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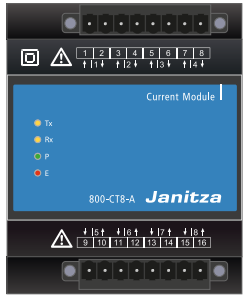
Deutsche Version: siehe Vorderseite

800-CT8-A module

Current measuring module

Installation manual

- Current measuring module, 5 A



User Manual:

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Janitza®

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General

Disclaimer
Compliance with the usage information for the devices, modules and components is a prerequisite for safe operation and attaining the stated performance characteristics and product features. Janitza electronics GmbH assumes no liability for bodily injury, material damage or financial losses which result from disregard of the usage information. Make sure that your usage information is readily available and legible.

Further usage information, such as the installation manual or the user manual for the basic device, can be found on our website, www.janitza.com under Support > Downloads.

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Subject to technical alterations.

- Make sure that your device, module or component matches the installation manual.
- First make sure you have read and understood the usage information accompanying the product.
- Keep the usage information associated with the product available for the entire service life and pass it on to any possible subsequent users.
- Please find out about device revisions and the associated modifications of the usage information associated with your product at www.janitza.com.

Disposal
Please abide by national regulations! Dispose of individual parts, as applicable, depending on their composition and existing country-specific regulations, e.g. as:

- Electronic waste
- Batteries and rechargeable batteries
- Plastics
- Metals

or engage a certified disposal company to handle scrapping.

Relevant laws, standards and directive used
Please see the declaration of conformity on our website (www.janitza.com) for the laws, standards and directives applied for the device by Janitza electronics GmbH.

INFORMATION
Our usage information uses the grammatical masculine form in a gender-neutral sense! This form always refers equally to women, men and diverse. In order to make the texts more readable, distinctions are not made. We ask for your understanding for these simplifications.

2

Safety

Safety information
The installation manual does not represent a complete set of all safety measures required for the operation of the device (module/component). Special operating conditions can require additional measures. The installation manual contains information which must be observed to ensure your personal safety and avoid material damage.

Symbols used on the device (module/component):

⚡	The additional symbol on the device itself indicates an electrical danger that can result in serious injuries or death.
⚠	This general warning symbol draws attention to a possible risk of injury. Be certain to observe all of the information listed under this symbol in order to avoid possible injury or even death.

Safety information in the installation manual is marked by a warning triangle and, in dependence on the degree of hazard, is displayed as follows:

⚠ DANGER
Warns of an imminent danger which results in serious or fatal injury (death).

⚠ WARNING
Warns of a potentially hazardous situation which could result in serious injury or death.

⚠ CAUTION
Warns of a possibly hazardous situation which can result in minor or moderate injury.

ATTENTION
Warns of an immediately hazardous situation which, if not avoided, can result in material or environmental damage.

INFORMATION
Indicates procedures in which there is **no** hazard of personal injury or material damage.

Safety measures
When operating electric devices, it is unavoidable for certain parts of these devices and their components to conduct hazardous voltage. Consequently, severe bodily injury or material damage can occur if they are not handled properly.

- Before making connections to the device and its components, ground the device by means of the ground wire connection, if present.
- Hazardous voltages can be present in all circuitry parts that are connected to the power supply.
- There can still be hazardous voltages present in the device or the components even after disconnection from the supply voltage (capacitor storage).
- Do not operate equipment with current transformer circuits when open.
- Do not exceed the limit values specified in the user manual and on the rating plate! This must also be observed during testing and commissioning!
- Observe the safety information and warning notices in the usage information associated with the device and its components!

⚠ WARNING

Hazard due to disregard of warning notices and safety information!
Disregard of warning notices and safety information on the device itself and in the usage information for the device and its components can lead to injuries or even death!
Observe the safety information and warning notices on the device itself and in the usage information associated with the devices and their components, such as:
· Installation manual.
· Installation supplement.
· User manual.
· Supplement Safety Information.

Incoming goods inspection
The prerequisites for trouble-free and safe operation of the devices, modules and components include proper transport, storage, setup and assembly, as well as proper operation and maintenance.
Exercise due caution when unpacking and packing the device, do not use force and only use suitable tools.
Check:

- Visually inspect the devices, modules and components for flawless mechanical condition.
- Check the scope of delivery (see user manual) for completeness before you begin installing your devices, modules and components.

If it can be assumed that safe operation is no longer possible, take your device, module or component out of operation immediately! Secure against unintentional startup.

It can be assumed that safe operation is impossible if the basic device, module or component, for example:

- Has visible damage.
- No longer functions despite an intact power supply.
- Was subjected to extended periods of unfavorable conditions (e.g. storage outside of the permissible climate thresholds without adjustment to the room climate, condensation, etc.) or transport stress (e.g. falling from an elevated position, even without visible external damage, etc.).

Qualified personnel
To avoid bodily injury and material damage, only qualified personnel with electrical training are permitted to work on the basic device and its components who have knowledge of:

- The national accident prevention regulations.
- Safety technology standards,
- Installation, commissioning and operation of the device and the components.

⚠ WARNING

Risk of injury due to electric voltage or electric current!
When handling electric currents or voltages, serious bodily injury or death can result from:
· Touching bare or stripped leads that are energized.
· Device inputs that pose a hazard when touched.
Before starting work on your system:
· **Disconnect the supply of power to the system!**
· **Secure it against being switched on!**
· **Check to be sure it is de-energized!**
· **Ground and short circuit!**
· **Cover or block off adjacent live parts!**

Intended use
The module / component

- Is intended for use in **industrial areas** only.
- Is intended as an expansion or transfer module for measurement device and module topologies with suitable basic devices (see user manual of the respective module) in switchboard cabinets and small distribution boards.
- Must only be mounted when the basic device is disconnected from the power supply (see step "Mounting"). Observe the usage information associated with the basic device.

The basic device and the modules are **not** designed for installation:

- In vehicles! Use of the basic device with modules in non-stationary equipment is considered an exceptional environmental condition and is only permissible by special agreement.
- In environments with harmful oils, acids, gases, vapors, dusts, radiation, etc.
- In potentially explosive environments.

3

Brief device description

The current measuring module
· Extends the functional range of the basic device to include additional current measuring channels (2 blocks of 4 current measuring channels each). **Please note the information on suitable basic devices in the module's user manual!**
· is suitable for current transformers with transformer ratios of ../1 A or ../5 A.

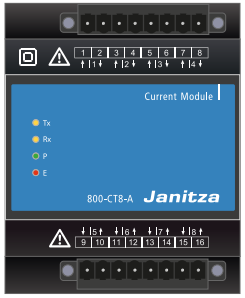


Fig: 800-CT8-A module

The basic device
· With current measuring module, measures current exclusively via current transformers. The current transformers require a basic insulation according to IEC 61010-1:2010 for the nominal voltage of the circuit.
· Has a limited number of module slots! Before setting up a JanBus measurement device and module topology, check the maximum number of slots of the basic device (see user manuals of the basic device and the modules)!

⚠ WARNING

Damage to the device/module or your installation even including life-threatening injuries due to a short circuit.
Insufficient insulation of equipment (current transformers) at the current measurement inputs with respect to the circuits can lead to life-threatening voltages or damage to your device, module or system.
· **Observe the information and specifications for your current transformer concerning insulation and ensure end-to-end double insulation of your current transformers to mains and measuring circuits!**

ⓘ *INFORMATION*
· The scope of delivery for the module includes connection terminals and the appropriate bus connector (JanBus interface) for connection to the basic device or further modules.
· In addition to the current measuring module, also observe the usage information for your basic device and the current transformers!
· Do not extend the connecting cables of the current transformers at the current measurement inputs of the device/module! Extended measuring leads can influence the measurement result!

4 Mounting

⚠ WARNING

Disregard of the installation instructions may cause property damage or personal injury!
Disregard of the installation instructions may cause damage to your basic device with module or destroy it and/or may also result in personal injury!
- Operate the basic device that belongs to the 800-CT8-A module **exclusively** with a supply voltage of **24 V**! Observe the technical specifications in the usage information of your basic device.

ⓘ INFORMATION

System limits:
- If necessary, observe the installation manual for transfer modules when setting up decentralized measuring concepts.
- **Before mounting, please check the number of suitable modules for your measurement device and module topology based on the respective usage information.**

The scope of delivery of the 800-CT8-A module can be found in the user manual for the module. More information on certain functions of the basic device with modules can be found in the usage information of the basic device.

⚠ WARNING

Disregard of the installation instructions may cause property damage or personal injury!
Non-observance of the installation instructions may cause damage to your basic device with module or destroy it and/or may also result in personal injury.
- In addition to the installation instructions for your module, also observe the installation instructions for your basic device, in particular the safety information and warning notices.
- Before installing modules
  - **Disconnect the supply of power to the system!**
  - **Secure it against being switched on!**
  - **Check to be sure it is de-energized!**
  - **Ground and short circuit!**
  - **Cover or block off adjacent live parts!**
- Provide adequate air circulation in your installation environment and cooling, as needed, when the ambient temperatures are high.
- Return defective modules to Janitza electronics GmbH in accordance with the shipping instructions for air or road freight (complete with accessories).
- All usage information is also available as a download at www.janitza.com.

ⓘ INFORMATION

When installing the device/module, ensure that there is sufficient space in the installation environment. Please also note the size of the connection terminals used!

Observe the installation instructions for your basic device (e.g. check bus connector installation!)

Install the 800-CT8-A module with the system de-energized as follows:
1. Press in the open bottom bolts on the rear of the module.
2. If this has not yet been done, press the bus connector (JanBus interface) included in the scope of delivery into the sockets on the rear of your module.

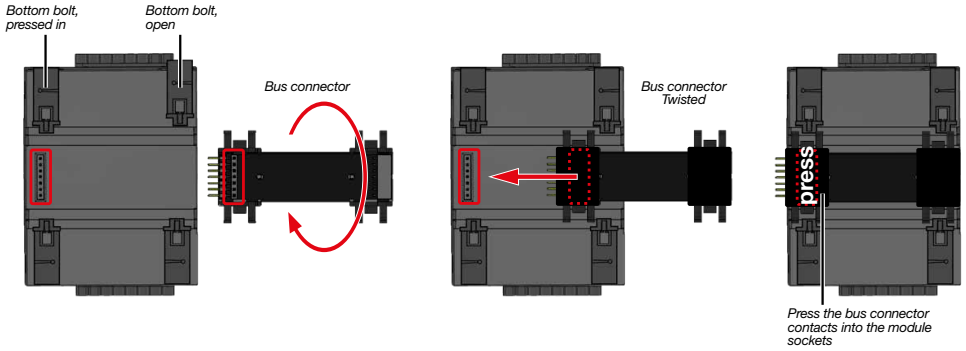


Fig.: Module rear views

3. Press the module with the bus connector onto the DIN rail (for suitable DIN rail types, see “Technical data”) until the bottom bolts engage (click).

4. To couple the bus connectors (devices), push the contacts of your module bus connector into the sockets of the basic device bus connector (or into the sockets of the connected module).

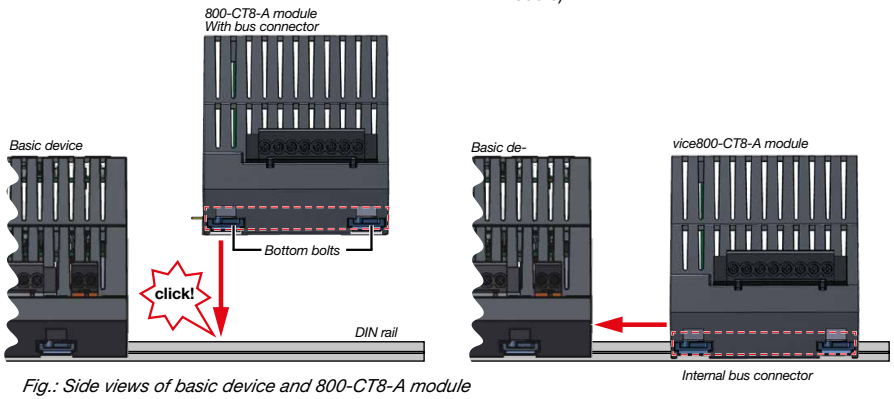


Fig.: Side views of basic device and 800-CT8-A module

ⓘ INFORMATION

- **Before coupling the module, check to be certain your basic device is de-energized! Coupling while energized can destroy your basic device or module!**
- **The basic device automatically recognizes the module during the power-up procedure!**

5. After successfully coupling the bus connectors (of the devices), mount end brackets to the series of meters and modules.

6. Wire the module and apply power to the basic device (your system).
The basic device automatically recognizes the module during the power-up procedure!



Figure: Assembly example: Front view of basic device with 800-CT8-A module

ⓘ INFORMATION

- **The figure shows a mounting example for the 800-CT8-A module.**
- **The maximum number of modules on a basic device can be found in the user manual for the basic device and for the module.**
- **Always start and end the installation of your measurement device and module series on the DIN rail with end brackets!**

ATTENTION

Improper handling or handling them too roughly can destroy your devices, modules and bus connectors!
Contacts, bottom bolts and retaining brackets can be damaged or broken off during mounting/dismounting.
- **Never touch or manipulate contacts!**
- **Protect contacts during handling, transport and storage!**
- **Never use force to mount/dismount devices/modules/bus connectors! Never force bus connector contacts into the bus connector sockets!**

INFORMATION

Please note the following for the setup and dimensioning of your measurement device and module topology:
- In addition to the usage information of the module, also observe all other usage information for the devices, modules and components integrated in your JanBus topology.
- The maximum bus length (JanBus - proprietary) for remote measurement points can be found in the usage information of the transfer module.
- One module of the type 800-CT8-A has 8 current measuring channels that make current measurements exclusively via current transformers ../1 A or ../5 A!
- Use end brackets to set up your measurement device and module series on the DIN rails.

5 Communication

After installing your module, check the function of the communication between the basic device and the module using the display on the basic device as follows:
- When you are in the *Home* measuring display **of the basic device**, pressing the button 1 *ESC* takes you to the *Menu* window.

Use buttons 2 (▲) and 5 (▼) to select the menu item *System information* and confirm with button 3 *Enter*.
- The *System information* window with the items *Basic device* and *Module 1* appears.

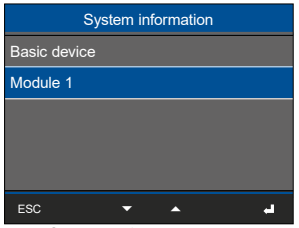


Fig.: System information window with the items "Basic device" and "Module 1".

- The basic device has detected module 1.

INFORMATION

If the basic device does not recognize the module(s) during the power-up procedure, the module functions are not supported. If there is no communication between the basic device and the modules, proceed as follows:
- Disconnect your system from the power supply and check the condition of the bus connectors and the connections of your modules to the basic device (JanBus interface). If necessary, push the contacts of the module bus connectors into the sockets of the basic device bus connector or the attached modules so that the bus connectors (devices) are coupled.
- For remote module series, check the connection of the transfer modules.
- If necessary, restart the basic device.
- If these measures do not lead to the desired result, please contact our Support – www.janitza.com

6 Current measurement

The **800-CT8-A module**
- Measures current exclusively via current transformers.
- Allows the connection of current transformers with secondary currents of ../1 A and ../5 A for current measurement inputs I1 to I8.
- Has a current transformer ratio of 5/5 A (I1 to I8) as the default setting.
- Does not measure DC currents.

⚠ WARNING

Risk of injury due to high currents and high electrical voltages!
Severe bodily injury or death can result from:
- Touching bare or stripped leads that are energized.
- Inputs of devices, components and modules are dangerous to touch.

Therefore, please note for your system:
- **Disconnect the supply of power before starting work!**
- **Secure it against being switched on!**
- **Check to be sure it is de-energized!**
- **Ground and short circuit! Use the ground connection points with the ground symbol for grounding!**
- **Cover or block off adjacent live parts!**

INFORMATION

You can configure the current transformer ratios via the user interface of the basic device.
Recommendation: Configure the current transformer ratios in a self-explanatory manner using the "Device configuration" function of the GridVis® software.

ATTENTION

Incorrectly dimensioned or connected current transformers can cause material damage!
Reversed current transformer terminals ("k" and "l") or incorrectly dimensioned current transformers can lead to incorrect measurement results and/or incorrect control performance!
- When connecting a current transformer, it is essential to observe the markings on the transformer!
- The polarity of the current transformers and thus the "energy flow direction" runs from "k" to "l"! The polarity of the current transformers may differ depending on the model!
- Also observe the technical connection requirements and the markings on the rating plate of your current transformers.

7 Connection variant for "Current measurement" with terminal assignment

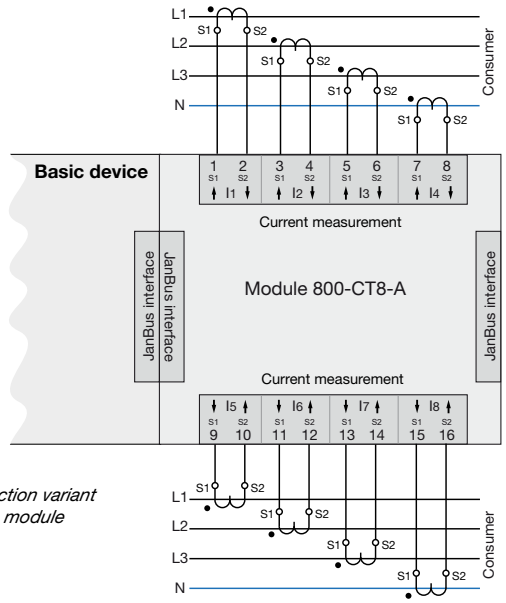
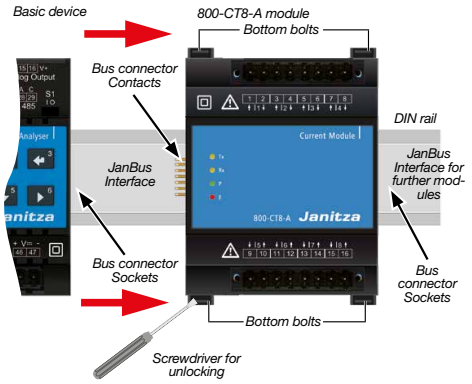


Fig. Connection variant 800-CT8-A module

8 Dismounting

Dismounting the module:

1. Disconnect the supply of power to the system! Secure it against being switched on! Check to be sure it is de-energized! Ground and short circuit! Cover or block off adjacent live parts!
2. Disconnect the wiring of your module.
3. Decouple the bus connectors (JanBus interface) of your module from the basic device and/or the connected modules by pulling out your module.
4. Unlock all bottom bolts of your module
   Recommendation: Use a screwdriver (be careful!).
5. Remove your module from the DIN rail without touching or damaging the bus connector contacts.



ATTENTION

Handling your module too roughly may cause damage to the module and result in material damage!
The bus connector contacts and the bottom bolts can be damaged or broken off when dismounting your module.

- **Never pull the module out of the DIN rail forcefully.**
- **First decouple the bus connectors (JanBus interface) and carefully unlock the bottom bolts of the module with a screwdriver!**

ATTENTION

Material damage due to disassembly or decoupling of the module during operation!
Dismounting or decoupling the module during communication with the basic device can cause damage to your devices!

- **Disconnect your system from the power supply prior to dismounting or disconnecting the module! Secure it against being switched back on! Check to be sure it is de-energized! Ground and short circuit! Cover or block off adjacent live parts!**

9 Technical data

General	
Net weight (with terminals)	approx. 220 g (0.49 lbs)
Device dimensions	Approx. W = 72 mm (2.83 in), H = 90 mm (3.54 in), D = 76 mm (2.99 in)
Width of the device in horizontal pitches (HP)	4 HP (1 HP = 18 mm / 0.71 in)
Mounting orientation	As desired
Fastening/mounting - Suitable DIN rails (35 mm)	· TS 35/7.5 according to EN 60715 · TS 35/10 · TS 35/15 x 1.5
Protection level	IP20
Impact resistance	IK07 according to IEC 62262

Transport and storage The following specifications apply for devices transported and stored in the original packaging	
Free fall	1 m (39.37 in)
Temperature	K55 - -25 °C (-13 °F) to +70 °C (158 °F)
Relative humidity	5 to 95% at 25 °C (77 °F), no condensation

Environmental conditions during operation The module · Must only be operated with suitable basic devices (see user manual for the module). · Is for weather-protected and stationary use. · Fulfills the operating conditions according to DIN IEC 60721-3-3. · Has protection class II according to IEC 60536 (VDE 0106, part 1), a ground wire connection is not required!	
Working temperature	-10 °C (14 °F) .. +55 °C (131 °F)
Relative humidity in operation	5 to 95 % at 25 °C (77 °F), no condensation
Pollution degree	2
Ventilation	No forced ventilation required
Supply voltage	Via basic device

Current measuring module 800-CT8-A	
Nominal current	5 A
Channels	8 (2x4) · 2 systems (L1, L2, L3, N) · Single channels
Measuring range	0.005 .. 6 A_{rms}
Crest factor	2 (relative to 6 A_{rms})
Overload for 1 s	120 A (sinusoidal)
Resolution	0.1 mA (color graphic display 0.01 A)
Overvoltage category	300 V CATII
Rated surge voltage	2.5 kV
Power consumption	approx. 0.2 VA (R_i = 5 mΩ)
Sampling frequency	8.3 kHz
Frequency of the fundamental oscillation	40 Hz .. 70 Hz
Harmonics	1 .. 25 (odd only)

Interface and energy supply	
JanBus (proprietary)	· Via bus connector
Supply voltage (via JanBus interface)	24 V

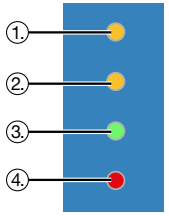
Connection capacity of the 800-CT8-A module terminals Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 2.5 mm², AWG 26-12
Wire ferrules (non-insulated) · Recommended strip length	0.2 - 2.5 mm², AWG 26-12 · 10 mm (0.3937 in)
Wire ferrules (insulated) * · Recommended strip length **	0.2 - 2.5 mm², AWG 26-12 · 12 mm (≤1.5 mm²), 10 mm (>1.5 mm²) / 0.47 in (≤1.5 mm²), 0.39 in (>1.5 mm²)
Wire ferrules: Contact sleeve length **	8 - 12 mm (0.31 - 0.47 in)
Tightening torque Screw flange	0.2 Nm (1.77 lbf in)

* ... Applies to wire ferrules with a maximum plastic collar outer diameter of up to 4.5 mm (0.18 in).
** .. Depending on the type of wire ferrules used (ferrule manufacturer).

INFORMATION

- Detailed technical data on the module can be found in the user manual.
- Technical data on the basic device and information on how to proceed in the event of a fault can be found in the usage information of your basic device.

LEDs on the 800-CT8-A module



1.	**Tx** (send data)	Blink "orange" during operation and indicate cyclic data exchange.
2.	**Rx** (receive data)	
3.	**P** (power – power supply)	Lights "green" if the supply of power via the JanBus interface is correct.
4.	**E** (error – initialization and malfunction)	Lights "red" when initializing/ starting the device and in the event of a fault.

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