



iMod - Configurable Automation Controller (CAC) with 3G/GPRS modem*

- **Full MODBUS support** - Modbus proxy/gateway/router, multiple Slave and Master channels, temporary values buffering
- **Alarm functions** - notification via SMS, e-mail, SNMP, Modbus PUSH, SQL, user scripts
- **Data Logger** - data logging limited to capacity of Flash memory (1GB) or SD card
- Convenient data archiving - **PostgreSQL, MSSQL** or **SQLite** database support
- **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.



iMod 9300/9400

Basic information

- iMod telemetry module offers variety of ways to log and access data. It has built-in I/O interfaces and communication channels e.g. Ethernet and 3G/GPRS.
- Flexible configuration makes it an efficient protocol controller. iMod integrates access to other devices, buffers data collected via multiple protocols and communication channels.
- Built-in WWW server allows data presentation and control directly from the device via web browser. iModCloud simplifies building WWW control modules.
- iMod is an innovative software service integrated with NPE hardware-system platform designed to accelerate start-up of advanced automation, monitoring and remote control projects.
- iMod-based systems operate worldwide. Constant development of the platform and remote update function provide access to latest functionalities.

Hardware features

- Adapted to constant operation in industrial conditions
- Energy-efficient RISC CPU
- Large RAM capacity for multiple independent services
- Rich set of I/O interfaces, including digital and analog I/Os, RS-232/RS-485 serial ports, relay outputs, Ethernet, USB*
- Built-in Wi-Fi, Zigbee, 3G/GPRS and Ethernet*
- Energy-efficient 1-wire bus support, typically used to read temperature and humidity sensors*
- Version with customer logo on demand (OEM)

Software features

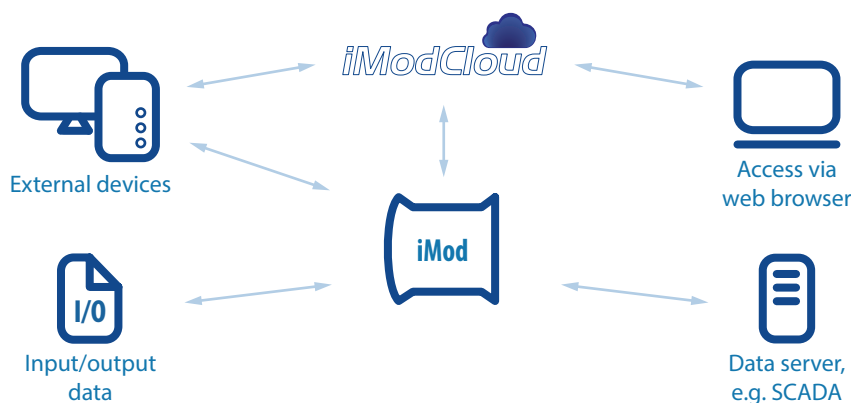
- In order to use iMod you just need to define a proper configuration
- Java-based iMod SDK allows adding custom protocols
- 1-wire and M-Bus scanning (automatic configuration) of devices/sensors
- Event-triggered communication to increase efficiency and lower transfer cost
- Buffered data is instantly available e.g. in SCADA systems
- Expansion modules to increase number of available interfaces
- Remote software update
- Technical support via dedicated portal and TECHBASE Solution Partner

* depending on version

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)



iMod 9300/9400

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 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

Cechy i zasada działania

The iMod features and principles of operation present innovative approach to telemetry and automation systems.

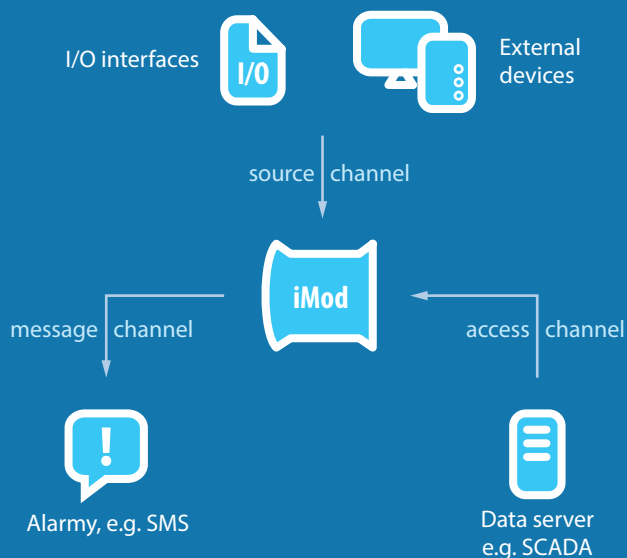
iMod is a configurable protocol controller, provides fast start-up and enables full use of functions without the need to write a program. Fully configurable system representing typical C-L-V usage. iMod provides functionalities of the following devices:

- telemetry module
- protocol and interface converter
- data logger
- autonomic controller
- notify module
- I/O module

Universal and flexible architecture together with plug-in solutions make iMod a versatile communication module supporting any user protocols.

iMod 9300/9400

Principle of operation



The iMod platform is designed to support all communication methods of current automation and telecommunication systems and offer clear and flexible configuration. For this purpose 3 types of communication channels are defined.

- **Source channel** - for cyclical reading values of properly defined parameters (e.g. Modbus Master polling other devices)
- **Access channels** - allowing access to iMod data (e.g. Modbus Slave shares data with a computer with SCADA).
- **Message channel** - event-based communication which allows sending notification (e.g. SMS, e-mail, Modbus Push)

Additional components

- iMod SDK allows to add custom protocols in a "plug-in" form.
- iMod operates on NPE Linux platform providing a large set of programming tools, e.g. C, C++, Java support and tools for database, SSH, SSL and VPN support.
- iModCloud - dedicated web service for remote control of devices. The service enables remote control of devices as well as data collection, analysis, and sharing. iModCloud makes managing systems very easy.
- NPE PLC (option) - allows to create PLC ladder logic programs based on iMod data/parameters.

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

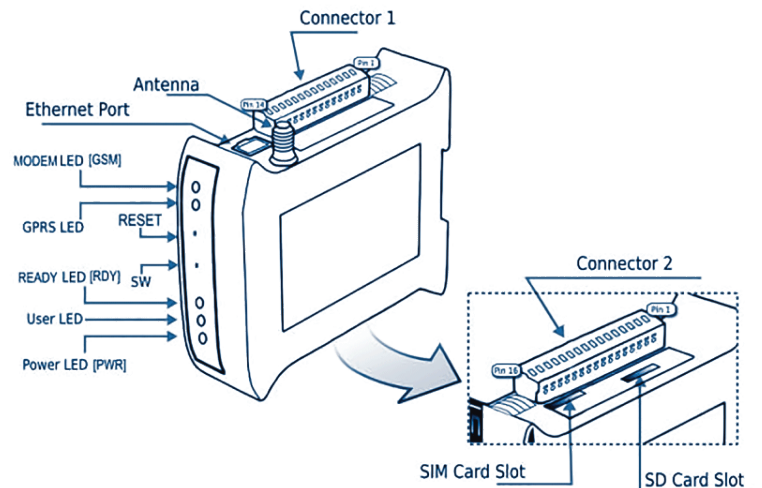
Options

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

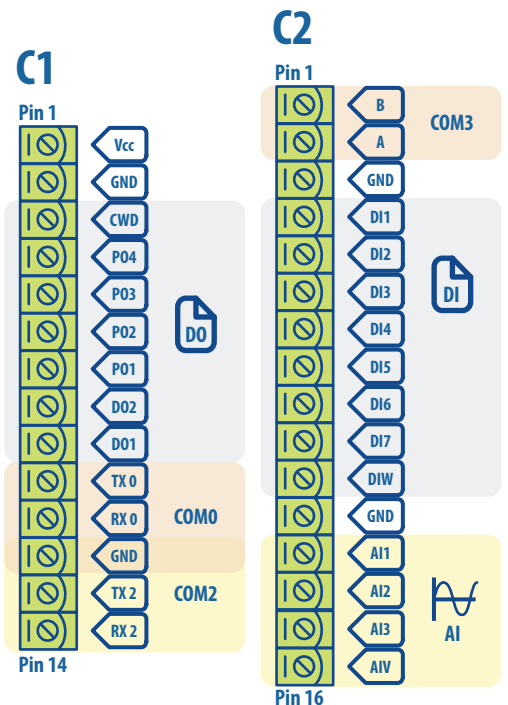
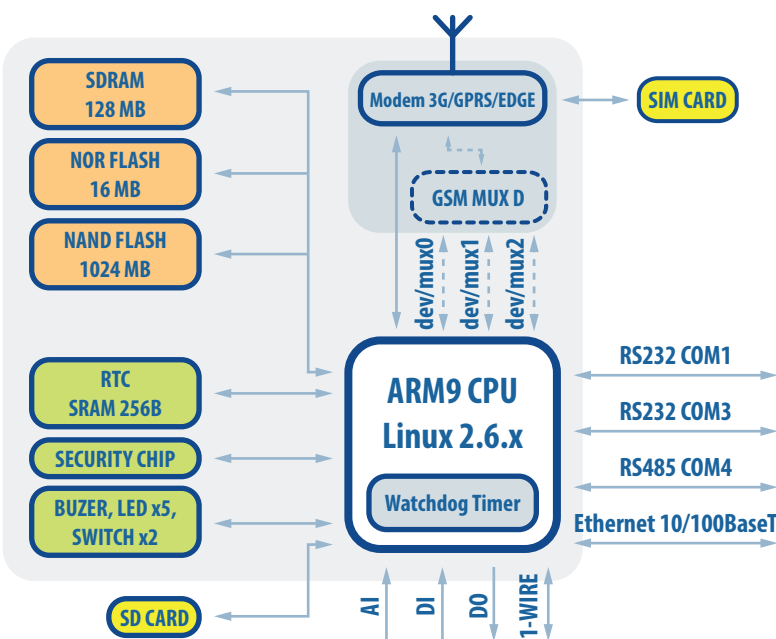
iMod 9300/9400

- - 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...10V
- AI AC - Analog inputs with alternating current 0...70V

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



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



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>