Operating Manual – TM40
Table of Contents

Introduction ............................................................................................................. 3
Features..................................................................................................................... 3
Security- and Warning Symbols ............................................................................ 4
CE Declaration of Conformity .............................................................................. 4
RoHS Declaration of Conformity .......................................................................... 4
Copyright © ........................................................................................................... 4
Disposal .................................................................................................................. 4
Maintenance / Cleaning and Storage ..................................................................... 4
Putting into Operation ......................................................................................... 5
  Acclimatisation .................................................................................................... 5
  Unboxing ............................................................................................................. 5
  Placement .......................................................................................................... 5
Connections and Functions ................................................................................... 5
  Right of the Display ............................................................................................ 5
  Left of the Display .............................................................................................. 5
Turn Device / ON-OFF ......................................................................................... 5
  Switch ON .......................................................................................................... 5
  Switch OFF ....................................................................................................... 5
  RESET ................................................................................................................ 5
Symbols and Meaning ............................................................................................ 6
  Display Top Right ............................................................................................... 6
  Display Middle ................................................................................................... 6
Module Detection after Switching ON and Module Specific Information ............. 6
Settings for Base Unit TM40 ................................................................................ 7
  Open Settings ................................................................................................... 7
  Quit Settings .................................................................................................... 7
  Set Time and Date ............................................................................................ 7
  Set language ...................................................................................................... 7
  Set Backlight .................................................................................................... 8
  Set Buzzer ......................................................................................................... 8
  Information ....................................................................................................... 8
Communication ...................................................................................................... 9
  Transfer Protocol / Coding ............................................................................... 9
Warning Messages and Errors ............................................................................. 9
Technical Data ....................................................................................................... 10
Accessories ......................................................................................................... 11
  Hard Case – TM40 ............................................................................................. 11
Introduction

Thank you for choosing a SWISS MADE high-precision pressure measurement instrument, made by HUBER Instrumente AG. In connection with a module, the TM40 is suitable for various adjustment-, verification and calibration- applications with inert or dry gases. The big battery capacity and the independent pressure conditioning will help to make your work more comfortable when using the TM40 for field applications.

The TM40 is a modular built pressure measurement instrument for low pressure ranges and consists of a base device, functioning as an input and display unit, as well as a slide in slot that’s capable of picking up four different modules. Up to four measurement modules (MM40) or two generator modules (GM40) can be used. Also a combination of MM40s and GM40s may be used. To be used for measurements, the base unit has to be equipped with minimum one module.

All entries are made on the device, via the 4.3” touchscreen display. The base unit is connected with the modules via a 9Pole-DSub connector that ensures the power supply and the communication between base unit and module. The pneumatic pressure-generation and the pressure-measurement are conducted directly in the modules themself. The features of the modules are explained in the corresponding manual of the modules.

Features

- Internal pressure generation
- Differential-, Gauge- and Absolute- pressure measurement.
- Min. / Max. measurement
- Data logger direct to micro SD-card or via USB to PC
Security- and Warning Symbols

Please note the advice symbols in the manual!

- The TM40 must be operated with the supplied plug-in power supply.
- Never use the plug-in power supply in case of a damaged housing or a damaged cable.
- Never open or modify the plug-in power supply.
- Before plugging in the plug-in power supply, make sure the stated operating voltage on the power supply is in accordance with the line voltage, you’re operating with.

Please read this manual carefully before putting the device into operation. Make sure, the operator of this device has read and understood the manuals and the security information. In case of questions or uncertainties, please contact the supplier or the manufacturer of the device.

CE Declaration of Conformity

- We declare under our sole responsibility, that this product is in conformity with the following standards:
  - IEC 61000-6-1:2005
  - EN 61000-6-3:2006 + A1:2010
  - EN 61326-1:2012

RoHS Declaration of Conformity

We declare herewith, that the TM40 and the corresponding components used for it are in conformity with the rules of the guideline 2011/65/EU of the European parliament to restrict the usage of certain dangerous substances in electronic devices.

Copyright ©

The content of this publication is not to be distributed without the permission in writing by HUBER Instrumente AG.
We reserve the right to make alterations in measures and design of the device.

Disposal

Please ensure a proper disposal of the device, in accordance with statutory regulations for electronic devices or send the device back to the manufacturer with the reference to dispose the unit.

Maintenance / Cleaning and Storage

The GM40 is maintenance-free.
There are no batteries or leaking components built-in.

For cleaning the housing, we recommend using a moist cloth with sparsely applied soap or a suitable plastic cleaner.
Do not use solvent-based cleaners.
To ensure the most accurate measurement results, we recommend having the device calibrated periodically at HUBER INSTRUMENTE AG.
Putting Into Operation

Acclimatisation
In the event of a transport from a cold-zone into a warm-zone, condensate may probably have formed into the device and cause malfunctions. Therefore the device should have sufficient time to acclimatise to the new ambient temperature, before putting it into operation.

Unboxing
Please carefully keep the original packaging. In order to ensure a secure transport and to preserve the warranty of the device, we kindly ask to use the original packaging or a suitable packaging with sufficient padding for shipment purposes.

Placement
Protect the device of direct sunlight. Ideally, a location should be chosen, where no significant temperature changes or any strong draft can interfere you measurements.

Connections and Functions

Right of the display
- ON / OFF button

Left of the display
- Socket for SD-card (FAT32)
- USB Interface
- Connector for plug-in power supply 9 VDC / 1A max.

Turn Device / ON-OFF

ON
- Press ON/OFF shortly.

OFF
- Press ON/OFF for 2 seconds

RESET
- Press ON/OFF for 7 seconds
Symbols and Meaning

Display top right
- Local time / date
- Charge condition of battery
  (If no battery is inserted, symbol won’t be displayed)
- Plug- in power supply
  (If no supply is connected, symbol won’t be displayed)

Display middle
- Module specific information
  (Please refer to the corresponding manual of the module)

Module Detection after Switching ON and Module Specific Information

At start-up, the base unit searches for available modules. Afterwards a module can be selected by typing on the corresponding field.

The modules are detected once at the start-up of the TM40. The TM40 has to be turned off in case a module is connected or disconnected, in accordance to recognise it. The slide in slot can be selected randomly.

Depending on the module, the start screen will provide the user with different information about the module

(Please refer to the corresponding manual of the module)
**Settings for Base Unit TM40**

**Open settings**
The menu is only accessible through the module selection screen. Press the R- symbol on the upper left corner to make the settings for the module.

**The following parameters can be adjusted:**
- Time / date
- Language
- Backlight
- Buzzer

**Exit settings**
Press OK.

**Set time and date**
Set time and date and press Enter to confirm.
Exit the settings by pressing Esc without saving the settings.

**Setup language**
Select the language.
Confirm by pressing OK.
Set backlight

Use the slider to adjust the backlight brightness.

By pressing Esc, the settings will be saved and the menu left.

Set buzzer

The buzzer makes a sound at various situations. (For ex. when exceeding the nominal pressure range of the corresponding module by 10%).

Select whether to turn it on or off by ticking / unticking the box. Confirm by pressing OK.

Information

General information in regard to the base unit TM40 is to find here.

The following information is provided:
- Type
- Firmware- and hardware version
- Input voltage Uin
- Battery voltage Ubat
- SD-card inserted or not
- Manufacturers address

Exit by pressing Esc.
Communication

The TM40 has a USB 2.0 (Mini-B) interface on its front. This interface serves, inter alia, as a transmitter of logged data. The interface is designed as a VCP. VCP stands for virtual COM port. For applications that support a serial interface, a serial interface is accordingly emulated. The access on application level happens like on a physical present interface. Most operating systems will install the VCP-driver automatically, once the computer is connected.

If the selected module supports a data logger function and output channel of the measured data is set to „USB“, the measured data will be permanently sent from the TM40 to the connected pc. A terminal program is needed. Various terminal programs are suitable (for ex. Docklight, HTerm or HyperTerminal).

Eventually the VCP-driver has to be installed manually. We’re pleased to advise you in this case.

Transfer Protocol / Coding

The characters are transferred, as ASCII-characters.

Warning Messages and Errors

<table>
<thead>
<tr>
<th>Störung / Anzeige</th>
<th>Mögliche Ursache</th>
<th>Abhilfe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device doesn't start</td>
<td>• No power supply</td>
<td>• Make sure the plug-in power supply is plugged correctly</td>
</tr>
<tr>
<td>Modul not detected</td>
<td>• Modul not inserted correctly</td>
<td>• Insert module correctly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tighten locking screws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use different socket</td>
</tr>
<tr>
<td>Display doesn't respond</td>
<td>• Polluted display</td>
<td>• Clean front</td>
</tr>
<tr>
<td></td>
<td>• Isolating gloves</td>
<td>• Operate without gloves</td>
</tr>
<tr>
<td></td>
<td>• Display has to be adjusted fresh</td>
<td>• Turn off device. At start up hold your finger pressed on the display until the procedure of recalibration appears</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Send instrument to manufacturer</td>
</tr>
<tr>
<td>No or bad communication</td>
<td>• USB not installed correctly</td>
<td>• Re-install driver</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contact the manufacturer</td>
</tr>
<tr>
<td>Battery won't be charged</td>
<td>• No power supply</td>
<td>• Insert power plug correctly</td>
</tr>
<tr>
<td></td>
<td>• Input voltage too low</td>
<td>• Replace plug-in power supply</td>
</tr>
<tr>
<td></td>
<td>• Too much charging cycles</td>
<td>• Send instrument to manufacturer</td>
</tr>
<tr>
<td>Data logger doesn't save any measured values</td>
<td>• SD-card not inserted correctly</td>
<td>• Insert card correctly</td>
</tr>
<tr>
<td></td>
<td>• SD-card formatted falsely</td>
<td>• Formatt to FAT32</td>
</tr>
</tbody>
</table>
Technical Data

Display: 4,3“ resistive Touchscreen 480x270
Sockets: max. 4
Internal battery: Li-Ion 7.4V/34Wh
Battery runtime: up to 8h (depending on operation mode)

Operation temperature: 15...35 °C (optional 0 ... 50 °C)
Storage temperature: -20...70 °C
Air humidity: < 95%, not condensing
Protection class: IP20

Supply voltage: 9V DC, max. 1A (external plug-in power supply included)
(Voltage range 100 - 240 Vac, 50 – 60 Hz)
Power consumption: 9 W (VA)

Interface: USB 2.0 (VCP)

Dimensions: 390 x 290 x 155 mm (LxWxH)
Net weight: 4500 g

For further technical data, please refer to the data sheet.
Accessories

Hard Case – TM 40
The TM40 hard case is the ideal companion for the mobile use of the TM40. This case ensures the TM40 and its accessories are well protected when using the TM40 in the field.