

Length meter:***	yes	yes	yes	yes	-
Linear encoder:****	-	-	yes	-	-

*according to the used force gauge

***Code S (with distance meter; see page A 13)

**one complete turn of the hand wheel

****Code FA (for force displacement-graphing)

Delivery includes: Test stand without force gauge, operating manual in English

Vertical Test Stands

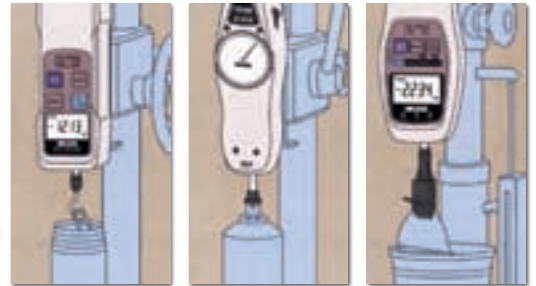
The test stands assure consistent, identical measuring conditions for a wide range of applications. All Imada force gauges can easily be mounted to these stands.

Model MSF-50N

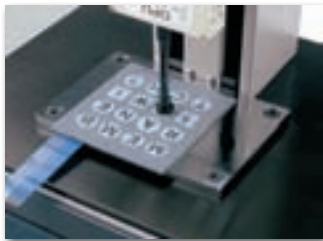
Model KV-50N



Application examples:



For grips see page A11



Manual Test Stands with small knob
Model MSF-50N Model KV-50N

- Max. capacity: 50 N
- Stroke: 80 mm
- One complete turn of knob = 1.8 mm
- Weight, net: approx. 1.2 kg
- Dimensions (LxWxH): 110 x 81 x 204 mm
- Code FA optional (= model MSL)

For compression and tension test

Distance Meter Code S

To measure the exact travel distance all vertical test stands are also available with a length measurement system:

- Adjustable display in mm or inch
- Resolution of length measurement 0.01 mm
- Zero setting
- Digimatic output



Available for Models:

- KV-50N** 100 mm*
- SVL-1000N** 100 mm*
- SVH-1000N** 100 mm*
- HV-500N** 300 mm*
- HV-1000N** 300 mm*
- HV-3000N** 300 mm*
- MX2-500N** 300 mm*
- MX2-1000N** .. 300 mm*
- MX2-2500N**... 300 mm*
- MX-500N** 300 mm*
- MX-1000N** 300 mm*
- SH-1000N** 300 mm*
- SH-3000N** 300 mm*
- MH2-500N** 300 mm*
- MH-1000N** 300 mm*

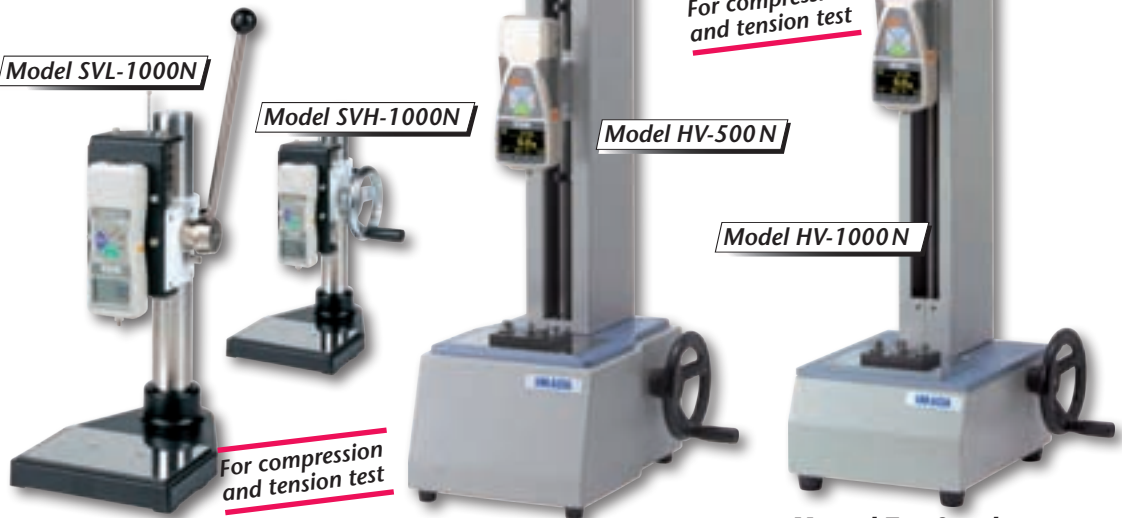
* Measuring range

Model SVL-1000N

Model SVH-1000N

Model HV-500N

Model HV-1000N



For compression and tension test

For compression and tension test

Manual Test Stand with Lever Model SVL-1000N
Hand Wheel Model SVH-1000N

- Max. capacity: 1000 N
- Stroke: 60 mm
- Stroke control by mechanical stops
- Fixed position (clearance): adjustable from 0 to 265 mm
- Weight, net: approx. 7 kg
- Dimensions (LxWxH): 200 x 280 x 410 mm

Manual Test Stand with Hand Wheel Model HV-500N

- max. capacity: 500 N
- Stroke: 288 mm
- One complete turn of the hand wheel = 2 mm
- Weight, net: approx. 10 kg
- Dimensions (LxWxH): 327 x 309 x 597 mm

For compression and tension test

Manual Test Stands with Hand Wheel Model HV-1000N and Model HV-3000N

- max. capacity: 1000 N (HV-1000 N) 3000 N (HV-3000 N)
- Stroke: 430 mm
- One complete turn of the hand wheel 1.2 mm (HV-1000 N) 0.6 mm (HV-3000 N)
- Weight, net: approx. 18 kg (HV-1000 N) approx. 24 kg (HV-3000 N)
- Dimensions (LxWxH): 305 x 275 x 730 mm (HV-1000 N) 355 x 310 x 744 mm (HV-3000 N)

Delivery includes: Test stand without force gauge, operating manual in English

Subject to change without notice.



Special features MX series:

- Enables force controlled testing and conditional overload prevention
- **Manual operation:** the carriage is moving as long as switch is pressed. It stops when travel limits are reached
- **Single cycle mode:** Carriage travels up and down once within the limits
- **Continuous cycle mode:** Carriage travels up and down continuously within the limits
- 2 manual adjustable limits to adjust range of movement

Special features EMX series:

- Force controlled: To enable force controlled testing and conditional overload prevention (only with ZT series)
- **Manual operation:** The carriage is moving as long as switch is pressed. It stops, when travel limits are reached
- **Cycle mode:** Carriage travels up and down within the limits, numbers of cycles can be set.
- **log mode:** Moves the cross head exactly 0.01 mm
- **Endurance tests:** Setting number of cycles and time period to keep force.
- **LCD display with many functions:**
MX2: digital setting of travel speed
EMX: digital setting of travel speed and travel distance
- 3 different speeds adjustable (start, measuring, back)
- Stronger main shaft improves measurement accuracy

Specifications	Model MX-500	MX-1000N	MX-5000N	MX2-500N	MX2-1000N	MX2-2500N	EMX-1000N
Max. capacity:	500 N	1000 N	5000 N	500 N	1000 N	2500 N	1000 N
Stroke:*	275 mm	420 mm	340 mm	230 mm	290 mm	290 mm	290 mm
Travel speed in mm/min:	10 - 300	8 - 240	10 - 300	10 - 300	10 - 300	10 - 300	0.5 - 600
Power supply:	100...240 VAC, 50/60 Hz						
Weight net:	13 kg	24 kg	30 kg	18 kg	19 kg	26 kg	23.5 kg
Dimensions in mm:	214x428x573	263x368x903	250x420x816	220x380x562	280x421x660	280x421x644	280x421x643

Attachment

Long stroke:	L (250 N)	L (500 N)	–	L	L	L	L
Length meter:**	yes	yes	yes	yes	yes	yes	yes
Linear encoder:***	–	–	–	yes	yes	yes	yes

*according to the used force gauge

**Code S (see page A13)

***Code FA (for force displacement-graphing)

Delivery includes: Test stand without force gauge, operating manual in English



Force-Displacement Measuring Unit

FSA Series

Ranges from 2N up to 2500N

For Force-displacement measurements. Using the software »Force Recorder Professional« force-displacement and force-time graphs can be easily created and analyzed

For compression and tension measurements, strength tests, shearing and peeling tests, longterm tests etc.

Special features:

- + Force gauge with high sampling rate of 2000 measurements/sec.
- + Force gauges with different ranges can be mounted on the test stand
- + Test stands with high precision linear scale Code FA (resolution using software 0.001 mm)
- + The displacement readings can be shown on the force gauge display (resolution 0.01 mm)

Software »Force Recorder Professional«:

- High sampling rate (2000 readings/sec)
- Automatic statistic calculation (min-, max-, average values)
- 5 graphs can be displayed and easily compared at the same time
- It is possible to start/stop the recording automatically when the measured value reaches set points

Model FSA-1KE-500N

Delivery includes no computer



The FSA system exists out of following components



Motorized vertical test stand
Model MX2-500N, MX2-1000N, EMX-1000N and MX2-2500N each with Code FA (linear scale)
→ see page A14 →



Force gauge ZTA series
Force gauge ZTA series for compression and tension forces with measuring range 2N up to 2500N
→ see page A7 →



Manual vertical test stand
Series MSF-50 is used as a portable, mini material tester. (model MSL = model MSF with linear scale)
→ see page A13 →



Software »Force Recorder Professional«
is used for data acquisition using USB output. Force-displacement or force-time graphs can easily be created and stored
→ see page A10 →

Available Models	MSF-50N	MX2-500N	MX2-1000N	EMX-1000N	MX-2500N
Nominal load:	50 N	500 N	1000 N	1000 N	2500 N
Model FSA:	MSL	0.5K2	1K2	1KE	2.5K2
Travel distance:	80 mm	235 mm	300 mm	320 mm	320 mm

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

Test stand
Range of force gauge
Complete order no.

FSA + **0.5K2** + **200N** = **FSA-0.5K2-200N**

Delivery includes: Force gauge, standard attachments, AC adapter, carrying case, manufacturer's calibration report, USB cable 1.5 m, USB adapter, CD-ROM with driver and simple software for communication and data logging »ZT-Logger, software »Force Recorder Professional«, operating manual in English

Subject to change without notice.



Universal Test Stand

ZPM Series

Tester for tensile and compression forces including displacement measurement.
To determine tensile strength, crushing strength, peeling-, friction- or shear forces etc.

Special features:

- + Interchangeable load cell to cover capacities up to max. 5000 N
- + USB port to control the machine and for communication to PC
- + High precision drive using ball screw, ball bearings and timing belt
- + Length measurement with encoder, resolution 0.01 mm (display)
- + The supplied software offers several tests:
Tensile strength, peeling- and friction tests and constant load holding
- + A machine with excellent value and many features

Standard features:

- Working area of 500 mm (exclude grips), optional 1200 mm.
- Load cell and grips can easily be changed
- Strong, rugged, bending resistant housing design
- A wide range of grips and fixtures are optionally available; please send us your demand profile
- Calibration report of load cell is included free of charge



A wide range of grips are available

Available Models	Capacity	Stroke
ZPM-50-500	50 N	500 mm
ZPM-100-500	100 N	500 mm
ZPM-200-500	200 N	500 mm
ZPM-500-500	500 N	500 mm
ZPM-1000-500	1000 N	500 mm
ZPM-2000-500	2000 N	500 mm
ZPM-3000-500	3000 N	500 mm
ZPM-5000-500	5000 N	500 mm



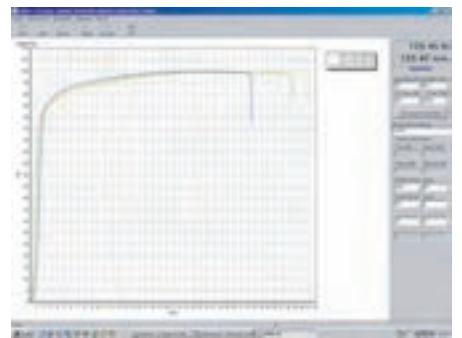
TH56-K
Vice grip for clamping paper, foil, fabric etc.
max. load 1 kN

TH76-5
Rope grip with deflecting cylinder and wedge clamp
max. load 5 kN

Model ZPM

Specifications Model ZPM

Accuracy:	Load cell: Linearity - better than $\pm 0.03\%$, Hysteresis ± 0.02 nominal load Distance measuring by encoder 0.0001 mm (internal)
Overload capacity:	Approx. 120% nominal load
Display:	LCD with double-spaced display: force, distance, speed
Resolution:	Force 0.01 N (50N load cell), 0.1 N (load cells up to 5000 N) Distance 0.01 mm (LCD), 0.001 mm (PC)
Measuring frequency:	USB output with fast data transfer
Feed:	Under load: 1 - 500 mm/min continuously adjustable Without load: 1 - 700 mm/min continuously infinitely adjustable
Max. travel distance:	500 mm excluding grips (optional 1200 mm)
Software:	Win XP and higher
Power supply:	230 V (switchable to 110 V)
Housing material:	Rugged construction; aluminium and stainless steel
Weight net, (gross):	Approx. 48 kg (60 kg)



Easy to use software for machine control, to create hysteresis graphs and force-distance diagrams

Delivery includes: 1 test stand, load cell, software, calibration certificate

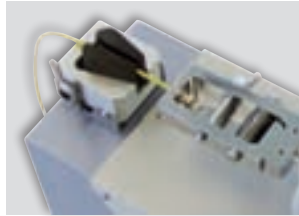


Wire Pull Testers

For testing the pull-off force of wire/terminal connections

Model LH-500 N

- Max. capacity: 500 N
- Stroke: 85 mm
- Weight: approx. 11 kg
- Dimensions (LxWxH): 450x155x182 mm
- **Delivery includes:** test stand, wedge grip CW-500N and wire terminal clamp CH-500N, without force gauge



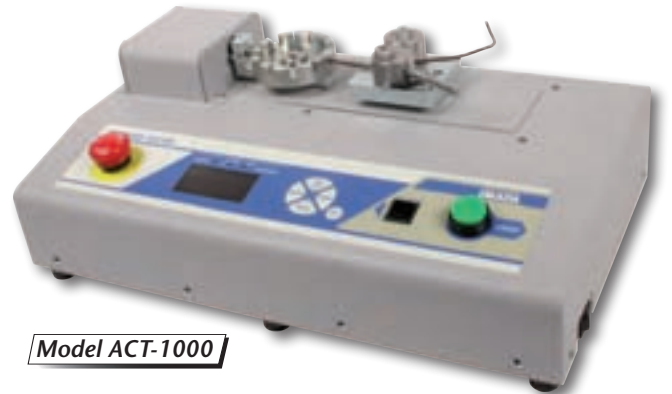
Model LH-500 N

Model ACT-1000 N

Measures accurately the pull-off force on most soldered or solderless wire terminals, crimped connectors and similar wire terminations.

Special features:

- + For testing accordance UL 486A-486B and JISC2805 standards
- + For wires with diameter between 1 mm up to 8 mm
- + Terminal grip with 12 slots from 1 to 8 mm
- + 2 selectable modes: Break Mode: to capture peak force
Keep Mode: to apply the adjusted force for a specified time
- + To store test conditions for 26 samples (name, mode, speed, force)
- + Internal memory for recall readings at the display or transfer to a PC with software free of charge
- + Programmable high/low setpoints for go/no-go testing with color-coded indicators (orange, green, red) in the LED display and relays outputs



Model ACT-1000

Available Models	Capacity	Resolution	speed mm/min
ACT-1000	1000 N	1 N	10/25/50/100
ACT-1000-V300	1000 N	1 N	25/50/100/300

Specifications **Model ACT-1000 N**

Terminal grip slot:	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7 and 8 mm
Wire diameter:	1 - 8 mm
Accuracy:	±0.5% FS*; ±1 digit
Sampling rate:	2000 times/sec
Selectable units:	N, kgf, lbf
Stroke:	50 mm
Sample length:	100 mm or more
Overload:	150% FS* (Symbol flashes at 110%)
Output:	USB, RS 232
Power supply:	100...240 V AC
Temperature range:	0-40 °C
Air humidity:	80% RH, max.
Housing dimensions:	400x240x150 mm
Weight, net (gross):	11 kg

Delivery includes: Test stand with force gauge and clamps, operating manual in english

* FS = Full Scale



Operation:

The user insert the sample into the wire terminal slot and the wire end into the combined clamp-pull device. Press start key to zero the gauge and to start the pull motor. The wire will be fixed and constantly pulled off from the clamp. When the wire breaks, the display will show the peak force and the wire grip will return to home position.

Torque Meter

HTG Series

Hand-held torque meter with separate sensor, output signal and memory



For measuring the torque of screws, screw and plug connectors, components or screwdrivers etc.

Special features:

- + Display of opening or closing torque (left and right torque)
- + **Real Time:** to display the current values
- + **Peak Modes:** to capture the peak force achieved during a test
- + Selectable units: Nm, Ncm, kgfm, kgfcm, lbf.in, ozf.in
- + Programmable high/low setpoints for go/no-go testing with color-coded indicators (orange, green, red) in the LED display and relais outputs
- + Storage of 1000 values, which can be recalled or downloaded to a PC
- + Output signals (USB, RS232, analog) and Mitutoyo Digimatic
- + OLED display is highly visible in dark locations

Special features of model HTGA in comparison with model HTGS

- + Readings can be transferred from the internal memory to an USB flash drive or directly saved on it
- + 2 output values can be set, from which the actual reading will be sent to external devices
- + Indication of two peak values per measurement

Sensor Attachment:

Various torque pin chucks, a socket holder, hexagon socket, an adapter with male thread and a table with different table pins are available as sensor attachment.

For more information visit us at www.hans-schmidt.com

Model HTGS-5N
For portable use



Available Models	Capacity	Resolution
HTGS-2N	0 - 2.000 Nm (200 Ncm)	0.001 Nm (0.1 Ncm)
HTGS-5N	0 - 5.000 Nm (500 Ncm)	0.001 Nm (0.1 Ncm)
HTGS-10N	0 - 10.00 Nm (1000 Ncm)	0.01 Nm (1 Ncm)
HTGA-2N	0 - 2.000 Nm (200 Ncm)	0.001 Nm (0.1 Ncm)
HTGA-5N	0 - 5.000 Nm (500 Ncm)	0.001 Nm (0.1 Ncm)
HTGA-10N	0 - 10.00 Nm (1000 Ncm)	0.01 Nm (1 Ncm)

Specifications	Series HTG
Accuracy:	± 0.5 % FS* ± 1 digit
Sampling rate:	2000 times / s
Selectable units:	Nm, Ncm, kgfm, kgfcm, lbf.in, ozf.in
Display:	OLED, 4 digit; update 10 times/sec
Overload capacity:	200 % FS* (display flashing beyond 110 % FS*)
Memory:	Internal memory for max. 1000 values (clockwise or counter clockwise torque and peak values)
Output signal:	USB, RS232C (8, 1, N, 19200) Mitutoyo Digimatic, analog ± 2 V DC, Open collector 3x Comperator (+NG, Ok, -NG), overload signal

Sensor attachment must be ordered additional



Accessories see page A 10

Torque sensor with additional supporting handles for 10Nm models

Setpoints:	Min, Max (adjustable), with output signal
Temperature range:	0 - 40 °C
Air humidity:	80 % RH, max.
Power supply:	Rechargeable NiMH battery pack (approx. 8 hours continuous use) and/or 100...240 VAC adapter with two adapters (EU/USA)
Housing dimensions: (approx.)	Display unit: 187 x 75 x 34 mm (L x W x H) Sensor: 183 x 38 mm (L x Ø)
Weight: (approx.)	Display unit: 440 g / Sensor: 530 g complete set: 2000 g

Delivery includes: Torque meter with 1 sensor **without** pin chuck, handle (only HTGS-10N and HTGA-10N), USB cable, AC adapter, carrying case, manufacturer's calibration report, CD-ROM with driver and simple software for communication and data logging »ZT-Logger«

* FS = Full Scale

Cap Torque Meters

DTX Series

Torque meter – table design – with output signal and memory

For checking the cap torque of bottles, glass jars, cans etc. in the food, pharmaceutical and beverage industry.

Special features:

- + Display of opening or closing torque
- + **Real Time:** to display current values
- + **Peak Mode:** to capture the peak force achieved during a test
- + Selectable units: Nm, kgfm, lbf.in or Ncm, kgfcm, lbf.oz
- + Clamps containers from Ø 20 to 180 mm (small table with Ø 7 to 50 mm on request)
- + Programmable high/low setpoints for go/no-go testing with indicators in the LED display and relais output
- + Storage of 1000 values which can be recalled on the display or downloaded to a PC
- + Output signals (USB, RS 232, analog) and Mitutoyo Digimatic
- + OLED display is highly visible in dark locations

Special features of model DTXA in comparison with model DTXS

- + Readings can be transferred from the internal memory to an USB flash drive or directly saved on it
- + 2 output values can be set, from which the actual reading will be sent to external devices
- + Indication of two peak values per measurement

Clamping Table:

A large and small table with different table pins and various torque pin chucks are available. For more information visit us at www.hans-schmidt.com

Accessories see page A 10



Model DTX2A

Available Models	Capacity	Resolution
DTXS-2	0 - 2.000 Nm (200 Ncm)	0.001 Nm (0.1 Ncm)
DTXS-5	0 - 5.000 Nm (500 Ncm)	0.001 Nm (0.1 Ncm)
DTXS-10	0 - 10.00 Nm (1000 Ncm)	0.01 Nm (1 Ncm)
DTXA-2	0 - 2.000 Nm (200 Ncm)	0.001 Nm (0.1 Ncm)
DTXA-5	0 - 5.000 Nm (500 Ncm)	0.001 Nm (0.1 Ncm)
DTXA-10	0 - 10.00 Nm (1000 Ncm)	0.01 Nm (1 Ncm)



Torque meter DTXA with small table and 50 mm table pins

Specifications	Series DTX
Accuracy:	± 0.5 % FS* ± 1 digit
Sampling rate:	2000 times/sec
Selectable units:	Nm, Ncm, kgfm, kgfcm, lbf.in, ozf.in
Display:	OLED, 4 digit, 14 mm high
Overload capacity:	200 % FS* (flashing LED beyond 110 % FS*)
Output signal:	USB, RS 232 C (8, 1, N, 19200), Mitutoyo Digimatic, analog ± 2 V DC, Open collector 3x, (+NG, Ok, -NG) overload signal
Setpoints:	Min, Max (programmable), with output signal

Memory:	Internal memory for max. 1000 values (clockwise or counter clockwise torque and peak values)
Temperature range:	5 - 40 °C
Air humidity:	85 % RH, max.
Power supply:	Rechargeable NiMH battery pack (approx. 8 hours continuous use) and/or 100...240 VAC adapter with two adapters (EU/USA)
Dimensions:	305 x 233 x 127 mm (LxWxH)
Weight, net (gross):	Approx. 4900 g (5900 g)

Delivery includes: Torque meter, 1 table, 1 set of chuck pins 25 mm long, AC adapter, manufacturer's calibration report, USB cable 1.5 m, CD-ROM with driver, simple software for communication and data logging »ZT-Logger« operating instruction

* FS = Full Scale



MTS Series

Motorized torque stand
for constant measuring conditions

For checking the cap torque of bottles, glass jars, cans etc. in the beverage, cosmetic and pharmaceutical industry.

Accessories see page A 10

Special features:

- + The motorized torque test stand can be configured according the customer's demand. The torque stand exists out of a test stand depending on the sample height, a torque meter with different ranges and features as well as an upper chuck and lower table.
- + The torque will be measured without influence of the operator. The results are more accurate and significant as measured with a manual device.
- + **3 selectable modes:** Normal: Revolution in one direction until manual stop
NG Stop: Revolution in one direction until the adjusted value is reached
Endurance Test: Repeats the operation in two directions within the adjusted limits (MTS series). The number of repeats are shown in the display. The opening and closing angel as well as the number of repeats can be adjusted with MTS-RA series
- + Max. size of samples:
 - upper clamping chuck Ø20 - 90 mm or Ø7 - 50 mm
 - lower clamping table Ø20 - 160 mm or Ø7 - 50 mm
 - Max. available sample height 140, 240 or 340 mm
- + The rotation speed can continuously be adjusted between 3 - 90 degree/sec. The value will be displayed

You can find information about the torque meter at page B2 and online at www.hans-schmidt.com

Model MTS-10N



Required Moduls



Torque stand (Model MTS)



Torque meter (Series DTX)



Lower clamping table



Upper clamping chuck



Software

Clamping Chucks:

A large and small table with different table pins, various torque pin chucks and an adapter with M10 male thread are available. For more information visit us at www.hans-schmidt.com

Specifications

Torque Stand

Sample Height:	max. 140, 240 or 340 mm
Speed:	3 - 90°/sec adjustable
Temperature range:	0 - 40° C
Air humidity:	80% RH, max.
Power supply:	100 - 240 V AC, 50/60 Hz, max. 3 A
Weight:	14 kg net without accessories

Available Models

Capacity

Resolution

MTS-10N	140 mm	
MTS-10N-L	240 mm	
MTS-10N-2L	340 mm	
MTS-10N-RA	140 mm	with rotary encoder
MTS-10N-L-RA	240 mm	with rotary encoder
MTS-10N-2L-RA	340 mm	with rotary encoder

Delivery includes: Torque stand, power cable, cable for torque meter, centering stick and operation instruction in english

Multi-function



Speed- and Length Meter as well as Tachometer

Model YS-20

Tachometer to measure yarn or wire speed and length as well as revolutions and surface speed.

Measures the speed or length of yarns, wires and other filaments (material diameter up to 0.5 mm) – for example on circular knitting and hosiery machines – using a yarn measuring adapter with an easy-run, rubber coated measuring wheel and unique »wrapper« roller. This technique eliminates filament slip and breakage. The YS-20 can also be used either as a contact or a non-contact tachometer to measure revolutions of shafts, motors, pulleys etc. or line speed of moving surfaces as conveyor belts, webs of paper or fabric etc.



Pic. above: Non-contact with reflective tape and contact measurement with adapter

Pic. left: With yarn measuring adapter as speed and length meter



Special adapter (optional) for speed measuring of welding-wire on robots model YS-W



Speed measurement

0.10 ... 1999 m/min
0.30 ... 6500 feet/min
4.00 ... 78000 inch/min

Length measurement

0.02 ... 99999 m
0.01 ... 99999 feet
1.00 ... 99999 inch

Revolution measurement

Non-contact measurement:
1.00 ... 99999 min⁻¹
Contact measurement:
1.00 ... 19999 min⁻¹

Specifications

Accuracy:	± 0.2% of displayed value ± 1 digit
Measuring time:	0.5 s
Resolution:	0.01 m (length measurement)
Display:	5 digit LCD, 10 mm high – floating decimal point
Memory:	Min, Max, last reading
Auto Power Off:	after 30 s of non-use
Temperature range:	5 - 45 °C
Air humidity:	85 % RH, max.
Batteries:	2x 1.5 V Type AA (approx. 20 h continuous use)
Housing material:	ABS plastic
Dimensions:	145 x 60 x 30 mm (LxWxH)
Weight, net (gross):	approx. 150 g (700 g)

Model YS-20

Delivery includes: Tachometer in carrying case with standard accessories: 2 Batteries, 1 Adapter for yarn speed measurement, 1 Adapter for contact measurement, 1 Rubber Tip, 1 Measuring wheel (10 cm circumference), 1 Set of reflective tapes

Subject to change without notice.



For Knitting Industries

Yarn Consumption Meter

LM Series

Electronic Yarn Consumption Meter (Inch-Meter)

The LM Series accurately measures the accumulated total yarn consumption of a single yarn feeding system for one or more machine cycles of a circular knitting machine.

Special features:

- + 2 Different Models:**
 - Sensor controlled unit with an external sensor (Code V) for automatic start/stop signal
 - Basic unit without sensor for manual use
- + Both models are available in cm (LMC) or inch (LMI)**
- + Precision, ball-bearing mounted wheel is recessed into an adjustable slot on the rear side**
- + Magnet base for convenient mounting. It is stationary mounted on the cylinder ring between filament break monitors and the filament guides.**

Advantage of use:

- Yarn consumption measurements of all knitting feeds ensure uniform stitch lengths and homogeneous fabric structure.
- Fabric specifications can be reliably maintained and repeated.
- The quantities of yarn which are required for producing particular fabrics can be simply and accurately calculated.
- The use of LM ensures the same fabric quality, respectively structures can be produced on different machines in the same quality.



Specifications

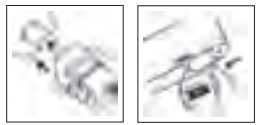
	Model LMC/LMC-V	Model LMI/LMI-V
Measuring range:	1 - 999999 cm	1 - 999999 inch
Resolution:	1 cm	1 inch
Accuracy:	± 1 % of displayed value ± 1 digit	
Measuring principle:	Pulse counting	
Preselect switch:	1 - 99 Machine revolutions (Option Code V)	
Display:	LCD, 5 mm high	
Auto Power Off:	after 2 min of non-use	
Temperature range:	10 - 45 °C	
Air humidity:	85 % RH, max.	
Batteries:	2x 1.5 V Type AAA (about 30 h of continuous use)	
Housing material:	Aluminium	
Dimensions:	Instrument: 160 x 55 x 51 mm (LxWxH) Magnetic base: height 190 mm, diameter 40 mm	
Weight:	Instrument: approx. 210 g; Magnetic base: approx. 430 g Complete with carrying case (gross): approx. 1400 g	

Delivery includes: **Model LMC/LMI:** Length meter with transport packaging incl. 2 Batteries and 1 Magnetic base
Model LMC-V/LMI-V: Length meter with transport packaging incl. 2 Batteries, 1 Magnetic base, 1 Sensor with cable 1m, 1 Magnet

Special accessories: EK0630: Extension cable 0.8 m
EK0631: Additional sensor and magnet

Operation of model LMC-V and model LMI-V:

- In »Auto« mode the sensor/magnet supplies the start/stop signal for measurement during user-selected number of machine revolutions (from 1 - 99 rev. set on front-panel rotary switches).
- In »Manual« mode the unit works without external sensor as long as the operator desires – this function is equivalent to the operating principle of basic unit model LMC and model LMI.



Contact measurement of revolutions, surface speed and length

Model DT-105 A

Electronic hand-held tachometers
Contact type

Standard features:

- Measures revolutions, surface speed and length
- Easy to read LCD display
- Easy to use
- Built-in memory for Last, Max, Min and 10 separate readings for recall in display
- Rugged aluminium housing
- 16 user selectable engineering units

Model DT-107 A

Standard features:

- Same as DT-105 A, but with LED display



Model DT-105 A
LCD display for longer battery life

Model DT-107 A
Bright, easy to read LED display



Accessories

- A 10006 S
- B 10007 S
- F 10002 S
- G 10005 S
- E 10008 E



Model DT-107 A-12C

Model DT-105 A and DT-107 A is also available with 12 inch grooved wheel (groove 24 mm) to determine wire speed and length of ropes, tapes etc.
Code 12C e.g. DT-107A-12C

Specifications

	Model DT-105 A	Model DT-107 A
Measuring ranges: (floating decimal point)	Revolutions: 0.1 - 25000 min ⁻¹ Speed: e.g. 0.02 - 3810 m/min Length: e.g. 0.5 - 99999 cm	
Accuracy:	0 - 999.9 min ⁻¹ (± 0.1 min ⁻¹) ± 1 digit 1000 - 9999.9 min ⁻¹ (± 1 min ⁻¹) ± 1 digit 10000 - 25000 min ⁻¹ (± 0.01 % of reading) ± 1 digit Speed and Length: ± 0.4 % of reading ± 1 digit	
Measuring units:	Revolutions: min ⁻¹ (rpm); rph; total rotations (counter): rev Speed: m/min; m/h; feet/min; feet/h; yards/min; yards/h; inch/min; inch/h; miles/h Length: cm; m; inch; feet; yard	
Display:	5 digit LCD 12 mm high	5 digit LED 10 mm high
Auto power off:	after 5 min of non-use	10 s
Batteries:	2x 1.5 V Type AA approx. 65 h continuous use	approx. 40 h continuous use
Memory system:	13 readings (incl. Last + Max + Min) are stored and retained for 5 min	
Temperature range:	5 - 45 °C	
Air humidity:	85 % RH, max.	
Housing material:	Die-cast aluminium	
Dimensions:	180 x 60 x 47 mm (LxWxH)	
Weight, net (gross):	approx. 350 g (800 g)	

Model DT-105 A and DT-107 A:
Built in selector switch permits the user to display readings in a wide variety of measuring units.



Delivery includes: Tachometer in carrying case with standard accessories: 2 Batteries, 2 Rubber Tips (A), 1 Funnel (B), 1 Rubber measuring wheel (F) 6 inch circumference, 1 Extension shaft (E) 75 mm, Certificate of compliance with the order, Instruction manual in German and English
Special accessories: Grooved measuring wheel (G) with 6 inch circumference for measuring yarn and wire speeds, Calibration certificate

Subject to change without notice.



Contact measurement of revolutions, surface speed and length



Non-contact measurement of revolutions, using a laser beam and reflective tape

Model DT-205 L

Electronic hand-held tachometers
Contact and non-contact type

1. Without Adapter (with laser beam):
Non-contact measurement of revolutions
2. With additional Adapter:
Contact measurement of revolutions, surface speed and length

The screw-in adapter makes it quick and easy to convert from contact to non-contact operation.

Standard features:

- Easy to read LCD display
- Measuring distance up to 2 m
- Built-in memory for Last, Max, Min and 10 separate readings for recall in display
- Rugged aluminium housing



Combined unit

Model DT-205 L
with Adapter H and rubber tip A

Model DT-205 L
LCD display for longer battery life



Reflective tapes



Series DT is also available with measuring wheel 12 inch circumference (Code-S) e.g. DT-205LS

Model DT-207 L

Standard features:

- Same as DT-205 L, but with LED display



Model DT-207 L
Bright, easy to read LED display

Specifications

	Model DT-205 L	Model DT-207 L
Measuring ranges: (floating decimal point)	Revolutions (non contact): 6 - 99999 min ⁻¹ Revolutions (contact): 1 - 25000 min ⁻¹ Speed (contact): e.g. 0.11 - 3810 m/min Length (contact): e.g. 0.02 - 99999 m	
Accuracy:	6 - 8300 (± 1 min ⁻¹) ± 1 digit 8301 - 25000 (± 2 min ⁻¹) ± 1 digit 25001 - 99999 (± 0.01 % of reading) ± 1 digit	
Measuring units:	Speed and Length: ± 0.4 % of reading ± 1 digit Revolutions: min ⁻¹ (rpm) Speed: m / min; feet / min; yards / min; inch / min Length: m; inch; feet; yard	
Laser, class 2:	Output < 1 mW, wavelength 670 nm, max. measuring distance 2 m	
Display:	5 digit LCD 12 mm high	5 digit LED 10 mm high
Auto power off:	after 5 min of non-use	10 s
Batteries:	2x 1.5 V Type AA approx. 40 h ...	approx. 25 h continuous use
Memory system:	13 readings (incl. Last + Max + Min) are stored and retained for 5 min	
Temperature range:	5 - 45 °C	
Air humidity:	85 % RH, max.	
Housing material:	Die-cast aluminium	
Dimensions:	167 x 60 x 47 mm (L x W x H)	
Weight, net (gross):	approx. 365 g (950 g)	

Model DT-205 L and DT-207 L:
Built in selector switch permits the user to display readings in a wide variety of measuring units.



Delivery includes: Tachometer in carrying case with standard accessories: 2 Batteries, 35 self-adhesive reflective tapes, 1 Adapter (H), 2 Rubber Tips (A), 1 Funnel (B), 1 Rubber measuring wheel (F) 6 inch circumference, 1 Extension shaft (E) 75 mm, Certificate of compliance with the order, Instruction manual in German and English
Special accessories: Set with 140 self-adhesive reflective tapes, Grooved measuring wheel (G) with 6 inch circumference for measuring yarn and wire speeds, Calibration certificate

Tachometers



Contact measurement of revolutions, surface speed and length



Non-contact measurement of revolutions, using a laser beam and reflective tape

PH Series

Electronic hand-held tachometers
Contact and non-contact type

Standard features:

- Easy to read LCD display
- Built-in memory for Max, Min, Average, Last and 10 separate readings for recall in display
- Compact, rugged plastic housing
- 10 user selectable measuring units

High value at low cost



Model PH-100A

Contact Type:
Measures revolutions, surface speed and length

Model PH-200 LC

Combined Instrument:
1. Non-Contact mode uses laser beam and reflective tape for measuring rpm
2. Contact type mode uses screwed-in adapter for measuring rpm, surface speed and length

Model PH-200L

Non-Contact Type:
Measures revolutions with laser beam



Specifications

	Model PH-100A	Model PH-200 LC	Model PH-200L
Measuring ranges: (floating decimal point)	Revolutions (non contact): Revolutions (contact): 1.0-25000 Speed: e.g. 0.1 - 3810 m/min Length: e.g. 0.01 - 99999 m	■ 6 - 99999 min ⁻¹ ■ 6 - 25000 min ⁻¹ ■ e.g. 1.0 - 3810 m/min ■ e.g. 0.2 - 99999 m	■ 6 - 99999 min ⁻¹ --- --- ---
Accuracy:	1 - 599 min ⁻¹ (± 1 min ⁻¹) ± 1 digit 600 - 25000 min ⁻¹ (± 0.01 % of reading) ± 1 digit	■ 6 - 599 (± 1 min ⁻¹) ± 1 digit ■ 600 - 25000 (± 2 min ⁻¹) ± 1 digit ■ 25001 - 99999 (± 0.01 % of reading) ± 1 digit	■ 6 - 599 (± 1 min ⁻¹) ± 1 digit ■ 600 - 99999 min ⁻¹ (± 0.01 % of reading) ± 1 digit
Measuring units:	Speed and Length: ± 0.4 % of reading ± 1 digit Revolutions: min ⁻¹ (rpm); total rotations (counter): rev Speed: m / min; feet / min; yards / min; inch / min Length: m; inch; feet (only Model PH-100A); yard	---	■ min ⁻¹ (rpm) --- ---
Memory system:	14 readings (incl. Last + Middle + MAX + MIN) are stored and retained for 5 min		
Laser, class 2:	■ Output < 1 mW, wavelength 670 nm, max. measuring distance 2 m		
Batteries:	3x 1.5V Type AA approx. 50 h ...	■ approx. 35 h continuous use	■ approx. 35 h continuous use
Display:	5 digit LCD 12 mm high		
Auto power off:	after 5 min of non-use		
Temperature range:	5 - 45 °C		
Air humidity:	85 % RH, max.		
Housing material:	Plastic (ABS)		
Dimensions:	123 x 64 x 32 mm (LxWxH)	■ 150 x 64 x 32 mm (LxWxH)	■ 116 x 64 x 32 mm (LxWxH)
Weight, net (gross):	approx. 180 g (400 g)	■ approx. 230 g (450 g)	■ approx. 170 g (390 g)



Delivery includes: Tachometer in carrying case with 3 Batteries, Certificate of compliance with order, Instruction manual in German and English:

1 Rubber Tip (A), 1 Funnel (B), 1 Rubber measuring wheel (F) with 6 inch circumference

■ 1 Adapter (LC), 35 reflective tapes, 1 Rubber Tip (A), 1 Funnel (B), 1 Rubber measuring wheel (F)

■ 35 self-adhesive reflective tapes

Special accessories:

Grooved measuring wheel (G) with 6 inch circumference for measuring yarn and wire speeds, Calibration certificate

■ Grooved measuring wheel (G) with 6 inch circumference for measuring yarn and wire speeds, Calibration certificate

■ Set with 140 self-adhesive reflective tapes, Calibration certificate



Stroboscopes



Stroboscopes are highly stable industrial quality instruments for non-contact RPM measurement as well as for inspection and observation of moving parts.

General applications:

- RPM measurement
- Measuring the number of oscillations
- Detecting slippage
- Motion analysis by »freezing« or »slowing down« actions

Principle:

If a periodic flash is aimed at a rapidly rotating or oscillating object at always the same position, the object appears to stand still or to move in slow motion.

Phase shifter:

Phase shift adjustment permits movement of objects to desired position for convenient observation.

Applications:

- Electrical industry
- Mechanical engineering
- Automotive industry
- Textile industry
- Optical industry
- Printing and paper industry
- Ship-building and aircraft
- Chemical industry
- Medical industry
- Mining industry

The true RPM (min^{-1}):

All stroboscopes give the illusion of stopped motion when flashing in submultiples of the true speed.

To obtain the correct RPM:

Turn frequency always from the highest RPM downwards. When the first single image appears, read the true RPM.

To verify this, double the flash rate, you then might see 2 images. If the flash rate, however, is below the actual RPM value by 1/even numbers, a frozen motion with only one image will appear.

Measuring higher RPM than the stroboscope range using harmonics:

All instruments can be used also to measure higher RPM by using the images effect.

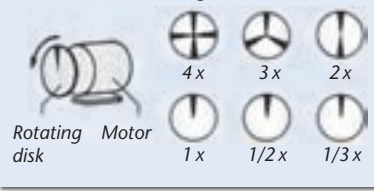
For example:

- Range up to 20000 min^{-1}
- Rotating object 40000 min^{-1}
- Images 2 times seen

Revolutions of shaft rpm	Stroboscope display = Number of flashes (rpm)	Flashes / rpm shaft	Number of visible images
at 1500 rpm	6000	4	4
	4500	3	3
	3000	2	2
	1500	1	1
	750	1/2	1
	500	1/3	1

rpm = (min^{-1})

Number of visible images:





Model MS-1

Pocket-Mini-Stroboscope

Standard features:

- Small, handy unit for one hand operation
- Easy to read LCD display
- For measuring 30 to 12500 rpm and higher using „harmonics“ (see page E1)
- Brightest flash in his class
- Trigger input for external triggering the strobe
- Battery operated with high quality batteries and short charging time
- Last displayed value is stored and strobe runs at that speed when switched on again
- Tripod mounting facility



Model MS-1
with standard attachments in carrying case

Model MS-1

1200 Lux*

* distance to measure 20 cm

Specifications

Model MS-1

Flash range:	0.5 - 208.3 Hz = 30 - 12500 min ⁻¹ (rpm, FPM)
Accuracy:	± 0.01 % of displayed value ± 1 digit
Resolution:	± 1 min ⁻¹
Light intensity:	approx. 1200 Lux 20 cm distance
Flash duration:	< 9 μs
Display:	5 digit LCD, 9 mm high
Flash tube:	Xenon-Longlife (Lifetime approx. 200 million flashes) at 6000 min ⁻¹
External trigger input:	0 - 5 V DTL/TTL compatible, U _{out} = 7.2 V unregulated, R _j = 100 KΩ
Tripod mount:	1/4" 20
Power supply:	Li-ion rechargeable battery (2h continuous use, 5 h recharging time) and/or AC Adapter 100 ... 240 V DC, 50/60 Hz
Temperature range:	0 - 40 °C
Air humidity:	85 % RH, max.
Housing material:	ABS
Dimensions:	240 x 65 x 40 mm (L x W x H)
Weight, net (gross):	approx. 420 g (approx. 1300 g)

Special accessories:

Belt-clip holster:	Model 20003 R
--------------------	---------------



Belt-clip holster

Delivery includes: Stroboscope with carrying case and manufacturer's inspection report, battery recharger with 4 adapters for world wide use, jack 3.5 mm plug for trigger signal, operating manual in several languages

Subject to change without notice.



Series 3000

Compact stroboscopes

Standard features:

- 4 different models
- Light weight and handy size
- Analog or digital display
- Mains use or battery-operated
- Display in Hz (flashes/sec) and min⁻¹ (rpm)



Accumulator/Charger Model 2020.03

Accumulator: with Euro/US adapters
In leather case with fastening clip, about 2 h of continuous use (depending on flash rate), weight approx. 700 g

Charger: Required power 100...240 V AC, output 12 V DC



Leather case

Model 3000.10



Model 3000-BA

Model 3000-BD

Specifications

	Model 3000-NA	Model 3000-BA	Model 3000-ND	Model 3000-BD
Flash range:	2.5 - 300 Hz = 150 - 18000 min ⁻¹		4 - 335 Hz = 240 - 20100 min ⁻¹	
Power supply*:	220...250 VAC ■ 12 V DC		220...250 VAC ■ 12 V DC	
	50/60 Hz		50/60 Hz	
Light intensity:	max. 450 Lux in 50 cm distance (depending on flash rate)			
Flash duration:	7 μs, max.			
Accuracy:	< ± 2% of set value		■ ± 0.01 % of set value, ± 1 digit	
Display:	analog		■ LCD 2 x 8 characters	
Flash tube:	Xenon-longlife (Lifetime approx. 100 million flashes)			
Temperature range:	5 - 45 °C			
Air humidity:	85% RH, max.			
Housing material:	Plastic shatterproof			
Dimensions:	155 x 95 x 80 mm (LxWxH)			
Weight, net (gross):	approx. 600 g (800 g)			

Special accessories:

Accumulator/Charger*:	Model 2020.03	Model 2020.03
Leather case:	Model 3000.10 Model 3000.10	Model 3000.10 Model 3000.10

* Standard 220 - 250 V
(Should you require 115 V, please indicate in your order)



Model DT-311N

Mains operated, portable

Standard features:

- For revolutions up to 35000 min⁻¹
- Easy to operate controls
- Easy to read LED display
- Detachable pistol-grip handle and mounting possibility on tripod
- Double-flash (x2) and half-rate (÷2) flash selection for easy determination of true flash rate
- Provides synchronizing pulse output for other stroboscopes
- Accepts external trigger input: Phase shift adjustment 0° to 359° permits movement of objects to desired position for best view and flash photography
- Flash delay switch to move a frozen object slowly within 6 s
- Rugged aluminium housing



Model DT-315N

With internal battery, portable

Additional features:

Same functions as Model DT-311N, but additionally with:

- Integrated rechargeable battery, 12 V power required
- AC adapter for recharging and/or mains operating



Model DT-315N-H

Model 20009S rubber caps for shock absorbing



Model DT-311N

Model DT-315N

Specifications

	Model DT-311N	Model DT-315N
Flash range:	0.7 - 585 Hz = 40 - 35000 min ⁻¹ (rpm, FPM) automatic range control	
Accuracy:	± 0.1 % of reading, ± 1 digit	
Resolution:	40 - 4999 min ⁻¹ : 0.1 min ⁻¹ ; 5000 - 7999 min ⁻¹ : 0.2 min ⁻¹ 8000 - 9999 min ⁻¹ : 0.5 min ⁻¹ ; 10000 - 35000 min ⁻¹ : 1 min ⁻¹	
Light intensity:	approx. 300 Lux (depending on flash rate)	
Flash duration:	10 - 40 μs	
Display update time:	approx. 0.2 s	
Display:	LED 5 digit, 10 mm high	
Flash tube:	Xenon, 10 W (Lifetime approx. 100 million flashes)	
Phase shift:	0° - 359° with 1° resolution	
Triggering input signal:	H-level: 2.5 - 12 V – L-level: 0 - 0.8 V, pulse width minimum 50 μs, positive edge trigger; input resistance approx. 4.7 KΩ	
Output signal for sensor:	12 V ± 0.6 V DC, 40 mA	
Power supply*:	230 V AC ± 10%, 50/60 Hz	<ul style="list-style-type: none"> ■ 10.5 - 15 V DC (2.3 A) ■ NiCd battery (1 h continuous use) ■ and/or AC adapter 230 V DC
Temperature range:	5 - 45 °C	
Air humidity:	85% RH, max.	
Housing material:	Aluminium profil, ABS	
Dimensions:	185 x 120 x 120 mm (L x W x H)	■ 250 x 120 x 120 mm (L x W x H)
Weight, net (gross):	approx. 1200 g (1800 g)	■ approx. 2000 g (3200 g)

* Standard 230 V

(Should you require 115 V, please indicate in your order – extra charge)



Model QLED

Hand-held LED Stroboscope

Standard features:

- For revolutions up to 300000 min⁻¹ (rpm, FPM)
- Latest LED technique with 40 or 118 LEDs depending on model
- Recommended distance to object: 1 m or 3 m depending on model
- Rugged aluminium housing for industrial use
- 5 flash frequencies can be saved for fast adjustment
- IP 30 protected
- Power supply: Li-Ion battery
- AC adapter for charging

Special features:

- + Powerful light output: 1750 or 8000 Lux at 1°/300 mm depending on model
- + 2 operation modes:
Standard: Frequency, brightness, phase shifting
Pro: additional e. g. slow motion, frame rate, pulse divider, memory
- + Can be triggered internal and external: for phase shifting and additional functions
- + Illuminants with adjustable light intensity and sharpness
- + Adjustable units: FPM, Hz, min⁻¹
- + LCD Display
- + Resolution depending on flash frequency 0.1, 1 or 10 FPM
- + Thread insert for handle or stationary use



Model DT-400

with standard attachment in carrying case



Model QLED-40

Easy to use with a large number of functions

Specifications	Model QLED-40	Model QLED-118
Number of LED's:	40	118
Frequency range:	30 - 300000 min ⁻¹ (rpm, FPM)	
Display:	LCD, multiline	
Accuracy:	±0.02% ±1 digit / ±0.025 μ	
Resolution:	±0.1 (30 - 999.9 min ⁻¹)	
	±1 (1000 - 9999 min ⁻¹)	
	±10 (10000 - 300000 min ⁻¹)	
External trigger input:	3-30 V / max. 5 mA, DIN 41524 5-Pin standard plug	
Light duration:	Adjustable	
Light intensity:	Approx. 1750 Lux at 1°/300 mm	Approx. 8000 Lux at 1°/300 mm
Flash color:	Approx. 5000-8000 K	
Power supply:	Integrated Li-Ion Akku	
Operating time:	Approx. 7 h at 0.5° (~875 Lux)	Approx. 2.3 h at 0.5° (~4000 Lux)
	Approx. 4 h at 1.14° (~2000 Lux)	Approx. 5 h at 0.25° (~2000 Lux)
Temperature range:	0 - 40 °C	
Housing material:	Aluminium	
Dimensions:	150 x 130 x 112 mm (LxWxH)	
Weight:	1050 g	1150 g

Delivery includes: Stroboscope with carrying case, AC adapter with 4 adapters (EU, GB, USA, AUS), trigger plug, handle, calibration certificate and operating manual



Series DSL

LED Stroboscopes, hand-held, portable

Standard features:

- Latest LED technique
- Lifetime of LED's do not need wear-out or replacement
- Easy to use just in one hand
- Recommended distance to object: 20 - 50 cm
- Double-flash-function (x2) and half-rate-flash-function (:2) for easy and fast determination of the true flash rate
- Rigid Aluminium housing

Special features

- + For revolutions up to 300000 min⁻¹ (rpm, FPM)
- + Exceptionally light-intense: 1500 Lux at 6000 min⁻¹, distance 20 cm
- + User programmable settings: flash duration, phase shift, delay and much more
- + IP65 protected (dust and splash water)
- + Model DSL-T with combined trigger input/output
- + 3 standard AA-batteries provide 6 hours continuous use



Model DSL-300

Available Models

	Measuring Range	Trigger Signal
DSL-300	30 - 300000 min ⁻¹ (0.5-5000Hz)	no
DSL-300-T	30 - 300000 min ⁻¹ (0.5-5000Hz)	yes

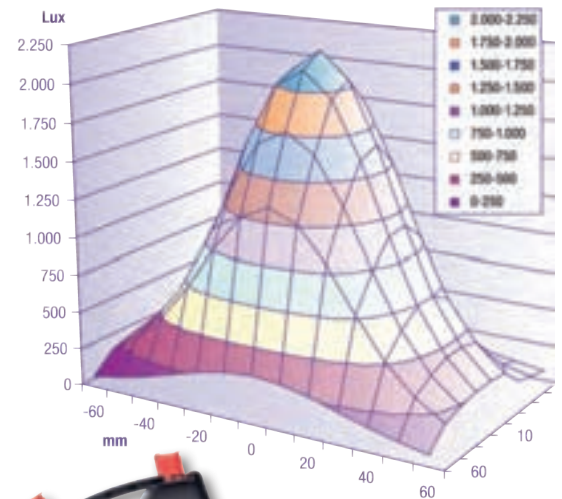
Specifications

	Model DSL-300
Flash range:	0.5 - 5000 Hz = 30 - 300000 min ⁻¹ (rpm, FPM)
Accuracy:	0.02% (± 1 digit)
Resolution:	0.1 min ⁻¹ (30-999 min ⁻¹), 1 min ⁻¹ (1000+)
Light intensity:	1500 Lux at 6000 min ⁻¹ at 20 cm distance
Display:	LCD, multiple lines
Flash color:	approx. 6500K
Phase shift internal:	360° (increment 1°)
Power supply:	3 x AA batteries, operation: approx. 6 h
Temperature range:	Operation: 0 - 40 °C
Housing material:	Aluminium/ABS
Dimensions:	191 x 82 x 60 mm (L x W x H)
Weight, net (gross):	approx. 420 g (approx. 850 g)

	Model DSL-300-T only
Trigger output:	Optocoupler non-isolated
Level:	NPN, max. 32V, 50 mA
Pulse length:	adjustable
Trigger input:	Optocoupler, isolated
Level:	3 ... 32V NPN + PNP
Minimal puls length:	50 usec
Phase shift external:	360° (increment 1°)
Delay time:	0 ... 999 ms
Reverse voltage protection:	yes

Light output (Lux)

DSL-300 at 20 cm distance and 6000 min⁻¹



Delivery includes: Stroboscope with carrying case, 6 batteries, manufacturer's inspection report and manual in different languages, DSL-300-T: 3 m trigger cable

Subject to change without notice.



DSL Series

LED Stroboscopes, hand-held

Standard features:

- Easy to read LED display
- Highly efficient LED illuminants assure a good illumination of the observing object
- For revolutions up to
DSL-200: max. 150000 min⁻¹
DSL-600: max. 120000 min⁻¹
- For one hand operation
- Double-flash-function (x2) and half-rate-flash-function (:2) for easy and fast determination of the true flash rate
- 9 flash rates can be stored
- Adjustable flash duration time for best illumination
 - shorter flash period - tighter image
 - longer flash period - more brightening
- Handy, rugged aluminium housing
- Battery operated

Additional features DSL-200:

- + 359° digital phase shift adjustment in 1° increments to permit movement of objects
- + External trigger input and output
- + Tripod mountable



Model DSL-200

with standard attachment in carrying case



Model DSL-600

with standard attachment in carrying case

Specifications	Model DSL-200	Model DSL-600
Flash range:	0.2 - 2500 Hz 12 - 150000 min ⁻¹ (rpm, FPM)	0.2 - 2000 Hz 12 - 120000 min ⁻¹ (rpm, FPM)
Accuracy:	0.01 % (± 1 Digit)	0.01 % (± 1 Digit)
Resolution:	0.1 (12 - 9999.9 min ⁻¹) 1 (10000 - 150000 min ⁻¹)	0.1 (12 - 9999.9 min ⁻¹) 1 (10000 - 120000 min ⁻¹)
Light intensity:	4300 Lux at 6000 rpm at 20 cm distance	1200 Lux at 6000 rpm at 20 cm distance
Flash duration:	adjustable	adjustable
Display:	LCD, 5 digit, 12 mm high	LCD, 5 digit, 12 mm high
Power supply:	NiMH rechargeable	2 x AA Battery
Operation time:	6 h bei 6000 rpm (continuous use)	8 h bei 6000 rpm (continuous use)
Temperature range:	0 - 45 °C	0 - 45 °C
Housing material:	Aluminium	Aluminium
Dimensions:	190 x 33 x 30 mm (LxWxH)	168 x 39 x 33 mm (LxWxH)
Weight, net (gross):	Approx. 350 g (1200 g)	Approx. 225 g (610 g)

Delivery includes: Stroboscope with carrying case, 2 batteries, charger (only DSL-200) and operating manual in english



Thickness Gauges

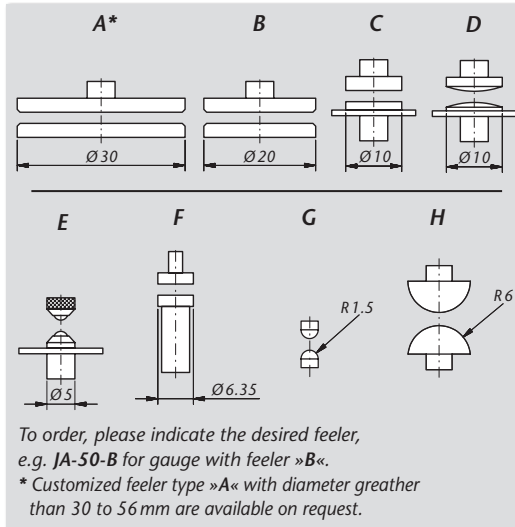
Thickness gauges are used for measuring the thickness of leather, textiles, cardboard, felt, rubber, sheet metal, foils, plywood, plastic parts of all kinds etc. Depending on the application, the following points are important for selecting the best model:

- Max. resolution required
- Measuring range
- Depth of jaw
- Shape of feelers
- Measurement principle

The aluminium housing is lightweight and rugged.

It can be easily zeroed by turning the outer knurled ring of the scale.

Specified Test Report with calibration report can be made only for the dial gauge for an extra charge.



Feeler shapes and applications:
A+B: for rubber, felt*, soft materials*, non wovens*, etc.
C+F: for soft leather, cardboard, paper, foils, etc.
D+H: for hard leather, plywood, fiber-board, etc.
E+G: for sheet metal, etc.

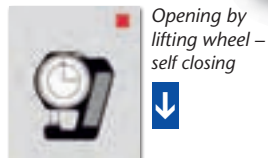
* meets no DIN EN ISO standards

To order, please indicate the desired feeler, e.g. JA-50-B for gauge with feeler »B«.
 * Customized feeler type »A« with diameter greater than 30 to 56 mm are available on request.



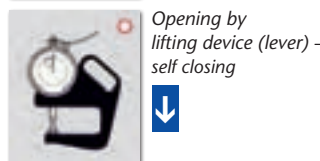
You can choose following measuring principles:

Measurement by spring force:



Model J-15

Model J-45



Measurement by manual pressure by plunger:



Specifications	J-15	J-45	J-50	JA-50	J-100
Resolution:	0.01 mm	0.01 mm	0.01 mm	0.01 mm	0.01 mm
Measuring range:	10 mm	10 mm	10 mm	10 mm	10 mm
Depth of jaws:	18 mm	45 mm	50 mm	50 mm	100 mm
Scale diameter:	36 mm	36 mm	54 mm	54 mm	54 mm
Measuring pressure:	0.8 N	0.8 N		0.8 N	0.8 N
On request:				0.6 N/2 N	0.6 N/2 N
Feeler shape*:	F	F	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E
Lifting wheel:	■	■			
Spring force:			●		
Lifting device:				○	○
Weight, net:	90 g	110 g	300 g	300 g	450 g

* To order, please indicate the desired feeler, e.g. JA-50-B for gauge with feeler »B«.



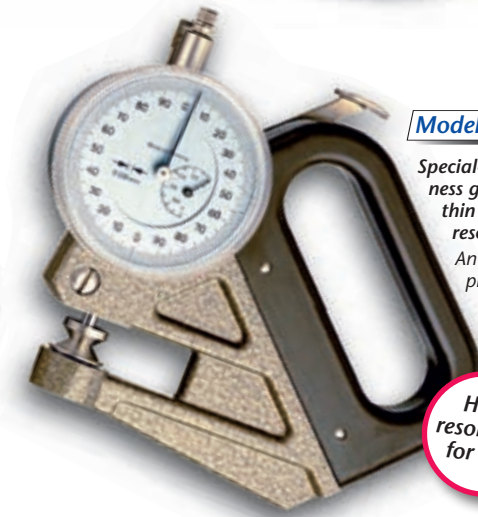
Model JA-50



Model J-200-30



Model J-100



Model F-1000-30

Special-purpose thickness gauge for foils and thin materials with a resolution of 1 µm. An insulated handle prevents transfer of heat from the hand to the movement.

High resolution for foils

Specifications	J-200	J-200-30	J-300	J-300-30	J-400	J-400-30	F-1000-30
Resolution:	0.01 mm	0.01 mm	0.01 mm	0.01 mm	0.01 mm	0.01 mm	0.001 mm
Measuring range:	10 mm	30 mm	10 mm	30 mm	10 mm	30 mm	1 mm
Depth of jaws:	200 mm	200 mm	300 mm	300 mm	400 mm	400 mm	30 mm
Scale diameter:	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm
Measuring pressure:	1.5N	1.5N	1.5N	1.5N	1.5N	1.5N	2N
On request:	1.2N/3N	1.2N/3N	1.2N/3N	1.2N/3N	1.2N/3N	1.2N/3N	0.4N/4N
Feeler shape*:	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	F
Lifting wheel:							
Spring force:							
Lifting device:	○	○	○	○	○	○	○
Weight, net:	1100g	1100g	1350g	1350g	1500g	1500g	340g

* To order, please indicate the desired feeler, e.g. JA-50-B for gauge with feeler »b«.



The Model K-200, K-300 and K-400 thickness gauges are provided with a swing-out foot for on-table operation.

Specifications	K-15	K-50	KA-50	K-50-2	K-50-3	K-50-5	K-100	K-200	K-300	K-400
Resolution:	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm	0.1 mm
Measuring range:	10 mm	10 mm	10 mm	20 mm	30 mm	50 mm	30 mm	30 mm	30 mm	30 mm
Depth of jaws:	15 mm	50 mm	50 mm	50 mm	50 mm	50 mm	100 mm	200 mm	300 mm	400 mm
Scale diameter:	36 mm	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm	54 mm
Measuring pressure:			0.5 N					1.8 N	1.8 N	1.8 N
On request:								0.9/2.5 N	0.9/2.5 N	
Feeler shape*:	F	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E
Spring force:	●	●		●	●	●	●			
Lifting device:			○					○	○	○
Weight, net:	60g	300g	300g	300g	330g	350g	450g	700g	1000g	1400g

* To order, please indicate the desired feeler, e.g. K-50-B for gauge with feeler »b«.

Subject to change without notice.



Digital Thickness Gauges

JD and FD Series

- Easy to read LCD display
- Highest accuracy
- User selectable units mm and inch
- Dial gauge: Sylvac S 229
- USB or RS 232 output for data-collection
- Includes swing-out foot for on-table operation (Model JD-200-25 only)

Accessory:

USB or RS 232 connecting cable to connect the gauge with a computer; it is delivered with a Windows program (Win XP and higher) to transfer the data to the PC and to store them as an Excel file.



Model JD-50

Model FD-1000-30-3

Special-purpose thickness gauge for foils and thin materials with a resolution of 1 µm. An insulated handle prevents transfer of heat from the hand to the movement.



Model JD-200-25

Specifications	JD-50	JD-100	JD-200	JD-200-25	FD-50	FD-200-25	FD-1000-30-3
Resolution:	0.01 mm 0.001 inch	0.01 mm 0.001 inch	0.01 mm 0.001 inch	0.01 mm 0.001 inch	0.001 mm 0.0001 inch	0.001 mm 0.0001 inch	0.001 mm 0.00005 inch
Measuring range:	10 mm / 0.4 inch	as JD-50	as JD-50	25 mm / 1 inch	10 mm / 0.4 inch	25 mm / 1 inch	3 mm / 0.12 inch
Depth of jaws:	50 mm	100 mm	200 mm	200 mm	50 mm	200 mm	30 mm
Shape of jaws:	as J-50	as J-100	as J-200	as K-200	as J-50	as J-200	as F-1000-30
Measuring pressure:	< 1.4 N						2 N
Feeler shape*:	A/B/C/D/E						f
Display:	LCD 6 digit, 8.5 mm high						
Measuring principle:	Capacitive (Sylvac)						
Temperature range:	10 - 45 °C						
Battery:	3 V Lithium, CR 2032						
Data output:	USB or RS 232, galvanic isolation						
Lifting device:	○	○	○	○	○	○	○
Weight, net:	300g	450g	1100g	700g	300g	1100g	300g

* To order, please indicate the desired feeler, e.g. JD-200-25-D for gauge with feeler »d«.

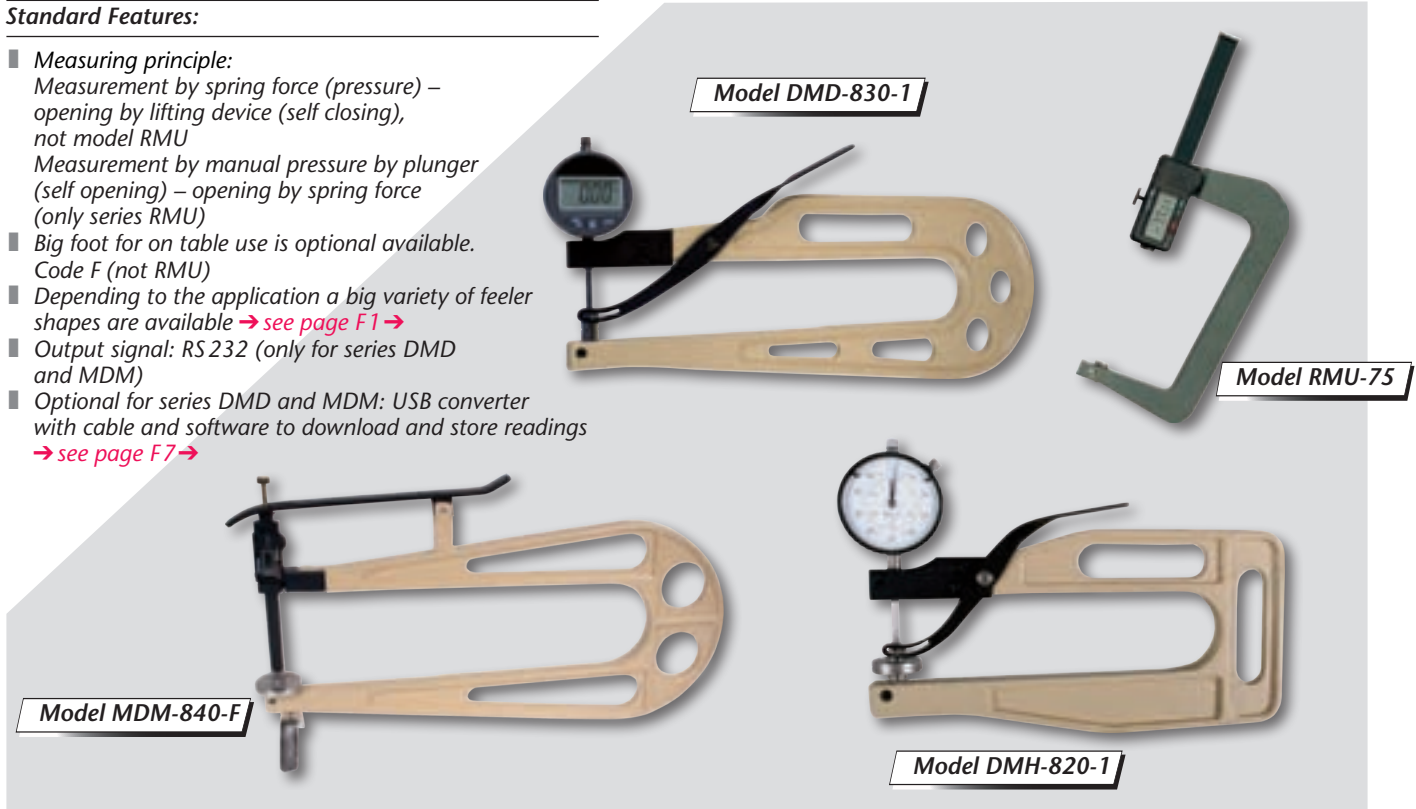


Thickness Gauges with big jaws and enlarged measuring range

Max. 650 mm depth of jaw, max. 100 mm measuring range

Standard Features:

- **Measuring principle:**
Measurement by spring force (pressure) – opening by lifting device (self closing), not model RMU
Measurement by manual pressure by plunger (self opening) – opening by spring force (only series RMU)
- Big foot for on table use is optional available. Code F (not RMU)
- Depending to the application a big variety of feeler shapes are available → see page F1 →
- Output signal: RS 232 (only for series DMD and MDM)
- Optional for series DMD and MDM: USB converter with cable and software to download and store readings → see page F7 →



Available Models	Measuring Range	Depth of jaw	Resolution	Measuring Pressure
<i>Analog display</i>				
DM-820	0-25 mm	200 mm	0.1 mm	2 N
DM-820-1	0-50 mm	200 mm	0.1 mm	2 N
DM-830	0-25 mm	300 mm	0.1 mm	2 N
DM-830-1	0-50 mm	300 mm	0.1 mm	2 N
DM-835	0-75 mm	350 mm	0.1 mm	2 N
DM-840	0-100 mm	400 mm	0.1 mm	2 N
DM-850	0-25 mm	500 mm	0.1 mm	2 N
DM-850-1	0-50 mm	500 mm	0.1 mm	2 N
DM-865	0-25 mm	650 mm	0.1 mm	2 N
DM-865-1	0-50 mm	650 mm	0.1 mm	2 N
DMH-3-1	0-25 mm	50 mm	0.01 mm	1 N
DMH-820-1	0-25 mm	200 mm	0.01 mm	1 N
DMH-830-F	0-10 mm	300 mm	0.01 mm	1 N
DMH-830-1-F	0-25 mm	300 mm	0.01 mm	1 N
DMH-850-F	0-10 mm	500 mm	0.01 mm	1 N
DMH-850-1-F	0-25 mm	500 mm	0.01 mm	1 N

Available Models	Measuring Range mm	Depth of jaw mm	Resolution	Measuring Pressure
<i>Digital display</i>				
DMD-3	0-10 mm	50 mm	0.01 mm	2 N
DMD-3-1	0-25 mm	50 mm	0.01 mm	2 N
DMD-820	0-10 mm	200 mm	0.01 mm	2 N
DMD-820-1	0-25 mm	200 mm	0.01 mm	2 N
DMD-830-F	0-10 mm	300 mm	0.01 mm	2 N
DMD-830-1-F	0-25 mm	300 mm	0.01 mm	2 N
DMD-850-F	0-10 mm	500 mm	0.01 mm	2 N
DMD-850-1-F	0-25 mm	500 mm	0.01 mm	2 N
MDM-815-1	0-50 mm	150 mm	0.01 mm	2 N
MDM-820-1	0-50 mm	200 mm	0.01 mm	2 N
MDM-830-1-F	0-50 mm	300 mm	0.01 mm	2 N
MDM-835-F	0-75 mm	350 mm	0.01 mm	2 N
MDM-840-F	0-100 mm	400 mm	0.01 mm	2 N
RMU-30	0-30 mm	50 mm	0.01 mm	
RMU-50	0-50 mm	50 mm	0.01 mm	
RMU-75	0-75 mm	50 mm	0.01 mm	

To order, please indicate the desired feeler. (a, b, c, g, h), e.g DMD-820-A for gauge with feeler «a»

Subject to change without notice.



Measuring moving objects

With analog or digital display

8.7 mm rollers permit measurement on moving materials such as wires, tapes, foils etc. up to a speed of 150 m/min. The rollers are grounded.

The lower roller is standard equipped with flanges.

If wider material has to be measured the lower roller is available without flanges. To order use:

Code-O e.g. FD-50-RO.



Model JD-50-R



Model J-50-R



Model FD-50-R

Accessory:

USB or RS 232 connecting cable to connect the gauge with a computer; it comes with a Windows program (Win XP or higher) to transfer the data to the PC and to store them as an Excel file.



Specifications	Model J-50-R*	Model J-50-RS*	Model JD-50-R*	Model FD-50-R*
Resolution:	0.01 mm	0.005 mm	0.01 mm/0.001 inch	0.001 mm/0.0001 inch
Measuring range:	0 - 5 mm	0 - 5 mm	10 mm/0.4 inch	10 mm/0.4 inch
Depth of jaws:	50 mm	50 mm	50 mm	50 mm
Measuring pressure:	1.0 N	1.0 N	< 1.4 N	< 1.4 N
Scale diameter:	54 mm	54 mm		
Display:			LCD 6 digit, 8.5 mm high	
Measuring principle:			Capacitive (Sylvac)	
Temperature range:			10 - 45 °C	
Battery:			3 V Lithium, CR2032	
Data output:			USB or RS 232, galvanic isolation	
Lifting device:	○	○	○	○
Weight, net:	300g	300g	300g	300g

* The lower roller is standard equipped with flanges; if required without flanges use Code O: e.g. FD-50-RO



Series DD

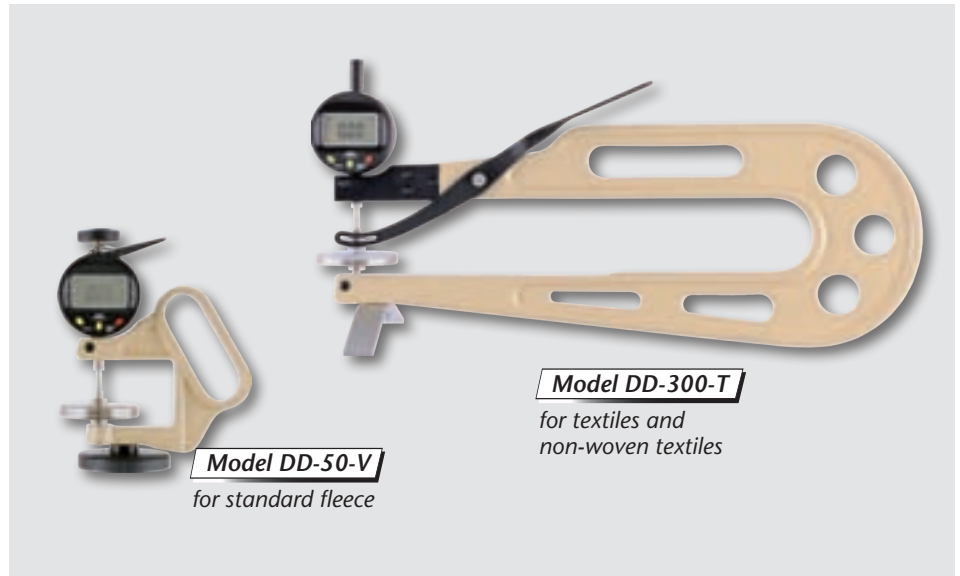
To determine the thickness of textiles, fleece, leather etc. corresponding to the standard. This thickness gauge is used for quick comparative measurements.

Special features:

- Depending on the application the measuring feeler size and measuring pressure is corresponding to the standard
- Measuring range 0 - 10 mm (optional Code E: 0 - 25 mm)
- Big foot for on table operation
- Optional: USB converter for data transfer to PC

Standard features:

- Easy to use; opening by lifting device (self closing)
- LCD display 4 digits, with selectable units (mm or inch)
- Zero setting by pushing a button
- Manufacturer's calibration report is included



Model DD-50-V
for standard fleece

Model DD-300-T
for textiles and non-woven textiles



Model DD-50-T
Opening by lifting device
Self closing by spring force



USB Konverter with cables
for data transfer to a PC with software SW-50 by USB or RS 232 interface.



Software SW-50
for data transfer, displaying and analysis of measured data on PC

Available Models	Measuring Range	Dept of jaw	Resolution	Application	Standard	Feeler Ø	Face of Feeler	Pressure
DD-50-T	0 - 10 mm	50 mm	0.01 mm	Textiles and non-woven textiles	corresponding DIN EN ISO 5084	50.42 mm	20 cm ²	1 kPa
DD-200-T	0 - 10 mm	200 mm	0.01 mm					
DD-300-T	0 - 10 mm	300 mm	0.01 mm					
DD-500-T	0 - 10 mm	500 mm	0.01 mm					
DD-50-V	0 - 10 mm	50 mm	0.01 mm	Standard fleece	corresponding DIN EN ISO 9073-2	56.42 mm	25 cm ²	0.5 kPa
DD-200-V	0 - 10 mm	200 mm	0.01 mm					
DD-300-V	0 - 10 mm	300 mm	0.01 mm					
DD-500-V	0 - 10 mm	500 mm	0.01 mm					
DD-50-L	0 - 10 mm	50 mm	0.01 mm	Leather	corresponding DIN EN ISO 2589	10 mm	0.785 cm ²	49.1 kPa
DD-200-L	0 - 10 mm	200 mm	0.01 mm					
DD-300-L	0 - 10 mm	300 mm	0.01 mm					
DD-500-L	0 - 10 mm	500 mm	0.01 mm					

Optional measuring range 0 - 25 mm (e.g. DD-50-T Code E) as required. Please mention when ordering.

Subject to change without notice.



Thickness gauges according to International Standards

Series D-2000

Thickness gauge with digital display to meet highest accuracy for textiles, fleece, carpet, geomaterials, leather, paper, foils, rubber, etc.

Special features:

- + Isolated dial gauge to protect the instrument against outside external impacts; this ensures highest accuracy and repeatability
- + Rigid housing frame
- + Feeler movement manual by plunger
- + Digital display with USB output (optional RS 232)
- + Measuring range 0 - 10 mm, optional 0 - 25 mm or 0 - 50 mm
- + Resolution 0.01 mm, optional 0.001 mm

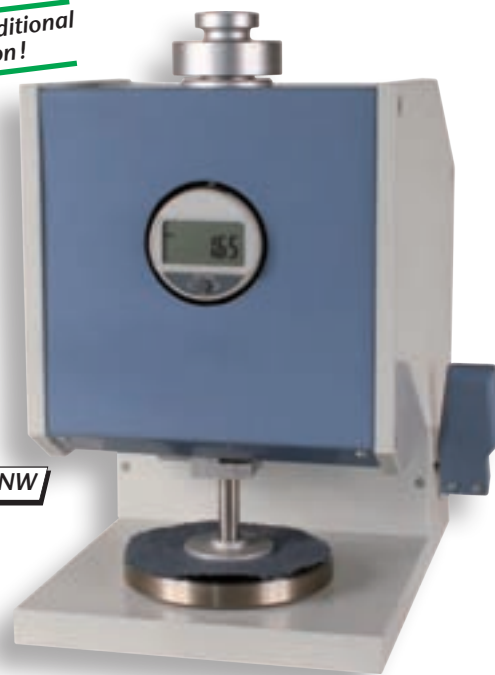
Standard features:

- Easy to use
- LCD display with switchable units mm or inch
- Inspection sheet of manufacturer - free of charge
- DKD calibration certificate (German calibration institute) optional

Peripheral Equipment:

- Additional weights and measuring feeler depending on the required standard
- Motorized to lift and lower the measuring feeler
- Adjustable measuring time (2...32 sec)

Ask for additional information!



Model D-2000-NW

Available Models	Standard	Application	Feeler Ø mm	Feeler cm ²	Test Pressure
D-2000-T	DIN EN ISO 5084	Textiles	50.42	20	0.1 kPa and 1 kPa
D-2000-V1	DIN EN ISO 9073-2	Fleece	56.42	25	0.5 kPa
D-2000-V2	DIN EN ISO 9073-2	Fleece	56.42	25	0.1 kPa and 0.5 kPa
D-2000-G1	DIN EN ISO 9863-1	Geomaterials	56.42	25	2 kPa
D-2000-G2	DIN EN ISO 9863-1	Geomaterials	56.42	25	2 kPa, 20 kPa and 200 kPa
D-2000-NW	DIN 53855	Non-woven textiles	56.42 35.68	25 10	0.5 kPa and 1 kPa 5 kPa
D-2000-P*	DIN EN ISO 534	Paper	16	2	50 kPa and 100 kPa
D-2000-HY	DIN EN ISO 54540	Hygienic paper	56.42	25	2 kPa
D-2000-L	DIN EN ISO 2589	Leather	10	0.785	49.1 kPa
D-2000-Gi		Rubber	35.68	10	5 kPa
D-2000-F*	DIN 53370	Foils	R 30 mm Feeler Calotte		0.5 N

* Resolution 0.001 mm standard

All designs are available for series D-2010 and D-2020 with standard resolution 0.001 mm

Series D-2010

Thickness gauge with graphic display



Special features:

- + Motorized feeler movement
- Graphic display - touch-screen
- + 2 modes: Single or a series of measurements
- + Adjustable measuring time
- + Statistics (no. of readings, average, standard deviation)
- + USB output

SW-50

Software for data transfer, displaying and analysis of measured data on PC optional available



Series D-2020

Thickness gauge with feed roller system



Special features:

- + Motorized feeler movement
- Graphic display - touch-screen
- + 2 modes: Single or a series of measurements
- + Feed roll for material transport during a series of measurements
- + Adjustable measuring time
- + Statistics (no. of readings, average, standard deviation)
- + USB output



Shore Durometers

Ask for additional information!

HPS Series

According DIN 53505, ISO 7619, ISO 868, ASTM D 2240

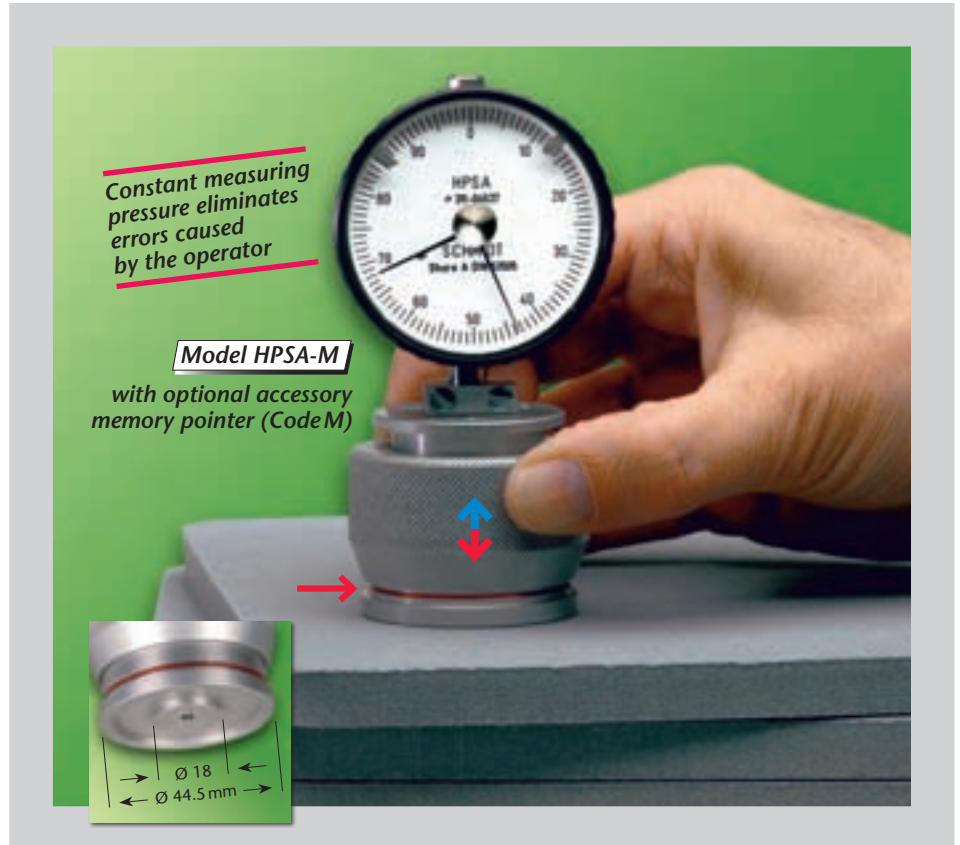
With constant measuring pressure

For determining the surface hardness of soft rubbers, elastomers, natural rubber products etc.

Special features:

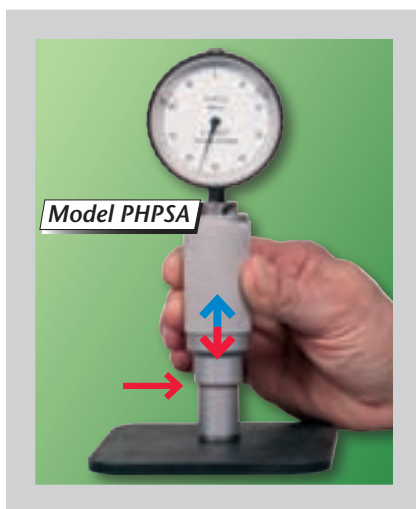
- + Easy to use
- + Constant pressure indicating system assures uniform test pressure eliminating false reading due to differences between operators
- + High repeatability
- + Flat big working base (44.5 mm) prevent tilting and improve the measuring accuracy
- + Adjustable Min. Max. indicator marks

For measuring the hardness, the spring-loaded outer ring of the housing is pressed downwards until the edge of the ring meets the red marking on the housing. This ensures a constant pressure and prevents measuring errors.



Series PHPS

For hard to reach areas

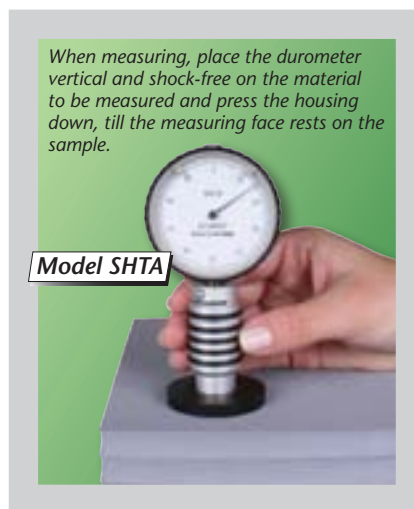


Special features:

- + Working base = measuring face \varnothing 18 mm

Series SHT

Compact durometer for fast measurements

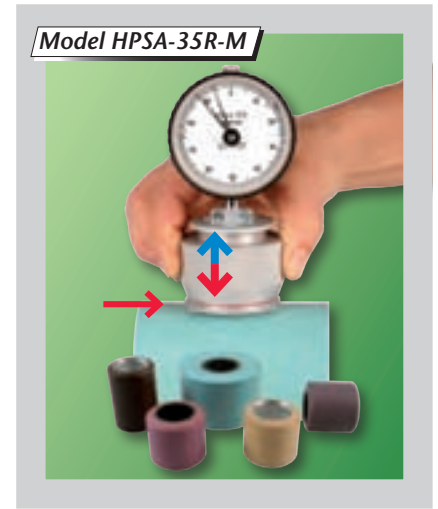


Special features:

- + Working base = measuring face \varnothing 18 mm

Series HPSA-R

For cots, pressure rollers and many other rubber coated rollers, etc.



Special features:

- + Working face lightly curved to fit on rollers and to improve accuracy

Subject to change without notice.



Shore Durometers

According DIN 53505, ISO 7619-1, ISO 868, ASTM D2240

Specifications	Model HPSA	Model HPSAO	Model HPSO	Model HPSB	Model HPSC	Model HPSD
Shore:	Shore A	Shore AO	Shore O	Shore B	Shore C	Shore D
Indentor:	Cone 35° ∅ 1.25 mm	Ball Ø 5 mm	U-grooved 3/32"	Tapered pin 30° ∅ 1.25 mm	Cone 35° ∅ 1.25 mm	Tapered pin 30° ∅ 1.25 mm
Typical applications:	Soft rubber, elastomers, natural rubber soft PVC, eather, etc.	Foams, steering wheels and inner linings of motor vehicles	Soft elastomers, oft elastic materials, medium fast textiles	For harder material than Shore A	Medium hard rubber, elastomers and plastic	Hard rubber, rigid thermoplaste, resopal, hard plastic materials
Application range:	10 - 90 Shore A	< 20 Shore A	20 - 80 Shore O	10 - 90 Shore B	10 - 90 Shore C	10 - 90 Shore D
Standard:	DIN 53505 ISO 7619, ISO 868 ASTMD2240	ISO 7619-1	ASTMD2240	ASTMD2240	ASTMD2240	DIN 53505 ISO 7619, ISO 868 ASTMD2240
Measuring spring force:	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N	... 4,45 - 44.5 N	.. 4,45 - 44.5 N
Test pressure*:	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N	approx. 50 N	approx. 50 N
Display range:	0 - 100 Shore units					
Scale diameter:	51 mm					
Measuring face:	18 mm Ø					
Weight, net (gross):	approx. 300 g (500 g)					
Dimensions:	50 x 58 x 110 mm (LxWxH)					

The principle used to measure hardness is based on measuring the resistance force of the penetration of a pin into the test material under a known spring load. The amount of penetration (max. 2.5 mm) is converted to hardness reading on a scale with 100 Shore units.

* Spring load of outer ring to create constant pressure when outer ring is pulled down to red marking

Specifications	Model PHPSA	Model PHPSO	Model PHPSB	Model SHTA	Model SHTD
Shore:	Shore A	Shore O	Shore B	Shore A	Shore D
Indentor:	Cone 35° ∅ 1.25 mm	U-grooved 3/32"	Tapered pin 30° ∅ 1.25 mm	Cone 30° ∅ 1.25 mm	Tapered pin 30° ∅ 1.25 mm
Measuring face:	18 mm Ø			18 mm Ø	
Weight, net (gross):	approx. 300 g (500 g)			approx. 200 g (300 g)	
Dimensions:	50 x 58 x 170 mm (LxWxH)			28 x 58 x 110 (LxWxH)	

Specifications	Model HPSA-R20-M	Model HPSA-R35-M	Model HPSA-R55-M
Shore:	Shore A	Shore A	Shore A
Recommended roller Ø:	< 40 mm	40 - 70 mm	70 - 110 mm
Radius of working face:	20 mm	35 mm	55 mm
Measuring base:	44.5 mm Ø		
Weight, net (gross):	Approx. 300 g (500 g)		
Dimensions:	50 x 58 x 110 mm (LxWxH)		

For more specifications see Shore durometers HPS series



Model HP-P20-100

Control rings:
Control of the measuring distance (available as optional accessory)
1 pcs. (20 Shore) or 1 set with 4 pcs. (20, 40, 60, 80 Shore) and one base disk (not for HPSA-R)



Model PSHP

For testing series:
Spring loaded lever for fast, precise positioning (only for HPS series)



Textile Hardness Tester

HP Series

With constant measuring pressure

To measure the winding density (hardness) of textile bobbins, beams, spools, cones, dye packages etc.

Special features:

- + 6 different models with different ball sizes and working faces are available
- + Constant pressure system eliminates false reading due to difference between operators
- + Ball shaped indenter prevents damage to bobbins
- + Working face slightly curved to fit on small bobbins
- + Special flat bottom versions for bobbins with diameters over 400 mm, such as warp beams
- + Also available with optional accessory memory pointer (Code M)

The principle used to measure textile hardness is based on measuring the resistance force of the penetration of a ball against the spool under a known spring load. The measuring principle is the same as for the ShoreA hardness test.



Specifications

	Model HP-2.5	Model HP-5	Model HP-10	Model HP-2.5-F	Model HP-5-F	Model HP-10-F
Indentor:	Ball 2.5 mm Ø	Ball 5 mm Ø	Ball 10 mm Ø	Ball 2.5 mm Ø	Ball 5 mm Ø	Ball 10 mm Ø
Area applications:	for closely wound bobbins of synthetic, finished fibers and filaments	for loosely wound bobbins of synthetic fibers and closely wound natural fibers, yarns and threads	for very loosely wound bobbins of thick yarns, such as carpet yarns	with flat working face for measuring warp beams Same as Model HP 2.5, but for bobbin diameters over 400 mm		
Depth of indentation*:	0 - 2.5 mm	0 - 2.5 mm	0 - 2.5 mm	0 - 2.5 mm	0 - 2.5 mm	0 - 2.5 mm
Test pressure**:	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N	approx. 12.5 N
Measuring spring force*:	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N	0.55 - 8.065 N
Display range:	0 - 100 hardness graduation marks			0 - 100 hardness graduation marks		
Scale diameter:	51 mm	51 mm	51 mm	51 mm	51 mm	51 mm
Working face radius:	55 mm	55 mm	55 mm			
Working face flat:				45 mm Ø	45 mm Ø	45 mm Ø
Weight, net (gross):	approx. 300 g (500 g)			approx. 300 g (500 g)		
Dimensions:	50 x 58 x 110 mm (LxWxH)			50 x 58 x 110 mm (LxWxH)		

* Meets requirements of Shore A ** Spring load of outer ring to create constant pressure when outer ring is pulled down to red marking

Subject to change without notice.



These cutters are recommended for determination of weight per unit area

Sample Cutters

Model 240 and Model 230

The cutters are designed to precisely cut samples out of various materials, such as woven, non-woven and knitted fabric, carpet, film or paper.

Standard features:

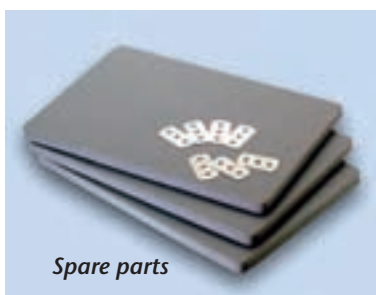
- Easy to use
- Rugged design
- 4 High quality blades for precision cut

Delivery includes:

Cutter with one cutting board and 4 spare blades

Procedure:

The material to be cut is placed under the cutter between the cutting board and the cutter. While holding the cutter with one hand, apply pressure to the handle and rotate it by at least 90°.



Spare parts



Models 240/100, 230/50 and 230/10 with sample cut-outs and cutting board

Specifications	Model 240/100	230/100	230/140	230/103	230/50	230/38	230/10
Cutting thickness:	max. 3 mm	max. 10 mm	max. 5 mm	max. 5 mm	max. 5 mm	max. 5 mm	max. 5 mm
Sample cutout:	100 cm ²	100 cm ²	154 cm ²	1/100 yd ²	50 cm ²	12 cm ²	10 cm ²
Sample diameter:	113 mm	113 mm	140 mm	103 mm	80 mm	38 mm	36 mm
Weight net:	2200 g	1500 g	2000 g	1400 g	1100 g	750 g	750 g
Weight gross:	2800 g	2100 g	2600 g	2100 g	1700 g	1400 g	1400 g
Dimensions Ø:	165 mm	151 mm	175 mm	138 mm	118 mm	85 mm	80 mm
Dimensions H:	115 mm	103 mm	110 mm	110 mm	110 mm	113 mm	113 mm

For ordering spare parts:

Blades (100 pcs.):	60001M	60002M (20 pcs.)	60001M	60001M	60001M	60007M	60007M
Rubber cutting boards:	1 or 10 pcs.	1 or 10 pcs.	1 or 10 pcs.	1 or 10 pcs.	1 or 10 pcs.	1 or 10 pcs.	1 or 10 pcs.

Area Weight Balance

Model ARR-300

Required to determine the weight per unit area of textile material to maintain production specifications or to determine material costs etc.

Standard features:

- 2 Measuring modes:
 - g/m² for fabric, paper or similar materials
 - g to determine weight
- Supplied with calibration weight for recalibration
- Integrated, rechargeable battery
- AC Adapter for recharging and/or mains operation

Specifications Model ARR-300

Capacity:	30000 g/m ² Area weight mode 300 g Weight mode
Resolution:	1 g Area weight mode (g/m ²) 0.01 g Weight mode
Sample size:	100 cm ²
Power supply:	Accumulator (12 h continuous use, recharging time 12 h) and/or AC adapter* (DC 9V – 500 mA)
Platform size Ø:	120 mm
Temperature range:	10 - 45 °C
Weight, net (gross):	approx. 1700 g (2700 g)
Dimensions:	200 x 220 x 60 mm (L x W x H)

Delivery includes: Balance, AC adapter and Calibration weight

* Standard 230V
(Should you require 115V, please indicate in your order)



Model ARR-300 with sample cutout and calibration weight

Rechargeable battery operated

Textile Moisture Meter

Model TEM-I

For determination the residual moisture content of yarn bobbins, fabric rolls, filaments, fiber flocks etc.

Special features:

- + Easy to use for many applications
- + Multiple scale for direct readings for wool, rayon and cotton and 0 - 100 scale for comparison tables used for other materials
- + Portable, battery-operated
- + Compact housing supplied in leather carrying case

Measuring principle:

The moisture content is determined by measuring the electrical conductivity of the material which always is proportional to the content of moisture.

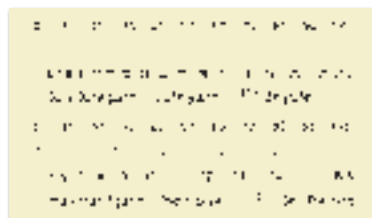


Direct readings for wool, rayon and cotton, and 0 - 100 scale for comparison tables

Textile special



Model TEM-I



Comparison tables for 36 fiber types

Various interchangeable electrodes are available for use in a wide variety of applications:

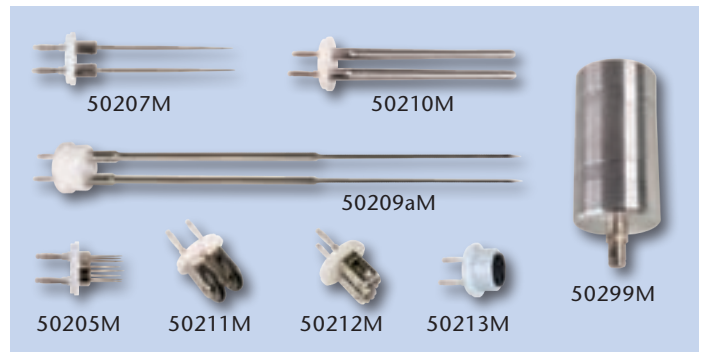
- 50205M: Needle electrode for yarns in cops, cross-wound bobbins and hanks (needle length 25 mm)
- 50207M: same as 205 but with needle length 100 mm
- 50209aM: Stab electrode for textiles in sacks and rolls (needle length 325 mm)
- 50210M: Knife electrode for fabric rolls (knife length 110 mm)
- 50211M: Roller electrode for running webs of fabric (roller 27 mmØ)
- 50212M: Continuous run electrode for yarn hanks and single filaments (roller 16 mmØ)
- 50213M: Surface electrode for fabrics (surface 23 mmØ)
- 50299M: Electrode for calibration

Specifications

Model TEM-I

Measuring ranges:	Wool: 8 to 24.5% moisture content Rayon: 3 to 23% moisture content Cotton: 2 to 12% moisture content Comparison measurement: 0-100 scale
Battery:	9V E-block
Weight instrument:	approx. 400 g, net
Weight total set:	approx. 1200 g, net
Dimensions:	200 x 250 x 70 mm (LxWxH)

- Delivery includes:**
- Instrument with leather carrying case
 - 1 Connecting cable
 - 1 Electrode holder with electrodes 50205M and 50207M
 - 1 Operating manual with comparison tables



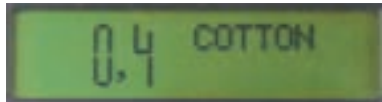
Textile special

Model DHT-2

Multi functional instrument to determine the residual moisture of yarn bobbins, fabric rolls, filaments, cotton bales, fiber flocks as well as to measure room temperature and humidity RH %

Special features:

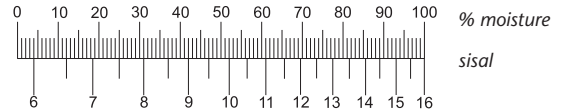
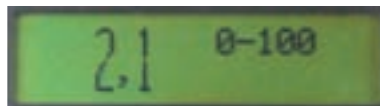
+ Digital display for direct moisture percentage reading of 10 materials and 10 often used material mixtures (50 PES/50 Zw, 50 PES/50 PAC, 50 PES/50 Bw, 67 PES/33 Bw, 70 PES/30 Zw, 70 PES/30 Wo, 67 PAC/33 BW, 70 PAC/30 Wo, 60 Bw/40 PES, 50 Wo/50Zw)



+ Scale with 0 - 100 for non stored materials; with the help of supplied comparison tables the moisture of additional 20 materials can be determined

+ Portable, battery operated

Digital display with 0 - 100 scale for comparison tables for 20 often used materials mixtures



Specifications

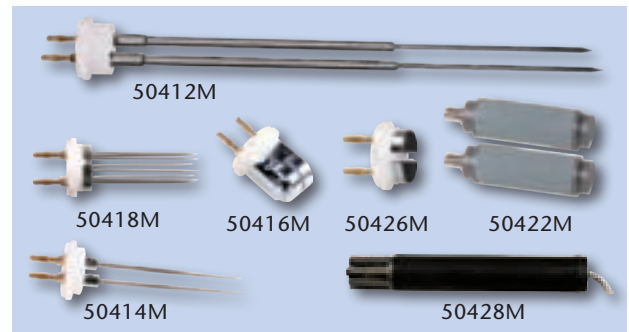
Model DHT-2

Applications	Direct reading: wool, rayon, cotton, linen, nylon, acrylic, polyester, hemp, jute, paper and 10 material mixtures
Residual moisture:	0-100 scale: 20 conversion sheets for different materials
Room temperature:	-30° to 70° Celsius (optional) with 50428M
RH %:	5% to 95% RH% (optional) with 50428M
Display:	LCD, resolution 0.1
Measuring accuracy:	1% full scale
Power supply:	Battery 9VEBlock, low battery signal
Weight net (gross):	600g (1300g)
Dimensions:	170 x 250 x 65 mm (LxWxH)

- Delivery includes:**
- Instrument with leather carrying case
 - 1 Connecting cable
 - 1 Electrode holder with 2 electrodes:
 - 50414M and 50418M
 - 1 Operating manual with comparison tables

Various interchangeable electrodes are available for use in a wide variety of applications:

- 50414M: 2 Needles, 100 mm long
- 50418M: 8 Needles, 80 mm long
- 50412M: Stab electrode for sacks and rolls, 300 mm long
- 50416M: Roller electrode for running fabrics and webs
- 50428M: Thermo-hygrometric probe to measure temperature and RH %
- 50422M: 2 Calibration electrodes with constant values
- 50426M: Surface electrode for fabrics (surface 30 mm Ø)





Stiffness Tester - Softometer

Series KWS

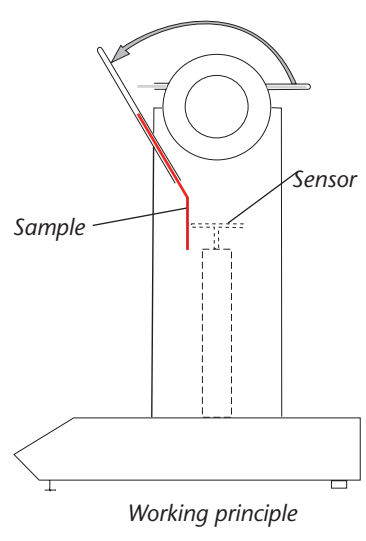
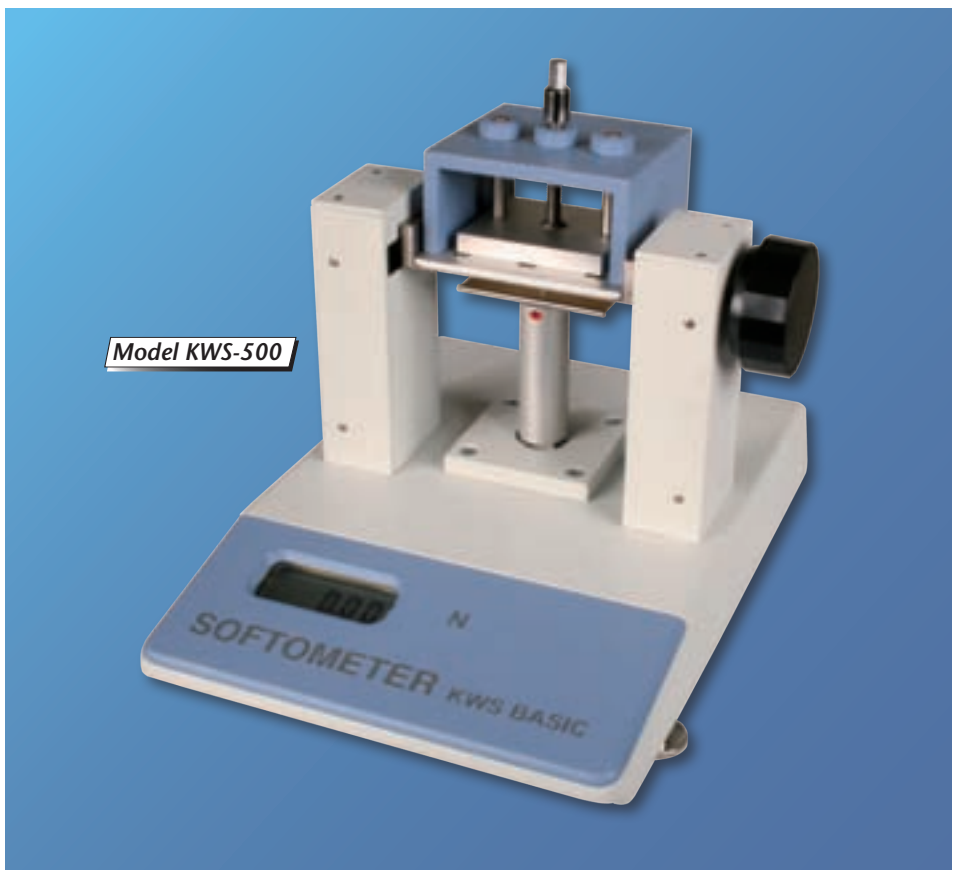
To determine the suppleness and stiffness of fabric, fleece, plastic, leather, paper and other limp materials

Special features:

- + High repeatability of test results through
 - Elimination of subjective influence by the operator
 - Precisely defined test conditions
 - Electronic timing of the test procedure
- + 2 operating modes
 - Display of measurement result after 10 sec.
 - Instant display of actual values, which change over time with testing materials with relaxation ability
- + Rotable test table, 30° bending radius
- + Recommended sample size:
 - Max. width 60 mm,
 - Max. length 75 mm
 - Max. thickness 5 mm

Operation:

A test sample of defined size and thickness is clamped onto the test table. The test table is tilted by 30° into the test position, thereby bending the sample. The sample presses against the force sensor and the measured force is displayed in newtons and millinewton.



Available Models	Range	Resolution
KWS-500	0 - 500 mN	0.5 mN
KWS-2000	0 - 2000 mN	1 mN
KWS-20K	0 - 20 N	10 mN

Specifications	Series KWS
Unit of Measure:	mN (0.001N)
Sample bending angle:	max. 30°
Sample dimensions:	max. width 60 mm, max. length 75 mm, max. thickness 5 mm
Display:	digital, LCD, 13 mm
Operating modes:	actual value display or display after 10 sec, user-selectable
Interface:	RS 232C (8, 1, N, 9600)
Temperature range:	5 - 45°C
Air humidity:	85% RH, max.
Power supply:	AC adapter 230 VAC, 50 Hz
Weight net (gross):	approx. 2.4 kg (approx. 4 kg)
Dimensions:	280 mm x 180 mm x 225 mm (LxWxH)

Subject to change without notice.



Elongation Tester

Series EFT

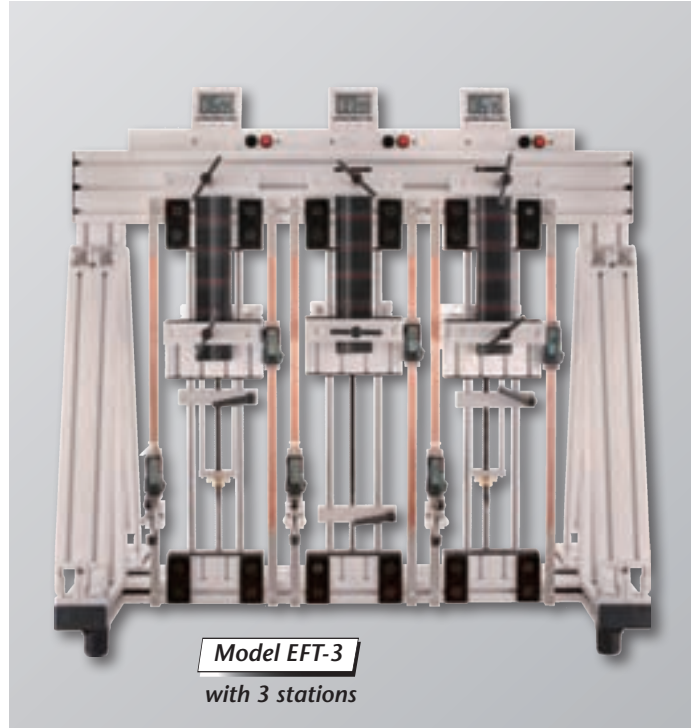
for measuring static and permanent elongation of fabrics

Special features:

- + 3 different designs with 1, 3 or 6 test stations
- + Rugged warp resistant aluminium frame
- + Recommended size of the test specimen: 5 x 60 mm (non metal fabrics)
- + Capacity 25, 50, 75, 100 or 125 N
- + Max. test periode 99 minutes
- + Elongation force tester with 0.01 mm resolution
- + Accuracy at max. elongation is 0.4 mm
- + According VW standard PV3909

Test procedure:

Adjust the measuring force. Fix the test specimen, e. g. 50 x 160 mm, between the two clamps. Determine the length exactly by using the length measuring system and mark this initial value. Activate the timer. Read the static elongation at the end of the test period. Determine the permanent elongation after the adjusted balancing time.



Leak Detector

Model LDT-1

Reduces the operating costs of compressed air-systems

Convenient for locating leakages in compressed air-systems, pneumatic systems, valves, fittings, steam pipe lines, oxygen sockets in hospitals as well as checking internal sealing of e. g. cockpits, pressure chambers etc.

Special features:

- + For leakages with diameter more than 0.1 mm and 1 bar
- + Signal indication over headset and LED indicator
- + Longer probes and a ultrasonic parabolic reflector optional available
- + For checking cabins ultrasonic transmitter optional available



Specifications

Model LDT-1

Display:	LED and acustical
Power supply:	9 V battery, E-block
Housing material:	Plastic (ABS)
Dimensions:	180 x 90 x 70 mm (LxWxH)
Weight, net (gross):	Instrument with probe 250 g head phone 220 g (1800 g)

Functions:

Flowing gas from a leakage is a typical source of non-audible ultrasonic sound with defined frequency. LDT-1 converts this source into a audible signal and displays the signal level on a LED optically.

Version: ZE8/2015

SCHMIDT
control instruments

Language 

**SCHMIDT offers the worldwide
largest selection
of Tension Meters**

 made
in
Germany



Request for our special colored catalog!

MORE THAN
60
YEARS

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

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

Phone:
int. + 49 (0) 86 38 / 9410-0

Fax:
int. + 49 (0) 86 38 / 4825

e-mail:
info@hans-schmidt.com

Internet:
www.hans-schmidt.com