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NewTec

User Manual
NTSecureGateway

Language Version: EN
Date: 2020-10

IMPORTANT NOTE
READ CAREFULLY BEFORE USE
TO BE KEPT FOR FUTURE REFERENCE

Valid for the following hardware components:
NTSecureGateway 11648_0008_0012 V2.1

F905

Change Management

Revision ID	Description of Changes
DV A1	Initial Revision

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Content

NTSecureGateway User Manual

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Warnings Used in This Manual

Information marked with this symbol MUST be obeyed to avoid the risk of severe injury, health danger, or major destruction of the unit and its environment.

Information marked with this symbol MUST be obeyed to avoid the risk of possible injury, permanent damage or malfunction of the unit.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

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 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.

Safety Instructions

This description is part of the device. It contains texts and illustrations for the correct handling of the module and must be read before installation or use.
Please follow the instructions in the description. Non-observance of the instructions, operation outside the intended use, incorrect installation or incorrect handling can result in serious impairments to the safety of people and systems.

The device may only be installed, connected, put into operation, changed or retrofitted by a qualified electrician.
Disconnect the device from the external power supply before carrying out any work on it. In the event of installation and system faults, the mains potential may be connected to the control circuit for devices that are not electrically isolated. If necessary, also switch off independently supplied output load circuits.

For the installation of the device, the safety regulations of the electrical engineering and the employers' liability insurance association must be observed.

Only the signals indicated in the technical documentation may be applied, and only components from the approved accessory components list of NewTec GmbH may be connected to the device’s connection terminals.

In case of malfunctions or ambiguities, please contact the manufacturer. Tampering with the device might seriously impair the safety of people and equipment. They are not permitted and will lead to exclusion of liability and warranty.

The proper and safe operation of the products requires proper transport, proper storage, set-up, assembly, installation, commissioning, operation and maintenance.

Any manipulation will void the warranty.

Intended Use

This product is designed to be used in industrial applications.
It is intended to be mounted in an electrical cabinet.
It is intended to collect measurement data via the provided interfaces (Bluetooth Low Energy, CAN, RS485 or digital IOs) and provide this information to higher level instances like PLCs, Industry PCs, or Cloud solutions.
It is not intended to be used to control other devices, especially devices that can harm humans
It is not intended to be used in safety critical applications
It is not intended to measure and / or transfer critical data that can lead to machine failures
It is only intended to be used in an environment that is not exceeding the conditions defined in the chapter Maximum Ratings.
The use of the product by private consumers is excluded.
Buyer shall verify the suitability of the product for the intended application by own tests before using the NTSecureGateway. Due to the large number of parameters and conditions under which this product can be used, each organization and person using this product is obliged to test this product on their own responsibility for suitability and usability with regard to the desired application.

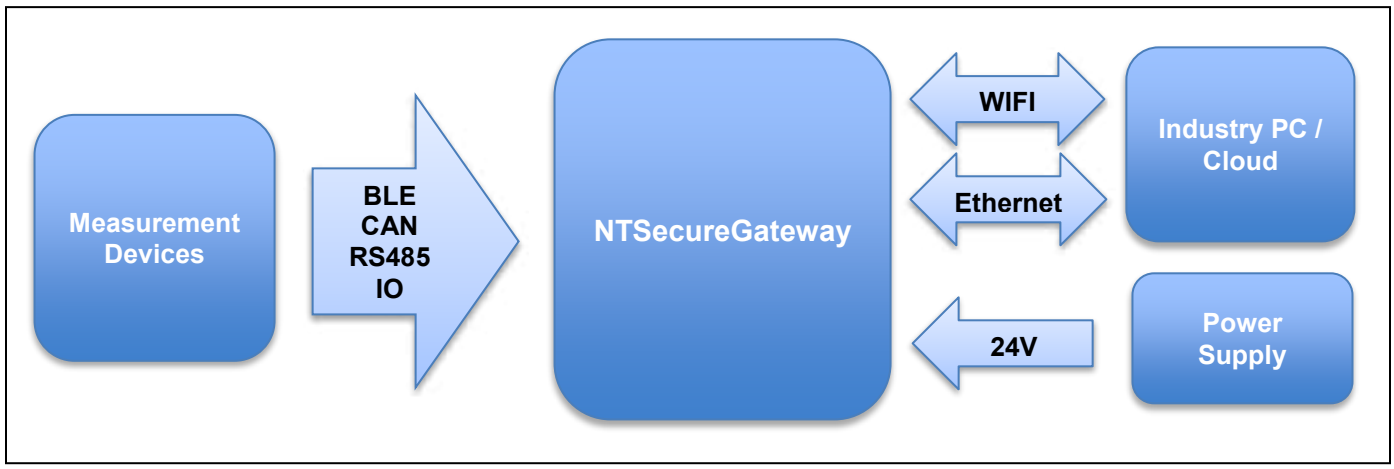

Figure 1: Intended use

Residual Risks

The device must only be used for its intended purpose and only if it is in perfect safety condition.
Malfunctions that could impair safety must be rectified immediately.
In case of improper or unintended use, the device may no longer be used and any warranty claim expires. Non-permissible influences can be: strong mechanical stress (e.g. when the device has been dropped), voltages, currents, humidity outside the specification.
When commissioning machines/systems for the first time, all safety functions must always be checked in accordance with the applicable regulations and the specified test cycles for safety devices must be observed.

Designated Location of Operation

The device must only be used and operated in a safe electrical cabinets. In any case, the regulations and provisions of the professional association and all provisions that apply at the respective operating site must be observed.

Device Overview

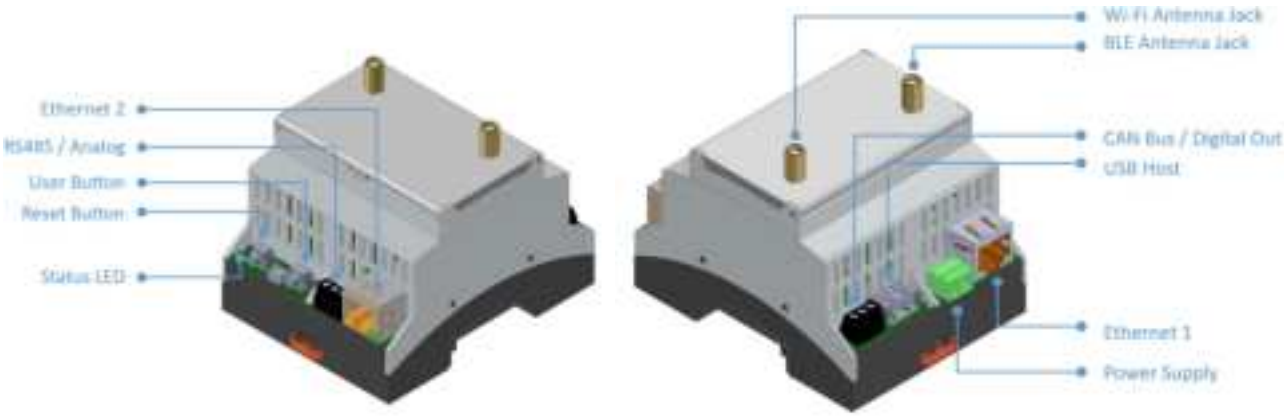

Figure 2: External Interfaces

Key Features

- Microchip ATSAMA5D27 incl. 128 MB RAM
  - ARM Cortex-A5 core
  - Up to 500 MHz
- 4GB eMMC
- Interfaces:
  - 2xEthernet
  - Wifi
  - USB 2.0 Host
  - BLE
  - CAN
  - RS485
  - 4-20mA
  - 0-10V
- Supported protocols (additional Software license required):
  - OPC/UA
  - MQTT
  - PROFINET
- Housing: DIN Rail (72 x 90 mm)
- IP 67 housing available on request
- Power supply 7-32 V or passive POE (24 V)

Use Cases

- Secure data transfer
- End-to-end encryption
- Edge computing platform
- Extensible through individual application programming

Security Features

- Dedicated cryptographic hardware engine (ARM TrustZone)
- Cryptography and security middleware services·
- Secure Boot
- Secure Update
- Various supported encryption algorithms, such as AES, RSA, Diffie-Hellman, Elliptic Curve
- Tamper Protection
- ATECC608 Secure Keystore

Technical Data

Dimension

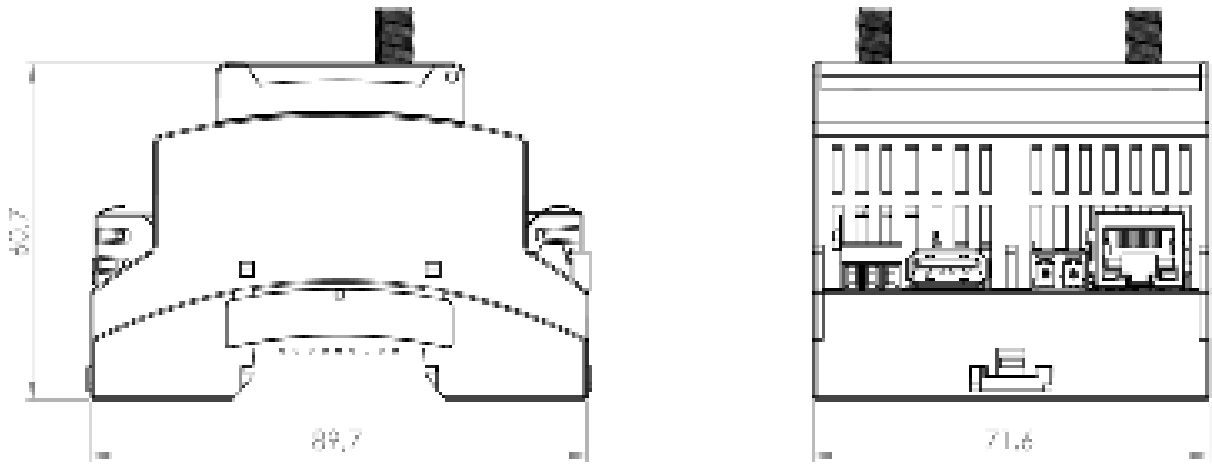

Figure 3: Dimension in mm

Maximum Ratings

Supply Voltage	**7 VDC ... 32 VDC**
Operating Current	Max: 0.5A @24V
Storage Temperature	-15 °C to +70 °C
Operating Temperature	0 °C to +40 °C
Protection class	IP20
Condensation	Not allowed

Table 1: Maximum Ratings

Interfaces

For Location of the interfaces see Figure 2: External Interfaces

Power Supply

Mating Connector: Phoenix Contact, Part No: 1836079

Pin Number	Description
1	GND
2	24V

Ethernet 1

10BASE-T and 100BASE-TX Ethernet connector
Support for 24V passive Power over Ethernet (POE)

Ethernet 2

10BASE-T and 100BASE-TX Ethernet connector

CAN Bus / Digital Out

Depending on mounting option this connector is used for CAN Bus or for digital output

CAN Bus:

Pin Number	Description
1	GND
2	CAN Hi
3	CAN Lo

Digital Output:

Pin Number	Description
1	GND
2	5V or 24V (mounting option)
3	Switched GND

USB Host

USB-A connector for USB 2.0

RS 485 / Analog

Depending on mounting option, this connector is used for RS485, 4-20mA or 0-10V interface

RS485:

Pin Number	Description
1	GND
2	RS485 A
3	RS485 B

Analog Input:

Pin Number	Description
1	GND
2	Analog In
3	N/A

User Button
Application dependent

Reset Button
System Reset

Status LED
RGB LED, application dependent

Wi-Fi Antenna Jack
SMA Antenna connector. Use specified antenna only: Pulse W1010

BLE Antenna Jack
SMA Antenna connector. Use specified antenna only: Pulse W1010

System Overview

General Description

The main functionality of this devices is to provide connectivity between different interfaces in a secure way. So there are a lot of communication interfaces that can be connected by software. The specific functionality depends on the software configuration of your application. For details please see software user guide.

Block Diagram

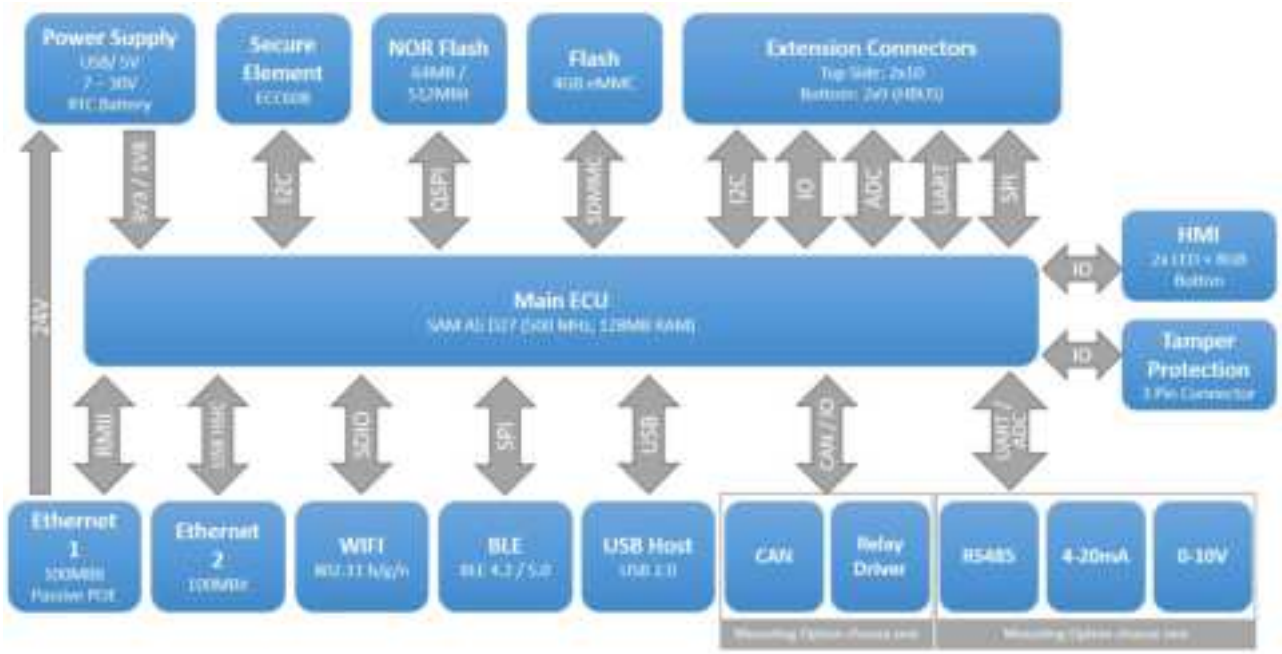

Figure 4: Block Diagram

Installation

Installation Requirements

The NTSecureGateway is designed to be mounted in an electric cabinet with a minimum protection class of IP54. It is intended to be mounted on a DIN Rail according to EN 60715 (35mm x 7.5mm). First snap in the orange clip at the top position (1) to the DIN Rail. Then pull down the orange clip at the bottom side (2) with a screw driver, to also snap it to the DIN Rail. Ensure that both orange clips are in the default position and the housing is mounted firmly on the DIN Rail.

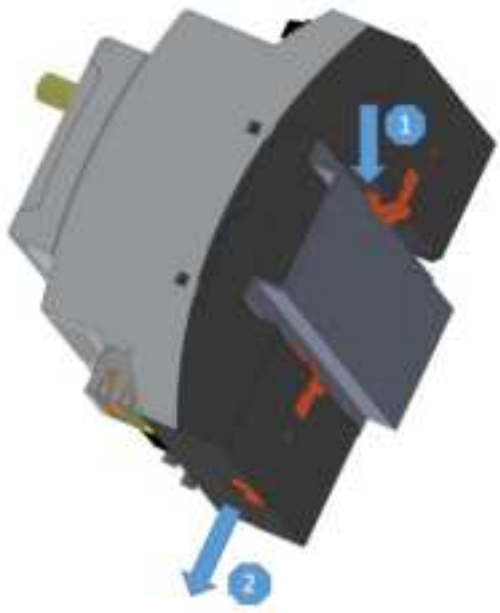

Figure 5: DIN Rail mounting

Initial commissioning

For initial commissioning connect 24 V to the power supply connector. The following connector is needed: Phoenix Contact, Part No: 1836079.

Ensure that the supply voltage is not exceeding the values defined in Table 1: Maximum Ratings, otherwise the device could be damaged.

Respect polarity, otherwise the device could be damaged.