# PRODUCT CATALOG

## THE CONNECTED APPROACH TO SMARTER BUILDINGS

**NETIX.AI**
THE SMART MOVE

# WHO WE ARE

NETIX.AI is a vendor neutral building automation solutions provider. We use technology to curate sustainable solutions that transform buildings into energy efficient and sustainable edifices. Building on the principles of AI and Internet of Things (IoT) and, being a Master Systems Integrator, we are dedicated to focusing our energies towards a smarter and connected world by combining our design and engineering skills, extensive knowledge and resources to create innovative solutions for any requirement.

As a solution provider NETIX.AI is an ideal choice for an eco-system where comfort, sustainability, energy efficiency, reliability and build quality are priorities. From design to engineering an optimal solution, to integrating and connecting with other building services, to testing, commissioning and maintaining system performance – we do it all.

Enabled through an extensive network of experienced and highly qualified Systems Integrators and backed by regional offices in Dubai, India, Singapore, USA and the Netherlands, our customers are guaranteed maximum benefit from our products and services.

We provide in-depth training to our partners and end-users directly if required and have been instrumental in helping to optimise energy usage, as well as providing a healthy internal environment for the well being of building occupants.

## Our Unique Portfolio includes:



01 INTELLIGENT INTEGRATED BUILDING MANAGEMENT SYSTEM
02 SMART CITY
03 INTELLIGENT INTEGRATED CONTROL & COMMAND CENTRE
04 MANAGED SERVICES
05 ENERGY MANAGEMENT
06 SMART METERING & TENANT BILLING

# KEY HIGHLIGHTS

NETIX.AI leverges AI and IoT based building management system technology to deliver smart, sustainable and cost effective solutions and services

## OPEN FRAMEWORK
Integrating new technologies with existing assets having open or proprietary protocols

## SECURE
Strengthening the platform to address cyber-security challenges and improved digital trust to safeguard assets and business

## SCALABLE
Netix software platform delivers sophisticated yet simple and scalable integration using the latest cloud based technology

## COST EFFECTIVE
Achieving higher energy efficiency using IoT and A I to help organizations cut maintenance and operating expenses through digitalisation

## IoT CAPABILITIES
Building up connectivity and providing device and data management from business intelligence to big data analytics and IoT integration of an entire infrastructure

## INSIGHTFUL
A single window access to real-time data utilising cognitive technologies, i.e. AI and machine learning

## BRAND AGNOSTIC & USER FRIENDLY
Our unique solutions and open framework provides a brand agnostic approach, at the touch of your finger

# NETIX.AI SOLUTIONS

## intelligent Integrated Building Management System and Smart Connected Buildings

iIBMS is a blend of IoT, advanced intelligence, data analytics and automation (BMS). Using advanced technology, NETIX.AI delivers a system capable of integrating any asset while incorporating unique features such as enterprise security, open framework and much more, while leveraging cloud solutions to achieve scalable integration. Our solutions transform buildings into high performing and longer lasting assets.
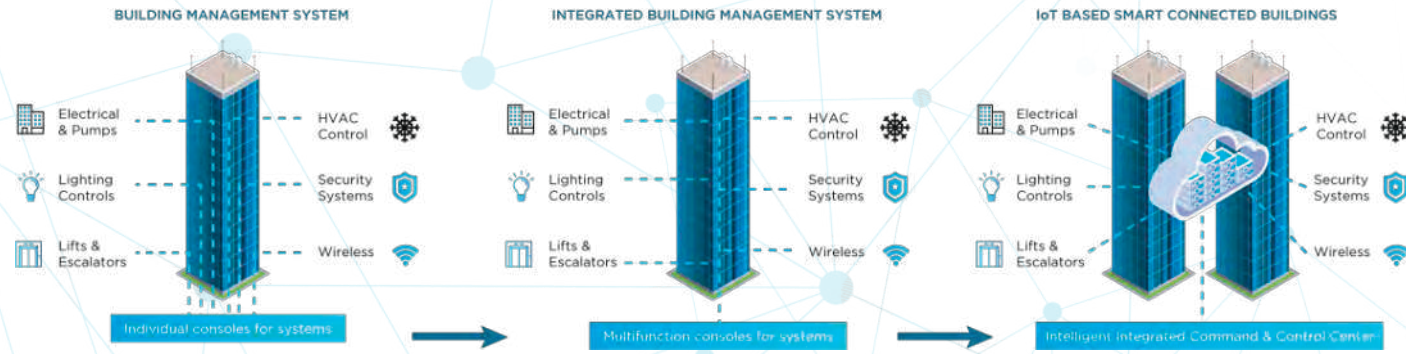


## Smart City

A NETIX.AI smart city solution is not just digitalisation of establishments. It is the groundwork for an upgraded, scalable and sustainable solution achieving an optimised, efficient and healthier eco-space, where the time gap between data collection, data analysis and solution implementation is the minimal. Thus ensuring the comfort and well being of its inhabitants.

## intelligent Integrated Command & Control Centre –iICCC

NETIX.AI iICCC is a single window access to smart data management. The intelligent integrated command and control centre, powered by Netix Konnect, caters to various facets of commercial vertical domains.

It enables clients to optimise the performance of their assets, enhance the efficiency and safety of the building/ city and it's occupants, all while utilising the advanced analytics and atrificial intelligence.



## Managed Services

Managed services refer to the outsourcing of in-house functions to third-party service providers. At the most basic level, a managed service provider (MSP) monitors and maintains customer assets on a regular basis. With the help of our software/platform NETIX.AI is equipped to offer the service of continuously monitoring, managing and resolving operational challenges within an establishment.

## Smart Metering & Tenant Billing

A NETIX.AI smart meter is an intelligent, digital device that is designed to track the exact energy usage in near real-time, enabling customers to actively manage and reduce their energy consumption. Netix provides an extensive range of energy and water meters, including very large sized meters.

The Netix Integrated Billing Module is a user-friendly platform with intuitive and flexible features that allow building owners to automatically monitor and bill their tenants. It has a logical data logger that maintains digital records and information which can be easily customised to meet different client requirements.

# CONTENTS

# SUPERVISOR SOFTWARE

# NCUVSUPXXX

## Uniview SUPRA  Supervisory Software



### Product Description

NETIX.AI Uniview SUPRA is a versatile feature rich supervisory software built on the Niagara platform. It is capable of integrating NETIX.AI BACnet and Niagara controllers, third party devices and internet protocols into a centralised platform that is designed to manage buildings at an end user level. It is used to supervise HVAC systems and other low current systems such as lighting, security, life safety in a building or across multiple buildings.

The Software serves real-time graphical information to standard web-browser clients and provides server level functions. These functions include centralized data logging / trending, archiving to external databases, alarms, real time graphical displays, dash-boarding, system navigation, master scheduling, data-base management and integration with other enterprise software applications. The Software also provides a comprehensive graphical tool-set for creating feature-rich user interfaces.

### Key Features

**Web Access**
HTML5 and Java enabled user interface (UI) Java Script data interface library included (Baja Script)
Access to alarms, graphics, schedules, logs and configuration data with a web browser and mobile devices.

**Real Time Graphical Display**
Free configurable HTML5 user interface. Supported by libraries and template functions for an efficient user interface engineering.

**Alarm**
Sophisticated alarm segregation, processing, escalation and routing, including e-mail alarm acknowledging.

**Connectivity**
BACnet driver with server and client support. Modbus IP, LON IP, MBUS, KNX IP, OPC and SNMP drivers supported by open point license. For more details, please refer section -Software & Driver.

**Scheduling**
Read / write access to BACnet and Niagara schedules. Global schedule and calendar functions "Scheduling" on Supervisor support to manage device without internal schedule function.

**Centralized Data Logging**
All points can be added to a history database. Interval and Change Of Value (COV) algorithms are supported. History data can be visualized in easy and intuitive way. Optional enterprise-level data archival using SCL, MySQL or Oracle databases and HTTP/HTML/XML, CSV or text formats.

**Audit**
"Audit Trail" of database changes, database storage and backup, global time functions, calendar, central scheduling, control and energy management routines.

**Navigation**
Navigation can easily be adjusted to end-user permissions and needs.

**Scripting / Logic**
Freely programmed scripts and logic can be used to implement control and management functions on supervisor level. Batch functions can be executed to force actions or adjust settings across the system.

**Plant Controller Support**
Supports multiple Netix plant controllers connected to a local Ethernet network or the Internet. Supports remote alarm and trend archive data base back up of NETIX.AI controllers.

**Engineering**
Supports configuration of Uniview IP based Niagara Unitary Controller applications making it a single unified configuration tool. Provides online/offline use of the SUPRA Workbench graphical configuration tool and a comprehensive Java Object Library.

**META Data Support (Tagging)**
Additional information can be added to all integrated objects. This information can be used to structure data, search data and prepare data for further analytics. It helps to quickly navigate to individual buildings using tags to diagonise problems

**Documentation**
Full Supervisor documentation in "one click".

**Dash Boarding**
Robust built-in analytic capabilities supported by standard Niagara and mathematical programming blocks to enable sophisticated analytic algorithms. Data summary views customizable by end-users.

**Search**
Find data quickly, by using the clear text search function.

**Security**
Uniview SUPRA follows industry best practices for cyber security with support for features such as strong, hashed passwords, TLSv1.2 for secure communications and certificate management tools for authentication.
Eligible for accreditation under the Federal Risk Management Framework (RMF)
FIPS 140-2 Level 1 conformance available.

**Users**
Supports an unlimited number of users via Internet / Intranet access with a standard web browser depending on the host PC / Server resources.

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# SUPERVISOR SOFTWARE

## NETIX.AI EAM

### Archiving
Optional enterprise-leveldata archival using SQL and MySQL database, and XML, CSV or text formats.

### Reporting
Define reports which can be manually or automatically created as PDF or CSV file and attached to email.

### NETIX.AI System Architecture



### Software and Drivers

Uniview SUPRA supervisory software comes with several open point IP protocols driver licenses such as oBIX; BACnet/IP; LON; Modbus TCP; SNMP; KNX-IP; MBus TCP that cover most control situations.Other drivers can be purchased individually al-a-carte basis.

### Key Features

- Supports water, gas, BTU and electrical meters
- Maximise operational efficiency through the identification of opportunities to validate savings, trend and model
- Simple, intuitive design minimises operator training
- Analysis period can be today, yesterday, this month, last week and last month
- The consumption, consumption benchmark, average and peak value can be visualised on the dashboard
- Popup sound alarm notification
- Report export option in PDF and CSV file formats
- Automatic periodic report generation and notification through email
- Supports up to 1,000 nodes
- Real-time data monitoring and analytics
- Suitable for green and brown field projects
- Option to enter manual reading
- Simple data backup and data restoration
- Supports any third-party meter with BACnet/Modbus/M-Bus communication protocol
- Works as standalone,with Uniview SUPRA or any BMS Supervisor

### Product Description

NETIX.AI Energy Analytics Module (EAM) is a user-friendly application, designed to achieve energy efficiency through process optimisation by reporting on granular energy use by an individual consumption point or equipment. The EAM is designed to work as a standalone system. Alternatively, it can be used as an extended module for any Building Management System with the support of built-in open protocol drivers like Modbus, BACnetIP and M-Bus.
The EAM is designed to be compliant to ESTIDAMA, which is a design methodology program build based on "Abu Dhabi Vision 2030". The dashboard helps to monitor, analyse and compare energy parameters of the nodes. Moreover, the analysing period of the dashboard can be se to "today", "yesterday", "this month" and "last month" which is a reasonable measure to compare periods with similar activity levels.

### Why NETIX Energy Analytics Module (EAM)?

- Gives information about feeder-wise consumption data
- Gives a clear picture about energy consumption associated with each feeder
- Helps to monitor and optimise electrical parameters to reduce operational costs
- Helps future planning based on consumption patterns from MAC grid system

### Module Description

Dashboard and User Friendly
Any observed increase in energy consumption should be carefully and critically analysed. The aim of such analysis should be a steady and extended decrease in energy consumption, unless it is disrupted by any planned increase in the activity level.
In Estidama dashboard, all the nodes will be displayed to the left of the screen. The node search option and criteria selection are available at the top. The top five nodes will be displayed. Parameter selection is at the right. Click on the required node to get the relevant details. Based on the selection, the consumption, average and peak values will be displayed along with the related graph. In the selection type 'hourly', 'daily', 'weekly', 'monthly' and 'yearly' options can be selected.

Benchmark and Alert
The chart will be displayed with consumption details of every hour of the selected date with the target/benchmark line. Any alert will be generated and logged as soon as consumption crosses the set benchmark.
The listed groups and meters assigned in it can be seen as per the ESTIDAMA compliance

Tag Profile
The load parameters of all the nodes can be monitored here. The required tags can be selected from the dashboard box. Multiple search criteria like 'All', 'Top 5', 'Top 10', 'Top 20' nodes, 'Top load' and 'Least load' nodes can be selected.

# ENTERPRISE SECURITY



## Product Description

NETIX.AI Enterprise Security is a full-featured access control and security application built on the Niagara software platform. The application features an intuitive graphical user interface for managing access control and security that can be tailored for the end user with custom reports and graphics. When the application is hosted on a NCUNIVIEW-NEO controller, it offers a complete access control and security solution that integrates with building control systems. For larger systems, Netix Enterprise Security may be hosted on a Supervisor computer to manage databases and aggregate alarm and history data. This provides a robust distributed network architecture for access control, security, video surveillance and building control which meets the standard for smart buildings and IoT technologies.

## Key Advantages

- Unified graphical tool set for all connected building systems
- BACnet® server for integration with almost any building automation system
- Scalable from 2 – 10,000 doors
- Robust, distributed architecture
- Centralized data management and backup
- Integrated video surveillance
- Customizable access control functions using Niagara tools
- The same NCUNIVIEW-NEO hardware platform can be used for both building automation and security
- Advanced threat level management
- Seamless integration between access control and building systems
- Unified user interface for building systems

## Features

| Component | Description |
|---|---|
| Database API | Increase the security of your facility by accurately registering visitors and screening them against government databases before granting access to your facility with visitor management integration, or integrate with other personnel systems for centralized management of physical access |
| LDAP database integration | Synchronize physical and logical access and manage from a single point of entry |
| Role-based users | Control what users view and can access or command |
| Threat level management | Change building access control based on up to 255 different threat levels |
| Advanced zone management | Count people in a zone, set min and max occupancy limits, require a Supervisor and prevent passback |
| Intrusion zone management | Monitor, arm and disarm secured areas |
| Elevator floor control | Individual floor access control |
| Intuitive user interface | Featuring context-sensitive help |
| Web client user interface | System access wherever, whenever you need it without additional client licenses |
| Configurable Wiegand formats | Support for most proximity card formats. Avoid replacing existing credentials when retrofitting systems |
| Custom reports | Information presented in various formats |
| Custom graphic / map creation | Create custom graphics to provide operators with quick access to critical information |
| Video system integration | View and control cameras from the same console as other building functions. Select associated video from the alarm console, or pop-up video when alarms occur |
| Integrated identity management | Print badges, verify identity by comparing photo with video feed |
| Database import | Import data from other access control systems or HR databases to quickly populate the database |
| Alarm escalation | Escalate alarms to remote consoles or email recipients |

# CONTROLLERS

# NCUNIVIEW–NEO

## Integration Controller

## NEO Series

### Key Features

- Integration Controller powered by Niagara 4
- Multiple Protocol Connectivity
- Expandable Architecture
- Diagnostic LEDs
- I/O Module Expansion
- SD Card Slot for Memory Expansion
- Wireless Connectivity

## Product Description

**IoT Integration Platform**
The NCUNIVIEW–NEO is a compact, embedded IoT (Internet of Things) controller and server platform for connecting multiple and diverse devices and sub-systems. With Internet connectivity and Web- serving capability, the NCUNIVIEW–NEO controller provides integrated control, supervision, data logging, alarming, scheduling and network management. It streams data and rich graphical displays to a standard Web browser via an Ethernet or wireless LAN, or remotely over the Internet.

**Wide selection of module expansion**
The NCUNIVIEW–NEO Controller allows for flexible use of communication and I/O expansion modules. The Controller supports maximum of 4 NCU–NEO–LON modules or 2 NCU–NEO–2X–485 modules or 4 NCU–NEO–232 modules or 16 NCU–NEO–10–16–485 modules.

**Latest Niagara 4 Framework®**
The licensing model for the NCUNIVIEW–NEO controller is simplified and features standard drivers along with optional IO and field bus expansion modules for ultimate flexibility and expandability. The NCUNIVIEW–NEO controller operates with Niagara 4, the latest version of the Niagara Framework®, for optimum performance. In larger facilities, multi-building applications and large-scale control system integrations, Netix Uniview SUPRA Software (NCUVSUP) can be used with NCUNIVIEW–NEO controllers to aggregate information, including real-time data, history and alarms, to create a single, unified application.

**Mounting**
The NCUNIVIEW–NEO Controller is compatible with (DIN43880) enclosures . It is also suitable for mounting to a panel or to an EN50022 standard 35mm rail.

## Agency Listing

UL916, CE EN 61326–1, FCC Part 15 Subpart B, Class B, FCC Part 15 Subpart C, 1999/5/ECR&TTE Directive, CCC, SRRC, RSS, ROHS

## Technical Information

| Operating Voltage | 24V AC/DC (±10%), 50/60 Hz |
|---|---|
| Operating Environment | –30°C …70°C, 0–80% Rh (Non–Condensing) |
| Processor | TI AM3352: 1000MHz ARM® Cortex™–A8 with secure boot |
| Communication interface | USB type A connector Back–up & restore support. Two isolated RS485 with switch–selectable bias & termination. Two 10/100MB Ethernet ports |
| Memory | 1GB DDR3 SDRAM, Expandable SD Card with 4GB flash total storage/2GB user storage |
| Wireless connectivity | Wi–Fi (Client or WAP) IEEE802.11a/b/g/nIEEE802.11nHT20 @ 2.4GHz IEEE802.11n HT20/HT40 @ 5GHz Configurable radio (Off, WAP, or Client) WPAPSK/WPA2PSK supported |
| Niagara framework | Runs Niagara 4.1 and later |
| Clock & Battery | Batteryless Real time clock |
| Encryption | Supports SSL and TLS encryption |
| Enclosure | UL listed ABS enclosure |
| MTTF | 10+ Years |

## Expandable Architecture
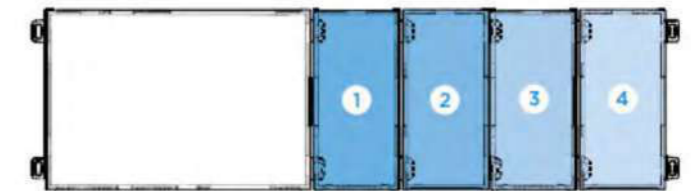
| Expansion 1 | Expansion 2 | Expansion 3 | Expansion 4 |
|---|---|---|---|
| 232 or LON | 232 or LON | 232 or LON | 232 or LON |
| 2x285 | 232 or LON | 232 or LON | 232 or LON |
| 2x285 | 2x285 | 232 or LON | |
| 2x285 | 2x285 | | |

## Ordering Codes

NCUNIVIEW –NEO: Integration Controller
NCU–NEO–LON: LON Modules
NCU NEO 2X 485: RS 495 Module
NCU NEO 232: RS 232 Module
NCU NEO 10–16–485: IO Module

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# EDGE-10

## Integration Controller



## Environmental Specification

| | |
|---|---|
| Operating temperature | -20 to 60°C |
| Storage temperature | -40 to 85°C |
| Humidity | 5-95% non-condensing |
| Shipping & vibration | ASTM D4169, Assurance Level II |
| MTBF: | 10 years |

## Ordering Codes

EDGE-10: Edge 10 field controller with 10 points of onboard IO, 1 RS485 serial port, and 2 10/100 Ethernet ports.     Supports 1 IO-R-34. Includes Niagara N4 and drivers for BACnet, Modbus and SNMP. Supports up to 3 devices or 50 points. Includes all software updates released for commercial use by Tridium for the life of N4, but not for any later versions.



## Product Description

Edge 10 is an IP-based field equipment controller powered by the Niagara Framework®. Edge 10 controllers drive applications such as zone temperature control, and the operation of fan coil units, single-stage air handling units, water-source heat pumps and more. Edge 10 controllers run the full Niagara stack, with 10 points of on-board IO and IO-R-34 expansion capability. Edge 10 licensing supports three devices and 50 total points to harness the full power of Niagara at the edge.

## Networks

- Edge 10 controllers can be daisy chained to continue network connectivity and eliminate the need for separate wiring back to a switch
- Connect Edge 10 controllers to your main building or IT network and manage them directly with a Supervisor alongside of a NEO
- Use the secondary Ethernet port of the NEO to create a private network of Edge 10 controllers

## Expandability

One (1) IO-R-34 connected over a shielded 485 bus

## Agency Certification

FCC Part 15, class b, C-UL, CE, UL916, Open Energy Management Class 2, RoHS2, REACH, WEEE, CAN/CSA-C22.2 No. 205-12

**AI powered data analytics and IoT solutions for buildings and cities**

# CONTROLLERS

## IoT NCCBC-16P-8044/ NCCBC-16P-8044
## IoT NCCBC-16P-8044-D/ NCCBC-16P-8044-D

### Programmable Controller                          NX2 Series



### Product Description

IoT-NCCBC-16P-8044 is a fully programmable IP controller, with 16 base points (8UI, 4DO, 4AO), including 8 universal inputs (AI/DI), 4 digital outputs, 4 analog outputs, which is web page functions configurable. This controller is       dedicated to new fan unit and temperature humidity control system, such as fan, pump, heat exchanger, humidifier, boiler, valve and so on. Combining with different extension modules, such as NCM-B-0800 (8DI) or NCM-B-6002 (6U/DI, 2DO), to come out with a well-designed proposal. It can also be applied as a Modbus Master, Master Bridge, BACnet Router gateway & MQTT Client.

- Built-in Real-time Clock
- ESP32 Processor
- BACnet MS/TP or Modbus RTU
- BACnet IP / Modbus IP
- Supports multiple PID logic
- MQTT (only in IoT-NCCBC-16P-8044 / -D)
- Alarm Handing Support
- Energy Management Module
- Fully Programmable
- Standalone / Network Operational
- Mathematical and Logical Calculation
- Flexible IO Points Combination
- Programmable via Uniview SUPRA
- 1X RS485 Port
- 1x Ethernet Port

### Key Features

**Standard Open Protocol**
Provided with two open-source communication protocols, BACnet MSTP/IP and Modbus RTU/TCP IP, which is able to easily monitor devices in real-time and communicate to upper layer software.

**Energy And Device Management Function Module**
Comes with specific function modules for energy and device management.

**High Accuracy Analog Channels**
12-bits A/D converter with programmable gain amplifier yields a high resolution and accuracy reading on analogue input points. 12-bits D/A converter provides more accurate analog output control.

**Online Firmware Upgrade/Configuration**
The controller firmware can be upgraded and configured via RS485.

**Plug – In Extensible Module**
IoT-NCCBC-16P-8044 is able to be plugged with different extension modules into the right-sided slot to extend its functionality. Available extension modules are NCM-B-0800, NCM-B-6002 till this moment.

**Stable Operating System**
The Stability and reliability of the operating system is improved with the software/hardware monitor (watchdog).
Comes with built-in high precision real-time clock (back up lithium battery).

### Technical Information

#### Mechanical

| | |
|---|---|
| Dimensions | 151x116x40mm |
| Casting Material | UL 94 ABS |
| Weight | 500g |

#### Electrical

| | |
|---|---|
| Power Supply | 24V AC +/-5% or 24V DC +20%/-15% |
| Consumption | <10W |
| Current Rating | 1A at 24VAC/VDC |
| Operating Temp | 32 to 131°F(0 TO 55 °C) |
| Storage Temp | -4 to 185°F (-20 to 85 °C) |
| Operating Humidity | 0% -95% relative humidity non-condensing |
| Battery | Panasonic CR1220 Lithium Coin Battery |

#### Communication 1

| | |
|---|---|
| RS485 | EIA-485 Standard Two Wire, Half Duplex |
| Baudrate | 9.6K, 19.2K, 38.4K, 76.8K, 115.2Kbit/s |
| Data Bits | 8 bits |
| Parity | None, Even, Odd |
| Protocol | Modbus RTU, BACnet MSTP |

#### Communication 2

| | |
|---|---|
| Ethernet | 10/100Base T |
| Protocol | Modbus TCP, BACnet IP, Modbus RTU, BACnet MSTP (MQTT Client (Open-source, MQTT/MQTTS) - only in IoT-NCCBC-16P-8044/-D) |

#### Universal Inputs

| | |
|---|---|
| Channels | 8 Channels, 12bits with Programmable Gain Amplifier |
| Voltage | 0 - 10V, 0 - 5V |
| Current | 4 - 20mA ,0 - 20mA |
| Resistance | 0 - 30K , 0 - 10K, 0 - 1.5K |
| Thermistor Sensor | NTC: 10K TYPE 2/3, 3K, 20K (±0.1°C) RTD: 1K Balco, 1K Platinum (±0.2°C) |
| True DI supported with jumper selection | |

#### Digital Outputs

| | |
|---|---|
| Channels | 4 Channels |
| Type | Relay, SPST NO, 24VAC/VDC, 1A |

#### Analog Outputs

| | |
|---|---|
| Channels | 4 Channels, 12bits |
| Voltage | 0 - 10V |
| Current | 0 -20mA, 4 -20mA (Max load resistance 800 ohms) |

#### Standards

| | |
|---|---|
| CE | |

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# NCCBC-22P-8464

## Programmable Controller

## NX2 Series



## Product Description

NCCBC-22P-8464 controller adopts flexible point allocation, with 22 basic points (8UI,4DI,4DO,6AO). It has standard communication protocols, BACnet IP, BACnet MSTP and Modbus RTU.

The feature is that users can choose and distribute IO extension modules with different points, NCM-B-0800 (8DI) or NCM-B-6002 (6U/DI, 2DO). According to the actual needs of the project, users can combine schemes that meet the requirements and effectively improve competitiveness. In addition, NCCBC-22P-8464 can be upgraded to a more advanced IP controller and Ethernet functions through the optional extension module NCM-IP-0800, supporting the configuration of web functions, and making NCCBC-22P-8464 a super functional controller that supports BACnet IP/Modbus IP.

- ARM Cortex 32-bit Processor
- Fully programmable
- Standalone/ Network operation
- Supports multiple PID logics
- Access Password Protection
- Alarm handing
- BACnet MSTP/ Modbus RTU
- Built-in real-time clock
- Energy function block
- Math and Logic calculation
- 2 X RS485 Port
- Flexible IO Points Combination
- 1xOptional:Ethernet port

## Key Features

**Standard Communication Protocols**
The controller comes with BACnet MSTP and Modbus RTU communication open protocols, which is able to accommodate most of the Building Automation application.

**High Accuracy Analog Channels**
12-bits A/D converter with programmable gain amplifier yields a high resolution and accuracy reading on analogue input points. 12-bits D/A converter provides more accurate analogue output control.

**Online Firmware Upgrade/Configuration**
The controller firmware can be upgraded and configured via RS485.

**Plug – In Extensible Module**
NCCBC-22P-8464 can be extended at functional or IO points with modules of different functions through the right slot. Currently, NCM-B-0800, NCM-B-6002 and NCM-IP-0800 can be matched with the extension modules.

**Robust System Operation**
The controller has a built-in high accuracy Real Time Clock with backup battery.
Software and hardware watchdog timer are provided for high reliability operation.

**Energy And Device Management Function Module**
Comes with specific function modules for energy and device management.

## Technical Information

### Mechanical

| Dimensions | 167x120x40mm |
|---|---|
| Casting Material | UL 94 ABS |
| Weight | 320g |

### Electrical

| Power Supply | 24V AC +/-5%or 24V DC +20%/-15% |
|---|---|
| Consumption | <10W |
| Current Rating | 250mA at 24VAC/VDC |
| Operating Temp | 32 to 131°F(0 TO 55 °C) |
| Storage Temp | -4 to 185°F (-20 to 85 °C) |
| Operating Humidity | 0% -95% relative humidity non-condensing |
| Battery | Panasonic CR1220 Lithium Coin Battery |

### Communication

| RS485 | 2 Channels, EIA-485 Standard Two Wire |
|---|---|
| Baudrate | 9.6K, 19.2K, 38.4K, 76.8K, 115.2Kbit/s |
| Data Bits | 8 bits |
| Parity | None, Even, Odd |
| Protocol | Port1:BACnet MSTP or Modbus RTU Port2: Modbus RTU only (Optional) BACnet IP with NCM-IP-0800 |

### Universal Inputs

| Channels | 8 Channels, 12bits with Programmable Gain Amplifier |
|---|---|
| Voltage | 0 - 10V, 0 - 5V |
| Current | 4 - 20mA ,0 - 20mA |
| Resistance | 0 - 30K , 0 - 10K, 0 - 1.5K |
| Thermistor Sensor | NTC: 10K TYPE 2/3, 3K, 20K (±0.1°C) RTD: 1K Balco, 1K Platinum (±0.2°C) |
| True DI supported with jumper selection | |

### Digital Input

| Channels | 4 Channels |
|---|---|
| Type | Dry Contact,Non-isolated |
| Limit | ON Sate <2000 ohms, OFF state >20000 ohms |

### Digital Outputs

| Channels | 4 Channels |
|---|---|
| Type | Relay, SPST NO, 24VAC/VDC, 1A |

### Analog Outputs

| Channels | 6 Channels, 12bits |
|---|---|
| Voltage | 0 - 10V |
| Current | 0 -20mA, 4 -20mA (Max load resistance 800 ohms) |

### Standards
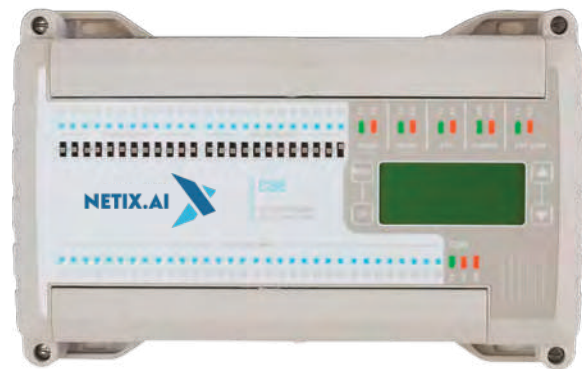
| CE |
|---|

# CONTROLLERS

# NCCBC56

## Universal Controller

<div style="text-align:right">NX Series</div>



### Key Features

- Freely Programmable Controller
- Connectivity through BACnet/IP
- 16PID Controllers
- LCD Display
- Flexible I/O Points: 32 UI, 12AO, 12DO
- Diagnostic LEDs
- HOA Override Switches for DO/AO
- SD Card Slot for Memory Expansion

## Product Description

**For Multiple Applications**

The Netix NCCBC56 Controller, applies the latest technologies and modern design, ensures advanced controls and versatile functionality in complex control systems in a robust single-piece design. The Controller is perfectly suited for all types of sophisticated controls, such as HVAC systems and other process controls.

**Wide Selection of I/O**

The NCCBC56 Controller allows for flexible use of I/O with universal inputs. The Controller comes with 32 on board Universal Inputs, 12 Digital Outputs and 12 Analogue Outputs. The Universal Input allows connecting a thermistor, 0-5V, 0-10V and 0-20mA signals. The mechanical relay of the digital output allows 2A, 24V AC or DC signals. The Controller also supports pulse inputs. The I/O count can be easily extended with I/O Expansion Units (NCCBX22, NCCBX22IN).

**Multiple Communication Protocols**

Communication is based on the international ISO 16484-5 BACnet® standard. In addition, the Controller has two on-board RS485 channels for BACnet MS/TP or Modbus communication. The Zigbee slot is optional and can connect wirelessly to the network. The main RS485 port can operate with baud rate of 1200~921600. The sub port supports baud rates of 9600 or 19200.

**Diagnostic LEDs and HOA Override**

The Controller comes with colour LEDs for all inputs and outputs and is equipped with additional diagnostic LEDs (Red LED for TX and Green LED for RX) for RS485, Ethernet and communication bus. The Controller indicates the green diagnostic LED for power indication and red LED for fuse state indication and comes with Hand, Off, Auto override switches for all outputs.

**Expandable Architecture**

The I/O points of the Controller can be further extended by utilising the I/O Expansion Units. Any combination of I/O Expansion Units totaling up to 64 points of each I/O type can be added (for more details, refer the table). The expansion units communicate to the main controllers over Modbus RTU Protocol. The memory of the Controller can be expanded with micro SD cards. Trend and Alarm data can be stored in the micro SD card.

## Mounting & Wiring

The controller can be mounted inside the cabinet, snapped onto DIN rail or fastened to inside wall via screw holes provided in the housing. The controller can be mounted within the cabinets and can be wired with screw terminals blocks attached directly to the housing.

## Technical Information

| | |
|---|---|
| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
| Operating Environment | -30°C …45°C, 0-80% Rh (Non-Condensing) |
| Max. Power Consumption | 10W @24V DC (all outputs on) |
| Communication Interface | IP : BACnet/IP<br>Main Node/Master : BACnet MS/TP, Modbus RTU<br>Sub Node/Slave : Modbus RTU |
| Memory | 512KB Flash / 512KB RAM, Expandable with SD Card |
| Universal Inputs | AI: 10kNTC, 4-20mA, 0-5V, 0-10V    DI: Potential Free Contact |
| Digital Outputs | Relay Outputs, 30V AC/DC, 3A |
| Analog Outputs | 0-10VDC Max. 100 mA |
| Dimensions | 246 x 156x 50 mm |
| Enclosure | UL listed ABS enclosure |
| Standard(s) | CE |

## Expandable Architecture



## Possible Configurations

| BACnet Controller | Quantity | UI (AI/DI) | AO | DO |
|---|---|---|---|---|
| NCCBC56 | 1 | 32 | 12 | 12 |
| Expansion Module | | | | |
| NCCBX22IN | 0 | 0 | 0 | 0 |
| NCCBX22 | 2 | 16 | 16 | 12 |
| BACnet Controller | Quantity | UI (AI/DI) | AO | DO |
| NCCBC56 | 1 | 32 | 12 | 12 |
| Expansion Module | | | | |
| NCCBX22IN | 1 | 22 | 0 | 0 |
| NCCBX22 | 1 | 8 | 8 | 6 |

## Ordering Codes

NCCBC56:  BACnet controller with 56 I/O: 32 UI, 12DO, 12AO

# NCCBC26

## Universal Controller

### NX Series



### Key Features

- Freely Programmable Controller
- Connectivity through BACnet/IP
- 16PID Controllers
- Flexible I/O Points: 16UI, 4 AO, 6 DO
- Diagnostic LEDs
- HOA Override Switches for DO/A

## Product Description

### For Multiple Applications

The Netix NCCBC26 Controller is a modular controller for basic HVAC controls. Supporting multiple communication protocols, NCCBC26 is equipped with real time clock and internal schedules to maximise energy savings of the buildings.

### Wide Selection of I/O

The NCCBC26 Controller allows for flexible use of I/O with universal inputs and comes with16 on board Universal Inputs, 6Digital Outputs and 4 Analogue Outputs. The Universal Input allows connecting a thermistor, 0–5V, 0–10V and 0–20mA signals.The mechanical relay of the digital output allows 2A, 24VAC or DC signals.The Controller also supports pulse inputs and the I/O count can be easily extended with I/O Expansion Units (NCCBX22, NCCBX22IN).

### Multiple Communication Protocols

Communication is based on the international ISO 16484–5BACnet® standard and the Controller has two on–board RS485 channels for BACnet MS/TP or Modbus communication.The main RS485 port can operate with baud rate of 1200~921600.Thesubport supports baud rates of 9600 or19200.

### Diagnostic LEDs and HOA Override

The Controller comes with colour LEDs for all inputs and outputs. The Controller is also equipped with additional diagnostic LEDs (red LED for TX and green LED for RX)for RS485, Ethernet and communication bus. The Controller indicates the green diagnostic LED for power indication and red LED for fuse state indication. The Controller comes with–hand,Off, Auto over–ride switches for all outputs.

### Expandable architecture

The I/O points of the Controller can be further extended by utilising the I/O expansion–units.Any combination of I/O Expansion Units totaling up to 64 points of each I/O type can be added. The IO expansion unit communicates with the main controller over ModBus over an RS485 protocol. The memory of the Controller can be expanded with micro SD cards. Trend and Alarm data can be stored in the micro SDcard.

### Mounting & Wiring

The Controller can be mounted inside the cabinet, snapped on to the DIN rail or fastened to inside wall via screw holes provided within the housing. The Controller can also be mounted in the wiring cabinets. The Controller can be wired with screw terminal blocks attached directly at the housing.

## Technical Information

| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
|---|---|
| Operating Environment | –30°C …45°C, 0–80% Rh (Non-Condensing) |
| Max. Power Consumption | 10W @24V DC (all outputs on) |
| Communication Interface | IP : BACnet/IP<br>Main Node/Master : BACnet MS/TP, Modbus RTU<br>Sub Node/Slave : Modbus RTU |
| Memory | 512KBFlash / 512KBRAM, Expandable with SD Card |
| Universal Inputs | AI: 10kNTC, 4–20mA, 0–5V, 0–10V<br>DI: Potential Free Contact |
| Digital Outputs | Relay Outputs, 30V AC/DC, 3A |
| Analog Outputs | 0–10VDC Max. 100 mA |
| Dimensions | 155 x 156 x 50 mm |
| Enclosure | UL listed ABS enclosure |
| Standard(s) | CE |
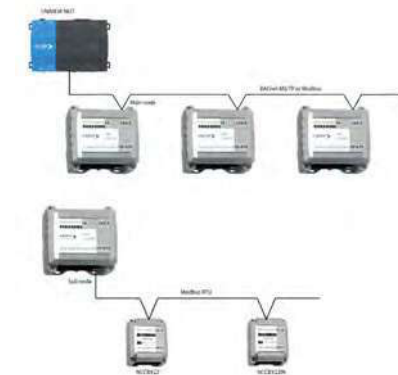
## Expandable Architecture



## Possible Configurations

| BACnet Controller | Quantity | UI (AI/DI) | AO | DO |
|---|---|---|---|---|
| NCCBC26 | 1 | 16 | 4 | 6 |
| Expansion Module | | | | |
| NCCBX22IN | 0 | 0 | 0 | 0 |
| NCCBX22 | 6 | 48 | 48 | 36 |
| BACnet Controller | Quantity | UI (AI/DI) | AO | DO |
| NCCBC26 | 1 | 16 | 4 | 6 |
| Expansion Module | | | | |
| NCCBX22IN | 1 | 22 | 0 | 0 |
| NCCBX22 | 3 | 24 | 24 | 18 |
| BACnet Controller | Quantity | UI (AI/DI) | AO | DO |
| NCCBC26 | 1 | 16 | 4 | 6 |
| Expansion Module | | | | |
| NCCBX22IN | 2 | 44 | 0 | 0 |
| NCCBX22 | 0 | 0 | 0 | 0 |

## Ordering Codes

NCCBC26: BACnet controller with 26 I/O: 16UI, 6 DO, 4 AO

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# CONTROLLERS

# NCCBC22

## Universal Controller

### Key Features

- Freely Programmable Controller
- Connectivity through BACnet/IP
- 16 PID Controllers
- Flexible I/O Points: 8 UI, 6 AO, 8 DO
- Diagnostic LEDs
- HOA Override Switches for DO/AO

## Product Description

### For Multiple Applications

The Netix NCCBC22 Controller is a modular controller for basic HVAC controls and is equipped with real time clock and internal schedules to maximise energy savings of the buildings. The Controller supports multiple communication protocols.

### Wide Selection of I/O

The NCCBC22 Controller allows for flexible use of I/O with universal inputs & multitude of outputs. The Controller comes with 8 on-board Universal Inputs, 8 Digital Outputs and 6 Analogue Outputs. The Universal Input allows connecting a thermistor, 0–5V, 0–10V and 0–20mA signals. The mechanical relay of the digital output allows 2A, 24VAC or DC signals. The Controller also supports pulse inputs. The I/O count can be easily extended with I/O Expansion Units (NCCBX22, NCCBX22IN).

### Multiple Communication Protocols

Communication is based on the international ISO 16484–5 BACnet® standard. In addition, the Controller has two on-board RS485 channels for BACnet MS/TP or Modbus communication. The main RS485 port can operate with a baud rate of 1200~921600. The sub-port supports baudrates of 9600 or 19200.

### Diagnostic LEDs and HOA Override

The Controller comes with colour LEDs for all inputs and outputs. The Controller is also equipped with additional diagnostic LEDs (red LE for TX and green LED for RX) for RS485, Ethernet and communication bus. The Controller indicates the green diagnostic LED for power indication and red LED for fuse state indication. The Controller comes with Hand, Off, Auto override switches for all outputs.

### Expandable Architecture

The I/O points of the Controller can be further extended by utilising the I/O Expansion Units. Any combination of I/O Expansion Units totaling up to 64 points of each I/O type can be added. The IO expansion units communicate to the main controller over ModBus over RS485 protocol. The following I/O expansion units are available:
– NCCBX22 with 8UI, 6DO, 8AO
– NCCBX22IN with 22UI
The memory of the Controller can be expanded with micro SD cards. Trend and Alarm data can be stored in the micro SD card.

## Mounting & Wiring

The Controller can be mounted inside cabinet, snapped on to DIN rail or fastened to inside wall via screw holes provided in the housing. The Controller can also be mounted within the wiring cabinets. The Controller can be wired with screw terminal blocks attached directly at the housing.

## Technical Information

| | |
|---|---|
| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
| Operating Environment | –30°C …45°C, 0–80% Rh (Non-Condensing) |
| Max. Power Consumption | 6W @24V DC (all outputs on) |
| Communication Interface | IP : BACnet/IP<br>Main Node/Master : BACnet MS/TP, Modbus RTU<br>Sub Node/Slave : Modbus RTU |
| Memory | 512KB Flash / 512KB RAM, Expandable with SD Card |
| Universal Inputs | AI: 10k NTC, 4–20mA, 0–5V, 0–10V<br>DI: Potential Free Contact |
| Digital Outputs | Relay Outputs, 30V AC/DC, 3A |
| Analog Outputs | 0–10VDC Max. 100 mA |
| Dimensions | 107 x 134 x 50 mm |
| Enclosure | UL listed ABS enclosure |
| Standard(s) | CE |

## Expandable Architecture



## Ordering Codes

NCCBC22: BACnet controller with 22 I/O: 8 UI, 8 DO, 6 AO

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# NCUNIVIEW–IO–R–16 & IO–R–34

Uniview –I/O Expansion Unit        **NEO Series**
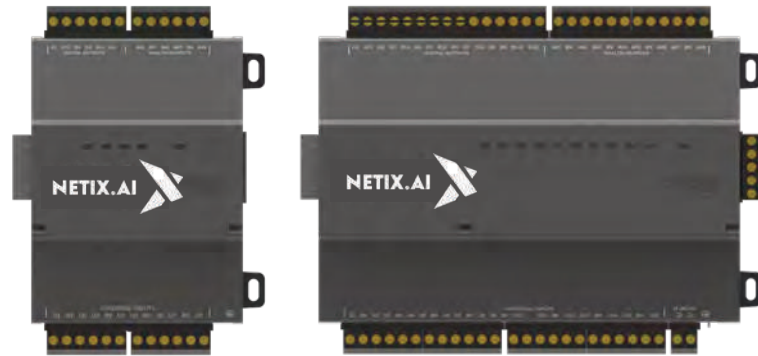


## Product Description

Remote IO is part of Netix portfolio of hardware, software and tools designed for remote monitoring and control applications that enables end–to–end automation and device–to–enterprise integration.

Remote IO allows the NCUNIVIEW to interface directly with simple nonintelligent inputs and outputs remotely located up to 4,000 feet from the NCUNIVIEW. The connection is established via an industry–standard RS 485 multi–drop communications bus. Multiple IO R devices can be utilized on a single NCUNIVIEW, providing 250+IO points on a single NCUNIVIEW.

IO–R–16
- 8 Universal inputs: Type 3 (10k) thermistors, 0–100K ohm, 0–10VDC, 0–20 mA with external resistor
- 4 Relay outputs: (Form A contacts, 24VAC @ .5 amp rated)
- 4 Analog outputs (0–10VDC)
- Powered from IO–34
- Connected to NCUNIVIEW remotely over a shielded RS485 bus

IO–R–34
- 16 Universal inputs: Type 3 (10k) thermistors, 0–100K ohm, 0–10VDC, 0–20 mA with external resistor
- 10 Relay outputs: (Form A contacts, 24VAC @ .5 amp rated)
- 8 Analog outputs (0–10VDC)
- Can Power up to 4 IO–16

## Agency Certifications

UL 916, C–UL, CE EN 61326–1:2013, RCM, FCC part 15, class b, RoHS2, REACH, WEEE, China ROHS, Open Energy Management Class 2

## Dimensions

IO – R – 16: 82.5mm (w) x 116mm(h) x 61mm(d) (3.25 in x 4.5 in x 2.4 in)
IO – R – 34: 162mm(w) x 116mm(h) x 61mm(d) (6.8 in x 4.5 in x 2.4 in)

## Expandable Architecture

Common Configurations:
a. Maximum configuration for 2 panels
b. Maximum configuration for 4 panels
c. Maximum configuration for 8 panels



a. For 2 Panels

b. For 4 Panels        c. For 8 Panels
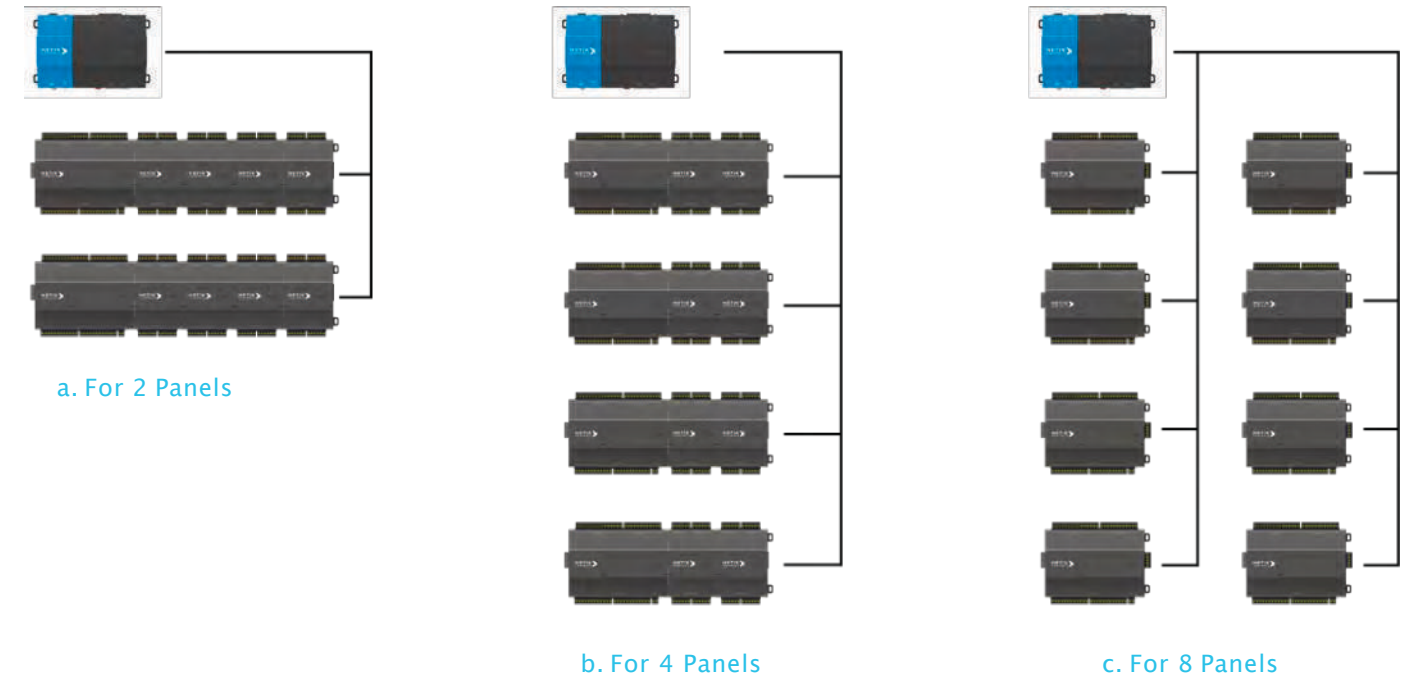
## Mounting

The IO modules support mounting on EN50022 standard 7.5mm x 35mm DIN rail or panel mounting.

## Technical Information

| | |
|---|---|
| Expandability | (8) IO–34s or (16) IO–16s |
| Power | One IO–34 can power four IO–16 modules |
| Environmental Specifications | Operating temperature: –20–60°C<br>Storage temperature: –40–85°C<br>Humidity: 5%–95% –Non Condensing<br>Shipping & vibration: ASTM D4169, Assuance Level II<br>MTTF: 10 years+ |

## Ordering Codes

**IO–R–16:** NRIO module with 8 Universal Inputs, 4 Relay Outputs, 4 Analog Outputs
**IO–R–34:** NRIO module with 16 Universal Inputs, 10 Relay Outputs, 8 Analog Outputs
**PMD2VA:** 90–240Vac to 15Vdc DIN rail mounting PSU 20VA
**PME3VA:** 90–240Vac to 15Vdc DIN rail mounting PSU 30VA.

# EXPANSION MODULE

# NCM–IP–0800

NCM Series – IP Expansion Module NX2 Series



## Technical Information

| | |
|---|---|
| Dimensions | 120x80x40mm |
| Casting Material | UL 94 ABS |
| Weight | 150g |
| Power Supply | Internal of the controller |
| Communication | Ethernet 10/100mbps;BACnet/IP |
| Standard(s) | CE |

## Digital Input

| | |
|---|---|
| Channels | 8 Channels |
| Type | Dry Contact, Isolated 3.7 KV |
| Limit | ON Sate <2000 ohms, OFF state >20000 ohms |

# NCM–B–0800 / NCM–M–0800

NCM Series – Bridge / Expansion Module NX2 Series
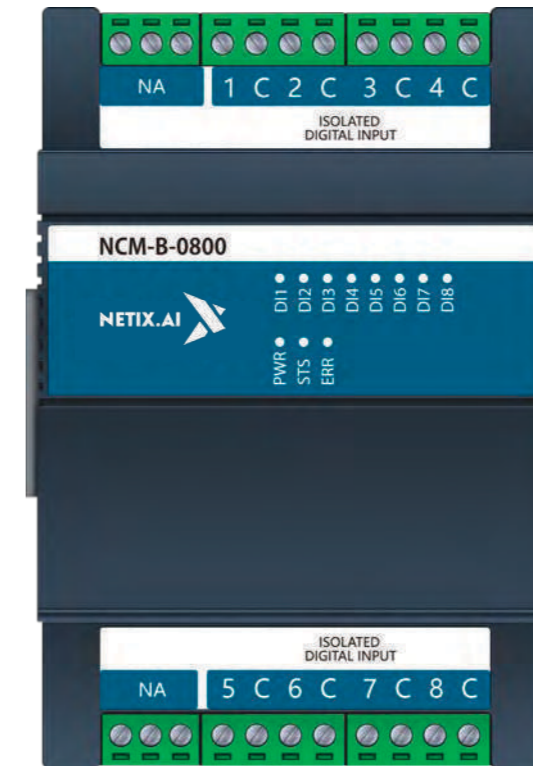


## Technical Information

| | |
|---|---|
| Dimensions | 120x80x40mm |
| Casting Material | UL 94 ABS |
| Weight | 150g |
| Power Supply | Internal of the controller / External Power 24V AC +/–5%or 24V DC +20%/–15% |
| Communication | Internal of the controller Protocol / RS485 |
| Standard(s) | CE |

## Digital Input

| | |
|---|---|
| Channels | 8 Channels |
| Type | Dry Contact, Isolated 3.7 KV |
| Limit | ON Sate <2000 ohms, OFF state >20000 ohms |

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# NCM-B-6002

## NCM Series – Bridge Module

# NCM-M-6002

## NCM Series – Expansion Module

## Technical Information

| Dimensions | 120x80x40mm |
|---|---|
| Casting Material | UL 94 ABS |
| Weight | 150g |
| Power Supply | Internal of the controller |
| Communication | Internal of the controller Protocol |
| Standard(s) | CE |

## Universal Input

| Channels | 6 Channels, 12bits with Programmable Gain Amplifier |
|---|---|
| Voltage | 0 – 10V, 0 – 5V |
| Current | 4 – 20mA, 0 – 20mA |
| Resistance | 0 – 30K , 0 – 10K, 0 – 1.5K |
| Thermistor Sensor | NTC: 10K TYPE 2/3, 3K, 20K<br>RTD: 1K Balco, 1K Platinum |
| True DI supported with jumper selection | |

## Digital Output

| Channels | 2 Channels |
|---|---|
| Type | Relay, SPST NO, 24VAC/DC, 1A |

## Technical Information

| Dimensions | 120x80x40mm |
|---|---|
| Casting Material | UL 94 ABS |
| Weight | 150g |
| Power Supply | 24V AC +/–5% or 24V DC +20%/–15% |
| Standard(s) | CE |

## Universal Input

| Channels | 6 Channels, 12bits with Programmable Gain Amplifier |
|---|---|
| Voltage | 0 – 10V, 0 – 5V |
| Current | 4 – 20mA ,0 – 20mA |
| Resistance | 0 – 30K , 0 – 10K, 0 – 1.5K |
| Thermistor Sensor | NTC: 10K TYPE 2/3, 3K, 20K (±0.1°C)<br>RTD: 1K Balco, 1K Platinum (±0.2°C) |
| True DI supported with jumper selection | |

## Digital Output

| Channels | 2 Channels |
|---|---|
| Type | Relay, SPST NO, 24VAC/DC, 1A |

## Communication

| RS485 X 1 | EIA–485 Stnd. Two Wire, Half Duplex, 1Load |
|---|---|
| Baud Rate | 9.6K, 19.2K, 38.4K, 76.8K, 115.2Kbit/s |
| Data Bit and Parity | 8 bits and None, even Odd |
| Protocol | Port1(BACnet MSTP or Modbus RTU) |

# EXPANSION MODULE

## NCCBX22

### Mixed I/O Expansion Unit

### NX Series

### Key Features

- Flexible I/O Expansion Unit
- Controller Connectivity through RS485
- I/O Points: 8 UI, 6 DO, 8 AO
- Diagnostic LEDs

### Technical Information

| | |
|---|---|
| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
| Operating Environment | −30°C …45°C, 0–80% Rh (Non-Condensing) |
| Max. Power Consumption | 2.5W @24V DC (all outputs on) |
| Communication Interface | RS485 |
| Memory | 512KB Flash / 512KB RAM, Expandable with SD Card |
| Universal Inputs | AI: 10k NTC, 4–20mA, 0–5V, 0–10V DI: Potential Free Contact |
| Digital Outputs | Relay Outputs, 30V AC/DC, 3A |
| Analog Outputs | 0–10VDC Max. 100 mA |
| Dimensions | 111x 137 x 50 mm |
| Enclosure | UL listed ABS enclosure |
| Standar(s) | CE |

### Ordering Codes

NCCBX22: Expansion unit with 22 I/O: 8 UI, 6 DO, 8 AO

### Product Description

IO Expansion Unit
The Netix NCCBX22 I/O Expansion Unit is a flexible extension to Netix Controllers. The I/O points of the Controller can be easily extended by utilising I/O Expansion Units. Several expansion units can be connected with the same Controller. Typically the Units are located in the same cabinet with the Controller, but they could also be located in a remote location up to several hundreds of meters away if the required.

Flexible Selection of I/O
The I/O Expansion Unit allows for flexible use of I/O with universal inputs. The Expansion Unit comes with 8 on-board Universal Inputs, 6 Digital Outputs and 8 Analogue Outputs. The Universal Input allows connecting a thermistor, 0–5V, 0–10V and 0–20mA signals. The mechanical relay of the digital output allows 2A, 24VAC or DC signals.

Multiple Communication Protocols
Communication is based on the international ISO 16484–5 BACnet® standard. The Unit has one on-board RS485 port for BACnet MS/TP or Modbus/RTU communication. Dual terminals on the RS485 port allow for daisy chaining and creation of RS485 network between multiple devices. The device's Ethernet port supports BACnet/IP and Modbus TCP protocols and can be utilized when device is used as a standalone I/O Unit without Controller connectivity.

Diagnostics LEDs and HOA Override
The I/O Expansion Unit comes with LEDs for all inputs and outputs. The Unit is also equipped with additional diagnostic LEDs (red LED for TX and green LED for RX) for RS485, Ethernet and communication bus. The Unit indicates the green diagnostic LED for power indication and red LED for fuse state indication. The Unit comes with Hand, Off, Auto over-ride switches for all outputs.

Mounting and Wiring
The Unit can be mounted inside cabinet, snapped onto DIN rail or fastened to the inside wall via screw holes provided in housing. The Unit can also be mounted in wiring cabinets. The Unit can be wired with screw terminal blocks attached directly to the housing.

iNTELLIGENT INTEGRATED BUILDING MANAGEMENT SYSTEM

# EXPANSION MODULE

# NCCBX22IN

Universal Input Expansion Unit                                    NX Series



## Key Features

- Flexible Input Expansion Unit
- Connectivity to Controller through RS485
- I/O Points: 22 UI
- Diagnostic LEDs

## Product Description

### I/O Expansion Unit
The Netix NCCBX22IN I/O Expansion Unit is the flexible extension to Netix Controllers. It allows for flexible use of I/O with universal inputs. The Expansion Unit comes with 22 On Board Expansion Inputs. The Universal Input allow connecting a thermistor, 05V, 0–10V and 0–20mA signals.
Several expansion units can be connected with the same Controller. Typically the Units are located in the same cabinet with the Controller, but they can also be located in remote location up to several hundreds of meters away if the application requires it.

### Multiple Communication Protocols
Communication is based on the international ISO 16484–5 BACnet® standard. The Unit has one on-board RS485 port for BACnet MS/TP or Modbus / RTU communication. Dual terminals on the RS485 port allow for daisy chaining and creation of RS485 network between multiple devices. The device's Ethernet port supports BACnet/IP and Modbus TCP protocols and can be utilized when device is used as a stand alone I/O Unit without Controller connectivity.

### Diagnostics LEDs
The I/O Expansion Unit comes with LEDs for all inputs. The Unit is also equipped with additional diagnostic LEDs (red LED for TX and green LED for RX) for RS485, Ethernet and communication bus. The Unit indicates the green diagnostic LED for power indication and red LED for fuse state indication.

### Mounting & Wiring
The Unit can be mounted inside the cabinet, snapped on to DIN rail or fastened to inside wall via screw holes provided in housing. The Unit can be wired with screw terminal blocks attached directly at the housing.

## Technical Information

| | |
|---|---|
| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
| Operating Environment | −30°C …45°C, 0–80% Rh (Non-Condensing) |
| Max. Power Consumption | 2.5W @24V DC |
| Communication Interface | RS485 (BACnet MS/TP on Modbus/RTU) |
| Universal Inputs | AI: 10k NTC, 4–20mA, 0–5V, 0–10V<br>DI: Potential Free Contact |
| Dimensions | 111x 137 x 50 mm |
| Enclosure | UL listed ABS enclosure |
| Standar(s) | CE |

## Ordering Codes

NCCBX22IN: Expansion unit with 22 UI
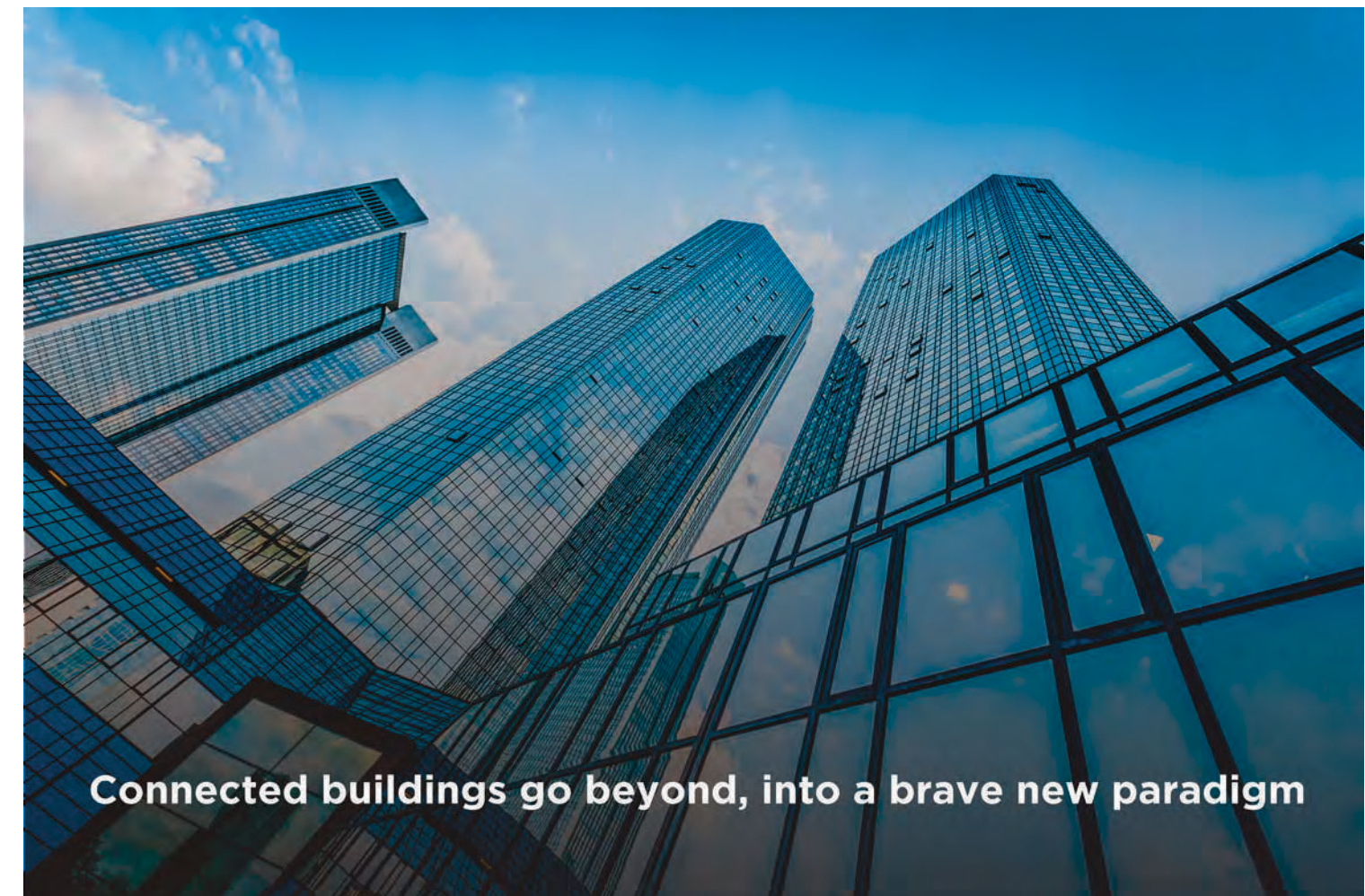


Connected buildings go beyond, into a brave new paradigm

# SMART GATEWAY

## NCCSG

Smart Gateway

NX2 Series



### Product Description

NCCSG is an intelligent gateway device with two isolated RS485 interfaces with the functions of Modbus Bridge and BACnet Router, Modbus RTU or BACnet MSTP devices can be directly released through Modbus TCP or BACnet IP protocol.
In addition, NCCSG has the optional model, can be used as BACnet client or Modbus Master on RS485 bus and then with a single BACnet server or Modbus slave role is read by host via IP, thereby to provide seamless protocol conversion for building automation system, to realize the rapid integration of system.

- RS485 x 2
- Built-in real time clock
- Access Password Protection
- Protocol Transformation
- Online Firmaware Upgrade Configuration
- Web Settings
- Web

### Key Features

Web Settings
Provide users with quick and easy gateway function configuration settings.

Stable OS
The reliability and stability of the operating system is improved through software/hardware monitor (watchdog). Embedded high precision real time clock (standby lithium battery).

Online Firmware Upgrade Configuration
The controller can be upgraded and configured via IP connection.

Protocol Transformation
Multiple protocols, Including Modbus Master \ Slave \ Bridge, BACnet Router \ Server \ Client.

### Technical Information

| Description | NCCSG Links Network Controller |
|---|---|

#### Model

| NCCSG-M | NCCSG-MS |
|---|---|
| NCCSG-B | BACnet MSTP to BACnet IP Gateway |
| NCCSG-MB | BACnet MSTP to Modbus TCP Gateway (OR) Modbus RTU to BACnet IP Gateway |
| NCCSG-MS | Modbus RTU to Modbus TCP Gateway (Appears as single Modbus device) |

#### Mechanical

| Dimensions | 148x120x1mm |
|---|---|
| Casting Material | UL 94 ABS |
| Weight | 240g |

#### Electrical

| Power Supply | 24V AC +/-5%or 24V DC +20%/-15% |
|---|---|
| Consumption | <10W |
| Current Rating | 1A at 24V AC |
| Operating Temp | 32 to 131°F (0 TO 55 °C) |
| Storage Temp | -4 to 185°F (-20 to 85 °C) |
| Operating Humidity | 0% -95% relative humidity non-condensing |

#### Communication 1& 2

| RS485 x 2 | EIA-485 Std. 2 Wire, Half Duplex, 1Load |
|---|---|
| Baudrate | 9.6K, 19.2K, 38.4K, 76.8K, 115.2Kbit/s |
| Data Bits | 8 bits |
| Parity | None, Even, Odd |
| Protocol | BACnet MSTP or Modbus RTU |

#### Ethernet

| Ethernet | 10/100 Base-T |
|---|---|
| Base Protocol | IP, TCP, UDP, ICMP, IGMP, FTP, HTTP |
| Application Protocol | BACnet IP, Modbus TCP |

#### Standards

| CE | |
|---|---|

# NCT100 Series

## Touch Panel LCD Room Thermostat

### Technical Information

| | |
|---|---|
| Sensor | NTC |
| Temperature Range | 5 – 35°C |
| Current Load | 5A for fan and 3A for valve |
| Shell Material | Polycarbonate |
| Dimension | 86 X 86 X 13.3 |
| Installation Box | 86 * 86mm or European 60mm |
| Ambient Temperature | 0 ~45°C, 5 ~95% RH (Non condensing) |
| Storage Temperature | –5° ~ 55°C |
| Accuracy | ±0.5°C |
| Power Consumption | <1.5W |
| Power Supply | 110~240V, 50 ~60Hz |

### Product Variant Features

| | |
|---|---|
| Model/Series | NCT100 |
| Shape | Square |
| Screen | LCD, 3.2 inch screen |
| No. Of Pipes | 2–pipe/4–pipe |
| Backlight Colour | White, Blue, Black (negative black screen) |
| Communication | Modbus RTU |
| Value Control | On & Off/0–10VDC/3–way value |
| Fan Speed | 3–speed/0–10 V |
| Operations Voltage | 24VAC/110–240VAC |
| Energy saving Mode | Optional Volt Free for keycard or occupancy sensor |
| Time Clock | Available on request |
| Colour | Black, White, Gold, Silver, Pink, Brushed Stainless Steel |

### Product Description

The NCT100 series are micro–processor based 3.2inch LCD thermostat and are available in multiple variants like cooling only, heating only, Cooling & Heating, with input voltage options of 24VAC/230VAC. Also available in a choice of co–lours including white(WH), Black(BL), Gold (GL) and in any RAL colour of your choice (subject to quantity).

### Key Features

- Modern design
- Chrome frame adds aesthetic value to the thermostat
- Scratch resistant acrylic lenses
- Simple operation through touch button
- Large screen backlit display makes it easy to read even in low light
- Four periods program schedules maximize comfort and economy available on request
- One–touch temperature control over–rides program schedule at any time
- Precise comfort control keeps temperature within 0.5°C of the set level
- Internal and external sensor selectable is suitable for any place (customized)
- Data memory when power is off (customized)
- Easy installation
- Mounting Back boxes in 86mm and 60mm (European) size options.
- Optional communication available via Modbus RTU protocol.
- Standalone or networkable via Modbus RTU

### Ordering Code

A1: Two pipe; Control Fan Coil Unit & Two wired Motorized valve. (when room temperature reaches the set point, both will turn off)
A2: Two pipe; Control Fan Coil Unit & Two wired Motorized valve. (when room temperature reaches the setpoint valve will turn off but fan will turn to low speed)
B: Two pipe; Control on/off Motorized Damper
C: Two Pipe; Control Fan Coil Unit & Three wired Motorized valve
M: Two pipe; Control 0–10V Motorized Valve
F: Four pipe; Control Fan Coil Unit and Two wired Heat and Cool Motorized valve.
T: Clock
L: Backlight
P: Weekly Programmable
N: RS485/MODBUS RTU communication
K: Key card
E: External sensor
For example: NCT100 A1B M L K... (Please add choice of color)

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# THERMOSTAT

## NCTBM4

Networked Thermostat                                          NX Series



### Key Features

- Networked Multi-Purpose Thermostat
- Configurable for different HVAC Applications
- Connectivity through BACnet MS/TP and Modbus RTU over RS485
- 3 PID Controllers
- Full Color LCD Display
- Advanced Menu Based Navigation

## Product Description

This versatile thermostat is designed for cooling and heating applications both in residential and commercial buildings. The thermostat can be configured for use with AHUs, FCUs, VAV, modulating valves and almost any HVAC application. The thermostat supports BACnet MS/TP and Modbus RTU protocols to allow for easy integration.

This thermostat has five relay outputs and two analog outputs as well as 8 universal inputs. These I/Os can be configured for different purposes. There are wide range of settings available to configure this device for almost any application. Configurations can be easily copied to other devices to configure multiple devices easily and effectively.

## Technical Information

| | |
|---|---|
| Operating Voltage | 24V AC/DC (±20%), 50/60 Hz |
| Communication Interface | BACnet MS/TP and Modbus RTU RS485 protocols |
| Baudrates | 9600, 19200, 38400, 57600, 115200(configurable) |
| Operating Environment | 0 …50°C, 5–95% Rh (Non-Condensing) |
| Power Required | 50 mA |
| Display | Color LCD display |
| Temp Sensor | NTC Thermistor 10Kohm ±0.5°C |
| Universal Inputs | 8 pcs configurable inputs (10k therm, contacts, 4–20ma, 0–5V, 0–10V) for temperature sensors, contacts, etc. |
| Digital Outputs | 5 pcs Relay Outputs, 24VAC Max. 2A |
| Analog Outputs | 2 pcs 0–10VDC Max. 100 mA |
| Dimensions | 112x 80 x 23 mm |
| Enclosure | Plastic (IP31), separate mounting base with terminals for easy wiring |
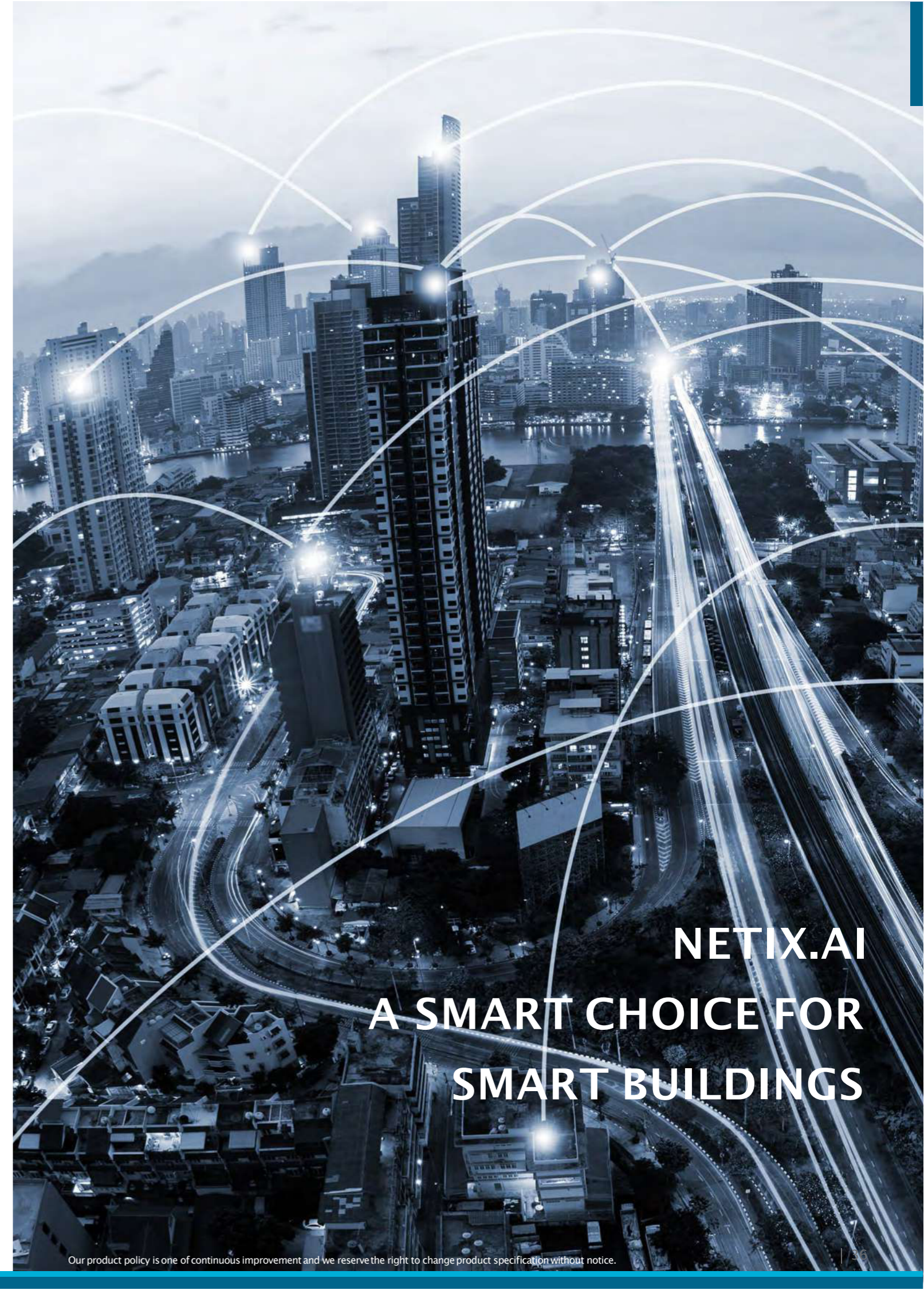
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# NCSTED1

## Duct Temperature Sensor

### Key Features

- Duct Type Temperature Sensor
- Accurate NTC10 Type Thermistor with Nominal Resistance of 10kOhm at 25°C.
- Optional Probe Lengths
- Suitable for any HVAC Application

### Product Description

The NCSTED1 duct temperature sensor is an accurate NTC10 type temperature detector, designed for temperature measurement of air ducts. Temperature is detected by an NTC thermistor with nominal resistance of 10,000 ohms at 25°C.

Applications

The sensor is designed for single point monitoring of air temperature inside ducts. The rigid stainless steel probe and the enduring ABS casing make the sensor suitable for any HVAC application. The probes provide excellent heat transfer, fast response and resistance to moisture penetration.

Installation

The duct type probes are installed in the side of the duct to monitor a single point temperature within the duct. Install the probe in a straight section of duct at a suitable distance downstream from any heating, cooling or humidification devices.

### Technical Information

| | |
|---|---|
| Sensor Type: | 10,000 ohms Thermistor |
| Nominal Resistance: | 10,000 ohms at 25 °C |
| Range: | −40 …120 °C |
| Accuracy: | ± 0.2 °C / 25°C |
| Probe Lengths: | 101.6mm (4") 152.4mm (6"), default length 203.2 mm (8") 304.8 mm (12") |
| Probe Material: | Stainless Steel 304 |
| Enclosure Material: | ABS plastic |
| Protection Class: | IP65 |

### Ordering Code

NCSTED1: Duct Temperature Sensor

# NCSTEFL1

## Flying Lead Temperature Sensor

### Key Features

- Accurate NTC10 Type Thermistor with Nominal Resistance of 10kOhm at 25°C
- Sensor element is inserted into a sleeve of stainless steel
- The single point sensor can be used in very small spaces or for unobtrusive installations

### Product Description

The flying lead temperature sensor NCSTEFL1 is an accurate NTC10 type temperature detector, designed for temperature measurement of HVAC applications. Temperature is detected by an NTC thermistor with nominal resistance of 10,000 ohms at 25°C.

Protection

Sensor element is inserted in a sleeve of stainless steel, which gives good protection against water and dust (IP67).

Installation

The single point sensor can be used in all HVAC applications, especially in very small spaces or for unobtrusive installations.

### Technical Information

| | |
|---|---|
| Sensor | 10kΩ NTC Element |
| Nominal Resistance: | 10kΩ at 25 °C |
| Range: | −50 …120 °C |
| Accuracy: | ± 0.2 °C / 25°C |
| Sleeve: | 4mm x 30mm, stainless steel |
| Cable: | 3.2mm x 2.3m, PVC |
| Protection Class: | IP67 (cable gland) |

### Ordering Code

NCSTEFL1: Flying Lead Temperature Sensor

# SENSORS

# NCSTEFP1

## Frost Protection Sensor



### Key Features

- Accurate NTC10 type thermistor with nominal resistance of 10 kOhm at 25°C
- Designed for applications with fast response time requirement
- Applicable for monitoring Air-Heating Radiators against frost
- Sensor stem is made of Stainless Steel

### Product Description

The frost protection sensor NCSTEFP1 is an accurate NTC10 type temperature detector, designed for temperature measurement of HVAC applications with fast response time requirement. Temperature is detected by an NTC thermistor with nominal resistance of 10kΩ at 25°C. The time constant of the sensor is about 2.5 seconds.
Application
The frost protection sensor is designed for temperature measurement of HVAC applications with fast response time requirement, such as monitoring of heating coils against frost.
Installation
The sensor is installed to the radiator by means of a joint with R¼" thread. The mounting depth can be adjusted to max. 210mm. The sensor stem is made of stainless steel for prolonged life.

### Technical Information

| Sensor Type: | 10,000 ohms Thermistor |
|---|---|
| Nominal Resistance: | 10,000 ohms at 25 °C |
| Range: | −50 …120 ℃ |
| Accuracy: | ± 0.2 ℃ / 25℃ |
| Time Constant: | Appr. 2.5s |
| Mounting: | R ¼" thread |
| Stem: | 4 mm x 200mm |
| Connecting Cord: | ⌀2.8mm x 2m |
| Pressure Rating: | PN16 |

### Ordering Code

NCSTEFP1: Frost Protection Sensor

# NCSTEW1

## Immersion Temperature Sensor



### Key Features

- Immersion Type Temperature Sensor
- Accurate NTC10 Type Thermistor with Nominal Resistance of10kOhm at 25°C.
- Selectable Probe Lengths
- Easily Fitted to Thermowell
- Suitable for any HVAC Application

### Product Description

The immersion temperature sensor NCSTER1is an accurate NTC10 type temperature detector, designed for temperature measurement of indoor spaces. Temperature is detected by an NTC thermistor with nominal resistance of 10kΩ at 25°C.
Applications
The immersion sensor is designed to measure the temperature inside pipes carrying fluid. It is to be used with a stainless steel thermowell. The rigid stainless steel probe and the enduring casing make the sensor suitable for most HVAC applications. The sensor is encapsulated in a stainless steel probe, which is constructed to provide good heat transfer and fast response.
Installation
Immersion sensors require a thermowell. The immersion type probes are installed in the appropriate length thermowell for the pipe size. Thermal conductive compound should be added inside the thermowell to provide optimum thermal

### Technical Information

| Sensor Type: | 10,000 ohms Thermistor |
|---|---|
| Nominal Resistance: | 10,000 ohms at 25 °C |
| Range: | −40 …120 ℃ |
| Accuracy: | ± 0.2 ℃ / 25℃ |
| Probe Material | Stainless Steel 304 |
| Enclosure Material | ABS plastic |
| Thermowell Material | Stainless Steel 304 |
| Protection Class | IP65 |

### Ordering Code

NCSTEW1: Immersion Temperature Sensor
NCSTW1: Thermowell for Immersion Temperature Sensor

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# NCSTE01

## Outdoor Temperature Sensor

### Key Features

- Accurate NTC10 Type Thermistor with Nominal Resistance of 10kOhm at 25°C
- Robust Weather-Proof Enclosure
- Easy to Install

### Product Description

The outdoor temperature sensor NCSTEO1is an accurate NTC10 type temperature detector, designed specifically for outside air temperature measurement. Temperature is detected by an NTC thermistor with nominal resistance of 10kΩ at 25°C.
Projection
The sensor comes in a robust, weather-proof (IP54) plastic housing.
Installation
The sensor is very easy to install. The screw cover and the terminal blocks tilted to 45° support easy installation. The sensor is mounted on the wall with screws through the lugs on the bottom.

### Technical Information

| Sensor Type: | 10,000 ohms Thermistor Element |
|---|---|
| Nominal Resistance: | 10,000 ohms at 25 °C |
| Range: | −50 …120 °C |
| Accuracy: | ± 0.2 °C / 25°C |
| Cable Gland | M16 |
| Mounting | With screws on wall, external lugs Ø 4.5mm screws hole distance 82 mm |
| Enclosure | Plastic (<120°C) |
| Protection Class | IP54, cable downwards |

### Ordering Code

NCSTEO1: Outdoor Temperature Sensor

# NCSTER1

## Room Temperature Sensor

### Key Features

- Stylish Room Temperature Sensor
- Accurate NTC10 Type Thermistor with nominal resistance of 10kOhm at 25°C
- Installer-friendly wiring access
- Available also with Potentiometer and Display (options)

### Product Description

The room temperature sensor NCSTER1is an accurate NTC10 type temperature detector, designed for temperature measurement of indoor spaces. Temperature is detected by an NTC thermistor with nominal resistance of 10kΩ at 25°C.
Installation
The product features include a universal back plate to mount to any wall box or may be flush mounted. For the most accurate results, units should be mounted on an inside wall to a wall box, away from any supply air exhausts and other sources of heat or cold.
Application
The stylish casing of the product makes it ideal for any indoor space.

### Technical Information

| Nominal Resistance | 10,000 ohms at 25 °C |
|---|---|
| Range | −50 …120°C |
| Accuracy | ± 0.2°C / 25°C |
| Material | ABS plastic |
| Protection Class | IP65 |
| Dimensions (mm) | 86 X 86 X 32 mm |

### Ordering Code

NCSTER1: Room Temperature Sensor
NCSTER1P: Room Temperature Sensor optional with potentiometer
NCSTER1LCD: Room Temperature Sensor optional with display
NCSTER1PLCD: Room Temperature Sensor optional with potentiometer and display

# SENSORS

# NCSTEST1

## Strap-On Temperature Sensor



### Key Features

- Accurate NTC10 Type Thermistor with Nominal Resistance of 10kOhm at 25°C
- Easily Mounted on the pipe with an adjustable tie
- Designed to detect temperatures in pipes.

## Product Description

The strap-on temperature sensor NCSTEST1is an accurate NTC10 type temperature detector, designed for temperature measurement of HVAC applications. Temperature is detected by an NTC thermistor with nominal resistance of 10 kΩ at 25°C.
Installation
The sensor is easily mounted on the pipe with an adjustable tie.

## Technical Information

| Sensor | 10,000 ohms NTC Element |
|---|---|
| Nominal Resistance | 10,000 ohms at 25 °C |
| Range | -50 …120 ℃ |
| Accuracy | ± 0.2 ℃ / 25℃ |
| Pipe Diameter | ⌀10 …90 mm |
| Cable | 2 m, LIYY 2 x 0,14 |
| Protection Class | IP54 |

## Ordering Code

NCSTEST1: Strap-On Temperature Sensor

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# TRANSMITTERS

# NCSCO2R1

## CO2, Temperature & Humidity Transmitter



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### Key Features

- Stylish Carbon Dioxide Transmitter
- Temperature Measurement Included
- Humidity Measurement Available (optional)
- 0-10VDC Outputs
- Patented Self Calibration Algorithm
- Compact Enclosure
- Installer-friendlyWiring Access
- Available also with Display (optional)

## Product Description

The NCSCO2R1is the accurate Carbon Dioxide (CO2) and Temperature Transmitter for clean indoor environments. The transmitter features a patented self-calibrationalgorithm which makes the installation and maintenance of the device fast and simple.
The transmitter enables the measurement and control of indoor air quality and room temperature, and also humidity level (optional). The measurements are output with standard 0-10VDCsignals.The measurement data can be used e.g. for demand based ventilation control.
The stylish casing of the product makes it ideal for any indoor space. The transmitter is mounted on the wall surface or on the standard flush mounting box (60 mm hole distance).

## Technical Information

| Sensor Type (CO2) | Electro-mechanical |
|---|---|
| Output Signals | 0-10V <2mA (CO2; RH; °C) |
| Range (CO2) | 0 ....2000 ppm |
| Accurcy (CO2) | ±40ppm +3% of reading |
| Stability | <0.2% FS per °C (Self Calibrating) |
| Response Time | < 2 min |
| Range (Temp) | 0 ....50 °C |
| Accuracy (Temp) | ± 0.5 °C / 25 °C |
| Range (RH) | 0 ....100% (RH) |
| Accuracy (RH) | ± 2% RH / 25 °C |
| Power Supply | 24VAC/DC (22...28V), <2W |
| Operating Environment | 0 ....50 °C, 0 ....85%RH (non condensing) |
| Material | ABS Plastic |
| Protection Class | IP 20 |
| Mounting | On the wall surface or on the standard flush mounting box (60mm wide hole distance) |

## Ordering Code

NCSCO2R1: Carbon Dioxide Transmitter
NCSCO2R1LCD: Carbon Dioxide Transmitter – optional, with display
NCSCO2R1RH: Carbon Dioxide Transmitter – optional, with humidity measurement
NCSCO2R1M: Carbon Dioxide Transmitter – optional, with Modbus connectivity

# NCSPDA1

## Differential Pressure Transmitter – Air

### Key Features

- Differential Pressure Transmitter for air
- Designed for Accurate Pressure Differential Detection in HVAC Systems
- Self-Compensating Piezo-resistive Pressure Transducer
- Can be mounted in any position
- IP54 Enclosure

### Product Description

The differential pressure transmitter NCSPDA1 is the accurate, general purpose differential pressure transducer designed for demanding HVAC and Energy Management applications. The transmitter has two jumper selectable pressure ranges. It is used to measure differential pressure, overpressure.
Application
The differential pressure transmitter is most suitable for monitoring overpressure and differential pressure of air and other non-combustible, non-aggressive gases.
Installation
The sensor can be mounted in any position, as the self-compensating piezoresistive pressure transducer eliminates any possible mounting error.

### Technical Information

| | |
|---|---|
| Measuring Method | Piezoresistive Pressure Transducer |
| Pressure Range | (configurable with jumper)<br>0 ...500 Pa<br>0 ...1000 Pa |
| Output Signals | 0-10VDC (factory default, jumper selectable) 4-20 mA |
| Sample Media | Air and other non-combustible, non-aggressive gases |
| Operating Environment | 0 ...50 °C, 0 ...95 % RH (non-condensing) |
| Linearity and Hysteresis Error | < ±1% of full scale |
| Long Term Stability | < ±0.5 to ±2.5% of full scale/year, depending on pressure range |
| Repetition Accuracy | < ±0.2% of full scale |
| Response Tim | 100ms (selectable) |
| Maximum Current Drawn | 60mA (without display) or 110mA (with optional display) |
| Process Connection | 6mm hose connection |
| Electrical Connection | Screw terminal block for wires up to 1.5mm² |
| Case Dimensions (mm) | 86 X 58 |
| Weight | 130g |
| Protection Class | IP54 with casing |

### Ordering Code

NCSPDA1: Differential Pressure Transmitter – Air
NCSPDA1LCD: Differential Pressure Transmitter with display – Air

# NCSPDW13

## Differential Pressure Transmitter – Liquid

### Key Features

- Differential Pressure Transmitter for liquids.
- Designed for Pressure Differential Detection in Cooling and Heating Systems
- Two Selectable Pressure Ranges, up to 1.0/ 2.5 Bar
- Selectable Output Types
- IP54 Enclosure

### Product Description

Water differential pressure transmitter NCSPDW13 is designed for pressure measurements of HVAC applications, such as water, heating, air-conditioning and refrigeration systems. The transmitter can measure over pressure, under pressure and pressure difference. Pressure sensor element is made by using ceramic techniques. Allowed mediums are water and glycol.
Installation
The transmitter is wall mounted with screws. Connections to the detected process are done with 8 mm copper pipes. The range for measuring can be chosen at commissioning.

### Technical Information

| | |
|---|---|
| Pressure Ranges | (selectable S2 Jumper)<br>0 ... 1.0 Bar<br>0 ... 2.5 Bar |
| Outputs | (selectable S1 Jumper)  0-10VDC, < 8mA;<br>4-20mA, < 500 Ohm |
| Power Supply | 24 VAC/DC, 45mA |
| Inaccuracy | < 2.5% of full scale |
| Long Term Stability | < 0.03 Bar / year |
| Zero Point Setting | Manually by a push button |
| Operating Environment | -20 ...70 °C |
| Allowed Medium Temperature | -20 ...100 °C |
| Max. Static Operation Pressure | 16 Bar |
| Max. Momentary Pressure | + connection: 7.5 Bar<br>– connection: 5.0 Bar |
| Material | Wetting parts: Brass, ceramics; Housing: Plastics (polycarbonate) |
| Housing | Plastics (polycarbonate) |
| Protection Class | IP54, process connection down |

### Ordering Code

NCSPDW13: Differential Pressure Transmitter – Liquid

# NCSRHD1

## Duct Humidity & Temperature Transmitter

### Key Features

- Duct Humidity & Temperature Transmitter
- Highly Stable RH Sensor Element
- Accurate NTC10 Type Thermistor with Nominal Resistance of 10kOhm at 25°C.
- Display for Easy Reading
- Suitable for any HVAC Application

### Product Description

The duct humidity & temperature transmitter NCSRHD1is designed for humidity and temperature measurements of air ducts, intended specifically for use in environmental monitoring and control systems. The transmitter offers reliability and accuracy for even the most demanding applications.

Application

The sensor is designed for single point monitoring of air & humidity inside ducts. The rigid stainless steel probe and the enduring ABS casing make the sensor suitable for any HVAC application. The probes provide excellent heat transfer, fast response and resistance to moisture penetration.

Installation

The duct type probes are installed through a hole in the section of the duct to monitor single point humidity and temperature within the duct. Install the probe in a straight section of duct at a suitable distance downstream from any heating, cooling or humidification devices.

### Technical Information

| | |
|---|---|
| Sensor Type (RH) | Capacitive |
| Sensor Type (Temp.) | NTC10 |
| Output Signals | 0–10V,0–5V, 4–20mA (jumper selectable) |
| Range (RH) | 0 …100 % RH |
| Range (Temp) | −30°C …70°C |
| Accuracy (RH) | ±5% RH / 25°C (20…80%RH) |
| Accuracy (Temp.) | ±0.5°C / 25°C |
| Hysteresis (RH) | <±1% RH |
| Response Time | <10s(25°C, in slow air) |
| Stability (RH) | ±0.5% RH / year |
| Power Supply | 24V AC/DC (±10%) |
| Current Output Load | <500 ohms |
| Display Resolution | 0.1°C, 0.1% RH |
| Enclosure Material | ABS plastic |
| Protection Class | IP65 |

### Ordering Code

NCSRHD1: Duct Humidity & Temperature Transmitter

# NCSRHO1

## Outdoor Humidity & Temperature Transmitter

### Key Features

- Outdoor Humidity and Temperature Transmitter
- Highly stable RH sensor element
- Accuracy ±2%
- Humidity span 0% to 100%
- 0–10VDC outputs
- Fast response time
- Compact enclosure
- Easy Installation

### Product Description

The relative humidity and temperature transmitter NCSRHO1is intended specifically for outdoor air temperature and humidity monitoring. The state-of-the-artdesign combines micro-processor based linearization and temperature correction with a world class capacitance sensor, resulting in reliable and accurate measurements.

Application

The transmitter offers reliability and accuracy for even the most demanding applications. High quality sensors guarantee the long stability and wide ranges both for humidity and temperature detecting. Excellent long-term stability and quick response time combined with temperature compensation make the product an ideal choice for HVAC applications.

Details

The transmitter is designed for use in HVAC automation, energy management and process control and monitoring systems, where high performance and stability are demanded. The transmitter detects outdoor air humidity by the capacitive sensor and temperature by the thermistor.

### Technical Information

| | |
|---|---|
| Sensor Type (RH) | Capacitive |
| Sensor Type (Temp.) | 0–10V, 0–5 V, 4–20mA |
| Output Signals | 0–10V, 0–5 V, 4–20mA |
| Range (RH) | 0 …100 % RH |
| Range (Temp.) | −50 …50 °C |
| Accuracy (RH) | ±2 % RH / 25°C (0…90%RH) |
| Accuracy (Temp.) | ±0.5 °C / 0°C |
| Stability (RH) | ±5 % RH / 2 years |
| Power Supply | 24 VAC/DC, < 1W |
| Operating Environment | 0 …50 °C, 0 …100% RH (non-condensing) |
| Cable Gland | M16 |
| Mounting | With screws, external lugs |
| Protection Class | IP54, cable downwards |
| Dimensions (mm) | 87 x 87 x 46 |

### Ordering Code

NCSRHD1: Duct Humidity & Temperature Transmitter

# TRANSMITTERS

# NCSRHR1

## Room Humidity & Temperature Transmitter

### Key Features

- Stylish Room Humidity and Temperature Transmitter
- Highly stable RH sensor element
- Accuracy ±2%
- Humidity span 0% to 100%
- 0-10VDC outputs
- Fast response time
- Compact enclosure
- Installer-friendly Wiring Access
- Available also with Potentiometer and Display (options)

### Product Description

The relative humidity and temperature transmitter NCSRHR1is intended specifically for indoor air quality monitoring and control. The state-of-the-art design combines micro-processor based linearization and temperature correction with a world class capacitance sensor, resulting in reliable and accurate measurements.

Application
The transmitter offers reliability and accuracy for interior spaces. Excellent long-term stability and quick response time combined with temperature compensation make the product an ideal choice for HVAC applications.

Installation
The product may be flush mounted and a universal back plate provided allows mounting on a back box. For the most accurate results, units should always be mounted back box and away from any supply air exhausts and other sources of heat or cold.
The stylish casing of the product makes it ideal for any indoor space.

### Technical Information

| | |
|---|---|
| Sensor Type (RH) | Capacitive |
| Output Signals | 0 – 10V <2mA |
| Range (RH) | 0 …100 % RH |
| Range (Temp) | 0 …50 °C |
| Accuracy (RH) | ±2% RH / 25°C |
| Accuracy (Temp) | ±0.5 °C / 25°C |
| Power Supply | 24 VAC/DC, (22 ....28V), < 2 W |
| Operating Environment | 0 …50 °C, 0 …100% RH (non-condensing) |
| Material | ABS Plastic |
| Protection Class | IP20 |
| Dimensions (mm) | 86 x 86 x 32 |

### Ordering Code

NCSRHR1: Room Humidity & Temperature Transmitter
NCSCO2R1LCD: Room Humidity & Temperature Transmitter with potentiometer
NCSCO2R1RH: Room Humidity & Temperature Transmitter with display
NCSCO2R1M: Room Humidity & Temperature Transmitter with potentiometer & display

# FLOW SWITCHES

# NCSLFS1

## Liquid Flow Switch

### Key Features

- Paddle Type Liquid Flow Switch
- Suitable for Water and Normal Media
- Installable on Pipes to 1...8"
- ABS Casing with a Protection Class IP65
- Max. Pressure 11bar
- Alarm Signal of Flow Shortage

### Product Description

The NCLFS1is a robust liquid flow switch, paddle type, ideal for flow detection in any demanding process application.
Application
The liquid flow switch is well-suited in pipes of general industrial plants, including heating and air conditioning systems, refrigeration systems, heat pumps, sprinkler or anti-fire systems. The product is available in brass, which is suitable for normal media, and optionally (upon request) in stainless steel, which is suitable for sea water and aggressive media.
Installation
The flow switch can be installed in every position far from elbows or throttlings, with arrow in flow direction. If pipe is vertical, recalibrate range to balance paddle weight. If the device is downwards mounted take care of slags, and apply it in a straight pipe far from filters, valves, etc. with length at least 5 times the diameter of pipe upstream and downstream the unit.

### Technical Information

| | |
|---|---|
| Contacts | Dust-tight micro switch with switching contacts SPDT |
| Switch Capacity | 15(8) A, 24...250 Vac |
| Liquid Temperature | –40°C …120°C |
| Maximum Pressure | 11Bar |
| Connection | R1" |
| Pipe Diameter | 1" ... 8" |
| Paddles | Stainless Steel AISI 316L |
| Housing | Base in ABS, transparent PC cover |
| Protection Class | IP65 |
| Dimensions (mm) | 140 x 62 x 65 |
| Weight | 950 g |

### Ordering Code

NCSLFS1: Liquid Flow Switch

# NCSDPSA1

## Differential Pressure Switch – Air



### Key Features

- Differential Pressure Switch for Air
- Adjustable Switching Pressure
- Switching Pressure Easily Adjustable without a Pressure Gauge
- Robust and Reliable Operation
- More than a Million Switching Operations

### Product Description

The differential pressure switch NCDPSA1 is a general purpose air flow proving switch designed for HVAC and Energy Management applications. It is used to sense positive or negative differential air pressure. It is easily adjustable – using a scaled adjustment knob.

Application

The differential pressure switch is most suitable for monitoring overpressure, vacuum and differential pressure of air and other non-combustible, non-aggressive gases. It is most often used in monitoring of air filters and ventilators and flows in ventilation ducts.

Life Cycle

During its life cycle the switch is capable of handling over a million switching operations

### Technical Information

| | |
|---|---|
| Contacts | Dust-tight micro switch with switching contacts SPDT |
| Switch Capacity | 15(8) A, 24...250 Vac |
| Liquid Temperature | -40°C …120°C |
| Maximum Pressure | 11 Bar |
| Connection | R1" |
| Pipe Diameter | 1" ... 8" |
| Paddles | Stainless Steel AISI 316L |
| Housing | Base in ABS, transparent PC cover |
| Protection Class | IP65 |
| Dimensions (mm) | 140 x 62 x 65 |
| Weight | 950 g |

### CE Conformity

Low Voltage Directive 2006/95/EC, RoHS Directive 2011/65/EC, Gas Appliance Directive 90/396/EC, ATEX-Directive 94/9/EC, ANSI UL508, CSA

### Ordering Code

NCSDPSA1: Differential Pressure Switch – Air

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# NCSDPSW1

## Differential Pressure Switch – Liquid



### Key Features

- Differential Pressure Switch for Liquids
- Wide Range
- Adjustable Differential and Switching Point
- Full Mechanical Switching
- Visible Set Point Scale
- Easily adjustable

### Product Description

The liquid differential pressure switch NCDPSW1 is suitable for monitoring flow across pumps, chillers, and valves. The product is suitable for non-aggressive media such as water, air, oil, diesel, or steam. The unit is designed for both flow proving and flow failure detection to cover the range of 0.3 to 4.5 Bar with an adjustable set point that can be viewed on the dial.

Application

The differential pressure switch is most suitable for monitoring overpressure and differential pressure of liquids and non-aggressive gases. It is often used in monitoring of pumps or valves in chilled water systems, for example. With the pressure switch the pressure can be adjusted without a pressure gauge.

### Technical Information

| | |
|---|---|
| Range | 0.3 …4.5 Bar |
| Differential | 0.2 Bar |
| Max. Op. Pressure | 12 bar |
| Max. Test Pressure | 23 bar |
| Op. Temp. | -20°C …70°C |
| Fluid Temp. | Max. 70°C |
| Pressure Connection | ¼"BSP female |
| Ele. Connection | Screw terminals suitable for 1.5mm conductors max |
| Contact Rating | 3 Amp @ 230 VAC resistive, 0.1Amp Inductive |
| Protection Class | IP30 |
| Dimensions (mm) | 48 x 128 x 175 |

### Ordering Code

NCSDPSW1: Differential Pressure Switch – Liquid

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# NE3

## Ultrasonic Heating & Cooling Energy Meters

### Product Description

NE3 is designed for commercial accounting of heating and cooling energy when heating media is water and is used in centrally heated objects: residential houses or heat supply objects.

- Static liquid metering using ultrasonic technology
- High accuracy
- For residential and commercial use
- Heating and Cooling
- MID DN15 – DN100

### Key Features

- Flexible meter configuration. Meter is delivered in user configuration mode with possibility to configure meter parameters and features as: units, mounting position, pulse inputs/outputs, communication ON/OFF and other meter parameters
- Dual communication module options (RF/MBUS, MBUS/MBUS, LoRa/ MBUS…)
- Accuracy class 2
- Nominal flow 0.6 / 1.0/ 1.5/ 2.5 / 3.5 / 6.0 / 10.0 / 15.0/ 25.0 / 40.0 / 60.0 m$^3$/h
- Dynamic range up to q p/qi = R 100/250
- No straight sections required for DN15– DN50
- No measurement of air
- Ambient class B
- Protection class IP 65/67/68
- Nominal pressure PN16/25 bar
- Pressure P25/63
- Temperature measurement Pt500, 0 ⁰C …180⁰C
- Temperature of conveying liquid: 5 ⁰C …130⁰C
- Metering archive
- Battery lifetime > 15+1years
- Power supply options: Battery/External
- Optional communication modules
- Mounting in any installation position
- RF and MBUS on-board(by request)
- Tariff functions

### Approvals

- MID approval certificate
- EN1434
- 2014/32/EU

### AMR Interfaces, Optional

- W-MBUS 868 MHz (only on-board)
- MBus
- ModBus
- BACnet
- LoRa

### Measuring Accuracy Class 2

### Optical Interface

Integrated into the front panel of calculator. It is designed for data reading via M-bus protocol and parameterization of the meter.

### Radio Interface

The internal radio provides data reading via WMBUS telegram:
S1,T1OMS mode, LoRa
WMBUS telegram:
- Current total Energy
- Current flow
- Current date and time
- Accounting date information
- Error date

### Hourly, Daily & Monthly Parameter Values

- Integrated energy
- Integrated cooling energy
- Integrated energy of tariff
- Integrated volume of liquid
- Integrated pulse value in pulse input 1/2
- Maximum thermal power value for heating/cooling and date
- Maximum value of flow/return temperature of heat conveying liquid and -=date
- Minimum value of flow/return temperature of heat conveying liquid and -=date
- Minimum value of temperature difference and date
- Average value of flow/return temperature of heat conveying liquid
- Operating time without an error
- Total error code
- Time when the flow rate exceeded 1.2qs
- Time when the flow rate was less than qi

## Data Loggers – History Values

- Every hour, day and month values of the measured parameters are stored in internal memory
- All data from archive can be read by means of the remote reading
- In addition data logger records of monthly parameter scan be seen on the display
- Hours for archive records: 1480 h
- Days for archive records: 1130 days
- Months for archive records: 36 months
- Archive data storage time: at least 36 months
- Time of storage of all measured integral data, also without power supply to the electronic unit: at least 15 years

## Power Supply

- Power supply (one of following depending on meter configuration):
- AA battery 3,6 V 2,4 Ah (Li–SOCl2) battery, operation time at least 15+1 years
- 12..42V DC or 12...36V 50/60Hz AC external power supply, used current 10 mA and back up battery AA 3,6 V (Li–SOCl2)
- 230 V (+ 10% – 30%) 50 / 60Hz AC power supply, current consumption is not more than 10mA

## Technical Information

| Flow rate sensor | qp [m3/h] | 0.6 / 1.0 / 1.5 / 2.5 / 3.5 / 6.0 / 10 / 15 / 25 / 40 / 60 |
|---|---|---|
| | R qp/qi [m3/h] | 100/250 |
| | Resolution of flow-rate indicators: | 00000.001m³ |
| Technical data | LCD Display | 8-digit |
| | Protection class [IP] | P65/67/68 |
| | Ambient class | Class B / EN 14154 |
| | Ambient temperature | +5 0C...+65 0C |
| | Units (selectable by the user when installing): | kWh; MWh; GJ; Gcal; m³ |
| | Resolution of energy indicators (selectable by the user when installing): | 0000000.1kWh, 00000001kWh, 00000.001MWh (Gcal or GJ) 000000.01MWh (Gcal or GJ) |
| | Installation position | all installation positions (vertical, horizontal, rising pipe, down pipe) |
| | Nominal pressure [bar] | PN16/25 bar |
| | Pressure loss | 0.63 / (0.25) bar |
| | Battery lifetime | 15+1 years |
| | Flow sensor cable length | 1.2m (2.5 m or 5 m – special order) |
| | Temperature sensor Pt500, two-wire connection, cable length | Up to 10 m |
| | Temperature measurement range | 0 ºC – 90 ºC, 0 ºC – 130ºC |
| | Mounting of calculator | Mounting on standard DIN-rail or on the wall |
| | Number of configurable pulse inputs/ outputs | 2 or no (to be specified when ordering), OB – in the operating mode; OD – in the test mode |

# NE2

## Ultrasonic Heating & Cooling Energy Meters



## Product Description

Ultrasonic heat meter NE2 is designed for metering of consumed heating or cooling energy in closed or open heating/cooling systems, installed in dwelling houses, office buildings or energy plants.
Heat meter consists of the primary flow sensor and the calculator with type approved pair of temperature sensors with Pt500 elements.

## Advantages

- High accuracy
- Heating/cooling
- AMR

## Special Features

- Heat meter can be used for heat and flow measurements in closed or open loop heat supply systems.
- Two flow measurement channels.
- Two pressure measurement channels.
- Two pulse inputs for additional flow sensors.
- Pre-programmed or measured pressure values may be used for energy calculation.
- Cold water temperature for open loop application can be measured, or pre-programmed temperature value can be used.
- Optional integrated regulation or alarm function.
- Flexible menu setup – list of parameter values displayed on the LCD may be configured according to the customer's needs.
- Power supply – from internal battery or 230 V AC power source.
- Battery lifetime not less than 11 years.
- Optical data interface according to EN 61107.
- Optional communication modules.

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## Technical Information

| TEMPERATURE MEASUREMENT | |
|---|---|
| Number of measurement channels | 1,2 or 3 |
| Temperature measurement limits | 0 °C ... 180 °C |
| Temperature difference measurement limits | 2 K ... 150*K or 3...150K (*MID is not applied) |
| Type of temperature sensors | Pt500 |
| Connection scheme | four-wire or two-wire |
| Cable length between the calculator and each of the sensors: four-wire connection scheme two-wire connection scheme | 10 m; 15m.; 20m.; 40 m.; 60 m; 80 m; 100 m. 3 m; 5 m. |
| Display resolutions for temperature and temperature difference | 0,1 °C |
| PRESSURE MEASUREMENT | |
| Number of pressure measurement channels | up to 2 |
| Input current limits (programmable) | 0 ... 5 mA, 0...20 mA, 4 ... 20 mA |
| Lower pressure measurement limits (programmable) | 0 ... 2500 kPa |
| Upper pressure measurement limits (programmable) | 100 ... 2500 kPa |
| Relative normalized pressure measurement error | Not more than ±0,25% from the upper pressure measurement limit |
| FLOW MEASUREMENT | |
| Flow liquid temperature | 0 °C ... 130 °C |
| Number of flow channels | 2 |
| Number of pulse inputs | 2 |
| Cable length between the calculator and each of the sensors | 3 m.; 5 m.; 10 m.; 15m.; 20m.; 40m.; 60m.; 80m.; 100m. |
| Nominal pressure | PN16 or PN25 |
| COMMUNICATION INTERFACES | |
| Optical communication interface | Integrated, according to EN 61107(IEC 1107) |
| Number of plug-in(optional) interface modules | 1 |
| Available types of plug-in interface modules | M-bus M-bus/CL/RS232 and 2 pulse outputs (230V power supply) M-bus/CL/RS232 and 2 current outputs (230V power supply) RS232 RS485 Wireless 868 MHz MODBUS MiniBus RF868MHz |
| POWER SUPPLY OPTIONS | |
| Internal battery | 3,6 V, battery lifetime – not less than 10 years |
| AC source supply | 230 V, AC 50 Hz |
| ENVIRONMENT CONDITIONS | |
| Ambient tamperature for the calculator | 5 OC ... 55 OC |
| Ambient temperature for the flow sensors | -30 OC ... 55 OC |
| Environment class | C according to LST EN1434, M1;E2 |
| Protection class for the calculator | IP65 |
| Protection class for the flow sensors | IP65 (IP67/IP68 – on request) |
| Installation place | Indoor |
| Mounting of calculator | Mounting on standard DIN-rail |

# NF1

## Ultrasonic Water Meter



### Product Description

Ultrasonic water meter NF1 designed for measurement of cold and hot water consumption in households and blocks of flats, as well for industrial applications.

- Static water meter using ultrasonic technology
- High accuracy
- For residential and commercial use
- Hot and cold water

### Key Features

- Temperature class T30, T30/90, T90
- Nominal flow 1.6/ 2.5 / 4.0 / 6.3 / 10/ 16/ 25 / 40 / 63 / 100 m$^3$/h
- Dynamic range up to $Q_3/Q_1 = R$ 250/400
- No straight sections required
- No measurement of air
- Ambient class B/C
- Protection class IP 68
- Nominal pressure PN16/25 bar
- Temperature measurement possibility Pt 500, 0-180°C
- Internal data logger
- Battery lifetime > 16 years
- Power supply options: Battery/External power supply
- Optional communication modules
- Measure reverse flow (to additional register)
- Flow direction indication

# ULTRASONIC METERS

## Approvals

- MID
- OIML R49 Compliant
- EN 14154

## AMR Interfaces, Optional

- M-Bus module
- CL module
- MODBUS RS485
- RF868 MHz module (Default)
- MiniBus module + LoRa

## Optical Interface

Integrated into the front panel of calculator. It is designed for data reading via M-bus protocol and parameterization of the meter and for volume pulse output in test mode.

## Radio Interface

The internal radio module provides data reading via WMBUS telegram: Axis, S1, T1OMS mode, Lora.

## Wired M-Bus Interface (Special Order)

The internal M-Bus module provides data reading possibility via M-Bus protocol.

## Data Registration

- Total volume
- Forward volume
- Reverse volume
- Volume of pulse input 1 (optional)
- Volume of pulse input 2 (optional)
- Maximum flow rate value and date
- Minimum flow rate value and date
- Maximum temperature value and date (if used )
- Minimum temperature value and date (if used )
- Operating time without an error
- Error code
- Time when the flow rate exceeded $1.2Q_4$
- Time when the flow rate was less than $Q_1$

## Universal Pulse Input/Output (Special Order)

- Pulse cable (optional)
- Two configurable pulse outputs/inputs

## Error Codes

ERROR and message code indication:
- Battery low alarm
- Air in pipe
- Leak detection

## Data Logger – History Values

- Every hour, day and month values of the measured parameters are stored in internal memory
- All data from archive can be read by means of the remote reading
- In addition data logger records of monthly parameters can be seen on the display

## Data Logger – History Values

- Every hour, day and month values of the measured parameters are stored in internal memory
- All data from archive can be read by means of the remote reading
- In addition data logger records of monthly parameters can be seen on the display

## Power Supply

Power supply (one of following depending on meter configuration):
- 2 x AA battery 3,6 V 2,4 Ah (Li-SOCl2) battery, operation time at least 16 years
- 12..42V DC or 12...36V 50/60Hz AC external power supply, used current 10 mA and back up battery AA 3,6 V (Li-SOCl2) (Optional)

## Technical Information

| Flow rate sensor | $Q_3$ [m³ /h] | 1.6 / 2.5 / 4.0 / 6.3 / 10 / 16 / 25 / 40 / 63 / 100 |
|---|---|---|
| | R $Q_3$ / $Q_1$ [m³ /h] | $Q_3$ 1.6: 250<br>$Q_3$ 2.5: 250 / 400<br>$Q_3$ 4.0, 6.3, 10, 16, 25, 40, 63, 100: 250 / 400 |
| Technical data | LCD Display | 8-digit |
| | Protection class [IP] | IP68 |
| | Ambient class | Class B / EN 14154 |
| | Ambient temperature | +5 ºC...+65 ºC |
| | Installation place | Indoor, outdoor in a pit or inst. box |
| | Installation position | All installation positions (vertical, horizontal, rising pipe, down pipe) |
| | Nominal pressure [bar] | PN16/25 bar |
| | Pressure loss | 0.63 / (0.25) bar |
| | Temperature sensor, two-wired connection, cable length (optional) | Up to 5 m. |
| | Battery lifetime | 10–16 years |

# SMART VALVE

## NCSV-LITE

Wireless Smart-Valve



## Product Description

The NETIX.AI LoRaWAN Time-controlled shut-off valve is a battery-operated wireless valve with embedded LoRaWAN® technology. With its ultra-low-power consumption, the Smart-Valve can be triggered for remote OPEN/CLOSE operations. The valve is working on batteries during 5+ years and through extreme long distances with exceptional deep indoor signal penetration.

## Key Features

- LoRaWAN wireless shut-off valve
- Extreme range propagation
- Battery operated with ultra-low consumption
- Time-controlled automatic operations
- Pipe size from DN10 to DN80 (3/8" to 3")
- Fraud resistant with tamper
- Industrial grade (PN25, IP67, fluid up to 140°C/284°F)
- License free operation on EU868, US915 and AS923
- IoT ready (compliant with all Internet of Things platforms)
- Exceptional signal penetration through obstacles
- Provided with free of charge Android and iOS App

## Benefits

- Extreme range: Ultra-long range propagation of the signal with deep obstacles penetration
- Industrial grade: PN25, cold and hot fluids
- Tampering: Any misuse is immediately reported
- Mobile Control: Operate your shut-off valve directly from your smartphone or tablet

## Technical Information

| | |
|---|---|
| Product ID | Time-controlled wireless shutoff valve Lite Edition |
| Radio Technology | LPWAN LoRaWAN 1.0.2 Class A –star-of-star topology –Class C on demand |
| Working t° | –20°C.. +70°C / –4°F...160°F |
| Body and Cover | Brass |
| Armature, plunger and core | Stainless steel |
| Seal material | EDPM |
| Maximum fluid pressure | 25 Bars (DN10 to DN32) 20 Bars (DN40 to DN65) |
| Pipe Section | DN10,DN15,DN20,DN25,DN32,DN40,DN50, DN65, DN80 (from 3/8" to 3") |
| Minimal differential pressure | 125mBars |
| Maximum differential pressure | 10 Bar |
| Maximum fluid t° | –20°C...+140°C/ –4°F... 284°F |
| Fluid support | Liquids, compressed air,oil-free or dry neutral gases |
| Tamper | Enclosure opening is immediately reported to the Concentrator |
| IP Protection | IP67 |
| Power supply Class "A" | One or two (replaceable) Lithium batteries type-D 3.0VDC or 3.6VDC |
| Certifications | CE, UL, FCC, ACS. WRAS. DZR, NSF6I–FDA, etc. |
| Public Operator and Network Server Interoperability | Orange, Objenious, Kerlink–Wanesy,Comcast, Meshed, TTN, The Things Industries, NNN-Co. Actility ThingPark, Senet, Digita, etc. |
| Range | 15+km/10mi.LOS (line of sight) 2+km/1.5mi.in urban environment 22+floors in a building |
| Security | 128–bit AES encryption key |
| Max. valves per gateway | 128–1000 depending on duty cycles |
| Max. valves per gateway | not limited (each valve has a unique ID key) |
| Frequency | License free EU868. US915.AS923 |
| Antenna | Internal with +2.1dB Gain |
| Maximum output power | 14dBm |
| Data rate | 290 bps –50 Kbps |
| Data Read | OPEN/CLOSE status –battery level –device ID –enclosure tampering. DI/AI. alarm, tem-perature. hygrometry, RSSI, etc. |
| Data Write | OPEN/CLOSE command Transmit frequency |
| Manual override | Press buttons for local ON/OFF |
| Board protection | Supplied with conformal coating |
| Form factor | All–in–one or segregated (with cable disconnection detection) |
| Editions | Full shut–off Trickle (min.50L/h in close) Slow closing (anti–hammer effect) |
| Valve threads | BSPP or NPT |
| Power supply Class "Cs' | External from 9VDC to 60VDC |
| Mobile App | Free of charge mobile Application for Android and iOS |

# NCSV–SPECIAL

## Wireless Smart –Valve

### Product Description

The NETIX.AI LoRaWAN  Time–controlled shut–off valve is a battery–operated wireless valve with embedded LoRaWAN'" technology. With its ultra–low–power consumption, the Smart–Valve can be triggered for remote OPEN/CLOSE  operations. The valve is working on batteries during 10+ years and through extreme long distances with exceptional deep indoor signal penetration.

### Key Features

- LoRaWAN  wireless shut–off valve
- Extreme range propagation
- Battery  operated  with ultra–low consumption –10–15 years autonomy
- Time–controlled automatic operations
- Pipe size from DN10 to DN80 (3/8" to 3")
- Fraud resistant with tamper
- Industrial grade (PN25, IP68, fluid up to 140°C/284°F,…)
- License free operation
- Special Firmware for private LoRa Network Server and private APN
- Exceptional signal penetration through obstacles
- Provided with the Smart–Valve Studio software Suite

### Benefits

- Extreme range: ultra–long range propagation of the signal with deep –obstacles penetration
- Industrial grade: PN25, cold and hot fluids
- Low consumption: ultra–low power with 10+years autonomy
- Tampering: any misuse is immediately reported
- Mobile Control: operate your shut–off valve directly from your smartphone or tablet Made 100% in Europe  Designed to work with "Smart–Valve Studio"

### Technical Information

| Product ID | SVE–SPL–DNxx  (xx for pipe size) |
|---|---|
| Radio Technology | LPWAN  LoRaWAN  1.0.2Class A –star–of–starstopology –Class C on demand |
| Working t° | –20°C…+70°C / –4°F…160°F |
| Body and Cover | Brass |
| Armature, plunger and core | Stainless steel |
| Seal material | EDPM |
| Maximum fluid pressure | 25 Bars (DN10 to DN32) 20 Bars (DN40 to DN65) |
| Pipe Section | DN10,DN15,DN20,DN25,DN32,DN40,DN50, DN65, DN80 (from 1/2"to 3") Sizes above DN80 available with external power |
| Minimal differential pressure | 125mBars |
| Maximum differential pressure | 10 Bar |
| Maximum fluid t° | –20°C…+140°C/–4°F…284°F (EPDM) |
| Fluid support | Liquids, compressed air, oil–free or dry neutral gases |
| Tamper | Enclosure opening is immediately reported to the Concentrator |
| Extra sensors | Temperature and hygrometry |
| IP protection | IP68 |
| Power supply Class "A" | Two (replaceable) Lithium batteries type–D 3.0VDC or 3.6VDC |
| Certifications | CE, UL, FCC, ACS, WRAS,  DZR, NSF61–FDA,etc. |
| Public Operator and Network Server in-teroperability | Orange, Objenious, Kerlink–Wanesy, Comcast, Meshed, UN, The Things Industries, NNNCo, Actility ThingPark, Senet, Digita, etc. |
| Firmware | Private LoRa Network Server firmware design for private APN |
| Range | 15+km/10mi.LOS (line of sight) 2+km/1.5mi.in urban environment  22+ floors in a building |
| Security | 128–bit AES encryption key |
| Max. valves per gateway | 128–1000depending on duty cycles |
| Max. valves per project | Not limited (each valve has a unique ID key) |
| Frequency | License free EU868, US915,AS923 |
| Antenna | Internal with +2.1dB Gain |
| Maximum output power | 14dBm |
| Data rate | 290 bps –50 Kbps |
| Data Read | OPEN/CLOSE  status –battery  level –device ID –enclosure tampering, alarm, tem-perature, hygrometry, RSSI, etc. |
| Data Write | OPEN/CLOSE  command Transmit frequency |
| Manual override | Press buttons for local ON/OFF |
| Board protection | Supplied with conformal coating or optional epoxy potting |
| Form factor | Segregated (with cable disconnection detection) |
| Editions | Full shut–off Trickle (min.50L/h in close) Slow closing (anti–hammer effect) |
| Valve threads | BSPP |
| Manufacturing | 100% Made in EU |
| Mobile App | Smart–Valve Studio Mobile edition for control via smartphones and tablets |
| Software | Each Device is provisioned for usage on "Smart–Valve Studio" |

# TENANT BILLING SOFTWARE

# NIBM

## IBM – Integrated Billing Module
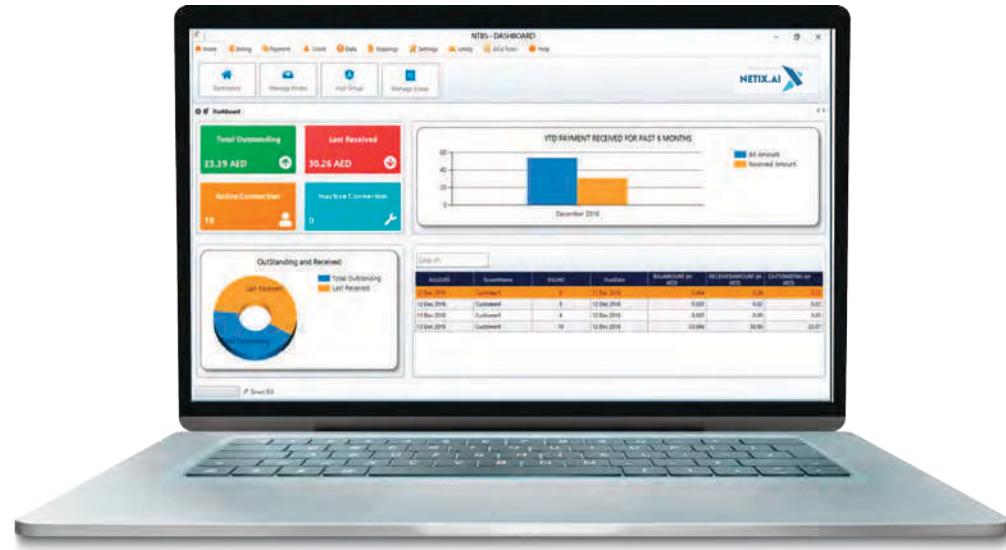


## Product Description

NETIX.AI Integrated Billing Module is a user-friendly application with intuitive and flexible features which enables users to easily monitor tenant utility usage and create invoices based on that usage. The application serves as both a monitoring and invoice generation tool, allowing invoices to be manually or automatically generated for a variety of utility usage patterns.

## Key Features

- Supports water, gas, BTU and electrical meters
- Automatic invoice generation on scheduled basis
- Maximize operational efficiency through identification of opportunities to validate savings; trend and model energy/wages to identify abnormal usage
- Simple, intuitive design minimizes operator training
- Invoices output as PDF files for multiple utilities on a single or multi-page invoice
- Supports upto 155,000 meters and 255 invoice templates
- Real-time data capturing
- Can be implemented using existing/normal commercially available meters
- Can be utilized effectively to prevent power theft, timely electricity bill payments, etc.
- Multiple Tariff calculator
- Cost of manpower for billing/collection is reduced
- Option to enter manual reading
- Accurate billing system
- Supports BACnet/IP, Modbus IP, M-Bus IP
- Vendor neutral and supports any meter with BACnet/Modbus/M-Bus comminication protocol
- Works as standalone or along with Uniview SUPRA or with any BMS Supervisor

## NIBM Module Description

**Dashboards**
Intuitive user-interface delivering multiple data like total outstanding amount, last received, connected units, disconnected units and number of owners to name a few. Creating bills, visibility of history log, bill cancellation and refunds of security deposit, all features are accessible via the dashboard module.

**Billing**
Compiled refund logs, monthly variables, manually and automatic calculated bill amount and reading history, all can be accessed through the billing module

**Meter**
Transparent visibility of live readings, payment entry and error logs. Intuitive features to upload the readings in excel

**Payment**
Complete view of payment history, cancellation and PDC approval for the same

**Client**
Addition of new clients, final bill request and clearance for the same via the client move out sub-module

**Service**
Provides visibility of service list

**User**
Enabling users to give permissions on buildings, access to user menu creation and defining setting for user for approval (invoice, payment cheque, final bill request, final bill, refund/adjustment)

**Alert**
Generation of alerts via the alert template file, revision, cancelation and history log generation for the same
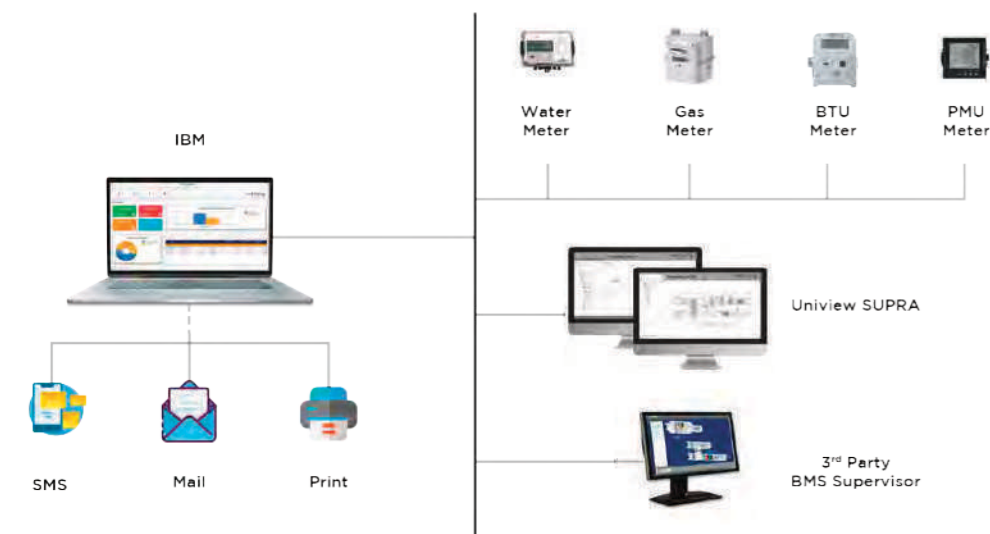
**Report**
Delivers multiple detailed reports and alert requests

**Approval**
Access to approval history, pending resubmission for rejected approval and tracking of invoices

**Settings**
Access to flexible tariff design parameters, profile customization, license information and more

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**NETIX.AI**
THE SMART MOVE

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