



Device type manager for MACX-MCR/PI-EX-temp modules

User Manual

UM EN MACX-MCR-/PI-EX-DTM

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2013-06-11

Designation: UM EN MACX-MCR-/PI-EX-DTM

Revision: c00

Order No.: —

This user manual is valid for:

Designation	Order No.	Designation	Order No.
MACX-MCR-/PI-EX-DTM	—	MACX MCR-EX-T-UIREL-UP-SP-C	2924809
		MACX MCR-T-UI-UP	2811394
MACX MCR-EX-SL-RTD-I	2865939	MACX MCR-T-UI-UP-C	2811873
MACX MCR-EX-SL-RTD-I-NC	2865573	MACX MCR-T-UI-UP-SP	2811860
MACX MCR-EX-SL-RTD-I-SP	2924142	MACX MCR-T-UI-UP-SP-C	2811970
MACX MCR-EX-SL-RTD-I-SP-NC	2924168	MACX MCR-T-UIREL-UP	2811378
MACX MCR-EX-SL-TC-I	2865942	MACX MCR-T-UIREL-UP-C	2811514
MACX MCR-EX-SL-TC-I-NC	2865586	MACX MCR-T-UIREL-UP-SP	2811828
MACX MCR-EX-T-UI-UP	2865654	MACX MCR-T-UIREL-UP-SP-C	2811831
MACX MCR-EX-T-UI-UP-C	2811763	PI-EX-RTD	2865227
MACX MCR-EX-T-UI-UP-SP	2924689	PI-EX-RTD-NC	2865311
MACX MCR-EX-T-UI-UP-SP-C	2924692	PI-EX-TC	2865230
MACX MCR-EX-T-UIREL-UP	2865751	PI-EX-TC-NC	2865324
MACX MCR-EX-T-UIREL-UP-C	2865722		
MACX MCR-EX-T-UIREL-UP-SP	2924799		

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PHOENIX CONTACT GmbH & Co. KG
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1 Installation

The DTMs of this device can be used in several Frame Applications. As an example the IFS-CONF is chosen to demonstrate the use of the DTM inside a frame application.

The FDT (Field Device Tool) is a control or engineering system that integrates device user interfaces known as DTMs (Device Type Managers). Usually DTMs from various manufacturers can be integrated in a Frame Application, but only IFS-DTMs can be integrated into the frame application IFS-CONF. The communication DTM of this Device DTM is the IFS-USB-PROG-ADAPTER.

1.1 Installation of the device DTM

To install the device DTM start the installation file of the MACX-MCR-/PI-EX-DTMs. This calls the installation wizard, which guides you through the installation process. Follow the instructions in the installation program. The installation program generates all the directories required for operation and copies the necessary files.

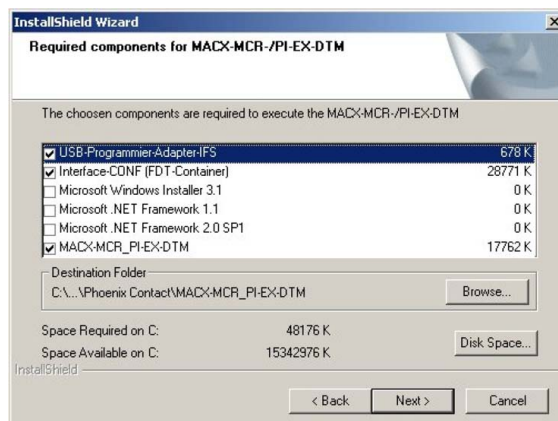


Figure 1-1 Required components

Content of the MACX-MCR-/PI-EX-DTM

USB-Programmier-Adapter	Driver of communication device IFS-USB-PROG-ADAPTER
Interface-CONF (FDT-Container)	Optional frame application: DTMs are working with any other frame application
Microsoft Windows Installer 3.1	Probably needed on PCs, when not patched regu- larly for IFS-CONF
Microsoft .NET Framework 1.1	Probably needed on PCs, when not patched regu- larly for IFS-CONF
Microsoft .NET Framework 2.0 SP1	Probably needed on PCs, when not patched regu- larly for IFS-CONF
MACX-MCR-/PI-EX-DTM	DTM necessary to communicate with device over IFS-USB-PROG-ADAPTER and DTMs of MACX-MCR/PI-EX-temp devices.

1.2 Installation of IFS-CONF

To install IFS-CONF, proceed as follows:

If chosen the IFS-CONF option during MACX-MCR-/PI-EX-DTM installation an installation wizard will be called, which guides you through the installation process.

Follow the instructions in the installation program. The installation program generates all the directories required for operation and copies the necessary files.

1. Open the Start menu.
2. Open the "Settings" menu.
3. Open the Control Panel.
4. Open the "Software" module.
5. Select the "IFS-CONF" entry in the list box.
6. Click on "Add/Remove".
7. Follow the on-screen instructions.

Program user interface

Knowledge of handling and operating the IFS-CONF user interface is required at this point. For more detailed information about IFS-CONF, please refer to the online help.

1.2.1 Transferring the MACX-MCR-/PI-EX-DTMs to the catalog management

To transfer the MACX-MCR-/PI-EX-DTM to the catalog management, proceed as follows:

1. Open the "Tools" menu.
2. Select the "DTM-Catalog Management..." command here.

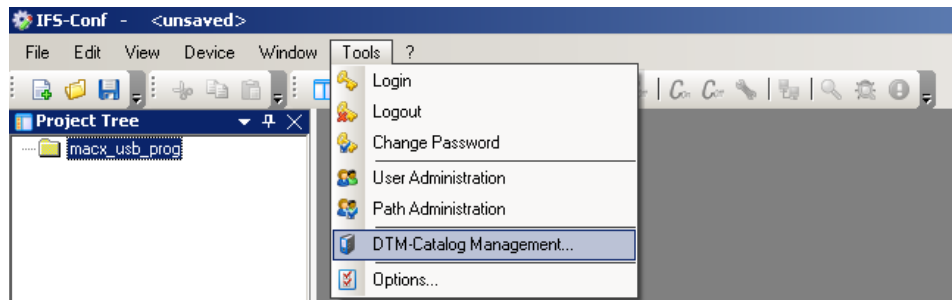


Figure 1-2 Opening the DTM-Catalog Management

3. Click on "Search for installed DTMs".
4. The DTM-catalog management update process is displayed in a progress indicator. The DTMs entered in the registry are displayed under "Known DTMs". This includes the DTMs that were supplied with IFS-CONF as well as other installed IFS-DTMs.

To transfer MACX-MCR-/PI-EX-DTMs and the IFS-USB-PROG-ADAPTER DTM from the selection table to the current DTM-catalog, proceed as follows:

5. Select the MACX-MCR-/PI-EX-DTM and then the IFS-USB-PROG-ADAPTER DTM or several DTMs simultaneously and click on the ">>" button or transfer all the DTMs by clicking on "All >>".
6. Click on "Update Catalog and Close Window".

The MACX-MCR-/PI-EX-DTM and the IFS-USB-PROG-ADAPTER DTM are now transferred to the current DTM-catalog of IFS-CONF. If you want to transfer additional DTMs at a later time, follow the same procedure.



After first installation an update of catalog data can be necessary.

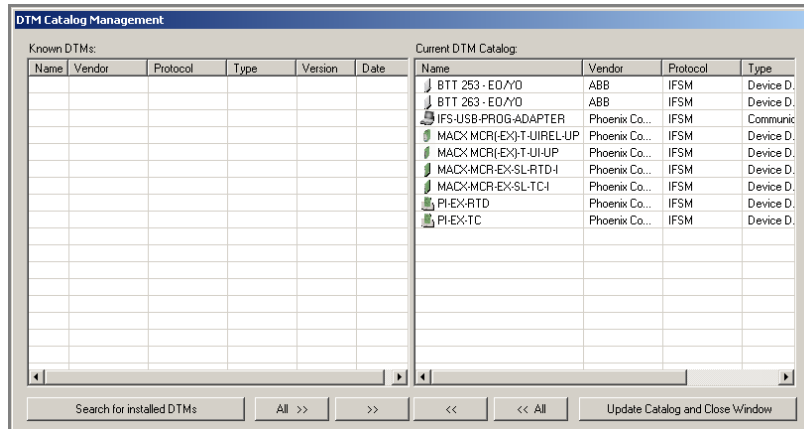


Figure 1-3 DTM-Catalog Management

The selected DTM-catalog is displayed in IFS-CONF. In order to use the MACX-MCR-/PI-EX-DTM a corresponding project file must be created.

1. Create a new project file by selecting "New" in the "File" menu.
2. To assign a name to the project file, save the project file by selecting "Save As" in the "File" menu.

By default, IFS-CONF saves the file with the file extension *.axf to "...My Documents\My FDT Projects".

The following describes how to transfer the necessary devices from the DTM-catalog to the project tree. Proceed as follows:

1. First, click on the IFS-USB-PROG-ADAPTER in the CONTACTRON-DTM-IFS catalog.
2. Then drag and drop the IFS-USB-PROG-ADAPTER in the project tree.



Alternatively, you can also select from the MACX-MCR-/PI-EX-DTM catalog by double-clicking on the required device

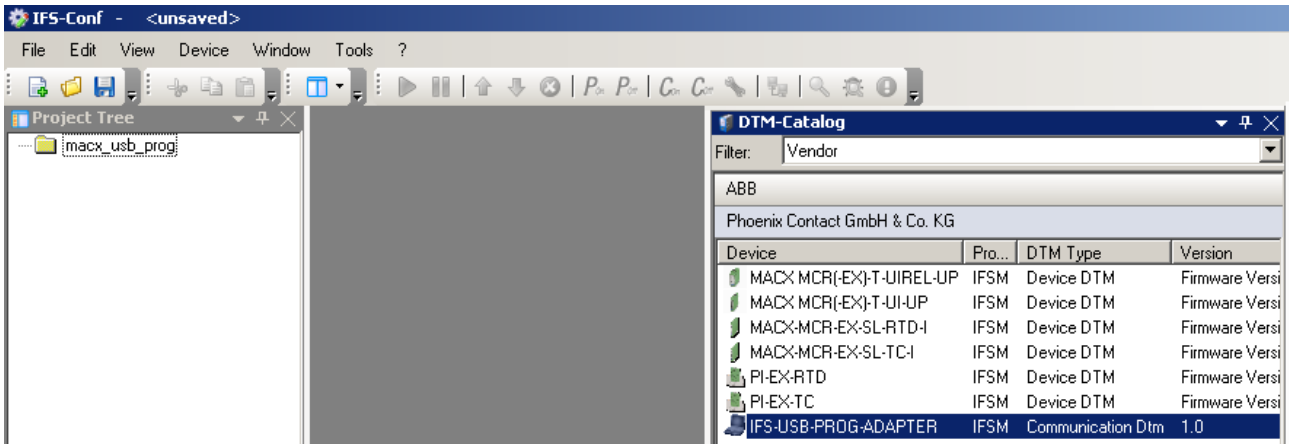


Figure 1-4 Transferring the IFS-USB-PROG-ADAPTER to a project

To connect the required devices from the DTM catalog to the IFS-USB-PROG-ADAPTER, proceed as follows:

1. First, click on the IFS-USB-PROG-ADAPTER in the project tree.
2. Then select the required MACX MCR module in the MACX-MCR-/PI-EX-DTM catalog.
3. Drag the MACX MCR module over to the programming adapter.



Alternatively, you can also select from the MACX-MCR-/PI-EX-DTM catalog by double-clicking on the required device or by right clicking in the adapter in the project tree, choose "Add" and there choose the required device.

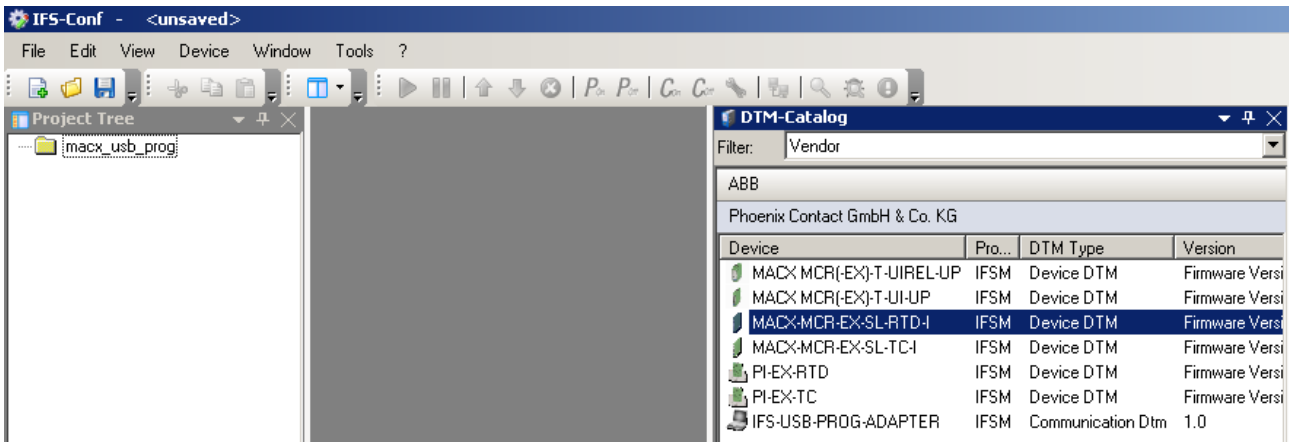


Figure 1-5 Transferring the DTM to a project

2 MACX-MCR-/PI-EX-DTMs

The DTM (Device Type Manager) comprises all functions, the structure, the parameterization, and the GUI (graphical user interface) including a help system for a specific field device or device range. The DTM is installed on the PC as a program, but can only be started from a container or the frame application, e.g., IFS-CONF.

In addition to the device DTMs, there are also DTMs for communication devices, such as PROFIBUS DP controller boards, HART modems or gateway devices. The device used for communication to MACX MCR products is the IFS-USB-PROG-ADAPTER from Phoenix Contact.

2.1 Scan topology

A topology scan can be used to determine which device is connected to an adapter / bus / interface already chosen in the project tree.

By right clicking IFS-USB-PROG-ADAPTER in the project tree and choosing scan topology and following further instructions, the frame application scans this interface for known device connected to them.

If a known device is found, the frame application connects it and starts the online parameterization.



The frame application "IFS-CONF" scans the topology of a connected IFS-USB-PROG-ADAPTER automatically during its start up.

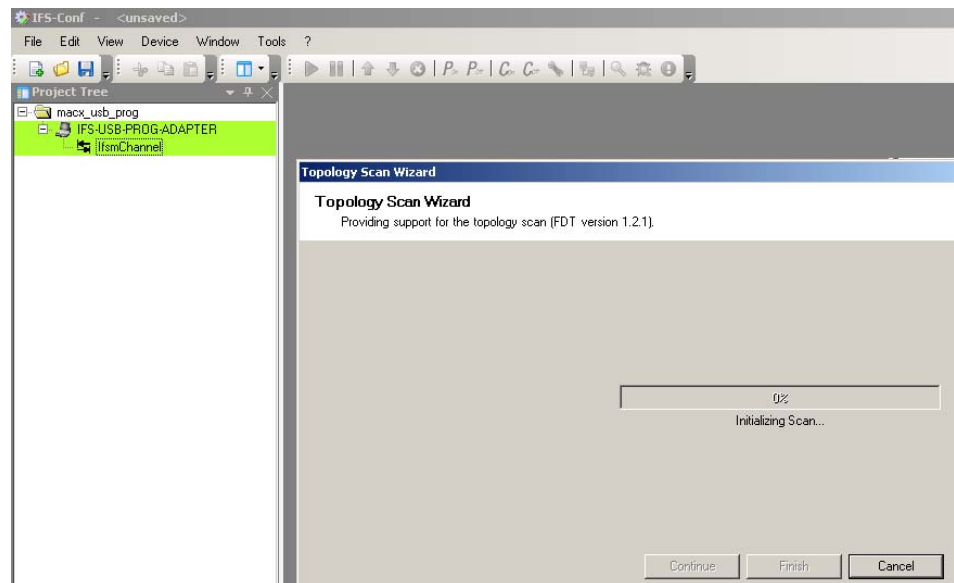


Figure 2-1 Startup Topology Scan

Start topology scan manually

- Open the context menu of the IFS-USB-PROG-ADAPTER and select "Scan Topology, IfsmChannel".

2.2 Establish an online connection to a bus device

To establish an online connection with MACX-MCR/PI-EX-temp module without using the scan topology function, proceed as follows:

1. Select the required MACX-MCR/PI-EX-temp module in the project tree.



If the project tree isn't apparent, activate it by clicking: "View, Project Tree".

2. Open the context menu and select the "Connect" command.
3. A connection is established to the selected MACX-MCR/PI-EX-temp module.

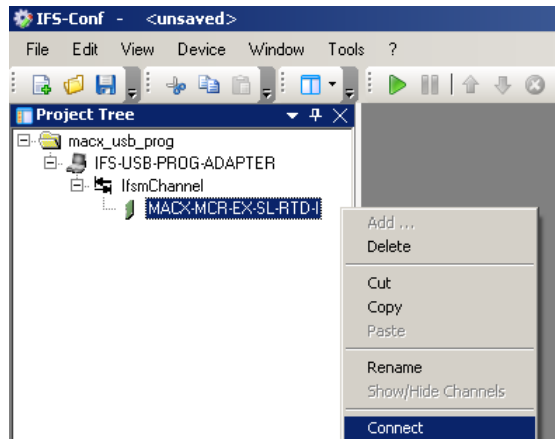


Figure 2-2 Connect to device

2.3 Reading the parameter data of a bus device online

To read the parameter data of the MACX-MCR/PI-EX-temp module via an online connection, proceed as follows:

Reading parameter data online

1. From the context menu select the "Online Parameter" command.

A successful connection for online parameterization is shown by green coloring the background of the adapter and device in the project tree.

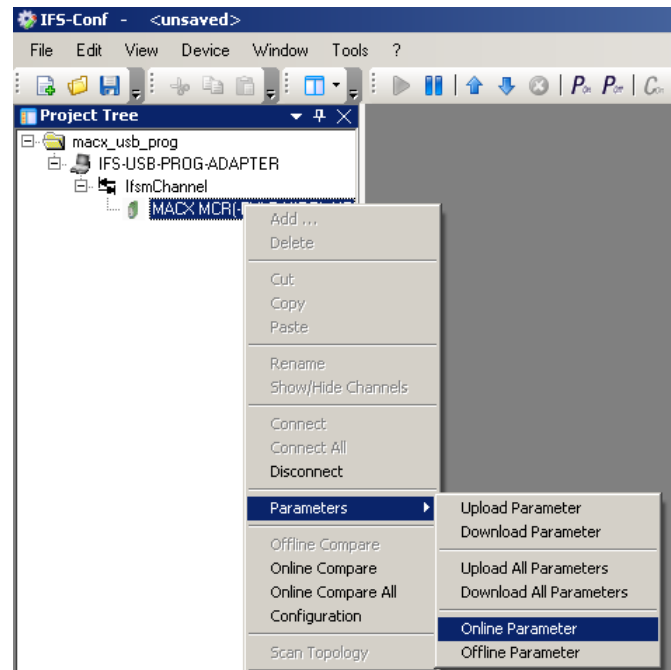


Figure 2-3 Reading parameters online

The parameter data is read and displayed for editing in the parameter menu of the MACX-MCR/PI-EX-temp module.

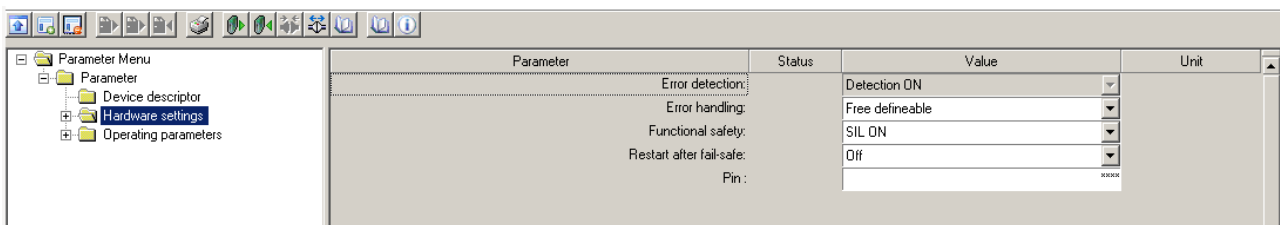


Figure 2-4 Parameter windows

2.4 Information area

The following information about the currently connected device is displayed here:

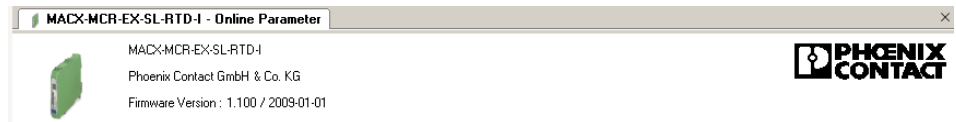


Figure 2-5 Device identification

- Device image: A stylized image of the front view of the device is displayed here.
- Device information: Device type
- Firmware version
- Manufacturer logo: An image of the manufacturer's logo is displayed here.

2.5 Toolbar

The toolbar contains the following menu items:



Toggle Ident Area

The Ident Informations can be enabled or disabled.



Tree Expand

Full expand of the parameter tree



Tree Collapse

Complete collapse of the parameter tree



Print:

The current device settings can be printed in table format for documentation purposes.



Load From Device:

This button can be used to read the device data of a connected device.
If the connected device is not supported, an error message is displayed.



Store to Device:

When this button is pressed, the current local device settings are transferred to the device.



Connect:

With this icon the device can be connected to the Frame application and its data will be read.

If the device is connected, this option is grayed out



Disconnect

To disconnect the device from the interface press this icon.

If no device is connected, this option is grayed out



Manual:

Here a Manual about the used DTM is accessible.



About this DTM:

Information about the DTM Name, its version, the connected Device and its Firmware version, and Splendor Information can be found here.

Tabs

There are three possible tabs of this DTM. The

- Online parameters tab, the
- Observe tab and the
- Service tab (Force).

2.6 Online Parameters tab

The Online Parameters tab appears by clicking on the device in the project tree and choosing "Parameters, Online Parameters".

This tab contains configuration and parameterization dialog boxes that are relevant for the connected device.

The tree structure is divided into the following groups:

- Device descriptor
- Hardware settings
- Operating parameters

In all windows in which parameters can be modified:

- the modified parameters are indicated with an icon (pencil) and
- the "Cancel" button is available to reject the current changes.

2.6.1 Device descriptor

The

- device descriptor (a tag number, 16 characters),
- user text (20 characters), and
- installation date

can be specified here. Additionally, the module name, serial number, and firmware version are displayed.

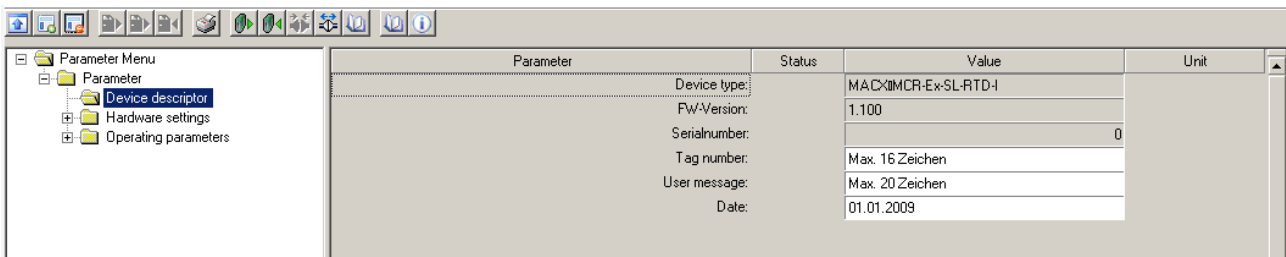


Figure 2-6 Device descriptor in the Online Parameters tab

2.6.2 Hardware settings

- Error detection
- Error detection can only switched off while functional safety is deactivated.
- Error handling

Here the error handling (overrange, underrange, linebreak and shorted) can be all preset to a value > 21.5 mA, < 3.6 mA or every single error level can be set to a free chosen value. This value has to be bigger than 21.5 mA or smaller than 3.6 mA.
- Functional safety

Here the functional safety can be switched off. With deactivated functional safety deactivated configuration options become available.
- Restart after fail-safe

If restart is configured, the device will do a restart after falling into fail safe (or in an internal error mode during functional safety deactivated). During the restart internal tests will test the hardware. If these tests don't find a fault, the device will go back to work.

Analog input

Signal type (sensors)

RTD:

- Mode (2-, 3-, 4- wire)

TC:

- Cold junction
- Cold junction temperature

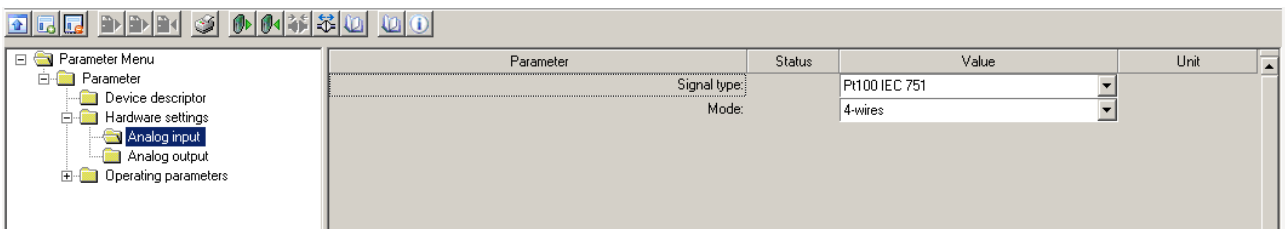


Figure 2-7 Hardware settings in the Online Parameters tab

Analog output

- Analog output (can't be switched off during SIL mode)

2.6.3 Operating parameters

Analog input

- Analog input range start.
Chosen value has to be inside the defined sensor range.
- Analog input range end
Chosen value has to be inside the defined sensor range. The minimum range also has to be respected.
- Temperature unit
°C, °V, during resistance or voltage mode Ohm or mV.
- Oversampling
Sets oversampling filter to a certain value
- Moving average filter
Sets moving average filter to a certain value
- 2-wire compensation cable impedance
Only available during RTD/Resistance 2-wire mode. The value of impedance can be measured by shortening the sensor and using the monitoring function (in observe tab) to measure the impedance.

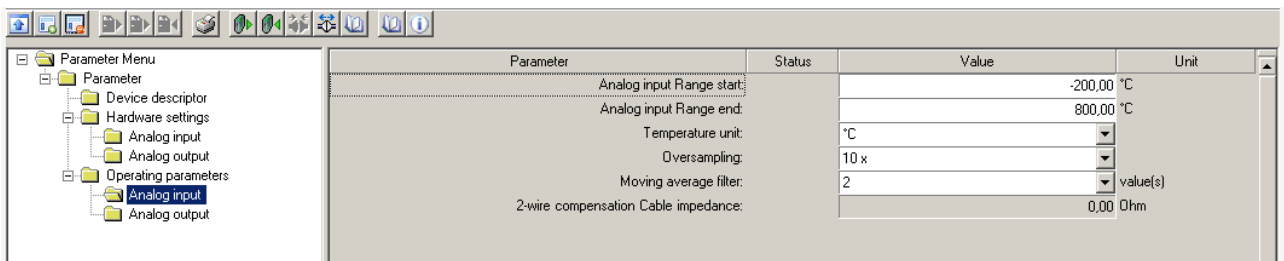


Figure 2-8 Operating parameters in the Online Parameters tab

Analog output

- Analog output range start.
Start of output range. This setting can only be changed while functional safety is deactivated.
 - Analog output range end
End of output range. This setting can only be changed while functional safety is deactivated.
 - Zero
An offset of the sensor input can be compensated here.
 - Span
A span of the sensor input can be compensated here.
- (The next four settings can be preset by "Hardware Settings, Error handling")
- Overage (definition of device behavior during input overrange)
 - Underrange (definition of device behavior during input underrange)
 - Linebreak (definition of device behavior during input linebreak)
 - Shorted (definition of device behavior during input shorted)

2.7 Observe tab

The Observe tab appears by clicking on the device in the project tree and choosing "Observe".

This tab monitors the devices working values. It is only available during online mode.

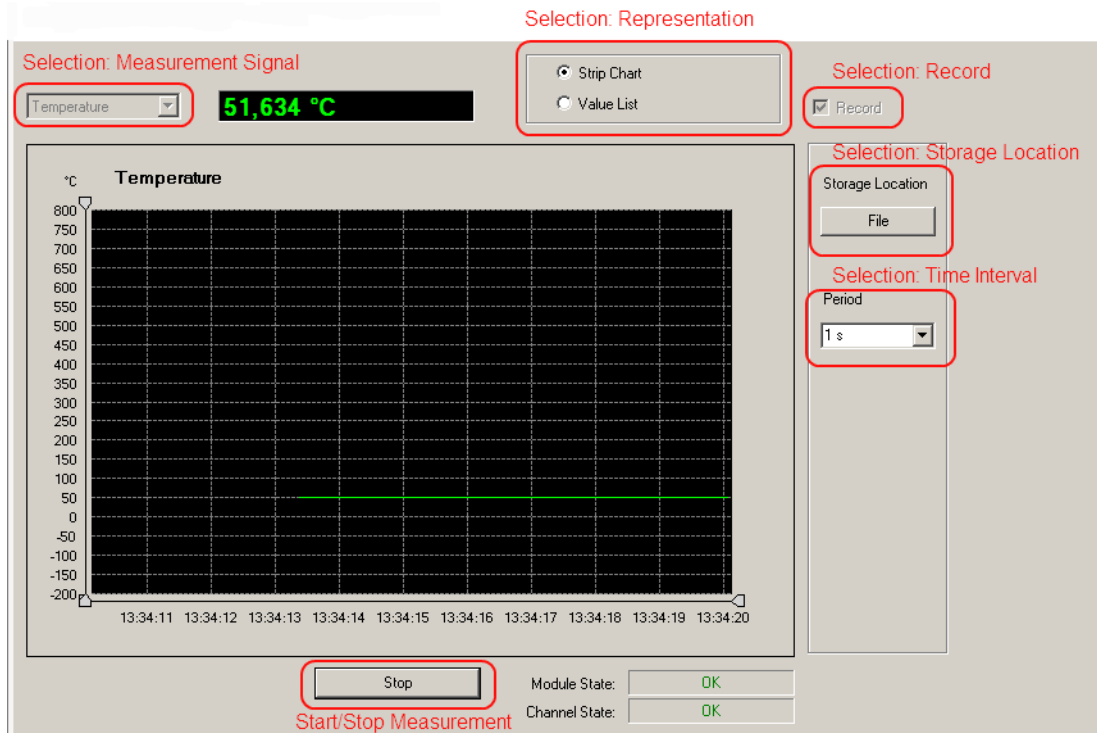


Figure 2-9 The Observe tab

Selection: Measurement Signal

- For the MACX MCR-EX-SL-TC...temperature, temperature of cold junction, output value (mA)
- For the MACX MCR-EX-SL-RTD...temperature, resistance, sensor current, output value (mA)

Selection: Representation

The values can be represented as a diagram ("Strip Chart") or in table form ("Value List").

Selection: Record

This function shows or hides the functions "Storage Location" and "Period". Both functions are necessary for recording measured device values.

Selection: Time Interval

A recorded measurement can be stored as a text file on a data carrier ("Record" checkbox) and later imported into Microsoft Excel. The following time intervals are available as scanning rates for the sequence of measurements:

0.5 s, 1.0 s, 5.0 s, 10.0 s, 30.0 s, 1 min., and 5 min.

Storage Location

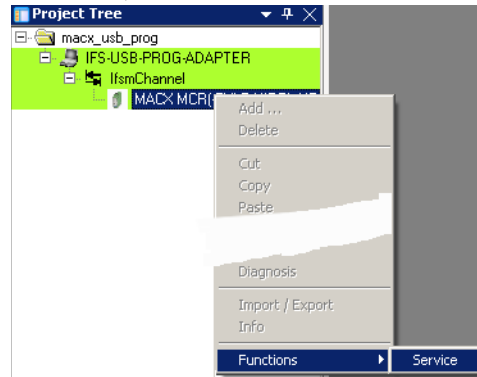
The storage location for the measured value file can be specified under "File...". Once 32,000 measured values have been recorded, the file is closed and a new file is opened with an additional index in the file name.

Start/Stop Measurement

Measurement is started by clicking on "Start" and stopped by clicking on "Stop".

2.8 Service tab (Force)

The Service Tab appears by clicking on the device in the project tree and choosing "Functions, Service".



Forcen

Forcen means to set the output value of the device to a certain value independent from the input value.

To do this, "Forcen" or "Forcen + Zero + Span" must be chosen. The percentile value editable in the "Set Output to" window gives the wished output value. (E.g. 4 – 20 mA Range, 0% = 4 mA, 100% = 20 mA). Additionally during "Forcen + Zero + Span" mode the wished output value changes its value corresponding to the "Zero" and "Span" input.

The wished output value becomes the output value of the device by pushing the "Set Output to" button.

Zero + Span

To adjust the output signal, during "Zero + Span" mode the Zero and Span can be set to the wished level. The output level will change its behavior after pushing the "Set output to" button. These settings can be imported into the device by pushing "Apply" (Zero and Span settings in Operating Parameters will be set equally), and later writing the changed configuration into the device.

Reset

Reset of device.

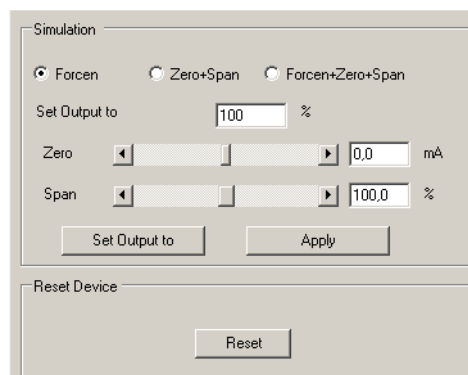


Figure 2-10 The Service tab