

Compatible with
MSD200



Sample Project: Data logging and data evaluation (part 1) MSD200 Data Logger and Microsoft Excel

In this sample project, the data logging and the following evaluation using the MSD200 and Microsoft Excel are explained in detail and presented as an example.

3 data series (2 temperature measurements and 1 air humidity measurement) are taken using the sensors and transmitters from akYtec and are logged with the MSD200.

Afterwards, the data is transferred to Microsoft Excel 2016 and is evaluated there. The most commonly used information in the industry is the max value, min value, average value and standard deviation, which are calculated here.

1. Device and signal types

Table 1 Device and signal types

Device	Signal type	MSD200-Interface	Configuration on the device
MSD200 Data logger	4 analog inputs (4...20 mA) modbus Protocol RS485 Interface		
Temperature sensor PT100 via temperature transmitter NPT1	Analog (4...20 mA)	Input 1 in MSD200	Measuring range: -190...105°C
Humidity and temperature transmitter PVT100	Analog (4...20 mA)	Input 2 in MSD200	Measuring range: 0... 100% for humidity measurement
MV110-24.8A	Analog input module	RS2 (DEV) in MSD200	With M110 Configurator
Temperature sensor PT1000	Analog (0...4000 ohm)	AI5 (with MV110-24.8A)	Measuring range: -50...120°C

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1.1. Project structure

The aim of the project is to record 3 sensor readings (2 temperature readings and 1 humidity).

Note: All devices which are used here are available from akYtec GmbH. As many devices as possible are used in this sample project to make you familiar with the different application options and to adapt it to your requirements.

The following sketch illustrates our sample project:

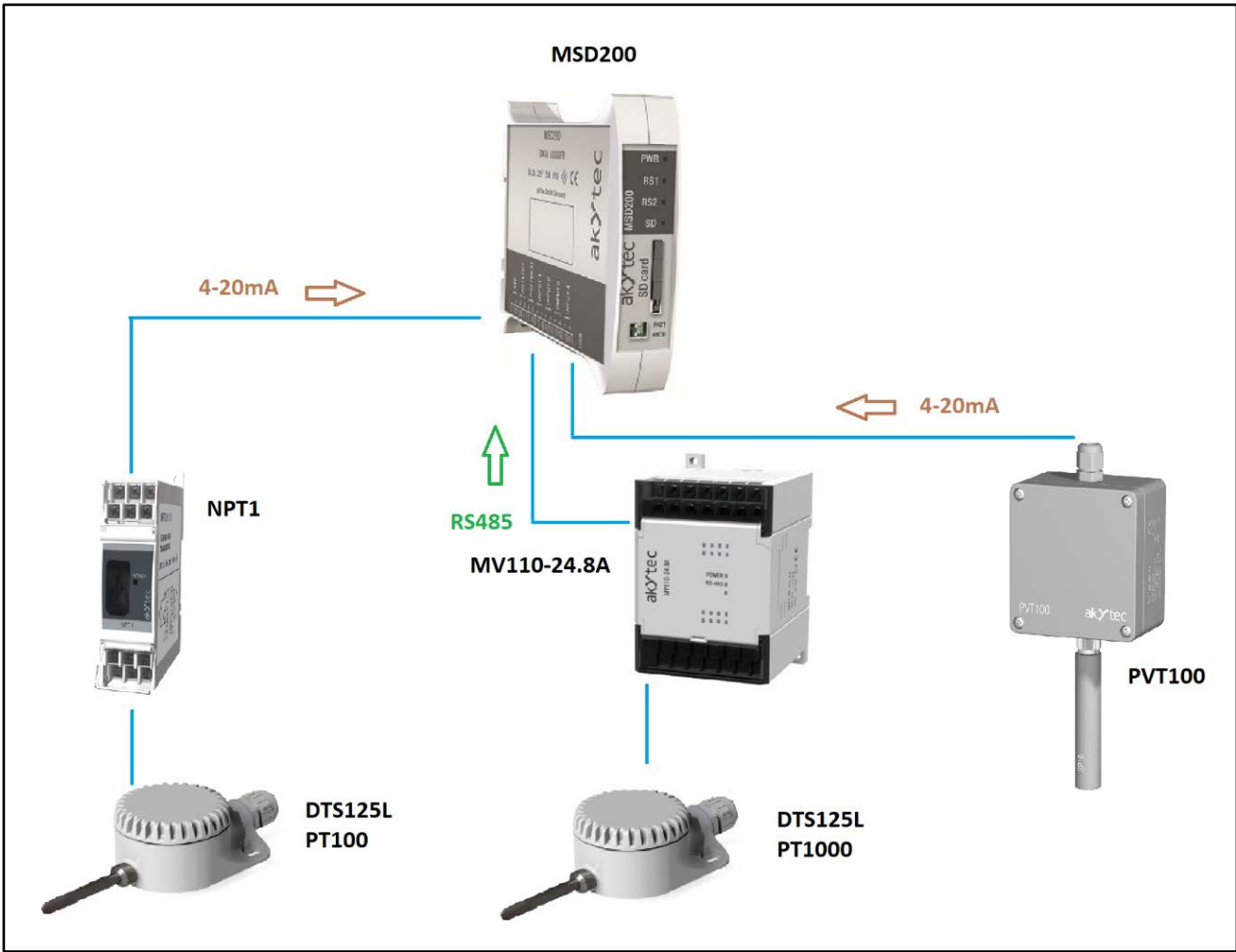


Fig. 1 Data logging with MSD200

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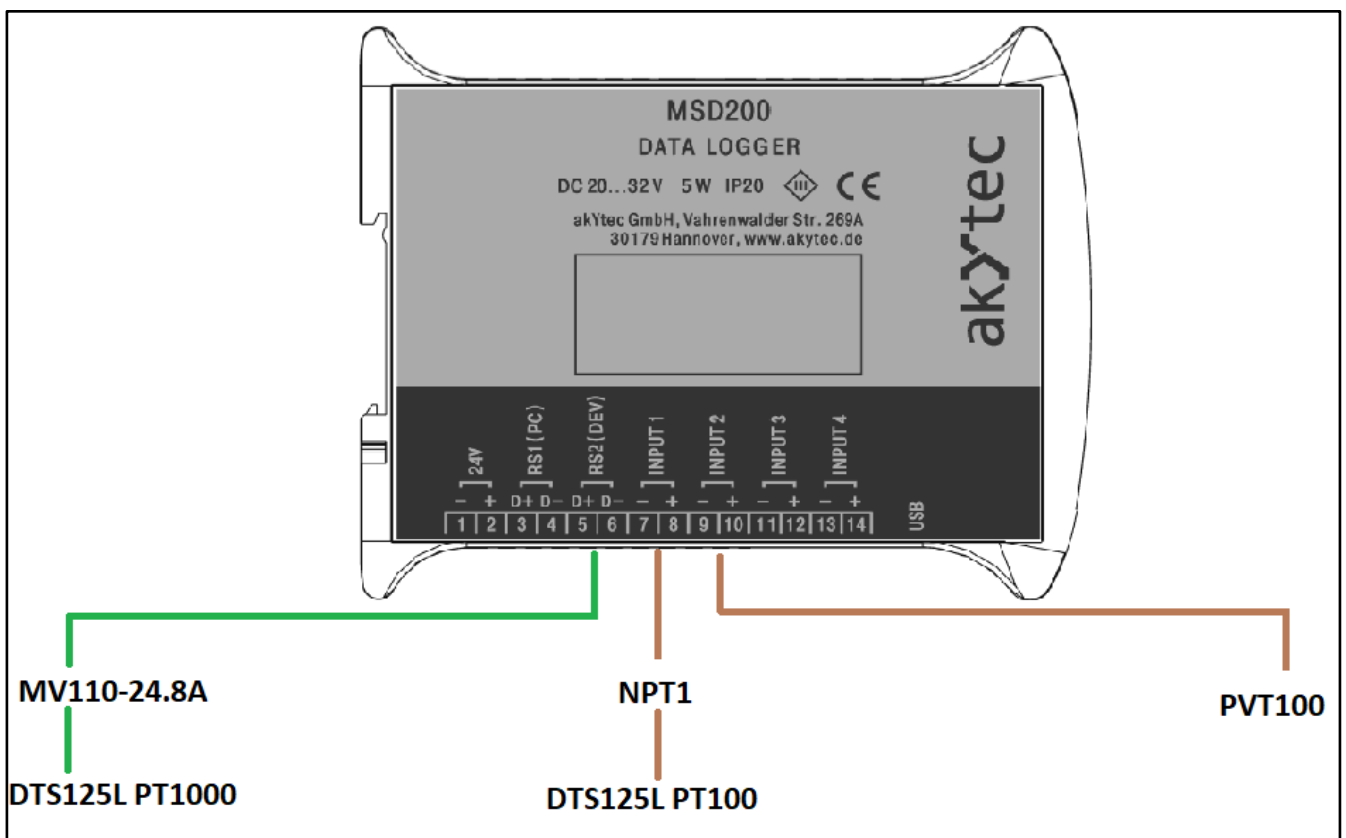


Fig. 2 Used interfaces at MSD200

For the first temperature measurement, the DTS125L PT100 temperature sensor is used, which is connected to the temperature transmitter NPT1. The measured temperature is converted by the NPT1 into an electrical signal (4...20 mA), so that the MSD200 can evaluate it.

The second temperature measurement takes place with the temperature sensor DTS125L PT1000, which is connected via an analog input module MV110-24.8A to the MSD200 data logger via an RS485 interface. Here, we select the possibility of the DTS125L PT1000 via an analogue input module MV110-24.8A with 8 channels, so that in your application you are quickly able to add more signals for larger projects.

The last measurement is the humidity measurement. This is done by PVT100 which is connected via a 4...20 mA signal directly to an analog input of the MSD200.

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1.2. Device configuration

To display the temperature and humidity values, the NPT1 transmitter and the MV110-24.8A analog input module must be configured. The software is included with the devices and is also available for download on our homepage www.akytec.de.

For configuration of the MV110-24.8A, we are using the interface converter IC4 to connect the device to the PC. The converter can also be purchased from our company. For our selected input 5, the configuration looks like this:

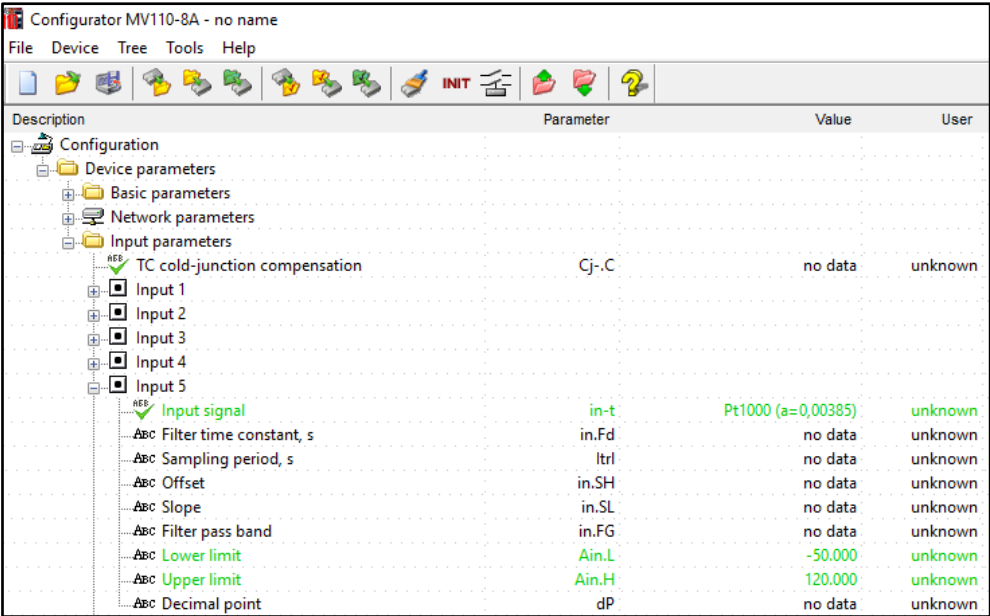


Fig. 3 Configuration in MV110-24.8A

The PT1000 is selected with its measuring limits.

The MSD200 Configurator is used to configure the MSD200:

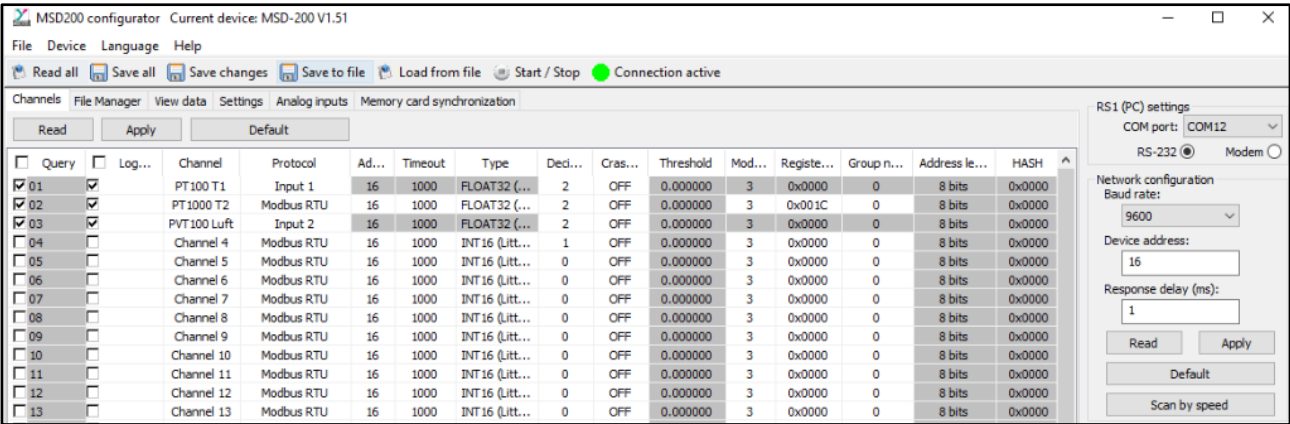


Fig. 4 Configuration of the individual channels

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Switch on the application by setting 24 VDC and moving the MSD200 FACT switch to 'ON' and connect the MSD200 to your PC via an USB cable. The corresponding 'COM port' in the upper right corner of the window is entered and the connection is started so that the green lamp lights up in 'Connection active'. In the first 3 channels the settings for the temperature measurements and the humidity measurement are taken as in the picture above.

Channel 1 will log the temperature measurement via the DTS125L PT100 sensor, channel 2 will log the second temperature measurement via the DTS125L PT1000 sensor with the MV110-24.8A and channel 3 will log the measurement of the humidity via the PVT100 sensor.

The second temperature measurement via the analog input module MV110-24.8A is transmitted as a Modbus signal to the MSD200 data logger. For this, it is still necessary to specify the respective register to which the MSD200 should access from the input module. In our example this register is '0x001C'. To accept the entered values, confirm with 'Save changes' and 'Apply'.

For the sensors and transmitters that are plugged directly into the analog inputs of the MSD200 (here INPUT 1 and INPUT 2), the respective measuring ranges of the sensors must be entered under 'Analog inputs':

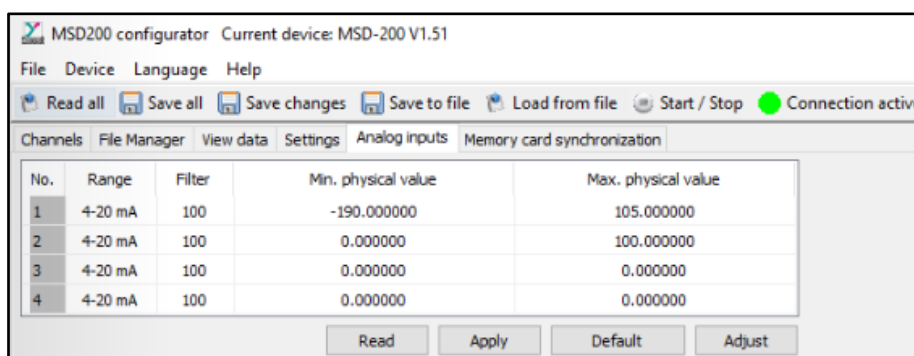


Fig. 5 Configuration of the analog inputs

Table 1 on page 1 shows the respective measuring ranges of the DTS125L PT100 and the PVT100 as well as their operating instructions. Confirm here also with 'Save changes' as well as 'Apply'.

Please make sure that under 'Settings' the MSD200 data logger works as a Master (see Figure 7). Select in 'Mode' the setting 'Master'. In this mode, the MSD200 can poll data from all other connected slaves (up to 64 channels) in a Modbus network. In our example we only have one slave, the analog input module MV10-24.8A with the DTS125L PT1000 sensor. The MSD200 data logger queries the temperature data from the previously mentioned register '0x001C' of the MV110-24.8A.

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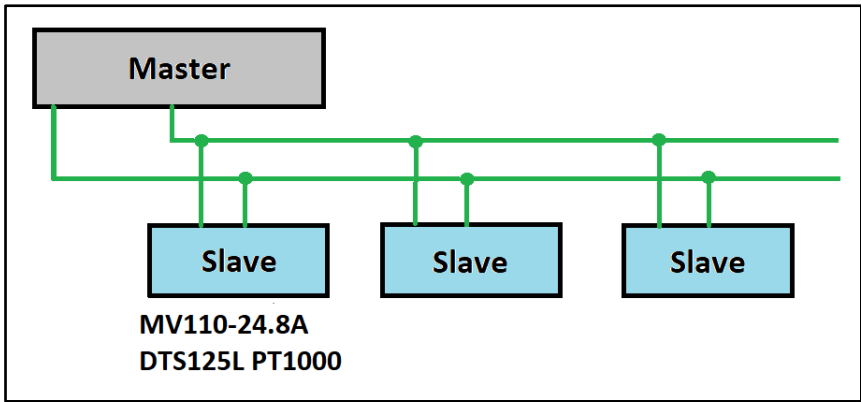


Fig. 6 Functioning Master and Slave

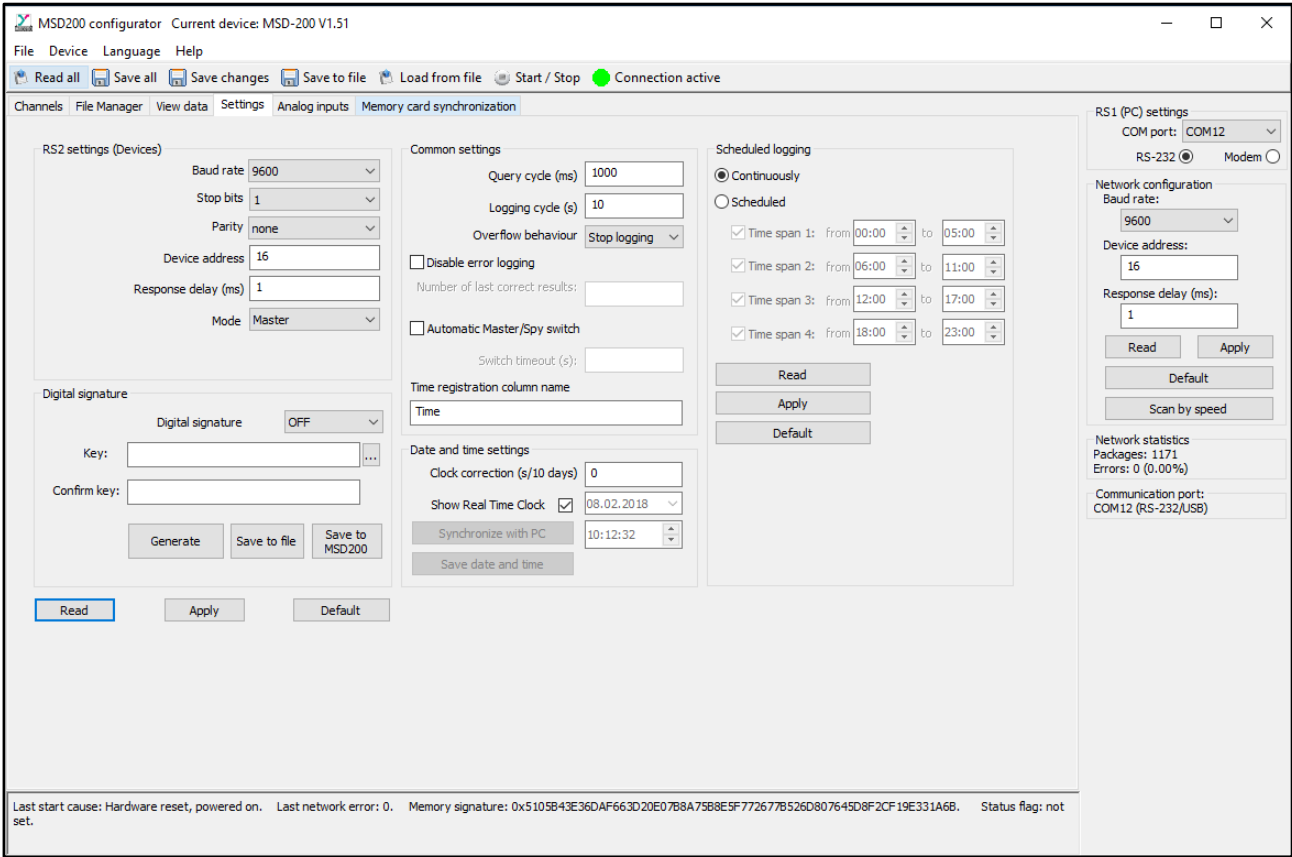


Fig. 7 Settings for MSD200 as a Master

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Now you can start logging the data by switching the 'ARCH' switch to 'ON'.

Under the item 'View data' you can see the recorded real-time values. Under 'Polling cycle' you set the interval, in which the MSD200 polls the individual sensors according to their real-time values.

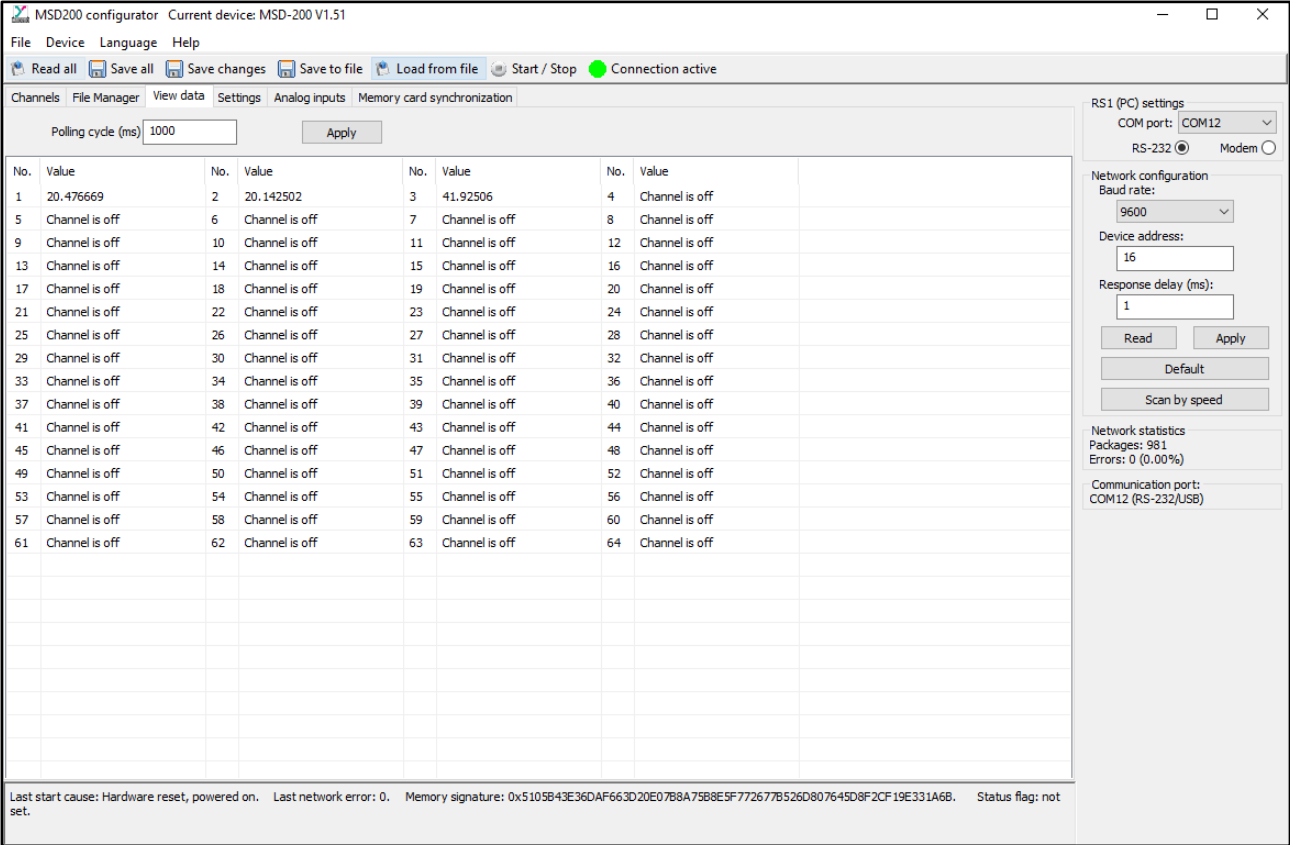


Fig. 8 View Data – Monitoring of real-time values

This is only for real-time viewing.

In addition, the measured values are stored on the SD card. To transfer them to your computer and to have them displayed, click on the button 'File Manager' above. In the left window, you can select a location in which to save your CSV or Excel file. In the right window you can find your current measured value series after pressing the 'Refresh button'. Select it with a left mouse click and press the button 'Copy'. This file now also appears in your previously selected location. Figures 9 to 11 show this process again.

By reselecting your file in the right window and clicking the "Refresh" button, you can update your logged value data.

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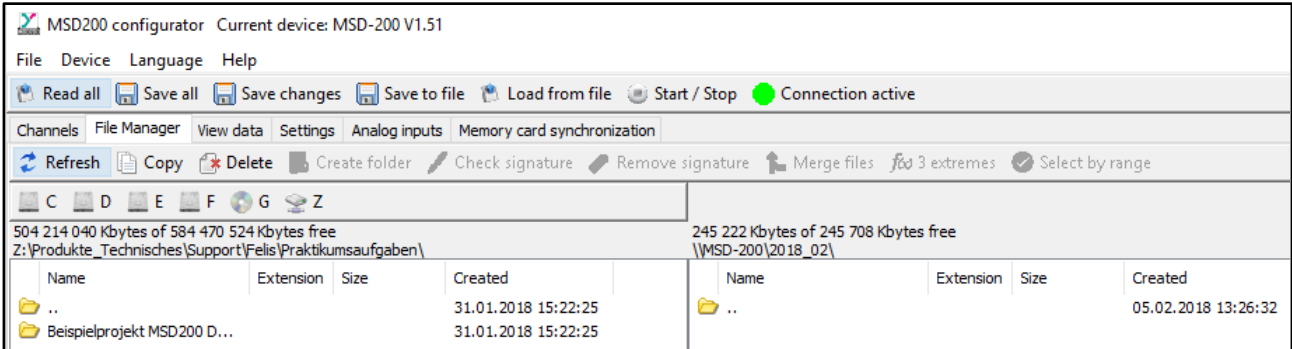


Fig. 9 File Manager – Main settings

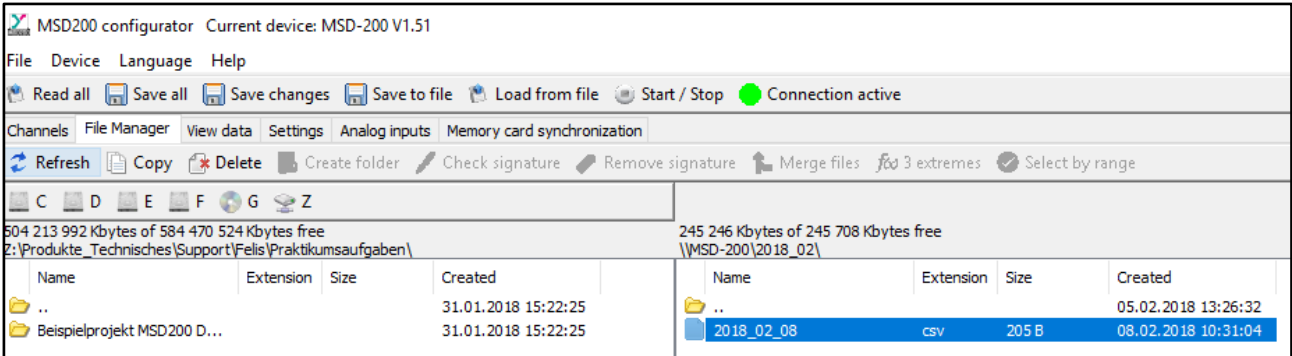


Fig. 10 File Manager - current measurement appears by pushing 'Refresh'

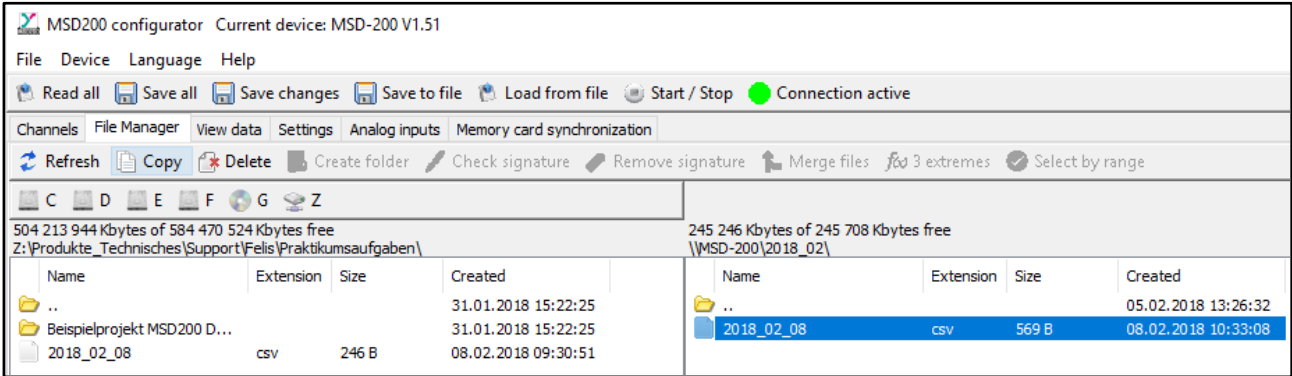


Fig. 11 File Manager - CSV file appears in the storage location