

CANbridge NT

200 and 420

USER MANUAL

4.01.0331.20000 1.9 en-US ENGLISH



Important User Information

Disclaimer

The information in this document is for informational purposes only. Please inform HMS Networks of any inaccuracies or omissions found in this document. HMS Networks disclaims any responsibility or liability for any errors that may appear in this document.

HMS Networks reserves the right to modify its products in line with its policy of continuous product development. The information in this document shall therefore not be construed as a commitment on the part of HMS Networks and is subject to change without notice. HMS Networks makes no commitment to update or keep current the information in this document.

The data, examples and illustrations found in this document are included for illustrative purposes and are only intended to help improve understanding of the functionality and handling of the product. In view of the wide range of possible applications of the product, and because of the many variables and requirements associated with any particular implementation, HMS Networks cannot assume responsibility or liability for actual use based on the data, examples or illustrations included in this document nor for any damages incurred during installation of the product. Those responsible for the use of the product must acquire sufficient knowledge in order to ensure that the product is used correctly in their specific application and that the application meets all performance and safety requirements including any applicable laws, regulations, codes and standards. Further, HMS Networks will under no circumstances assume liability or responsibility for any problems that may arise as a result from the use of undocumented features or functional side effects found outside the documented scope of the product. The effects caused by any direct or indirect use of such aspects of the product are undefined and may include e.g. compatibility issues and stability issues.

Table of Contents

Page

| | | |
|----------|--|-----------|
| 1 | User Guide | 3 |
| 1.1 | Target Audience..... | 3 |
| 1.2 | Related Documents | 3 |
| 1.3 | Document History | 3 |
| 1.4 | Trademark Information | 3 |
| 1.5 | Conventions | 4 |
| 2 | Safety Instructions | 5 |
| 2.1 | General Safety Instructions | 5 |
| 2.2 | Indented Use..... | 5 |
| 3 | Scope of Delivery | 5 |
| 4 | Product Description | 6 |
| 4.1 | Features | 6 |
| 4.2 | Default Configuration | 6 |
| 4.3 | Operational Modes | 7 |
| 4.4 | Add-Ons for Customer Specific Expansions | 7 |
| 5 | Installation..... | 8 |
| 5.1 | Installing the Software | 8 |
| 5.2 | Installing the Hardware..... | 8 |
| 5.3 | Checking and Updating the Firmware | 10 |
| 6 | Configuration..... | 12 |
| 6.1 | Basic Configuration | 12 |
| 6.2 | Configuring the Device Name | 13 |
| 6.3 | Repeater/Star Coupler Configuration..... | 14 |
| 6.4 | Bridge Configuration..... | 15 |
| 6.5 | Downloading the Configuration with Linux | 16 |
| 6.6 | Reset | 17 |
| 6.7 | Read and erase LOG File..... | 18 |
| 7 | Operation..... | 19 |
| 7.1 | Mini USB Port..... | 19 |
| 7.2 | Indicators | 19 |

| | | |
|-----------|---|-----------|
| 8 | Technical Data | 21 |
| 9 | Support/Return Hardware..... | 22 |
| 9.1 | Support | 22 |
| 9.2 | Return Hardware | 22 |
| 10 | Disposal..... | 22 |
| A | Regulatory Compliance | 23 |
| A.1 | EMC Compliance (CE) | 23 |
| A.2 | EMC Compliance (UKCA) | 23 |
| A.3 | FCC Compliance Statement | 23 |
| A.4 | Disposal and recycling..... | 24 |
| B | UL Ordinary Locations (Ord.Loc.) | 25 |

1 User Guide

Please read the manual carefully. Make sure you fully understand the manual before using the product.

1.1 Target Audience

This manual addresses trained personnel who are familiar with CAN, CAN FD and the applicable national standards. The contents of the manual must be made available to any person authorized to use or operate the product.

1.2 Related Documents

| Document | Author |
|--|--------|
| Installation Guide <i>VCI Driver</i> | HMS |
| User Manual <i>CAN-Gateway Configurator</i> | HMS |
| User Manual <i>CAN@net NT/CANbridge NT Lua ADK</i> | HMS |

1.3 Document History

| Version | Date | Description |
|---------|---------------|---|
| 1.0 | October 2016 | First release |
| 1.1 | February 2017 | Updates and minor changes |
| 1.2 | November 2017 | Merged manual for CANbridge 200 NT and 420 NT |
| 1.3 | April 2018 | Moved parts of the configuration to user manual of CAN-Gateway Configurator |
| 1.4 | January 2019 | New CAN-Gateway-Configurator version |
| 1.5 | March 2019 | Layout changes |
| 1.6 | March 2020 | Added new features, structural changes |
| 1.7 | December 2020 | Added UL listing, adjusted links |
| 1.8 | June 2021 | Minor corrections |
| 1.9 | December 2021 | Added UKCA compliance information, , information about Reset Target |

1.4 Trademark Information

Ixxat® is a registered trademark of HMS Industrial Networks. All other trademarks mentioned in this document are the property of their respective holders.

1.5 Conventions

Instructions and results are structured as follows:

- ▶ instruction 1
- ▶ instruction 2
 - result 1
 - result 2

Lists are structured as follows:

- item 1
- item 2


Bold typeface indicates interactive parts such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

```
This font is used to indicate program code and other
kinds of data input/output such as configuration scripts.
```


This is a cross-reference within this document: [Conventions, p. 4](#)


This is an external link (URL): www.hms-networks.com


Safety advice is structured as follows:


| | |
|---|---|
|  | <p>Cause of the hazard!</p> <p>Consequences of not taking remediate action.</p> <p>How to avoid the hazard.</p> |
|---|---|

Safety signs and signalwords are used dependent on the level of the hazard.

 *This is additional information which may facilitate installation and/or operation.*

| | |
|---|--|
|  | <p>This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.</p> |
|---|--|

| | |
|---|--|
|  | <p>Caution</p> <p>This instruction must be followed to avoid a risk of personal injury.</p> |
|---|--|

| | |
|---|--|
|  | <p>WARNING</p> <p>This instruction must be followed to avoid a risk of death or serious injury.</p> |
|---|--|

2 Safety Instructions



Risk of interference to radio and television if used in office or home environment!

Use exclusively included accessories. Use exclusively shielded cables.

Make sure that the shield of the interface is connected with the device plug and the plug on the other side.



Connection disturbance possible if extension cable or longer cable is used!

HMS recommends connecting the interface directly with the included cable or via an active USB hub to the computer according to the USB specification.

2.1 General Safety Instructions

- ▶ Protect product from moisture and humidity.
- ▶ Protect product from too high or too low temperature (see [Technical Data, p. 21](#)).
- ▶ Protect product from fire.
- ▶ Do not paint the product.
- ▶ Do not modify or disassemble the product. Service must be carried out by HMS Industrial Networks.
- ▶ Store products in dry and dust-free place.

2.2 Indented Use

The components are used to connect CAN and CAN FD networks with each other. They are intended for installation on standard DIN rail.

3 Scope of Delivery

Included in scope of delivery:

- CANbridge NT
- 1 x power connector
- 2 x CAN connector (with CANbridge NT 200)
- 4 x CAN connector (with CANbridge NT 420)
- User Manual *CANbridge NT*
- Installation Guide *VCI Driver*
- Mini USB cable

The following is available for download on the CANbridge NT support pages on www.ixxat.com/support-bridges-gateways:

- CAN-Gateway Configurator
- VCI driver
- User Manual *CAN-Gateway Configurator for CAN@net NT and CANbridge NT*
- User Manual *CAN@net NT/CANbridge NT Lua ADK*

4 Product Description



To use all features the latest version of the CAN-Gateway Configurator as well as the latest firmware of the CANbridge NT must be installed. For information about firmware versions below V6 contact Ixxat support.

The CANbridge NT is a universal, intelligent CAN topology component, that allows the coupling of several CAN networks with different baud rates or frame formats in the operational modes Repeater/Star Coupler and Bridge. The CANbridge NT 420 additionally is capable of CAN FD. CAN messages are received by one network and transmitted in the other network, according to filter and implementation rules. The filtering mechanism is based on a list of CAN identifiers. With the CANbridge NT 420 bridging between Classic CAN and CAN FD is possible.

4.1 Features

- CANbridge NT 200: 2 x CAN connections (terminal adapters)
- CANbridge NT 420: 4 x CAN connections (terminal adapters), via the CAN-Gateway Configurator two connections can be switched between Classic CAN and CAN FD
- 1 x mini USB 2.0 port high-speed, for configuration
- CAN/CAN FD according to ISO 11898-1:2015
- CAN high speed according to ISO 11898-2:2016
- freely configurable baud rates
- automatic baud rate detection
- With the CAN-Gateway Configurator a configuration can be created, modified, written to and read from the target device via USB connection.

The configuration of the following features are described in detail in the User Manual *CAN-Gateway Configurator CANbridge NT & CAN@net NT 100/200/420*:

- Classic CAN/CAN FD ID filtering (mapping)
- Classic CAN to CAN FD mapping and CAN FD to Classic CAN mapping (with NT 420)
- J1939 mapping
- cyclic transmission of CAN messages
- command line program CANGWfile (available for Windows and Linux)
- action rules via if-this-action-then-that-event functionality

4.2 Default Configuration

By default the CANbridge NT is configured as Repeater, the CANbridge NT 420 as Star Coupler with baud rate 125 kBaud on each port. In the Repeater/Star Coupler mode all messages are transmitted unchanged to the other ports in Classic CAN mode.

4.3 Operational Modes

4.3.1 Repeater/Star Coupler

The CANbridge NT 200 can be configured as Repeater and the CANbridge NT 420 as Star Coupler. In the Repeater/Star Coupler mode all messages are transmitted unchanged to the other ports in Classic CAN mode. Filters, CAN-ID modifications and CAN-FD mode are not possible.

The following settings and features are possible:

- Expert mode
- Communication Error Severity
- Action Rules

4.3.2 Bridge

The Bridge mode allows free configuration of the transmission of CAN messages. With the CANbridge NT 420 NT bridging between Classic CAN and CAN FD is possible.

The following settings and features are possible:

- Use of Lua ADK
- Expert mode
- Communication Error Severity
- Action Rules
- Mapping table
- J1939 Mapping
- CAN FD/CAN Demultiplexing (only CANbridge NT 420)
- CAN/CAN FD Multiplexing (only CANbridge NT 420)
- Cyclic transmission
- CAN tunnel to transmit messages between two Classic CAN networks via a CAN FD network (only CANbridge NT 420)

4.4 Add-Ons for Customer Specific Expansions

4.4.1 Lua ADK

With the Lua Application Development Kit customer specific Lua scripts can be executed on the CANbridge NT in operational mode Bridge. By using the Lua ADK for handling and processing of communication data the functionality of the standard application can be expanded.

For more information about the Lua ADK see User Manual *CAN@net NT/CANbridge NT Lua ADK* on the product support pages on www.ixxat.com/support-bridges-gateways.

5 Installation

5.1 Installing the Software

To create a configuration for the CANbridge NT, the CAN-Gateway Configurator running on a Windows system and the Ixxat VCI driver are needed.



The VCI driver is constantly improved and expanded! Check if a newer version is available on www.ixxat.com/driver-windows.



The CAN-Gateway Configurator and the device firmware are constantly improved and expanded! Check if newer versions are available within the product support pages on www.ixxat.com/support-bridges-gateways.

- ▶ Install the latest VCI driver on a Windows computer (see Installation Guide *VCI Driver*).
- ▶ Download the *CAN-Gateway Configurator CANbridge NT & CAN@net NT 100/200/420* package from the product support pages on www.ixxat.com/support-bridges-gateways.
- ▶ Start the **Ixxat CanGWconfig Setup**.
 - Installation wizard starts automatically.
- ▶ Follow the instructions in installation program.
 - By default the CAN-Gateway Configurator is stored in *C:\Program Files\HMS\Ixxat CAN-Gateway Configurator V6*.
 - The examples for (LUA and configuration) are stored in *C:\Users\Public\Documents\HMS\Ixxat CAN-Gateway Configurator\Examples*.
- ▶ Check the firmware version in *C:\Users\Public\Documents\HMS\Ixxat CAN-Gateway Configurator\Examples\firmware* and check if a newer firmware version is available on www.ixxat.com/support-bridges-gateways
- ▶ If newer firmware version is available, update the firmware (see *Updating the Device Firmware, p. 10*).
- ▶ In Windows Start menu open folder **Ixxat CANGWconfig** and start **CAN-Gateway Configurator V6**.



With the CANbridge NT 200 it is possible to open existing configuration files that are not configured via the CAN-Gateway Configurator: open menu **File** and select **Import legacy configuration**.

5.2 Installing the Hardware



Fig. 1 Connectors

| | |
|---|------------------------------------|
| 1 | CAN 1 |
| 2 | CAN 2 |
| 3 | Power connector |
| 4 | CAN 3 (only with CANbridge NT 420) |
| 5 | CAN 4 (only with CANbridge NT 420) |

- ▶ Make sure, that the cross-sectional area of the cable is equal to or larger than 0.14 mm² resp. AWG 25.
- ▶ To remove the connector use screwdriver or similar tool.
- ▶ Connect the CAN cables.
- ▶ Connect the power supply.
- ▶ Plug the connector into the housing.

The shield of the CAN connector is connected to the device ground and the PE on the back of the device (DIN rail) via a 1 MΩ resistor and a 10 nF capacitor. To achieve the highest interference immunity, ground the shield of the CAN cable.

5.2.1 Power Connector

Pin Allocation

| Pin no. | Signal |
|---------|-----------------------|
| 1 | V+ (+9 V to +36 V DC) |
| 2 | V- |
| 3 | — |
| 4 | — |



5.2.2 CAN and CAN FD Connectors

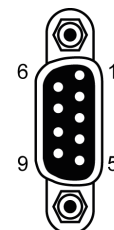
Pin Allocation of Terminal Adapters

| Pin no. | Signal |
|---------|----------|
| 1 | CAN high |
| 2 | CAN low |
| 3 | CAN GND |
| 4 | Shield |



If a D-Sub 9 connector is used, observe the following pin allocation of the D-Sub 9 connector:

| Pin no. | Signal |
|---------|----------|
| 1 | — |
| 2 | CAN low |
| 3 | CAN GND |
| 4 | — |
| 5 | Shield |
| 6 | — |
| 7 | CAN high |
| 8 | — |
| 9 | — |



5.3 Checking and Updating the Firmware

5.3.1 Checking the Device Firmware

- ▶ Make sure, that the latest VCI driver is installed.
- ▶ Make sure, that the device is correctly connected to the host computer and to power supply.
- ▶ Make sure that the latest CAN-Gateway Configurator is installed (check within product support pages on www.ixxat.com/support-bridges-gateways).
- ▶ Start the Ixxat CAN-Gateway Configurator.
- ▶ Open menu **Scan** and select **All Ixxat devices**.
 - Connected devices and firmware version of the devices are shown.

5.3.2 Updating the Device Firmware



Whether a password is needed, is defined in the security settings of the CAN-Gateway Configurator. The default password is IXXAT. For more information see user manual *CAN-Gateway Configurator*.



The firmware is constantly improved and expanded! Check if a newer firmware version is available within the product support pages on www.ixxat.com/support-bridges-gateways.

To use all features the latest firmware versions of the CAN-Gateway Configurator and of the CANbridge NT must be installed.

If the current firmware of the CANbridge NT in use is V4 or older:



- ▶ See update package on the product support pages on www.ixxat.com/support-bridges-gateways for information about updating to V5 or contact Ixxat support.

If the current firmware of the CANbridge NT in use is V5 or V6:

- ▶ Check if newer firmware is available on the product support pages on www.ixxat.com/support-bridges-gateways.
- ▶ Download and unzip the update package.
- ▶ Make sure, that the device is connected to power supply.
- ▶ Connect the device to the computer via USB.
- ▶ Make sure that the latest CAN-Gateway Configurator is installed (check within product support pages on www.ixxat.com/support-bridges-gateways).
- ▶ Start the CAN-Gateway Configurator.
- ▶ In drop down list **Select device type** select the device in use.
- ▶ In drop down list **Select device version** select the current firmware version of the device **V5** or **V6**.



The device is only found if the selected firmware version matches the firmware version of the connected device.

- ▶ Scan for devices with button **Scan**  and select the device in use in the combo box **Target Device**.
- ▶ Click button **Connect** .

-
- ▶ Open menu **Target** and select **Read configuration from target**.
 - ▶ Save the configuration on the computer.
 - ▶ Open menu **Target** and select **Update Firmware**.
 - ▶ Select the update file.
 - Firmware of the connected device is updated.
 - ▶ In the status window check if the update is completed successfully.
 - ▶ If the device was updated from V5 to V6 , select **V6** in drop-down list **Select device version**.
 - ▶ If using a V5 configuration, open menu **File** and select **Convert V5 to V6** to convert the configuration to the latest version.
 - ▶ Write the saved configuration to the device.



HMS recommends to verify configurations that are converted from V5 to V6, to make sure that all settings are working correctly.

6 Configuration

! The security settings set via the CAN-Gateway Configurator define if a password is needed to change the configuration. The default password is IXXAT. For more information see user manual *CAN-Gateway Configurator*.

6.1 Basic Configuration

! Connection disturbance possible if extension cable or longer cable is used!
HMS recommends connecting the interface directly with the included cable or via an active USB hub to the computer according to the USB specification.

i It is possible to add information about the configuration in fields **Author**, **Configuration Name** and **Additional Info** in the configuration tree entry **Info**.

i It is possible to create and save a configuration without a connected device. Saved configurations can be downloaded to connected CAN NT devices with Windows and Linux by using the Command Line Tool (see [Downloading the Configuration with Linux, p. 16](#)).

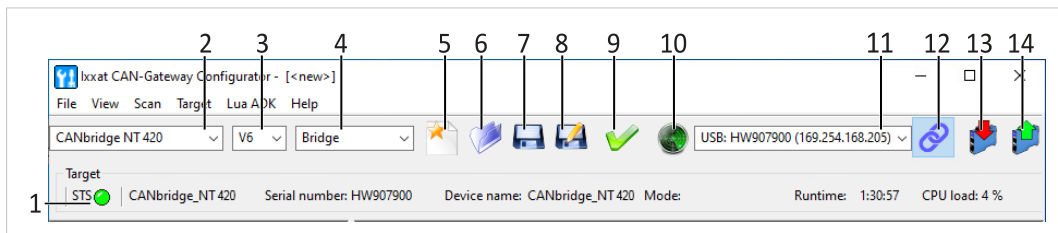


Fig. 2 CAN-Gateway Configurator

| | |
|----|---|
| 1 | Information about target device, ST5 (status) reflects Power LED of device |
| 2 | Drop-down list Select device type |
| 3 | Drop-down list Select device version |
| 4 | Drop-down list Select operational mode |
| 5 | Button New |
| 6 | Button Open |
| 7 | Button Save |
| 8 | Button Save as |
| 9 | Button Verify |
| 10 | Button Scan |
| 11 | Combo Box Target device |
| 12 | Button Connect |
| 13 | Button Write to |
| 14 | Button Read from |

- ▶ Make sure, that the latest VCI driver is installed.
- ▶ Make sure, that the device is correctly installed (see [Installing the Hardware, p. 8](#)).
- ▶ Connect a device to the host computer via Mini USB cable.
- ▶ Make sure, that the latest firmware is on the device (see [Checking and Updating the Firmware, p. 10](#)).

- ▶ Make sure, that the latest CAN-Gateway Configurator is installed (check within product support pages on www.ixxat.com/support-bridges-gateways).
 - ▶ Start the Ixxat CAN-Gateway Configurator.
 - ▶ Open menu **Scan** and select **All Ixxat devices**.
 - Connected devices and firmware version of the devices are shown.
 - ▶ Select the type of CANbridge NT in use in drop-down list **Select device type (2)**.
 - ▶ Select the firmware version of the device in drop-down list **Select device version (3)**.
 - ▶ Select the desired operational mode for the device in use in drop-down list **Select operational mode (4)**.
 - ▶ Select the device in combo box **Target device (11)**.
 - ▶ Click button **Connect (12)** to connect the selected device.
 - If device is connected, **STS (1)** is green flashing.
 - Information about the target (1) device is shown.
 - ▶ Make sure, that the CANbridge is updated to the latest firmware.
 - ▶ To create a new project file, click button **New (5)**.
 - ▶ To change the current configuration of the device, click button **Read from (14)** and save the configuration.
- or
- ▶ Configure the device in the desired mode (see *Repeater/Star Coupler Configuration, p. 14* or *Bridge Configuration, p. 15*).

6.2 Configuring the Device Name

The displayed name of a connected device can be chosen freely.

- ▶ Open menu **Target** and select **Change device name**.
 - Window **Device Name Configuration** is opened.

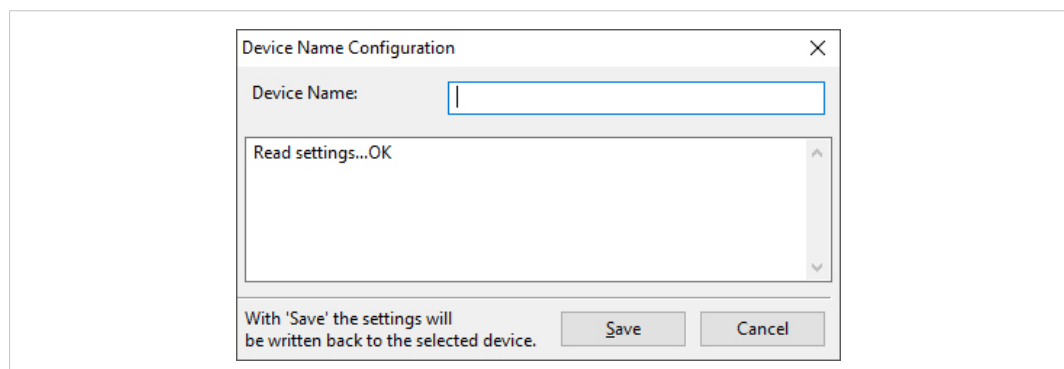


Fig. 3 Window Device Name Configuration

- ▶ Enter desired name in field **Device Name** and click button **Save**.
 - Name is written to the device.

6.3 Repeater/Star Coupler Configuration

The CANbridge NT 200 can be configured as Repeater and the CANbridge NT 420 as Star Coupler. In the Repeater/Star Coupler mode all messages are transmitted unchanged to the other ports in Classic CAN mode. Filters, CAN-ID modifications and CAN-FD mode are not possible.

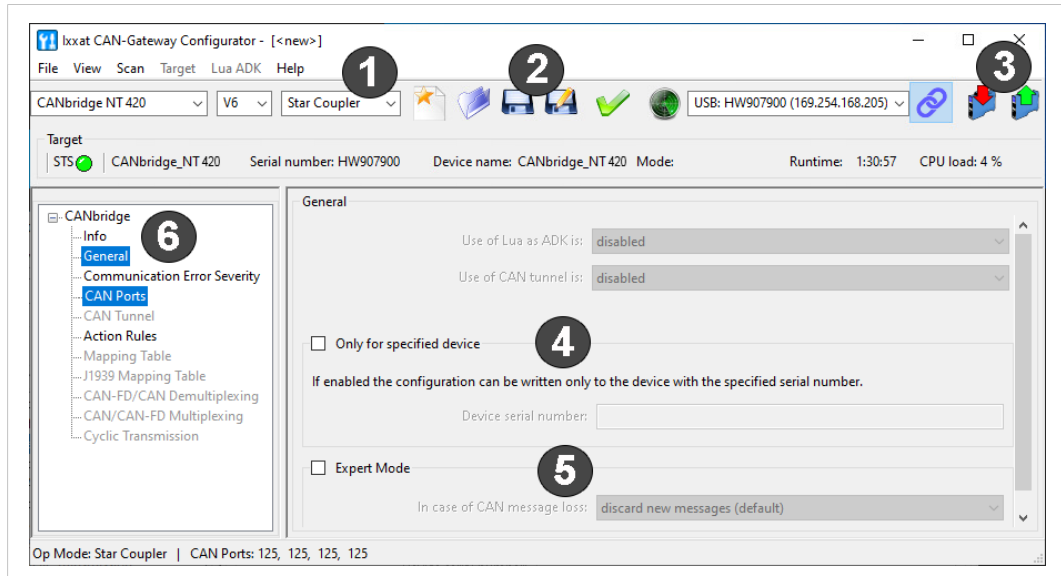


Fig. 4 Repeater configuration

- ▶ Make sure, that the basic configuration is set and that the correct device type and version are selected (see [Basic Configuration, p. 12](#)).
- ▶ With CANbridge NT 200 make sure that operational mode **Repeater (1)** is selected.
- ▶ With CANbridge NT 420 make sure that operational mode **Star Coupler (1)** is selected.
 - In Repeater/Star Coupler mode the mapping table is deactivated.
 - All messages are transmitted unchanged.
- ▶ In the configuration tree (6) select **General**.
- ▶ If checkbox **Only for specified device (4)** is enabled, enter the serial number of the device to which the configuration can be written.
- ▶ If checkbox **Expert Mode (5)** is enabled, select the desired settings (for more information see User Manual *CAN-Gateway Configurator*).
- ▶ Configure the baud rate for all active CAN ports (6) (see User Manual *CAN-Gateway Configurator* for more information).
- ▶ For description of further configuration possibilities see User Manual *CAN-Gateway Configurator*.
- ▶ To write the configuration to the device, click button **Write to (3)**.
- ▶ Click button **Save** or **Save As (2)** to save the configuration.



Observe the bus load when setting the baud rates. If the bus load is high on a port with high baudrate but the other port has a low baud rate, a bus overload can occur.

6.4 Bridge Configuration

By using the mapping table and the multiplexing table the Bridge mode allows free configuration of the transmission of CAN messages. With the CANbridge NT 420 bridging between Classic CAN and CAN FD is possible.

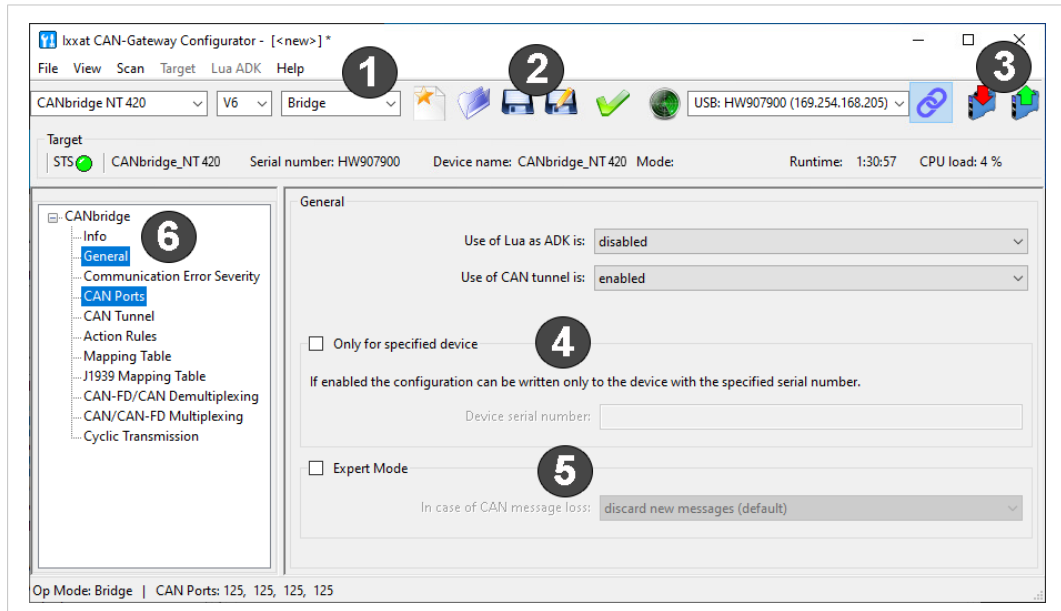


Fig. 5 Bridge configuration

- ▶ Make sure, that the basic configuration is set and that the correct device type and version are selected (see [Basic Configuration, p. 12](#)).
- ▶ Make sure, that operational mode **Bridge** (1) is selected.
- ▶ In configuration tree (6) select **CANbridge — General**.
- ▶ If checkbox **Only for specified device** (4) is enabled, enter the serial number of the device to which the configuration can be written.
- ▶ If checkbox **Expert Mode** (5) is enabled, select the desired settings (for more information see User Manual *CAN-Gateway Configurator*).
- ▶ For the description of the CAN tunnel and of further configuration possibilities see User Manual *CAN-Gateway Configurator*.
- ▶ Configure the baud rate settings for all active CAN ports and the mapping table (for more information see User Manual *CAN-Gateway Configurator* on product support pages on www.ixxat.com/support-bridges-gateways).



Only messages that are entered in the mapping table are forwarded. By default, no filter is set and all messages are rejected.

- ▶ To write the configuration to the device, click button **Write to** (3).
- ▶ Click button **Save** or **Save As** (2) to save the configuration.

6.5 Downloading the Configuration with Linux

The basic configurations, like the selection of the operating mode, can only be created with the CAN-Gateway Configurator with Windows. A configuration can be created and saved without a connected device and can then be downloaded to connected CAN NT devices with Linux by using the Command Line Tool that is included in the scope of delivery.

- ▶ To be able to read and write configurations on CAN NT devices, copy the included file *60-bgi.rules* to the folder `/etc/udev/rules.d/` (root access required).
- ▶ To activate the new rules, execute the following command:

```
udevadm control --reload-rules
```

- ▶ To download a saved configuration file to CAN NT devices, start the command line tool *cangwfile* without parameters.
 - Output shows the syntax, examples and all possible commands.
- ▶ Write the configuration to the target device (see User Manual *CAN-Gateway Configurator* for more information about the Command Line Tool).

6.6 Reset

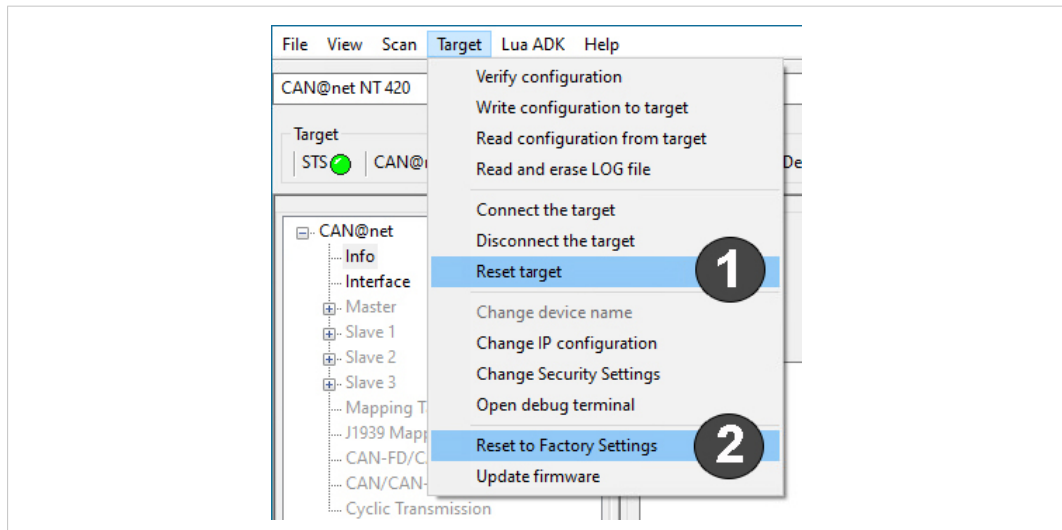


Fig. 6 Reset

6.6.1 Reset Target

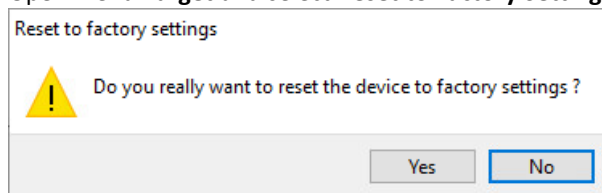
With **Reset target** (1) it is possible to restart the device without reset the configuration.

- ▶ Open menu **Target** and select **Reset target**.
 - Device is restarted (software of the device).
 - Connection to the CAN-Gateway Configurator is lost.

6.6.2 Reset to Factory Settings

With **Reset to Factory Settings** (2) it is possible to reset the configuration of a connected device to factory settings.

- ▶ Make sure that the device is connected via USB.
- ▶ Open menu **Target** and select **Reset to Factory Settings**.



- ▶ Click button **Yes** to confirm the reset.
 - Configuration is reset to factory settings.
 - Connection to the CAN-Gateway Configurator is lost.

6.7 Read and erase LOG File

In case of an error the device writes the error in a log file. The log file can be read from the device, saved as a txt file and send to the Ixxat support if needed.

- ▶ Open menu **Target** and select **Read and erase LOG file**.
 - Window **Save Log File As** is opened.
- ▶ Define a file name and save the file.
 - .txt-file is created and saved.
 - Configuration file is saved.

7 Operation

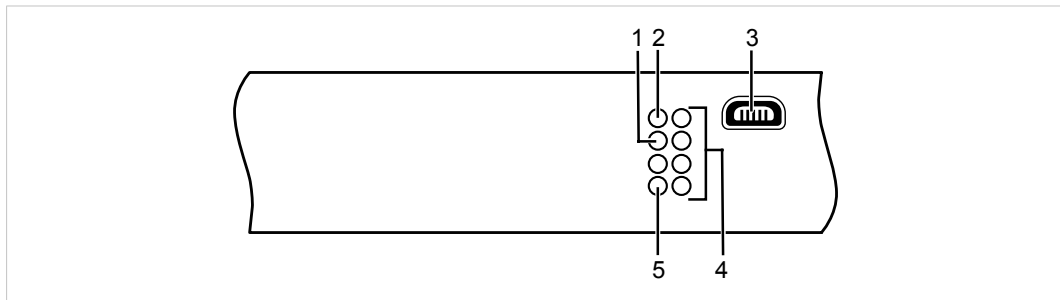


Fig. 7 Ports and LEDs

| | |
|---|-----------------|
| 1 | Status LED |
| 2 | Power LED |
| 3 | Mini USB port |
| 4 | CAN LEDs 1 to 4 |
| 5 | User LED |

7.1 Mini USB Port

Provided to connect the device for configuration.

7.2 Indicators

7.2.1 Power LED

Indicates the status of the power supply.

| LED state | Description | Comments |
|-----------|-------------|---|
| Off | No power | Possible causes: device not connected to power supply, fuse of device damaged, internal power supply damaged, power supply not sufficient |
| Green | Power | Device fully functional |

7.2.2 Status LED

Indicates the device status.

| LED state | Description | Comments |
|------------------------|---|---|
| Off | Device not ready | No firmware, application firmware not started |
| Green flashing (1 Hz) | Application firmware started | Device in <i>Operational</i> state |
| Red/green flashing | Configuration file error | Rewriting of configuration to device necessary |
| Green/orange flashing | Device in <i>Configuring</i> state | In <i>Configuring</i> state the device read the configuration from the local file system. In operating mode CAN-ETH-CAN Bridge the device tries to establish the connection to the slaves. If a slave is missing, the device stays in <i>Configuring</i> state. |
| Orange flashing (1 Hz) | Automatic baud rate detection or Lua ADK in remote mode | Ongoing automatic baud rate detection, or Lua ADK in remote mode |
| Red flashing | Device error | Application signals a device error, error in configuration or no configuration. Read log file for more information (see Read and erase LOG File, p. 18). |

7.2.3 User LED

Indicates the primary application status and can be configured with user defined settings via Action Rules. See User Manual *CAN-Gateway Configurator* for more information.

7.2.4 CAN LED

CAN 1-4 LEDs indicate the status of the corresponding CAN interface.

| LED state | Description | Comments |
|-----------------|---|---|
| Off | No CAN communication | No connection to CAN |
| Orange flashing | Indicates a state of the automatic baud rate detection | See User Manual <i>CAN Gateway Configurator</i> |
| Green flashing | CAN communication | LED is triggered with each CAN message |
| Green | CAN communication | Device in <i>Operational</i> state, no messages on CAN bus |
| Red flashing | CAN communication, CAN controller in <i>Error</i> state | CAN controller in <i>Error Warning</i> or <i>Error Passive</i> state, reception/transmission of CAN messages possible |
| Red | Bus off | CAN controller is in <i>Bus Off</i> state, no CAN communication possible |

8 Technical Data

| | |
|--|---|
| Dimensions | 114.5 x 99 x 22.5 mm |
| Weight | Approx. 150 g |
| Operating temperature | -40 °C to +85 °C |
| Storage temperature | -40 °C to +85 °C |
| Power supply | 9 V to 36 V DC with overvoltage and polarity protection |
| Current consumption | Typically 110 mA at 24 V input voltage, typically 220 mA at 12 V input voltage |
| Housing material | Polyamide |
| Galvanic isolation | 1 kV DC for 1 sec |
| Protection class | IP20 |
| CAN bit rates (CAN 1/CAN2) | 5 kbit/s to 1000 kbit/s |
| CAN FD bit rates (CAN3/CAN4 with CANbridge NT 420) | Arbitration rate: up to 1000 kbit/s, data rate: up to 8000 kbit/s (verified by testing) User defined bit rates are possible. Depending on the operating conditions (cable length, settings made, remote stations, etc.) the maximum data might not be reached or exceeded. |
| Max. number of bus nodes | 120 |
| CAN bus termination resistor | None |
| CAN pass through delay | 25-50 µs depending on configuration settings and CAN load |
| Startup time after power on | < 1 s |
| Processing time in Bridge mode | 30 000-40 000 msg/s |
| Startup time | Min. 225 ms (configuration size 5 kB), max. 765 ms (configuration size 140 kB) |

9 Support/Return Hardware

9.1 Support

- ▶ To contact support, go to www.ixxat.com/technical-support/contact-technical-support.
- ▶ Scroll down and click button **mysupport.hms.se** to register a support case.

9.2 Return Hardware

- ▶ On www.ixxat.com/support/product-returns click button **Portal** to access the support portal.
- ▶ In the support portal select **Submit Product Return (RMA)**.
- ▶ Read the information and click **Create RMA Case**.
- ▶ Register a support account and sign in.
- ▶ Fill in the form for warranty claims and repair.
- ▶ Print out the Product Return Number (PRN resp. RMA).
- ▶ Pack product in a physically- and ESD-safe way, use original packaging if possible.
- ▶ Enclose PRN number.
- ▶ Observe further notes on www.ixxat.com.
- ▶ Return hardware.

10 Disposal

- ▶ Dispose of product according to national laws and regulations.
- ▶ Observe further notes about disposal of products on www.ixxat.com.

A Regulatory Compliance

A.1 EMC Compliance (CE)



The product is in compliance with the Electromagnetic Compatibility Directive. More information and the Declaration of Conformity is found at www.ixxat.com.

A.2 EMC Compliance (UKCA)



The product is in compliance with the Electromagnetic Compatibility Regulations 2016. The Declaration of Conformity is available at www.ixxat.com

A.3 FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

| | |
|--------------------------|---|
| Product name | CANbridge NT |
| Model | 200/420 |
| Responsible party | HMS Industrial Networks Inc |
| Address | 35 E. Wacker Dr, Suite 1700 Chicago , IL 60601 |
| Phone | +1 312 829 0601 |



Any changes or modifications not expressly approved by HMS Industrial Networks could void the user's authority to operate the equipment.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

A.4 Disposal and recycling



You must dispose of this product properly according to local laws and regulations. Because this product contains electronic components, it must be disposed of separately from household waste. When this product reaches its end of life, contact local authorities to learn about disposal and recycling options, or simply drop it off at your local HMS office or return it to HMS.

For more information, see www.hms-networks.com.

B UL Ordinary Locations (Ord.Loc.)

CANbridge NT devices are certified for use in ordinary locations in compliance with the following standard:

- UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14, Audio/video, information and communication technology equipment Part 1: Safety requirements

The certification number of the certified devices according to OrdLoc certification is:

- E466303

According to the standards listed above, the devices are certified with the following marking:



Intended Use

The components are used to connect computer systems to CAN and CAN FD networks and to connect the networks with each other. They are intended for installation on standard DIN rail.



Risk of interference to radio and television if used in office or home environment!

Use exclusively included accessories. Use exclusively shielded cables.

Make sure that the shield of the interface is connected with the device plug and the plug on the other side.



Protect product from moisture and humidity.

Protect product from too high or too low temperature, and from fire.

Utilisation prévue

Les composants sont utilisés pour connecter les systèmes informatiques aux réseaux CAN et CAN FD et pour connecter les réseaux entre eux. Ils sont destinés à être installés sur un rail DIN standard.



Risque d'interférence avec la radio et la télévision si elles sont utilisées au bureau ou à la maison !

Utilisez exclusivement les accessoires inclus. Utilisez exclusivement des câbles blindés.

Vérifiez que le blindage de l'interface est connecté avec la prise de l'appareil et la prise de l'autre côté.



Protégez le produit de l'humidité.

Le produit ne doit pas être soumis à des températures extrêmes et doit être protégé contre tout risque d'incendie.

