SMARTEH®
LIVING SYSTEMS

GENERAL BUILDING AUTOMATION CATALOGUE

Product Overview

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Written by SMARTEH d.o.o.

GENERAL BUILDING AUTOMATION CATALOGUE
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Smarteh Building Automation Product Line

Smarteh controllers are developed to provide building energy efficiency. On the other hand Smarteh automation systems are designed with special care to provide guest comfort.

Openness & connectivity

Modular configurations and communication possibilities allow you to create high performance and economical solution at the same time.

Simplicity

Smarteh controllers enables simple adjustment towards customer needs and demands.

Effectiveness

Parameterization is a candy for the integrators. It gives them possibility to simplify commissioning by making standard software for similar applications. On site commissioning is reduced to simple parameter settings.

Comfort & economy

We offer cost effective and innovative solutions to provide comfort and energy savings. In building automation many types of controls can be used. From classic light switches up to Smarteh color LCD touch button panels and touch screens. Energy savings are achieved by effective management of lighting, heating, air-conditioning, access control and other appliances, connected and controlled through our automation system.

1.1 STANDARDS & PROVISIONS

	LPC-2 LPC-3
EMC	EN 61000-6-3:207+A1:2011, EN 61000-6-1:2007, EN 61000-3-2: 2006+A1:2009+A2:2009, EN 61000-3-3:2013
LVD	IEC61010-1:2010 (3rd Ed.), IEC 61010-2-201:2013 (1st Ed.)

1.2 ENVIRONMENT

		LPC-2 LPC-3
Temperature	Operation	0 to 50 °C
	Storage	-20 to 60 °C
Relative humidity		max. 95%, no condensation
Protection class		IP 30

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LPC-2 Programmable Controllers

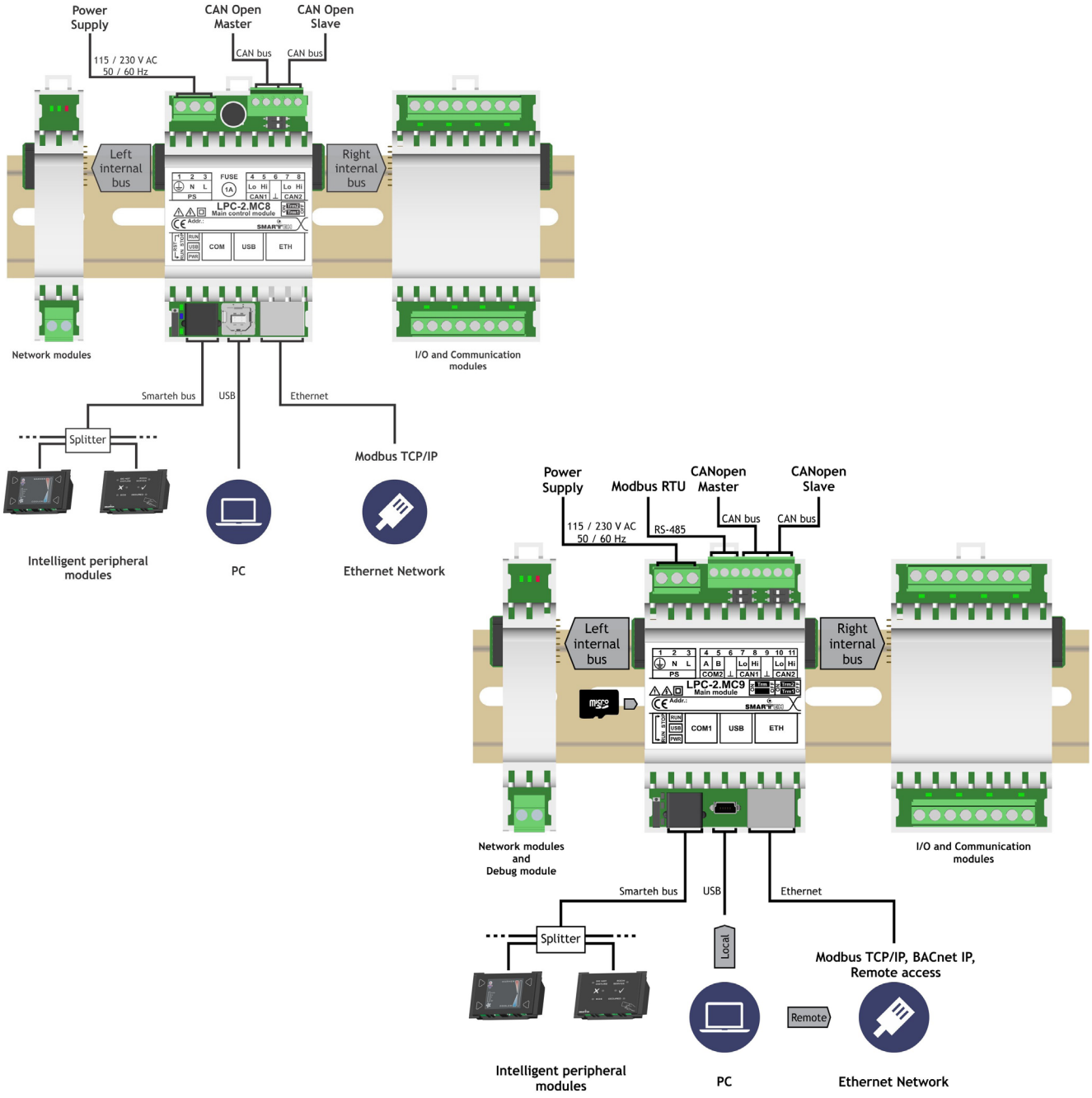
LPC-2 Programmable Controllers

Longo Programmable Controller LPC-2 is open programmable logic controller for use in building automation, supervision and control solutions. Controller is easy to use and supports all five IEC-61131-3 programming languages (FBD, LD, SFC, ST, IL). Modular LPC-2 controller architecture offers many different configuration options and communication possibilities.

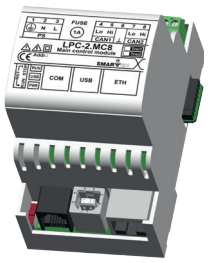
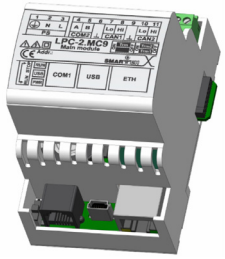
2.1. CONTROLLER CONFIGURATION BASICS

Main control module is the heart of LPC-2 system. Its purpose is to execute application program and to exchange data with I/O, communication and peripheral modules.

The controller is powered directly from the main power supply (115 / 230 V AC).



2.2. MAIN MODULES

	MAIN MODULES	
		
TECHNICAL DATA	LPC-2.MC8	LPC-2.MC9
Rated power supply	115 / 230 V AC, 50/60 Hz	
Power consumption of main module and bus supply	max. 24 W	
Number of I/O & communication modules supported	up to 7	
Number of intelligent peripheral modules supported (RFID, IR, LCD, VOC, wireless)	up to 16	
Real time clock	integrated	
Operating system	/	Linux
Processor	/	SOC ARM9 454 MHz
Memory	/	256 MB DDR2, 512 MB SLC NAND
Communication ports – Integrated ports	Smarteh bus Modbus TCP/IP (Slave) CANopen (Master & Slave)	Smarteh bus Modbus TCP/IP (Master & Slave) Modbus RTU (Master / Slave) BACnet IP (B-ASC) CANopen (Master & Slave)
Communication ports – Optional modules	LON FT-10*, EnOcean* IR DALI/DSI master GSM SMS	EnOcean* IR DALI/DSI master
Programming port	USB	USB, Ethernet (LAN, Internet)**
Programming SW	Smarteh IDE	
Programming standard	IEC 61131-3 (FBD, LD, SFC, ST, IL)	
Dimensions L x W x H	90 x 53 x 77 mm	

* Network modules are used to extend networking capability of controller units.

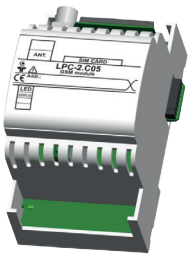
** Programming is possible through LAN network or internet.

2.3. NETWORK MODULE

LON


TECHNICAL DATA	LPC-2.NL2*
Power supply	from internal bus
Power consumption (bus)	0.5 W
Dimensions L x W x H	90 x 18 x 60 mm
Communication port	LonWorks
Communication protocol	LonTalk
Connection	screw type
Compliant to	LON TP/FT-10, 78 kbps
User defined	LON interface file *.xif
Configuration SW	LonMaker

2.4. COMMUNICATION MODULES

IR	GSM	ENOCEAN
For the IR (infra-red) communication modules see section 2.9.4 – Intelligent Modules		

TECHNICAL DATA	LPC-2.C05**	LPC-2.EO1
Power supply	from internal bus	
Power consumption (bus)	1 W	0.5 W
Functional description	communication extension	
Connection	wireless	wireless
Communication protocol	GSM SMS messaging	EnOcean
Functionality	master/slave	transceiver
Compliant to	GSM900 & GSM1800	868.3 MHz EnOcean radio
Limitations	up to 9 GSM nrs. (users)	various input & output devices
Configuration SW	GSM Manager	WinEtel, LPC Tester
Dimensions L x W x H	90 x 53 x 60 mm	90 x 18 x 60 mm

* LPC-2.NL2 is compatible with LPC-2.MC8 only.
** LPC-2.C05 is compatible with LPC-2.MC8 only.

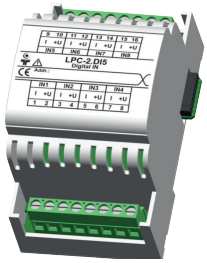
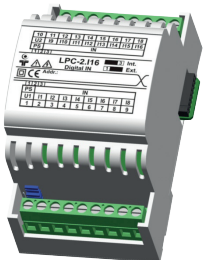
DALI/DSI

TECHNICAL DATA	LPC-2.DL1	LPC-2.DL2***
Power supply	from internal bus	from internal bus / external
Power consumption (bus)	2 W	7 W
Functional description	communication extension	
Connection	screw type	
Communication protocol	DALI or DSI	DALI, DALI2 or DSI
Functionality	master & power supply	
Compliant to	DALI & DSI	DALI, DALI2 & DSI
Limitations	up to 64 slave devices	up to 128 slave devices
Dimensions L x W x H	90 x 18 x 60 mm	

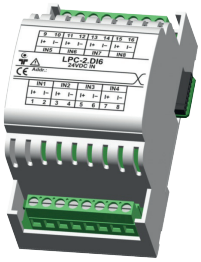
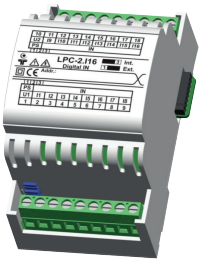
*** LPC-2.DL2 is compatible with LPC-2.MC9 only.

2.5. DIGITAL INPUT MODULES

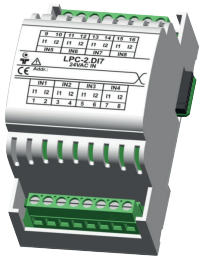
2.5.1. Voltage free digital inputs

VOLTAGE FREE (DRY) CONTACTS DIGITAL INPUTS			
			
TECHNICAL DATA	LPC-2.DI1	LPC-2.DI5	LPC-2.I16
Number of inputs	1	8	16
Voltage	24 V DC		
Voltage source	from internal bus		jumper selectable in 2 groups of 8 inputs: internal bus or external
Input threshold resistance	On: R < 5 kΩ, Off: R > 40 kΩ		
Power consumption (bus)	0.5 W	1.5 W	2.5 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

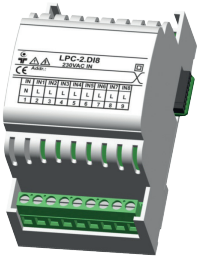
2.5.2. 24 V DC digital inputs

24 V DC DIGITAL INPUTS			
			
TECHNICAL DATA	LPC-2.DI3	LPC-2.DI6	LPC-2.I16
Number of inputs	1	8	16
Voltage	24 V DC		
Voltage source	external		jumper selectable in 2 groups of 8 inputs: internal bus or external
Input resistance	2.7 kΩ	3.6 kΩ	4.7 kΩ
Input threshold	On: U > 15 V, Off: U < 2 V		
Power consumption (bus)	0.25 W		
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.5.3. 24 V AC digital inputs

	24 V AC DIGITAL INPUTS	
		
TECHNICAL DATA	LPC-2.DI4	LPC-2.DI7
Number of inputs	1	8
Voltage	24 V AC	
Voltage source	external	
Input resistance	2.7 kΩ	3.6 kΩ
Input threshold	On: u > 15 V, Off: u < 2 V	
Power consumption (bus)	0.25 W	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm

2.5.4. 230 V AC digital inputs

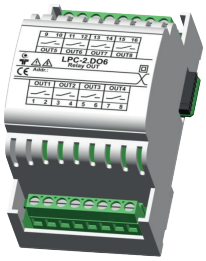
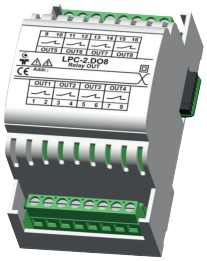
	230 V AC DIGITAL INPUTS	
		
TECHNICAL DATA	LPC-2.DI2	LPC-2.DI8
Number of inputs	1	8
Voltage	230 V AC	
Voltage source	external	
Input resistance	72 kΩ	200 kΩ
Input threshold	On: u > 150 V, Off: u < 20 V	On: u > 60 V, Off: u < 22 V
Power consumption (bus)	0.25 W	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm

2.6. DIGITAL OUTPUT MODULES

2.6.1. Relay digital outputs

RELAY DIGITAL OUTPUTS

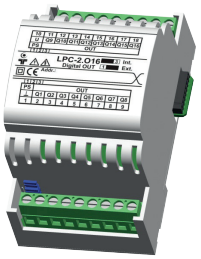


TECHNICAL DATA	LPC-2.DO2	LPC-2.DO3	LPC-2.DO6	LPC-2.DO8
Number of outputs	1		8	
Output type	relay, NO	relay, NC	relay, NO	relay, NC
Switching power (resistive load per output channel)	230 V AC/3 A, 30 V DC/3 A, 48 V DC/1 A For inductive loads use of suppression circuits is recommended			
Power consumption (bus)	0.5 W		2.75 W	
Dimensions L x W x H	90 x 18 x 60 mm		90 x 53 x 60 mm	

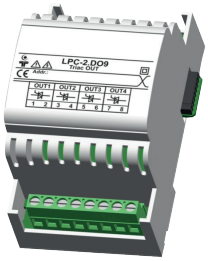
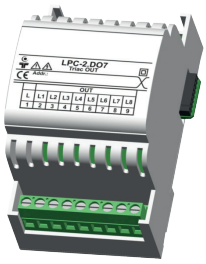
2.6.2. Transistor 24 V DC digital outputs

TRANSISTOR DIGITAL OUTPUTS

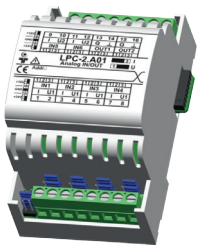
TECHNICAL DATA	LPC-2.DO1	LPC-2.O16	
Number of outputs	1	16	
Output supply	bus powered	bus powered	ext. power supply
Output type	transistor output		
Voltage	24 V DC		
Switching power on output	100 mA, short circuit proof, output powered from bus only	100 mA per module	500 mA per channel, 4 A per module
Max. load capacitance/channel	/	10 µF	
Power consumption (bus)	0.75 W	3 W	1 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.6.3. Triac 24 .. 230 V AC digital outputs

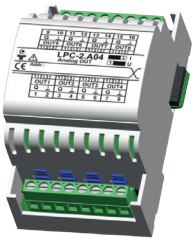
24 .. 230 V AC DIGITAL OUTPUTS			
			
TECHNICAL DATA	LPC-2.DO4	LPC-2.DO9	LPC-2.DO7
Number of outputs	1	4	8
Output type	zero crossing triac		
Voltage	24 .. 230 V AC (external power supply)		
Switching power on output channel	0.05 .. 1.8 A per channel		0.05 .. 0.9 A per channel, 1000 W per module
Switching frequency	1 Hz		
Power consumption (bus)	0.25 W	0.75 W	1 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.7. ANALOG MODULES

2.7.1. Analog inputs & outputs

	TEMPERATURE ANALOG INPUT	ANALOG INPUT & ANALOG OUTPUT
		

TECHNICAL DATA	LPC-2.A02	LPC-2.A01	
Number of inputs	2	6	
Number of outputs	/	2	
Input output type individually jumper selectable	/	voltage	current
Type of inputs	thermocouples E, J, K, N, R, S, T, NTC 10k, Pt100, Pt1000 & Ni1000	0 .. 10 V	0 .. 20 mA
Input connection	passive	passive / active, jumper selectable reference: GND, 24 V DC or 10 V DC	
Input resistance	/	10.7 kΩ	182 Ω
Input resolution	0.1 °C	3900 levels of full scale	
Measuring error of full scale	< ±1 %	< ±0.5 %	< ±0.1 %
Type of outputs	/	0 .. 10 V	0 .. 20 mA
Output resolution of full scale	/	450 levels	
Output accuracy	/	< ±0.1 %	< ±0.3 %
Power supply	from internal bus		
Power consumption (bus)	2 W	5 W	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

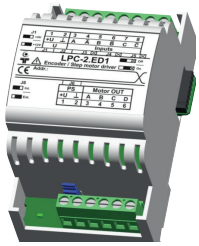
	ANALOG OUTPUT MODULES	
		

TECHNICAL DATA	LPC-2.A03		LPC-2.A04	
Number of outputs	2		8	
Output type individually selectable	voltage	current	voltage	current
Type of outputs	0 .. 10 V	0 .. 20 mA	0 .. 10 V	0 .. 20 mA
Output resolution of full scale	5000 levels			
Output accuracy of full scale	±2 %		±1 %	
Load resistance	R > 500 Ω	R < 500 Ω	R > 500 Ω	R < 500 Ω
Power supply	from internal bus			
Power consumption (bus)	1 W		5 W	
Dimensions L x W x H	90 x 18 x 60 mm		90 x 53 x 60 mm	

2.8. DEDICATED MODULES

2.8.1. Stepper motor and encoder

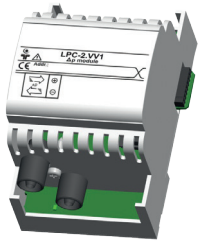
STEPPER MOTOR OUTPUT MODULE WITH ENCODER INPUT



TECHNICAL DATA	LPC-2.ED1*
Number of outputs/inputs	4 (1 step motor) / 6 (1 encoder)
Output type (motor)	bipolar stepper motor drive (A, B, C, D)
Output power supply	internal (bus) 24 V or external 5 .. 36 V DC, jumper selectable
Output rated load	up to 500 mA per channel with external power supply
Input type (encoder)	TTL with 4k7 Ω pull up to 5 V DC or RS-485 with 120 Ω termination, jumper selectable ($\bar{A}$, A, $\bar{B}$, B, $\bar{Z}$, Z)
Input frequency	up to 10 kHz
Input power supply	internal (bus), selectable 5 V DC or 12 V DC
Power consumption (bus)	1 W, no load connected
Dimensions L x W x H	90 x 53 x 60 mm

2.8.2. Differential pressure module

DIFFERENTIAL PRESSURE MODULE FOR AIR PRESSURE OR FLOW (VAV) MEASUREMENT



TECHNICAL DATA	LPC-2.VV1
Number of differential pressure	1
Pressure measurement range differential, non-polluted atmosphere	0 .. 1000 Pa
Pressure measurement error	< 0.5 % of full scale
Pressure measurement pipes	internal diameter 4.0 .. 4.5 mm rubber, plastic, silicone, ...
Pressure measurement resolution	1000 levels per full scale
Power consumption (bus)	0.5 W
Dimensions L x W x H	90 x 53 x 60 mm

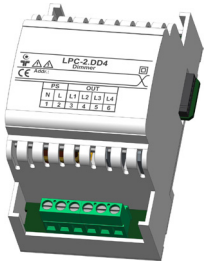
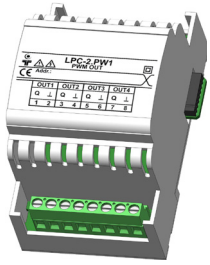
* LPC-2.ED1 is compatible with LPC-2.MC8 only.

2.8.3. Special digital outputs

	ADJUSTABLE VOLTAGE OUTPUT	DOOR LOCK OUTPUT
		

TECHNICAL DATA	LPC-2.SO2	LPC-2.DOL
Number of outputs	1	
Output type	adjustable voltage	high voltage start pulse, then hold
Output power supply	from internal bus	
Voltage	5 .. 12 V DC adjustable in 1 V step using DIP switch	pulse: 30 .. 50 V DC hold: 5.5 .. 6.5 V DC
Output load	0.7 A, 9 W	coil resistance ≥ 20 Ω, please check selected door lock for compatibility
Switching frequency	T > 5 s	
Power consumption (bus)	9 W	2 W
Dimensions L x W x H	90 x 18 x 60 mm	

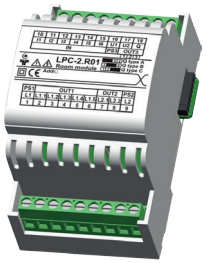
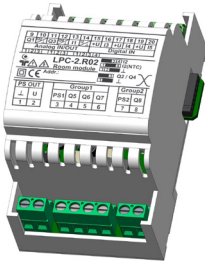
2.8.4. Dimmer outputs

	DIMMER OUTPUT		
			

TECHNICAL DATA	LPC-2.DD2*	LPC-2.DD4	LPC-2.PW1
Number of outputs	1	4	
Output type	triac current drive	MOSFET drive	control signal for PWM ballasts
Output power supply	external		internal
Rated load voltage	115 / 240 V AC 50/60 Hz		11 V
Rated load current	up to 1.5 A	1 x 0,9 A, 3 x 0,65 A	100 mA per channel
Power consumption (bus)	0.25 W	1 W	5 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

* LPC-2.DD2 is compatible with LPC-2.MC8 only.

2.8.5. Room modules

ROOM CONTROL DIGITAL INPUT AND OUTPUT MODULE		
		
TECHNICAL DATA	LPC-2.R01	LPC-2.R02
Number of inputs	6 digital	2 analog, 3 digital
Number of outputs	7 + 1	4 analog, 4 digital, 1 power supply
Type of inputs	6 voltage free (dry) contact inputs	3 voltage free (dry) contact, 1 analog 0 .. 10 V 1 analog 0 .. 10 V or NTC inputs
Digital inputs voltage	24 V DC internally supplied	
Digital inputs threshold resistance	On: R < 5 kΩ, Off: R > 40 kΩ	
Type of outputs	7 triac AC make contact in two groups (5 + 2), 1 door lock DC output	4 triac AC make contact in two groups (3 + 1) 4 analog 0 .. 10 V, 1 power supply 24 V AC/DC
Triac output voltage	24 .. 230 V AC	
Output current per triac channel	0.9 A	group1: 0.9 A, group2: 3 A
Max. sum triac output load	1000 W	
Door lock output voltage	pulse: 20/35/50 V DC hold: 6.5 .. 7.5 V DC	/
Door lock output max. load	20 Ω	/
Power supply	from right internal bus external power supply for triac output	
Power consumption (bus)	4 W	max 9 W
Dimensions L x W x H	90 x 53 x 60 mm	

2.9. INTELLIGENT PERIPHERAL MODULES

2.9.1. Temperature & fan control panels

	TEMPERATURE CONTROL	TEMPERATURE & FAN CONTROL
		

TECHNICAL DATA	LPC-2.P02V	LPC-2.P01V
Basic functionality	control panel and regulator for room heating and/or cooling	
Room temperature sensor	built in, accuracy ±1 °C	
Light intensity sensor	used for automatic LED intensity adjustment, can also be used in application SW	
Temperature set	2 push buttons (WARMER, COOLER)	
Temp. set point display	10 blue LED	
Fan speed selection	/	1 push button
Fan set point display	/	4 blue LED
Fan support	/	3 speed or step less fan
Piping system	2 or 4 pipe systems supported	
Frost protection	< 5 °C	
Door / window open switch	supported	
Economy operating mode	supported	
Housing color	black or white + customer selectable front plate**	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	74 x 48 x 25 mm	

	LCD TEMPERATURE CONTROL	LCD TEMPERATURE & FAN CONTROL
		

TECHNICAL DATA	AVAILABLE VERSIONS	
Push buttons + Temp. sensor	LPC-2.DP2B	LPC-2.DP1B
Push btn + Temp. + RH sensor	LPC-2.DP2BH	LPC-2.DP1BH
Basic functionality	LCD control panel and regulator for room heating and/or cooling	
Measuring accuracy	temp. range 0 .. 50 °C: accuracy ±1 °C, RH range 0 .. 95 % RH, accuracy < 5 % of full scale	
Room temperature display	numeric, on LCD, resolution 0.5 °C	
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW	
Temperature set	2 + 2 touch buttons	2 buttons****
Temp. set point display	numeric and graphic, on LCD***	
Fan speed selection	/	2 buttons
Fan set point display	/	graphic, on LCD
Fan support	/	3 speed or step less fan
2 and 4 pipe system support	yes	
Frost protection	< 5 °C	
Door/window open switch	supported	
Economy operating mode	supported	
Front plate color	black or white + customer selectable front plate**	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Power supply	over communication cable	
Power consumption	1 W	
Dimensions L x W x H	75 x 49 x 29 mm	

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter.

*Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.DPxxx and LPC-2.POxV modules:

- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Ave
- Tem – Pure, Line, Soft
- Master
- Bticino - Living, Light

**Color of the front plate can be done in different colors.

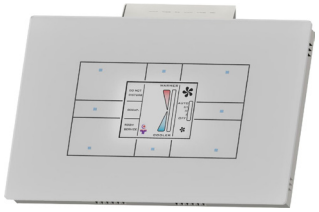
***Temperature set point is temporarily displayed while LCD display is in SET mode.

***Numeric value of temperature can be displayed or hidden - user programmable.

****To change settings on LCD panel with touch buttons press any button for approximately one second, to switch LCD to SET mode.

2.9.2. Glass LCD temperature, fan & RFID access control panel

LCD TEMPERATURE, FAN & RFID ACCESS CONTROL

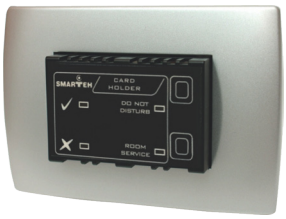


TECHNICAL DATA	LPC-2.DT3
Basic functionality	LCD color display with 8 control touch buttons and temperature, fan and access control features. Picture on display, functionality of the touch buttons, status LEDs and buzzer can be adapted to the customer needs.
Buttons	8 touch buttons
Signalization LEDs	8 status LEDs
Measuring accuracy	temp. range 0 .. 50 °C: accuracy ±1 °C, RH range 0 .. 95 % RH, accuracy < 5 % of full scale
Room temperature display	numeric, on LCD, resolution 0.5 °C
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW
Temperature set	2 touch selectable buttons
Temp. set point display	numeric and graphic, on LCD*
Fan speed selection	2 touch selectable buttons
Fan set point display	graphic, on LCD
RFID reader type	ISO / IEC 14443 A / MIFARE 13.56 MHz
RFID read/write NDEF data type	MIFARE classic 1k, 2k, 4k
Front plate	glass, painted in black or white
Mounting	flush mount**, panel mount
Communication connector	RJ-12 (splitters and interconnection cables needed)
Power supply	over communication cable
Power consumption	2 W
Dimensions L x W x H	118 x 160 x 27 mm

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter.

*Numeric value of temperature can be displayed or hidden - user programmable.
*Temperature set point is temporarily displayed instead of measured temperature while LCD display is in SET mode.
**Fasten mounting frame with screws into: TEM VM4, PM4, DM40 Elettrocanalli ECS37104 *Legrand 801 42 or similar

2.9.3. RFID access control panels

	ACCESS CONTROL RFID CARD READERS		ACTIVE RFID CARD HOLDER
			
TECHNICAL DATA	LPC-2.ID3V	LPC-2.ID1V	LPC-2.ID2V
Basic functionality	identification, door unlocking etc.	hotel room door unlocking and room status signalization	RFID card holder, presence identification and room status setting
RFID reader type	EM4100 - EM Marin (Manchester 64 read only) 125 kHz		
Signalization LEDs	OK (access granted) FAULT (access denied)	OK (access granted) FAULT (access denied) OCCUPIED DO NOT DISTURB ROOM SERVICE SOS	DO NOT DISTURB ROOM SERVICE
Acoustic signalization	short beep: OK long beep: FAULT	short beep: OK long beep: FAULT	/
Buttons functions	/		DO NOT DISTURB ROOM SERVICE
Digital input			mechanical switch for card presence
Housing color	black or white + customer selectable front plate**		
Mounting	flush mount*		
Communication connector	RJ-12 (splitters and interconnection cables needed)		
Power supply	over communication cable		
Power consumption	0.5 W		
Dimensions L x W x H	74 x 48 x 25 mm		

	ACCESS CONTROL RFID CARD READERS		ACTIVE RFID CARD HOLDER

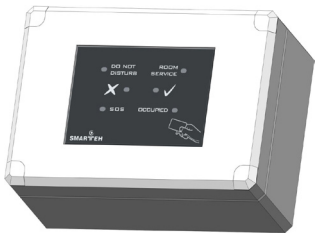
TECHNICAL DATA	LPC-2.CR1M	LPC-2.CA1M	LPC-2.CH1M
Basic functionality	identification, door unlocking	hotel room door unlocking and room status signalization	RFID card holder, presence identification and room status setting
RFID reader type MIFARE (push buttons)	ISO/IEC 14443 A / MIFARE 13,56 MHz		
Available versions	LPC-2.CR1M	LPC-2.CA1M LPC-2.CA1MB (ring bell)	LPC-2.CH1M
Signalization LEDs	OK (access granted) FAULT (access denied)	OK (access granted) FAULT (access denied) OCCUPIED DO NOT DISTURB ROOM SERVICE SOS	DO NOT DISTURB ROOM SERVICE
Acoustic signalization	short beep: OK long beep: FAULT	short beep: OK long beep: FAULT	/
Buttons functions	/	RING BELL (only: CA1MB)	DO NOT DISTURB ROOM SERVICE
Housing color	black or white + customer selectable front plate**		
Mounting	flush mount*		
Communication connector	RJ-12 (splitters and interconnection cables needed)		
Power supply	over communication cable		
Power consumption	0.5 W		
Dimensions L x W x H	75 x 49 x 29 mm		

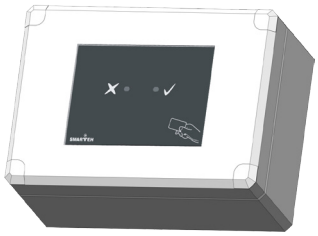
*Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.Cxx and LPC-2.IDxV modules:

- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Ave
- Tem – Pure, Line, Soft
- Master
- Bticino - Living, Light

**Color of the front plate can be done in different colors.

ACCESS CONTROL RFID CARD READER FOR OUTDOOR USE





TECHNICAL DATA	LPC-2.CA2M	LPC-2.CR2M
Basic functionality	identification, door unlocking, etc.	
RFID reader type	ISO/IEC 14443 A / MIFARE 13,56 MHz	
Signalization LEDs	OK (access granted), FAULT (access denied)	
Acoustic signalization	short beep: OK, long beep: FAULT	
Housing color	black panel on white housing	
Mounting	outdoor use, IP65	
Communication connector	RJ-12	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	120 x 80 x 60 mm	

2.9.4. Temperature, humidity and air quality sensors

TEMPERATURE, RELATIVE HUMIDITY (RH) AND AIR QUALITY (VOC) SENSOR

TECHNICAL DATA	LPC-2.TH1	LPC-2.AQ1
Basic functionality	temperature and RH measurement	VOC measurement
Temp. measurement range	-20 .. 60 °C	CO2 equivalents: 450 .. 2000 ppm
Measuring accuracy	temperature range 0 .. 50 °C: accuracy ±1 °C RH range 0 .. 95 % RH, accuracy < 5 % of full scale	air quality measurement range 0 .. 2000 ppm
VOC Detection – substances (LPC-2.AQ1)	Acetone, Ethanol, Isoprene, CO2, Nonanal, Decanal, Methane, Hydrogen, Limonene, Alcohols, Esters, CO, Unburnt hydrocarbons, Benzene, Phenols, Humidity, Formaldehyde, Ketone, Styrene...	
Housing color	black or white + customer selectable front plate**	
Mounting	flush mount*	
Communication connector	RJ-12 (RS-485)	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	74 x 48 x 25 mm	24 x 48 x 34 mm

2.9.5. Infrared transceiver and remote control

	IR TRANSCEIVER	IR REMOTE CONTROL
		

TECHNICAL DATA	LPC-2.IR2V	LPC-2.RC1S
Basic functionality	temperature, relative humidity, light intensity measurement	IR remote control for building automation, designed to be used with all Smarteh intelligent peripherial modules that have an IR receive function
Communication protocol	programmable IR transceiver, IR receiver for LPC-2.RC1S, various IR protocols	RC-5
Housing color	black or white + customer selectable front plate**	/
Mounting	flush mount*	/
Communication connector	RJ-12 (splitters and interconnection cables needed)	/
Power supply	over communication cable	4x AAA batteries
Power consumption	0.5 W	/
Dimensions L x W x H	24 x 48 x 52 mm	60 x 179 x 16.5 mm

2.9.6. Switch panel

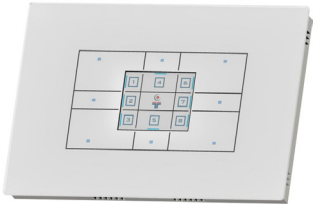
	LCD CONTROL SWITCH
	

TECHNICAL DATA	LPC-2.DT1B
Basic functionality	LCD color display with 4 control buttons. Picture on LCD and functionality of the buttons can be adapted to the customer needs
Buttons	2+2 push
Housing color	black or white + customer selectable front plate**
Mounting	flush mount*
Communication connector	RJ-12 (splitters and interconnection cables needed)
Power supply	over communication cable
Power consumption	1 W
Dimensions L x W x H	75 x 49 x 29 mm

*Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.DTxx and LPC-2.AQ1 modules:

- Tem – Pure, Line, Soft
- Gewiss – Playbus, System
- Master
- Vimar – Plana, Idea
- Ave
- Bticino – Living, Light

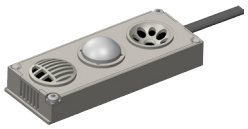
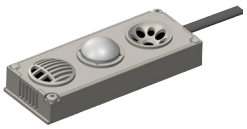
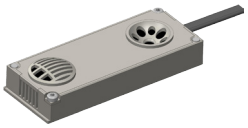
**Color of the front plate can be done in different colors.

GLASS LCD CONTROL SWITCH	
	

TECHNICAL DATA	LPC-2.DT2
Basic functionality	LCD color display with 8 control touch buttons and temperature, fan and access control features. Picture on display, functionality of the touch buttons, status LEDs and buzzer can be adapted to the customer needs.
Buttons	8 touch buttons
Signalization LEDs	8 status LEDs
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW
Front plate	glass, painted in black or white
Mounting	flush mount*, panel mount
Communication connector	RJ-12 (splitters and interconnection cables needed)
Power supply	over communication cable
Power consumption	1 W
Dimensions L x W x H	106 x 160 x 27 mm

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter.

2.9.7. Multisensors

CO2 SENSOR, PIR SENSOR, LUX SENSOR, VOC SENSOR, IR TRANSCEIVER			
			

TECHNICAL DATA	LPC-2.SM5	LPC-2.SM6	LPC-2.SM7
Basic functionality	CO2 & light intensity measurement, occupancy detection, IR transceiver	VOC & light intensity measurement, occupancy detection, IR transceiver	IR matrix sensor, light intensity measurement, IR transceiver
Communication protocol	programmable IR transceiver IR receiver for LPC-2.RC1S various IR protocols		
Housing color	black or white housing and cable		
Mounting	mounting with integrated magnets or screws		
Connection cable	2 m length (RJ-12 male)		
Power supply	over communication cable		
Power consumption	0.5 W		
Dimensions L x W x H	40 x 109 x 25 mm		

*Fasten mounting frame with screws into: TEM VM4, PM4, DM40 Elettrocanalli ECS37104 *Legrand 801 42 or similar

SMARTEH
LIVING SYSTEMS

LMP-1 Modbus RTU Products

LMP-1 Modbus RTU Products

3.1. MODBUS RTU TEMPERATURE CONTROL PANELS

	LCD TEMPERATURE CONTROL	LCD TEMPERATURE & FAN CONTROL
		

	AVAILABLE VERSIONS	
Push buttons + Temp. sensor	LMP-1.MP2B	LMP-1.MP1B
Push btn + Temp. + RH sensor	LMP-1.MP2BH	LMP-1.MP1BH
Basic functionality	LCD control panel nad regulator for heating and/or cooling.	
Measuring accuracy	temp. range 0 .. 50 °C: accuracy ±1 °C, RH range 0 .. 95 % RH, accuracy < 5 % of full scale	
Room temperature display	numeric, on LCD, resolution 0.5 °C	
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW	
Temperature set	2 + 2 push buttons	2 push buttons****
Temp. set point display	numeric and graphic, on LCD***	
Fan speed selection	/	2 push buttons
Fan set point display	/	graphic, on LCD
Fan support	/	3 speed or step less fan
2 and 4 pipe system support	yes	
Frost protection	< 5 °C	
Door/window open mode	supported	
Economy operating mode	supported	
Housing color	black or white + customer selectable front plate**	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Supported protocols	Modbus RTU (RS-485)	
Power supply	7 .. 30 V DC	
Power consumption	1 W	
Dimensions L x W x H	65 x 49 x 29 mm	

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter.

*Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LMP-1.MPxx module:

- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Ave
- Tem – Pure, Line, Soft
- Master
- Bticino - Living, Light

**Color of the front plate can be done in different colors.
***Temperature set point is temporarily displayed while LCD display is in SET mode.

***Numeric value of temperature can be displayed or hidden – user programmable.

****To change settings on LCD panel with touch buttons press any button for approximately one second, to switch LCD to SET mode.

3.2. MODBUS RTU RFID ACCESS CONTROL PANELS

ACCESS CONTROL RFID CARD READERS	ACTIVE RFID CARD HOLDER

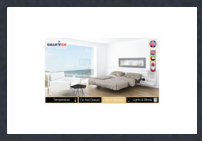
TECHNICAL DATA	LMP-1.CA1M	LMP-1.CH1M
Basic functionality	hotel room door unlocking and room status signalization	RFID card holder, presence identification and room status setting
RFID reader type MIFARE (push buttons)	ISO/IEC 14443 A / MIFARE 13,56 MHz	
Signalization LEDs	OK (access granted) FAULT (access denied) OCCUPIED DO NOT DISTURB ROOM SERVICE SOS	DO NOT DISTURB ROOM SERVICE
Acoustic signalization	short beep: OK long beep: FAULT	/
Buttons functions	/	DO NOT DISTURB ROOM SERVICE
Housing color	black or white + customer selectable front plate**	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Supported protocols	Modbus RTU (RS-485)	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	75 x 49 x 29 mm	

*Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.Cxx and LPC-2.IDxV modules:

- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Ave
- Tem – Pure, Line, Soft
- Master
- Bticino - Living, Light

**Color of the front plate can be done in different colors.

Operator Terminals



Operator Terminals

4.1. 7” LCD PLC BASED TOUCH SCREENS

7” LCD PLC BASED TOUCH SCREENS		
		

TECHNICAL DATA	LPC-3.GOT.001	LPC-3.GOT.011
Rated power supply	8 .. 30 V DC	
Power consumption	max. 5 W	
Front plate	aluminum, black or gray	glass, black or white
Dimensions L x W x H	160 x 210 x 46 mm	170 x 220 x 47 mm
Screen	7” LCD display	
	resistive touch screen	capacitive touch screen
	800 x 480 pixels 154 x 92 mm	
Operating system	Linux	
Processor	SOC ARM9 454 MHz	
Memory	256 MB DDR2, 512 MB SLC NAND	
Real time clock	integrated	
Communication ports	Modbus RTU (Master / Slave) Modbus TCP/IP (Master / Slave) BACnet IP (B-ASC) CANopen (Master / Slave)	
Programming port	USB, Ethernet (LAN, Internet) *	
Programming SW	Smarteh IDE	
Programming standard	IEC 61131-3 (FBD, LD, SFC, ST, IL)	

* Programming is possible through LAN network or internet.

4.2. 4.3” LCD PLC BASED TOUCH SCREENS

4.3” LCD PLC BASED TOUCH SCREENS

TECHNICAL DATA	LPC-3.GOT.111	LPC-3.GOT.131
Rated power supply	8 .. 30 V DC	
Power consumption	max. 5 W	
Front plate	glass, black or white	
Dimensions L x W x H	106 x 160 x 34 mm	118 x 160 x 34 mm
Screen	4.3” LCD display with capacitive touch screen 480 x 272 pixels 96 x 55 mm	
Operating system	Linux	
Processor	SOC ARM9 454 MHz	
Memory	256 MB DDR2, 512 MB SLC NAND	
Real time clock	integrated	
Communication ports	Modbus RTU (Master / Slave) Modbus TCP/IP (Master / Slave) BACnet IP (B - ASC) CANopen (Master / Slave)	
Programming port	USB, Ethernet (LAN, Internet)*	
Programming SW	Smarteh IDE	
Programming standard	IEC 61131-3 (FBD, LD, SFC, ST, IL)	
RFID reader type	/	ISO / IEC 14443 A / MIFARE 13.56 MHz
RFID read / write NDEF data type	/	MIFARE classic 1k, 2k, 4k
Temperature sensor	temp.range 0 .. 50 °C: accurancy ± 1 °C	
Light intensity sensor	integrated	
Acustic signalization	integrated	

* Programming is possible through LAN network or internet.

4.3. 7” LCD PC BASED TOUCH SCREEN

7” LCD PC BASED TOUCH SCREEN	

TECHNICAL DATA	LTS-2.PC3
Rated power supply	5.2 V DC*
Power consumption	max. 7 W
Front plate	aluminum, gray or black
Dimensions L x W x H	160 x 210 x 55 mm
Screen	7” LCD, 16:9, capacitive touch screen
	64 k colors
	800 x 480 pixels
	154 x 92 mm
Keyboard	USB keyboard & mouse supported
Signalization	buzzer, LEDs on back
Operating system (supported)	Windows CE 6.0 (Linux, Android)
Processor	Samsung S5PV210 1 GHz
Memory	512 MB RAM on board SD card interface (SD 4 GB included)
Real time clock	integated battery backup CR1220, 3 V
Communication ports	10/100M Ethernet (RJ-45 plug) 1 x RS-232 (DB9 plug) 2 x RS-485 (2 x 4pin disconnectable screw terminals)
Multimedia support	audio input interface stereo audio output interface CMOS camera interface USB camera supported
OS & app. download.	USB, RS-232, SD CARD
Included SW	Movicon Win CE, VNC

*Optional power supply available

SMARTEH
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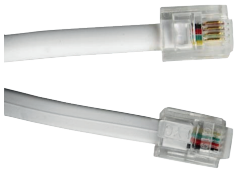
Accessories

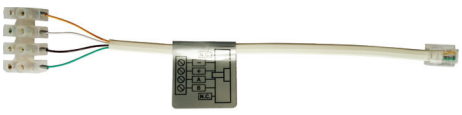
Accessories

5.1. CONNECTION OF INTELLIGENT PERIPHERAL MODULES

RJ-12 CONNECTION CABLE		
		
TECHNICAL DATA	SSK	ICM-7
Functionality	interconnection cable for flush mount	
Compatibility	LPC	
Communication connector	RJ-12 to RJ-12	
Dimensions	0.5 m	7 m (other length to be specified)

	SPLITTER 1/2	SPLITTER 1/8	SPLITTER 1/3
			
TECHNICAL DATA	SPL-1	SPL-2	SPL-5
Functionality	used to connect up to 2 intelligent peripheral modules to Main module	used to connect up to 8 intelligent peripheral modules to Main module	used to connect up to 3 intelligent peripheral modules to Main module
Compatibility	LPC-2		
Communication connector	RJ-12		
Dimensions L x W x H	37 x 30 x 27 mm	70 x 54 x 32 mm	36 x 32 x 27 mm

5.2. VARIOUS ACCESSORIES

INTERCONNECTION CABLE STK4 - 020	
	
TECHNICAL DATA	
Functionality	used to provide power supply to various Smarteh devices for example LPC-3 GOT.111 4,3” touch panel
Compatibility	Smarteh devices
Communication connector	RJ-12 to screw type connectors
Dimensions	0.2 m

5.3. LON TERMINATORS

LON TERMINATORS

TECHNICAL DATA	LBT-1	LBT-2	LBT-3	LFT-1	LFT-2	LFT-3
Basic functionality	LON terminators are used to provide electrical termination of twisted pair.					
Compatibility	TP / FT-10					
Topology	bus	bus	bus	FREE	FREE	FREE
Connection	RJ-45	flying wire	RJ-12	RJ-45	flying wire	RJ-12

5.4. ACCESS CONTROL EQUIPMENT

	RFID IDENTIFICATION CARD	ELECTRICAL DOOR LOCK

TECHNICAL DATA	CRD-2	EKS-X
Basic functionality	RFID identification card	electromagnetic door lock
RFID Standard	EM4100 125 kHz MIFARE Classic 1K comply to ISO/IEC 14443-4 Type A (13.56 MHz)	/
Compatibility	all RFID intelligent modules	LPC-2.DOL, LPC-2.R01
Options	custom printing available	suitable face plates available micro switch option available
Dimensions L x W x H	credit card size, 0.84 mm thick	70.8 x 20.5 x 29.5 mm

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LIVING SYSTEMS

Sensors

Sensors

6.1. TEMPERATURE SENSORS

TEMPERATURE SENSORS

TECHNICAL DATA	NTC-1	NTC-4	NTC-5
Basic functionality	temperature measuring		room temp. measurement
Measuring range	0 .. 50 °C	-20 .. 100 °C	
Rated resistance	10 kΩ ± 5 %, EPCOS part B57891, 4901		
Compatibility with LPC-2	LPC-2.A02, LPC-2.A01		
Connection	2 wires flame retardant, halogen free, 0.7 m	2 wires flame retardant, halogen free, 4 m	RJ-12
Housing	PA66 with 25 % glass fibers	PA66 with 25 % glass fibers, waterproof	flush mount
Dimensions	14.5 x 10 x 42 mm	ϕ6 x 30 mm	24 x 48 x 34 mm

6.2. MAGNETIC SENSORS

REED RELAY SWITCH

TECHNICAL DATA	MGK-3	WIRELESS SOLAR POWERED SWITCH
Basic functionality	reed relay switch, detecting position, such as doors closed, windows closed etc.	
Connection cable	1 m halogen free, flame retardant cable	Wireless - Enocean
Dimensions	ϕ9 x 19 mm, ϕ19 x 29 mm	/

6.3. CONDENSATION, WATER LEAKAGE, OCCUPANCY SENSORS

	CONDENSATION SENSORS		WATER LEAKAGE SENSOR

TECHNICAL DATA	LCS-1.C01	LCS-1.C02	LWD-2
Basic functionality	sensing condensation on the surface of cooling elements		water leakage sensor
Behavior	output is active (conducting) if no condensation		output is active (conducting) in the absence of water
Sensitivity	adjustable (trimmer)		electrodes submersed into water
Ambient temperature	0 .. 50 °C		
Supply voltage	5 .. 32 V AC / DC	10 .. 32 V DC	10 .. 28 V DC
Local signalization	red LED: condensation, green LED: power OK	green LED: no condensation	Green LED: no water
Compatibility	see user manual for connection diagrams		
Connection wires	4 wire cable	2 wire cable	2 wire cable
Connection cable	2 m or 7 m		4 m
Mounting	on pipe with spring provided		vertical / horizontal
Dimensions L x W x H	44 x 45 x 11.5 mm		60 x 40 x 15 mm

OCCUPANCY SENSORS

TECHNICAL DATA	LOC-1	LOC-2
Basic functionality	sensor for detecting moving person	
Behavior	output is active if moving person is present	
Ambient temperature	0 .. 50 °C	
Supply voltage	5 .. 32 V AC / DC	10 .. 32 V DC
Local signalization	red LED: moving person is present, green LED: no moving person	red LED: moving person is present
Compatibility	see user manual for connection diagrams	
Connection wires	4 flying wires	2 flying wires
Connection cable	2 m	
Mounting	mounting with integrated magnets or screws	
Dimensions L x W x H	44 x 45 x 11.5 mm	

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LIVING SYSTEMS

Standalone Products

Standalone Products

7.1. GSM COMMANDER GM2

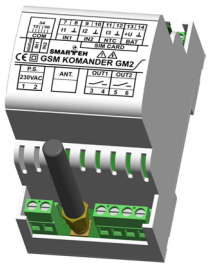
GSM COMMANDER GM2 is designed for the remote alarming and control, using SMS messages via GSM network. With GSM COMMANDER GM2 you can control two electrical devices and monitor the status of two sensors with a common mobile phone. Apart from the GM2 you need a valid SIM card of a network provider.

The typical purpose of GM2 is:

- sending commands for remote switching of one or two electric devices from common mobile phone using simple SMS messages,
- receiving automatically generated SMS alarms from one or two connected sensors to a mobile phone.

There are also two versions of GM2, which are application specific:

- GM2-V is used for remotely opening of garage or backyard door or barrier gate by initiating phone call to the GSM number of GM2.
- GM2-A is used for vehicle monitoring - burglary alarm.

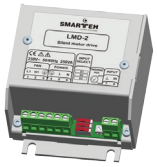
	GSM COMMANDER
	

TECHNICAL DATA	GM2
Basic functionality	remote control for 2 devices (outputs), monitoring 2 digital inputs and 1 analog input for NTC temp. control measurement
Rated power supply	230 V AC, 50/60 Hz
Backup power supply	optional: Pb accu. 12 V, app 1.3 Ah, accu. is recharged from the GM-2
Power consumption	1 .. 8 W
Communication protocol	SMS commands and alarms (text messages) and 1x ring command (voice call)
Security	access limited to list of registered users, based on phone numbers
GSM	dual band 900/1800 MHz
SIM compatibility	PIN checking must be disabled on the SIM card
Antenna	included in delivery
Antenna extension cable	to be ordered separately: AC1 (1 m), AC4 (4 m), AC10 (10 m)
Configuration	through cell phone and SMS commands or using GSM manager
Dimensions L x W x H	95 x 53 x 77 mm

7.2. SILENT MOTOR DRIVE LMD-2

LMD-2 is stepless motor drive for speed regulation, which adjusts the speed of the motor in a way that motor does not produce audible noise. Main usage of this unit is in HVAC (Heating, Ventilating, and Air Conditioning) applications, where variable fan speed with low noise is required.

SILENT MOTOR DRIVE FOR FAN SPEED CONTROL



TECHNICAL DATA	LMD-2
Basic functionality	variable voltage output (PWM modulated with frequency of 20 kHz)
Power consumption	250 VA (maximum load)
Rated load voltage	230 V AC, 50/60 Hz
Rated load current	1.3 A
Control mode setting	jumper selectable
Control modes	0 .. 10 V, 0 .. 20 mA, external 10k potentiometer, internal potentiometer
Connection type	screw type connectors
Ambient temperature	0 .. 40 °C
Dimensions L x W x H	93 x 82 x 47 mm

7.3. POWER SUPPLY MODULES

The power supply modules can be used to supply voltage to Smarteh's equipment and also for powering third party devices like sensors, measuring converters etc.

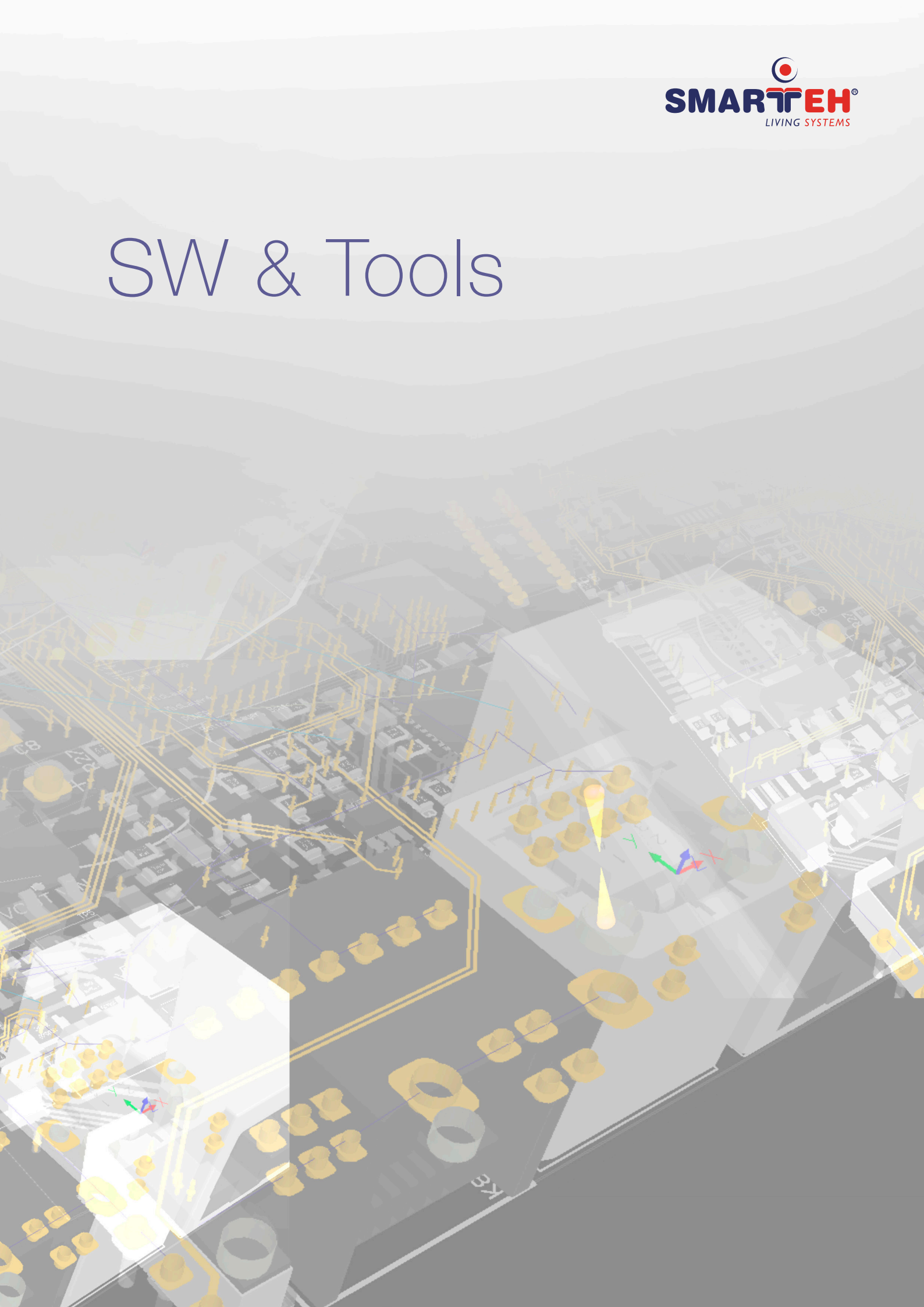
POWER SUPPLY MODULES

TECHNICAL DATA	APS-1	APS-04
Basic functionality	DC power supply	
Power supply	115 / 230 V AC, 50/60 Hz	
Power consumption	12 W	60 W
Rated output voltage	5.2 V DC	24 V DC
Rated output load	2.4 A	2.5 A
Connection type	screw type connectors	
Dimensions L x W x H	93 x 25 x 56 mm	91 x 71 x 56 mm

Note: Contact Smarteh for other available power supply

SMARTEH®
LIVING SYSTEMS

SW & Tools



SW & Tools

8.1. USB TO SERIAL RS-232 / RS-485 ADAPTER

USB TO SERIAL RS-232 / RS-485 ADAPTER

TECHNICAL DATA		LSA-2.USB
Basic functionality		optically isolated serial converter from PC (USB) to RS-232 or RS-485 device
Rated communication speed		up to 115 kbps
Power supply		from USB
Power consumption		0.25 W without power supply output (PS out) load
Connectors	Mini USB	USB connection to PC
	RS-232-RJ-12	Tx, Rx, GND, +PS out
	RS-232-DB9M	Tx, Rx, GND
	RS-485-RJ-12	A, B, GND, +PS out
	RS-485-DB9FM	A, B, GND
	RS-485-screw	A, B, GND, +PS out
RS485 line termination		internal 120 Ω
Power supply output (PS out)		10 V DC / 75 mA, galvanic isolated
Dimensions L x W x H		80 x 64 x 26 mm
Configuration SW		Adapter is already supported with corresponding drivers on Linux systems (Ubuntu, Arch, Fedora, Suse), Vista and Windows 7, 8, 10. For other operating systems (Win98, Win 2000, Win ME and XP) drivers can be downloaded from www.smarteh.si

8.2. LON LINE TESTER

LON line tester LLT-1 is testing device for quick checking of LON TP/FT-10 78 kbps based network built with CAT5+ cabling. Testing can be performed on busy networks (traffic running) or on idle networks (no traffic).

	LON NETWORK CABLE TESTER	
		

TECHNICAL DATA	LLT-1 MASTER	LLT-1 SLAVE
Basic functionality	testing device for quick checking of network cables on LON FT-10 78 kbps based networks, primarily built with CAT5+ cabling	
Power supply	2 x AA batteries or 5 V DC adapter	
Power consumption	0.3 A	
Supported diagnostics	line shorted, using LLT-1 MASTER	
	signal level sufficient, using LLT-1 MASTER and LLT-1 SLAVE	
	transmit/receive operation, using LLT-1 MASTER and LLT-1 SLAVE	
Limitations of use	only one Master and Slave pair of LLT-1 tester can be used on single FT-10 channel at the same time	
	testing through routers, repeaters and gateways is not possible.	
	different type of channels (like XF-1250) are not supported.	
Package	protective bag 2 x AA batteries (not included) AC power adapter	
Dimensions L x W x H	154 x 95 x 40 mm	

8.3. PROGRAMMING CABLES

PROGRAMMING CABLES

TECHNICAL DATA	PMC	PTC	PMU	
Functionality	programming, parameterization & online monitoring	parameterization & online monitoring	programming, parameterization & online debugging	
HW compatibility	LPC-2.C05 GM2		LPC-2.MC8	LPC-2.MC9
	LPC-2.MC7 LPC-2.MC3			
SW compatibility	Smarteh IDE (programming)		Smarteh IDE	
	LPC Tester (monitoring) GSM Manager (parameterization)			
PC communication port	COM (RS-232)		USB	
Communication connector	DB9 / RJ-12		USB A - B	USB mini

8.4. PROGRAMMING SW

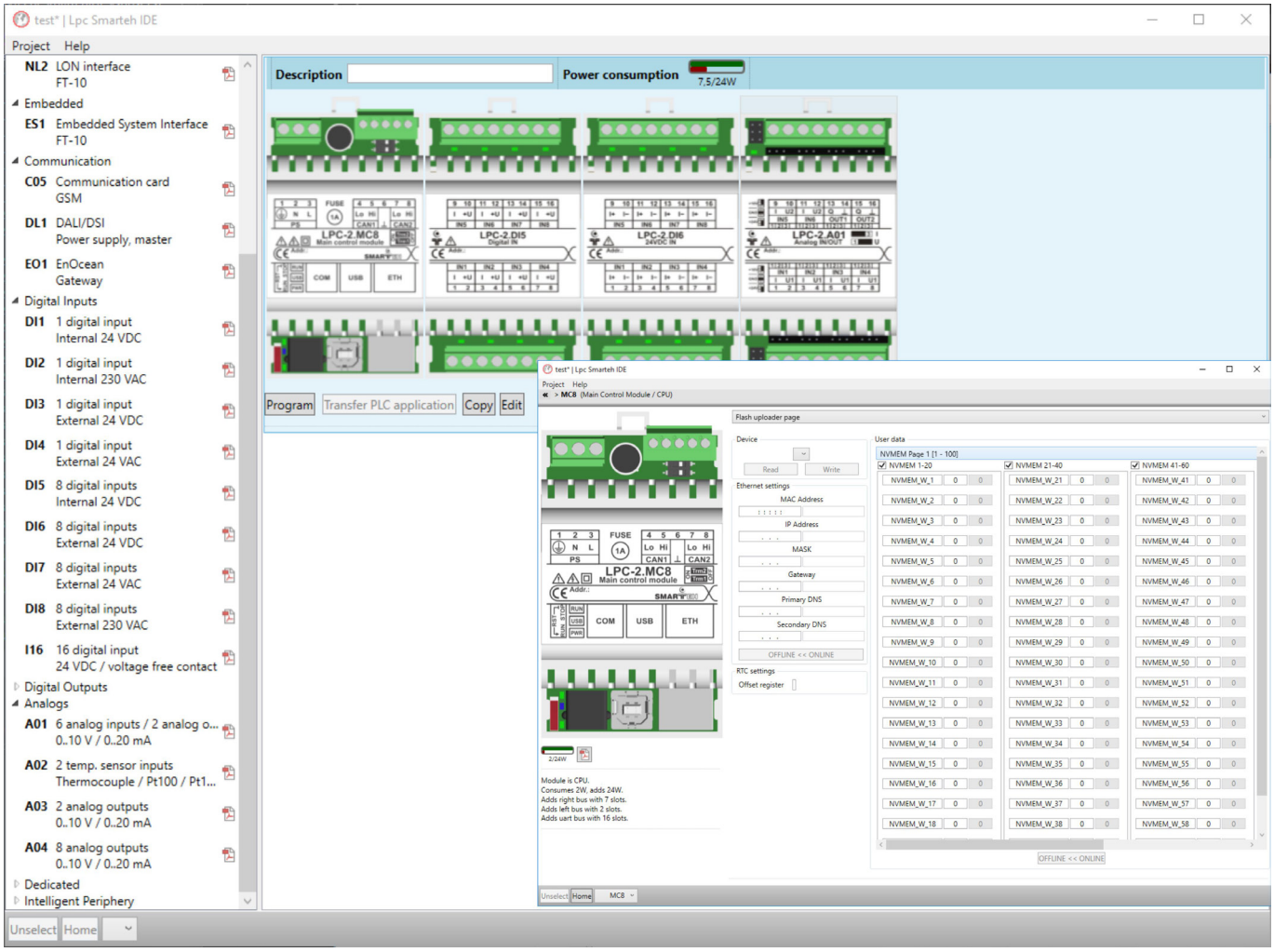
8.4.1. Smarteh IDE

Smarteh IDE software is a tool for programming LPC-2 controllers. It combines tools for composing LPC-2 configurations and programming application logic.

It allows composing different configurations from available LPC-2 modules, taking care of all configuration rules and limitations. Default SW tags for connected modules are created automatically.

Composing configurations can be performed by module wizard, used for assembling chosen modules in to optimum number of LPC-2 configurations.

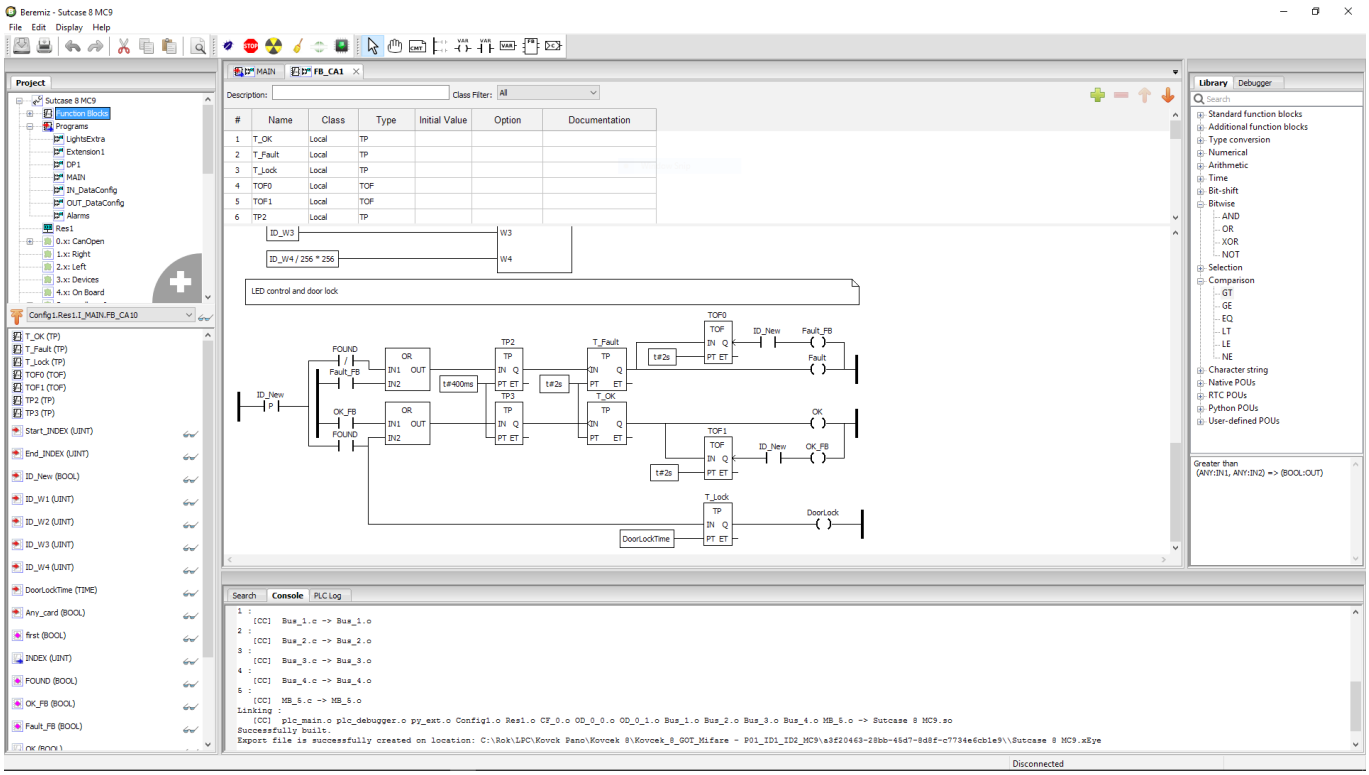
Smarteh IDE can be obtained from Smarteh's web page for free.



Sample of the Smarteh IDE - configuration.

After final selection of modules we can select „Program“ from Project menu. Composed configuration is then switched to programming editor.

Programming in Smarteh IDE is used for development of software application for the selected hardware configuration. Programming editor supports following programming languages by IEC 61131-3 standard:
IL (instruction list), ST (structured text), LD (ladder diagram), FBD (function block diagram) and SFC (sequential function chart).



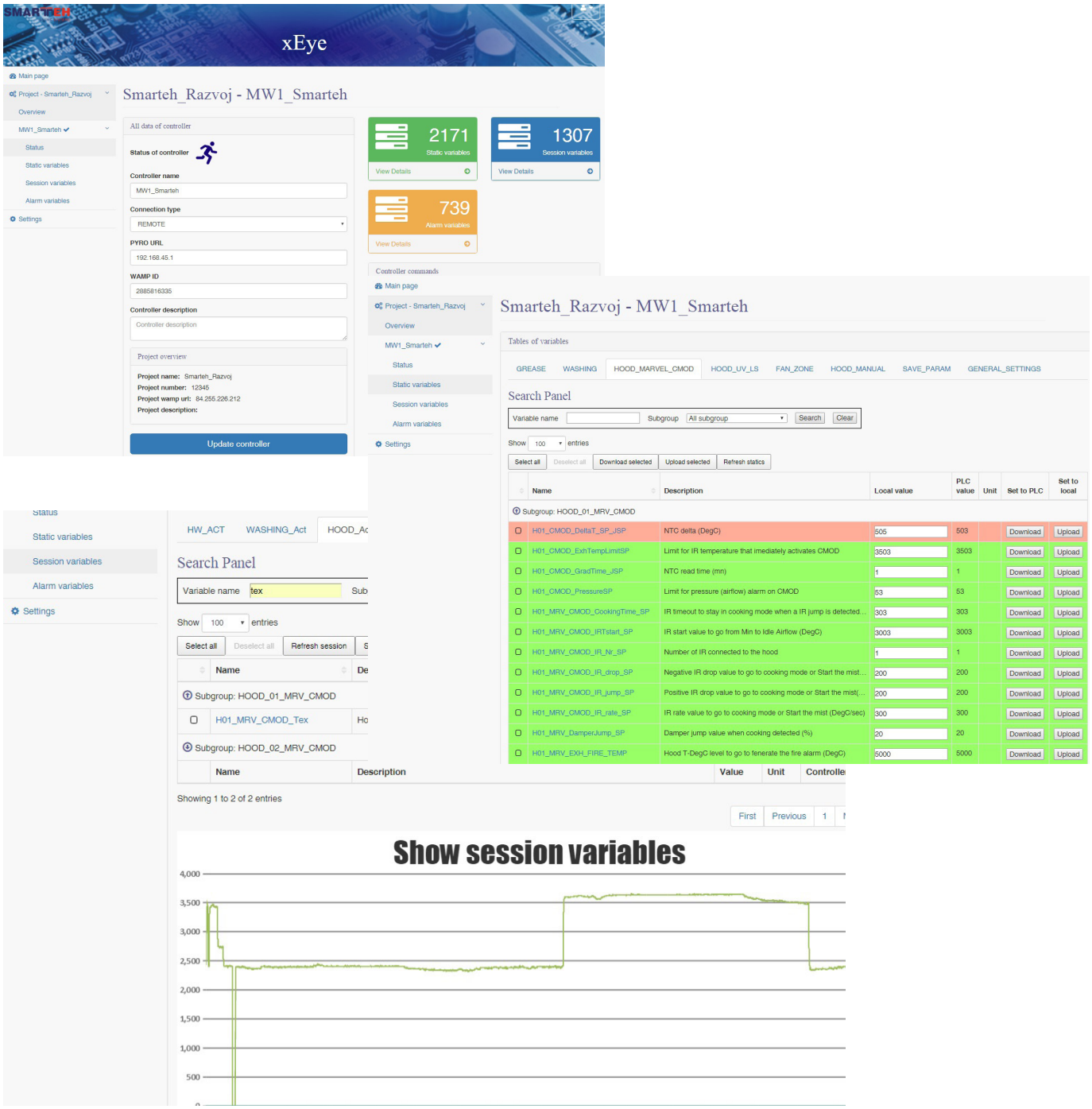
Sample of the Smarteh IDE – programming editor

Smarteh IDE software has the following system requirements:

- Microsoft Windows 7 or later
- .Net version 4.5 or later
- At least 2GB RAM
- 1 GB hard disk space
- USB port

8.4.2. SMARTEH xEYE

xEye application is used for users which will not create and debug their own PLC program, but they still need to have some control over the LPC-2.MC9.
With xEye it is possible to check the controller statuses, read/write settings and monitor parameters online. In addition, transferring of PLC program to the controller is supported.
Connection can be established over USB, LAN or internet. For remote internet connection only certificate validation from Smarteh company is necessary to be done. After that, controller will connect to the cloud automatically and remote connection can be established.
xEye shows all information dynamically, according to the LPC-2.MC9 programming. Means, xEye presentation of information is adapted automatically to controller program.

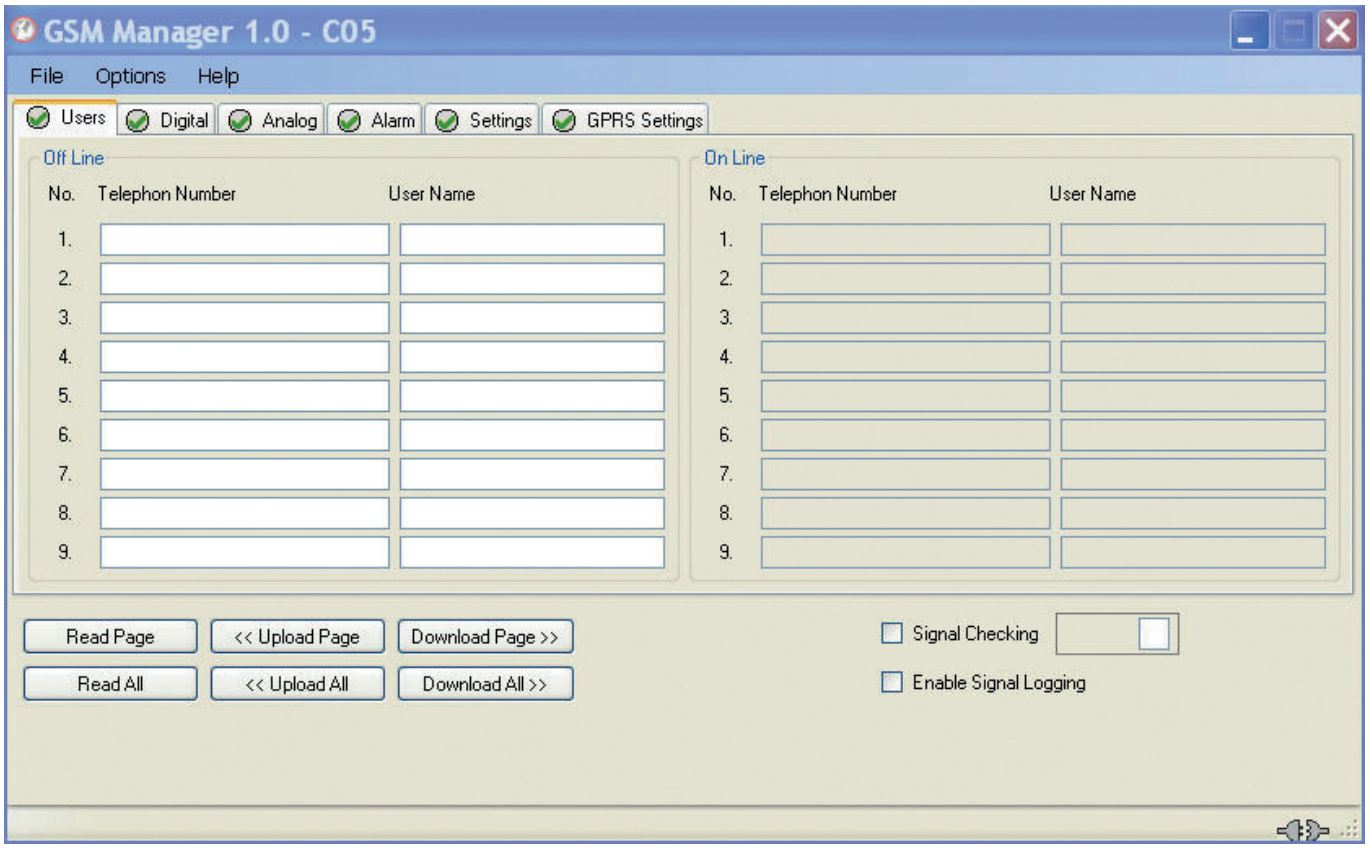


Sample of the xEye application.

8.4.3. GSM MANAGER

GSM Manager software is used for managing GSM modules. It allows parameterization and monitoring GSM module configuration.

It also allows executing manually entered AT commands and monitoring GSM module processing.



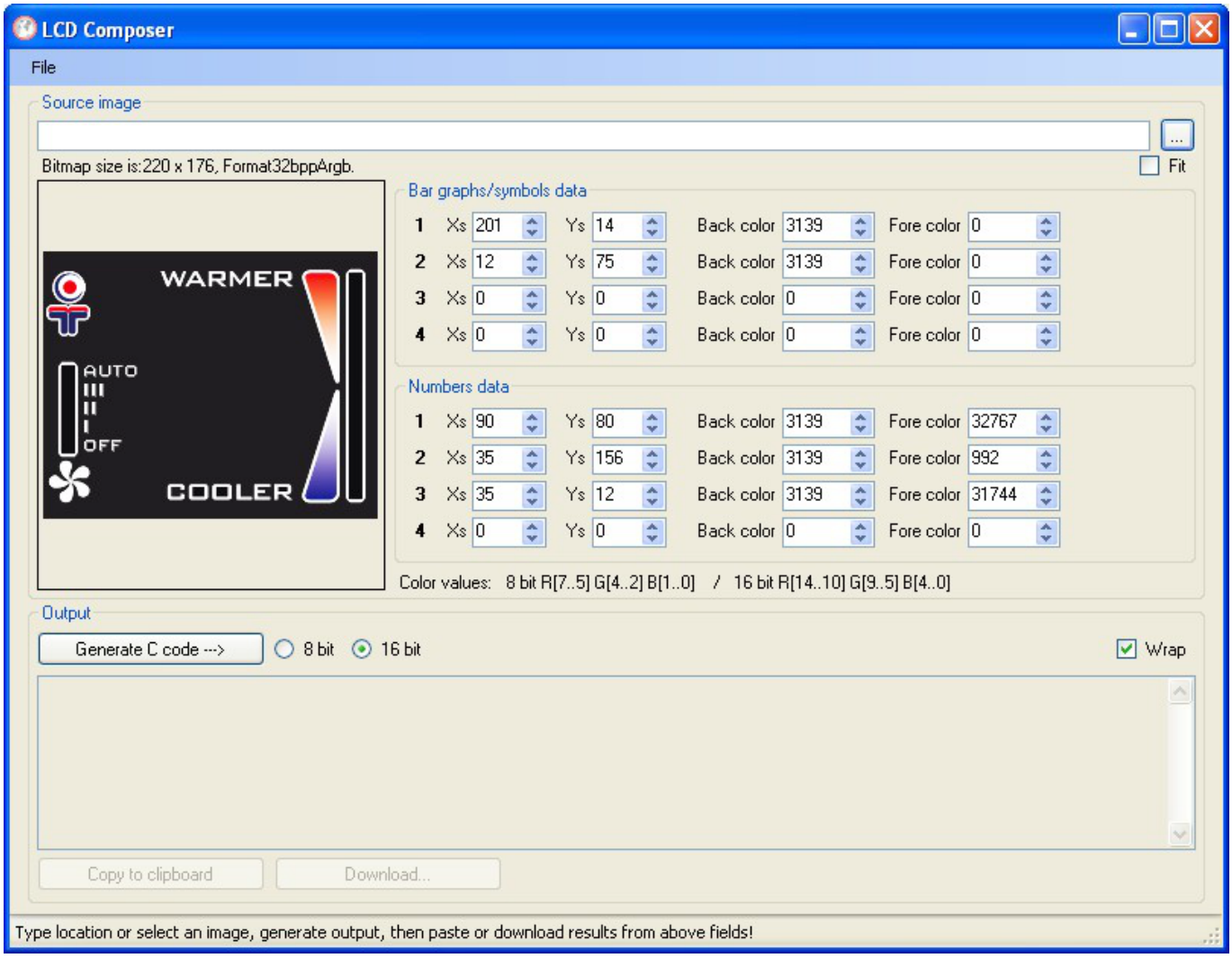
Sample of the GSM Manager setting options.

8.4.4. LCD COMPOSER

The LCD Composer is an application for setting and downloading the background picture and relevant objects for the LCD Display panels (like LPC-2.DP1/H, LPC-2.DP2/H, LPC-2.DT1,...)

The background picture is made in .bmp format and 220x176 pixel size resolution. It can be edited and adjusted by standard picture editing programs.

The LCD panels program takes care for displaying this background picture and generating additional objects-elements on this picture (bargraph/numbers etc.). The settings from the LCD Composer are used to define this objects properties.

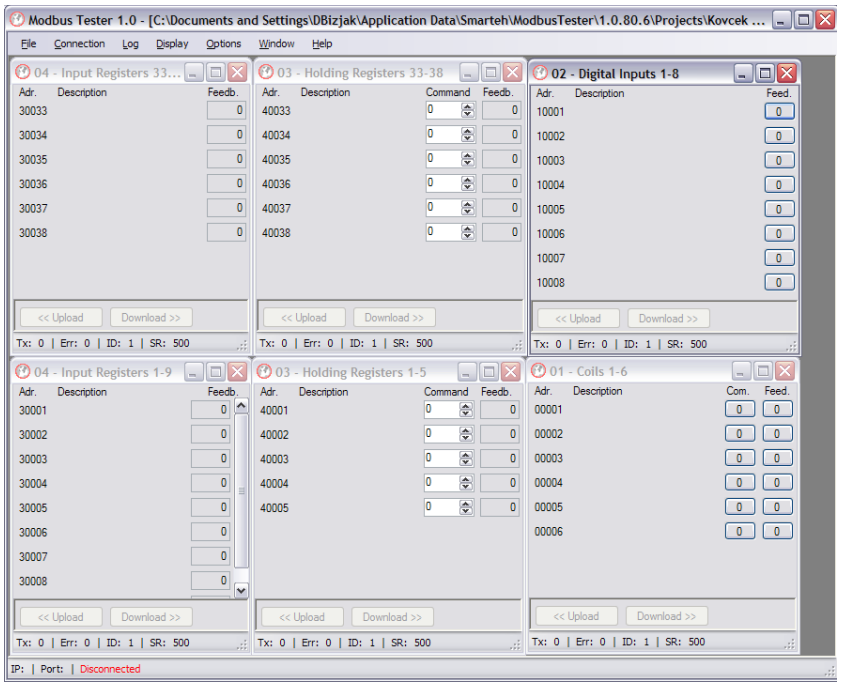


Sample of the LCD Composer application.

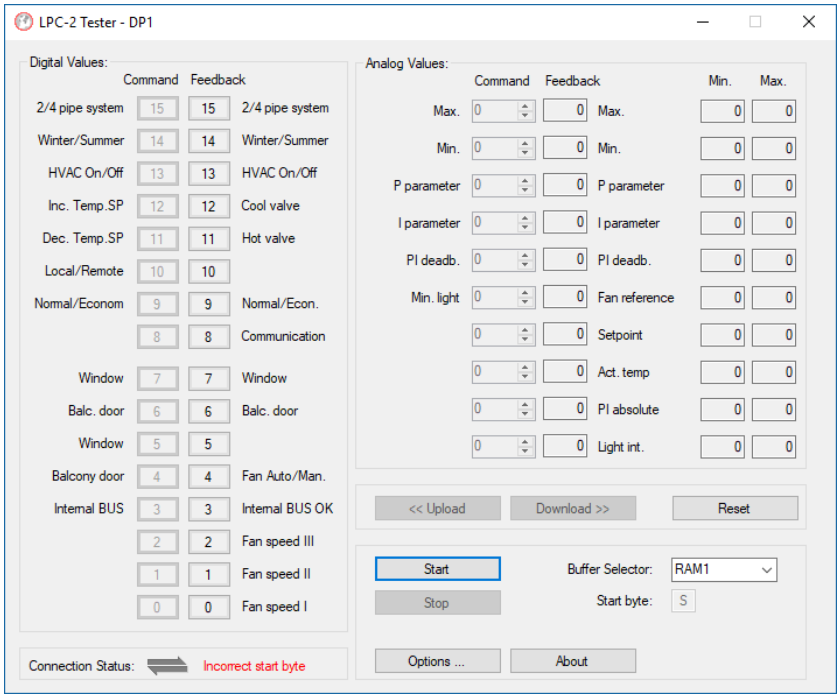
8.4.5. MODBUS TESTER & LPC TESTER

Modbus Tester is a product for establishing the communication with the controllers over the Ethernet and exchanging data over the Modbus TCP/IP protocol.
Standard Modbus variables (digital inputs, coils, input registers, holding registers) are supported.

LPC Tester is a product for testing and setting up I/O devices.
Main window consists of five parts. In digital values and analog values section selected buffer values are displayed. Currently communication status is displayed with two arrows. In the lower right part of the window we have command buttons to control tests. When application is started everything is ready to start communication.



Sample of the Modbus Tester application.



Sample of the LPC Tester application.

SMARTEH d.o.o.
Poljubinj 114, 5220 Tolmin, Slovenia
tel.: + 386(0)5 388 44 00
fax.: + 386(0)5 388 44 01
info@smarteh.si
www.smarteh.com