



NPE X1000 - Programmable automation controller (PAC)

NPE X1000 is a series of industrial computers which you can easily adapt to your needs by choosing from the available options.

- Energy-efficient processor with RISC technology
- Adapted for constant operation in industrial conditions
- Vast RAM resources for easy start-up of many independent services
- Rich set of I/O interfaces: including digital and analog inputs/outputs, RS-232/RS-485 serial ports
- Built-in 2x Ethernet (LAN) communication
- Economic 1-Wire bus, typically used for reading temperature and humidity sensors
- Expandable hardware resources by three expansion cards



NPE X1000

Basic information

- Fully configurable platform - you can create your own unit by selecting available options
- Designed for the needs of automation, telecommunications, remote supervision, and monitoring
- Full range of communications interfaces, including 3G/GPRS modem
- Standard protocol support (e.g. MODBUS, SNMP), possibility to install dedicated user protocols
- Exceptional data logging capabilities due to SDHC cards support (up to 32GB)
- Web page visualization of current/archived data (Web-based SCADA) and remote control directly from the device

Available Hardware Options

- **Base version - NPE X1000 Lite** includes USB 2.0 (host), USB OTG (device/host), Ethernet
- **Maximum version** (base version + additional options presented below):
- **Serial ports:** 3x COM: 2x RS-232, RS-232/485
6x COM: 4x RS-232, 2x RS-232/485
- **Digital and Relay I/O:**
8x Digital Input, 6x Digital Output, 2x Relay Output
- **Configurable Digital I/O:**
8x or 16x Digital Input/Output
- **Analog Inputs:**
4x or 8x Analog Input
- **Communication Interfaces:** 2x Ethernet, 1-Wire, CAN
- **Audio/Video:** HDMI, 2x Audio Input, 2x Audio Output
- **Expansion cards (max. 3):**
Wi-Fi, ZigBee, 3G/GPRS, Bluetooth, GPS
- **Other:** Extended temperature range

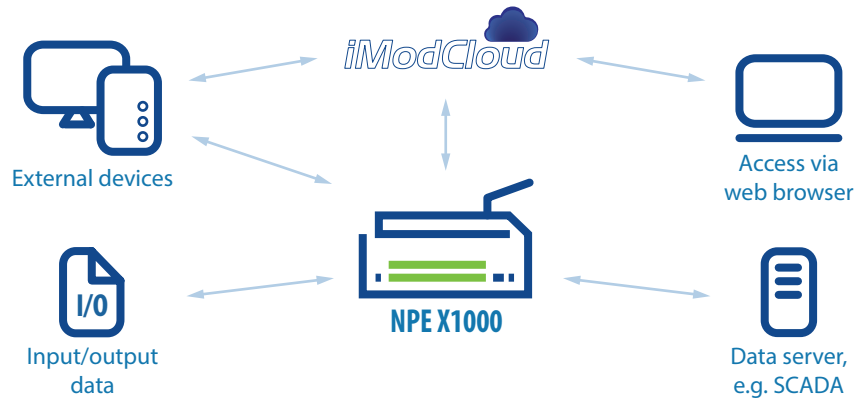
Software Properties

- New firmware based on Linux Kernel 3.x 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/GPRS, 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 X1000

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

- PLC
- Serial port server
- Protocol and interface converter
- Programmable controller
- 3G/GPRS/EDGE modem
- MODBUS Gateway/Router
- SNMP Agent
- Web server with PHP and SQL database support
- SMS Gateway
- 3G/GPRS router, NAT
- E-mail server, FTP, SSH, VPN and other Linux services

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 plastic 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

Built-in 3G/GPRS/EDGE*

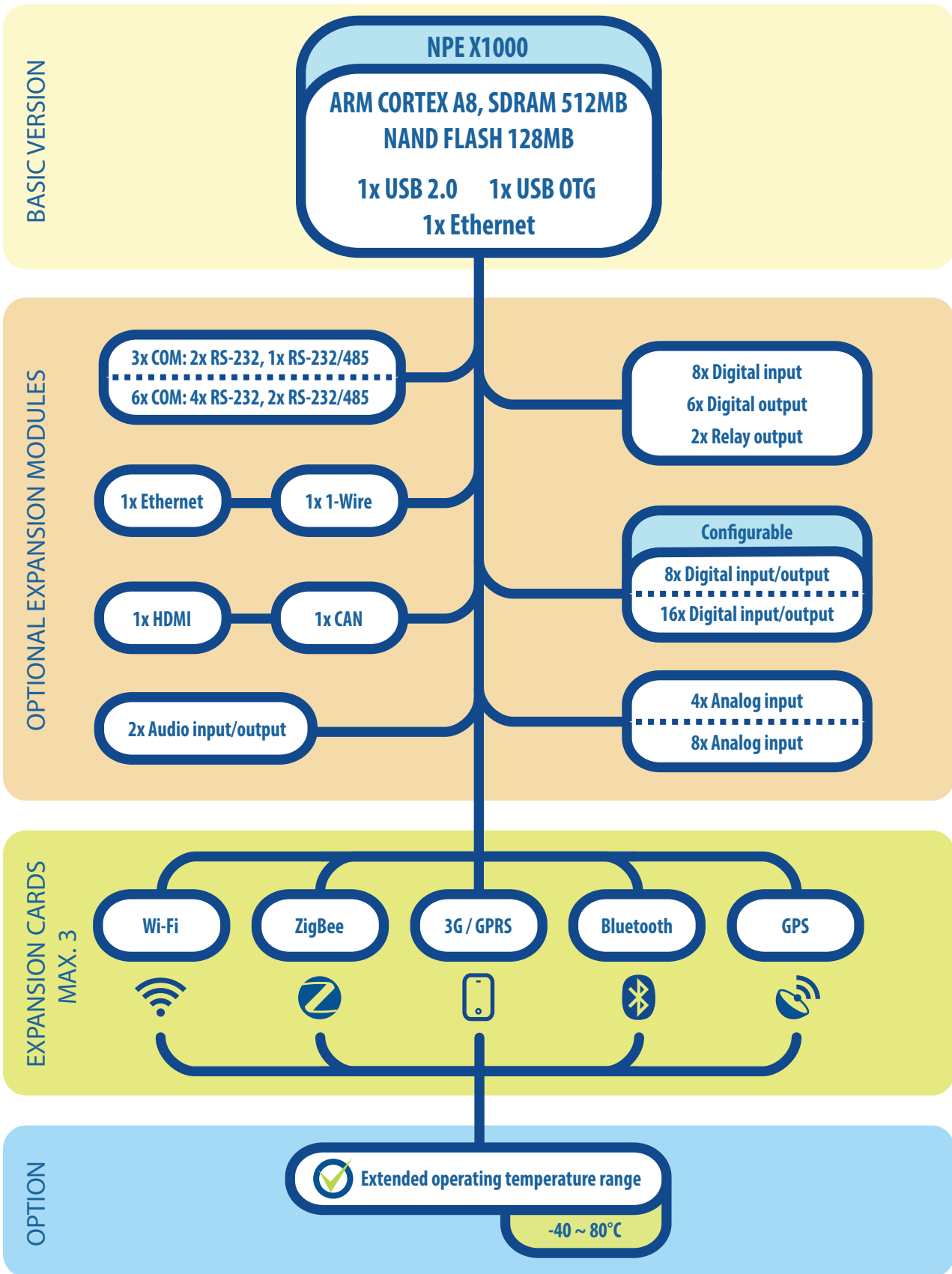
Modem for data 3G/GPRS data transmission and SMS support. iMod has unique hardware-software features providing connection efficiency and economy:

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

* depending on installed extension cards

Configuration Scheme

NPE X1000



Technical specification

SYSTEM

CPU	ARM CORTEX A8 CPU, 800 MHz
RAM	512 MB DDR3 800 MHz (optional: 1GB)
Flash memory	128 MB NAND FLASH
SD Flash memory	SDHC Card reader x1 (up to 32 GB)
Operating system	Linux 3.X
Real Time Clock	RTC, 240 byte SRAM, Watch Dog Timer

ETHERNET INTERFACE

2x Ethernet 10/100 Mbps (RJ45 connector)

SERIAL PORTS

RS-232 ports	1x RS-232 (9 pins), 2x RS-232 (5 pins)
RS-232 / RS-485 ports	1x RS-232 (3 pins) service console, 2x RS-232 (3 pins) / 2x RS-485 (2 pins)

USB PORTS

1x USB 2.0 (host), 1x USB OTG (device/host)

INPUTS/OUTPUTS

Digital inputs	8x DI with opto-isolation (0...30V)
Digital outputs	6x DO with opto-isolation (0...30V), max. power efficiency 500 mA
Digital relay outputs	2x RO (0...230V DC/AC), max. power efficiency 500 mA
Analog inputs	8x AI 0...20 mA (0...7V) (12bit resolution), Max Peak Power: 600W
Configurable I/Os	16x DI/DO, max. power efficiency 500 mA
1-Wire	1x 1-Wire

POWER SUPPLY

9 ~ 24 V AC/DC, 500 mA

MECHANICAL PARAMETERS

Dimensions	35 x 213 x 58 mm
Weight	350g (without extension modules)
Casing	ABS, DIN bus installation

OPERATING AND STORAGE CONDITIONS

Temperature -40 ~ 80°C, humidity 5 ~ 95% RH (no condensation)*

AVAILABLE EXPANSION CARDS

Wi-Fi
ZigBee
3G/GPRS Modem
Bluetooth
GPS Module

CONNECTORS AND PHYSICAL INTERFACES

2x RJ45 (Ethernet)
1x HDMI
1x microSDHC slot
3x monostable switch button
1x32, 1x22, 1x10, 1x28, 1x12, 1x2 pin screw terminal
1x type A USB 2.0, 1x type B mini USB
3x expansion card slot (MiniPCI connection)

*some of the expansion cards can limit operating temperature range