



# ACT20C Station

Manual



## 1.1 Revision history

Version	Date	Change
0.0	03/2015	First edition
1.0	06/2015	Page 22, more precisely specifying the Ethernet communication interface
2.0	04/2016	Page 7, 33, 35 product complemented Page 10, CE standards updated

## 1.2 Contact address



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## 2. About this documentation

### 2.1 Complete documentation

This system manual provides an overview of the components of the ACT20C station as well as their operation mode in the station network.

Detailed technical information can be found in the component-specific operating instructions.

All documents are available in electronic form for download at "<http://www.weidmueller.de>".

Documen- tation	Title
System manual	<ul style="list-style-type: none"> <li>• ACT20C-Station Systemhandbuch (DE) (document number 1535730000)</li> <li>• ACT20C station system manual (EN) (document number 1535970000, this manual)</li> </ul>
Operating instructions	<ul style="list-style-type: none"> <li>• Gateway ACT20C-GTW-100-MTCP-S (document number 1535450000)</li> <li>• Bus termination terminal ACT20C-LBT-10 (document number 1535710000)</li> <li>• Current-measuring transducer ACT20C-CMT-XX-(AO)-RC (document number 1535720000)</li> <li>• Current-measuring transducer ACT20C-CML-XX-(AO)-RC (document number 2424750000)</li> </ul>
Installation manual	FDT/DTM software*) <ul style="list-style-type: none"> <li>• Quick Installation Guide for FDT/DTM Software*)</li> </ul>
Online help	FDT/DTM software*) <ul style="list-style-type: none"> <li>• WI-Manager FDT frame application</li> <li>• DTM ACT20C-CMT-XX-(AO)-RC</li> <li>• DTM ACT20C-CML-XX-(AO)-RC</li> </ul>
Markings and certifications	see operating instructions and "downloads" of the device in the online product catalog

Table 1: Documentation for ACT20C station

\*) <http://www.weidmueller.de/FDT-DTM>


### 2.2 Target group


This documentation is aimed at personnel who plan, install, put into operation and maintain an ACT20C station.


### 2.3 Terms used


See chapter 8.5 "Glossary" in the appendix.


## 2.4 Symbols and their meanings


	<b>DANGER!</b>
	DANGER (red) indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This symbol should only be used for extreme situations.

	<b>WARNING!</b>
	WARNING (orange) indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

	<b>CAUTION!</b>
	CAUTION (yellow) indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

	<b>NOTICE</b>
	NOTICE (blue) indicates a hazardous situation which, if not avoided, may result in damage to property.

	<b>INFORMATION</b>
	Helpful information for trouble-free operation.

	<b>TIP</b>
	Note for simple operation.




## 3. Safety notifications

### 3.1 General safety notifications


This section includes general safety notifications on handling the ACT20C station. Specific safety notifications on concrete actions and situations are specified at the relevant points in the documentation.

All applicable safety regulations, technical requirements and operating instructions must be taken into account before installation, commissioning and maintenance of the station and its components.


The current documentation, other certificates and further information are available for download at "<http://www.weidmueller.com>".

	<b>DANGER!</b>
	Non-observance of the warnings may lead to serious injury and/or damage to property.


#### 3.1.1 Authorised personnel

	<b>DANGER!</b>
	<p>For safe installation and for safe operation of the station and its components, the following must be taken into account:</p> <ul style="list-style-type: none"> <li>The components must only be installed by qualified specialist personnel who are familiar with national and international laws, directives and standards in the respective region of application (see IEC 61010-2-201).</li> </ul>


#### 3.1.2 Electrostatic discharge

	<b>NOTICE</b>
	During the usage and handling of the station and its components, the respective protective measures against electrostatic discharge must be observed.


#### 3.1.3 Open equipment

	<b>WARNING!</b>
	<p>The components of the ACT20C station are open equipment which is exclusively installed and operated on a DIN rail in lockable enclosures, cabinets with min. protection class IP20 and impact protection IK08 or in electrical operating areas. Only trained and authorised personnel may access the equipment.</p> <p>Place a WEW 35/1 end bracket at the beginning and end of an individual module or group of modules.</p> <p>The standards and guidelines applicable for the assembly of switch cabinets and the arrangement of data and supply lines must be complied with.</p>

### 3.1.4 Fusing

	NOTICE
	The power supply for the station must offer secure isolation.
	During installation, the station must be provided with a fuse dimensioned according to the rated values of the station and its components, which disconnects the supply voltage in case of malfunction.
	The maximum permissible load current of the ACT20C components is listed in the technical data of the respective operating instructions (see also chapter 2.1 "Complete documentation").
	In the case of modules without a fused sensor/actuator power supply, all lines to the connected sensors and actuators must be fused according to their conductor cross-section (as per VDE 0298 Part 4).
	All connections of the ACT20C components must be protected against voltage pulses and overcurrents according to IEC 61010-2-201. The operator must decide whether additional surge protection is required according to IEC 62305.

### 3.1.5 Earthing / Shielding

	Shielded lines must be connected according to standards and fixed on a shield bus.
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## 3.2 Intended use

The components of the ACT20C series are intended for use in industrial automation. An ACT20C station with gateway and connected modules is intended for diagnostics, remote access and condition monitoring of systems or parts of systems.

All modules of a station are integrated in a communication network and connected with superordinate systems via a gateway. The ACT20C components correspond to protection class IP20 (acc. to DIN EN 60529). They can be used in the safe zone.

Observance of the supplied documentation is part of the intended use. The station described in this manual may only be used for the intended applications and only in connection with certified third-party devices or components.

- Read and follow all instructions in this manual.
- Only take an ACT20C station into operation if all components are in good condition, if it is to be used as intended, if it complies with all safety instructions and all the dangers are known and all instructions in this manual have been complied with.
- Make sure that this manual and any other relevant documents are complete, readable and accessible to the employees at all times.
- The responsibility for the safety of a system containing this station lies with the operator of the system, who should also ensure safety during assembly and operation.

## 3.3 Legal notice

Devices of the ACT20C series are CE-compliant according to Directive 2014/30/EU (EMC Directive) and Directive 2014/35/EU (Low Voltage Directive).

## 4. System properties

### 4.1 Applications

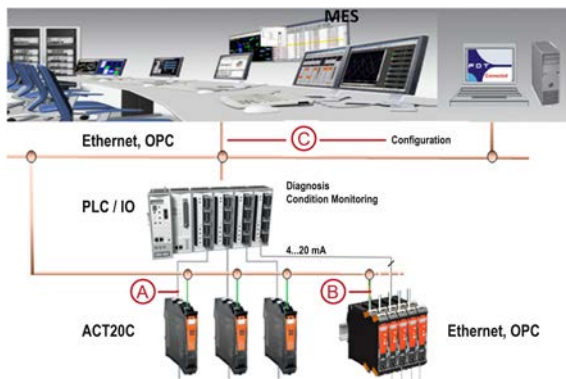


Figure 1: ACT20C station

The ACT20C series was developed specially for applications with continuous processes. It enables the continuous monitoring of diagnostic, device and process information ("condition monitoring").

### 4.2 Properties

#### Station structure

Several ACT20C components form a station, which consists of an ACT20C Ethernet gateway, communicative ACT20C signal converters and an ACT20C bus termination terminal.

The components are mounted on a DIN rail with integrated bus profile to enable the combined transmission of communication signals and supply voltage (see also chapter 5.2 "Installation").

#### "Condition Monitoring"

In addition to the analogue output signal (A), e.g. as 4...20 mA signal, status and process information of all components of the station are available via the network connection (B) of the gateway.

This contains information on

- installation conditions (e.g. cable breakage, short-circuit)

- ambient and operating conditions (e.g. operating life, measuring overrange, limit value violation)
- connected devices (e.g. service life, frequency of use)

The operational status of the gateway and each module is classified on the basis of NE107 and can be adapted to application-specific requirements. This is indicated by a LED on the front according to NE44.

#### "Plug & Produce"

The commissioning of the station is supported by station management in the gateway. This means that the initial commissioning and module exchange are possible during operation without the use of a software tool ("Plug & Produce").

#### Software parameterisation according to the FDT standard

Parameterisation of the components is carried out with the WI-Manager software and the associated device drivers (DTM) of the ACT20C product series (C). This software is an application based on the standardised FDT technology (Field Device Tool) for Microsoft Windows and allows central adaptation of the components to the respective application. Besides simple parameterisation, the WI-Manager and DTMs also enable the evaluation of measurement and diagnostic data. This data is also available to the superordinate control or maintenance system (C) directly over Ethernet.

#### "Hot swapping"

In a station, individual modules can be pulled during operation ("hot swapping") and replaced by replacement modules of the same type **without** impairing the operational status of the other modules. The "Plug & Produce" function enables the new module to accept the configuration directly from the gateway without needing to use the WI-Manager software.

"Hot swapping" is supported by the connection system of an ACT20C device, which enables simple, coded plugging and release of the female plug using the release lever.

**High availability**

The processing function of the individual modules of a station is independent of the functional condition of the gateway.

**Secure isolation**

All signal converters of the station have a galvanic, 3- or 4-way isolation for secure isolation according to IEC/EN 61010-2-201.

## 5. Assembly and installation

### 5.1 General

An ACT20C station must only be installed by authorised personnel (see chapter 3.1.1 “Authorised personnel”).

#### 5.1.1 Environmental conditions

Observe the information in chapter 3.1.3 „Open equipment“ and chapter 3.2 “Intended use”.


Avoid influences due to direct sunlight, dust, high temperatures, mechanical vibrations and shock, as well as due to rain or high humidity.

The permissible temperature range of the ACT20C station and its components must be maintained and appropriate measures (ventilation, heating) should be taken if necessary.

The ACT20C station must be installed in a zone with pollution degree 2 or better.

The design ensures safe operation when the ACT20C station is used below a height of 2000 m above sea level.

#### 5.1.2 Unpacking

	<b>NOTICE</b>
	<p>Material damage caused by electrostatic discharge (ESD)!</p> <ul style="list-style-type: none"> <li>• The devices of an ACT20C station can be damaged or destroyed by electrostatic discharge. When handling the devices, the necessary safety measures against electrostatic discharge (ESD) according to EN 61340-5-1 and EN 61340-5-2 must be observed.</li> <li>• All devices are supplied in ESD-protected packaging. The packing and unpacking, as well as the installation and disassembly of a device, may only be carried out by qualified personnel and in accordance with the ESD information.</li> <li>• When removing the packaging of the individual components, proceed carefully as follows.</li> <li>• Also observe the safety notifications on the package insert.</li> </ul>

## 5.2 Installation

### 5.2.1 Mounting the DIN rail with bus system

All components of the ACT20C station are intended for installation on a standard 35 mm wide DIN rail with CH20M bus system and, together, form a rail bus.

The CH20M bus system consists of a mounting profile, bus board, cover profile and side end plates.

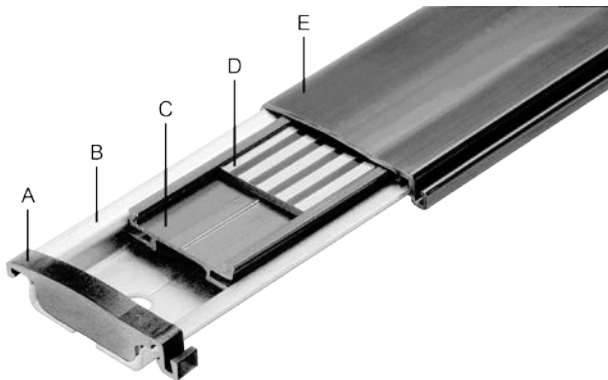


Figure 2: DIN rail with CH20M bus system

- A End plate, left
- B DIN rail TS 35x7.5 or TS 35x15x1.5 according to DIN EN 60715
- C Mounting profile
- D Bus board
- E Cover profile



The CH20M bus system can be ordered as a set or in the form of individual elements. The profiles are available in different lengths (see also chapter 8.4 "Ordering data" and "<http://catalog.weidmueller.com>" with keyword search "ch20m bus").

Prepare the DIN rail with the bus system before installation of the ACT20C components:

- First mount a DIN rail.
- When using a DIN rail TS 35x7.5, make sure that the head height of the mounting screw does not exceed 3.5 mm.

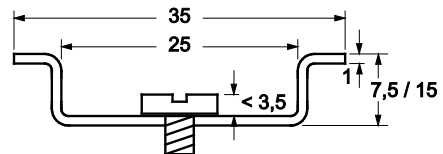


Figure 3: Mounting screw head height

- Insert the mounting rail and the bus board in the DIN rail.
- After installation of the components, close off sections of the DIN rail with the associated cover profile that are not required.
- Place the end plates on the ends of the DIN rail in order to protect the bus and to fix the mounting profile in place.

## 5.2.2 Installing components

The gateway and modules are installed by clipping them into the DIN rail by means of the spring-loaded holder for installation.

<b>i</b>	<p><b>When clipping them in, care must be taken to ensure that the bus contacts are not damaged:</b></p> <ul style="list-style-type: none"> <li>• To do so, position the module at a min. 45° angle on the DIN rail and insert the upper edge of the DIN rail into the groove on the enclosure bottom (see Figure 4 "Installation", step 1).</li> <li>• Now, clip the enclosure into the DIN rail using a rotating movement (see Figure 4 "Installation", step 2).</li> </ul>
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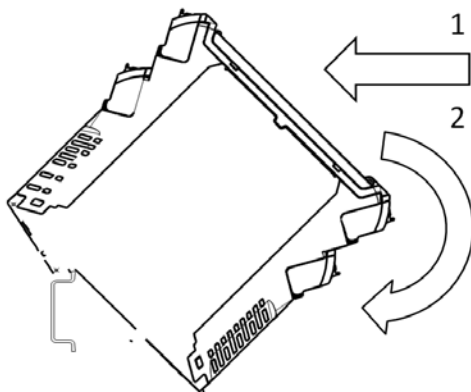


Figure 4: Installation

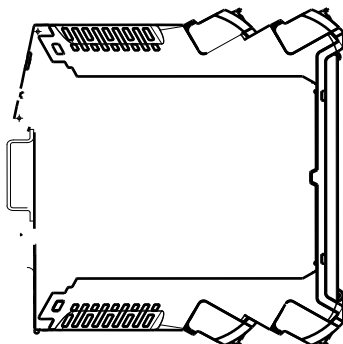


Figure 5: Component clipped in

## 5.2.3 Disassembling components

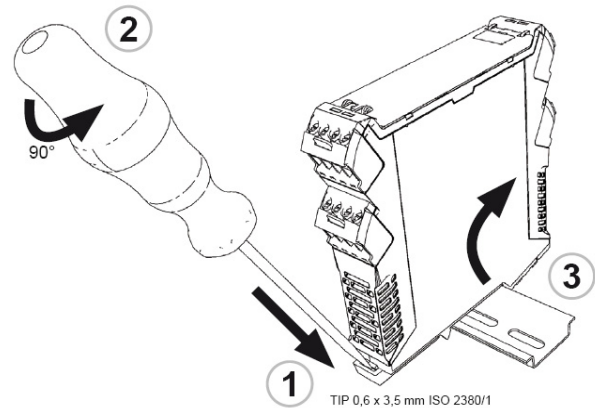


Figure 6: Disassembly

The component can be removed from the DIN rail again by actuating the spring release on the lower edge.

## 5.2.4 Labelling components

A wide range of markers are available as accessories for labelling equipment IDs.

Below the upper row of female plugs, there is a holder for accepting a marking. In addition, markers can be attached to the respective female plug in order to label the connection levels.

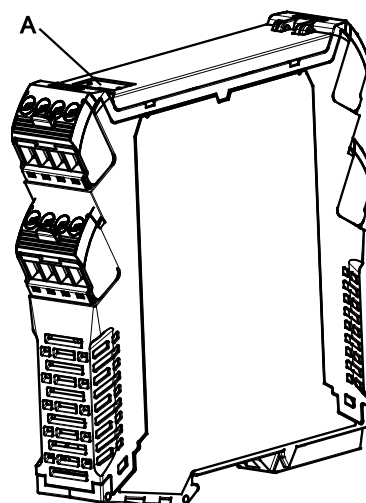


Figure 7: Attaching a marking

A Marking

### 5.2.5 Releasing the female plug

- Lever up the release lever of the female plug with a screwdriver.
- To do so, tilt the release lever by 90° so the female plug is released from the holding fixture and can now be pulled off the male header.

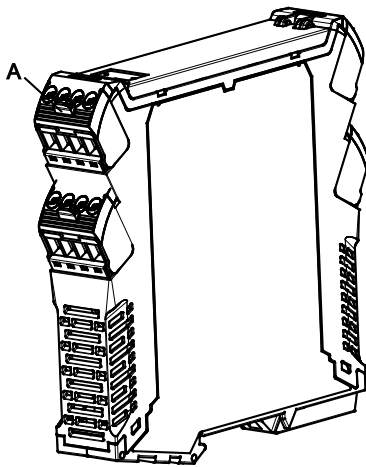


Figure 8: Female plug with release lever  
A Release lever

### 5.2.6 Sequence of installation



Figure 9: Arrangement of the components  
A End bracket WEW 35/1, mechanical  
B ACT20C gateway  
C ACT20C modules (1...16)  
D ACT20C bus termination terminal

Clip the components into the CH20M rail bus in the following sequence from left to right:

1. End plate and end bracket
  - ◇ The end bracket (Weidmüller "WEW 35/1 SW", part no. 1162600000) fixes the components in place on the DIN rail to the left side.
  - ◇ Place an end plate on the left end of the DIN rail in order to protect the bus and to fix the mounting profile in place on the top-hat rail.
2. Gateway
  - ◇ The gateway must be clipped into the DIN rail left of the modules.
3. Modules (1...16 pieces)
  - ◇ A participant address in the range 2...17 must be set on the DIP switch of each module (see operating instructions for the respective component in Table 1 "Documentation for ACT20C station").



All participant addresses must be unique.



The participant addresses should be assigned in ascending sequence for reasons of clarity.

Free slots on the DIN rail must be filled with placeholder modules or protected against contact with the cover profile (see also chapter 8.4 "Ordering data").

4. Bus termination terminal and end plate
  - ◇ The rail bus must be terminated with the bus termination terminal.
  - ◇ Also place an end plate at the right end of the DIN rail.



### 5.2.7 Encoding the female plug

The ACT20C female plug can be subsequently equipped with coding pins in order to prevent any unintentional plugging onto another male header on the enclosure.

Coding pins are available as accessories (see chapter 8.4 "Ordering data")

- Plug a coding pin (black) into each coding socket (orange) of a female plug up to the stop.

Now before(!) connecting the female connector onto the male header of the enclosure for the first time, adapt the coding as follows:

- Rotate both coding elements on the female plug clockwise (see Figure 10 "Setting the coding element").  
Each adjustment dial has four coding positions so 16 codings per female plug are possible (see Figure 11 "Coding positions").

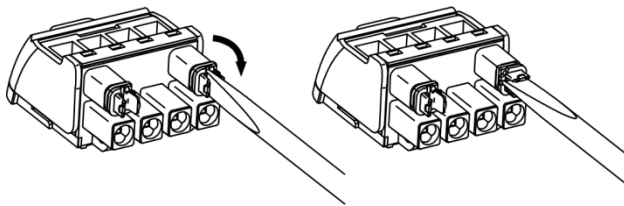


Figure 10: Setting the coding element

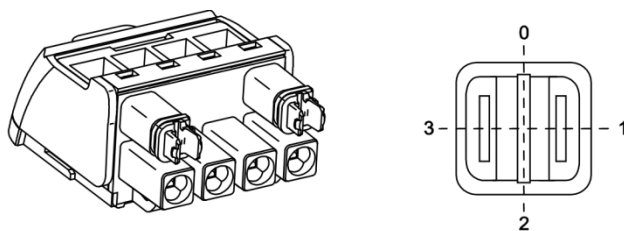


Figure 11: Coding positions

- Now connect the coded female plug with the male header on the enclosure.  
By doing so, the coding pins are transmitted from the female plug to the male header of the enclosure and remain there.

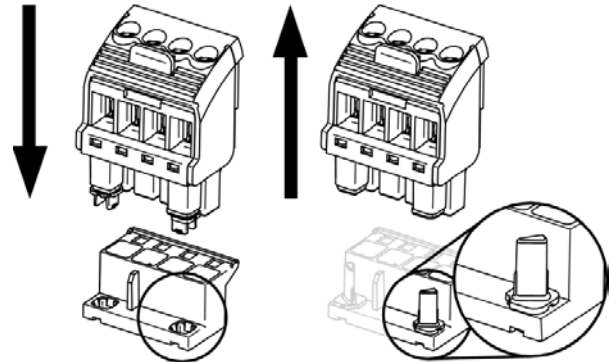
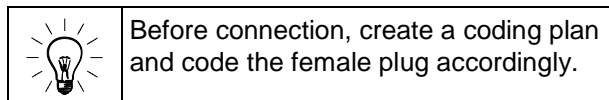



Figure 12: Transmission of the coding pins




## 5.3 Installation

	<b>WARNING!</b>
	<p>Dangerous voltage!</p> <p>Before installation work, ensure that:</p> <ul style="list-style-type: none"> <li>the power supply of the electric circuits concerned are switched off and secured against being switched on again,</li> <li>the electric circuits concerned have been discharged.</li> </ul>


### 5.3.1 General

- The use of flexible single core cables is allowed for the mains supply only if the single core cables are provided with wire-end ferrules.
- A description of the inputs/outputs and the supply connections is printed on the side of the enclosure and also described in the package insert provided.


### 5.3.2 Electrical connections

	<b>WARNING!</b>
	<p>Observe the information in chapter 3 "Safety notifications".</p>

### 5.3.3 Connection with other electric circuits


	<b>WARNING!</b>
	<p>Only use power supplies that have secure isolation (e.g. Weidmüller Pro M series, type CP M SNT 70W 24V 3A, order no. 8951330000) for supplying the ACT20C station and connected Ethernet switches and PCS input cards.</p> <p>The voltages on the connections for input, output, Ethernet and the ACT20C power supply must not exceed the respective rated voltages.</p> <p>Also observe the information in chapter 3 "Safety notifications".</p>

### 5.3.4 Power supply

	<p>No other loads must be connected to the 24 V DC power supply of an ACT20C station.</p> <p>The length of the supply cable must not exceed 30 m.</p>
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### 5.3.5 Current consumption and power supply

The power supply of the ACT20C station is provided via the gateway.

	<b>NOTICE</b>
	<p>The current demand of all modules including the gateway must not be greater than 4 A in total.</p> <p>Before commissioning the station, check that this value is not exceeded for the installed station on the basis of the package insert for the components that are used.</p>

### 5.3.6 EMC protection

<b>i</b>	<p>Input, output and power supply lines must not be laid in areas that are the sources of electromagnetic interference fields.</p> <p>If necessary, additional filter and protective measures (e.g. shielded cables, surge protection) must be provided.</p>
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Possible sources of interference include relays, contactors, motors and their controls including thyristor control units and the cables that connect the corresponding units. ACT20C cables should not be installed together with such cables in the same channel.

The locally valid regulations for the installation of electrical equipment must be complied with.

## 6. Commissioning and parameterisation

### 6.1 General

#### 6.1.1 Connecting the power supply

Connect the gateway with the 24 V DC power supply.

### 6.2 Putting an ACT20C station into operation


#### 6.2.1 Initial commissioning

When the supply voltage is applied, the existing modules are automatically recognised by the gateway.

Now the modules are already visible to the gateway, but no process data are exchanged with the gateway yet.

Information on the default parameters of the modules and the gateway are described in the operating in-structions of the respective component (see also Table 1 “Documentation for ACT20C station”).


#### 6.2.2 Requirements for parameterisation

	<p>The following hardware and software is required for the application-specific parameterisation of the ACT20C station and its components:</p> <ul style="list-style-type: none"> <li>• Hardware (optional) <ul style="list-style-type: none"> <li>◇ Weidmüller CBX200 USB adapter or an</li> <li>◇ Ethernet patch cable and an Ethernet network interface on your Windows PC</li> </ul> </li> <li>• Software <ul style="list-style-type: none"> <li>◇ Weidmüller WI-Manager</li> <li>◇ Weidmüller DTM library</li> </ul> </li> </ul> <p>Install this software on your Windows PC:</p> <ul style="list-style-type: none"> <li>• Follow the instructions in the “Quick Installation Guide FDT/DTM Software” for the Weidmüller FDT/DTM software (see <a href="http://www.weidmueller.de/FDT-DTM">http://www.weidmueller.de/FDT-DTM</a>).</li> </ul> <p>Information on the operation of the WI-Manager and the DTMs can be found in the respective online help.</p>
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### 6.2.3 Reading in an ACT20C station

#### Creating a project

1. Connect your PC with the ACT20C gateway via a network interface or CBX200 USB adapter.

	<p>Point-to-point connection to the gateway via Ethernet:</p> <p>If you want to establish the point-to-point connection to a gateway with default settings over the Ethernet, carry out the following settings on the Ethernet interface of your PC:</p> <ul style="list-style-type: none"> <li>• IP address: 192.168.1.1</li> <li>• Subnet mask: 255.255.255.0</li> <li>• Gateway IP address: 0.0.0.0</li> </ul>
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2. Start the WI-Manager and select “Empty project”.

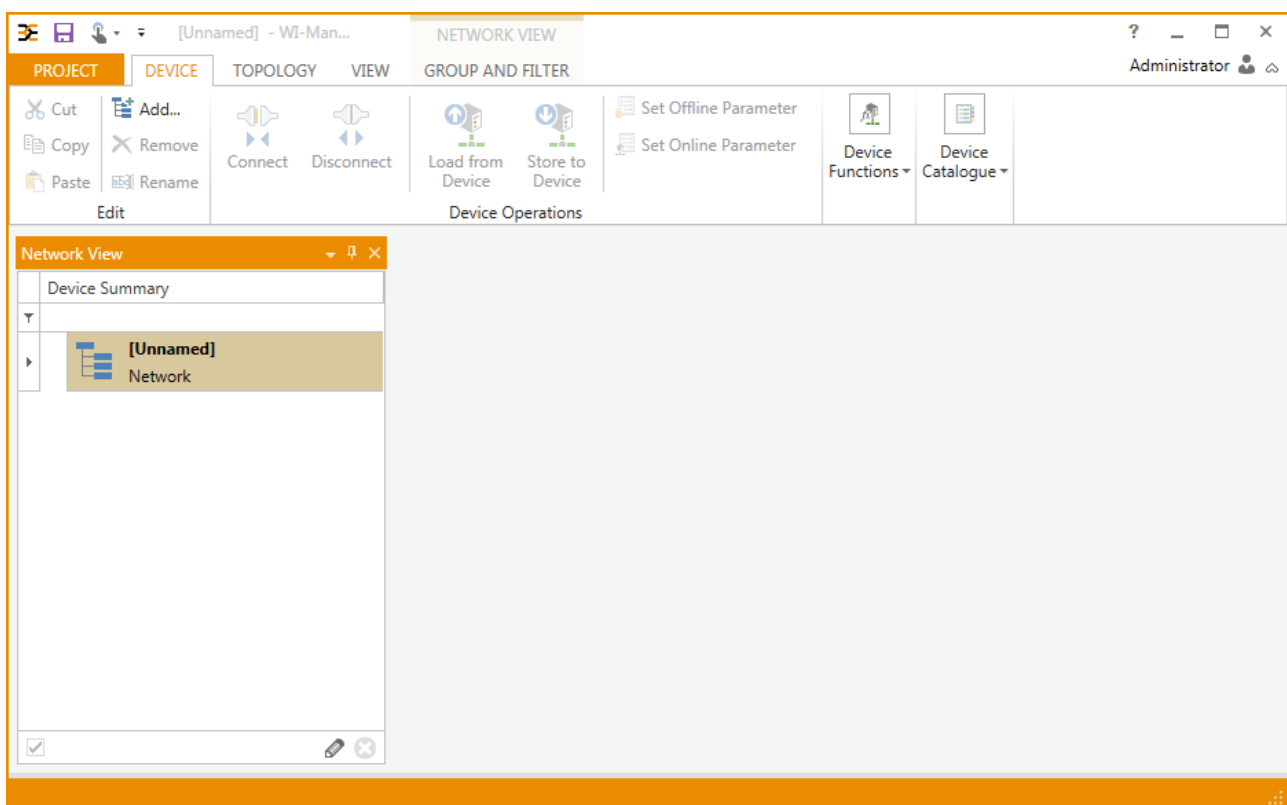


Figure 13: WI-Manager – New project

### Creating a communication interface with gateway

1. Now add a CBX200 interface or a Modbus TCP interface (alternatively) as well as an ACT20C gateway to the network shown in Figure 13 “WI-Manager – New project”:
  - a. Right-click on “Network” and select “Add > Weidmüller CBX 200 > OK”  
(Alternatively: Right-click on “Network” and select “Add > Modbus TCP Comm Interface (FDT version 2.0.0.0) > OK”).
  - b. Right-click on “Weidmüller CBX 200” (alternatively: “Modbus TCP Comm Interface”) and select “Add > ACT20C-GTW-100-MTCP-S > OK”.



As Ethernet communication interface for an ACT20C station use the “Modbus TCP Comm DTM” (FDT Version 2.0.0.0) only!

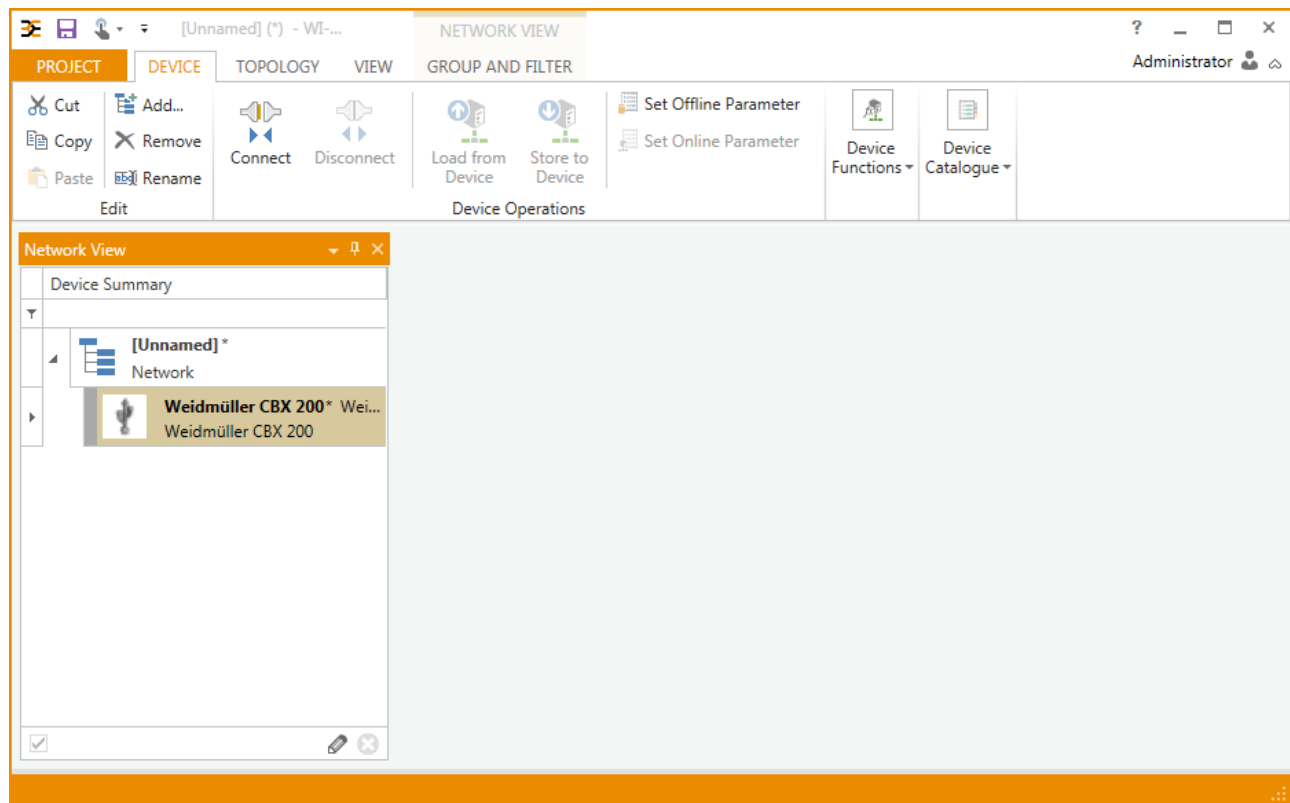


Figure 14: WI-Manager – Point-to-point access via a CBX-200 USB adapter

### Setting the communication parameters and establishing a connection

1. Adapt the IP address in the gateway DTM to the existing configuration in the gateway:
  - a. Start the “ACT20C-GTW-100-MTCP-S” gateway DTM by double-clicking on the corresponding symbol in the device overview.
  - b. Select the editing mode via the “Edit” button in the gateway DTM.
  - c. Set the IP address and network parameters in the gateway according to the existing configuration and end the input with “OK”.



The gateway has the following IP configuration ex works:

- IP adresse 192.168.1.130
- Subnet mask: 255.255.255.0
- Gateway IP address: 0.0.0.0



If the current communication parameters of the ACT20C gateway are no longer recognised, the IP address can be read out by means of CBX200 USB adapter or the gateway reset to the default settings and its IP works configuration by pressing a button (> 5 seconds).

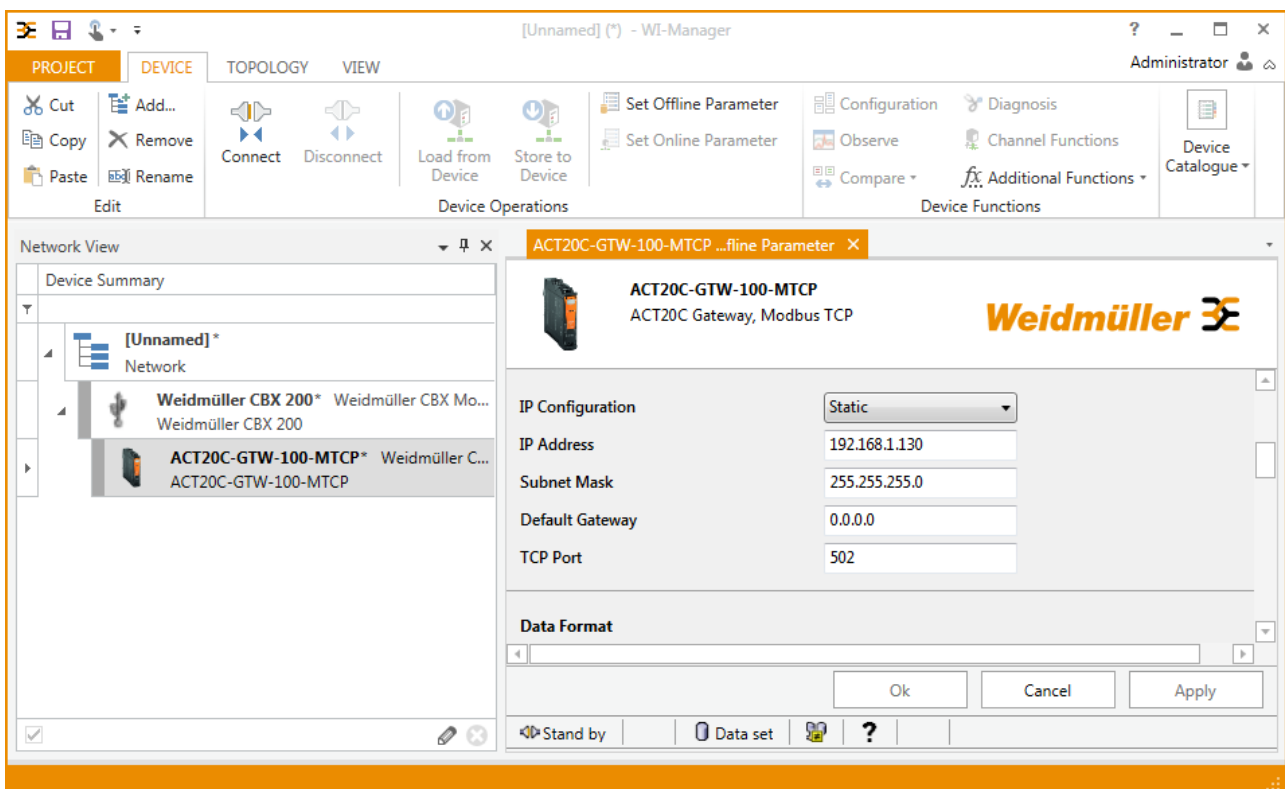


Figure 15: ACT20C gateway with network settings in processing mode

2. Establish the connection to the ACT20C gateway:
  - a. Right-click on the ACT20C gateway and select “Connect”.  
The current connection status is displayed in the status line at the lower edge of the window.

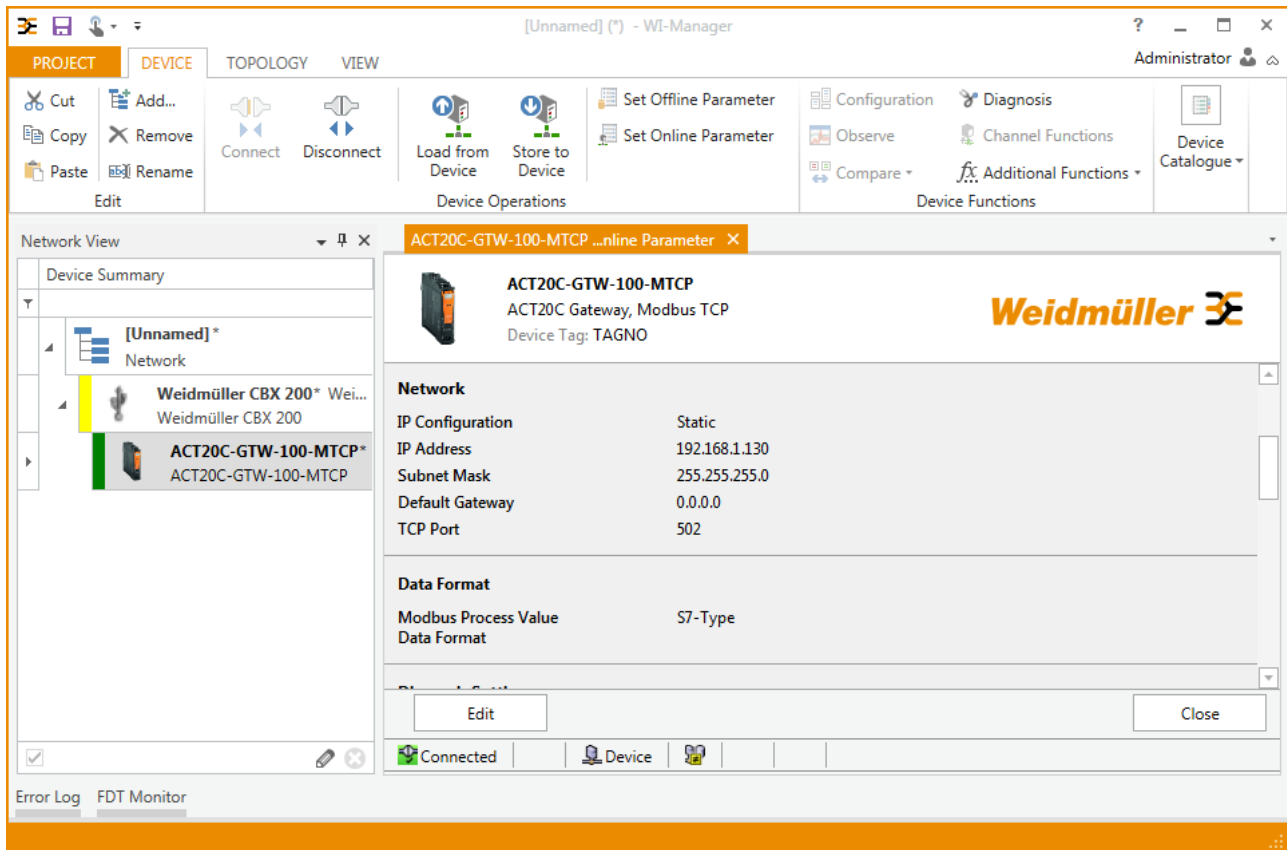


Figure 16: ACT20C gateway with network settings in online mode



### Reading in the station structure

1. Read in the structure of the ACT20C station:
  - a. Right-click on “ACT20C gateway” and select “Scan > Scan and create > OK”.
  - b. Save the project by clicking the disk symbol in the menu bar. To do so, select a storage location by selecting the corresponding folder symbol and allocate a project name, e.g. “Project-0100”.

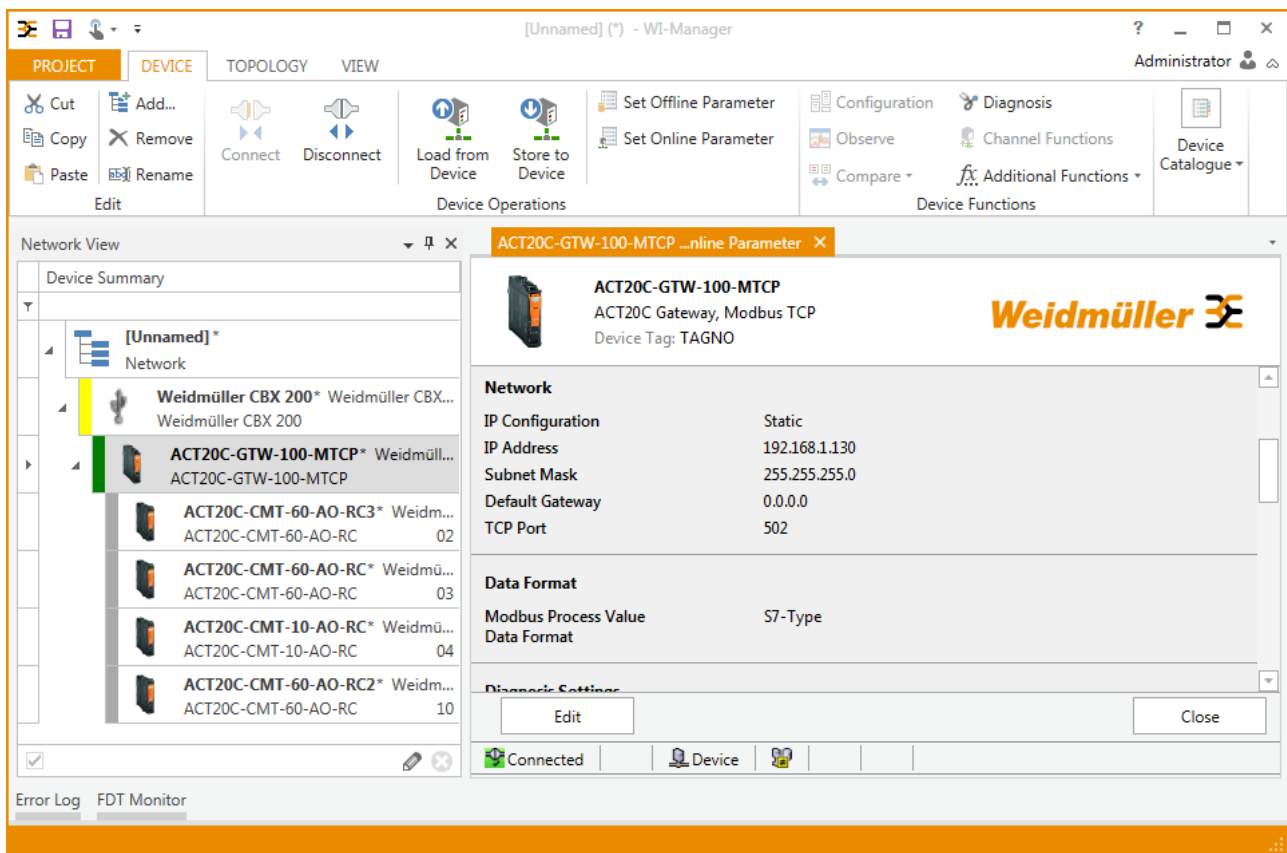


Figure 17: ACT20C station after reading in the station structure

### 6.2.4 Updating the station structure

With the update function, the current physical station structure is saved in the gateway as the station configuration. This fulfils the requirement for simple replacement of the module in future where a module is simply replaced by a module of the same type while the station is running ("hot swapping").

The new module is automatically recognised by the gateway and the configuration data saved in the gateway is now transferred back again ("Plug & Produce"). Thus, the function of a module can also be quickly re-established in case of malfunction without the use of the WI-Manager.

Update the gateway as follows in order to accept the current physical station structure:

1. Press the button on the gateway twice consecutively within 3 seconds in order to start the update of the station configuration.

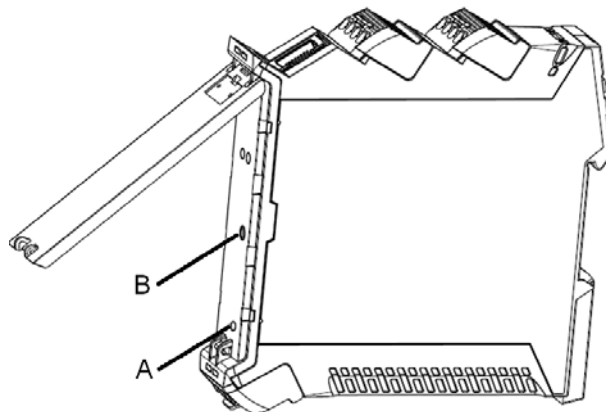


Figure 18: ACT20C gateway with operating elements

A Button

B Jack socket for CBX200 USB adapter

2. Alternatively: Start the update in the gateway DTM:
  - a. Right-click on "ACT20C gateway" and select "Additional features > Update station configuration > OK"
3. For the duration of the update, corresponding primary diagnostics are set in the gateway and the "PWR/STAT" LED flashes red.



This behaviour can, however, be changed by user configuration.  
The real behaviour may then vary from this description.

Parameter changes that are undertaken after the station configuration is updated are automatically synchronised with the gateway. Only a change of the physical station structure requires any further update of the station configuration.



During the update process, no modules must be added or removed, as otherwise the gateway may not be fully synchronised.

In this case, set the gateway back to the default settings and re-establish the device parameterisation of the ACT20C station. To do so, load the project data onto the ACT20C station again by means of WI-Manager.

### 6.3 Localising the ACT20C gateway

In the case of access per WI-Manager with gateway DTM over an Ethernet network, check that you are connected with the correct physical gateway.

1. Select the ACT20C gateway DTM with a right mouse-click and select the "Localise" function from "Additional features > Localise device".
  - a. The "PWR/STAT" LED on the gateway flashes alternately red and green.
2. Check that the desired gateway is addressed.
3. Deactivate the indication again via the ACT20C gateway DTM.

## 6.4 Parameterising the ACT20C gateway

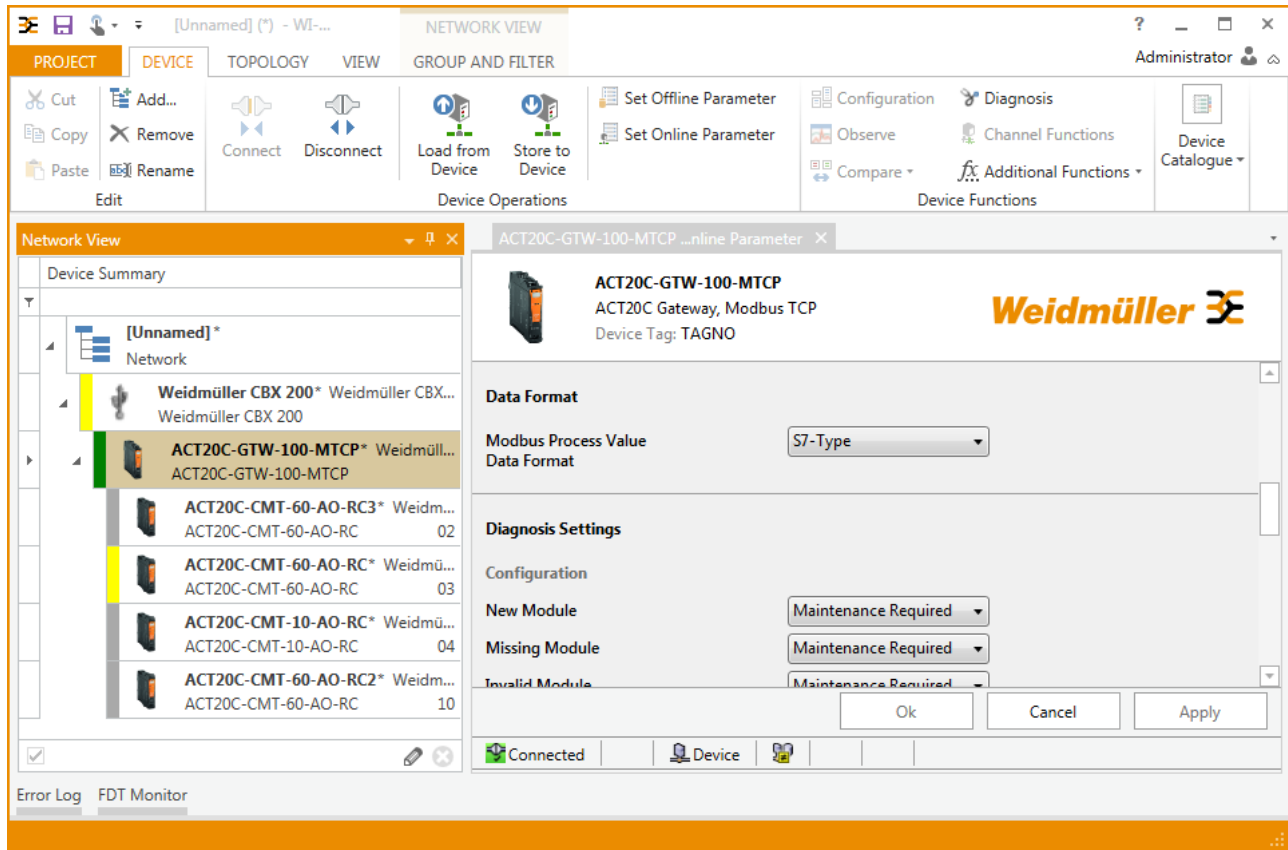


Figure 19: ACT20C gateway – Setting parameters

1. Connect your PC with the gateway via Ethernet or by means of a CBX200 USB adapter and establish the communication connection as follows:
  - a. Right-click on the ACT20C gateway and select “Connect”.
  - b. Select the “Edit” button in the DTM in order to change the parameters.
2. Set parameters according to their application, e.g. for data format or diagnostics, and end the input with “OK”.
3. Save the project by clicking the disk symbol in the menu bar.

## 6.5 Parameterising the ACT20C module

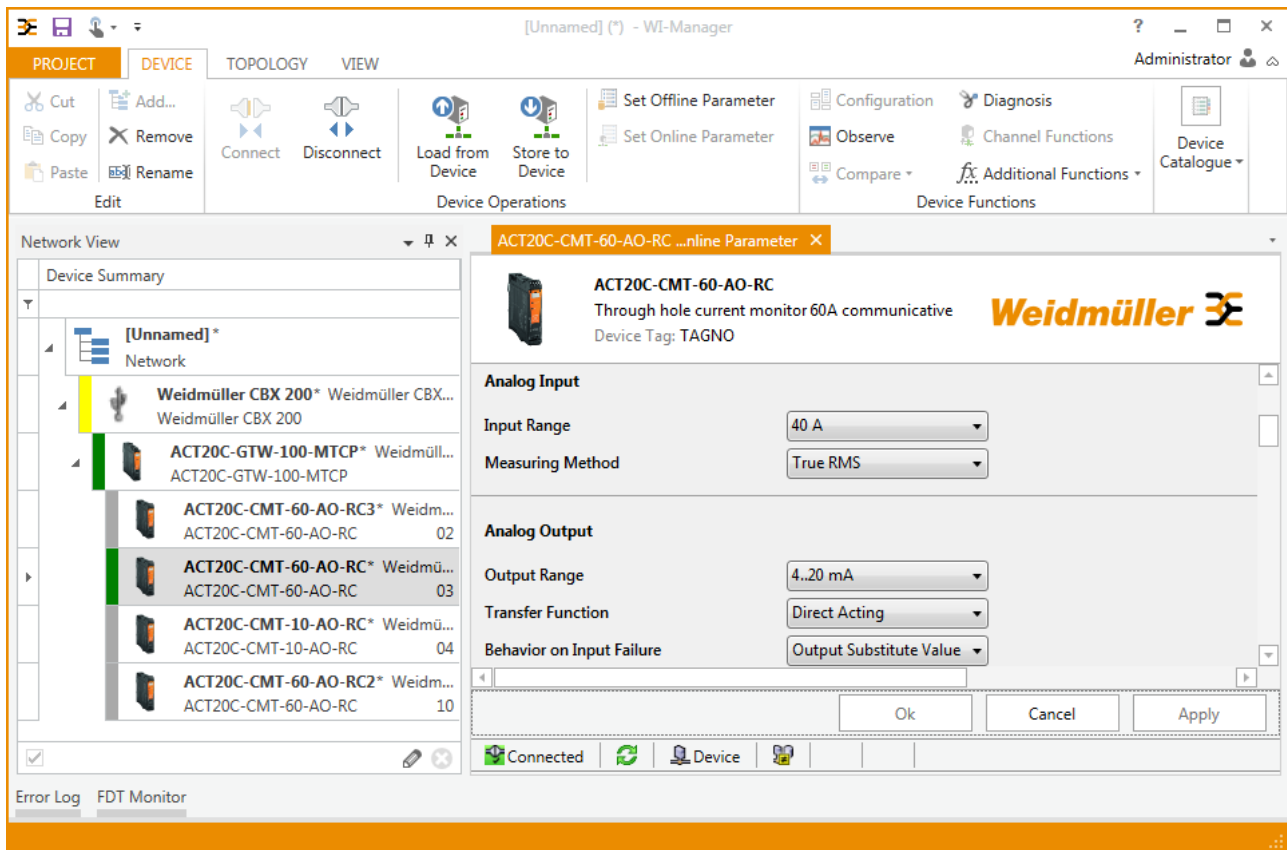


Figure 20: ACT20C module – Setting parameters

1. Connect your PC with the gateway via Ethernet or by means of a CBX200 USB adapter and establish the communication connection as follows:
  - a. Right-click on the ACT20C module and select “Connect”.
  - b. Select the “Edit” button in the DTM in order to change the parameters.
  - c. Set parameters according to their application and end the input with “OK”.
  - d. Save the project by clicking the disk symbol in the menu bar.


## 6.6 More settings

Further setting options can be found in the online help of the WI-Manager and in the online helps of the DTMs for gateway and modules (see Table 1 “Documentation for ACT20C station”).

## 7. Servicing and maintenance

All ACT20C components are maintenance-free. Therefore, it is generally sufficient to carry out a regular check of the components for damage as part of servicing and maintenance. Damaged components must be replaced in each case.


### 7.1 General

	<b>DANGER!</b>
	<p>Work on components of an ACT20C station must only be carried out by qualified electricians (see IEC 61010-2-201) with support by trained persons.</p> <p>As a result of his professional training and experience, an electrician is qualified to perform the necessary work and identify any potential risks.</p> <p>For maintenance work on the ACT20C station, its components or the electrical connections, observe the safety notifications and instructions in chapter 3 "Safety notifications".</p>


#### 7.1.1 Cleaning

1. Switch off the power supply.
2. Clean the module with a cloth dampened with distilled water.

### 7.2 Changing an ACT20C station

	<b>WARNING!</b>
	<p>If changes are made to the station (adding, removing, replacing a module) during operation, the information is not available on the Ethernet interface of the gateway for the duration of the replacement or only to a limited extent. Ensure that no dangerous status of the system can occur as a result.</p>


#### 7.2.1 Changing the module address during operation


	<p>Any change of the module address during operation requires a restart of the module to become effective.</p> <p>To do so, after changing the address setting, briefly disconnect the module from the supply voltage by temporarily releasing the module from the DIN rail (see chapter 5.2.3 "Disassembling components").</p>
	<p>For the duration of the restart, the measured variable is not available as an analogue signal at the output of the module or on the Ethernet interface of the gateway.</p> <p>Observe the notes in chapter 5.2.6 "Sequence of installation" as well as in the operating instructions of the respective module for the addressing of the modules of a station.</p>

## 7.2.2 Replacing a module during operation

The modules of an ACT20C station can be replaced by modules of the same type during operation without impairing the analogue output function of the other modules as a result.

The following procedure can also be carried out for several modules at the same time.


	<p><b>Requirements:</b></p> <ol style="list-style-type: none"> <li>1. The station must be in a synchronised condition (see chapter 6.2.4 “Updating the station structure”).</li> <li>2. The new module must have the same configuration as set ex works.</li> </ol>
---	---

	<p>An already configured module can be reset to the default configuration in the module DTM with the “Reset to factory settings” function (see chapter 7.2.4 “Removing a module during operation”).</p>
---	---

Carry out the replacement of a module with the following steps:

1. Removing a module
  - a. Release the female plug on the module to be replaced (see chapter 5.2.5 “Releasing the female plug”). In ACT20C current-measuring transducers, remove the power line from the feed-through.
  - b. Unclip the module from the DIN rail.
2. Preparing a new module
  - a. Make sure it is the same type of module by checking the printed type designation.
  - b. Set the same bus address on the DIP switch of the new module that is set on the removed module.
  - c. Clip the new module into the bus. The module will be immediately recognised by the gateway. The configuration parameters of the module will be updated.
  - d. Ensure that the module has been correctly integrated by checking the LED indicator and the station diagnostics by means of gateway DTM:

- i. The “PWR/STAT” LED of the module lights permanently green.
- ii. No module errors are pending in the station diagnostics of the gateway.

	<p>This behaviour can, however, be changed by user configuration. The real behaviour may then vary from this description.</p>
---	---

- e. Optional: Add new coding elements to the wired female plug of the old module in order to re-establish the coding protection. To do so, remove the coding elements from the attached female plugs of the new module and connect this to the already wired female plug (see also chapter 5.2.7 “Encoding the female plug”).
  - f. Now connect the wired female plug with the new module.
3. The new module is in operation.

### 7.2.3 Adding a module during operation

Insert the module into an empty slot in the following steps:

1. Remove an existing placeholder module.
  - a. Release female plugs on the module to be replaced by means of the release lever (see chapter 5.2.5 “Releasing the female plug”) provided they are already wired.
  - b. Unclip the module from the DIN rail.
2. Adding a new module
  - a. Clip the new module into the DIN rail.
  - b. Parameterise the module according to the requirements of your application (see chapter 6.5 “Parameterising the ACT20C module”).
  - c. Now connect the female plug with the new module.
3. Update the station structure (see chapter 6.2.4 “Updating the station structure”).
4. The new module is now in operation.

### 7.2.4 Removing a module during operation

#### Removing with module initialisation

Remove a module permanently from a station so the module is then no longer recognised for the gateway and the configuration on the module is deleted.

1. Carry out the “Reset to factory settings” function by means of module DTM.
2. Removing an existing module
  - a. Release the female plug on the module to be removed using the release lever (see chapter 5.2.5 “Releasing the female plug”). In ACT20C current-measuring transducers, remove the power line from the feed-through.
  - b. Unclip the module from the DIN rail.
3. Place a placeholder module or a suitable piece of bus covering onto the DIN rail.
4. Update the station structure (see chapter 6.2.4 “Updating the station structure”).
5. The module has now been removed.

#### Removing without module initialisation

Remove a module from the station in the following steps so the module is then no longer recognised for the gateway, but the configuration on the module is retained.

1. Removing an existing module
  - a. Release the female plug on the module to be removed using the release lever (see chapter 5.2.5 “Releasing the female plug”). In ACT20C current-measuring transducers, remove the power line from the feed-through.
  - b. Unclip the module from the DIN rail.
2. Update the station structure (see chapter 6.2.4 “Updating the station structure”).
3. The module has now been removed.



## 8. Appendix

### 8.1 Modbus access

The associated register list can be created as a CSV file by means of WI-Manager:

#### Exporting the Modbus register list as a document

1. Open the project with the WI-Manager in order to create a CSV file of the Modbus register list for an ACT20C station:
  - a. Right-click on the associated gateway in the network view and select "Additional Functions > Export Modbus Tabelle > OK"
  - b. In the following file selection dialogue, select a location in the file directory in order to save the CSV file there.

The information below is available on the gateway via Modbus register access.

#### 8.1.1 Gateway

<b>ACT20C-GTW-100-MTCP-S</b>
Identification
Device type
Part no.
Serial number
Device identification ("tag")
Hardware version
Software version
IP address
IP network mask
IP default gateway
"Condition monitoring"
Operating hours counter
Diagnostics and device status
NE107 device status gateway
Primary diagnostics
NE107 station status

Table 2: Gateway – Modbus information

#### 8.1.2 Modules

The following information is available on the gateway for each of the specified modules via Modbus register access.

<b>ACT20C-CMT-XX-AO-RC-S</b> <b>ACT20C-CML-XX-AO-RC-S</b>
Identification
Part no.
Serial number
Device identification ("tag")
"Condition monitoring"
Operating hours counter
Operating hours counter for connected load
Connected load active
Number of main alarms, upper limit value (HH)
Number of prealarms, upper limit value (H)
Number of main alarms, lower limit value (LL)
Number of prealarms, lower limit value (L)
Maximum input value of the last main alarm, upper limit value (HH)
Diagnostics and device status
NE107 station status
Primary diagnostics
Process data
Input value
Output value
Alarms
Upper limit value main alarm (HH) is pending
Upper limit value prealarm (H) is pending
Lower limit value main alarm (LL) is pending
Lower limit value prealarm (L) is pending
Active relay

Table 3: Modules – Modbus information

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## 8.4 Ordering data

### 8.4.1 ACT20C station with bus system

Description / Version	Article designation	Order no.	Qty.
Gateway	ACT20C-GTW-100-MTCP-S	1510370000	1
Bus termination terminal	ACT20C-LBT-10	1510340000	1
End bracket, mechanical	WEW 35/1 SW	1162600000	50
Modules			
Current-measuring transducer, 10 A	ACT20C-CMT-10-AO-RC-S	1510240000	1
Current-measuring transducer, 60 A	ACT20C-CMT-60-AO-RC-S	1510420000	1
Current-measuring transducer, 10 A	ACT20C-CML-10-AO-RC-S	2044840000	1
CH20M bus system set *)			
Set for DIN rail 35x7.5 / 250 mm	SET CH20M BUS 250MM TS 35X7.5	1335140000	1
Set for DIN rail 35x15 / 250 mm	SET CH20M BUS 250MM TS 35X15	1335150000	1
CH20M bus system individual *)			
Bus board, 500 mm	CH20M BUS 4.50/05 AU/500	1248230000	10
Mounting profile, 500 mm	CH20M BUS-PROFIL TS 35X7.5/500	1248160000	10
Cover profile, 500 mm	CH20M BUS-ADP TS 35/500	1248260000	10
End plate, left	CH20M BUS-AP LI TS 35X7.5 & 15	1193160000	50
End plate, right	CH20M BUS-AP RE TS 35X7.5 & 15	1193170000	50
FDT frame application, software	WI-Manager	Download **)	1
DTM device driver, software	Weidmüller DTM library	Download **)	1

\*) The CH20M bus system consists of a mounting profile, bus board, cover profile and side end plates and can be ordered as a set in a length of 250 mm as well as in the form of individual objects in the lengths 250 mm / 500 mm / 750 mm (see also "<http://catalog.weidmueller.com>" with keyword search "ch20m bus").

\*\* ) You can find our FDT/DTM software here: "<http://www.weidmueller.de/FDT-DTM>"

### 8.4.2 Accessories

Description / Version	Article designation	Order no.	Qty.
USB configuration adapter (optional)	CBX200 USB adapter	8978580000	1
Electronics housing as placeholder module, 22.5 mm	SK CH20M22	1105600000	1
Coding elements (plug (male) / socket (female))	CO BHZ CH20M BK	1429560000	100

## 8.5 Glossary

### A

#### ACT20C station

System made up of communicative signal converters connected via a gateway with a superordinate bus system, in order to facilitate remote access for configuration, diagnostics and condition monitoring. .... 7

### B

#### Bus termination terminal

The ACT20C-LBT-10 bus termination terminal is required as the right-sided electrical terminator on the CH20M rail bus of an ACT20C station. The terminal assumes the function of a mechanical end bracket at the same time. .... 7

### C

#### CH20M rail bus

see Rail bus ..... 16

#### Component

Part of a station that can be ordered as a product, e.g. gateway, module, bus termination terminal. .... 7

### D

#### Device

Active electronic components of a station, e.g. gateway, module..... 13

#### DTM

Device driver for configuration and commissioning according to the FDT standard..... 7

### E

#### ESD

Abbreviation for "Electrostatic Discharge" – uncontrolled electrostatic discharge ..... 13

### G

#### Gateway

A gateway connects ACT20C components with an Ethernet network for diagnostics, configuration and condition monitoring. .... 7

### H

#### Hot swapping

Replacement of individual modules during operation with the same type of replacement modules without impairing the operational status of the other modules. .... 11

### P

#### PCS

Process Control System (otherwise known as Distributed Control System), used to manage a process system..... 18

**Plug & Produce**

Initial operation and module replacement without the use of software tools, through automatic configuration. .... 11

**Plug-in connector**

Connection element for signal supply ..... 15, 17

**R****Rail bus**

DIN mounting rail with integrated CH20M bus system, consisting of a mounting profile, bus board, cover profile and side end plates..... 14

**S****System**

Totality of components that are interdependent or connected with one another, and that form a unit..... 7

**W****WI-Manager**

FDT (Field Device Tool) frame application for configuration, commissioning and maintenance of PC-configurable products with device drivers (DTM, Device Type Manager) according to the FDT standard..... 7





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