NETIX.AI

DATA SHEET

NX3 SERIES
IOT CONTROLLER & GATEWAY

Product Description

IoTGate was created with smart buildings in mind. The use of a LTE Cat M1/NB1 modem with high-power chipset ensuring better indoor coverage compared to traditional 2G /3G/ 4G modems, allows to connect devices deep inside buildings. By adding a Modbus and M-Bus connector it is possible to connect electricity, gas, water or calorie meters but also wired sensors that need to send data to a Cloud platform.

With the powerful program on **IoTGate** it is very straight forward to create the required data flow on the gateway or to perform edge processing on the data before it is sent to the Cloud. Data reduction through edge processing is vital in case of low band width (and higher cost per bit) protocols such as CAT-M or NB-IoT to improve data performance and reduce connectivity cost.

Features

❏ IoTGatewith LTE Multiband modem
❏ Ethernet, M-Bus and serial (RS232/RS485) interface
❏ Optional: WiFior LoRaWANor Battery backup available
❏ Real Time Clock
❏ Freely programmable Controller and Gateway
❏ Built-in SMS and E-mail service
❏ Suitable for Cloud and On-premise application
❏ Compatible with Uniview SUPRA, and NETIX.AI Platform

NB-IoT / Cat-M1

NB-IoT supports ultra-low complexity devices with very narrow band width of 180kHz. Due to its narrow band width, the data rate peaks at a round 60 kbps (forNB1). On the other hand, Cat-M1 operates at 1.08MHz band width with higher device complexity/cost than NB-IoT. The wider band width allows Cat-M1 to achieve greater data rates (up to 1Mbps for catM1) and lower latency (10 to 15ms vs 1.6s to 10s). The link budget (coverage) for NB-IoT is also higher (164dB) than for LTE CatM1 (155.7dB) and much higher than LTE Cat4 (142.7dB) which means that coverage under difficult circumstances (like indoor) is best in Cat-NB1 mode.

Most common use cases of NB-IoT include utility meters and sensors. Typical use cases for Cat-M1 include connected vehicles and alarm panels.

Cat-M1 and NB-IoT are considered future-proof and are viewed as 5G technologies.

Protocols, Interface & Platform

BACnet IP	Modbus TCP	KNX-IP	M-bus	LoRa	Wirepas	Zigbee	SNMP
MQTT	SMS	E-Mail	Wi-Fi	4G LTE	RS232	Ethernet	Monnit
	WebSocket	TCP	UDP	Cloud	On-premise		

For further information

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DATA SHEET

NX3 SERIES | C1
IOT CONTROLLER & GATEWAY

Application

❏ Energy monitoring
❏ Air Quality Monitoring
❏ NETIX.AI Platform integration
❏ 4 Mbus device.
❏ Remote monitoring
❏ Totalizer or Datalogger
❏ Private LoRaWAN network
❏ NB-IoT Router
❏ 2G and 4LTE connectivity
❏ 4LTE, SNMP, and FTP
❏ Key features: MQTT, Modbus TCP,
　 BACnet IP, SMS, Email, WIFI
❏ Mbus and Modbus RTU integration,
　 recommend to connect max
❏ 4LTE, SNMP, and FTP

Model Name	NX30126-12161 NX30126-12195 (Battery)	NX30126-12162	NX30126-12202
Category	C1	C1	C1
LTE	CAT M/NB-IoT 20 bands	CAT M/NB-IoT 20 bands	CAT M/NB-IoT 20 bands
3G HSPA+	No	No	No
2G	Yes 4 bands	Yes 4 bands	Yes 4 bands
Real Time Clock	No	No	No
Carrier Certifications	AT&T, VZW, USC, WW	AT&T, VZW, USC, WW	AT&T, VZW, USC, WW
SIM card holder	1 Micro SIM	1 Micro SIM	1 Micro SIM
MicroSD card holder	Yes	Yes	Yes
GNSS	See NX3-C1 w/ GPS (on demand)	No	No
LoRa	See NX3-C1 w/ LoRaWAN	No	868/915MHz forwarder or server
Wi-Fi	See NX3-C1 w/ Wi-Fi	802.11 b/g/n Client or AP	No
Ethernet	1 LAN/WAN	1 LAN/WAN	1 LAN/WAN
Expansion card slots	0	0	0
USB	No	No	No
Serial Port	RS232 or RS485 Half and Full Duplex	RS232 or RS485 Half and Full Duplex	RS232 or RS485 Half and Full Duplex
Other Ports	Mbus	Mbus	Mbus
I/O	0	0	0
Ignition Sense	Yes	Yes	Yes
VPN	Yes	Yes	Yes
Max. # VPN Tunnels	1	1	1
SD-WAN	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover
Operating Temperature	-30° to +70° C	-30° to +70° C	-30° to +70° C
Class 1 Div 2 Cert.	No	No	No
Power Range	9 to 33 VDC	9 to 33 VDC	9 to 33 VDC
Battery Backup	Optional card 900mAh	No	No
Dimensions (excl antenna connectors)	96.5 x 103.7 x 28.4mm	96.5 x 103.7 x 28.4mm	96.5 x 103.7 x 28.4mm
Weight	228 gr	250 gr	250 gr
Box Contents	Gateway Only No Power or Antennas	Gateway Only No Power or Antennas	Gateway Only No Power or Antennas
Std. Warranty	3 Year	3 Year	3 Year
Programming Application	Via Web browser	Via Web browser	Via Web browser
NETIX.AI Platform	Optional	Optional	Optional

NX3-IOTGATE -13092022-R5

For further information

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DATA SHEET

NX3 SERIES | C2
IOT CONTROLLER & GATEWAY

Application

❏ Energy monitoring through IP devices
❏ Air Quality Monitoring
❏ NETIX.AI Platform integration
❏ Suitable for IP based Integration
❏ Remote monitoring
❏ Private LoRaWAN network
❏ CAT4 Router
❏ 3G and 4LTE connectivity
❏ Key features: MQTT, Modbus TCP,
❏ BACnet IP, SMS, Email, WIFI, 4LTE,
❏ SNMP, and FTP

Model Name	NX30125-12164 NX30125-12196 (battery)	NX30125-12166	NX30125-12199
Category	C2	C2	C2
LTE	CAT 4 20 bands	CAT 4 20 bands	CAT 4 20 bands
3G HSPA+	Yes 7 bands	Yes 7 bands	Yes 7 bands
2G	No	No	No
Real Time Clock	No	No	No
Carrier Certifications	AT&T, VZW, USC, Telus, WW	AT&T, VZW, USC, Telus, WW	AT&T, VZW, USC, Telus, WW
SIM card holder	1 Micro SIM	1 Micro SIM	1 Micro SIM
MicroSD card holder	Yes	Yes	Yes
GNSS	Yes	Yes	Yes
LoRa	See NX3-C2 w/ LoRaWAN	No	868/915MHz forwarder or server
Wi-Fi	See NX3-C2 w/ Wi-Fi	802.11 b/g/n Client or AP	No
Ethernet	1 LAN + 1LAN/WAN	1 LAN + 1LAN/WAN	1 LAN + 1LAN/WAN
Expansion card slots	0	0	0
USB	No	No	No
Serial Port	No	No	No
Other Ports	No	No	No
I/O	0	0	0
Ignition Sense	Yes	Yes	Yes
VPN	Yes	Yes	Yes
Max. # VPN Tunnels	1	1	1
SD-WAN	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover
Operating Temperature	-30° to +70° C	-30° to +70° C	-30° to +70° C
Class 1 Div 2 Cert.	No	No	No
Power Range	9 to 33 VDC	9 to 33 VDC	9 to 33 VDC
Battery Backup	Optional card 900mAh	No	No
Dimensions (excl antenna connectors)	96.5 x 103.7 x 28.4mm	96.5 x 103.7 x 28.4mm	96.5 x 103.7 x 28.4mm
Weight	228 gr	250 gr	250 gr
Box Contents	Gateway Only No Power or Antennas	Gateway Only No Power or Antennas	Gateway Only No Power or Antennas
Std. Warranty	3 Year	3 Year	3 Year
Programming Application	Via Web browser	Via Web browser	Via Web browser
NETIX.AI Platform	Optional	Optional	Optional

NX3-IOTGATE -13092022-R5

For further information

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NETIX.AI

DATA SHEET

NX3 SERIES | C3 & C4
IOT CONTROLLER & GATEWAY

C3

Application

❑ Energy monitoring through IP devices
❑ Air Quality Monitoring
❑ NETIX.AI Platform integration
❑ Suitable for IP based Integration
❑ Remote monitoring
❑ Private LoRaWAN network
❑ CAT4 Router
❑ 3G and 4LTE connectivity
❑ Key features: MQTT, Modbus TCP,
❑ BACnet IP, SMS, Email, WIFI, 4LTE, ❑ SNMP, and FTP

Application

❑ Energy monitoring through both IP and two wire devices
❑ Air Quality Monitoring
❑ Netix Konnect integration
❑ Expansion slot allow to have multiple combination
❑ Remote monitoring and control
❑ Street light management
❑ Private LoRaWAN network
❑ CAT4 Router
❑ Optional WIFI Connectivity, WIFI access point mode by using add-on cards
❑ With optional Smart metering card it support 250 Mbus and 32 Modbus device

C4

NX3-IOTGATE -13092022-R5

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DATA SHEET

NX3 SERIES | C5
IOT CONTROLLER & GATEWAY

Model Name	NX30104-12214 NX30104-12219 (battery)	NX30124-12135 NX30124-12198	NX30125-12142 NX30125-12197(battery)
Category	C5	C4	C3
LTE	N/A	CAT 4 20 bands	CAT 4 20 bands
3G HSPA+	N/A	Yes 7 bands	Yes 7 bands
2G	N/A	Yes 4 bands	No
Real Time Clock	No	Yes	No
Carrier Certifications	N/A	AT&T, VZW, USC, Telus, WW	AT&T, VZW, USC, Telus, WW
SIM card holder	N/A	1 Micro SIM	1 Micro SIM
MicroSD card holder	Optional card	Yes	Yes
GNSS	No	Yes	Yes
LoRa	Optional card 868/915MHz forwarder or server (NX32132-12193)	Optional card 868/915MHz forwarder or server (NX32132-12193)	Optional card 868/915MHz forwarder or server (NX32132-12193)
Wi-Fi	Optional card 802.11b/g/n Client or AP (NX32131-12167)	Optional card 802.11b/g/n Client or AP (NX32131-12167)	Optional card 802.11b/g/n Client or AP (NX32131-12167)
Ethernet	1 LAN + 1LAN/WAN	1 LAN + 1LAN/WAN	1 LAN + 1LAN/WAN
Expansion card slots	2	2	1
USB	Optional cards	Optional cards	No
Serial Port	Optional cards	Optional cards	RS232 or RS485 Half and Full Duplex
Other Ports	Optional cards	Optional cards	CAN, I2C
I/O	Optional cards	Optional cards	3
Ignition Sense	Yes	Yes	Yes
VPN	Yes	Yes	Yes
Max. # VPN Tunnels	1	1	1
SD-WAN	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover	Non-Session Persistent WAN Failover
Operating Temperature	-30° to +70° C	-30° to +70° C	-30° to +70° C
Class 1 Div 2 Cert.	No	No	Optional
Power Range	9 to 33 VDC	9 to 33 VDC	9 to 33 VDC
Battery Backup	No	Optional card 900mAh	Optional card 900mAh
Dimensions (excl antenna connectors)	115 x 105 x 45 mm	115 x 105 x 45 mm	115 x 105 x 45 mm
Weight	285 gr	285 gr	320 gr
Box Contents	Gateway Only No Power	Gateway Only No Power or Antennas	Gateway Only No Power or Antennas
Std. Warranty	3 Year	3 Year	3 Year
Programming Application	Via Web browser	Via Web browser	Via Web browser
NETIX.AI Platform	Optional	Optional	Optional

❏ Local motoring and Control only
❏ Energy monitoring through both IP and two wire devices
❏ Air Quality Monitoring
❏ Expansion slot allow to have multiple combination
❏ With optional Smart metering card, it support 250 Mbus and 32 Modbus   device
❏ Private LoRaWAN network
❏ Optional WIFI Connectivity, WIFI access point mode by using add-on cards
❏ MQTT Through WIFI or Wire internet .
❏ Key features: Modbus TCP, BACnet IP, SMS, Email, WIFI, SNMP, and FTP

For further information

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Front Slot Expansion Cards	
NX31101-11919	Standard serial Card (RS232)
NX31102-11920	Industrial serial Card (RS232/RS485)
NX31104-11936	Ethernet expansion Card (4 port)
NX31103-11935	Ethernet expansion Card with PoE (4 port)
NX31124-12154	Smart Metering Card (including 1x6P connector) (*) (**)
NX31119-12096	BLE Card (nRF52)
NX31119-12191	BLE Card with Wirepas

Black Slot Expansion cards	
NX32131-12167	WLAN III expansion Card (client or access point for 32 clients, 2.4 and 5 GHz)
NX32132-12193	LoRaWAN 868 + 9XX MHz
NX32130-12163	Zigbee Card
NX32130-12201	wMbus Card - 868 MHz
NX32127-12144	Monnit ALTA Card 868 MHz
NX32123-12117	LoRaWAN AC Card 868 MHz

Application	
NX30002-12125	Secure Remote Access (1Y)
NX30002-12068	Secure Remote Access (3Y)
NX30001-12220	Cloud Wizzard
NX30001-12181	BACnet with LuvitRED
NX30001-12221	BACnet with Cloud Wizzard
NX30001-12222	LuvitRED OPC-UA node
NX30001-12209	Actility LRR packet forwarder

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For further information

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Accessories	
NX31008855	LTE antenna (Grand-Tek)
NX31008379	Wi-Fi/BLE antenna (Tao glass)
NX31009098	868/900 MHz antenna (Pulse)
NX31009568	External antenna LTE/GPS AP1530 0,4 m
NX31009607	External antenna LTE/GPS AP1530 1,5 m
NX31009608	External antenna LTE/GPS AP1530 3,0 m
NX31009881	External antenna LTE/GPS/Wifi AP1533-b 0,4 m
NX31009862	External antenna LTE/GPS/Wifi AP1533-b 3,0 m
NX33009144	PoE power adapter
NX31008607	DC power cable with Microfit connector 3m (3-wire)
NX31010084	AC power supply 28V for NX3IoT-C1 - barrel connector (EU version)
NX31010082	Adapter cable barrel connector to Microfit connector
NX31010342	AC power supply 12V/1.5A class 6 and cable with Micro fit connector 1.5m (for use with interchangeable blade plugs, not included)
NX31010346	US interchangeable plug for power supply
NX31010344	EU interchangeable plug for power supply
NX31010345	UK interchangeable plug for power supply
NX31008837	Telematics Card I/O connector (9x2)
NX31008836	Pre-crimped cables for Telematics Card IO connector (300mm, 20AWG)
NX31009819	Smart Metering Card 6P connector
NX31009920	Smart Metering Card 18P connector
NX33008652	IP65 box ABS for NX3IoT (200x300x131,5mm) + power supply
NX33009037	IP65 box ABS for NX3IoT (280x380x130mm) + power supply

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NX3 SERIES
IOT CONTROLLER & GATEWAY

Front Slot Expansion Cards

NX31101-11919
Standard serial Card (RS232)

Specifications:
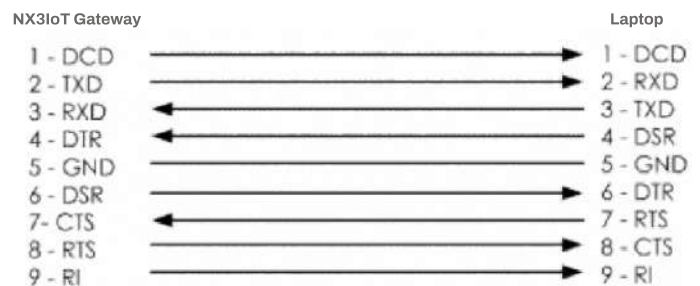Female DB9 connector
One serial port RS-232, 921.6 Kbaud maximum speed


Note:
The serial card is DCE device!

Connect the NX3IoT Gateway with a DTE device (laptop)
In order to connect the NX3IoT Gatewayto a laptop or any other DTE device you should use a regular straight cable

Connect the NX3IoT Gatewaywith another DCE device (modem, PLC,…)
In order to connect the NX3IoT Gateway to another DCE device you should use a cross cable. (= null modem cable
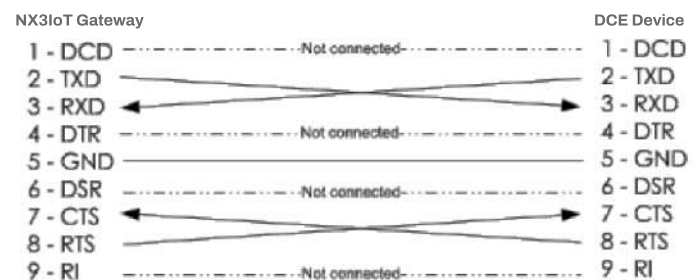
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Front Slot Expansion Cards

NX31102-11920
Industrial serial Card (RS232/RS485)

Specifications:
RS232
- One RS-232 serial port, 921.6 Kbaud maximum speed
- The RS232 interface on the industrial serial card is identical to the one on the low cost serial card. Please have a look at this low cost serial card for more info on the RS232 interface.
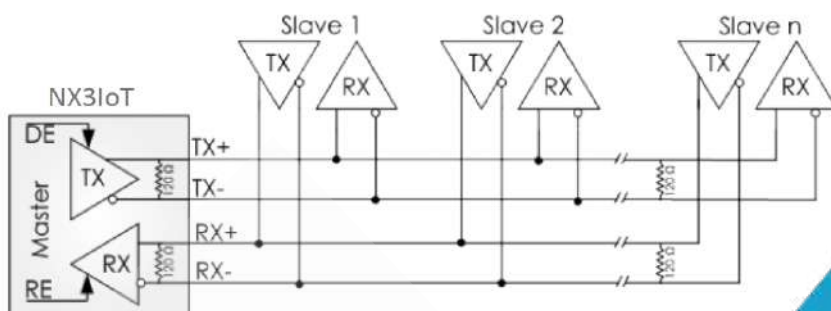
RS485
- One 22KV isolated RS-485 serial port, 921.6 Kbaud maximum speed
- Connector: Examples of the connector you should use are:
        1. Phoenix (MC1,5/5ST-3,81)
        2. Würth (691361300005)
- Terminations witch: With this switch you can choose to terminate the RS485 network with a 120 Ohm resistor
- Wire selection: This switch allows you to use a 4 wire network or a 2 wire network

You can use th eNX3IoT in a 2 wire network as shown below:
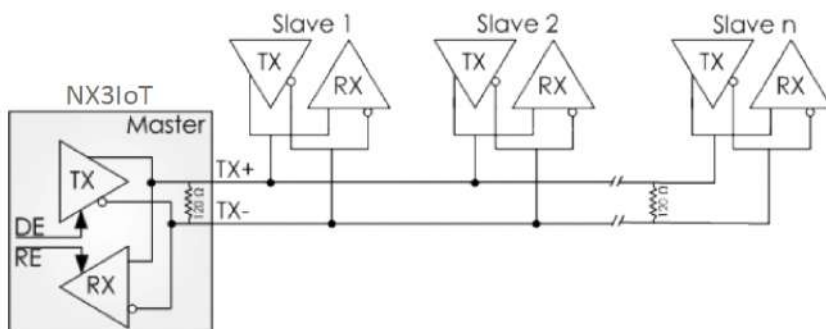
You can use th eNX3IoT in a 4 wire network as shown below:

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Note:
By default the TX and RX of the RS485 connection are disabled. So you have to enable them before you can start using the RS485 port. (You can enable this by using the DE and RE signals)
For a 2 wire interface (=half duplex) you should of course only enable one direction at the same time.
Below an example of how to do this in your code.
(The example shows how to activate both DE and RE)

```
#include <stdio.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/ioctl.h>
#include <errno.h>
/**********************************************************************
* Manifest Constants
**********************************************************************/
#ifndef TIOCM_OUT1
#define TIOCM_OUT10x2000
#define TIOCM_OUT20x4000
#endif
#define TIOCM_RETIOCM_OUT1
#define TIOCM_DETIOCM_OUT2
/**********************************************************************/int main (void)
{
    int fd= open("/dev/ttySP4",O_RDWR || O_NONBLOCK);
    if (fd< 0) { printf("failed to pen device\n"); return 0; }
    int status, err;
    /* switch on RS485 TRANSMIT buffer and RECEIVE buffer */
    ioctl(fd, TIOCMGET, &status);
    status |= (TIOCM_DE | TIOCM_RE);
    if ((err = ioctl(fd, TIOCMSET, &status)))
    {
        printf("ioctlerror 0x%x, errno0x%x, status %x",err, errno, status);
    }
    close(fd);
    return 0;
}
```

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DATA SHEET

NX3 SERIES
IOT CONTROLLER & GATEWAY

Front Slot Expansion Cards

NX31104-11936
Ethernet expansion Card (4 port)

Specifications:
The Ethernet switch allows more than on device to be connected to NX3IoT Intelligent M2M Gateway. It supports IEEE 802.3 flow control for Full Duplex mode and back pressure for half-duplex mode and supports MAC address auto-learning and auto-aging.
In addition being a 4-port Ethernet Switch, this NX3IoT expansion card includes expandable memory storage.

Ethernet
- RJ-45 receptacle tab on top
- 4-port 10/100 Base-T
- Auto-MDIX

Expandable storage
- On board uSD card connector available
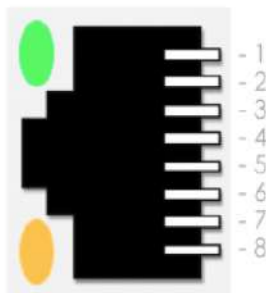
Pinout

Yellow LED:
- Active when operating speed is 100Mbps
- Inactive when operating speed is 10 Mbps or when not connected

Green LED:
- Active when valid links is detected
- Blinks when activity is detected
- Inactive when not connected

Pin #	Function
1	TX/RX+
2	TX/RX-
3	RX/TX+
4	Not used
5	Not used
6	RX/TX-
7	Not used
8	Not used

IMPORTANT:The auto-MDIX feature is always activated on the NX3IoT. This feature automatically detects the required cable connection type (straight or crossed), and configures the connection appropriately, removing the need for crossover cables.

In order for auto-MDIX to work correctly, auto-negotiation (auto speed and auto duplex) must be enabled on both sides of the link. Note that auto negotiation is always active on the NX3IoT.

NX3-IOTGATE -13092022-R5

For further information

Front Slot Expansion Cards

NX31104-11936
Ethernet expansion Card (4 port)

Specifications:
The Ethernet Switch with PoE delivers technology with up to 70 watt power to enable even broader endpoint support, faster deployment and lower operating expenses (requires special power supply).
In addition being a 4-port Ethernet Switch, this NX3IoT expansion card includes expandable memory storage.

Ethernet
- RJ-45 receptacle tab on top
- 4-port 10/100 Base-T
- Auto-MDIX

Power over Ethernet (PoE)
The expansioncard is compatible with the following standards:
- IEEE 802.3af. This standard providesup to 15.4 W of DC power to the external device
- IEEE 802.3at. This standard providesup to 25.5 W of DC power to the external device

Important remark: the cardfunctions as a 2 ports Class 4 PoE or a4-port Class 3 PoE device. It can deliver up to 60W in total to external devices. This means that it can deliver maximum 4 x 15W or 2 x 25.5W in total.

Expandable storage
- On board uSDcard connector available
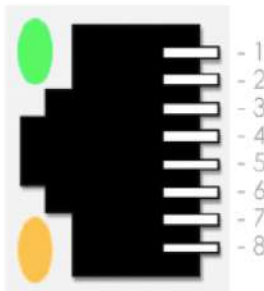
Pinout

Yellow LED:
- Active when operating speed is 100Mbps
- Inactive when operating speed is 10 Mbps or when not connected

Green LED:
- Active when valid links is detected
- Blinks when activity is detected
- Inactive when not connected

Pin #	Function
1	TX/RX+
2	TX/RX-
3	RX/TX+
4	PoE
5	PoE
6	RX/TX-
7	PoE
8	PoE

IMPORTANT:The auto-MDIX feature is always activated on the NX3IoT. This feature automatically detects the required cable connection type (straight or crossed), and configures the connection appropriately, removing the need for crossover cables.

In order for auto-MDIX to work correctly, auto-negotiation (auto speed and auto duplex) must be enabled on both sides of the link. Note that auto negotiation is always active on the NX3IoT.

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NX3-IOTGATE -13092022-R5

Power Supply

- Connector: Examples of the connector you should use are:
    1. Phoenix (MC 1,5/2ST-3,81)
    2. Würth(691361300002)
- Operating voltage: 50 -57Vdc, typical 56Vdc
- Power consumption: The mainboard of the NX3IoT consumes about 10W, the ethernet board can consume up to 60W (4x15w or 2 x 30W. So the total power should not exceed 70W.
- The POE ethernet board has an internal one time fuse of 2A
- The power plug is delivered together with the PoE Ethernet Switch expansion card. The plug is visible within the red circle in the picture below.
- This plug allows you to connect an external power supply to the socket on the PoE expansion card. Instructions for replacing the power plug can be found here.
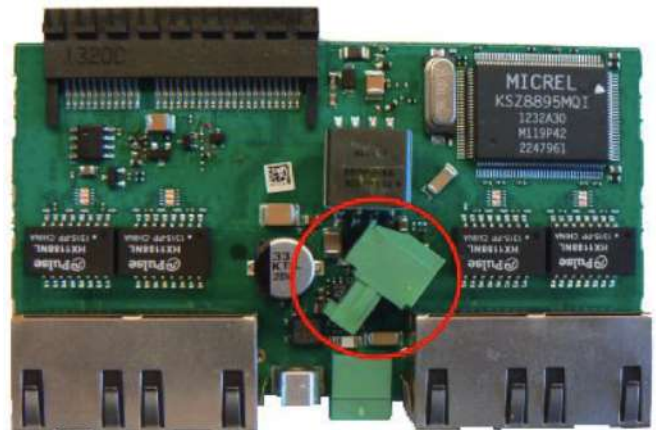
IMPORTANT:the polarity of the external power supply is indicated on the metal front plate of the expansion card.

SAFETY WARNING
When the PoE expansion board is inserted in the NX3IoT, the NX3IoTmust be powered from the PoE power supply. The main power input on the back of the NX3IoTwill be disabled!

SAFETY WARNING
The PoE power supply operates on DC power provided via a DC power supply or AC power adapters. Only use power supplies rated at 56Vdc and make sure the product is installed near a power outlet that is easily accessible. This product is regarded a class III equipment where protection against electric shock is provided by means of power supplied from a SELV (Safety Extra Low Voltage) circuit and does not generate hazardous voltages within itself.

SAFETY WARNING
When using the PoE board at a power level lower or equal to 30W the temperature range in which you can use this board is equal to the temperature range of the NX3IoT itself (-30°C to +70°C). However when the PoE board operates at a power level between 30W and 60W the temperature range is limited to -30°C to +45°C.When using an AC adapter make sure that the ambient temperature doesn't exceed the specified temperature limits of the AC adapter

For further information

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Front Slot Expansion Cards

NX31124-12154
Smart Metering Card (including 1x6P connector) (*) (**)

Connectors
The interfaces available on the card use a pluggable connector of the type: DFMC 1,5-3,5
IO connector
The device features 5 multi-purpose I/O's.

GND	GND	GND	GND	GND	GND	SDA	GND	P1D
IO5	IO4	IO3	IO2	IO1	PWR	SCL	3V3	P1R

When only GPIO/P1/I2C is used, you can utilize a smaller connector. **Important**: you can not place two smaller connector plugs next to each other on one connector.

Every I/O can be programmed for different functions:
- Digital input (0 -30V) (including dry-contact pulse counter)
- Analog input (0 -3.3V)
- Analog input (0-10V) (0-10V or 0-3.209V use different conversion tables)
- Current Loop (4 –20mA)
- S0 pulse-counter input
- Digital output (0 –3.3V)
- Open Drain output (< 250mA, 0 –30V)

This connector also contains an I2C header and a P1 port for smart metering. (DSMR)

M-Bus connector
This board contains an M-bus Master circuit and a separate M-bus Slave circuit.
Both use UART4 as communication channel, which means they can not be operated simultaneously!
On the NX3IoT Gateway the port can be opened on/dev/ttySP4.

GND	M-	S-
VDC	M+	S+

M-Bus Master requires the NX3IoT Gateway to be powered using the VDC and GND pins of this expansion card. The power supply should be at least 30V (1A) to have enough power to drive up to 250 M-Bus slaves (standard unit loads). The NX3IoT Gateway power connector must be left unconnected! The NX3IoT Gateway will be powered from the M-Bus power supply.

Serial connector
The pinout is described on the front plate of the card. C stands for common or GND
On the NX3IoT Gatewaythe port can be opened on/dev/ttySP0.

Please note that the serial RS-232/RS-485 interface has optical isolation built in!

C = common
NC = not connected

RS232

C	RTS	CTS
C	TX	RX

RS485 half duplex

C	HD-	NC
C	HD+	NC

RS485 Full duplex

C	TA-	RA-
C	TB+	RB+

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For further information

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DATA SHEET

NX3 SERIES
IOT CONTROLLER & GATEWAY

Front Slot Expansion Cards

NX31119-12096 - BLE Card (nRF52)
NX31119-12191 - BLE Card with Wirepas

Main features:
- Bluetooth 4.2 LE, based on Nordic Semiconductor nRF52 chipset
- Reverse polarity SMA connect or for external antenna
- μSD socket for memory expansion (up to 32GB)
- USB port available for connecting external device
- Blue LED for status in dication (LED is powered on when Bluetooth is active)

BLE variant (NX31119-12096):

The BLE expansion card enables NX3IoT gateway to receive message from BLE beacons using the iBeacon protocol. It's firm ware can be managed through LuvitRED 'drag & drop' configuration tool, supporting other types of communication in any RF frequency from 2400MHz to 2524MHz

Wirepas Mesh variant (NX31119-12191)

In combination with LuvitRED Advanced* and with Wirepas supported devices, Option's NX3IoT gateway is ready to be deployed as a sink in any Wirepas Mesh network. The Wirepas stack allows BLE beacons to communicate to each other in a mesh configuration with NX3IoT gateway as the access point for all the meshed beacons to the cloud. A typical use case is indoor/outdoor localization, where the location of the tags are determined using the signal strength of the beacons (or anchors) that have a fixed position in the building.

Biketracer

Biketracer is a tubular-shaped BLE beacon that allows tracing and/or identification of bicycles or motorcycles. Its built-in replaceable AAA battery lasts minimum 2years (when BLE advertising every second). The bike tracer can be activated via a Reed switch. Bike tracer communicates the identifier, temperature, accelerometer status and battery level. With additional Wirepas software, it can even communicate with other bike tracers.

Feature	Description
BLE module	Rigado BMD-301
BLE version	4.2 standards (Bluetooth 5 compliant)
Chipset on BLE module	Nordic nRF52832
Frequency band	2.4 GHz ISM band (2.36 to 2.5 GHz)
TX power	0dBm @5.3mA
RX Sensitivity	-96dBM @5.4mA
RSSI Resolution	1dB
Operating Temperature	-30°C to 70°C
External antenna connector on an expansion card	RP-SMA female
BLE support	YES - BLE variant NX31119-12096
ANT/ANT+ support	YES - ANT/ANT+ variant available
Wirepas support	YES - Wirepas variant NX31119-12191

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Black Slot Expansion cards

NX32131-12167
WLAN III expansion Card(client or access point for 32 clients, 2.4 and 5 GHz)

The WLAN Expansion Card (NX32131) features client & access point mode. It is a rear expansion card and is compatible with all devices from NX3IoT family which have the rear expansion slot. It is built a round a certified chipset RS9116N-DB00-CC0 from Redpine Signals (CE, FCC and ISED).

Features	Description
Number of users	up to 8 clients (32 from NX3IoT firmware 2.92.x onwards)
Wireless protocols	802.11 a/b/g/n
Frequency Bands	2.4 GHz & 5 GHz
Channels	2.4 GHz: 1-11; 5GHz: 20 MHz: 36, 40, 44, 48, 149, 153, 157, 161 40 MHz: 38, 42, 46,151, 155, 159, 165
Speed	802.11a/g: 54 Mbps; 802.11b: 11Mbps; 802.11n: MCS0 to MCS7
Wireless mode	Client & access point
Channel bandwidth	20 MHz & 40MHz
Security AP	WPA-PSK, WPA2-PSK, Mixed PSK
Security Client	WPA-PSK, WPA2-PSK, WPA2 Enterprise (PEAP-MSCHAPv2)
Antenna connector	RP-female
Operating temp.	-30°C to +70°C
Humidity (operational)	5 to 95% RH, non-condensig
Storage temp.	-40°C to +85°C
Certificate	CE, FCC/ISED

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Note: 5GHz WLAN operation
In order to reduce the potential for harmful interference to co-channel mobile satellite systems, the operation in the 5150-5250 MHz band (channels 36 to 48) is restricted to indoor usage only. Outdoor usage in these channels is allowed in the USA.

RF EXPOSURE WARNING
A minimum distance of 20 cm must be maintained between the user's body and the device antenna.

Industry Canada radiation exposure statement
This equipment complies with Industry Canada's RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotopically radiated power (e.i.r.p) is not more than necessary for successful communication.

This radio transmitter, IC 8407A-M7DB6, has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gaing reaterth anthe maximum gain in dicated for that type, are strictly prohibited for use with this device.

2.4GHz band: 2.37 dBi (50 ohm)
5GHz band: 2.93 dBi (50ohm)

WLAN antenna interface
Connector
- The WLAN antenna connector is an RP-female connector. it is labelled "WLAN Main" on the front plate of the expansion card.

- The RF connector on the WLAN antenna should be an RP-SMA male connector

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WLAN Antenna

The antenna parameters are as follows:

Frequency range
- 2.4 GHz
- 5 GHz

The integrator should only choose the frequencies he would like to use.

Performance
- Radiation pattern: Omni-directional
- Efficiency over all used frequencies: > 50%
- Maximum VSWR: < 2.5:1 with 50 ohm reference impedance

Polarization
- Linear

RF EXPOSURE WARNING
To comply with regulatory requirements, please check the maximum allowed antenna gain for your external antenna!The maximum gain is specified for each product in the certification information section of the WLAN Expansion Card.

The following antenna is recommended for both bands, 2.4 GHz and 5 GHz:

Taoglas GW.59.3153

Electrical Safety Note
The equipment is supplied by an external ES1 and PS2 circuit: Meaning that the voltage <60 Vdc and power <100 W

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DATA SHEET

NX3 SERIES
IOT CONTROLLER & GATEWAY

Black Slot Expansion cards

NX32132-12193 - LoRaWAN 868 + 9XX MHz
NX32123-12117 - LoRaWAN AC Card 868 MHz

There is an emerging trend of connecting, monitoring and controlling machine sand ot her 'things' in our environment but using wires to do so is often not desirable or even possible. The LoRa WAN expansion card allows the NX3IoT gateway to connect to all LoRa WAN wireless sensors.

This card can be inserted at the back expansion slot of the NX3IoT Gateway

LoRa expansion card sand supported regions in LuvitRED:
- NX3G2118: EU868, RU864, IN865
- NX3G2119: US915, AU915, AS923
- NX3G2123: EU868, RU864, IN865
- NX3G2124: US915, AU915, AS923
- NX3G2125: EU433
- NX3G2132: EU868, RU864, IN865, US915, AU915, AS923
- NX3G8102: EU868, RU864, IN865, US915, AU915, AS923

All LoRa WAN cards can be inserted in front slot of the NX3IoTif an adapter board is used. Using two lora cards simultaneously is not supported however. This can be useful if you need both WLAN and LoRaWAN support.

The LoRaWAN Expansion cards support 8 channels.

Connector
The LoRa antenna connector is an RP-female SMA connector.

LoRaWAN Antenna information
The antenna parameters are as follows:
Frequency range
86x MHz9xx MHz
The integrators should only choose the frequencies he would like to use.

Performance:
Radiation pattern: OmniEfficiency over all used frequencies: 70%Maximum VSWR: 2 MaximumGain: 1dBiNominal impedance: 50 Ohm

Polarization:
Linear
The following antenna is recommended:
Pulse Larsen Antennas
Part number W1063 (with RP-SMA male)

RF EXPOSURE WARNING

To comply with regulatory requirements, please check the maximum allowed antenna gain for your external antenna!

For further information
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