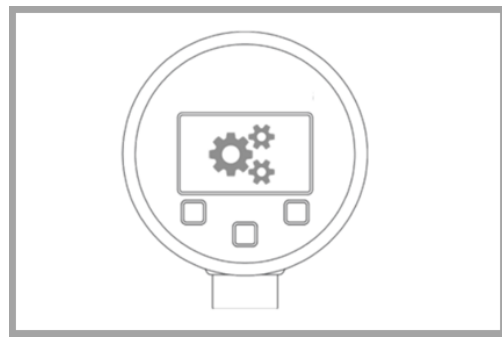


Operation manual for DAQ software



READ THOROUGHLY BEFORE USING THE DEVICE KEEP IT FOR FURTHER USAGE

ID: BA_DQA_E | Version: 04.2019.0

1. Requirement:

- Minimum system requirements:
- 1.0 GHz processor
 - Windows 7 (x86 or x64)
 - 50 MB free space on the hard disk
 - 1280 x 1024 screen resolution
 - Microsoft® .Net 3.5 framework

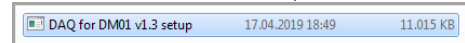
Parametrization of precision digital gauge DM01 series as well as reading of stored data.

2. Comment:

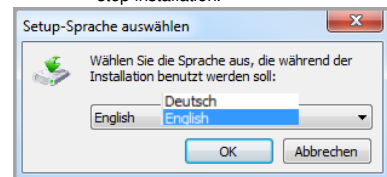
This product requires actual driver for communication cable "FTDI TTL-232R-5V-AJ". This is available for download at <http://www.ftdichip.com/Drivers/VCP.htm>. (direct installation with Windows Update Service.) Administrator rights are required to install drivers and configuration tool. A safe directory (for example, C:\Program Files or C:\Program Files (x86)) is recommended for installation. Automatic installation, if the PC-system is connected to the Internet.

3. DAQ software installation:

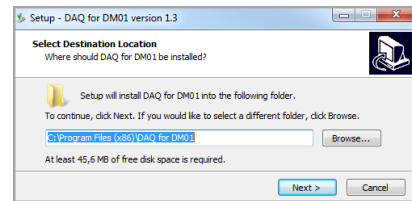
- double-click the setup file »DAQ for DM01 v.X.X setup« (depending on the version) and follow the instructions on the desktop.



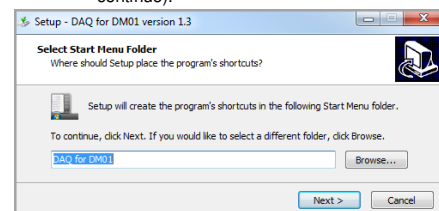
- choose a language »German« or »English« and confirm the selection with »OK« or click »Cancel« to stop installation.



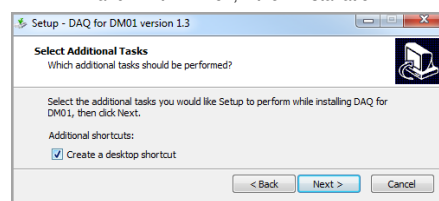
- after selecting the language and confirming with »OK« next step »Select Destination Location« is displayed. A target directory »C:\Program Files (x86)\DAQ for DM01« is defined. The destination directory can be changed by clicking on »Browse«. Click »Next«, after choosing location, to go to the next step or »Cancel« to exit the installation. Confirm cancellation with »Yes« or click »No« to continue the installation.



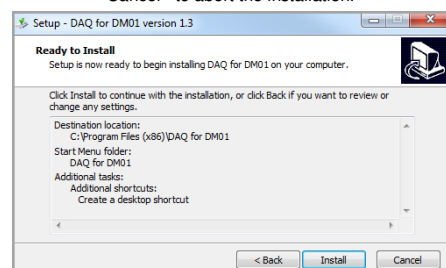
- after clicking »Next« the step »Select Start Menu Folder« is displayed, a Start menu folder must be set. The system defines a selection »DAQ for DM01«. You can change the system mapping by clicking »Browse« and setting destination folder. With »OK« you confirm the selection and with »Cancel« the selection is terminated. After defining folder, click »Next« to continue installation or »Cancel« to abort (confirm the cancellation with »Yes« or »No« to continue).



- after clicking »Next«, you will be taken to the next step »Select Additional Tasks«. In this area, you can specify whether a desktop icon should be created or not. If you don't want a desktop symbol, delete the marking. If you click »Back«, a backward menu step will be executed, if you click on »Cancel«, you can cancel the installation after confirming with »Yes« and with »No«, the installation will continue.

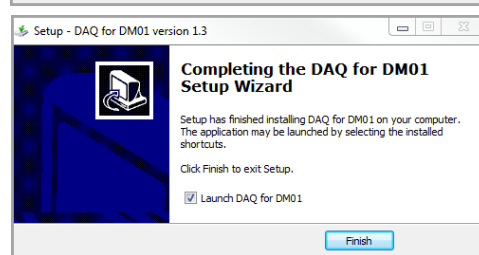
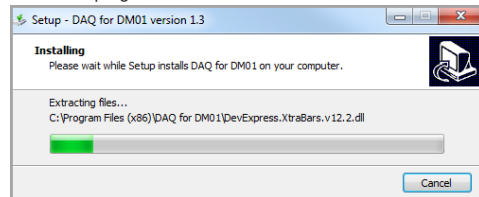


- after clicking »Next«, you will get to the next step, »Ready to Install«. The overview shows destination folder and start menu folder. A change is not possible. Click »Install« to start the software installation, »Back« to return to the menu or »Cancel« to abort the installation.



- after you click »Install«, the software will be installed. The progress is indicated by installation bars. At the end of the installation, click »Launch DAQ ...« if you

want to start DAQ software after install process and then »Finish«. The installation is done and the program is started, if selected. If not: The program must be started via the desktop shortcut or via "all programs".

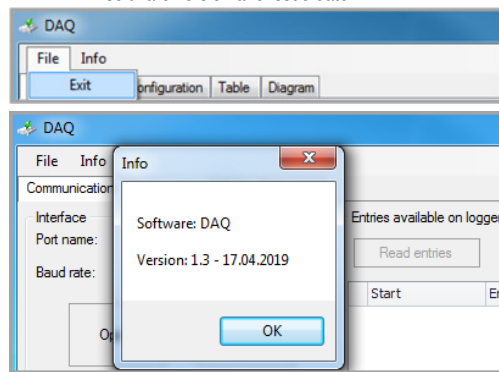


NOTE: after installation and before DAQ use, please make sure that the device DM 01 (ensure power supply with batteries) is connected to the PC via USB cable!

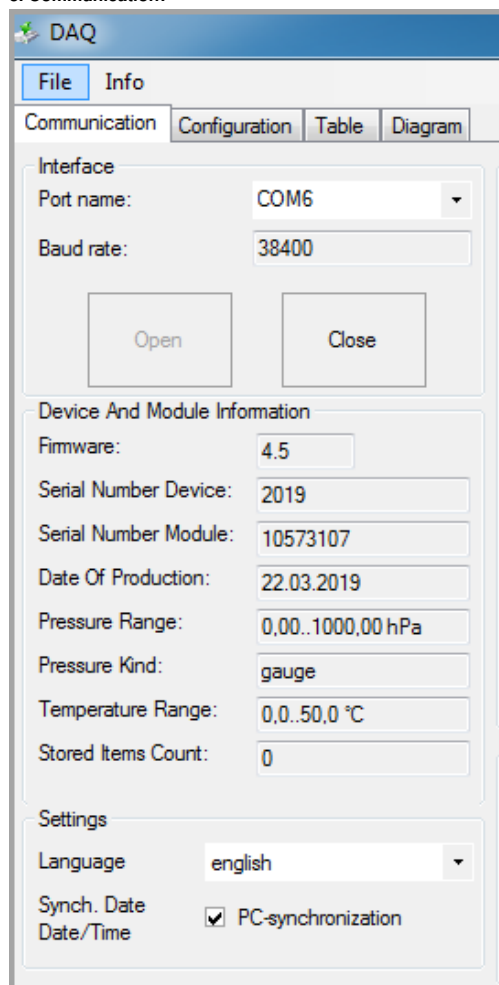
- 4. **Data logger DAQ:** The software is used to start, read out and configure the logger of precision digital gauge DM01 series. The logger data is displayed and can be downloaded as a .bin or .csv file.

4.1. Features:

- File: program exit.
- Info: Information about program name, software version and issue date.



5. Communication:



- 5.1.1. **Interface Port name:** COM port (e. g.: COM6) is assigned to the PC device manager after installation of FTDI driver. Please select a port created on your computer. For multiple COM ports, the right assignment is required by the user. Without port assignment there is no communication between computer and DM01-device.

- 5.1.2. **Baud rate:** The value 38400 bit/s is fixed by the manufacturer and cannot be changed by the user.

- 5.1.3. **Open:** »Open« starts communication between computer and DM01 and the device-specific features will be displayed. If a pressure sensor (module) is not connected, data from last connected sensor will be showed.

- 5.1.4. **Close:** Communication between computer and DM01 stops. Device-specific data are not present. Module information and entries shown in the software are empty and inactive.

5.2. Device And Module Information:

- 5.2.1. **Firmware:** The current firmware of the display device is displayed (e. g.: 4.5).

- 5.2.2. **Serial Number Device (display):** The serial number of the connected display is displayed in the field (e. g.: 10504131).

- 5.2.3. **Serial Number Module (pressure sensor):** The serial number of the connected pressure sensor (module) is displayed (e. g.: 10572107).

- 5.2.4. **Date Of Production:** The date on which the pressure sensor (module) was manufactured (e. g.: 22.03.2019).

- 5.2.5. **Pressure range:** The min. and max. nominal pressure of the pressure sensor (module) with associated unit are displayed (e. g.: 0,00 ... 1000,00 hPa).

- 5.2.6. **Pressure Type:** The physical measurement method of pressure of pressure sensor module is shown (e.g.: gauge / absolute).

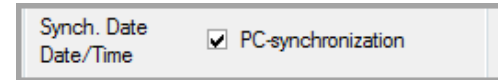
- 5.2.7. **Temperature Range:** The min. and max. temperature range of pressure sensor module is displayed. The temperature range 0 ... 50 °C is the same for all pressure sensors (modules). Depending on the unit setting, temperature can be displayed in °C, K or °F.

- 5.2.8. **Stored Items Count:** Information, how many values are stored in the datalogger. A maximum of 600798 readings can be stored (e. g.: min: 0 / max: 600798).

5.2.9. Settings:

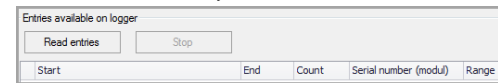
- Language: The program presentation of DAQ can be set in two languages German or English.

- 6. **Synch. Date / Time:** PC- synchronization, this feature provides a date and time synchronization between system setting on the computer and the data logger (display.) After tick is set, the current time and current date will transfer from the computer to the data logger as soon as the "Write" function in the configuration area is executed.

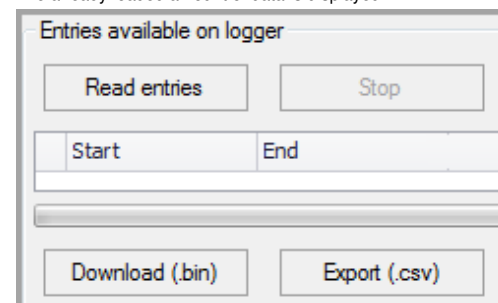


7. Entries available on logger:

- 7.1.1. **Read entries:** The measured values stored in the data logger are read after using "Read entries" button and displayed in the lower area, sorted by date.



- 7.1.2. **Stop:** The function "Download (.bin)" or "Export (.csv)" can be stopped after activation by click on action field "Stop". The already loaded amount of data is displayed.



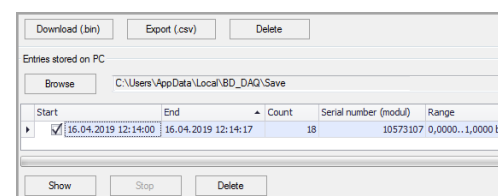
7.1.3. Table:

The listed records have the following columns:
Start: start of the measured value acquisition date DD.MM.YYYY and time hh:mm:ss
End: end of data acquisition date DD.MM.YYYY and time hh:mm:ss
Count: quantity of readings min. 0 and max. 600798 recorded in one measurement interval.
Serial number (module): a serial number of the pressure transmitter (e. g.: 10583207)
Range: Nominal pressure range of the pressure sensor. Value and unit (e. g.: 0.0000 ... 1.0000 bar). The sorting of the values ascending, or descending is possible.

Start	End	Count	Serial number (modul)	Range
16.04.2019 12:14:00	16.04.2019 12:14:01	18	10573107	0,0000...1,0000 bar

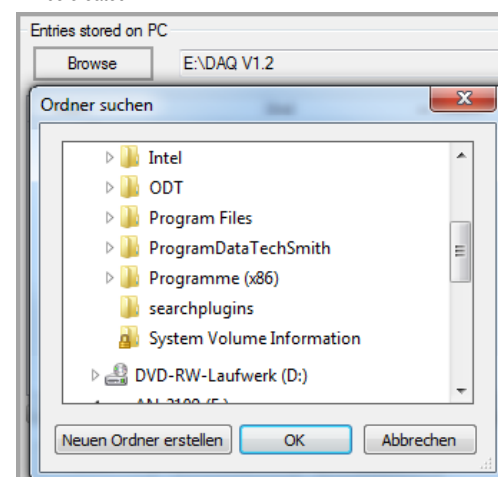
- 7.1.4. **Download (.bin):** Select a file by a tick in table area "Start". Only one file can be selected. Click the "Download (.bin)" button. Define destination directory and confirm with "Save". The file is transferred. The progress is displayed on the bar. A file with extension (.bin) is stored. The download can be aborted by clicking the "Stop" action field in top or bottom area. The download time is about 0.03 seconds per value.

- 7.1.5. **Export (.csv):** Select a file by a tick in table area "Start". Only one file can be selected. Click the "Export (.csv)" button. Define destination directory and confirm with "Save". The file is transferred. The progress is displayed on the bar. A file with extension (.csv) is stored. Editing with e.g. MS Office® (Excel®) is possible. The download can be aborted by clicking the "Stop" action field in top or bottom area. The download time is about 0.03 seconds per value.

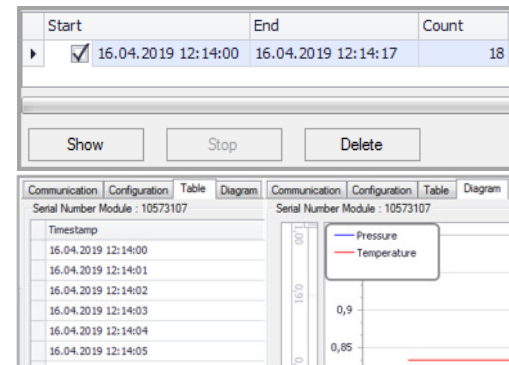


- 7.1.6. **Delete:** The data that was read out or downloaded or saved as a CSV file can be deleted. Select a file from the upper or lower table, set the tick in the "Start" table area. Only one file can be selected. Click on the "Delete" button. A warning message "All saved values are deleted! Do you really want to delete the values?" With "Yes" you confirm deleting the file with "No" the process is aborted. The data in the datalogger or on the storage medium, depending on the selection, and the table entry are deleted.

- 7.1.7. **Entries stored on the PC:** The data can be selected by using the Browse function. Select the destination directory in the "Search Folder" area and confirm with "OK". Click on the file and confirm with "OK". It is possible to create a new directory. Click on "Create new folder" and name the folder with "OK" the folder will be created.

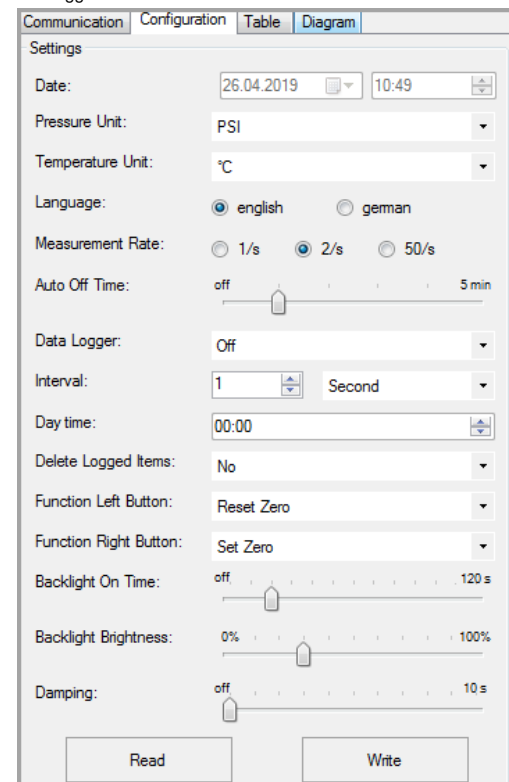


- 7.1.8. **Show:** The Display function provides a representation of the measured values in the register Table and Diagram. Select a .bin file (only one possible) and then click on the area »Show«. The measured values are displayed in the tab "Table" and "Diagram". To see the values, click "Table" or "Diagram".



8. Configuration:

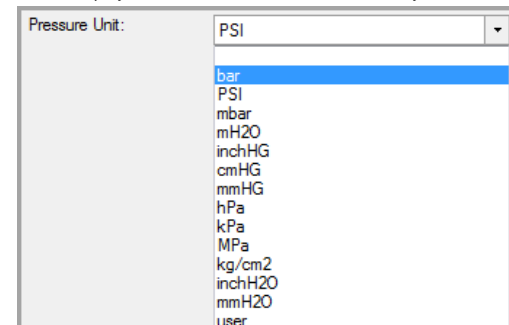
The datalogger (display) can be configured via tab "Configuration". The data set on the datalogger can be read out or the setting can be changed via software and be written to the datalogger.



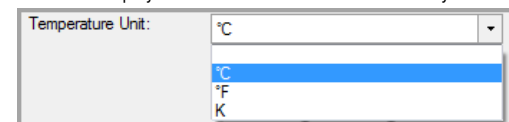
- 8.1. **Settings:** An area with possible configuration properties only for DM01 Device (Display).

- 8.1.1. **Date (date / time):** The date and time synchronization from PC to DM01 takes place automatically after clicking the »Write« action field and when in Communication area PC-synchronization is set!

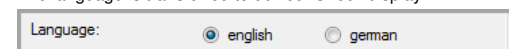
- 8.1.2. **Pressure Unit:** Possible units are [bar], [PSI], [mbar], [mH2O], [inchHG], [cmHG], [mmHG], [hPa], [kPa], [MPa], [kg/cm2], [inchH2O], [mmH2O] or [user]. Select a unit. Click on the "Write" button. The unit is transferred. Check display. The conversion is done automatically.



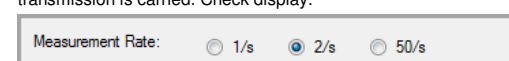
- 8.1.3. **Temperature Unit:** Possible units are [°C], [°F], [K]. Select a unit click on the button "Write". The unit is transferred. Check the display. The conversion is done automatically.



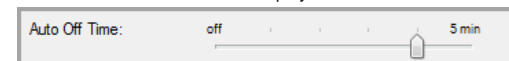
- 8.1.4. **Language:** Select a language English or German (depending on the default setting) and click the "Write" button. The language is transferred to device. Check display.



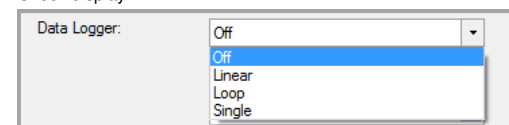
- 8.1.5. **Measurement Rate:** Possible settings: 1 / s (one value per second), 2 / s (two values per second) or 50 / s (50 values per second). Select a sample rate. Click the "Write" button. The transmission is carried. Check display.



- 8.1.6. **Auto Off Time:** Switching off the display can be set by the slider between off, 1 minute, 2 minutes, 3 minutes and 5 minutes. Select a position. Click the "Write" button. The transmission is carried. Check display.



- 8.1.7. **Data Logger:** Activate or deactivate the datalogger. Selection Off (deactivated), Linear (recording values will be stopped at 600798), Loop (recording values will be an endless loop and overwrite stored values after value 600798). Single (one value will be recorded after pressing button "Single"; you have to program "Left button" or "Right button" to the feature "Single"). Select a position and activate it by "Write" button. Check display.



8.1.8. Interval: Setting ranges 1 - 99, Millisecond, Second, Minute, Hour and Day. Set a combination. Click the "Write" button. The transmission is carried. Check display.

8.1.9. Day time: For the interval setting Day, a time for the measurement is set. Preset the data logger interval to Day and number of days 1-99, set the time hh: mm, click the "Write" button. The transmission is carried. Check display.

8.1.10. Delete Logged Items: All measured values recorded with the datalogger can be deleted. Select "Yes" and click "Write". Attention! all measured values will be deleted. Restoring the data is not possible! All logged values 1-600798 have been deleted. The display shows 0/600798. Check display. If logged values should not be deleted, select "No" and click "Write".

8.1.11. Function Left Button: Button configuration of left button. Configuration of possible functions: [Minimum], [Maximum], [Light], [Set Zero], [Reset Zero], [Single] or [Off]. Select an attitude, click on »Write«. Check display.

8.1.12. Function Right Button: Button configuration of right button. Configuration of possible functions: [Minimum], [Maximum], [Light], [Set Zero], [Reset Zero], [Single] or [Off]. Select an attitude, click on »Write«. Check display.

8.1.13. Backlight On Time: The backlight illumination can be set in ten-second increments between [10 s] and [120 s] or disabled by selecting [off]. Set a time setting or [off], click on »Write«. Check display.

8.1.14. Backlight Brightness: The brightness can be adjusted in 10% increments between [0%] and [100%]. Set a brightness setting, click on »Write«. Check display.

8.1.15. Damping: Damping can be set in one-second increments between [1 s] and [10 s] seconds or disabled by selecting [Off]. Set a damping setting, click on »Write«. Check display.

8.2. Read/Write

8.2.1. Read: The settings of the data logger DM01 will be read out (only a read function)

8.2.2. Write: All settings made in the "Configuration" register are transferred to the DM01 data logger after you click on »Write«.

8.3. Zero of pressure range (Display)

8.3.1. Set Zero: Set the displayed pressure to zero. By clicking on the button »Set Zero«, the displayed value will immediately set to zero. The zero point is set automatically. Check the display. The display shows "Z".

8.3.2. Reset Zero: By clicking the reset button "Reset Zero", the displayed value in the display will be reset to the current measured value. "Z" will be erased. Check the display.

8.3.3. User Unit: The user-defined unit [user] can only be programmed using the software DAQ, all pressure-related parameters will be converted automatically.

8.3.4. First: select the [user] option in the »Settings« area.

8.3.5. Caption (max. 8 characters): Enter the name of the unit, up to 8 characters (letters, numbers, ...) possible, e. g.: FORCE.

8.3.6. Factor (from bar into user unit): Enter the conversion factor, e. g.: 0.5. By clicking the button "Write". The transmission is carried. Check the display. The conversion from unit [bar] to [user] takes place automatically.

8.3.7. Read: By clicking on "Read" current values / settings are read from the datalogger.

8.3.8. Tag (max. 10 characters): Create the TAG-number for measuring point. Write a TAG- Name or TAG-number, maximum 10 characters possible. Click on "Write". The transmission is carried. Check the display.

8.3.9. Read: By clicking on "Read" current values / settings are read from the datalogger.

9. Table: To create and display the table, select a series of measurements in the Configuration "Entries stored on PC" area (only one measurement series possible) by selecting a check mark to the left of the selection. Then click on "Show" and then on register "Table". The values are displayed in shape of tables. The displayed values can be generated as a PDF file (Save .pdf).

Start	End	Count	Serial number (modul)	Range
<input checked="" type="checkbox"/> 28.03.2019 13:16:15	28.03.2019 13:16:52		1445	10573107 0,0000..1,0000 bar

The table contains the following information: Serial Number Module (pressure module). Timestamp (DD.MM. YYYY and hh: mm: ss) date and time at which the measured value was recorded or logged. Pressure, nominal pressure measured on the day and the time and related temperature, measured on the day and the time.

Timestamp	Pressure	Temperature
28.03.2019 13:16:15	-0,000231	23,58
28.03.2019 13:16:24	-0,000158	23,58
28.03.2019 13:16:24	-0,000231	23,58
28.03.2019 13:16:24	-0,000182	23,58
28.03.2019 13:16:24	-0,000206	23,58
28.03.2019 13:16:24	-0,000133	23,58
28.03.2019 13:16:24	-0,000255	23,58
28.03.2019 13:16:24	-0,000133	23,58
28.03.2019 13:16:24	-0,000182	23,58
28.03.2019 13:16:24	-0,000206	23,58
28.03.2019 13:16:24	-0,000011	23,58
28.03.2019 13:16:24	-0,000231	23,58
28.03.2019 13:16:24	-0,000084	23,58
28.03.2019 13:16:24	-0,000133	23,58
28.03.2019 13:16:24	-0,000231	23,58

Extra Information area:

Notes: Text information max. 100 characters possible, e. g.: short description of the measurement.

Test point: Name of the measuring point, max. 16 characters possible.

User name: name of the editor, max. 10 characters possible.

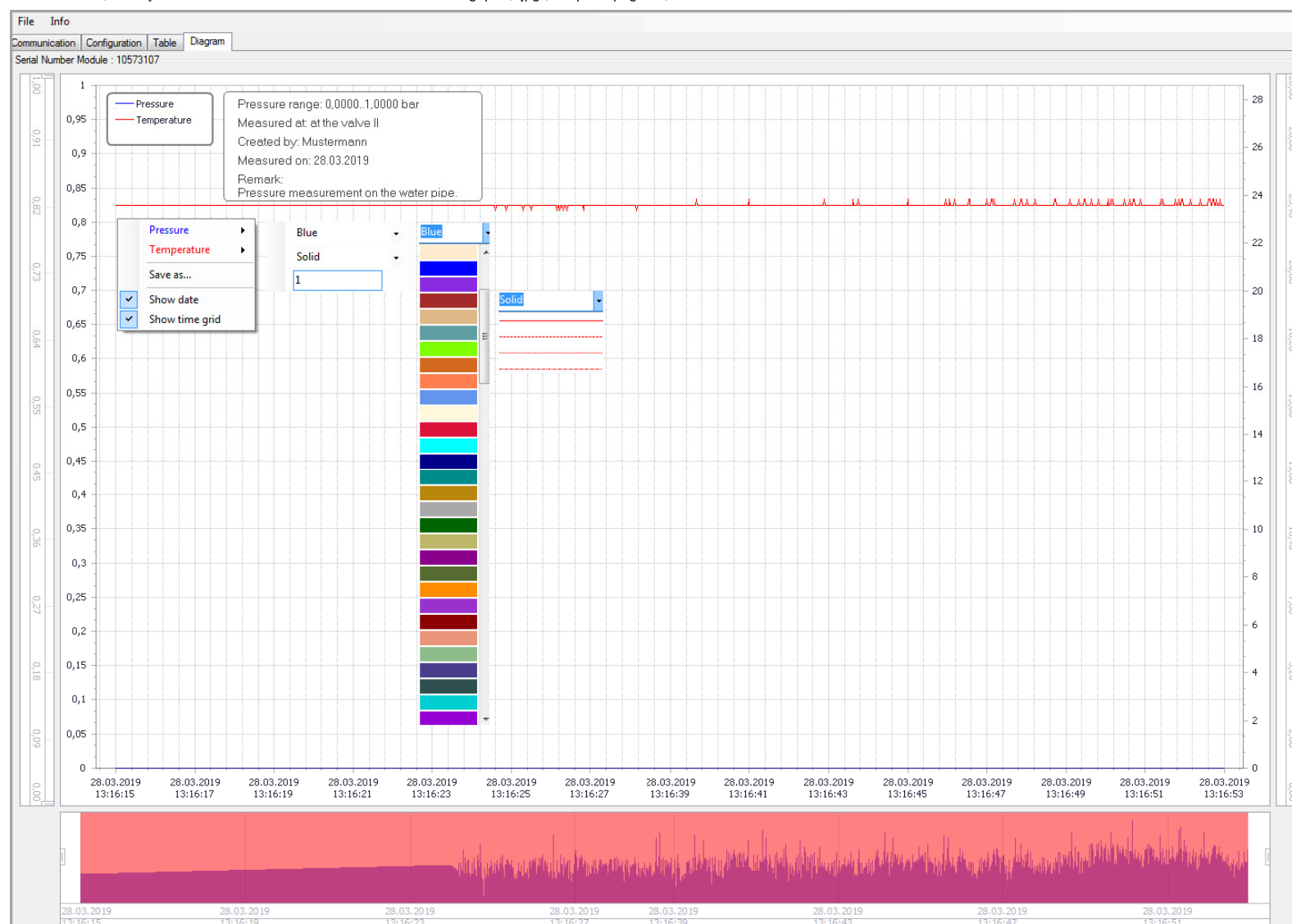
Pressure range: Nominal pressure range is usually taken from the data logger (can be changed by the user).

Test date: The date is usually taken from the data logger (can be changed by the user).

Create PDF file: Click "Save .pdf", choose a folder on PC and confirm with »Save«.

Timestamp	Pressure	Temperature
28.03.2019 13:16:15	-0,000231	23,58

10. Diagram: The diagram is generated automatically. In this area, users can not make changes. In the register "Table" settings for "chart header" and "chart annotation" can be made by setting a tick in the information area (Extra information). The pressure values will be shown in "blue" and the temperature in "red". But you can change it on your own by pressing right button of computer mouse. Possible style features: Color, line style and line thickness. Click "Save as..." for creating .pdf-, .jpg-, .bmp- or .png- file, choose a folder on PC and confirm with »Save«. The chart will be created.



Scaling : You can scale X- and Y-axis on your own, by moving the slider marks (two for each axis).

