



## NPE - Programmable automation controller (PAC) with 3G / GPRS modem\*

- Efficient RISC ARM9 processor
- Integrated 3G/GPRS/EDGE modem\*
- Linux 2.6.x operating system
- Ethernet 10/100 BaseT
- RTC and SRAM with power supply support
- 2 x RS-232, 1 x RS-485
- 8 digital inputs, digital outputs
- Transmitter outputs\*
- Analog inputs: 0..10V DC, 0..70V AC\*
- Switch, user LEDs
- 1GB NAND Flash, servicing of SD cards (up to 2GB)
- 1-Wire interface\*, USB\*
- GPS module\*
- Installation on DIN bus
- Modification on order



NPE 9300/9400

### Basic information

- Designed for the needs of automation, telecommunications, remote supervision, and monitoring
- Full range of communications interfaces, including built-in 3G/GPRS communication\*
- Service of standard protocols (e.g. MODBUS, SNMP), possibility of installation of dedicated user protocols
- Exceptional capabilities of data logging thanks to the built-in 1GB FLASH memory and servicing of SD cards (up to 2GB)
- Capabilities of presentation of web pages (SCADA web) directly from the device for the purpose of visualization of current and archived data as well as remote control
- iModCloud - dedicated cloud service that enables remote control of devices as well as data collection, analysis, and sharing.

### Hardware properties

- Adapted for constant operation under industrial conditions
- Efficient, energy-saving processor using RISC technology
- Large RAM memory for start-up of many independent services
- Rich set of I/O interfaces: including digital and analog inputs and outputs, RS-232/RS-485 serial ports, transmitter outputs, Ethernet, USB\*
- Built-in wireless communication Wi-Fi, ZigBee, 3G/GPRS\*
- Servicing of the economic 1-Wire bus typically used for reading of temperature and humidity sensors\*
- Possible hardware versions on special order, also with a logo specified by the orderer (OEM versions)

\* depending on the version

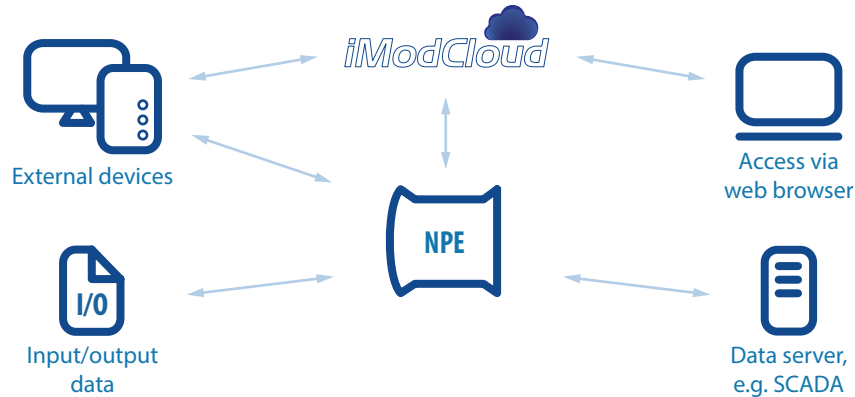
### Software properties

- New firmware based on Linux Kernel 2.6.X ensuring stability and security of device operation
- Possibility of operation with expansion modules for the purpose of increasing the amount of available interfaces (see accessories section)
- Ready tools and pre-compiled packs, service of VPN, SSH, SQL, PHP, JAVA, C/C++
- Developer tools and support of their use, instructions, informational materials
- Remote software updates
- Possible upgrade to the innovative iMod platform
- Dedicated web service iModCloud enabling remote control of devices and data
- Full technical support through a dedicated portal, super-standard design cooperation thanks to 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)



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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 (ventilators, 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 receipt 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

## 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](http://www.techbase.eu/imod)
- **iModCloud** - dedicated cloud service. The service enables remote control of devices as well as data collection, analysis, and sharing. iModCloud makes managing systems very easy. For more information about iModCloud service please visit our page: <http://www.imodcloud.com>
- **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

## Specification

### SYSTEM

CPU	ARM9 32-bit RISC CPU, 180 MHz, 200 MIPS
RAM	SDRAM 128 MB
Flash memory	1 GB
SD Flash memory	SD Card reader x1
Operating system	Linux 2.6.X
Real Time Clock	RTC, 240 byte SRAM , Watch Dog Timer

### ETHERNET INTERFACE

Ethernet 10/100 Mbps (RJ45 connector)
1.5 kV magnetic isolation

### SERIAL PORTS

RS-232 ports	2 x RS-232, built-in 15 kV ESD safeguard
RS-485 ports	1 x RS-485, built-in 15 kV ESD safeguard
Transmission parameters	Data bits: 5, 6, 7, 8; Stop bits: 1, 1.5, 2 Parity: None, Even, Odd, Space, Mark; Speed: 50 bps to 921.6 Kbps

### LED CONTROLS, KEYBOARD, INPUTS-OUTPUTS

LED signalization	System readiness x 1, user x 1, power x 1, GSM modem x 2
Ethernet signalization	LED link, LED 100Mbit (integrated with RJ45 socket)
Switch	1 x monostable switch, 1 x reset (access from the housing face)
GPIO	8 x DI, 6 x DO or 8 x DI, 2 x DO, 2 x DOP (transmitter outputs) 4 x AI: 0..10V DC or 3x AI:0..10V DC or 0..70V DC
Diagnostics socket	1 x 6-pin socket

### POWER SUPPLY

Supply voltage	12 ~ 36 Vdc (optionally 12 ~ 48 Vdc – telecommunications range)
Power consumption	Without GSM from 1,5W dt 3W typically 2 W, with GSM from 4W to 10W typically: 6W

### MECHANICAL PARAMETERS

Dimensions	35 x 120 x 101 mm (WxDxH)
Weight	300g max.
Casing	ABS, DIN bus installation

### OPERATING AND STORAGE CONDITIONS

Work parameters	Operating temperature: -10 ~ 60°C (optionally: -40°C to 75°C for NPE-9XXX-E) humidity: 5 ~ 95% RH (no condensation)
Storage parameters	Storage temperature: -20 ~ 80°C (optionally: -40°C to 85° for NPE-9XXX-E) humidity: 5 ~ 95% RH (no condensation)

### ADDITIONAL TECHNICAL PARAMETERS

GSM modem*	3G/GPRS 900/1800/1900 MHz Compliant to GSM Phase 2/2+ - Class 4 (2 W @ 900 MHz) - Class 1 (1 W @ 1800/1900 MHz) Antenna connector: SMA (female)
3G/GPRS/EDGE modem*	3G/GPRS/EDGE Class 10 max. 236.8 kbps (downlink)
3G/GPRS modem*	3G/GPRS Class 10 max. 85.6 kbps (downlink)
Options*	GPS, Wi-Fi, ZigBee, USB

\* depending on version

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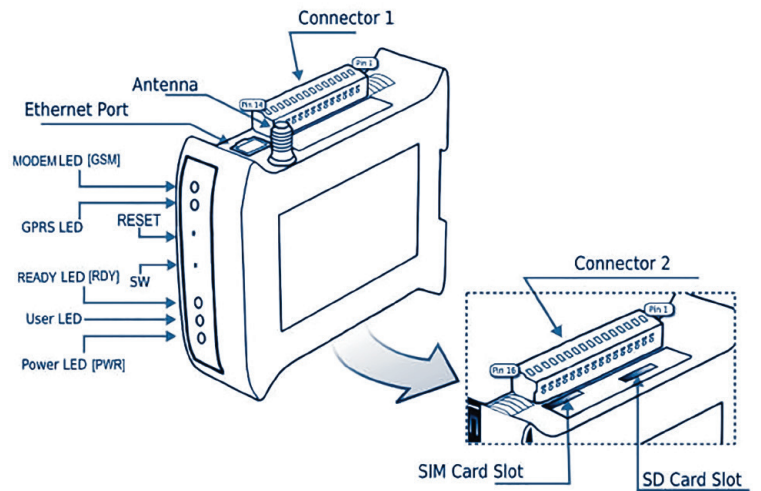
## Options

MODEL	DI	DO	DOP	AI DC	AI AC	1-WIRE	1 GB FLASH	GSM MODEM (OPTION)	MODBUS	SNMP
NPE-9300	8	6					■	3G/GPRS/EDGE	□	□
NPE-9300W	8	6				■	■	3G/GPRS/EDGE	□	□
NPE-9300R	8	2	2				■	3G/GPRS/EDGE	□	□
NPE-9300RW	8	2	2			■	■	3G/GPRS/EDGE	□	□
NPE-9400	8	6		4			■	3G/GPRS/EDGE	□	□
NPE-9401	8	6		3	1		■	3G/GPRS/EDGE	□	□
NPE-9400R	8	2	2	4			■	3G/GPRS/EDGE	□	□
NPE-9400RW	8	2	2	4		■	■	3G/GPRS/EDGE	□	□

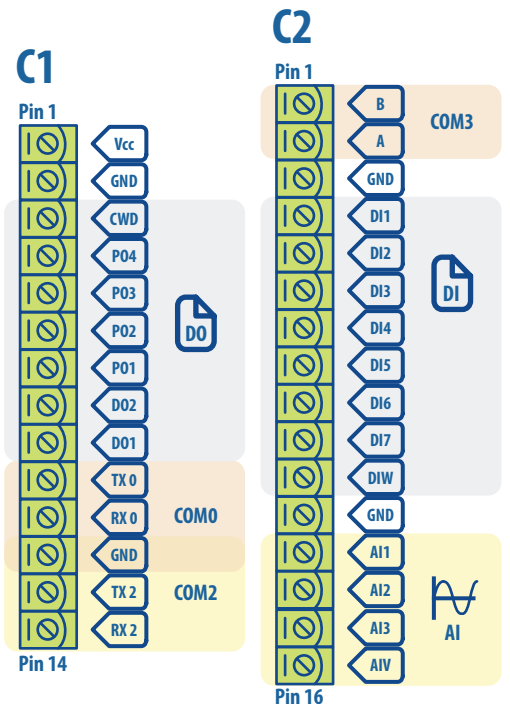
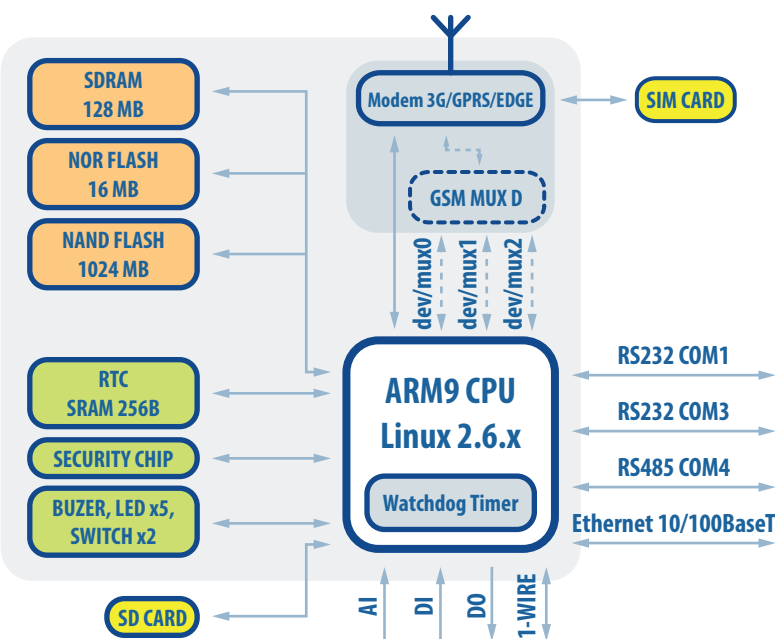
NPE 9300/9400

- - Built-in functionality
- - Optional functionality
- RTC - Real Time Clock
- DI - Digital Inputs
- DO - Digital Outputs
- DOP - Transmitter Outputs
- AI DC - Analog inputs with direct current 0...10 V
- AI AC - Analog inputs with alternating current 0...70 V

Optional: USB, ZigBee, Wi-Fi, 3G modem



## Device schematic



## Accessories

### POWER FEEDERS



#### SDK-0302-12VDC-R

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



#### MDR-20-24

DIN bus power feeder, output 24V DC 24W, input 85..264 V AC or 120..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



#### 1Wire-Therm-Copper

Digital temperature sensor in copper housing

### SERVICE KIT



#### NPE-SK1-3.3V-USB

The service kit includes a USB to RS-232 converter, a flat DB9 service cable and a CD containing drivers. Allows for the configuration and programming of the NPE device through the service port.

### DISPLAYS



#### TPD-430-EU

4,3" HMI panel, equipped with a high-resolution color touch screen, 32-bit RISC CPU, 1x RS-485



#### TPT-283U-W

2,8" HMI TFT touch screen, 32-bit RISC CPU, 1x RS-485, USB, FLASH memory, Ethernet

### ZIGBEE SENSORS/MODULES



#### ZS-10, ZS-20

Multi-channel ZigBee Sensor with Battery Power Supply



#### ZM-10, ZM-20

ZigBee Relay I/O Module

### ANALOG INPUT/OUTPUT MODULES



#### M-7017

8 analog voltage inputs



#### M-7017C

8 analog current inputs



#### M-7015

6 temperature inputs



#### M-7033

3 optically isolated temperature inputs



#### M-7024

4 14-bit analog outputs with isolation

### DIGITAL INPUT/OUTPUT MODULES



#### M-7041

14 isolated digital inputs



#### M-7045

16 isolated digital outputs

MODE INPUT/OUTPUT MODULES ON THE WEB PAGE: <http://www.a2s.pl/en/konwertery/modbus--t--2078-131.html>