



NPE X500 PLUS - Programmable automation controller (PAC)

NPE X500 PLUS is a series of industrial computers which you can easily adapt to your needs by choosing from the available options.

- Energy-efficient **ARM11 700 MHz** processor
- **512MB RAM** oraz **4GB EMMC FLASH**
- Rich set of I/O interfaces: including **digital and analog inputs/outputs, RS-232/RS-485 serial ports**
- **1-Wire** communication interface and **mBus Master**
- Expandable hardware resources: **3G/LTE, WiFi, Bluetooth, I/O Module**



NPE X500 PLUS

Basic information

- Designed for the needs of automation, telecommunications, remote supervision, and monitoring
- Fully configurable platform - you can setup hardware options of your device
- Full range of communications interfaces, including 3G/LTE modem
- Standard protocol support (e.g. MODBUS, SNMP), possibility to install dedicated user protocols
- Web page visualization of current/archived data and remote control directly from the device or cloud service

Available Hardware Options

- **Serial ports:** 2x RS-232/485
- **Digital I/O:**
4x Digital Input, 4x Digital Output
- **Analog inputs:**
2x Analog Input
- **mBus Master:**
max. 3 SLAVE devices or 1x RS-232
- **Communication interfaces:** Ethernet, 1-Wire, USB
- **Expansion cards/modules:**
Wi-Fi, ZigBee, LTE/3G/GPRS, Bluetooth, GPS, I/O Module
- **Other:** Extended temperature range
-25 ~ 80°C, humidity: 5 ~ 95% RH (no condensation)

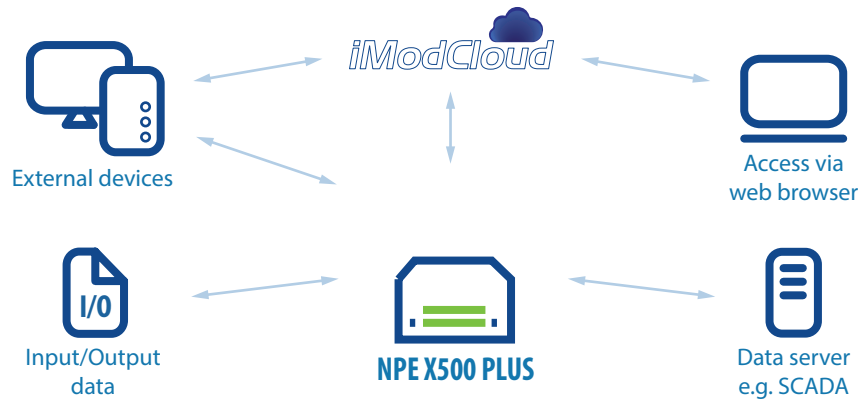
Software Properties

- New firmware based on Linux Kernel 3.19 or higher guarantees stability and security of operation
- Expansion modules to increase the amount of available interfaces (see accessories section)
- Ready tools and pre-compiled packs, C/C++, JAVA, SQL, PHP, SSH and VPN support
- Developer tools and support, instructions, informational materials
- Remote software updates
- Updates for the innovative iMod platform
- iModCloud – dedicated cloud computing service for telemetry, remote control and data sharing
- Full technical support through a dedicated portal, project cooperation via TECHBASE Solution Partner

Applications

Typical method of use (3 functions: C-L-V)

- **Protocol and interface conversion (Convert)** - data is collected from input interfaces, converted and transmitted to output interfaces, e.g. 3G/LTE, external modules
- **Data logger (Log)** - archiving and sharing data in a file format, database or with the use of external systems (SCADA or dedicated iModCloud)
- **Access via WWW (Visualize)** - data is presented directly from the device or with dedicated cloud computing services (iModCloud)



NPE X500 PLUS

You can configure the device, so it performs the following functions:

- PLC
- Telemetry module with data logger
- Serial port server
- Protocol and interface converter
- Programmable controller
- 3G/LTE modem
- MODBUS Gateway/Router
- SNMP Agent
- Web server with PHP and SQL database support
- SMS Gateway
- 3G/LTE router, NAT
- E-mail server, FTP, SSH, VPN

Adapted to Industrial Conditions:

- Low energy consumption
- RTC Battery-powered Real Time Clock (RTC)
- WatchDog function ensures hardware operation control of selected services
- Effective file systems used for FLASH memory, ensuring long, failure-free operation
- Compact, durable housing made from ABS aluminum, adapted to installation on a DIN bus
- Easy installation due to the use of disconnectable screw terminals
- No moving elements (fans, platter disks)
- Versions with extended operating temperature range: -25 ~ 80°C

Built-in 3G/LTE*

Modem for data 3G/LTE data transmission and SMS support. iMod has unique hardware-software features providing connection efficiency and economy:

- The device is equipped with Watchdog mechanism to ensure modem stability.
- Pre-installed software for constant verification of 3G/LTE connection and reconnect function.
- Multiplexing server provides 3 independent modem communication channels. Allows sending and receiving of SMS during 3G/LTE transmission.
- You can use telemetry SIM cards with dynamic IP addresses due to the use of DynDNS. VPN or iModCloud technology allows use of cards with non-public IP.

* depending on product version

Dedicated ready-to-use device software

- **iMod** - an innovative software platform allowing for fast start-up and full exploitation of device capabilities without the need for writing programs. A fully configurable system reflecting typical C-L-V use (see clarification above). In order to learn more about the iMod platform, visit the page: www.techbase.eu/imod

iModCloud is a Software as a Service (SaaS) that fully controls iMod devices. Together stand as a complete solution ecosystem – **iModCloud Ecosystem**. In other words – it is a combination of a cloud service with a web user interface and special industrial devices that are fully manageable remotely.



READY-TO-USE

iModCloud is ready-to-use set of components that can be adjusted to any remote monitoring and control system



REMOTE CONTROL

User interface of the system is accessible from any place of the world through web browsers of desktops and mobile devices

- **PLC** - software for creation of algorithms in the ladder system with the capability of operation on NPE, services the MODBUS protocol

Expanded developer's platform, additional software packs:

GPRS - facilitating management of the 3G/GPRS connection and containing the functionality of monitoring connection status and DynDNS service

SMS - allows sending and receiving text messages

APACHE - HTTP server pack, enabling device access from web browser

PYTHON/RUBY/JAVA/PHP - packs allowing creating, development and start-up of applications in many programming languages

PostgreSQL, MSSQL, SQLite - tools for database management

Open VPN - enables creating a connection, allowing communication between devices located in different networks, providing very high level of security

NXDynamics - a platform for fast and easy (drag and drop system) creation of WWW visualizations and a web panel for NPE management through an internet browser

SSH - enables remote connection with device while maintaining high level of security

GPS - allows the location of the device, traffic monitoring for the unit and time synchronization

Technical specification

SYSTEM

CPU	ARM11 700 MHz
RAM	512MB 400MHz
Flash Memory	4096MB EMMC
Operating system	Linux 3.19 or higher
Real Time Clock	RTC, 240 byte SRAM, Watch Dog Timer

ETHERNET INTERFACE

1x Ethernet 10/100 Mbps (RJ45 connector)

SERIAL PORTS

RS-232 / RS-485 Ports 2x RS-232 (3 pin) / 2x RS-485 (2 pin) high speed + optoisolation 2.5kV

USB PORTS

1x external USB 2.0 (host)

WEJŚCIA / WYJŚCIA

Digital inputs (DI)	4x DI (VIL 0..1 VDC, VIH 2.05..30 VDC) + optoisolation 2.5kV
Digital outputs (DO)	4x DO (0..30V), max. power efficiency: 500 mA + optoisolation 2.5kV
Analog inputs	2x AI - range 0..10V DC (18bit resolution) + optoisolation 2.5kV
1-Wire	1x 1-Wire 5VDC + optoisolation 2.5kV
mBus	1x mBus Master, max. 3 SLAVE devices + optoisolation 2.5kV or 1x RS-232

POWER SUPPLY

10 ~ 30 V DC, 1000 mA + 6V DC battery

PARAMETRY MECHANICZNE

Dimensions	127 x 75 x 91 mm
Weight	300g
Casing	Aluminium, DIN bus instalation

OPERATING AND STORAGE CONDITIONS

0 ~ 70°C, humidity: 5 ~ 95% RH (no condensation)
 Extended operating temperature: -25 ~ 80°C, humidity 5 ~ 95% RH (no condensation)*

AVAILABLE EXPANSION CARDS/MODULES

Wi-Fi (IEEE 802.11 b/g/n, speed up to 150 Mbps, 64/128-bit WEP, WPA, and WPA2)
 3G/LTE modem, GPS module, Bluetooth, **I/O Module:**
 8x digital input (DI) or 8x digital output (DO), 4x relay output (RO)

CONNECTORS AND PHYSICAL INTERFACES

1x RJ45 (Ethernet)
 2x monostable switch button
 2x16 pin screw terminal
 1x USB 2.0 typ A
 1x2 pin power supply
 1x2 pin battery
 1x SIM card slot

PRODUCER

TECHBASE Group Sp. z o.o., ul. Pana Tadeusza 14, 80-123 Gdańsk

*some of the expansion cards can limit operating temperature range

X500 models comparison

HARDWARE	NPE X500	NPE X500 PLUS
Configurable DIO	4	-
Analog Inputs	4	2
CAN	✓	-
mBus Master/RS-232	-	✓
ZigBee	✓*	-
HDMI	✓	-
Internal USB	✓	-
Power supply	DC	DC/battery

* option

Accessories

POWER FEEDERS



SDK-0302-12VDC-R

AC/DC power feeder, input 100-240V AC, output 12V DC 1000mA, cable endings in tube terminals



DN-20-24

DIN bus power feeder, output 24V DC 24W, input 88..264 V AC or 124..370 V DC

ANTENNAS



ANT-GSM-1M

GSM antenna with frequency 824-960MHz/1710-1910MHz/1920-2170MHz



ADA-0086-L

Screw-in angular antenna, SMA, 900/1800 MHz

1-WIRE SENSORS



1Wire-Therm-Stainless

Digital temperature sensor in steel housing



1Wire-Therm-ABS

Digital temperature sensor closed in ABS plastic housing

M-BUS CONVERTERS



mBus 10

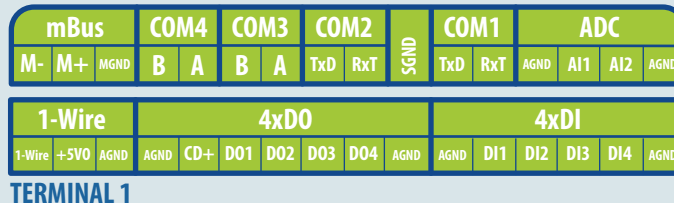
The mBus 10 is a transparent converter from RS-232 to M-Bus interface.



mBus 400

The mBus 400 is a transparent converter from RS-232 to M-Bus interface. You can connect 4 RS-232 signal lines - RxD, TxD, CTS, RTS.

Pinout



RESET
BUTTON

POWER
V- V+

AKU
V- V+

USB

LAN1
(eth0)

SIM CARD

USER
BUTTON