Tachometer

PH Series

Model PH-200L
PH-200LC

SCHMIDT
control instruments

Edition PH 03.1.E

Instruction Manual

Valid as of: 01.09.2008 • Please keep the manual for future reference!

PH-200LC

PH-200L

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
IN CONFORMITY EN 60825-08:1997
P< 1 mW λ = 670 nm

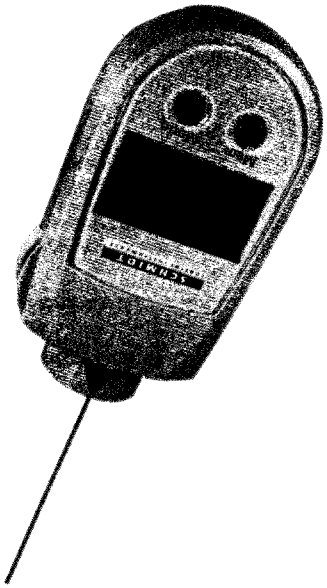
CE

VDMA
Mitglied
Member

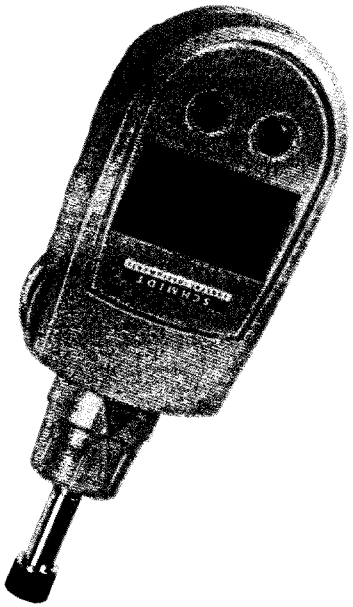
Tachometer

PH Series

Model PH-200L
PH-200LC



PH-200L



PH-200LC

Typ PH
Modellreihe PH
Tachometer

Contents

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.

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

These 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 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 potential explosive areas and must not come into contact with aggressive substances.

1.8 Copyright

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 PH-200L

Display ranges:	see page 6
Accuracy:	see page 6
Measuring units:	Rotation speed: rpm
Dimensions:	116 x 64 x 32 mm (L x W x H)
Weight net (gross):	Approx. 170 g (390 g)

MODEL PH-200LC

Display ranges:	see page 6	
Accuracy:	see page 6	
Measuring units:	Rotation speed:	rpm
	Total revolutions (rev counter).	rev
	Surface speed:	m/min, f/min, y/min, i/min;
	Length:	m, ft, yrd,
Dimensions:	150 x 64 x 32 mm (L x W x H)	
Weight net (gross):	Approx. 230 g (450 g)	

Model PH-200L and PH-200LC

Update time:	1 sec
Display:	5 digit, 12 mm high, LCD with floating point system
Laser, class 2:	Power < 1mW, Wavelength 670 nm
Measuring distance:	2 m maximum
Over range indicator:	Flashing "OVR" on the display
System control:	C-MOS microprocessor
Memory system:	14 readings (incl. MIN + MAX + average + last reading) retained for 5 min
Temperature range:	5° to 45°C
Air humidity:	85% RH max.
Auto power off:	After 5 min of non-use
Low voltage indicator:	Flashing "LO BAT" on the display
Power supply:	3 x AA 1.5 V, life: approx. 35 h continuous use
Housing:	Plastic (ABS)

2.1 Range and accuracy

Model PH-200L Non-Contact Measurement				
Revolutions		**Range**	**Accuracy**	**Display**
rpm	(rev/min)	6.0 - 599.0	± 1 rpm, ± 1 Digit	RPM
		600 - 99999	± 0.01 % full scale, ± 1 Digit	
rev	(revolutions)	0.1 - 99999	± 0.01 % full scale, ± 1 Digit	REV
Model PH-200LC Non-Contact Measurement				
Revolutions		**Range**	**Accuracy**	**Display**
rpm	(rev/min)	6.0 - 599.0	± 1 rpm, ± 1 Digit	**RPM**
		600 - 25000	± 1 rpm, ± 1 Digit	
		25001 - 99999	± 0.01 % full scale, ± 1 Digit	
rev	(revolutions)	0.1 - 99999	± 0.01 % of reading, ± 1 Digit	**REV**
Type PH-200L und PH-200LC Contact Measurement				
Revolutions		**Range**	**Accuracy**	**Display**
rpm	(rev/min)	6.0 - 599.0	± 1 rpm, ± 1 Digit	RPM
		600 - 25000	± 0.01 % full scale, ± 1 Digit	
rev	(revolutions)	0.1 - 99999	± 0.01 % of reading, ± 1 Digit	REV
Surface Speed				
Meters: m		**Range**	**Accuracy**	**Display**
m/min	(meters/min)	0.11 - 3810.0		m/M
Inch: in		**Range**		
i/min	(inches/min)	36 - 99999		I/M
Feet: ft		**Range**		
f/min	(feet/min)	3.0 - 12500		F/M
Yard: yd		**Range**		
y/min	(yards/min)	1.0 - 4167.0		Y/M
Length				
		Range	**Accuracy**	**Display**
m	(length)	0.2 - 99999		m
f	(length)	0.5 - 99999		FT
y	(length)	0.2 - 99999		YRD

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

2.2 Delivery includes

PH-200LC
Tachometer
3 batteries size AA 1.5 V
Accessories
- 1 cone tip adapter
- 1 funnel tip adapter
- 35 pcs. of reflective tape
- 1 measuring wheel (6" circumference)

1 instrucion manual
1 manufacturer's calibration report

PH-200L
Tachometer
3 batteries size AA 1.5 V
Accessories
- 35 pcs. of reflective tape
- 1 instruction manual
- 1 manufacturer's calibration report

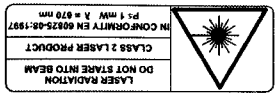
Special accessories
1 grooved measuring wheel with 6" circumference

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 Initial setup and operating procedure

3.1 Notes before starting measurement



Have you read and understood the instruction manual, in particular chapter 1 "Warranty and liability" ?

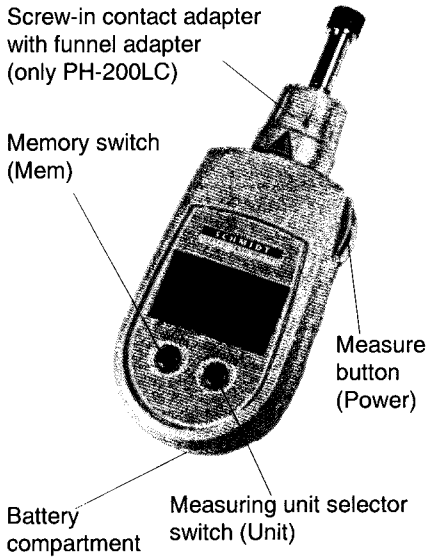
You are not permitted to operate the tension meter before doing so. Before working with the instrument you must put on your personal protective clothing, if necessary. For example, eye protectors, gloves, etc.

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.

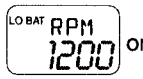
When using the 6" measuring wheel, accuracy can be affected as much as 0.4% of the reading.

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.

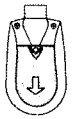
3.1.1 Operating elements



3.1.2 Battery replacement

Low battery voltage is indicated by flashing 

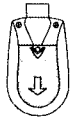
on the display.



Open the cover of the battery compartment in the direction indicated by the arrow and remove the batteries.

Insert three new batteries.
Please ensure proper polarity.

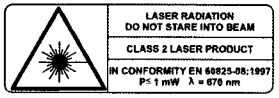
Used batteries must be disposed of in compliance with local regultions. If the instrument will not be used for a longer period of time, the batteries should be removed.

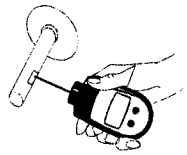


Close the battery compartment again in the opposite direction of the arrow.

3.2 Operating procedure

3.2.1 Non-contact measurement





1. Place a piece of reflective tape (included) on the shaft or rotating element to be measured.

The non-reflective area must always be larger than the reflective area. If the rotating element is highly reflective, it may be necessary to paint or tape it a darker color before applying the reflective tape in order to ensure reliable results.

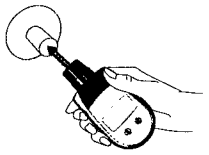
2. Set the measuring unit selector switch to the desired measuring unit.
3. Aim the tachometer at the reflective tape from a distance of 130 mm min. to 2 m max.
4. Press and hold the measure button for a few seconds.
   If the laser beam is properly aligned with the target, the display will show the speed measurements and the unit RPM will flash above the display digits.If the beam is off target, RPM will not flash. Adjust the aim.
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 (chapter 3.3). The tachometer will then power off automatically.

3.2.2 Contact measurement (only PH-200LC)

For both RPM measurements and non-RPM measurements, screw in the contact
adapter onto the front of the tachometer.

Do not use excessive torque when screwing in the adapter. Hand-tightening is sufficient.

3.2.2.1 Measuring RPM (only PH-200LC)

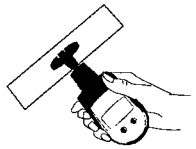


1. Select either cone tip adapter or funnel tip adapter and carefully place it on the shaft of the contact adapter. Make sure to align the pin on the shaft with the slot on the cone tip or funnel tip adapter.
2. Set the measuring unit selector Switch to the desired measuring unit.
3. Position the cone tip or funnel tip adapter carefully on the end of the rotating shaft insuring that it is positioned in the center of the rotating 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 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 (chapter 3.3).
   The tachometer will then power off automatically.

3.2.2.2 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 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 (chapter 3.3).
   The tachometer will then power off automatically.

3.2.2.3 Measuring surface speed and length (only PH-200LC)



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.
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 (chapter 3.3).
   The tachometer will then power off automatically.

• When the selector switch of the PH-200LC is moved from RPM measurement to surface speed or length measurement, the display will show the unit RPM and also 5 dashes (-----). Press the measure button to cancel the dashes.

3.3 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
AVE (average) value of all stored measurements
Up to ten separate readings can additionally be stored by pressing the memory switch momentarily when the desired reading appears on the display.

3.3.1 Memory recall

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

- for the 1st time: display shows last reading 
- for the 2nd time: display shows MAX reading 
- for the 3rd time: display shows MIN reading 
- for the 4th to 13th time:

  Display shows 1st to 

  10th stored readings 
- for the 14th time:
  (or after display of the last stored reading if not all 10 memory locations are used)

  Display shows the average of all measurements 

3.3.2 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.

3.4 Troubleshooting

Inaccurate measurement results:

- If the surface being measured is highly reflective, it may need to be painted or taped a darker color in order to ensure reliable results.
- The laser beam may not be hitting the reflective tape, or the reflective area may be too small.
- The measuring distance may be too short (unit must be at least 6" (130 mm) from intended mark).

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 instruction manual, 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.

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More than 75 years - Worldwide -

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