

Tachometer

SCHMIDT
control instruments



Edition DT 03.1.E

DT Series

Model DT-105A
DT-107A

Instruction Manual

Valid as of: 01.02.2007 • Please keep the manual for future reference!



DT-105A



DT-107A



SCHMIDT · ALL OVER THE TECHNICAL WORLD



Mitglied
Member

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1 Warranty and liability

In principle, the supply of the device is subject to our “General Conditions of Sale and Delivery.” These have been provided to the operating company on conclusion of the contract, at the latest.

Warranty:

- Tachometers are warranted for 12 months.

Parts subject to wear, electronic components and measuring springs are not covered by the warranty. No warranty or liability will be accepted for bodily injury or property damage resulting from one or several of the following causes:

- Misuse or abuse of the device.
- Improper mounting, commissioning, operation and maintenance of the device (e.g. verification interval).
- Operation of the device if any safeguards are defective or if any safety and protection precautions are not properly installed or not operative.
- Failure to comply with the notices in the instruction manual regarding transport, storage, mounting, commissioning, operation, maintenance and setup of the device.
- Any unauthorized structural alteration of the device.
- Insufficient inspection of device components that are subject to wear.
- Opening the device or improper repair work.
- Disasters caused by the effects of foreign objects or by force majeure.

1.1 Notices within the instruction manual

The fundamental prerequisite for the safe handling of this device and its troublefree operation is the knowledge of the basic safety notices and safety instructions.

This instruction manual contains the most important notices for the safe operation of the device.

This instruction manual, in particular the safety notices, must be observed by any person who works with the device. In addition, the local valid rules and regulations for the prevention of accidents must be complied with.

The representations within the instruction manual are not true to scale.

The dimensions given are not binding.

General indications of direction, such as FRONT, REAR, RIGHT, LEFT apply when viewing the front of the device.

1.2 Responsibilities of the operating company

In compliance with the EC Directive 89/655/EEC, the operating company agrees to only permit persons to work with the device who:

- are familiar with the basic regulations on industrial safety and accident prevention and who have been trained in handling the device.
- have read and understood the chapter on safety and the warning notices in these instruction manual and have confirmed this with their signatures.
- are examined regularly on their safe and conscientious working method.

1.3 Responsibilities of the personnel

All persons who work with the device agree to perform the following duties before starting work:

- to observe the basic regulations on industrial safety and accident prevention.
- to read the chapter on safety and the warning notices in these instruction manual and to confirm with their signatures that they have understood them.

1.4 Informal safety measures

The instruction manual must always be kept on hand where the device is operated. Apart from the instruction manual, the general and local valid regulations on accident prevention and environmental protection must be provided and complied with.

1.5 Training of the personnel

Only trained and instructed personnel is permitted to work with the device. The responsibilities of the personnel must be clearly defined for mounting, commissioning, operation, setup, maintenance, and repair. Trainees may only work with the device under the supervision of experienced personnel.

1.6 Intended use

The device is intended exclusively for measuring rotation speeds and surface speeds. Any other use or any use exceeding this intention will be regarded as misuse. Under no circumstances shall Hans Schmidt & Co GmbH be held liable for damage resulting from misuse.

The intended use also includes:

- Complying with all notices included in the instruction manual and observing all inspection and maintenance works.

1.7 Dangers in handling the device

The device was designed according to the state of the art and the approved safety standards. Nevertheless, its use may cause serious or fatal injury to the user or third persons, and/or an impairment of the device or of other material assets.

The device may only be applied:

- For its intended use in a faultless condition with regard to the safety requirements.
- Malfunctions that could impair safety must be remedied immediately.
- Personal protective equipment must be used according to the EC Directive 89/686/EEC.



The device must not be operated in potentially explosive areas and must not come into contact with aggressive substances.

1.8 Copyright

The copyright on these instruction manual remains with the company Hans Schmidt & Co GmbH.

These instruction manual is intended for the operating company and its personnel only. They contain instructions and notices that may only be reproduced on the prior written permission of Hans Schmidt & Co GmbH and under indication of the complete reference data. Violations will be prosecuted.

1.9 EU declaration of conformity and WEEE registration

In compliance with the EU Directive 2014/30/EU



Hans Schmidt & Co GmbH is registered in compliance with the German Electrical and Electronic Equipment Act (ElektroG).

2 Specifications

Model DT-105A and DT-107A

Display ranges:	see page 5
Accuracy:	see page 5
Measuring units:	Rotation speed: rpm, rph Total revolutions (rev counter): rev Surface speed: m/min, m/h, f/min, f/h, y/min, y/h, i/min, M/h cm, m, i, ft, yrd
Display:	Length: DT-105A: 5 digit (12 mm) high LCD DT-107A: 5 digit (10 mm) high LED
with floating point system	
Meas. frequency:	60 measurements/sec
Update time:	1 sec
Detection:	Optical coupler
Over range indicator:	Flashing numerals
System control:	C-MOS microprocessor
Memory system:	13 readings (incl. MIN + MAX + last reading) retained for 5 min Auto power off: DT-105A: after 5 min of non-use DT-107A: after 10 sec of non-use
Low voltage indicator:	DT-105A: Flashing "LO BAT" display DT-107A: Flashing "B" display
Power supply:	DT-105A: 2 x AA 1.5 V, life: approx. 65 h continuous use DT-107A: 2 x AA 1.5 V, life: approx. 40 h continuous use
Temperature range:	5° - 45°C
Air humidity:	85 % RH max.
Dimensions:	180 x 60 x 47 mm (L x W x H)
Housing:	Die-cast aluminum
Weight: net (gross):	Approx. 350 g (800 g)

2.1 Range and accuracy

Model DT-105A and DT-107A

Revolutions		Range	Accuracy	Display
				(only DT105-A)
rpm	(rev/min)	0.1 - 25000 rpm		RPM
		0 - 999.9	± 0.1 rpm, ± 1 Digit	
		1000 - 9999.9	± 1 rpm, ± 1 Digit	
		10000 - 25000	± 0.01 % of reading, ± 1 Digit	
rph	(rev/h)	6 - 9999.9	± 0.1 rpm, ± 0.1 Digit	R/H
			oder ± 6 U/h	
rev	(total number of revolutions)	0.1 - 9999.9	± 0.1 % of reading, ± 1 Digit	REV
		10000 - 99999	± 1 rev, ± 0.1 Digit	
Surface speed				
Meters: m		Range		
m/min	(meters/min)	0.02 - 3810.0		m/M
m/h	(meters/h)	0.9 - 99999		m/H
Inches: in		Range		
i/min	(inch/min)	0.6 - 99999		I/M
Feet: ft		Range		
f/min	(feet/min)	0.05 - 12500		F/M
f/h	(feet/h)	3 - 99999		F/H
Yards: yd		Range		
y/min	(yards/min)	0.02 - 4167.0		Y/M
y/h	(yards/h)	1.0 - 99999		Y/H
Miles: mil		Range		
M/h	(Miles/h)	0.0006 - 142.05		M/H
Length				
		Range		
cm	(length)	0.5 - 9999.5		CM
m	(length)	0.005 - 99999		m
i	(length)	0.1 - 9999.9		IN
f	(length)	0.01 - 99999		FT
y	(length)	0.005 - 9999.9		yRD

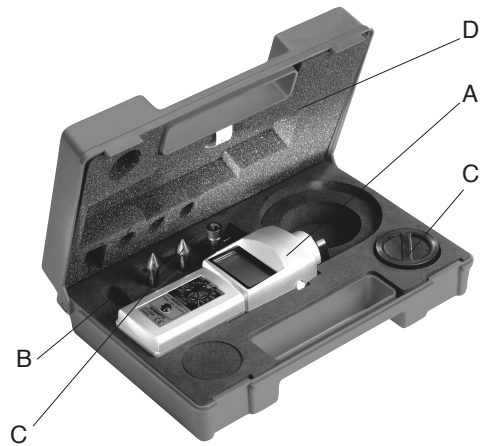
1 When using the 6" measuring wheel, accuracy can be affected as much as 0.4% of reading.

2.2 Delivery includes

- A. Tachometer
- B. 2 batteries size AA 1.5 V
- C. Accessories
 - 2 cone tip adapters
 - 1 funnel tip adapter
 - 1 shaft extension
 - 1 measuring wheel (6" circum-ference)
- D. 1 operating instructions
- 1 manufacturer's calibration report

Special accessories:

Grooved measuring wheel with 6" circumference



2.3 Unpacking

Unpack the tachometer and inspect it for any shipping damage. Notices of defect must be filed immediately, at the latest within 10 days on receipt of the goods.

3 Measuring

3.1 Notices before starting measurement



Have you read and understood the Operating Instructions, in particular chapter 1 “Warranty and liability” ?

You are not permitted to operate the device before doing so.

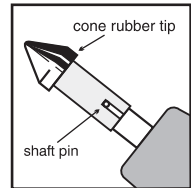
Do not operate or store instrument in the following places: explosive areas; near water, oil, dust, or chemicals; areas where temperature is higher than 40°C.

- **When using the 6” measuring wheel, accuracy can be affected as much as 0.4% of the reading.**

- **Although the tachometer itself is able to achieve the above ranges, the measuring wheel has a maximum speed limitation of 1500 m/min (5,000 FPM) for safety reasons.**

RPM measuring

The DT-105A and DT-107A hand-held digital tachometers are designed to accurately measure rotation speeds, surface speeds and length.

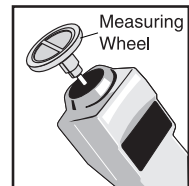


RPM measurement

When measuring RPM, the user will mount the cone tip adapter or funnel tip adapter to the end of the shaft and place in contact with the center of the rotating machine part.

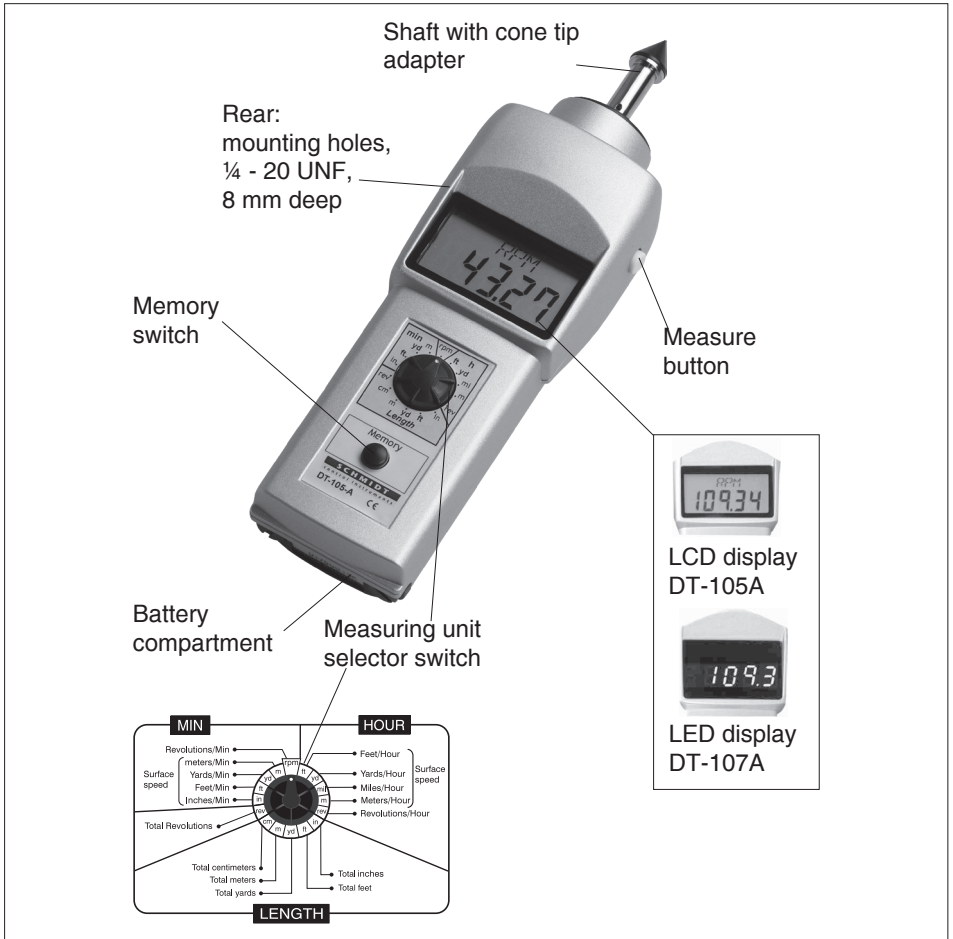
Surface speed and length measurement

When measuring surface speed or length, the measuring wheel with 6” circumference (approx. 48 mm diameter) is fitted to the end of the shaft and placed in contact with the moving surface.



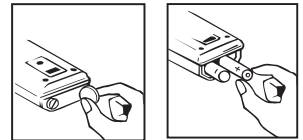
Surface speed and length measurement

3.2 Operating elements



3.2.1 Battery replacement

Low battery voltage is indicated by flashing “LO BAT” (DT-107A “B”) on the display. Remove the end cover by using a coin or appropriate screwdriver and replace both batteries. Please ensure proper polarity. Close the battery compartment again.

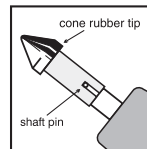


1 Used batteries must be disposed of in compliance with local regulations. If the instrument will not be used for a longer period of time, the batteries should be removed.

3.3 Operating procedure

3.3.1 Measuring RPM

1. Select either cone tip adapter or funnel tip adapter and carefully place it on the shaft. Make sure to align the pin on the shaft with the slot on the adapter.
2. Set the measuring unit selector switch to the desired measuring unit.
3. Position the adapter carefully on the end of the rotating shaft insuring that it is positioned in the center of the shaft. Apply enough pressure to eliminate slip.
4. Press and hold the measure button. The display will show the measured rpm and the unit RPM will flash above the display digits (on DT-107A “•” will flash) for as long as the adapter is in contact with the rotating shaft.
5. To capture the last reading, release the measure button before removing the tachometer from the rotating shaft. After release of the measure button, the RPM unit will stop flashing and the last reading will be displayed for approx. 5 minutes (DT-107A: 10 seconds; chapter 3.4). The tachometer will then power off automatically.



3.3.2 Counting total revolutions

1. Select either cone tip adapter or funnel tip adapter and carefully place it on the shaft. Make sure to align the pin on the shaft with the slot on the adapter.
2. Set the measuring unit selector switch to “rev” (total revolutions).
3. Position the adapter carefully on the end of the rotating shaft insuring that it is positioned in the center of the shaft. Apply enough pressure to eliminate slip.
4. Press and hold the measure button. The display will show the number of revolutions and the unit REV will flash above the display digits (on DT-107A “•” will flash) for as long as the adapter is in contact with the rotating shaft.
5. To capture the total number of revolutions, release the measure button before removing the tachometer from the rotating shaft. After release of the measure button, the REV unit will stop flashing and the measured value will be displayed for approx. 5 minutes (DT-107A: 10 seconds; chapter 3.3). The tachometer will then power off automatically.

3.3.3 Measuring surface speed and length

1. Select the 6” measuring wheel and set the measuring unit selector switch to the desired measuring unit.
2. Press and hold the measure button. The display will show the measured value and the applicable unit will flash above the display digits (on DT-107A “•” will flash).
3. To capture the last reading, release the measure button before removing the tachometer from the moving surface. After release of the measure button, the measuring unit will stop flashing and the last reading will be displayed for approx. 5 minutes (DT-107A: 10 seconds; chapter 3.3). The tachometer will then power off automatically.



3.4 Built-in memory system

The following data are automatically stored in memory for 5 minutes after release of the measure button:

- Last reading
- MAX reading
- MIN reading

Up to ten separate readings can additionally be stored by pressing the

10 memory switch momentarily when the desired reading appears on the display.

3.4.1 Memory recall

The stored readings can be recalled in the following order by pressing the memory switch:



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- for the 1st time: display shows last reading



DT-105A



DT-107A

- for the 2nd time: display shows MAX reading



DT-105A



DT-107A

- for the 3rd time: display shows MIN reading



DT-105A

- for the 4th to 13th time: display shows 1th to 10th stored reading



a



b

On the DT-107A model:

a. the memory location number and

b. the stored value

will alternately flash on the display.

3.4.2 Clearing the memory

To erase all stored readings, press and hold the memory switch for approx. 6 seconds until the display shows CCCCC, then release the memory switch.

4 Service and maintenance

The tension meter is easy to maintain.

5 Cleaning

For cleaning the unit, do not use any



AGGRESSIVE SOLVENTS

such as trichloroethylene or similar chemicals.



NO WARRANTY OR LIABILITY

shall be accepted for damage resulting from improper cleaning.

6 Correspondence

Should you have any questions regarding the instrument or Operating Instructions, or their use, please indicate above all the following details which are given on the ID plate:

- 1) Model
- 2) Serial number

Service address:

**Hans Schmidt & Co GmbH
Schichtstr. 16
D-84478 Waldkraiburg
Germany**

7 Repairs

Shipping instructions:

We kindly ask for return free of charge for us, if possible by airmail parcel. All occurring charges, if any (such as freight, customs clearance, duty etc.), will be billed to customer.

For return from foreign countries, we ask you to include a proforma invoice with a low value for customs clearance only, e.g. 50 Euro, each and to advise the shipment in advance by fax or eMail.



To avoid unnecessary follow-up questions, and the resulting loss of time or possible misunderstandings, please return the instrument with a detailed fault description to our service department. Please indicate in your order whether you require an calibration certificate with calibration report.

More than 75 years - Worldwide -

Hans Schmidt & Co GmbH

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