

User's Manual

RIHM

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1 General

1.1 Use

The RIHM is a precision instrument. The maximum tensile strain amounts to 300 N.

Forces over 300 N may cause permanent damage to the sensor.

The maximum angle of the flexible joint is 15 degrees!

If the angle is larger than the connection allows, it can be damaged and may finally break.

1.2 Loading the battery

The internal battery of the RIHM is charged by connecting it to the adaptor supplied, by means of a USB cable or by means of the USB-cable of a connected computer. Note that three plugs are provided for use between 110 and 220 Volt.

The RIHM can work from 5 up to 8 hours on a completely charged battery.

Recharging an empty battery will take approx. 10 hours. While recharging the RIHM cannot be used.

Please, note! *Do not use any other charger than the 5 Volt USB charger supplied, or a standard computer USB slot.*

1.3 Calibrating

Before it is used the device must be calibrated.

For an explanation see the calibrating function, - 3.6.4. -.

2. Information

2.1 Measuring method

During a set time (the measuring time) the RIHM will determine the maximum pulling force applied to the sensor. Together with the electronic circuit the sensor will deliver a voltage that is directly proportional to the pulling force applied.

The measured force is shown on the display in the SI unit [N. Newton], which is the maximum value out of a number of measurements.

The sample time can be extended. See 3.6.1 -

3. Operation

3.1 Concise instructions

Switching on : press key (S3) for 2 seconds

Display shows : P.XX YYY.YN-

The measurement is started with : key (S1)

Display shows : -MEM P.XX ZEROING-

Switching off : press key (S3) for 2 seconds

MEM P = memory position

XX = any number between 1 and 99

YYY.Y = measured value.

As long as the message -ZEROING- is shown, no pulling force must be applied.

However, this message is shown very briefly (approx. 0.5 second).

The measurement will start as soon as -MEM P.XX YYY.YN- appears.

As long as the value -YYY.YN- is blinking, the measurement is active.

The measurement automatically stops after 30 sec. (adjustable: see 3.61.)

The display shows: MEM P.XX- -YYY.YN-

While -YYY.YN- is not blinking anymore it shows the measured value. ??

The measurement can be interrupted with key (S2).

Tip: If the message - MEM P.XX- does not appear, press (S1) repeatedly, until - MEM P.XX- appears.

3.2 On/Off

By pressing key (S3) for 2 seconds, the RIHM can be switched on or off. The RIHM is off, when no characters appear on the screen. The RIHM will switch off automatically, if after some minutes no key has been touched (adjustable: see 3.6.3.).

3.3 Measuring memory

After the switch-on the RIHM will start in the measuring memory mode.

This mode shows the last 99 measurements that have been carried out.

A measurement is shown on the display as: MEM P.XX- -YYY.YN-

With the aid of (S2) and (S3) the value at one of the 99 memory locations can be examined.

3.4 Starting the measurements

Please note: To obtain an accurate measurement the RIHM must be calibrated.

By briefly pressing (S1) a measurement is started. The RIHM must be in the measuring

memory mode. Before the measurement begins, the zero point of the traction sensor is determined. -MEM P.XX. -ZEROING.

Please note: *It is important not to apply any pulling force to the RIHM during this phase, since this will cause a wrongly set zero point.*

During the measurement the display will show:

-MEM P.XX- YYY.Y N -. -YYY.Y N- will blink as long as the measurement is active.

This will indicate the current highest measured force.

The measurement can be stopped manually by briefly pressing (S2) or (S3).

The measurement is started again by pressing (S1).

The duration of the measurement and the length of time during which the maximum force is calculated can be adjusted in the Settings menu. (see 3.5)

3.4.1 Carrying out one single measurement

Use (S2) or (S3) to select a memory location. In this example memory location 20 has been chosen. Briefly press the start key (S1). After the zero point has been determined, the display will show:

-MEM P.20- - 000.0 N- As long as the measured value is blinking the measurement is active.

Carry out the measurement. The measurement is stored at P(osition) 20.

3.4.2 Carrying out a series of measurements

Use (S2) or (S3) to select a memory location.

In this example memory location 20 has been chosen as a starting point.

Press the start key (S1). After the zero point has been determined, there appears: MEM P.20- - 000.0 N- As long as the measured value is blinking the measurement is active.

Carry out the measurement.

Press the start key (S1). After the zero point has been determined, there appears: P.21- - 000.0 N- Carry out the following measurement.

Press the start key (S1). After the zero point has been determined, there appears: P.22- - 000.0 N- Carry out the following measurement etc. etc.

The measurements have been stored at respectively P(ositions) 20, 21 and 22.

3.5 Settings menu

The settings menu is activated by pressing (S1) for 2 seconds. If the message -MENU- -SETTINGS- is shown, the settings menu is activated. After 1 (one) second the first setting is shown.

The following settings are possible:

1. Erasing measuring memory

2. Adjusting the contrast

By briefly pressing (S1) the settings can be run through.

After the last setting the RIHM will return automatically to the measuring memory mode.

3.5.1 Erasing the measuring memory

Erases all stored measurements from the memory. -ERASE- -PRESS > -

Briefly press (S3), there appears -CONFIRM- -PRESS < -

Press (S2) to erase the memory, there appears -ERASE IN- -PROGRESS-

After the erasing process the RIHM will return to the measuring memory mode.

3.5.2 Adjusting the display screen contrast.

If the characters on the screen are vague, or the background is too dark, a better picture can be obtained with the aid of the contrast adjustment, the display will show

-CONTRASTS- - -  -

Use the keys (S2) and (S3) to change the contrast.

3.6 Advanced settings menu.

Please note: You must first activate the settings menu.

First press (S1) for 2 seconds.

The "advanced settings menu" is then reached by pressing (S1) and (S3) simultaneously for 2 seconds.

If the message - ADVANCED- -MENU- is shown, the settings menu is activated.

After 1 (one) second the first setting is shown.

The following settings are possible:

1. Sample time
2. Measuring time
3. Automatic switch-off time
4. Calibrating

3.6.1 Sample time

The sample time can be set from 1 up to 100, in steps of 1ms (1ms = 1/1000 sec.).

Use the keys (S2) or (S3) to extend or reduce the sample time -SAMPLE T- -010 MSEC-

3.6.2 Measuring time

The measuring time is the maximum duration of the measurement, which default is 20

sec. After this time has passed, the measurement will be terminated automatically.

-RUN T- -20 SEC- Use key (S2) or (S3) to extend or reduce, the measuring time.

3.6.3 Automatic switch-off time

This is the length of time after which the RIHM is switched off, if no keys are pressed. -

PWROFF T- -3 MIN-

Use the keys (S2) and (S3) to extend or reduce the time.

3.6.4 Calibrating

With this function you calibrate the RIHM. -CALIB- -PRESS >-

Press (S3) to continue -0 N- -PRESS >-

Make sure no force is applied to the RIHM and press (S3).

With this the zero point is determined.

Now apply a weight of 10 KG to the RIHM and press (S3). If you receive the message:

-CALIB OK- -XXX/YYY- then the calibration has been successful (-XXX- stands for maximum -YYY- for minimum) .

If you receive the message -CALIB- -ERROR- the calibration has failed and the calibration must be carried out again.

4. Installing the Windows driver

4.1 General

After the RIHM has been connected the "Found New Hardware" or "Add New Hardware" wizard will be shown in Windows 98, 2000 en XP.

If you are not familiar with this wizard, we recommend you have the driver installed by a computer (network) manager.

4.2 Installation

Follow the wizard procedure for the found hardware. As soon as a driver is asked for, you can enter the path to the folder / driver of the installation CD supplied.