



Smart Home, Building, Hotel, Office Automation



eHouse RS-485 - Smart Home, Building Automation and Management Catalog

Automation for:

- ✓ home
- ✓ office
- ✓ school
- ✓ special objects
- ✓ building
- ✓ hotel
- ✓ sport facilities
- ✓ any other building and premises
- ✓ flat
- ✓ pension
- ✓ swimming pools



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1.Introduction.

eHouse is complex solution of home automation from iSys.PL, developed since 2000.

eHouse RS-485 (formerly “**eHouse 1**” or “**eHouse One**”) controllers working on industrial serial bus. Controllers are connected serially and managed by main host (PC, Linux microcomputer, CommManager, eHouse.PRO server). Ehouse One network is connected to RS-232 port via RS-232 to RS-485 full duplex converter. Architecture is suitable for control whole room from single controller allows division of eHouse system to most natural independent segments (Rooms). Each segment can be located in professional room switch-board for 230V mains installation minimization to single room.

Segments are integrated each other by eHouse software and control protocols for sending events, controllers statuses, etc.

1.1. eHouse system applications

eHouse system was designed for interfacing software applications and all sort of electric and electronic devices. Main application of eHouse are:

- ✓ Home Automation
- ✓ Smart Home
- ✓ Building / Facility Management
- ✓ Office Automation
- ✓ Access Control & Limitation
- ✓ Security Systems
- ✓ Safety Systems
- ✓ Hotel automation
- ✓ Measurement systems
- ✓ Electronic Houses
- ✓ Low voltage house installations
- ✓ Control systems
- ✓ Visualization and graphical control
- ✓ Systems integration



1.2. Main features of eHouse RS-485 system

- ✓ Cheapest Professional home automation system available on the market thanks to large optimized micro-controllers electronic management modules
- ✓ Long live applications
- ✓ Not sensitive for elements aging
- ✓ Not sensitive for external interference, disruption, noise, sabotage, malfunction comparing to wireless systems
- ✓ Low voltage controllers contain a lot of digital outputs, PWM/DC dimmer outputs, digital inputs, measurement inputs (ADC), digital Inputs, with individually programmed and configured functionality
- ✓ Professional Installation in Room Switch-Board, Central Switch-Board with external relays modules for security, safety, trouble-free, fast service
- ✓ Multi Platform software for integration, configuration, visualization, programming libraries
- ✓ Possibility of self development, programming integration with attached programming libraries, templates, open source code.



2. eHouse RS-485 Controllers

eHouse RS-485 (eHouse One) controllers work directly on industrial serial bus. Controllers works under supervising host: PC, CommManager, eHouse.PRO server, Linux microcomputer.

2.1. RoomManager (RM)

RoomManager is decentralized medium range low voltage smart home controller (separated from Mains for safety and DIY solutions) dedicated for control and management of whole rooms in following applications:

- ✓ home automation, smart home
- ✓ building, office, hotel management
- ✓ intelligent building integration

Main functions of RoomManager (RM)

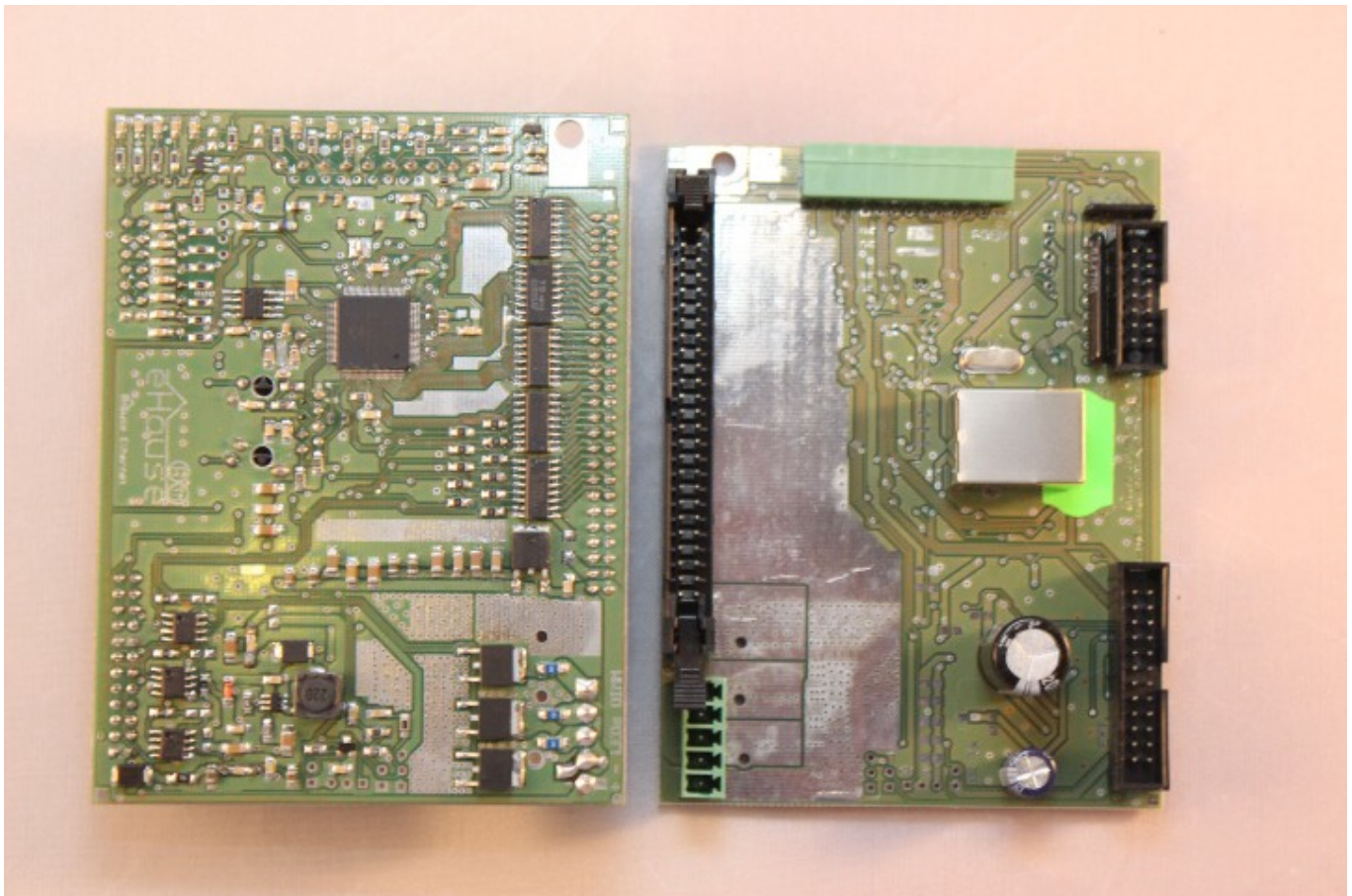
- ✓ 32 programmable digital outputs (on/off) with relays drivers
- ✓ 12 programmable digital inputs (on/off) for connecting sensors, switches, etc.
- ✓ 8 programmable ADC inputs with individually programmed levels (min,max)
- ✓ 3 PWM 12VDC/3A Dimmers with or without optoisolator for LEDs / LED RGB (optional)
- ✓ switching power supply for battery operation (optional)
- ✓ IR receiver compatible with Sony (SIRC) system for direct control of RM by remote controllers
- ✓ IR transmitter for remote control of external Audio, Video, HiFi equipment
- ✓ 248 programmable clock and scheduler items for running eHouse events
- ✓ 24 programs ADC measurement/regulation, Output/Dimmer Programs/Scenes together
- ✓ 248 programmed IR remote control codes for external A/V equipment
- ✓ 248 programmed IR control codes for RM
- ✓ SPI Interface for extension of systems (optional)
- ✓ I2C Interface for extension of systems (optional)
- ✓ RS232-TTL interface for installation extension modules to the controllers (optional)
- ✓ up to 250 RMs can be installed in eHouse RS-485 System without bus



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expansions (theoretically ~65000)

2.1.1 RM Standard Rev. 7 (Stand-alone) - RM-7



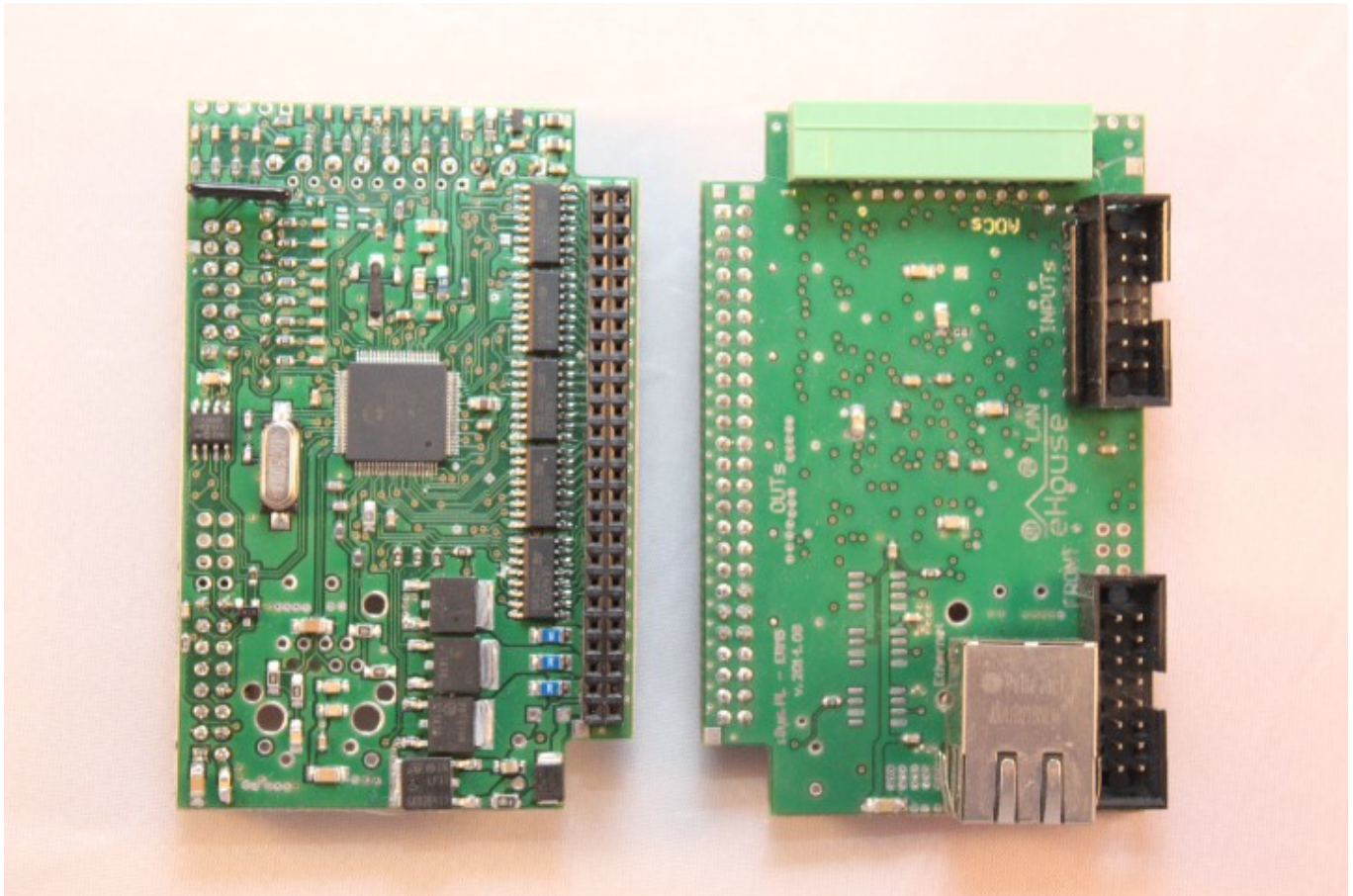
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- ✓ Modules can be painted with insulation materials on demand
- ✓ Modules may be RoHS or not on demand
- ✓ Installable Product RoHS not required for CE
- ✓ Complying with CE norms for (EMI)

2.1.2 RM Mini (RM-MINI) for direct MP-18 relay module connection

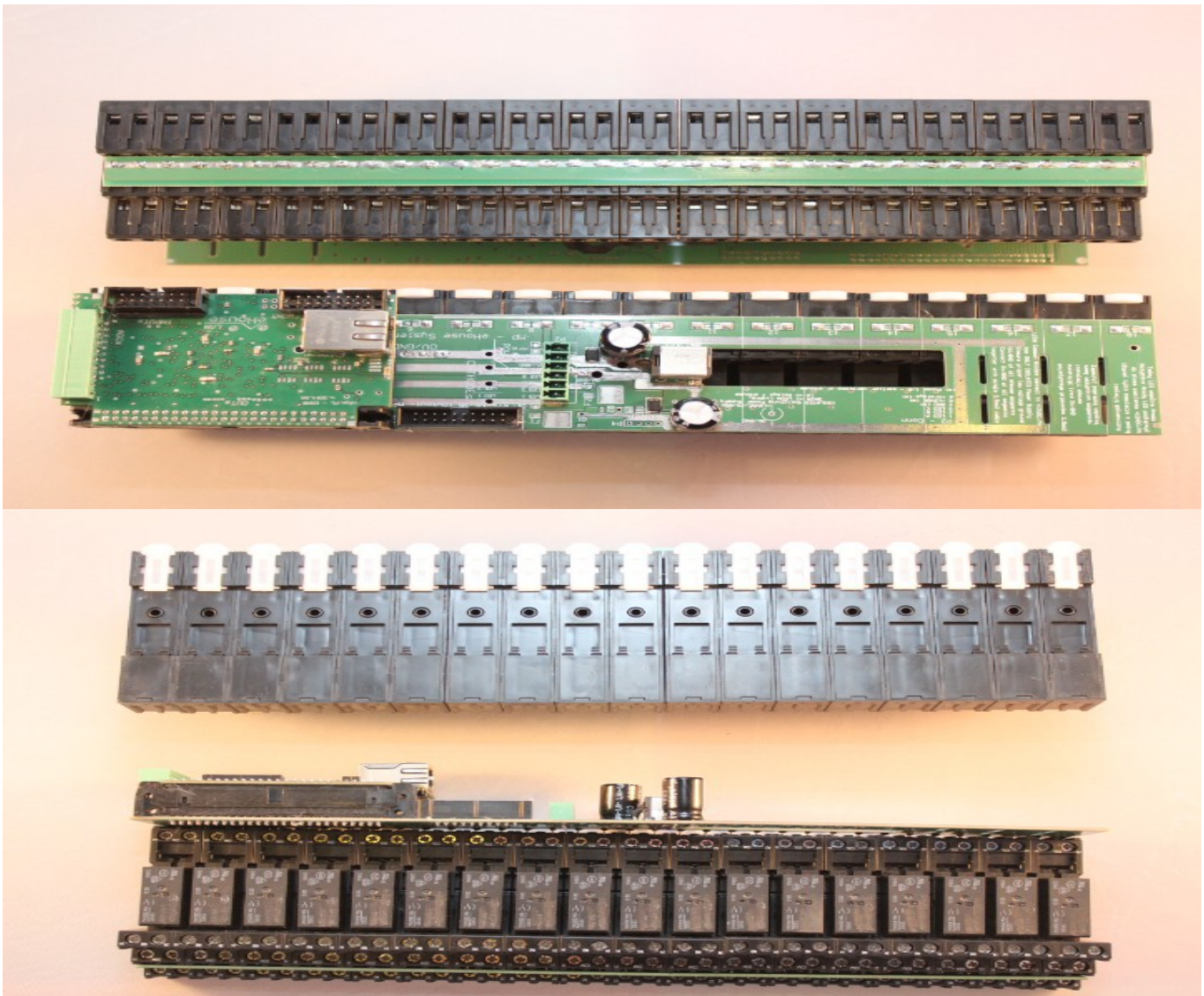


Differences from standard RM version:

- ✓ No build-in switching power supply
- ✓ Other pins and gender of IDC-50 socket
- ✓ Smaller than Credit Card (86*55*30mm) - may be changed during production and development
- ✓ Modules may be RoHS or not on demand
- ✓ Installable Product RoHS not required
- ✓ Complying with CE norms for (EMI)

2.1.3 RM Mini + MP-18 DIN Relay Module Set – for direct installation In Room-SwitchBoard for professional installations (291*110*60mm) – RM-SET or Integrated RM+MP18

- ✓ Complete Switch-Board implementation
- ✓ Cover box 1x18 modules for 18 relays, 2x18 for 24, 32 relays
- ✓ Requires only connection of RS-485 bus, 12VDC Power Supply, inputs to switches, External IR Panel for complete low voltage installation

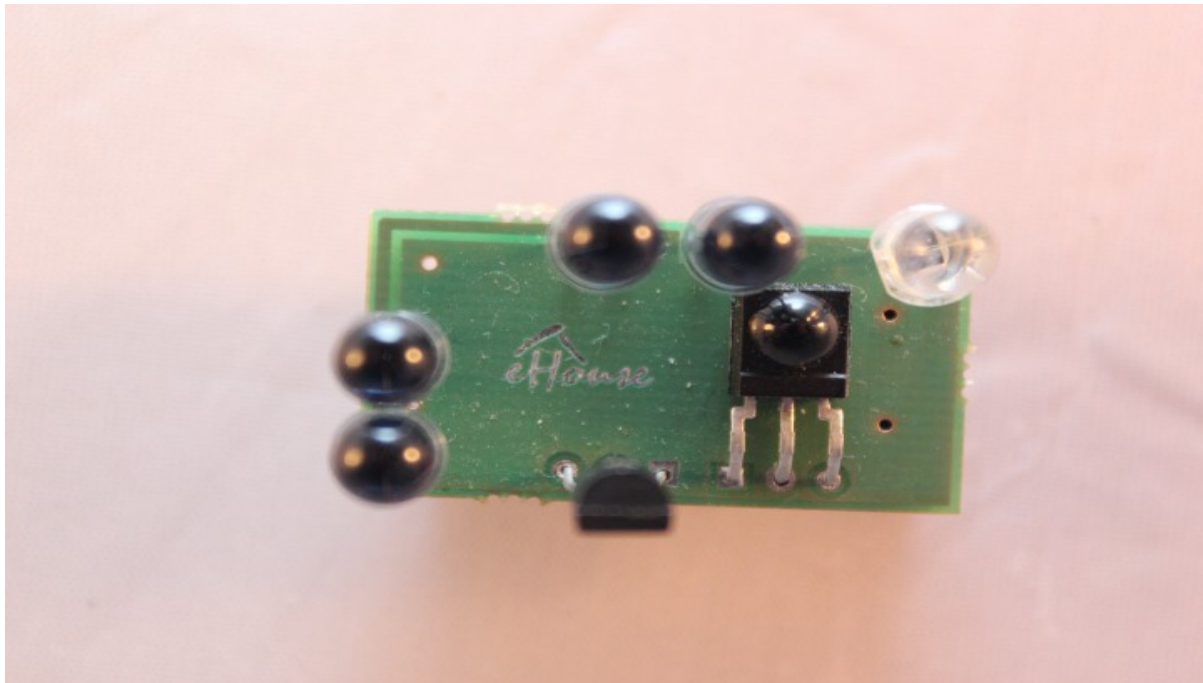


2.1.4 IR Front Panel for RoomManager - IR-EXT

IR front panel is designed for infrared support for eHouse controllers in both direction. Module without a cover for best IR ranges, adjustments, performance.

External IR Panel for RM, RM Mini, RM+MP18:

- ✓ IR Transmitter 4 narrow angle (15 degree) IR diodes (Range up to 8m)
- ✓ connection wires can be bend ca. 90 degree in any direction to get best range and performance depending on relative position to A/V equipment
- ✓ IR Receiver
- ✓ Temperature Sensor
- ✓ Light Level Sensor
- ✓ IDC-16 Socket for direct RM connection (up to 8m)



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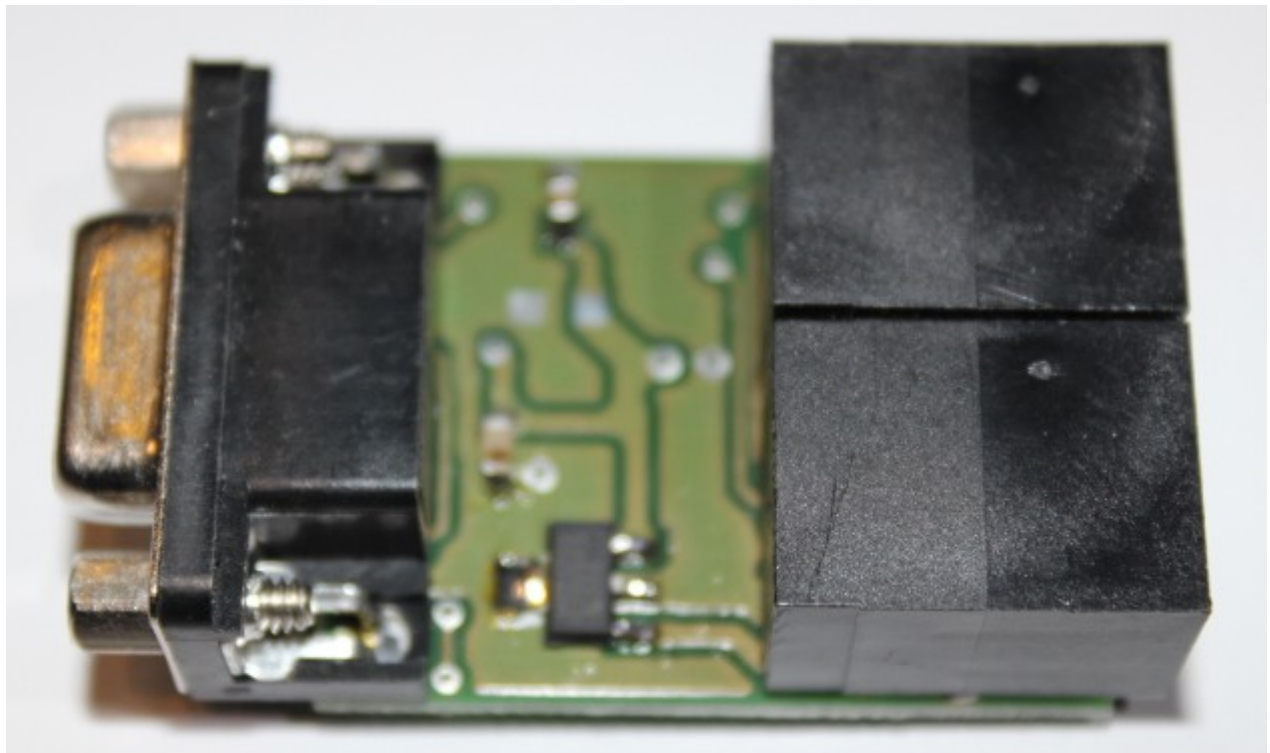


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2.2. RS-232/RS-485 Full Duplex Converter

RS-232 to RS-485 converter enables to connect RS-485 **eHouse One** bus directly to RS-232C port compatible to any PC.

For newer PC, microcomputers not equipped in standard RS-232C, it also requires additional USB/RS-232C Dongle.





2.3. CommManager (CM) / LevelManager (LM)

CommManager / LevelManager is integrated communication module:

- ✓ Ethernet
- ✓ GSM/SMS
- ✓ RS-485 (eHouse 1 support)
- ✓ security system
- ✓ rollers, drives, gates, windows, gateways controller (CM)
- ✓ single outputs mode (LM)

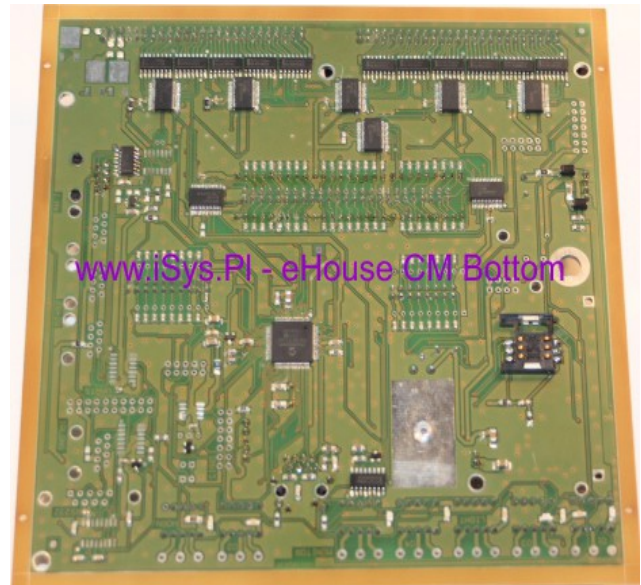
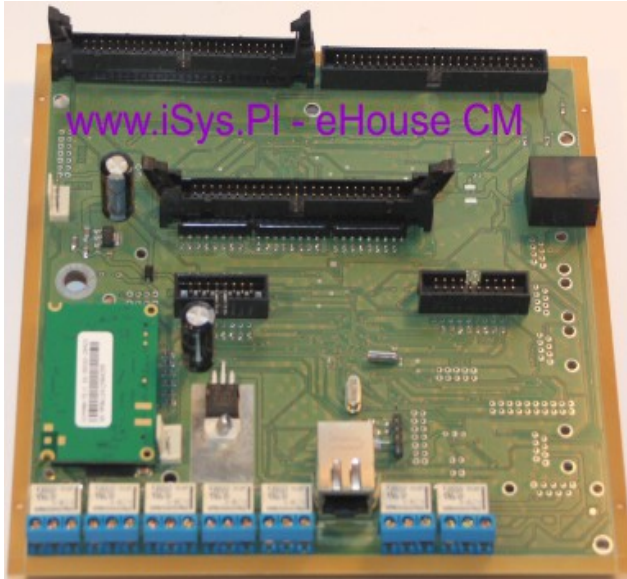
Main features of CommManager / LevelManager

- ✓ self contained security system with SMS notifications, controlled remotely
- ✓ 48 programmable digital inputs for switches, alarm sensors
- ✓ build in roller, gates, shadow awnings, doors drives controller (max 35) in Somfy / Direct standard (CM)
- ✓ enables alternative usage of outputs as a single - compatible with EMR max 77 (LM)
- ✓ RS485 interface for direct connection to "eHouse 1" data bus (supervision of "eHouse 1" controllers)
- ✓ Ethernet interface for direct control (over LAN, WiFi, WAN, Internet)
- ✓ contains GSM module for security system notification and controls the system via SMS
- ✓ enables direct connection of Early Warning Horn, Alarm Horn, Alarm Lamp, Alarm Monitoring device
- ✓ 128 position scheduler / calendar
- ✓ incorporates TCP/IP servers / clients for communication via (LAN)
- ✓ supports 21 security zones
- ✓ supports 4 level mask individually defined for each activated alarm sensor and each security zone:
 - 1) alarm horn (A)
 - 2) alarm light (W)
 - 3) monitoring (M)
 - 4) launch event associated with current alarm sensor (E)
- ✓ CommManager contains 24 rollers program definition together with security zone selection



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- ✓ broadcast status via UDP over LAN for all panels in the system
- ✓ contains SPI, I2C interfaces (optional)
- ✓ enables alternative usage of outputs as a single (Compatible with RoomManager max 77)



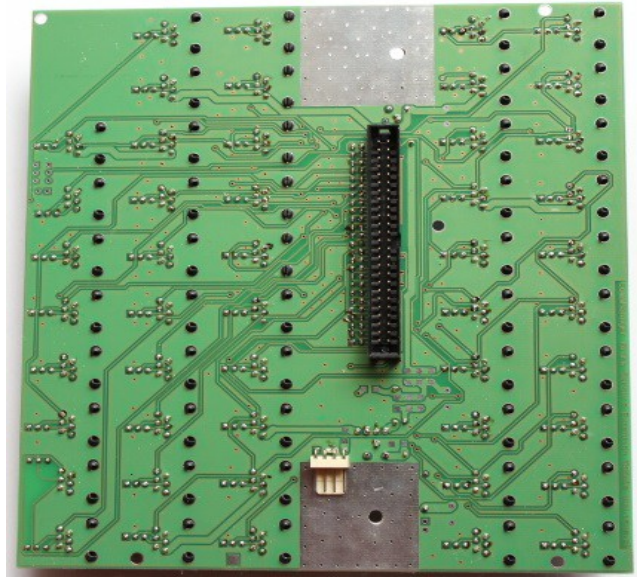
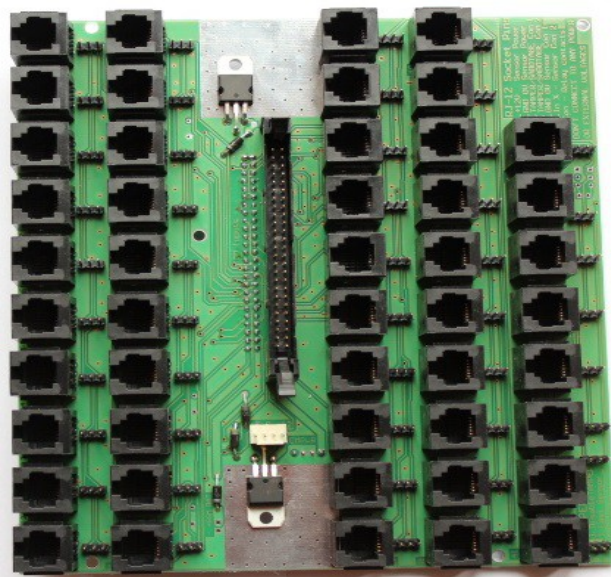
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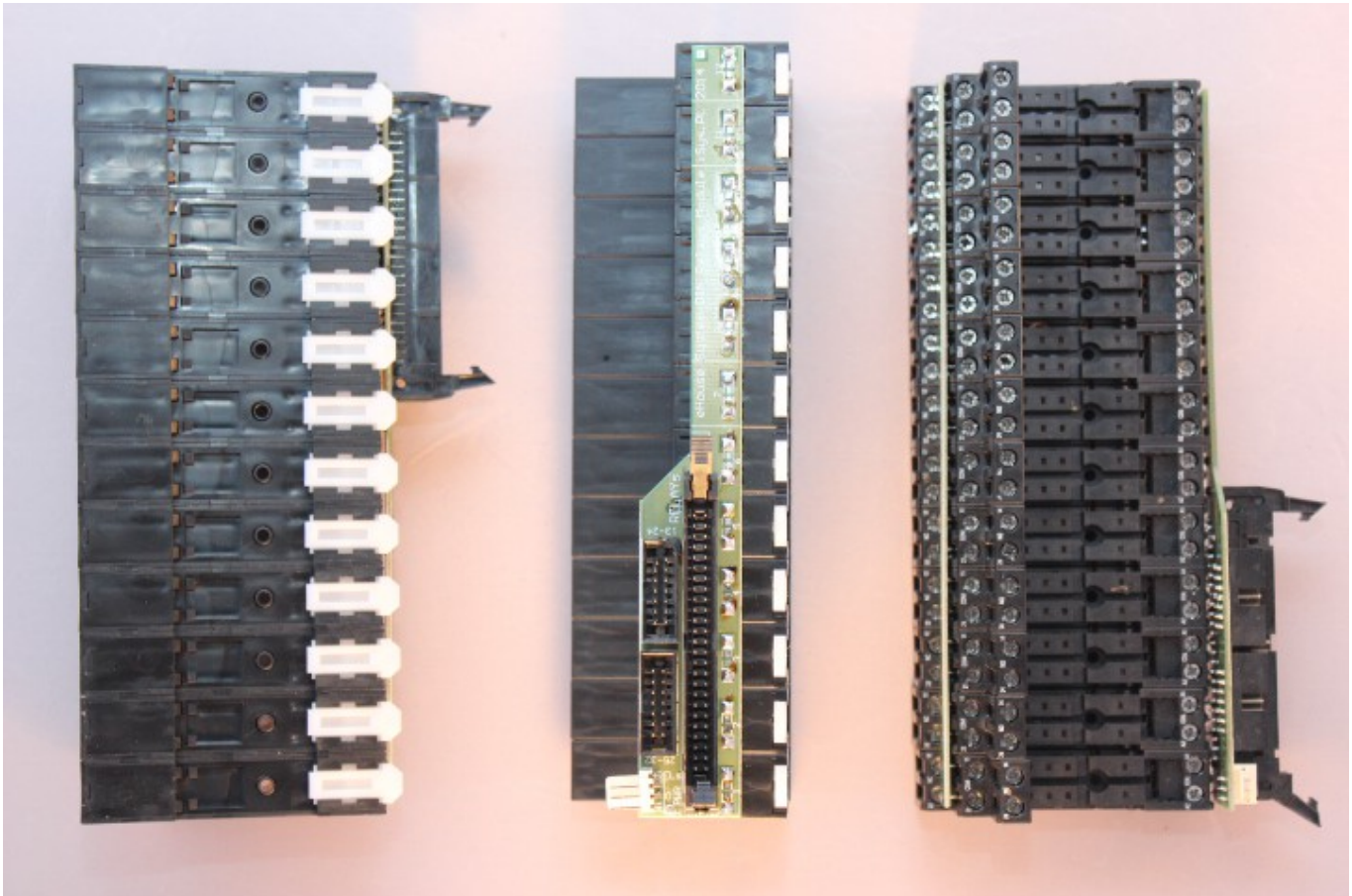
- ✓ Modules can be painted with insulation materials on demand
- ✓ Modules may comply RoHS or not on demand
- ✓ Installable module RoHS conformance is not required
- ✓ Complying with CE norms for (EMI)

2.4. Input Expander (48) for CM for professional installation - EXP-48



- ✓ 48 * RJ-12 telephone socket for connection of security sensors (switch-board)
- ✓ Power supply for GSM/SMS module
- ✓ Tamper options set by jumpers
- ✓ Fast Installation, Deinstallation, Service, Maintenance

2.5. DIN Relay Module 12 for professional installation - MP-12

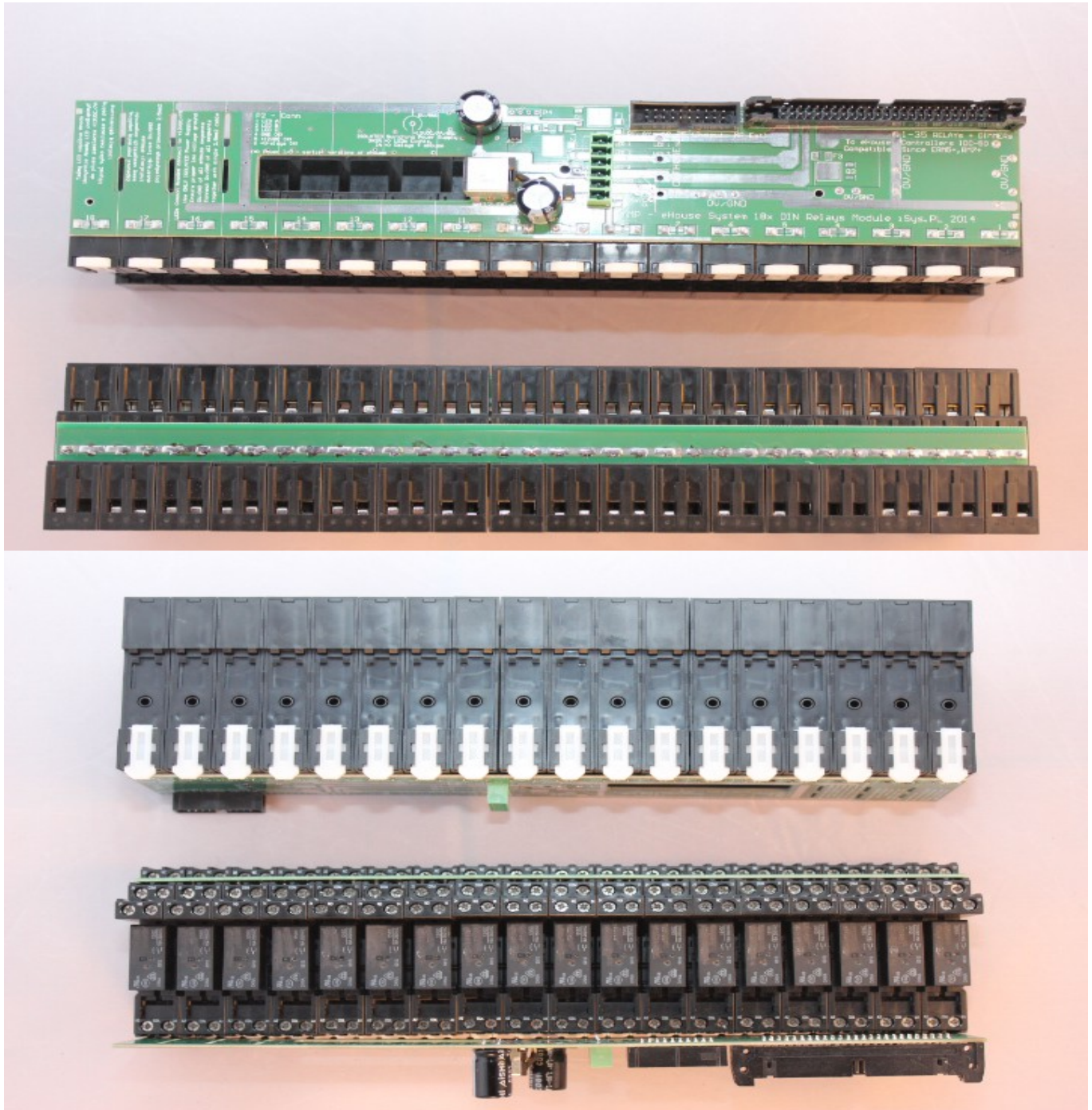


- ✓ 12 relays with DIN Sockets
- ✓ Implement complete Low Voltage connection for connection to eHouse controllers (Relay coils + Power Supply) IDC-50 socket
- ✓ IDC-14 sockets for expansion modules
- ✓ up to 3 modules can be connected (36 relays)
- ✓ Common rail for relay contacts
- ✓ Fast and professional low voltage installation without additional wires in switch-board



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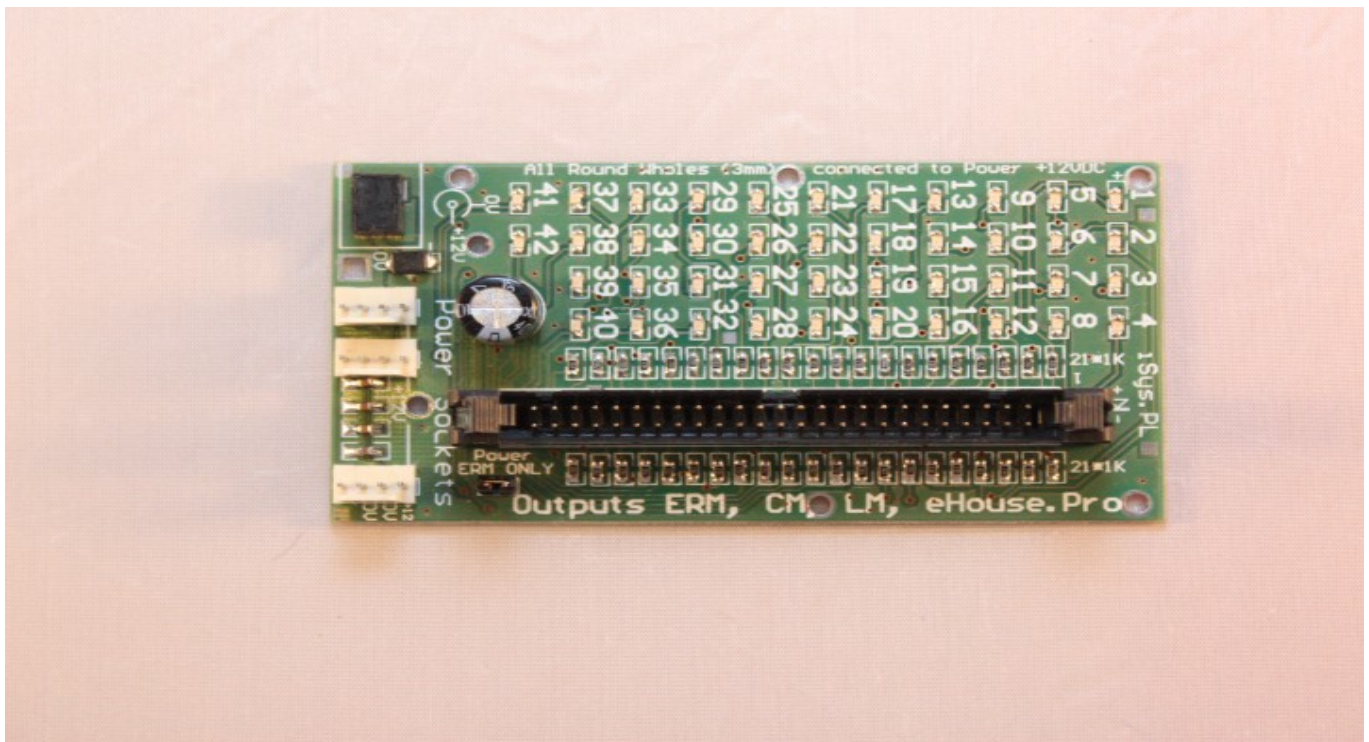
2.6. DIN Relay Module 18 for professional installation - MP-18



2.7. eHouse RS-485 Evaluation, Demo Boards

eHouse RS-485 evaluation/demonstration boards enables testing, debugging and development „on the desk” configuration on short wires installation. It strongly shorten eHouse controllers education, implementation, configuration and time to market of „eHouse One” system.

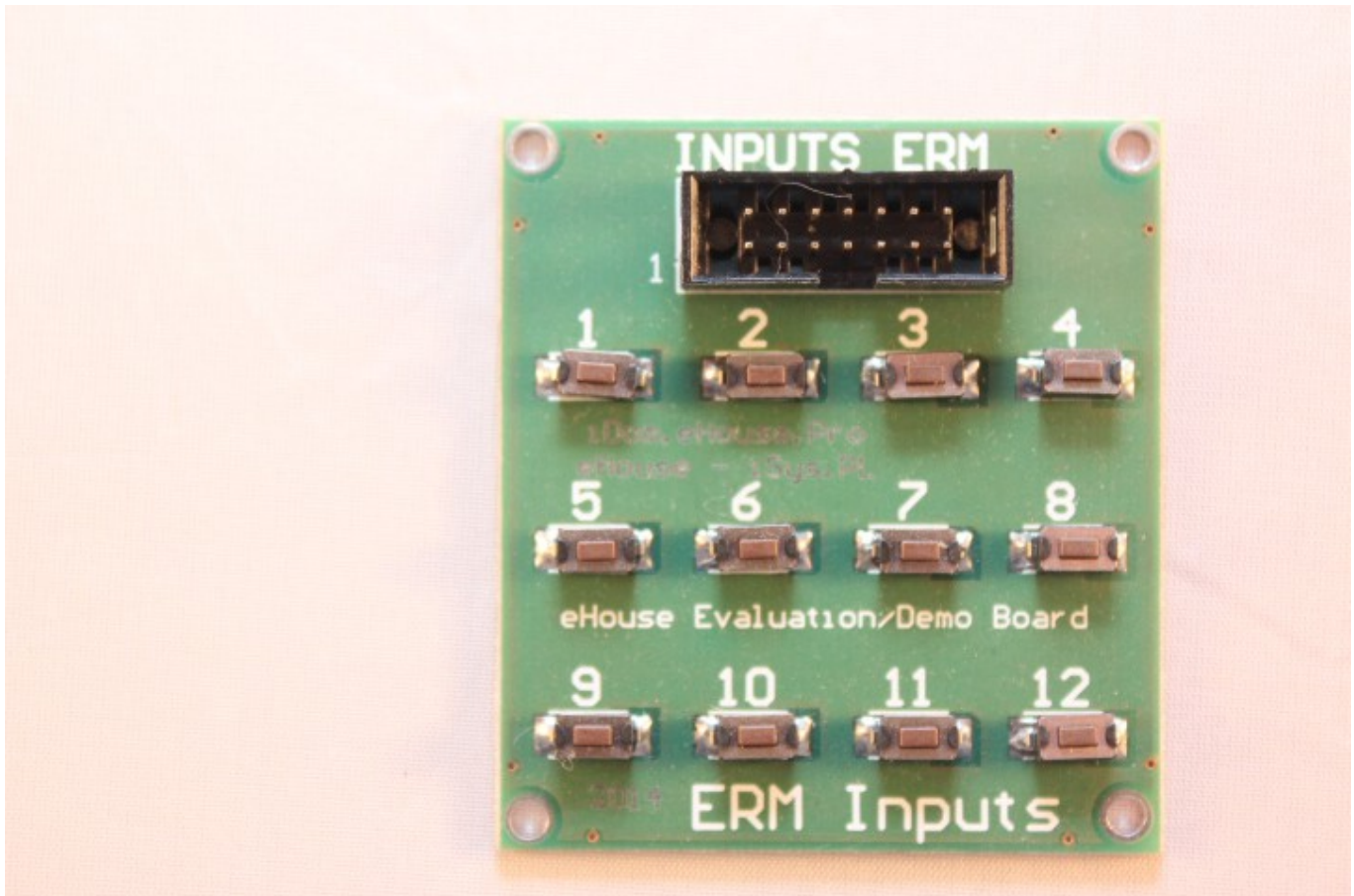
2.7.1 Outputs Demo Board – DEMO-OUT



Main functions of Outputs Demo Board:

- ✓ 42 LEDs for testing and evaluating outputs of eHouse Controllers
- ✓ IDC-50 socket for connecting single CM/LM, ERM, eHouse.PRO, RM
- ✓ Contains Power sockets for mature versions of controllers

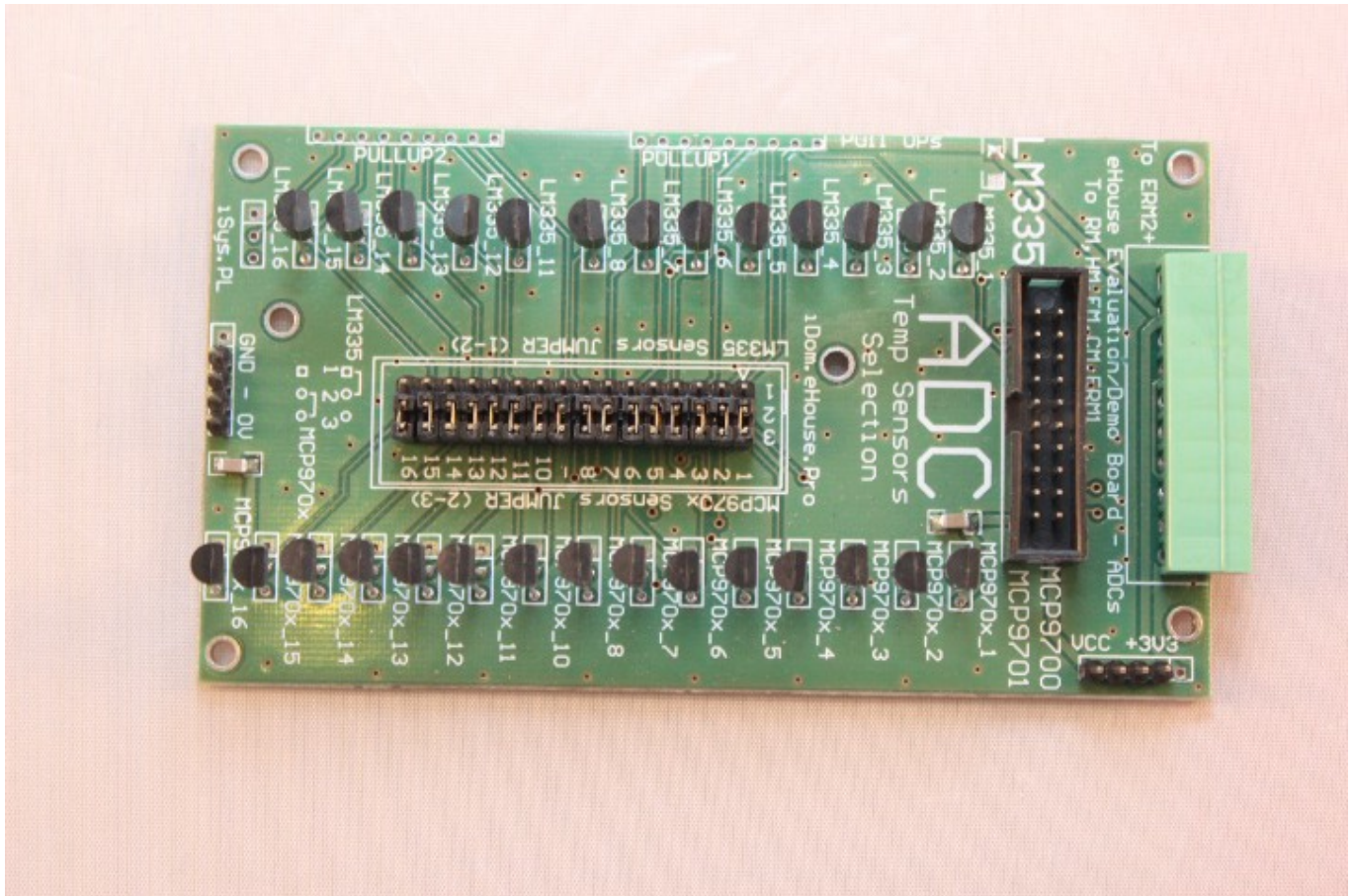
2.7.2 Inputs Demo Board – DEMO-IN



Main Functions of Input Demo Board:

- ✓ 12 micro switch for testing and evaluating inputs of eHouse Controllers
- ✓ Build in 12 micro switch connected to IDC-14 pin (RM inputs)
- ✓ switch compatible to RM, RM (Normally Opened)

2.7.3 ADC Measurement Demo Board – DEMO-ADC



Main Functions of Input Demo Board:

- ✓ 14 LM-335 temperature sensors selected via jumpers
- ✓ 15 MCP9700 temperature sensors selected via jumpers
- ✓ IDC-20 socket for ADC inputs compatible with eHouse Controllers
- ✓ 10-pin socket for ADC inputs compatible with eHouse Controllers

For evaluation Infrared support please use IR external panel - IR-EXT

2.8. Boxes and mounted switch-boards.

2.8.1 MINI box for RM Switch-board (18 outputs 230V/16A) - SWBOX18





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Metal installation box for switch-board montage type in the room / storey.

Size 458*308*115 mm with front frame / 406*254*110 mm without front frame

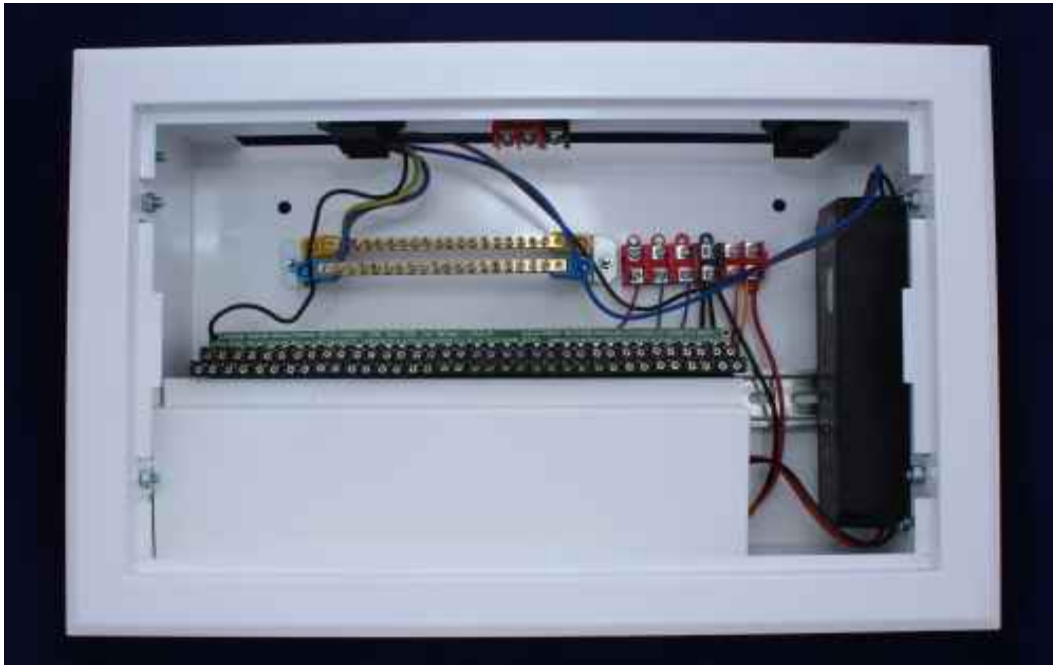
Consists of components:

- ✓ 1 DIN/TH rail for 18-22 modules for installation MP-18 relay modules
- ✓ 2 rails of 2*18 for neutral and safety cables
- ✓ removable front frame with door (left/right) with key closure
- ✓ threaded wholes for eHouse LED 12V/8A power supply (3 combinations)
- ✓ threaded wholes for installation various RM controllers
- ✓ metal shield/cover for electronic and low voltage part of installation
- ✓ threaded wholes for screwed connectors of external wires 230V and LED

2.8.2 MINI Switch-board for RM (18 intelligent outputs 230V/16A) - MINIRM18

Mounted eHouse RS-485 smart home MINI Switch-board for rooms, based on RoomManager, ready to install in the building. It contains complete set of accessories and components of single segment of eHouse One installation:

- ✓ metal switch-board box SWBOX18
- ✓ RoomManager controller RMMini / RMMP18
- ✓ DIN/TH relay module with relays and sockets 18*230V/16A - MP18
- ✓ IR control panel
- ✓ Switching power supply 230V=>12V/8A for eHouse and LED lights (eHousePSLED)
- ✓ Screwed connector for 230V cables
- ✓ Screwed connector for LED lights
- ✓ mounted low voltage cables (IDC-14, IDC-16 flat cables) – Optional
- ✓ mounted temperature sensors with cables 8*10m - Optional



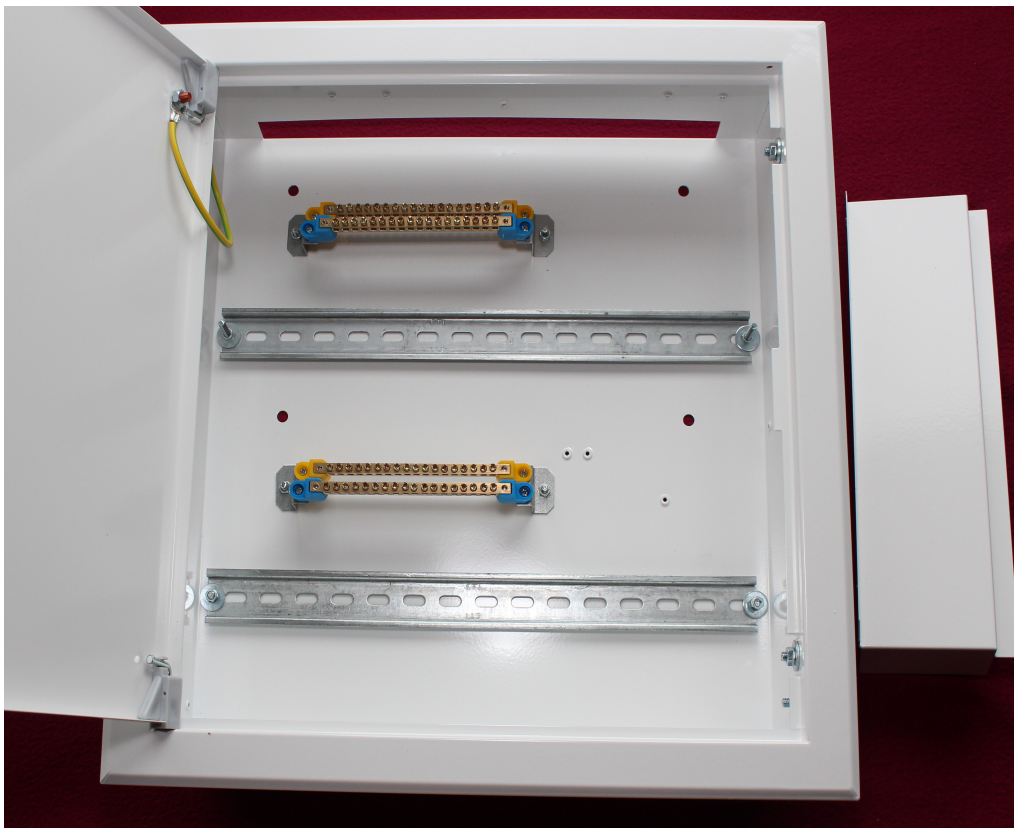
2.8.3 MIDI box for RM Switch-board (32 outputs 230V/16A) – SWBOX36

Metal installation box for switch-board - montage in the room/storey

size: 458*468*115 mm with front frame / 406*414*110 mm without front frame.

Contains:

- ✓ 2 DIN/TH rails for 2*(18-22) modules for installation MP-18 relay modules
- ✓ 4 rails of 4*18 for neutral and safety cables for 230V
- ✓ removable front frame with door (left/right) with key closure
- ✓ threaded holes for eHouse LED 12V/8A power supply (3 combinations)
- ✓ threaded holes for installation RM controller
- ✓ metal shield/cover for electronic and low voltage part
- ✓ threaded holes for screwed connectors of external wires: 230V and LED



2.8.4 MIDI Switch-board for RM, RM (32 intelligent outputs 230V/16A) - MINIRM32

Mounted eHouse RS-485 smart home MIDI Switch-board for rooms/storey based on RoomManager, ready to install at the building. It contains complete set of accessories and components of single segment of eHouse RS-485 installation:

- ✓ metal switch-board box SWBOX36
- ✓ RoomManager controller RMMini / RMMP18
- ✓ 2 DIN/TH relays modules with relays and sockets 2*18*230V/16A - MP18
- ✓ IR control panel
- ✓ switching power supply 230V=>12V/8A for eHouse and LED lights (eHousePSLED)
- ✓ screwed connector for 230V cables
- ✓ screwed connector for LED lights
- ✓ mounted low voltage cables (IDC-14, IDC-16 flat cables) – optional
- ✓ mounted temperature sensors with cables 8*10m - optional





2.9. "eHouse" Software Package

Ehouse RS-485 system is also equipped in auxiliary software for many operating systems including configuration, management, control, visualization, graphical control, web browser support, integration to other systems interfaces

2.9.1 eHouse RS-485 Windows package

- ✓ monitoring devices state
- ✓ allows easy, intuitive, secure configuration, naming of whole eHouse system from PC
- ✓ eHouse system event editing and creating
- ✓ scheduler editing and programming
- ✓ generating images for visualization purposes
- ✓ creating eHouse system logs
- ✓ decoding IR remote controller signals
- ✓ updating new firmware and configuration to all controllers



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2.9.2 Linux software package eHouse4cServer (eHouse.PRO) binary

eHouse4cServer assures supervision and integration of all versions of eHouse system.

Currently supported Linux versions:

- ✓ RaspberryPi or other based on ARM11
- ✓ x64
- ✓ x86
- ✓ Other Linux boxes may be developed depending on availability on the market

Main Functions (in reference to eHouse RS-485)

- ✓ Web Browser integration
- ✓ Apache Web Server integration (TCP Server)
- ✓ TCP Servers for panels connection
- ✓ eHouse1 support for integration
- ✓ eHouse.PRO support for integration
- ✓ eHouse4CAN support for integration
- ✓ Implements SMS hardware gateway support for SMS reception and transmission
- ✓ HTML requests support to control other systems, applications, programs
- ✓ Update configuration of eHouse4CAN controllers
- ✓ Generate automatic visualization of each eHouse controller
- ✓ TCP server for integration to other systems
- ✓ Supports Onkyo Audio-Video systems via Ethernet
- ✓ Supports Denon, Marantz Audio-Video systems via Ethernet
- ✓ Process IR control signals received from any controllers

eHouse4cServer are under constant development and functionality may change without notice

2.9.3 eHouse4Apache Module

- ✓ Enables integration eHouse4cServer with Apache WWW server
- ✓ transfer data between web browser and eHouse4cServer
- ✓ transmit events, commands, configuration
- ✓ send statuses to web browser



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2.9.4 Android (Java) - Control Panel Software since 4.0.0 (eHouse4Android)

eHouse4Android application is supported by various hardware devices eg.

- ✓ Pods
- ✓ Pads
- ✓ SmartPhones
- ✓ SmartTV

Main functions:

- ✓ Text control
- ✓ Voice control (Speech recognition)
- ✓ graphical control
- ✓ Online status via TCP, UDP (Local Network)
- ✓ Graphical visualization individually designed
- ✓ Graphical visualization automatic for each eHouse Controller
- ✓ Control via WiFi, Ethernet, LAN, Internet, SMS, eMail
- ✓ Online status via WiFi, Ethernet, LAN, Internet
- ✓ Supports eHouse 1, eHouse LAN, eHouse.PRO versions



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2.9.5 Java - PC Control Panel Software (eHouse4Java)

- ✓ Linux
- ✓ Windows
- ✓ other Java enabled system

Main functions:

- ✓ Text control
- ✓ Graphical control
- ✓ Online status TCP, UDP (Local Network)
- ✓ Graphical visualization individually designed
- ✓ Automatic graphical visualization for each eHouse Controller
- ✓ Control via WiFi, Ethernet, LAN, Internet, eMail
- ✓ Online status via WiFi, Ethernet, LAN, Internet
- ✓ TCP server for connecting external panels
- ✓ TCP server for OpenRemote support
- ✓ Supports eHouse 1, eHouse LAN, eHouse.PRO versions



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2.9.6 Windows Mobile 6.x+ .Net, .Net Compact Framework - Control Panel for devices (Mature)

- ✓ Pods
- ✓ Pads
- ✓ SmartPhones

Main functions:

- ✓ Text control
- ✓ Graphical control
- ✓ Online status TCP, UDP (Local Network)
- ✓ Graphical visualization individually designed
- ✓ Automatic graphical visualization for each eHouse Controller
- ✓ Control eHouse system via WiFi, Ethernet, LAN, Internet, SMS, eMail
- ✓ Online status via WiFi, Ethernet, LAN, Internet
- ✓ Supports eHouse 1, eHouse LAN versions



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2.9.7 JavaScript script - for Web browser client side support

- ✓ online status reception via JSON, data update
- ✓ online text control
- ✓ online graphical control
- ✓ online graphical visualization
- ✓ sending control commands (events) to eHouse system
- ✓ supports eHouse 1, eHouse LAN, eHouse.PRO versions
- ✓ supports SVG (Scalable Vector Graphics), XML



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2.9.8 CorelDraw VBA script - for creating visualizations for all control panels

- ✓ WebBrowser: HTML, SVG, XML
- ✓ Custom programmed formats (text)
- ✓ Windows XP, Vista, 7, 8 - PC, Pods, Pads
- ✓ Windows Mobile .Net, .Net Compact Framework - Pods, Pads, Smartphones
- ✓ Java - visualization and graphical control for PCs Java enabled platforms
- ✓ Android - visualization and graphical control for SmartPhones, Pods, Pads, SmartTV
- ✓ supports eHouse 1, eHouse LAN, eHouse.PRO versions
- ✓ supports templates



2.10. Programming libraries and code sources for development

For eHouse system developers and members of eHouse Alliance we offer programming libraries and scripts for most of operating systems:

- ✓ Windows XP, Vista, 7, 8, .Net
- ✓ Windows Mobile 6.x,7,8 .Net Compact Framework
- ✓ Linux x86, x64, ARM, RaspberryPi
- ✓ Java enabled platforms and operating systems
- ✓ Java Mobile for PDAs, Palmtops, Smartphones
- ✓ Web Server (Apache) modules
- ✓ Web Browser Integration scripts
- ✓ OpenRemote.Org integration
- ✓ Android

Libraries and scripts are in most important programming languages:

- ✓ Delphi, Pascal
- ✓ C,C++
- ✓ C#, .Net, .Net Compact Framework
- ✓ Java, Java Mobile (MIDP)
- ✓ Android (Java)
- ✓ VBA – Visual Basic
- ✓ PHP
- ✓ SVG, XML
- ✓ HTML
- ✓ JavaScript

Libraries are individually distributed base on license agreement and fees.



3. Appendix

3.1. Additional features of eHouse RS-485 system

- ✓ Support of PC computer together with eHouse software package for configuration, visualization, graphical control, communication gateways, continuous system state monitoring and logging
- ✓ Possibility of individual (end user - "Do It Yourself") and complete design (companies solutions based on eHouse controllers), configuration and installation
- ✓ Usage common electric switches, sensors, executive devices (without dedicated devices with build-in logic) for lowest costs
- ✓ Possibility to upgrade firmware of eHouse controllers from PC in working installation
- ✓ Possibility to implement individual / dedicated firmware for Vendors and third party cooperatives
- ✓ Possibility of individual programming (under PC computer, PC boards, Mobile Panels, Pads, Smartphones) and implementing own and dedicated control algorithms
- ✓ Possibility of creating individual images for visualization and graphical control for multiple methods in CorelDraw
- ✓ Many installations variants (low budget, comfort, economic, maximal, VIP / dedicated, centralized, decentralized, with / without PC supervision)
- ✓ eHouse Controllers are large/medium range low voltage (12V/ ~0.1A), low power electronic controllers for cost efficiency. This enables self installation (DIY), servicing and do not require local regulatory approvals, certification, conformance etc. eHouse requires external Relays or drivers to control external 230V devices.
- ✓ eHouse controllers are sold as electronic modules (without covers), thus it do not impose final equipment or arrangement of building
- ✓ For common applications external low costs relays modules containing (relays 230V/10A) can be used. For inductive, high power, three phase device - special relays are necessary.
- ✓ eHouse system contains binary software Windows XP+, Linux, Android, Windows Mobile (*), Java Platforms, WWW Web Browser, Apache support
- ✓ eHouse software library, templates for vendors development based on license agreement (Delphi Pascal, C, C++, C#, .Net, .Net Compact Framework, Java,



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Java Mobile, HTML, SVG, XML, JavaScript, PHP, Visual Basic Script, Apache module).

✓ Free eHouse open-source libraries for system integration, implementing individual algorithms (Delphi Pascal, C, C++, C#, .Net, .Net Compact Framework, Java, Java Mobile, HTML, SVG, XML, JavaScript, PHP, Visual Basic Script)



3.2. Management of eHouse system

eHouse Home Automation System can be manage and controlled from:

- ✓ Web Browser WWW
- ✓ PC Computer, Pads, Pods, Touch screen panels - eHouse software package (Windows XP, Vista, 7, 8, Linux, Java)
- ✓ Practically Any Mobile phone, PDA, Smart Phone, Touch Phone, Pod, Pad, Smart TV thanks to software package: Android 4+ (Java), Windows Mobile 6.x+ (*), Java Mobile MIDP (*) - No dedicated panels necessary
- ✓ IR Remote Controller - supported SONY standard protocol (SIRC) (using common SONY remote controller, universal, smart IR panel eg. Logitech, Philips, etc)
- ✓ Advanced scheduler, calendar
- ✓ Common electric switches
- ✓ Touch sensors

(*) Mature solutions available for vendors for development

3.3. Systems and devices controlled by eHouse

eHouse system can control and integrate a lot of external devices and systems:

- ✓ internal and external lights (any voltage AC / DC, LEDs, RGB, PWM dimmers for 12VDC lights)
- ✓ temperature measurement, regulation, management in rooms
- ✓ individual, central, floor, convector or ventilation heating
- ✓ pumps, motors, ventilators, executive devices, cut-off
- ✓ any electric and electronic devices (on / off)
- ✓ HiFi, Audio, Video systems via remote controller signal learn and send
- ✓ VideoLAN application from IR remote controller and eHouse system
- ✓ rollers, shade awnings, gates, gateways, drives, servo-motors
- ✓ integrated security system with SMS notification managed outside controlled zone
- ✓ Control external Devices, Systems, Applications, Programs by HTML Requests



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3.4. Screenshots

http://home-automation.isys.pl/all,eHouse_smart_home_visualization_galery.htm

http://www.isys.pl/all,inteligenty_dom_budynek_galeria_software.htm

3.5. Comparison table of eHouse Versions

Many eHouse versions (RS-485, LAN, CAN, PRO) enables individual selection depending on preference, budget, architecture, amount of controlled points and many aspects to achieve most accurate home automation system to user needs. All versions are integrated by eHouse.PRO server so it can be any combination of hybrid instalation and works under the same eHouse Control Panel software applications on different operation systems.



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Item / Architecture	PRO	RS-485 supervision PC / CM	LAN	CAN (EC)
Main Interface	Ethernet 100/10	RS-485 full duplex	Ethernet (10Mb)	CAN (Controller Area Network)
Interface Speed	100Mb	115.200kb	10Mb	100kb
Maximal Range Total	20m to Ethernet Switch	1200m segment, serially + tRMinators (theoretical)	20m to Ethernet switch	500m segment, serially + tRMinators (theoretical)
Maximal range star topology	20m	200m must be tested individually, 1 tRMinator	20m	100m must be tested individually, 1 tRMinator
Cable Type	UTP-8	UTP-8	UTP-8	UTP-8, AWT-6
Expandable segments	No need	+ unlimited (Hardware) / -	No need	+ unlimited (Hardware)
Controllers per segments	4	250 / 250	250	125
Total controllers in system	4	125 supported by apps ~65000 / 30	250 supported by apps / ~65000 theoretical	125 supported by apps / ~10000 theoretical
RoomManager	-	+	+	-
Rollers / Gates Control	128(256)	EM (13) / CM (40)	CM (40)	EC (2)
Rollers Programs	256	24 / 24	24	-
Max Rollers Controllers	1	1*EM / 1*CM	4*CM	125*EC
HeatManager	-	+	- / HM via CM	-
Stand-alone Security System	+	- / + CM	CommManager (CM)	- / Software eH4cServer implementation
Alarm Sensors Count	128/(256)	- / CM (48)	CM (48)	EC (4)
Max Alarm Sensors Controllers	1	- / 1 * CM	4 * CM	125 * EC
Security Zones	256	- / CM (21)	CM (21)	Individual Settings
Alarm Horn Output	Hardware	- / Hardware CM	Hardware CM	Software + Firmware Event
Alarm Warning Output	Hardware	- / Hardware CM	Hardware CM	Software + Event
Early Warning Output	Hardware	- / Hardware CM	Hardware CM	Software + Event



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Item / Architecture	PRO	RS-485 supervision PC / CM	LAN	CAN (EC)
Monitoring Output	Hardware	- / Hardware CM	Hardware CM	Software + Event
Silent Alarm	Hardware	-	-	-
GSM/SMS	Hardware	SmsGateway.exe / CM (Hardware)	CM (Hardware)	eH4C + Hardware SMSGate
Email control	-	EmailGate.exe / -	-	-
Ftp control	-	FtpGate.exe / -	-	-
BlueTooth	-	BlueGate.exe + RM BlueTooth Module	-	-
Mifare card reader - (attendance)	-	Optional RM expansion module	-	-
Access Control	-	RM + Mifare RFID	External RFID + Software	External RFID + Software
Function Limitation	-	RM + Mifare RFID	-	-
Digital Inputs	128/(256)	RM (12), EM (12)	RM (12), CM/LM (48)	EC (4)
Inputs support touch sensors / switches	-	-	-	+
Inverted inputs support	+	-	+	+
Authorization to system	Challenge-response, xored password, plain password, none, Apache security	Not required	Challenge-response, xored password, plain password, none	Based on Apache web server security
Supervising Host	Not Required	Required PC, CM, computer board, uC	Not Required	Not Required
Communication gateway to LAN	Not Required	Required PC (RS232<=>485) + eHouse.exe/eH4C, computer board, uC / CM not required	Not Required	Required (RS232<=>CAN) + linux Box + eH4C
Windows XP, Vista, 7, 8 app Manage&Control (M), Config (C), Visualization (V), Status (S), Graphical Visualization(G)	-MCVSG	+M +C +V +S +G	+M +C +V +S +G	+M +C +V +S -G only via WB
Linux	+MCVSG (eH4c)	+MVSG -C (Java)	+MVSG -C (Java)	+MVS -CG (eH4c +



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Item / Architecture	PRO	RS-485 supervision PC / CM	LAN	CAN (EC)
		+MVSG -C (eH4c + WB)	+MVSG -C (eH4c + WB)	WB) via WB only
Web Browser	+MCVSG	+MVSG -C (eH4c + WB)	+MVSG -C (eH4c + WB)	+MVSC -G (eH4c + WB)
Java Enabled Systems	+MVSG -C	+MVSG -C	+MVSG -C	-
Windows Mobile	-	+MVSG -C (.Net, .Net CF)	+MVSG -C (.Net, .Net CF)	+MVSC -G via WB only
Android	+MVSG -C (Java App)	+MVSG -C (Java App)	+MVSG -C (Java App)	+MVSC -G via WB only
Communication gateway to the Internet	not required	Required PC (RS232<=>485) + eHouse.exe, computer board, uC / for CM not required	Control not required / status of all controllers required LinuxBox + eH4C	Required (RS232<=>CAN) + linux Box + eH4C
Analog/Measurement Inputs ADC	-	RM (8), HM (16)	RM (8)	EC (2)
ADC measurement Range	-	<0..5V>	<0..3.3V>	<0..5> or <0..3.3V>
Digital Outputs	128/(256)	RM (24)	RM (24)	EC (4)
Single PWM dimmers	-	RM, EM, HM (3)	RM (3)	EC (4)
RGB dimmers	-	RM (1)	RM (1)	EC (1) + White
Build-In Power PWM MOSFET Dimmers Drivers	-	- , +	- , +	+
Power supply@ average current	5V/2A	7-12V@0.2A+Relays	6..12V/0.3A+Relays	7V..25V/0.21A..0.07A
Power supply type	Linear/Switch	Linear (Lin)	Lin/SW (Switch)/ Lin + SW	Lin / SW / SW + Lin
Relays	External	External (5V..12V) – DIN 230V/16A - single	External (5V..12V) – DIN 230V/16A - single	4 - Build-In (5V) 230V/5A or 2 - External Module (5V) 230V/20A
Output + Dimmers Programs	256	24	24	-
ADC Programs	-	together with outputs programs	12	-
Scheduler	5000	248	128	-



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Item / Architecture	PRO	RS-485 supervision PC / CM	LAN	CAN (EC)
RTC - synchronization	SNTP	Firmware - main host	Firmware - SNTP	Firmware - eH4c
Additional Interfaces	RS232,RS-485 (eHouse1), USB	RS232,SPI, I2C	RS232,SPI, I2C	RS232, SPI
Infrared Transmitter (IR)	-	+ 23 IR standards	+ 23 IR standards	+ 23 IR standards
Infrared Receiver (IR)	-	+ Sony SIRC standard 12,15,24b	+ Sony SIRC standard 12,15,24b	+ Sony SIRC standard 12,15,24b



4. Documentation / Do It Yourself – English Version

Most current documentation in English are located at producer home page:

http://home-automation.isys.pl/ehouse_doc.intelligent_house_building_doc.htm

Source code examples, templates, libraries: <http://isys.pl/download/>

Do It Yourself information: <http://smart.ehouse.pro/> - eHouse Blog

Details DIY, Programming, Designing, Instalation, Configuration, Articles, tips & tricks:

<http://smart.ehouse.pro/category/applications/> - eHouse applications

<http://smart.ehouse.pro/category/boilerroom/> - Boiler Room & Central Heating

<http://smart.ehouse.pro/category/building-management/> - Building Management General Info

<http://smart.ehouse.pro/category/design/> - eHouse Design, solutions, demos

<http://smart.ehouse.pro/category/ehouse4can/> - eHouse4CAN – Installation, Configuration

<http://smart.ehouse.pro/category/ehouse-lan/> - eHouse Ethernet – Installation, Configuration

<http://smart.ehouse.pro/category/ehouse-rs-485/> eHouse 1 – Installation, Configuration

<http://smart.ehouse.pro/category/ehouse-pro/> - eHouse.PRO – Installation, Configuration

<http://smart.ehouse.pro/category/renewableenergy/> - free and renewable energy usage

<http://smart.ehouse.pro/category/general/> - eHouse general info

<http://smart.ehouse.pro/category/integrationcontrol/> - Integration to other systems, devices, A/V

<http://smart.ehouse.pro/category/openremote/> - Integration with OpenRemote.ORG

<http://smart.ehouse.pro/category/os/linux/> - Linux programming for eHouse - „C”

<http://smart.ehouse.pro/category/os/windows/> - Windows programming

<http://smart.ehouse.pro/category/programming/android/> - Mobile Devices PADs, SmartPhone, SmartTV, Android programming, screenshots for eHouse

<http://smart.ehouse.pro/category/programming/apache/> - Apache integration to eHouse.PRO server

<http://smart.ehouse.pro/category/programming/csharp/> - C#, .Net, .Net CF programming

<http://smart.ehouse.pro/category/programming/c/> - C programming for Linux

<http://smart.ehouse.pro/category/programming/delphi/> - Delphi, Pascal programming for Windows



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<http://smart.ehouse.pro/category/programming/java/> - Multiplatform Java programming, screenshots

<http://smart.ehouse.pro/category/programming/windows-phone/> - Windows Mobile, Phone programming

<http://smart.ehouse.pro/category/programming/www/> - Web browser support for eHouse

<http://smart.ehouse.pro/category/visualization/> - Creating individual visualization and graphical control views



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5. Contact and Cooperation

iSys – Intelligent Systems

Wygoda 14, 05-480 Karczew

Poland

tel: +48504057165

email: is@isys.pl

GPS: (N:52 st 2min 44.3s; E:21st 15min 49.19s)

[Map](#)

Producer, manufacturer, developer home page in English:

<http://home-automation.isys.pl/> - Producer homepage

<http://smart.ehouse.pro/> - Do It Yourself, designing, development, examples, applications

<http://eHouse.Biz/> - eHouse smart home producer online shop

http://www.isys.pl/?home_automation - Other Languages (for information only not for reference)

Serwisy eHouse w języku polskim:

<http://inteligentny-dom.ehouse.pro/> Zrób to sam, programowanie, przykłady, projektowanie, zastosowania

<http://www.isys.pl/> - strona WWW producenta

<http://ehouse.net.pl/> - sklep internetowy producenta inteligentnego domu eHouse

<http://www.ehouse.pro/> - Automatyka domu, budynku, hoteli, pensjonatów

<http://sterowanie.biz/> - Sterowanie domem, budynkiem, mieszkaniem



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6. Notes:



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