



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

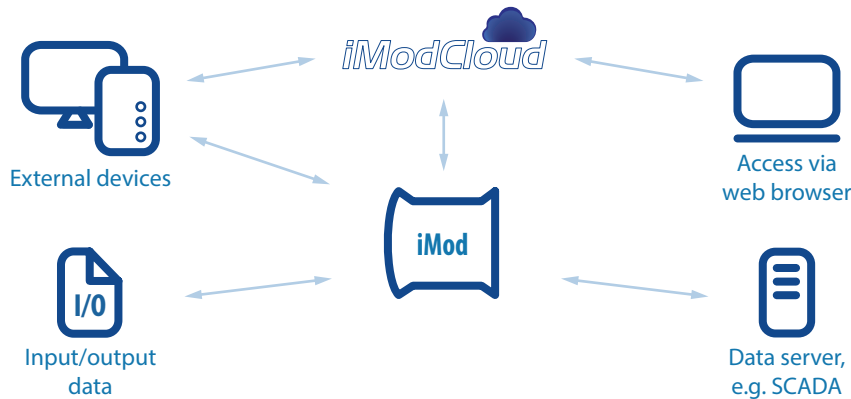
- In order to use iMod you just need to define a proper configuration
- Java-based iMod SDK allows adding custom protocols
- 1-wire and M-Bus scanning (automatic configuration) of devices/sensors
- Event-triggered communication to increase efficiency and lower transfer cost
- Buffered data is instantly 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

Features and principle of operation

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:

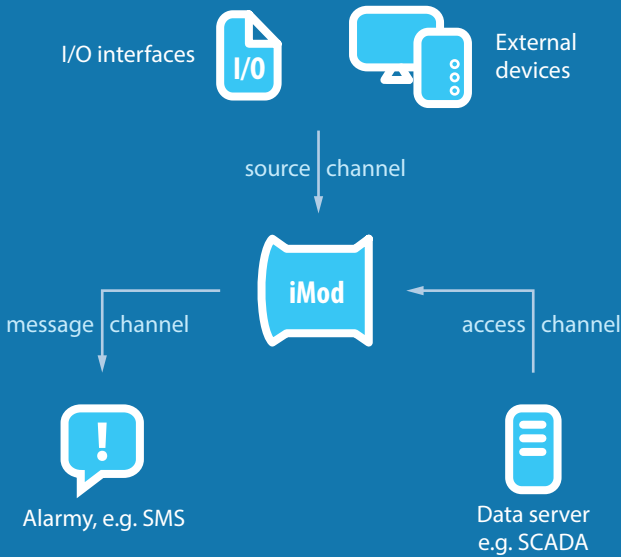
- telemetry module
- protocol and interface converter
- data logger
- autonomic controller
- notify module
- I/O module

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

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

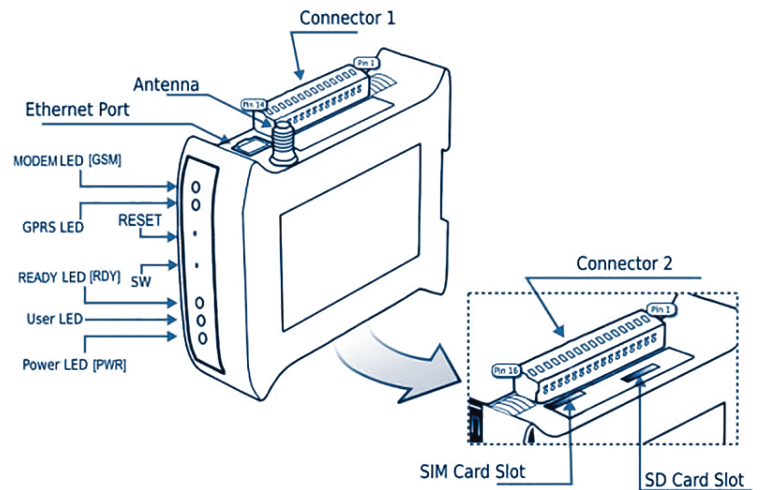
Options

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	□	□

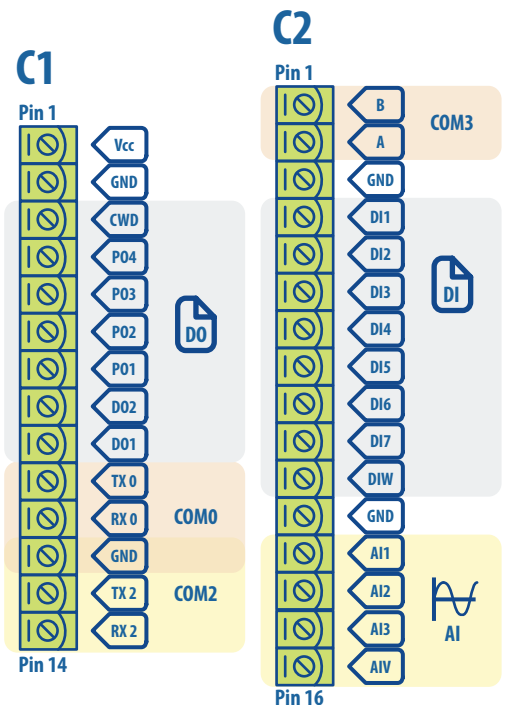
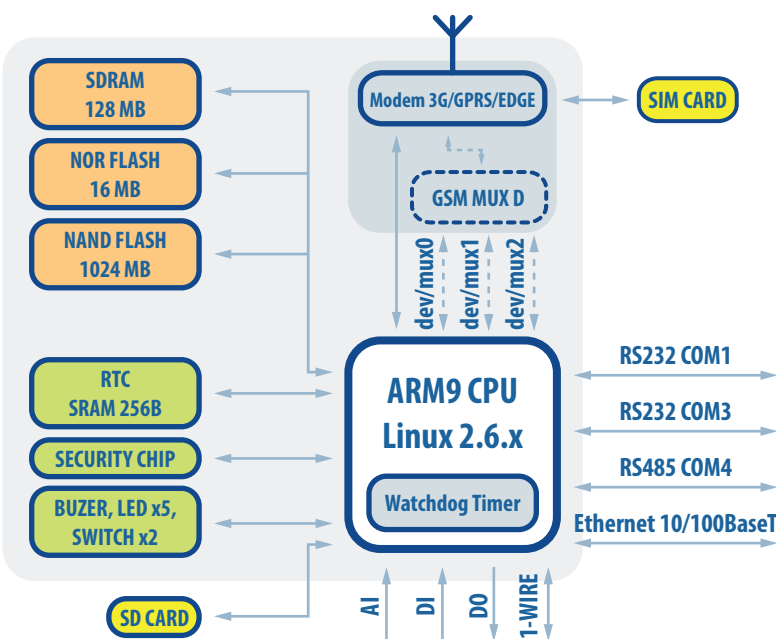
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- - Built-in functionality
- - Optional functionality
- RTC - Real Time Clock
- DI - Digital Inputs
- DO - Digital Outputs
- DOP - Transmitter Outputs
- AI DC - Analog inputs with direct current 0...10 V
- AI AC - Analog inputs with alternating current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