

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001:2015

LogicMachine5 Lite

Product Manual



September, 2024

Applicable firmware version: 2024.04

Technical support: support@openrb.com forum.logicmachine.net

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Introduction

LogicMachine (LM) is the easiest way to implement complex logic in KNX, Modbus, BACnet, ZigBee, EnOcean and other networks. LM enables efficient building automation process customization, providing virtually unlimited flexibility to the end users in a cost-effective way.

LM5 is an embedded platform with an integrated Ethernet, USB, KNX/TP and RS-485/RS-232 serial interfaces. LM can be used as a cross-standard gateway (Modbus, BACnet/IP), logic engine, visualization platform, KNX/IP Router. It can be integrated with various cloud/web services and 3rd party devices. Scripts (logic engine) allows LM to simultaneously act as a thermostat, security panel, lighting controller, etc. Additional applications can be installed to further extend the device functionality.

Technical support

Any faulty devices should be returned to Embedded Systems.

For any other technical questions use our forum at forum.logicmachine.net

Firmware updates are available at openrb.com/firmwares/



Risk of damage to property and personal injury due to wrong installation.

Electrical installation can only be ensured if the person can prove knowledge in the following areas:

- Installation of networks
- Mounting electric cables
- Installation of KNX networks

These skills are possessed by certified specialists who are trained in electrical installation technology. If these requirements are not met, you are personally liable for any damage to property or personal injury.

Electrical connection

The devices are constructed for the operation of protective low voltage (SELV). Grounding of devices is not needed. When switching the power supply on or off, power surges must be avoided.

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1. Security recommendations

It is recommended to install LM on a secure network without public access. Where possible separate network segments either physically, by using VLANs or firewalls.

If communication between several LMs is required in one building - provide a KNX Backbone key and set the "Enable only secure communication" option.

Disable KNX/IP features after the project has been fully commissioned if KNX/IP Routing is not needed.

LM cloud can be used for remote control. For remote commissioning and diagnostics either ZeroTier or OpenVPN should be used. Do not use port forwarding.

Use HTTPS instead of HTTP where possible. Install the *SSL certificate* application from the LM app store to obtain a valid certificate for your LM. Using HTTP over ZeroTier or OpenVPN is allowed as the tunneling connection is already encrypted.

Perform LM project backups periodically and store them in a safe place.

In case you find cyber security incidents or vulnerabilities, please contact us through this page: openrb.com/contact-us/

Embedded Systems SIA cannot be held responsible for performance problems and incompatibilities caused by applications, services or devices from third-party providers. Failure to follow these instructions can result in equipment damage.

2. Quick startup guide

2.1. Connection

- Mount the device on the DIN rail
- Connect the KNX/TP bus cable
- Connect 24V power supply to the device (red pole to 24V+, grey pole to GND)
- Connect LM to the local network using an Ethernet cable

2.2. Default network and access configuration

Login name	admin
Password	admin
IP address	192.168.0.10
Network mask	255.255.255.0

Make sure that your PC is on the same sub-network as LM or the connection will not be possible.

The device can be accessed by opening a web browser (Chrome, Firefox, Safari are supported) and entering IP of the device http://IP

Secure access to the device is available via https://IP

LM comes with a self-signed certificate for which the browser will display a warning. Install the *SSL certificate* application from the LM app store to obtain a valid certificate for your LM or accept the warning.

2.3. Discover LogicMachine IP address

LM has a built-in mDNS/zeroconf support. *LM Home* application for Android and iOS can be used to discover LM devices on the network.

2.4. Firmware upgrade and update installation

See <u>System \rightarrow Upgrade firmware</u> and <u>Utilities \rightarrow Install updates</u>.

3. Graphical user interface

After a successful login the main page appears:



- LogicMachine objects and object logs, scripts, schedulers, trends, visualization editor, user access, alerts and error logs
- System config network, KNX and other built-in service configuration, package management and firmware upgrade, general system status
- Visualization main graphical visualization (plan view)
- Touch graphical visualization for touch devices
- Schedulers user-defined schedulers
- Trend logs chart view for time-series data
- Mosaic app graphical visualization application

The main screen of the interface is a list of installed applications. It is possible to change the application order, hide selected applications. Each user can customize the background, light/dark theme and interface language. The admin user can install and update applications.

3.1. Customizing the background / Language

Click *Customize for change the interface language, color theme and the background image.*



The interface language can be chosen by clicking the *Language* drop-down menu.

Customize		×
Language	Spanish	~
	English	-
	Bulgarian	
	Chinese	
	Czech	
	Danish	

The background image is applied automatically when chosen.



3.2. Search function

Click Search \mathbf{Q} to open the search box to find applications containing the given search phrase.



3.3. Unlock the application list

Click Unlock 箻 to change the application order via drag & drop.



To hide certain applications for users click *Grid* and then click *Visibility*



After selecting which apps will be visible to users click Save \blacksquare

3.4. Admin mode

3.4.1. Admin mode settings

Click Grid	then Cus	tomize 🗡	and click Change a	dmin password.			
2	Customize		M (SSA 1X1/1/29) 1		•	2	
		Cr	ow users to show/hide appe nange admin password	5		5	

Allow users to show/hide apps enables/disables the possibility for non-admin users to to show or hide apps themselves.

3.4.2. Change default page view for users

While in admin mode it is possible to change the default view for all users - the background image, hide/unhide/sort apps the same way as described in 3.3. Once

the all the necessary changes have been made click Save 🔛

3.4.3. Add or remove applications

Click *Plus* to enter the application administration page. If an error message appears, provide valid DNS settings as described in <u>System Configuration \rightarrow Network \rightarrow Interfaces.</u>

The list of available applications is displayed.

	Installed (uninstall, update, configure) 2
Alert manage	Alert manager Version: 20180926 This application is used for client side alert handling including audio alerts. You can use the application stand alone or include the application into your visualization by a frame. Within the application you can select a lot of options how the client should respond to incoming alerts and how the acknowledge should be handled.
0	Amazon Alexa App Version: 20210326 Amazon Alexa Home Skills

Click Installed to view a list of currently installed applications on LM.



Applications can be installed manually by providing an appropriate application package file.



Mark option "Update automatically" for automatic updates of the selected application.

Install new apps and widgets
Amazon Alexa
Version: 20220325
☑ Update automatically
Amazon Alexa Smart Home (LM Cloud app must be installed and configured)

Click Update 🙎 to install a newer version of a selected application.

Click *Grid* 🖽 to return to the main page.

3.4.4. Exit admin mode

Click A to logout.

3.5. Application development

Visit our forum: forum.logicmachine.net

4. LogicMachine configuration

This is the main page of the LogicMachine configuration and management. It consists of the following tabs:

- **Objects** object management
- Object logs object logs
- <u>Scripting</u> scripting repository management
- Schedulers user scheduler managements
- <u>Trend logs</u> time/series value log managements
- <u>Scenes</u> scenes for object control
- Vis. structure visualization structure definition
- Visualization visualization editor
- <u>Vis. graphics</u> icon, background, font management
- <u>Utilities</u> utilities including import from ETS, reset, backup, restore
- <u>User access</u> user management and access logs
- Modbus Modbus mapper
- <u>Alerts</u> user and system alert messages
- Logs script logs
- Error log script and system error messages

4.1. Objects

Objects can be added to this list in several ways:

- Manually by clicking Add new object
- New group addresses seen on the bus are added automatically (if Bus sniffer enabled in <u>Utilities → General configuration</u>)
- Importing KNXPROJ in Utilities

LogicMachine				Neigh	bours: Sele	ct neighbour			✓ La	nguage: Eng	lish	~	<u>Start</u>	page Log
Objects Object logs Scriptin	ing Schedulers Trend	logs	Scenes	s \	/is. structure	Visualizati	on	Vis. graphi	cs U	tilities User	access	Da	di M	lodbus
Object filter	Grou Object name	IP	L0	Ev	Data type	Current	Log	Ex Ta	igs	Update	S	Vi	C	D
Name or group address:	1/1/1			Z	01. 1 bit	1				07.03.2		0		•
Name of group address.	1/1/8			2	01. 1 bit	1				08.03.2		_		•
	1/1/9			2	01. 1 bit	1				08.03.2		0		0
Data type:	1/3/1				01. 1 bit	1				07.03.2		0		8
All datatypes 💙	32/1/ Light_for_m			2	01.001	on				07.03.2		0		8
Tags:	32/1/ status			Ø	01.002	true				07.03.2		Ø	-0	8
	32/1/ my_RGB_c			Q	232.600					02.03.2		0		\otimes
Match mode:	32/1/ Scheduler			Z	01.001	off				02.03.2		0		8

4.1.1. Object parameters

Click the object name or group address to edit object parameters.

Edit object Object name: status Group address: 32/1/2 Data type: O1.002 boolean Current value: true Tags: Units / suffix: Log:
Object name: status Group address: 32/1/2 Data type: 01.002 boolean Current value: true Tags:
Group address: 32/1/2 Data type: 01.002 boolean Current value: true Tags:
Data type: 01.002 boolean Current value: true Tags:
Current value: true Tags:
Tags: Units / suffix:
Units / suffix:
log:
Export:
Read during start-up:
Poll interval (seconds):
KNX Data Secure key:
Object comments:
Save Cancel

- *Object name* name of the object
- *Group address* group address of the object (cannot be changed once object is created)
- Data type KNX data type of the object Note: in some cases objects added via bus sniffer or ESF import might have incorrect data type
- Current value current value of the object
- Tags allows grouping several objects via common tags which then can be used in scripting
- Units / suffix text value that appears after the object value. Some data types have units by default (%, °C etc.)
- Log enable logging for this object. Logs will appear in the Objects logs tab
- *Export* this will allow object access from BACnet/IP (if enabled). Can also be used to limit objects that can be accessed via Remote services (configurable)
- *Read during start-up* send a read request to this object when the system starts.
- Poll interval (seconds) periodically send read requests to this KNX object
- *KNX Data Secure key* KNX Secure key of the object for KNX communication encryption (32 hexadecimal characters)
- *Object comments* used comments about this object

The object list can be sorted by one of the following parameters - Name, Group address, Data type, Current value, Tags, Comments.

4.1.2. Object visualization parameters

Click 😺 in the object list to set specific visualization parameters for the selected object.

Note! Some properties like background color are only visible in the Visualization viewer but not in the editor.

4.1.2.1. 1 bit



• Control type - control element appearance (Touch Visualization or in Show control mode)



• Control size scale - size of the control element (only in Show control mode)

4.1.2.2. 4 bit (3 bit controlled)

Visualization parameters		×
Object:	32/1/3 light_1	
Step size:	25%	
Control background color:	#FF3333 × 🕶	
Background transparency:	5 🗘 %	
Control size scale:	50 🗘 %	
	Save Cance	1

- Step size step size for the value change, pressing +/- sends up/down command with the defined step size respectively, releasing sends stop
- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

4.1.2.3. Numerical data types (integer and floating point)

Visualization parameters		×
Object:	32/1/4 light_2	
Control type:	Slider	~
Minimum value:	Direct input / Step +/-	
Maximum value:	Slider	
-	Circular slider	
Step:	Custom value select	
Vertical slider:	Visible only Usermode	

4.1.2.4. Direct input / Step +/-

0 +	
	×
	<u> </u>
32/1/4 light_2	
Direct input / Step +/-	~
0	
255	~
51	
#00CC28 × ×	
40 🗘 %	
50 🗘 %	
	0 + 32/1/4 light_2 Direct input / Step +/- 0 255 51 #00CC28 ★ ★ 40 % 50 %

- Minimum value minimum allowed value
- Maximum value maximum allowed value
- Step step size for each +/- button press
- Control background color custom background color for this control element
- *Background transparency* custom background transparency
- Control size scale size of the control element



- Minimum value minimum allowed value
- Maximum value maximum allowed value
- Step step size for each < and > button press, when dragging or clicking the slider the final value will be adjusted to the closest value matching the step size
- Vertical slider change the slider orientation to vertical (not available in *Touch* mode)
- *Invert vertical slider* top becomes the minimum value, bottom becomes the maximum
- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element



- *Minimum value* minimum allowed value
- Maximum value maximum allowed value
- Step step size for each < and > button press, when dragging or clicking the slider the final value will be adjusted to the closest value matching the step size
- Slider color color of the active part of the slider's line
- Background color color of the inactive part of the slider's line
- Round line cap use round line cap for the slider's line
- *Hide title* whether to hide the title (object name)
- *Hide min/max/step buttons* whether to hide up/down buttons
- Line thickness thickness of the slider line
- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

4.1.2.5. Custom value select

Select from a list of custom values. Values can be defined in Vis. parameters

	0 75 255		255			
255 0 75 255 Default text: Object value: 0 ◇ Display text: 0 ◇ Display text: 0bject value: 75 ○ Display text: 75 Object value: 255 ○ Add custom value Visualization parameters Object: 32/1/4 light_2 Control type: Custom value select Show icons in Usermode: □ Control background color: #00991E Stackground transparency: 40		×				
ılt text: t value: t value:	0 75	< > < >	Display text: Display text:	0 75	8	
t value: dd custom valu	255 Ie	~ ~	Display text:	255	8	
Visualizatio	n parameters				×	
Object: Control ty Show icon Control ba Backgrour Control siz	pe: s in Usermode: ackground color: nd transparency: ze scale:		32/1/4 light Custom va #00991E 40 ♀ 100 ♀	∴2 alue select ✓ × ✓ %		
	a values ut text: t value: t value: t value: dd custom valu Visualization Object: Control ty Show icon Control ba Backgrour Control siz	0 75 255 at text: 1t text: 1t text: 1t value: 0 t value: 75 t value: 75 t value: 255 dd custom value Visualization parameters Object: Control type: Show icons in Usermode: Control background color: Background transparency: Control size scale:	0 75 255 at text: t value: 0 t value: 75 t value: 255 dd custom value Visualization parameters Object: Control type: Show icons in Usermode: Control background color: Background transparency: Control size scale:	0 75 255 1 1 1 1 1 1 1 1 1 1 255 255 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 75 255 255 avalues 255 akt text:	0 75 255 255 akt text:

- Show icons in Usermode use icons instead of textual values, icons can be defined in the Visualization editor (Additional icons)
- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

Visualization parameters	
Object:	32/1/5 my_RGB_color
Send after each color pick:	
Number of presets to show:	3 💌
Preset 1:	#FF3333 👻
Preset 2:	#00FF32 ¥
Preset 3:	#0026FF 💙
Control size scale:	100 🗘 %
	Save Cancel

- Send after each color pick specifies whether to send the new value after each color pick or only when $Ok \bigvee$ is clicked
- Number of presets to show the number of predefined presets to show
- Preset preset color
- Control size scale size of the control element

Object: 32/1/9 my_RGBW
Number of presets to show: 1
Preset 1: #33FFCC > White 15
Control size scale: 100 🔷 %
Save Cancel

- Send after each color pick specifies whether to send the new value after each color pick or only when Ok \checkmark is clicked
- Number of presets to show the number of predefined presets to show
- Preset preset color and white % value
- Control size scale size of the control element

4.1.2.8. DALI brightness and color temperature

	- +	
Visualization parameters		×
Object:	32/1/12 dalibrct	
Step size:	25%	
Control type:	Color temperature	
Control background color:	× •	
Background transparency:	0 🗘 %	
Control size scale:	100 🗘 %	
	Save Cancel	

- Step size step size for the value change, pressing +/- sends up/down command with the defined step size respectively, releasing sends stop
- Control type selects which property to control either brightness or color temperature
- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

4.1.2.9. Combined On/Off (read-only)

		off	
1	Visualization parameters		×
	Object: Display value of output:	32/1/13 combinedonoff	
		Save	Cancel

• Display value of output - selects which object number (1..16) is used for value display

4.1.2.10. Text (ASCII character, 14 byte string, 250 byte string)

	*	
Visualization parameters		×
Object: Control background color: Background transparency: Control size scale:	32/1/14 ascii_char 0 0 % 100 0 %	
	Save Cancel]

- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

4.1.2.11. Time / day

	Friday		~	·]	
	•	•	•		
	17	21	15		
	~	*	*		
		~	×		
Visualization para	meters				
Object: Control size scal	e:	32/1/17 ti 100	ime_day %		
			Save	C	an

• Control size scale - size of the control element

							·
	<		Mar	ch 2	022		>
	Мо	Tu	We	Th	Fr	Sa	Su
	28	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
	4	5	6	7	8	9	10
							**
					~		*
I		i an		i and a second			
Visualization parameter	ers						
Object:			32	2/1/	18	date	e
						~	
Control size scale:			1	00	1	¥	%
							Sa

• Control size scale - size of the control element

4.1.2.13. 1 byte enumeration

If a sub data type is selected (20.x) the control behaves like a Custom value select with predefined values depending on the data type.

		0			
ſ		medium			
	high				
	medium				
	low				
	void				
(
/isualization parame	eters				×
Object:		32/1/20 priority			
Control background	l color:	×	~		
Background transp	arency:	0 🗘 %			
Control size scale:		100 🗘 %			
		S	ave	Cancel	

- Control background color custom background color for this control element
- Background transparency custom background transparency
- Control size scale size of the control element

4.1.3. Change the object value

Click 📾 to change the object value. Control elements depend on the object data type and visualization parameters.

Set object va	ue	×	Set object value			×
Object nam Group addr Data type: New value	e: Weather T High ss: 5/1/5 09. 2 byte floating point 21):	Ð	Object name: Group address: Data type: New value:	Output 1 1/2/1 01.001 switch false	 •	
	Save Cancel			Save	Cancel	

4.1.4. Custom values

Click sto map textual values to certain numerical object values. When the *Default text* is set it will be shown when no matching object value has been found. Otherwise raw object value is displayed.

Custom values are available only for Boolean and integer data types. For Boolean data type use 0 for off/false and 1 for on/true.

Custom values		×
Default text:	Bedroom light	
Object value:	0 🗘 Display text: Light off	
Object value:	1 Display text: Light on	

4.1.5. Object control bar

O Add new object	O Auto update enabled	Clear	Mass edit	🙆 Mass delete	I

• Add new object - manually add new object to the list

Create object		×
	Create standard object	
	Create virtual object	

Virtual objects cannot appear on KNX/TP and KNX/IP, but can be accessed via BACnet and Remote services. Use virtual objects for values that are internal to the LM.

- Auto update enabled whether the object list is updated automatically or not when object values are changed
- *Clear* clear the list of group addresses
- Mass edit edit certain parameters of multiple objects at once:
 - object properties
 - visualization parameters
 - custom values

Mass edit		×
Group address list:	24 object(s) selected	~
Field list:	1 field(s) selected	*
Data type:	01.002 boolean	*

• Mass delete - delete all objects that either have no name set, no data type set or all objects matching the current filter

4.1.6. Object filter

Object list can be filtered by name/group address, data type and tags.

Wildcard(for example 1/1/*) can be used for filtering multiple groups addresses. Several filters can be specified, separated by comma.

Object filter	Group add	Object name	IP > L	Loc >	Event	Data type	Current value
Name or group address:	1/1/1				2	01. 1 bit (boolean)	1
light	1/1/8					01. 1 bit (boolean)	1
igne	1/1/9					01. 1 bit (boolean)	1
Data type:	1/3/1					01. 1 bit (boolean)	1
All datatypes	32/1/1 💟	Light_for_mosaic			2	01.001 switch	off
Tags:	32/1/2 💟	status			2	01.002 boolean	false
	32/1/3 💟	light_1				03. 4 bit (3 bit c	No control, Break
Match mode:	32/1/4 💟	light_2				05. 1 byte unsig	255
	32/1/5 💟	my_RGB_color			à	232.600 RGB c	
All tags	32/1/6 💟	Scheduler_object			à	01.001 switch	off
Apply filter Cancel	32/1/7 🔽	Scheduler_on_off_object			A	01.001 switch	on

Match mode:

All tags - represents AND function when all tags must match Any tag - represents OR function when at least one of tags must match

4.2. Object logs

Telegrams from objects that have the *Log* property enabled are available in the *Object logs* tab.

Objects Object logs Scripting	ng Schedulers Tren	nd logs Scenes	s Vis. structu	re Visualizatio	n Vis. graphic	s Utilities
Object log filter	Log time	Object addr	Туре	Source add	Login / met	Object name
Start date:	08.03.2022 16:57:1	32/1/2 🔽	write	local (se)		status
	08.03.2022 16:57:1	32/1/1 🔽	write	local (us)	admin	Light_for_m.
End date:						
Tags:						
Value:						
Source address:						
Login / metadata:						
Apply filter Cancel	Clear Export a	all logs	Page 1	of 1	2	

Logs can be filtered by the following criteria:

- Start date start date and time
- End date end date and time
- Name or group address specific name or group address of the object (* wildcard allowed)
- Tags object tags
- Value object value
- Source address source address when the telegram comes from KNX/TP or KNX/IP, *local* otherwise
- Login / metadata additional telegram information. For example: login and IP address if the value has been changed by a local or a cloud user

Click Clear to remove all object logs.

Object log size can be changed in *LogicMachine
→ Utilities → General Configuration*

4.3. Scripting

The Lua programming language is used for scripting (LuaJIT, compatible with Lua 5.1). Most of the Lua language aspects are covered in the first edition of "Programming in Lua" which is freely available at <u>www.lua.org/pil/</u>

Note! the latest Lua reference manual for LogicMachine can be found at <u>kb.logicmachine.net/libraries/lua/</u>

Scripts types:

- *Event-based* executed when a group event occurs (read/write/response)
- *Resident* function executed in an infinite loop with a defined sleep time between each iteration
- Scheduled executed at a defined time and date
- User libraries custom function libraries that are used in other scripts
- Common functions common functions that are used by other scripts
- Start-up (init) script executed when the system starts

4.3.1. Adding a new script

Click Add new script at the bottom of the Event-based, Resident or Scheduled

LogicMachine	Neighbours: Select neighbour	e: English v Start page Logou
Objects Object logs Scripting Sc	thedulers Trend logs Scenes Vis. structure Visua	lization Vis. graphics Utilities
Event-based Resident	Scheduled User libraries C	ommon functions
Script name	Group address / tag A Description Categ	ory Editor Ac Du De
Event for my_object (1/1/1)	1/1/1	2 🔍 🗈 🕲
Event for Light_for_mosaic (32/1/1)	32/1/1	in in iteration in
Event for Light_status (32/1/2)	32/1/2	A A A A A A A A A A A A A A A A A
Event for Scale_for_dimmer (32/1/3)	32/1/3	A A A A A A A A A A A A A A A A A
Event for light_2 (32/1/4)	32/1/4	A A A A A A A A A A A A A A A A A
Add new script		

4.3.1.1. Event-based

Event-based script	>	<
Script name:	Event for first (0/0/1)	
Group address / tag:	0/0/1 🗸	
Active:		
Execute on group read:		
Execution mode:	Normal	
Category:	~	
Description:		
	Save Cancel	

- Script name name of the script
- Group address / Tag specific group address or a tag name which triggers the script
- Active whether the script is active (green circle) or disabled (red circle)
- Execute on group read whether the script is executed when a group read telegram is received. By default scripts are triggered by group write/response telegrams
- *Execution mode* there are three possibilities of event script execution behaviours:
 - *Normal* if the event is triggered multiple times in quick succession, then script will execute for each event trigger
 - *First instance only* a new script instance is not executed if a script instance is already running when a new event is triggered
 - *Last instance only* an existing script instance is stopped if it is running and a new script instance is executed when a new event is triggered
- Category new or existing category for the script. This allows filtering scripts by category, it is also shown in the Tools \rightarrow Print script listings page
- Description description of the script

Event-based scripting can be used to implement custom logic for group address or tag events. User-defined function is executed when a "group write/response" or "group read" (if enabled) event occurs for a given group address. Event information is stored in the global *event* variable. Variable contents:

- *dstraw* (integer) raw destination group address
- *srcraw* (integer) raw source individual address
- dst (string) decoded destination group address (for example: 1/1/4)

- *src* (string) decoded source individual address (for example: 1.1.2)
- type (string) type of the event, either 'groupwrite', 'groupread', 'groupresponse'
- dataraw (string) event data as a binary string
- datahex (string) event data as a hex-encoded string

To get the event value use the following command: value = event.getvalue()

4.3.1.2. Resident

Resident script		×
Script name:	PWM	
Sleep interval (seconds):	0	
Active:		
Category:	~	
Description:	Converts 0100% to On/Off	
	Save Cancel	

- Script name name of the script
- Sleep interval (seconds) delay between each script execution
- Active whether the script is active (green circle) or disabled (red circle)
- Category new or existing category for the script. This allows filtering scripts by category, it is also shown in the Tools \rightarrow Print script listings page
- Description description of the script

Note! Even though resident scripts are executed in parallel they should not have internal infinite loops or it will not be possible to reload scripts after editing.

4.3.1.3. Scheduled

Scheduled script				×
Script name:		Floor heating off		
Minute:	2	0		
Hour:	2	8,19		
Day of the month:	2	*		
Month of the year:		Every month of the year	~	
Day of the week:		Every day of the week	~	
Active:				
Category:			~	
Description:		Turns floor heating OFF at 8:00 and 19:0	0	
		Save	ncel	

- Script name the name of the script
- *Minute, Hour, Day of the month, Month of the year, Day of the week* specifies when the script is executed
- Active whether the script is active (green circle) or disabled (red circle)
- Category new or existing category for the script. This allows filtering scripts by category, it is also shown in the Tools \rightarrow Print script listings page
- Description description of the script

Scheduled scripts are executed when the system date/time matches the specified script start date/time. Scheduled script is run only once for each matching date/time.

Scheduled scripts use standard *cron* format for date/time parameters. Valid values are:

* - execute script every minute, hour or day.

*/N – execute script every N minutes, hours or days. N is an integer, script is executed when the current value divided by N gives 0 in modulo. For example, script with hour parameter set to */8 will be executed when hour is 0, 8 and 16.

N – execute script exactly at Nth minute, hour or day.

N-K – execute script when minute, hour or day in the N-K range (inclusive).

N,K — it is possible to specify several N and N-K type parameters separated by a comma. For example, script with minute parameter set to 15,50-52 will get executed when minute is 15, 50, 51 and 52
4.3.2. List of scripts

LogicMachine		Neighbours: Select neighbour	✓ Language: English	✓ Start page Logout
+ Objects Object log	s Scripting Schedulers	Trend logs Scenes Vis. structure	Visualization Vis. graphics Utili	ties User access Dali •
Event-based	Resident	Scheduled User libraries	Common functions Start-u	ip (init) script
Script name 🔺	Sleep interval (seconds)	Description Category	Editor Active	Duplicate Delete
my_script	10			<u>)</u> (3)
O Add new script				

Available actions:

- Editor open scripting editor interface
- Active activate (green) or deactivate (red) the selected script
- Duplicate duplicate the selected script
- Delete delete the selected script

4.3.3. Script editor

Click is to open the editor.

Conditionals Coops and iterators Coops and itera	<pre>1 input = '1/1/3' 0.100% 2 output = '1/1/1' binary output 3 period = 30 whole period time in 4 5 value = grp.getvalue(input) 6 ontime = period * value / 100</pre>	seconds Group addresses: Objects by name:	~
 Alers and logs Time functions Miscellaneous Serial Modbus 	<pre>7 8 log(value, ontime) 9 10 if ontime > 0 then 1 grp.checkwrite(output, true) 12 os.sleep(ontime) 13 end 14 15 grp.checkwrite(output, false) 16 os.sleep(period - ontime) 17 </pre>	Storage: Storage: Scripts: Select topic Basic Functions String Manipulation Table Manipulation Table Manipulation Mathematical Funct Input and Output Fa Operating System a Object access and o JSON Script data storage Scenes Bit operators Serial library Encoding / Decodin TCP/UDP socket lib Scripting basics Editor	a library rary
	Logs Error log	Disabled Save	Save and close Close

4.3.3.1. Left sidebar

- *Helpers* predefined code snippets categorized by the use case, click an entry to insert it into the script
- Data types list of available data type constants, click an entry to insert it into the script
- Scripts list of all scripts for quick switching

4.3.3.2. Right sidebar

Event-based: Event for Light_for_mosaic (32/1/1) Show code shortcuts		¢ >>
<pre>1 value = event.getvalue() 2 grp.write('32/1/2', value)</pre>	Group addresses:	~
3 4	Objects by name:	~
	Tags:	•
	Storage:	~
	Scripts:	*
	Select topic	Back
	Basic Functions	^
	String Manipulation	
	Table Manipulation	
	Mathematical Functions	
	Input and Output Facilities	
	Operating System and Date / Time functions	
	Object access and control	
	JSON	
	Script control	
	Script data storage	
	Scenes	
	Bit operators	
	Serial library	~
		Search
Logs Error log Error log	abled Save Save and close	Close

- Group addresses, Objects by name, Tags, Storage, Scripts drop-down lists of all relevant values, click an entry to insert it into the script
- Built-in help Lua function documentation, click plus to insert a code snippet into the script

4.3.3.3. Bottom toolbar

	(((
Logs	Error log	Run script	C Enabled	Save	Save and close	Close

- Logs display a floating window containing Error logs
- Error logs display a floating window containing Error logs
- Run script execute the script (not available for resident and libraries)
- Enabled/Disabled toggle script status
- Save save the script and continue editing
- Save and close save the script and close the editor window
- Close close the editor window without saving the script

4.3.4. User libraries

LogicMachine	Neighbours: Select neighbour	Language: English
Objects Object logs Scripting Schedulers Trend logs	Scenes Vis. structure Visualization Vis. gr	aphics Utilities User access Dali Mod 🔶
Event-based Resident Scheduled	User libraries Common functions	Start-up (init) script
Script name 🔺		Editor Kee Del
user.dali		
Add new library		

User libraries contain custom functions that are used in other scripts.

User library	
Script name:	my_lib
Keep source:	Required if library provides block functions
Auto load library:	Required if library provides block functions
Description:	
	Save

- Script name unique library name
- *Keep source* library is converted to a binary form that cannot be edited when this option is disabled. Make sure to keep a backup of the source code when disabling this option
- Auto load library automatically load this library in all scripts
- Description description of the library

User libraries are manually included in other scripts by calling *require('user.library_name')* unless *Auto load library* is enabled.

4.3.5. Common functions

Common functions is a library that is automatically included in all other scripts. Functions like sunrise/sunset, email are included by default.



4.3.6. Start-up (init) script

Init script is run once each time the system starts.



4.3.7. Tools

LogicMachine		Neighbours:	Select neighbour	✓ Language: E	inglish v <u>Start p</u>	age Logout
Objects Object logs Scripting Sc	chedulers Trend logs Sc	cenes Vis. structure	Visualization Vis. graphics	Utilities User acces	s Dali Modbus	EnOceal 🗕
Event-based Resident	Scheduled	User libraries	Common functions	Start-up (init) script	Tools	
Script name 🔺	Sleep interval (seconds)	Description	Catego	ory Edi	Backup scripts	
my_script	10			4	Restore scripts	
					Print script listings	;
					🧊 Edit custom Javas	Script
					Show logs window	r i
						_
O Add new script						

- Backup scripts backup all scripts in *.gz file, Common function and Start-up *script* can be included in the backup if needed
- Restore scripts restore scripts from a backup

Restore	×
Restore mode:	 Remove existings scripts and import from backup Append keeping existings scripts
Backup file:	Browse No file selected.
	Save Cancel

• Print script listing - shows all scripts in a single page ordered by Category

Event for Light_for_mosaic (32/1/1)

Type: Event-based Active: Yes Group address / tag: 32/1/1 value = event.getvalue() grp.write('32/1/2', value)

- Edit custom JavaScript allows adding certain actions for the user visualization, schedulers and trends that are not possible by the built-in functionality. See examples at forum.logicmachine.net/showthread.php?tid=275
- Show logs window show script logs in a separate floating window

4.4. Schedulers

Schedulers are used to specify events based on date/time when an object should be set to a predefined value. Correct date, time and timezone must be set in *Utilities*. Location coordinates can be provided to make sunrise and sunset event time more accurate. It is recommended to enable time synchronization (NTP).

LogicMachine		Neighbours:	Select neighbour	r ·	✓ Lan	guage: (English	~	Start	<u>t page Lo</u>	<u>ogout</u>
Objects Object logs	s Scripting Schedu	lers Trend logs Sce	nes Vis. structu	ure Visualization	Vis.	graphics	Util	ities	User acc	cess E	Dali 🗕
Schedulers	Holidays										
Name	Object	On/off object	Start date	End date	Ev	Мо	Мо	Acti	Du	Del	
- No category -											
lamp	32/1/6 💟 Scheduler	32/1/7 💟 Scheduler	01 January	31 December		•	4	\bigcirc	Ľ	8	
O Add scheduler	Direct link	sort order									

4.4.1. Add scheduler (admin interface)

Scheduler		
Object:	2/2/2 for_shceduler	~
Active:		
Scheduler on/off object:	- Not set -	*
Name:	my_schedule	
Category:		~
Start date:	01 🗘 January	*
End date:	31 🗘 December	~
	Save	Cance

- Object the object group address which will be controlled by scheduler
- Active whether the scheduler is active or not
- Scheduler on/off object object that can be used to enable/disable this scheduler
- Name name of the scheduler
- Category category of the scheduler
- Start date start date of the scheduler
- End date end date of the scheduler

4.4.2. Scheduler events (admin interface)

Events can be added both in the admin and the end user interfaces.

LogicMachine		Neighbours: (Select neighbour		✓ Language: (English	✓ <u>Start p</u>	age Logout
Objects Object logs	Scripting Schedule	ers Trend logs Scen	es Vis. structure	Visualization	Vis. graphics	Utilities	User acces	s Dali 🔸
Schedulers	Holidays							
Name	Object	On/off object	Start date	End date	Events Mo	Mo Act	ive Du	Del
- No category -								
lamp	32/1/6 💟 Scheduler	32/1/7 💟 Scheduler	01 January	31 December	📷 ^	÷ () 🗈	8
my_schedule	2/2/2 for_shceduler	3/3/3 for_scheduler_2	01 January	31 December	🕞 🏠	÷ () 🗋	8
O Add scheduler	Direct link	ort order						

	Event			
	Active:			
	Name:			
	Run at:	Specific time	~	
	Start time:	12 🗘 hr 00 🗘 min		
	Day of the week:	All	~	
	Weekday in month:	All	~	
	Days of the month:	All	~	
	Months:	All	~	
	Year:	*		
	Holidays:	No effect	~	
	Value:	- Not set -		
	Leave year blank for re	ecurring events		
		-		
Add event		Save	Cancel	

- Active whether the event is active or not
- Name name of the event
- *Run at -* specific time, sunrise, sunset
- Start time start time for the event
- Days of the week days of the week when the event will be triggered
- Weekday in month weekdays of the month when the event will be triggered
- Days of the month days of the month when the event will be triggered
- Months months of the year when the event will be triggered
- Year year when the event will be triggered
- Holidays "do not run on holidays" or "run only on holidays"
- Value value to send to the group address when the event is triggered

4.4.3. Scheduler holidays (admin interface)

Lo	gicMachine			Neight	bours: Sele	ct neighbour	~	Language	: Er	nglish	~	Start page	Logo	out
+	Objects Object logs	Scripting	Schedulers	Trend logs	Scenes	Vis. structure	Visualization	Vis. graph	ics	Utilities	ι	Iser access	Dali	-)
	Schedulers	Holida	ys											
	Name	H	loliday					×				Delet	е	
I	my_sheduler_holiday		Name:									8)	
			Holiday type:		Specific dat	te		~						
			Day:		01			*						
			Month:		January			*						
			Year:					*						
			Duration (days):		1			*						
			🕕 Leave year l	blank for recu	rring holiday	S								
							Save	Cancel						
(Add holiday													

- Name holiday name
- Holiday type either Specific date or Day of the week
 - Specific date:
 - Day day of the month value
 - Day of the week:
 - Day of the week specific day of the week (e.g. 2nd Monday)
- Month holiday month value
- Year holiday year value, leave blank when a holiday recurs every year
- Duration (days) holiday length in days

4.4.4. Direct link (admin interface)

To get a direct link to a specific scheduler click the Direct link button. This link can be used to include scheduled in the Visualization via the Frame element.

LogicMachine		Neig	hbours: Se	lect neighbour		✓ Lan	iguage:	English	· · ·	Star	<u>t page</u> <u>Logout</u>
+ Objects Object log	s Scripting Schedu	lers Trend logs	Scenes	Vis. structure	Visualization	Vis.	graphic	s Uti	lities	User ao	cess Dali -
Schedulers	Holidays										
Name	Object	On/off object	Sta	art date E	End date	Ev	Мо	Мо	Acti	Du	Del
- No category -											
lamp	32/1/6 💟 Scheduler	32/1/7 💟 Schedu	ıler 01	January 3	1 December	C.	Ŷ	₽	0	Ę	8
my_schedule	2/2/2 for_shceduler	3/3/3 for_schedu	ler_2 01	January 3	1 December	- Ca	•	-	0	Ę	8
	Direct link						(×			
	Scheduler:	my	schedule				~				
	Links	,		h a dadaa a	2						
	LINK:	/50	dud-vis/so	nequiers nd=	Ζ						
	Show holidays:										

4.4.5. Scheduler events (user interface)

F Q						● + # A
Q o	*					
LogicMachine	System config	Visualization	Touch	Schedulers	Trend logs	25

≡ <	Holidays	>
lamp	riod	• Add holiday
my_schedule		
Holidays		

_		
=		
=		
_		

Status: active

<

1 January - 31 Decem	ber			
Name		Run at	Value	• Add ever
		10:58	1	C Edit X Delet
	my_schedule		> † C	
			Add event	
	un at	Value	✓ Event is active Name	
	0:58	1	New event	
			Run at	
			Specific time v	

Start time - 12

Day of the week All Weekday in month All Days of the month Months All Recurring every year Holidays No effect ~ Value 0 ~ Cancel

÷

00

-

÷

4.4.6. Scheduler holidays (user interface)



= <	Holidays	>
lamp	riod	• Add holiday
my_schedule	lanuary	C Edit × Delete
Holidays		

Holidays			>		A		e
	Ado	l ho	lida	у			
	Nam	e		-			
	Nev	v hol	iday				
	Holid	lay ty	/pe				
	Sp	ecific	; date				~
	From	n date	е				
	<		Mai	ch 2	022		>
	Мо	Tu	We	Th	Fr	Sa	Su
	28	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
	4	5	6	7	8	9	10
	To da	ate					
	<		Mar	ch 2	022		>
	Мо	Tu	We	Th	Fr	Sa	Su
	28	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
	4	5	6	7	8	9	10
	R	ecur	ring e	every	year		
				Save	•	Can	cel

4.5. Trend logs

Trend logs store object data for a certain period of time with a predefined interval between each value.

LogicMachine					Neighbo	ours: Se
Objects Object logs	Scripting Schedulers Tree	nd logs Vis. structure	Visualization	Vis. graphics	Utilities User	access
Name	Object	Log type	Decimal places	Trend resolution	Resolution data	Daily da
Thermostat bedroom	1/1/15 (Thermostat)	Absolute value	2	1 hour	180 days	2 years
Humidity	1/1/22 (Humidity sensor)	Absolute value	2	5 minutes	30 days	2 years
Add new trend log	Direct link					

4.5.1. Add new trend log (admin interface)

Trend log		×
Object:	1/1/1	*
Name:	Thermostat	
Category:		*
Log type:	Counter	*
Aggregate function:	Average	*
Trend resolution:	1 hour	*
Decimal places:	2	~
Resolution data:	180 days	*
Daily data:	2 years	*
Always show zero:	🗌 On graph Y axis	
	Save	Cancel

- Object object which value is used as trend data source
- Name name of the trend
- Category category of the trend
- Log type [Counter, Counter with negative delta, Absolute value] type of the log. Counter type is used for metering data which is always growing (electricity, water, gas), Absolute value is used for temperature, humidity sensor data. Counter with negative delta is used for metering data that can change both ways (solar installations connected to the grid).

- Aggregate function [Average, Minimum, Maximum, Last value] function which aggregates trend data into lower resolution, only available for the Absolute value type.
- Trend resolutions [5 min .. 1 hour] how often the trend value is stored
- Decimal places decimal places for the object value
- *Resolution data* time period for which the data at the defined resolution is kept
- Daily data time period for which the daily data is kept
- Always show zero whether to always show zero on the graph Y axis

4.5.2. Direct link (admin interface)

To get a direct link to a specific trend log click Direct link.

Lo	gicMachine							Neighb	ours: Selec	ct neighbour		✓ Lang	guage: En
÷	Objects	Ob	ject logs	Scriptin	g	Schedulers	Tr	rend logs	Scenes	Vis. structure	Visualizati	on Vis.	graphics
	Name		Object			Log type		Decimal	Trend re.	Resoluti	Daily data	Log size	Create
	- No catego	ory -											
	Thermostat		1/1/1			Counter		2	1 hour	180 days	2 years	40 KB	2022.0
				[Dir	ect link							×
					т	Frend log:			Thermosta	t		*	
					v	/iew mode:			Day			~	
					Ν	Aultiple trends:		(
					L	.ink:		[/scada-vis/	trends?id=1&n	node=day		
								l					
					I	nclude IP / ho	st:	(
	🕢 Add new	trenc	l log	Direct lir	nk	thange so	ort o	order					

4.5.3. Trend log functions for scripts

kb.logicmachine.net/libraries/trends/



Click *Menu* to select which trend log to view. In *Multiple trends* view click each trend to toggle its display.



- Day/Week/Month/Year change between different view
- Current select the date for the current data
- Previous select the date for the previous data
- Show previous toggle previous data display, current and previous data can be shown together for comparison
- Single trend / Multiple trends toggle between single and multiple trend log display
- Export trend data export selected trend data into a CSV file



Click Data to view trend data in a table view.

		Trend absolut 23 Mar 2022 / 28 Mar 2022				>		1
23 Mar 2022	28 Mar 2022	^	<		Mai	rch 2	022	
00:05 613.6	458		Мо	Tu	We	Th	Fr	S
0:10 313.2	500.4		28	1	2	3	4	
D:15 433.2	571.6		7	8	9	10	11	1
D:20 196.8	561.2		14	15	16	17	18	1
0:25 638.8	417.2		21	22	23	24	25	2
0:30 524.4	548.4		28	29	30	31	1	2
0:35 305	453		4	5	6	7	8	ę
0:40 479.4	364.8		Dav					
0:45 499.2	390.2		Day					
0:50 474.6	716.6		Curre	ant	P	revio		
0:55 545	474.4		Oun			CVIO	45	F
1:00 581.2	343.2		Sin	ale tr	end		Mult	iple
1:05 570.6	205.2		Oni	gio u	onu		man	PIN
1:10 565.8	460	v			vnor	ttron	d do	to
Graph Data					spor	uen	u da	la

4.6. Scenes

4.6.1. Add a scene

Lo	gicMachine				Neighbours	: Select	neigh	nbour	~	Langua	ge: E	nglish	~	<u>Start</u>	<u>page Logo</u>	out
+	Objects	Object logs	Scripting	Schedulers	Trend logs	Scei	ies	Vis. structure	Visualiza	tion	Vis. gra	aphics	Utilitie	s U	ser access	s 🔸
	Name		-	Trigger object			Trig	ger value	Tags			Se	Act	Du	Del	
1	my_scene		-	1/1/1			0						0	Cr	8	
			Scene	2							×					
			Nar Sce Trig Trig	ne: ne is active: Iger object: Iger value: Is:		my_scer 2 1/1/1 1	ne			× •]]]					
	Add scen	e						Sat	ve	Cance	el					

- Name name for the scene
- Scene is active whether the scene is active
- Trigger object object that triggers the scene
- Trigger value object value that triggers the scene
- Tags tags of the scene, can be used in scripts to run multiple scenes

4.6.2. Add objects to the scene sequence

Click Sequence 🔙 to add objects that will be controlled by the scene

t L	ogicMachine			Neighbours:	Select neig	nbour	v	Langu	Jage: En	glish	✓ <u>Sta</u>	art page Log
54	Objects Object logs	Scripting	Schedulers	Trend logs	Scenes	Vis. structure	Visualiza	tion	Vis. gra	phics	Utilities	User acces
	Name		Trigger object		Trigge	r value	Tags	Sequ	uence	Active	Dupli	Delete
	my_scene		1/1/1		0					0		8

Seq	uence for scene: my_scene								×
	Object	Status object	Value	Delay before	Move up	Move down	Set value	Delete	
	1/1/8		1	0	•			(3)	
	1/1/9		0	0	•			8	
		Add object				×			
		Object:	1/3/1		Y				
		Write to bus:	Does not apply to	o virtual objects					
		Status object:	Use main object		*				
		Delay before write:	0	seconds					
				Save	Cancel]			
		C							
0	Add object 💽 Run scene	● Save live values	ort order 🛛 🔞 Delete						

- *Object* sequence object
- Write to bus where the write will be sent to KNX/TP bus
- Status object optional object that can be used to get the value when saving live values
- Delay before write delay in seconds before the object value is written

4.6.3. Scene sequence toolbar



- Run scene execute this scene
- Save live values use current object value as sequence values
- Change sort order change sequence object order via drag&drop
- Delete delete selected objects from the sequence

4.7. Visualization structure

4.7.1. Levels/plans

LogicMachine		Neighb	ours: Se	elect neighbour		✓ La	nguage:	English	~	<u>Start pa</u>	age Logo	<u>out</u>
Objects Object logs Set	cripting Schedulers	Trend logs	Scenes	Vis. structure	Visualizati	on Vi	s. graphic	s Utili	ties L	Jser acces	s Dali	•
Levels / Plans Layouts / Wid	lgets											
Name	Visible	Description				Dup	Mov	Mov	Add	Export	Delete	
🚞 Main							•		\odot	(j)	8	^
📴 floor_1							•		\odot	(j)	8	
test_1	Usermode, Touch						•	4		(j)	8	
🛅 floor_2							•		\odot	ŵ	8	
iest_2	Usermode, Touch						•	4		(j)	8	
📴 Horizontal							•	4	\odot	¢	8	
AI3_1_page_H	Usermode, Touch					Ē	•			¢	8	
📊 Al2_1_page_H	Usermode, Touch						•	4		¢	8	
AI1_1_page_H	Usermode, Touch					Ē	•			¢	8	
📊 1_page_H	Usermode, Touch					Ē	•	4		¢		
Favorites_H	Usermode, Touch						•	4		¢	8	
📊 Cameras_H	Usermode, Touch							4		¢	8	
Garage doors_H	Usermode, Touch					Ē	•			¢		
	Ucormodo Touch					Pa	•	л			0	V
O Add new level 🕜 Import	E Change sort order											

Controls:

- Duplicate create a copy of the level/plan structure
- Up/Down move the level/plan up/down in the list (alternatively use *Change sort order* to re-order the structure via drag&drop)
- Add add a secondary level or a plan
- *Export* create a backup containing the selected structure that can be imported into another LM
- Delete delete the selected plan/level including any secondary levels and plans

4.7.1.1. Add new level

The *Main* level is added by default. Each top level can have several secondary levels. Each level can have several plans.

Click *Add new level* to add a new level. It is possible to protect this level and all secondary levels/plans by adding a PIN code.

LogicMachine		Neigh	bours: Se	elect neighbour	~	Language: En	g
Objects Object logs Scri	pting Schedulers	Trend logs	Scenes	Vis. structure	Visualization	Vis. graphics	
Levels / Plans Layouts / Widg	ets						
Name	Visible	Dessription	-		Du	- Mar Mo	יכ
🛅 Main	Level					×	Q
🧰 floor_1	Level name:		Villa				Q
iest_1	Pin code:						Ų
📴 floor_2	Descriptions						Ų
iest_2	Description:					4	Ų
🚞 Horizontal						4	Q
📊 Al3_1_page_H						4	Ų
📊 Al2_1_page_H						4	Ų
📊 Al1_1_page_H						4	Ų
📊 1_page_H					Save	Cancel	Ų
Favorites_H							Ų
	Usermode Touch				•		л
O Add new level	Change sort order						

Click Add 💿 to perform one of the following actions:

- Add second level add a secondary sublevel to this level
- Add plan add a plan to this level
- Import import levels/plans from a backup file

LogicMachine	Neight	oours: Select neighbour	Language:	English	> 5	<u>Start pa</u>	<u>ige Log</u>	out
Objects Object logs	Scripting Schedule	rs Trend logs Scenes Vis. structure	Visualizat	ion Vis	. graphic	s U	tilities	+
Levels / Plans Layouts /	Widgets			_				
Name	Visible	Select an action	×	. Mo	Ad	Ex	De	
Sauna_H	Usermode, Touch	Add second level					(3)	^
📊 Kitchen_H	Usermode, Touch	Add plan				W	3	
📊 Hall_H	Usermode, Touch					(j)	3	
📊 Security panel_H	Usermode, Touch	Import				(j)	3	
📊 Garage_H	Usermode, Touch			- •	_	(j)	3	
📄 Villa			- En - 1	• - ₽	\odot	(j)	8	\vee
O Add new level Revel	t 🕅 🗄 Change sort ord	ler			_			

Select Import to import levels and plans from a file (it can be exported from another LM). Object links between visualization elements and group addresses can either be cleared or kept.

Plan		X
Parent:	Villa	
Name:	1_page_2	
Plan size:	1024 🗘 768 🗘 🔲 🗸	
Layout:	- 🗸	
Usermode visualization:	Show 🗸	
Touch visualization:	Show 🗸	
Pin code:		
Primary background image:	× •	
Secondary background image:	× •	
Background color:	× •	
Touch background color:	× •	
Repeat background image:		
Fixed primary background:		
	Save Cancel	

- Parent name of parent level
- Name name for the plan
- Plan size plan size in pixels
- Layout layout for this specific plan. Layout is a plan that is displayed under the current plan
- Usermode visualization [Show, Show and make default, Hide] plan visibility in the Usermode visualization
- Touch visualization [Show, Show and make default, Hide] plan visibility in the Touch visualization
- PIN code protect plan access via PIN code
- Primary background image primary background image from Vis.graphics → Images/Backgrounds
- Secondary background image secondary background image from Vis.graphics → Images/Backgrounds
- Background color background color for the Usermode visualization
- Touch background color background color for the Touch visualization
- *Repeat background image* background image display mode, should be enabled for tiled background images
- Fixed primary background whether to fix the background image when scrolling

4.7.2. Layouts / Widgets

4.7.2.1. Add new layout

Layouts are plans that can be displayed under visualization plans to provide common controls, menus etc. *Layouts* cannot be used in the *Touch* visualization.

Objects	Object logs Scripting Schedul	ers Trend logs Scenes	Vis. structure	Visua	lization	Vi	+
Levels / Plans	Layouts / Widgets						
Name			D.	A	E	D	
Layouts	Layout			×		0	
Widgets	Parent:	Layout					
	Name:						
	Plan size:	1024 🗘 768 🗘 💷 -)				
	Primary background image:		×	*			
	Secondary background image:		×	*			
	Background color:	× 🕶					
	Touch background color:	× •					
	Repeat background image:						
	Fixed primary background:						
		S	ave Ca	incel			
L							
🕒 Add new la	yout 💽 Add new widget						

- Name layout name
- Plan size layout size in pixels
- Primary background image primary background image from Vis.graphics → Images/Backgrounds
- Secondary background image secondary background image from Vis.graphics → Images/Backgrounds
- Background color background color for the Usermode visualization
- Touch background color background color for the Touch visualization
- *Repeat background image* background image display mode, should be enabled for tiled background images
- Fixed primary background whether to fix the background image when scrolling

4.7.2.1. Add new widget

Widgets are plans that are shown in a pop-over window on top of the visualization plan. Only one widget can be visible at a time.

LogicMachine	Neighbours: Select neig	jhbour 🗸	Language: Engl	lish v	<u>Start page</u> Lo	<u>gout</u>
Objects Object logs Script	ing Schedulers Trend logs	Scenes Vis. structure	Visualization	Vis. graphics	Utilities	U →
Levels / Plans Layouts / Widget	s					
Name				D Ad	. Ex D	
Layouts	Widget			×		•
🛅 Widgets	Parent:	Widget				
	Name:	Thermostat				
	Plan size:	1024 🗘 768 🗘	-			
	Widget position:	~				
	Primary background image:	Al_BG_hor3.jpg		× •		
	Background color:	#FFA333 × •				
	Touch background color:	× •				
	Repeat background image:					
	Fixed primary background:					
			Save	Cancel		
O Add new layout O Add new wid	dget					

- Name widget name
- *Plan size* widget size in pixels
- Widget position fixed widget position in pixels relative to the top left corner of the plan. Leave empty to automatically position the widget relative to the element that it is linked to
- Primary background image primary background image from Vis.graphics \rightarrow Images/Backgrounds
- Background color background color for the Usermode visualization
- Touch background color background color for the Touch visualization
- Repeat background image background image display mode, should be enabled for tiled background images
- Fixed primary background whether to fix the background image when scrolling

4.8. Visualization

Logic Ma	chine															
Scripting	Objects Object logs	Schedulers	Trend logs	Vis. structure	Visualization	Vis. graphics	Utilities	BACnet	Dali	Modbus	Enocean	1-wire	Alerts	Logs	Error log	0
Structure	e	«	\frown						OL-	u utta	100					
0	Horizontal								JC	iute	IS .					
	Al3_1_page_H															
	Al2_1_page_H															
	Al1_1_page_H		No													
	1_page_H		F								' U '					
	Havorites_H															
	Garage doors H					\frown									\frown	
	Audio Video H		W	indow right		(🙈					Window	north				
	Climate control H					Ŭ	/								Ŭ	/
	Shutters H															
	Lighting_H						\									
	Access control_H		V	indow left		(🔊)				Window				$(\diamond $)
	Bathroom_H					\sim									\sim	×
	Bedroom_H															
	Whole house_H															
	🔟 Sauna_H									••••						
	Titchen_H			K Hall						-						
	Hall_H			\mathbf{P}												
	Security panel_H															
	Garage_H															
	Vertical		VV	'indow to gar	den	(🔊)									
	1_page_2															
	Alternative_1_page_2															

Both left and right sidebars can be minimized by pressing on *is icon*.

4.8.1. Plan editor

Plan editor is located on the right side of the visualization map. Click *Unlock current plan for editing* button to add/edit visualization elements. Click *Save and reload plan* to save all changes made to the current plan.

Element position: Element size:	10 10	↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓<	Element position:	Add to plan Cance
Unlock curren	t plan for editing	Cancel	Element size:	
PU/IO: 0.11 0.03 0.01, M	lemory: 10%, KNX/IP	Sync project data	Save and	reload plan



- Object object controls, either as an icon/value or inline control element
- Link link to a different plan, internal or external resource
- Text Label text label
- Image image
- Frame inline frame for displaying internal or external resources
- Gauge metering gauge
- Camera IP web camera integration
- Graph real time graph for displaying object logs

A selected element can be deleted, moved to a predefined position, duplicated and copied.

Delete	10 🛟	10 🛟	Duplicate		Сору
--------	------	------	-----------	--	------

Element position and size can be set directly. Click *Grid* to toggle snap to grid functionality when dragging the element. Click *Lock* to keep the aspect ratio when resizing width or height.

Element position:	10	 10	\$ ⋕	ŧ
Element size:	56	 56	\$) 🔒

Plan editor		>>
Object Link	Text label Image Frame	Gaug 🔶
Main object:	1/1/1	▼ s
Status object:	Use main object	*
Custom name:		
Read-only:		
Hide in Touch:		
Hide background:		
Send fixed value:		
No bus write:	In Usermode/Touch	
Pin code:		
Widget:	No widget	*
Display mode:	Icon and value	*
Touch icon:	×	*
On icon:		~
Off icon:		~
Additional classes:		
Font size:	12	~
Text styles:	B I U	
Custom font:		*
Font color:	×	~
Show value background:		n
Show control:	Inline in Usermode	
	Add to plan	Cancel

- Main object object that is used for control and status when status object is empty
- Status object object that is used for the current value display
- Custom name custom object name, also used in Touch visualization
- Read-only object control is not allowed when enabled
- *Hide in touch* do not display this object in the *Touch* visualization
- Hide background do not display the default object icon background
- Send fixed value sends a predefined value when not empty, otherwise a toggle is performed for Boolean data type or a control element is shown
- No bus write do not send the value to KNX/TP bus
- PIN code protect writing to this object via PIN code
- *Widget* if specified, shows an attached widget when the object is clicked instead of sending a value or showing a control element
- Display mode [icon and value, icon, value] object display mode
- Default icon default object icon (except for Boolean data type)
- On/Off icon icons for on/off state of Boolean objects
- Touch icon icon for the Touch visualization
- Additional classes addition CSS classes for the element
- Show control show inline control instead of icon in the Usermode visualization, not available for all object types

Visualization parameters can be changed for each element separately (*Local parameters*). When not set the mapped object parameters are used.

Additional icons can be added for numerical objects. Each icon can be mapped to a certain value range. These icons can also be used in the *Custom value select* display mode.

Additional id	cons						×
Min value	-10	Max value	0	Icon	sun-moon-off	~	\odot
Min value	0	🕻 Max value	10	Icon	sun-moon-on	~	8
Min value	10	🕻 Max value	20	Icon	sun-rain-on	~	\odot
Min value	20	🕻 Max value	30 3	Icon	sun-rain-off	*	\odot
O Add ice	on						
						Sava	Cancel
						Jave	Cancel

Plan editor	Text label In	age Fram	>> Gaur
		age II ran	
Link to:			*
Custom name:			
Hide in Touch:			
Hide background:	<		
Display mode:	Icon		*
Icon:			~
Active state icon:		3	× •
Additional classes:			
	Add	I to plan	Cancel
Element position:	10 🗘	10 🗘	#
Element size:	-	\$	
(
Save and	eload plan		Cancel

- Link to linked to another plan, Schedulers/Trends, etc. or an External Link (it should start with http:// or https://)
- Custom name custom link name
- *Hide in touch* do not display this link in the *Touch* visualization
- Hide background do not display the default link background
- Display mode [lcon; Value] link display mode
- Icon default link icon
- Active state icon icon that is displayed when the link points to the current plan. Can be used in Layouts to create a plan menu
- Additional classes additional CSS classes for the element

4.8.4. Text Label

Text labels are only visible in the Usermode visualization.

Plan editor	>
+ Object Link	Text label Image Frame Gaug →
Text:	
Font size:	14
Text styles:	□ B □ <i>I</i> □ <u>U</u>
Custom font:	~
Font color:	× •
Additional classes:	
	Add to plan Cancel
Element position:	10 🗘 10 🗘 🌐
Element size:	 3 3 3 4 5 5 6 6 7 8 8 9 9<
Save and r	reload plan Cancel

- Text label text
- Font size label font size
- Text style old, italic, underscore
- Custom font font name
- Font color label font color
- Additional classes additional CSS classes for the element

Plan editor		>>
Object Link	Text label Image Frame	Gaug 🔶
Image source:	Local	*
Select image:		~
Image size:	~	*
External link:		
Refresh interval (seconds):		*
Additional classes:		
	Add to plan	Cancel

- Image source [Local, Remote] image source type
- Source url / Select image image source URL (external) or select an existing local image
- Image size image width and height in pixels
- External link optional external URL which is open when the image is clicked
- Refresh interval (seconds) reload the image once in X seconds, can be used to display a snapshot from a camera
- Additional classes additional CSS classes for the element

4.8.6. Frame

- Source [Url, Schedulers, Trend logs] frame source
- Url source URL
- Frame size frame width and height in pixels
- Custom name custom frame name
- Refresh interval (seconds) reload the frame once in X seconds
- Hide in Touch do not display this frame in the Touch visualization
- Persistent (Do not unload when hidden) do not unload then frame when it is not visible anymore
- Additional classes additional CSS classes for the element

Plan editor	>>
+ Object Link	Text label Image Frame Gaug 🔶
Source:	Url
Url:	
Frame size:	480 🗘 320 🗘
Custom name:	
Refresh interval (seconds):	\$
Hide in Touch:	
Persistent:	Do not unload when hidden
Additional classes:	
	Add to plan Cancel

Note! Some websites do not allow their content to be placed into an inline frame. In this case the frame will be empty.

4.8.7. Gauge



Gauge allows visualizing and changing object value in a gauge.

- Data object group address
- Gauge size gauge size (width/height) in pixels
- Custom name custom gauge name
- Read only does not show a control element when gauge is clicked if enabled
- Additional classes additional CSS classes for the element

4.8.8. Camera

Shows a window with an IP camera stream when the icon is clicked. Note that RTSP streams are not supported.

Plan editor label Image Fra 	ame Gauge Camera Graph 🔶
Local source url:	
Remote source url:	
Window size:	640 🗘 480 🗘
Custom name:	
Icon:	camera.svg 🗸
Auto open window:	
Hide background:	
Additional classes:	
	Add to plan Cancel

- Local source url source address of the video stream
- *Remote source url* remote source address of the video stream when accessing LM outside of the local network
- Window size camera window size in pixels
- *Custom name* custom camera name (window title)
- *Icon* camera element icon
- Auto open window automatically open the camera window when the camera's plan is shown
- *Hide background* do not display the default camera icon background
- Additional classes additional CSS classes for the element

Note! Due to browser security policies it's **not possible** to pass credentials in the URL using the the following format: <u>http://USER:PASSWORD@IP</u>

Certain cameras allow passing credentials in a different way. Consult the camera's manual for more information.

Note! Only cameras that support HTTP MJPEG streaming in the web browser can be visualized

4.8.9. Graph

The graph element displays object logs for a certain object. Make sure that the *Log* option is enabled for the object that is displayed.

Plan editor	>>
+ label Image Fra	ame Gauge Camera Graph 🔶
Data object:	1/1/2 Temperature
Custom name:	
Icon:	Climatecontrol.svg
Window size:	640 🗘 480 🗘
Number of points:	10
Auto-follow value:	Do not always show zero
Auto open window:	
Hide background:	
Additional classes:	
	Add to plan Cancel

- Data object source data object
- Custom name custom graph name (window title)
- Icon graph element icon
- Window size graph window size in pixels
- Number of points number of data points to display in the graph
- Auto-follow value does not always show zero on the Y axis when enabled
- Auto open window automatically open the graph window when the graph's plan is shown
- Hide background do not display the default graph icon background
- Additional classes additional CSS classes for the element



4.8.10. Touch visualization

Touch visualization is designed for touchscreen devices (iPhone/iPad/Android). By default all objects from the main visualization are visible here. *Hide in touch* option allows hiding certain objects from this view.

	Dining room	>
Temperature 27C	-	27.00 +
\diamond	Go to Trend logs 👂	
💡 Lamp2		-
💡 Lamp2		-
i Lamp2		-
Lamp2		-

4.8.11. Left sidebar bottom toolbar



- Vis. configuration open visualization configuration from Utilities
- Change Touch object order change object order for Touch visualization via drag&drop
- Usermode view open current plan in Usermode visualization
- Touch view open current plan in Touch visualization

4.9. Visualization graphics

LogicMachine	Neighbours:	Select neighbour	~	Language: Engli	sh 🗸	Start page Logout
Objects Objects	ect logs Scripting	Schedulers T	rend logs Scenes	Vis. structure	Visualization	Vis. graphics 🔸
Icons Images /	Backgrounds Font	s Edit custom C	CSS			
Filter by name:	A	pply filter Cancel	L			
						^
					Q	
Accesscontrol	Audio_Video.s	Cameras.svg	Climatecontrol	Control_Garag	Control_Ligh	nt
					Λ	~
💽 Add icons 📔 🗄 🛛	Delete selected	Delete all				

4.9.1. Icons, Images / Backgrounds

It is possible to filter graphical elements by name.

Multiple elements can be deleted at once. Click each element to select it.

A preview for large graphical elements is shown when hovering the mouse cursor over.

Click *Add icons (Add images)* to add new graphics elements. It is possible to upload a single element or a ZIP-archive containing multiple elements.

File: Browse No file selected. I No file selected. Tip archive containing multiple graphics can be uploaded, each item can exceed 2MB, whole archive size cannot exceed 32MB		
Name can contain letters, numbers, underscore and minus sign ZIP archive containing multiple graphics can be uploaded, each item can exceed 2MB, whole archive size cannot exceed 32MB	File:	Browse No file selected.
	Name can contain ZIP archive contain UP archive contain	n letters, numbers, underscore and minus sign aining multiple graphics can be uploaded, each item cannot

- Name (optional) the name of the graphic element
- File element file

4.9.2. Fonts

LogicMachine	Neighbours:	Select neighbour	r	~	Language:	English	~	Start page Logout	
Objects Object logs Scripting Schedulers Trend logs Scenes Vis. structure Visualization						n	Vis. graphics 🚽		
Icons Images / Backgrounds Fonts Edit custom CSS									
Font	Add font					×		D	
	File: Browse No file selected. ③ Only TTF and OTF fonts are supported. Page reload is required for new fonts to become visible in the visualization editor								
					Save	Cancel			
Add font									

Custom fonts can be added for visualization use. TTF and OTF formats are supported.

4.9.3. Custom CSS

Custom CSS allows customizing Usermode and Touch visualizations, Trends and Schedulers by providing custom CSS rules. Additional classes for visualization elements can be used to customize a specific element or a group of elements.
4.10. Utilities

LogicMachine	Neighbours: Select neig	hbour	✓ Language: English	✓ Start page Logout
Vis. structure	Visualization Vis. graphics	Utilities User access	G Dali Modbus E	nOcean 1-wire Alerts 🔶
Import ESF file	Import KNXPROJ file	Import neighbours	Reset / clean-up	Factory reset
Date and time	Install updates	Backup	Restore	General configuration
Vis. configuration	System			

4.10.1. Import ESF file

Where possible KNXPROJ files should be imported instead. ESF does not provide full data type description of objects meaning that some data types will have to be corrected manually.

mport ESF nie	Renurs No file colorito d
It will be neces	ary to set correct data type for some imported objects. Existing
objects will not duplicates and	be overwritten. Objects with the same name are considered night not get imported

4.10.2. Import KNXPROJ file

Import KNXPROJ file		\times
File:	Browse No file selected.	
Password:		
Update existing objects:		
Add objects without data type:		
Add level names to objects:		
Import security keys:		
Create filtering table from the project data:		
Set group address filtering policy to "Accept":		
i Objects with the same name are considere	d duplicates and might not get imported	
	Save Cancel	

- Password ETS project password (optional)
- Update existing objects updates existing objects
- Add objects without data type whether to import objects that do not a have a data type assigned
- Add level names to objects when enabled the object name is formatted as Main group name - Middle group name - Group address name
- Import security keys for KNX secure communication
- Create filtering table from the project data creates a filtering table to control which group address telegrams are allowed to pass
- Set group address filtering policy to "Accept" telegrams with group addresses not included in the filtering table may be blocked, depending on the filtering configuration

4.10.3. Import neighbours

Import objects from another LogicMachine on the network. Remote services must be enabled on the neighbour device.

Import neighbours	×
Neighbour device:	LogicMachine-4 (192.168.1.17)
Remote password:	
	Save Cancel

4.10.4. Reset / clean-up

Use Reset / clean-up to delete certain system

Reset / clean-up	×
Objects:	
Object logs:	
Alerts:	
Logs:	
Error logs:	
Script and application storage:	
Save	cel

Warning: clearing script and application storage will delete configuration for installed applications.

4.10.5. Factory reset

Delete current configuration and return to factory defaults. Does not affect System configuration settings.

Factory	reset	×
?	Warning: factory reset will delete everything, make sure you have backed up before doing so. Device will reboot after reset is complete. Are you sure you want to proceed?	
	Yes No	

4.10.6. Date and time

For better precision of *Scheduler* sunrise/sunset functionality it is recommended to provide exact coordinates of the Latitude/Longitude.

Date and time		×
Current:	Mon Mar 14 11:39:36 2022	
Time:	11 🗘 39 🗘 36 🗘 Get from system	
Date:	14.03.2022	9
Timezone:	UTC 🗸	r
Warning: NTP client i recommended	s enabled, changing date and time manually is not	
First day of the week:	Monday Sunday	
Latitude/Longitude:	\$	
Note: when left empty, latitude and longitude are taken from the current timezone and may not fully match the actual location		
	Save	el

4.10.7. Install updates

Updates are provided via *.lmup package files. Depending on an update an automatic system reboot might be performed after installation.

Install updates	×
Update package file:	Browse No file selected.
Make sure that update Device will reboot after	package can be installed for the version you are using. successful update
	Save Cancel

4.10.8. Backup

Perform project backup as a single archive.

Backup		×
Password (optional): Repeat password:		
	Save Cancel	

An optional password for the backup can be added.

4.10.9. Restore

Restore project from a backup. The current project configuration will be overwritten.

Restore	×
Backup file: Password:	Browse No file selected.
(i) Warning: maximum bac Current database, scripts Device will reboot to com	kup size is 32MB. and visualization will be deleted. plete system restore
	Save Cancel

If your backup is protected with a password, then you need to fill the Password field.

4.10.10. General configuration

General configuration		
Interface language:	English	~
Automatic address range start:	1/1/1	
Virtual address range start:	32/1/1	
Discover new objects:	Yes, bus sniffer enabled	~
Object log size:	1000	~
Default log policy:	Log only selected objects	~
Log read telegrams:		
Alert log size:	200	*
Log size:	200	*
Error log size:	200	*
Code editor tab size:	2	
 If log size is changed to a smaller value, excess logs will be deleted on next auto clean-up (every 10 minutes) Log policy only affects new objects, current per-object log settings are kept unchanged Warning: excessive object logging degrades performance 		
Save Cancel		

- Interface language interface language
- Automatic address range start starting group address for standard objects
- Virtual address range start starting group address for virtual objects
- Discover new objects whether to enable KNX bus sniffer to automatically add newly discovered objects
- Object log size maximum number of entries for Object logs
- Default log policy whether to enable the Log property automatically for newly discovered objects
- Log read telegrams whether to log read telegrams, otherwise only write and response telegrams are logged
- Alert log size maximum number of entries for Alerts
- Log size maximum number of entries for Logs
- Error log size maximum number of entries for Error logs
- Code editor tab size number of spaces to insert when pressing Tab in the scripting editor

Vis. configuration	×
Usermode sidebar:	Show as overlay (auto-hide)
Usermode view:	Center plans, enable auto-sizing \sim
Usermode page transition:	No transition
Usermode auto-size upscaling:	
Usermode background color:	× v
Usermode background image:	×v
Custom font:	\sim
Use dark theme:	
Enable swipe gesture:	
Disable object click animation:	
Hide Home button in Touch:	
Dim inactive visualization after:	minutes
Dimming level:	80 🗘 %
Show alerts in visualization:	
Allow external access via iframe:	
Allow external resources (JS/CSS):	
	Save Cancel

- Usermode sidebar sidebar navigation menu mode for Usermode visualization:
 - o Show docked sidebar is always visible on the left side next to the plan
 - o Show as overlay (auto-hide) sidebar can be toggled by the end user, it is shown over the plan
 - o *Hide (full-screen mode)* sidebar is hidden
- Usermode view plan display mode:
 - o Align plans to top left plans are shown as is aligned to top left screen corner
 - o Center plans plans are centered both vertically and horizontally, content is cropped from sides if it does not fit inside the scree
 - o Center plans, enable auto-sizing plans are centered both vertically and horizontally, downscaled automatically to fully fit inside the screen
 - o Center horizontally, auto-size width plans are centered horizontally and can be scrolled vertically when the plan height is larger than screen height
- Usermode page transition apply selected animation when changing plans
- Usermode auto-size upscaling when auto-sizing is enabled the plan is only downscaled by default, enabled this option to allow upscaling as well
- Usermode background color default background color for Usermode visualization

- Usermode background image default background image for Usermode visualization
- Custom font default visualization font
- Use dark theme whether to use dark theme for Usermode, Touch, Schedulers and Trends
- Enable swipe gesture allows changing between plans by performing a horizontal swipe gesture
- Disable object click animation disable object click animation for visualization
- *Dim inactive visualization after* show a dark overlay after a defined number of minutes
- *Dimming level* overlay opacity in %
- Show alerts in visualization show alert message when alert() is called from a script
- Allow external access via iframe allow Usermode, Touch, Schedulers and Trends to be included in an iframe element
- Allow external resources (JS/CSS) allows to include JavaScript (JS) and Cascading Style Sheets (CSS) files from external domains. Also applies to *iframe* visualization elements.

4.10.12. System

Quick access to certain System configuration settings.



When *Toggle device identification* is clicked, LED2 starts blinking red and green. Click it again to stop this process.



4.11. User access

Ŀ	ogicMachine	Ν	leighbours: Select nei	ghbour		✓ Language:	English 🗸	<u>Start p</u>	bage Logout
+	; Vis. structure	Visualization Vis. g	raphics Utilities	User access	Dali	Modbus EnOcea	an 1-wire Alert	s Lo	gs Erro 🔶
	Name	Login	Visualization acc	Schedulers acc	ess	Trends access	Apps access	Ac	De
	user	user	Partial	None		None	Partial	0	8
	O Add new user	💭 User access settin	gs Access logs						

4.11.1. User access settings

User access settings	×
Disable password for Visualization: Enable password for Apps: Enable password for User directory:	
Visualization pin code: Remember username and password: User cookie expiration days:	30
S	Save Cancel

- Disable password for Visualization disable password access for the visualization
- Enable password for Apps enable password for the main application page
- Enable password for User directory enable password access for the user directory

- Visualization pin code global pin code for the visualization
- Remember username and password whether to save credentials on the client device. Does not apply to the admin user. Credentials become invalid if client IP address changes
- User cookie expiration days how many days the saved credentials are stored

4.11.2. User directory

HTTP server-side scripts (.lp) files can be placed into the *user* directory to provide additional functionality. FTP server must be enabled to upload files to this directory. Visit our forum for examples: <u>forum.logicmachine.net</u>

4.11.3. Adding users

User		×
General Visualization Schedulers	Trend logs Apps Mosaic Advanced	
Name:	user	
Login:	user	
Cloud login (e-mail):	example@openrb.com	
Active:		
Password:	•••••	
Repeat password:	•••••	
Visualization access:	Partial	\sim
Schedulers access:	Partial	\sim
Trends access:	Partial	\sim
Apps access:	Partial	\sim
Mosaic access:	Partial	\sim
Homepage:	Default homepage	\sim
	Save Cano	el

- Name name of the user
- Login user login name
- Cloud login (e-mail) login for cloud (e-mail address)
- Active whether the user is active or not. Inactive users can't access the system
- Password user password
- Visualization access [None, Partial, Full] Visualization access rights
- Schedulers access [None, Partial, Full] Schedulers access rights
- Trends access [None, Partial, Full] Trends access rights
- Apps access [None, Partial, Full] Apps access rights
- Mosaic access [None, Partial, Full] Mosaic access rights

• Homepage - default page that is shown after a user is logged in; it can be the Default homepage, Usermode visualization, Touch visualization, Schedulers, Trend logs or any of the installed applications

Access rights:

- None no access
- Partial access to specific elements is defined in a relevant tab
- Full full unrestricted access

licer								2
General	Visualization	Schedulers	Trend logs	Apps	Mosaio	Advance	d	
∃ floor_1								1
✓ tes	t_1							
floor_2								
	t_2							
	1 name H							
	1 nage H							
	1 page H							
- √ 1 r	page H							
Fav	vorites H							
Ca	meras_H							
Ga	rage doors_H							
Au	dio_Video_H							
Clir	mate control_H							1
Shi	utters_H							
🗌 Lig	hting_H							
Acc	cess control_H							
Bat	throom_H							
Be	droom_H							
					(
						Save	Cancel	
User								×
General	Visualization	Schedulers	Trend logs	Anns	Mosaic	Advanced		
	VISUAIIZAUOTT	Schedulers	Inclid logs	Upps	MOSaic	Advanced		
Holida	iys							
Jser								X
General	Visualization	Schedulers	Trend logs	Apps	Mosaic	Advanced		
Therm	II			L				
	lostat							
User							>	K)
General	Visualization	Schedulers	Trend logs	Anne	Mosaic	Advanced		
	VISUAIIZAUUTI	Schedulers	inchia logo	npps	Hostic	Auvanced		
CANX	Machine Cloud /							
	in 3.0	NEVV)						
	ic 3.0 (Admin)							
	icusers							
user								

zigbee

User X							
General Visualization Schedulers Trend logs Apps Mosaic Advanced							
□ 1_floor □ 2_1_room							

Advanced tab allows specifying group address access filter for each user. This feature is recommended for improved security especially when a single LogicMachine is shared by multiple independent clients.



4.11.4. Access logs

Access logs contain information on successful and unsuccessful login attempts into the system. Login, IP address and access time is provided for all entries.

Access logs				×
Name	Login	IP address	Accessed at	
	admin	192.168.1.213	15.03.2022 09:19:00	^
	admin	192.168.1.213	15.03.2022 09:06:48	
	root [ssh]	192.168.1.213	15.03.2022 09:06:24	
	root [ssh]	192.168.1.213	14.03.2022 16:30:19	
	root [ssh]	192.168.1.213	14.03.2022 16:14:31	

4.12. Modbus master (RTU/TCP)

L	ogicMachine	Neighbour	s: Select neighbou	ur	~	Language:	English	v	<u>Start pa</u>	age <u>Log</u>	out
+	Visualization Vis. graphic	s Utilities User	access Dali	Modbus	EnOcean	1-wire Ale	erts Logs	Erro	rlog	About	•
	Name	Profile	Status object	Conne	ection type	Device a	Poll interval	C	М	D	
	O Add device	settings 💮 RTU sca	an Read test	Profi	les Erro	or log	rite address				

4.12.1. Modbus devices profile

Each Modbus device requires a JSON profile which specifies the list of available Modbus points and their respective data formats.

Profile format description: <u>kb.logicmachine.net/misc/modbus-profile/</u>

Click *Profiles* and then click *Add profile* to upload a new profile.

Profiles					×
Profile	Description	Manufacturer	Dow	Delete	
UIO20	Universal 16+4 I/O module	Embedded Systems	(3	
Ad	d profile	×			
	File: Browse No file selected	1.			
		Save Cancel			
O Add profile					

Note! Device entry must be created from scratch when a new or updated profile is added.

4.12.2. RTU settings

Up to three different RTU connections can be defined.

RTU settings			×
RTU 1 RTU (serial) enabled:			
Port:	/dev/RS485-1		
Baud rate:	115200		~
Parity:	Even		~
Duplex:	O Half-duplex	O Full-duplex	
Leave port empty for	automatic detection		
RTU 2 RTU (serial) enabled:			
Port:			
Baud rate:	115200		~
Parity:	Even		~
Duplex:	Half-duplex	O Full-duplex	
RTU 3 RTU (serial) enabled:			
Port:			
Baud rate:	115200		~
Parity:	Even		~
Duplex:	Half-duplex	O Full-duplex	
Reset to defaults			
		Save	Cancel

- *RTU (serial) enabled* whether to enable this connection
- Port (/dev/RS485-1; /dev/RS485-2) serial port name or leave blank for automatic detection
- Baud rate (1200..500000) serial baud rate.
- Parity (None 1 stop bit; Odd; Even; None 2 stop bits) parity/stop bits
- *Duplex* either use half or full duplex communication

4.12.3. Read test

Click Read test to read values from a Modbus RTU/TCP device.

eautest		
Connection type:	O RTU 1 O RTU 2 O RTU 3	O TCP/IP
Device address:	1	*
Function:	Coil (#1)	*
Address:	0	~
Data type:	-	*
Read swap:	Word (CDAB)	*
Read length:	1	~

- Connection type either RTU 1, RTU 2, RTU 3 or TCP/IP
- Device address Modbus device address
- Function (Coil, Discrete input, Holding register, Input register) Modbus function
- Address starting data address
- Data type data type, only available for registers
- Read swap (None (ABCD); Word (CDAB), Byte (BADC), Byte and word (DCBA)) sets word/byte order
- *Read length* number of registers/coil to read, disabled when a predefined data type is selected

4.12.4. RTU Scan

Click *RTU Scan* to scan one of RTU ports for new devices in a selected address range. Only devices that are not already present and have a valid profile will be added. Operation will finish once the whole range has been scanned or 30 seconds have elapsed.



4.12.5. Adding Modbus device

Connection type:	🔿 RTU 1 🔿 RTU 2 🔿 RTU 3 🧿 TCP/IP
Name:	
Status object:	▼ (2)
Write to bus:	Does not apply to virtual objects
Profile:	~
IP:	
Port:	502 🗘
Persistent connection:	
Device address:	1 🗘
Poll interval (seconds):	5
Timeout (seconds):	\$
① Default timeout is 0.5	seconds for TCP
-	

Click Add device to add a new Modbus device with a predefined profile.

- Connection type either one of RTU ports or a TCP/IP connection
- *Name* device name
- Status object status object of Modbus device (online/offline)
- Write to bus whether to write status to KNX/TP
- *Profile* device profile
- TCP/IP properties:
 - o IP IP address of the Modbus device
 - o Port communication port of the Modbus device
 - o Persistent connection when enabled the connection is not closed after each read cycle
- Device address slave ID of the Modbus device
- Poll interval (seconds) number of seconds between each read cycle
- Timeout (seconds) time to wait for a reply from the device

4.12.6. Object mapping

0 5

Clicking the ╘	🗐 icon to map Moc	lbus data points	to objects.
----------------	-------------------	------------------	-------------

Object mapping for UIO2	0			×
Name	Linked to object	Current value	Туре	Dele
UIO20 - Output 1	47/1/1 💟 UIO20 - O	0	Coil: 0	(\times)
UIO20 - Output 2	47/1/2 💟 UIO20 - O	0	Coil: 1	\times
UIO20 - Output 3			Coil: 2	$\left(\times \right)$
UIO20 - Output 4			Coil: 3	$\left(\times \right)$
UIO20 - Output 5			Coil: 4	$\left(\times \right)$
UIO20 - Output 6			Coil: 5	\times
UIO20 - Output 7			Coil: 6	\otimes
UIO20 - Output 8			Coil: 7	(\times)
UIO20 - Output 9			Coil: 8	\otimes
UIO20 - Output 10			Coil: 9	\otimes
UIO20 - Output 11			Coil: 10	\times
UIO20 - Output 12			Coil: 11	(\times)
UIO20 - Output 13			Coil: 12	\otimes
UIO20 - Output 14			Coil: 13	\times
UIO20 - Output 15			Coil: 14	\bigcirc
+ Map selected items to o	objects			

You can mass map the objects, by selecting the required data points and clicking

+ Map selected items to objects

Select the starting group address. The data points will be mapped to objects using the same sequence as in the mapping table.

Map selected items to objects					
Starting group address					
32/1/5					
	ОК	Cancel			

Click on a specific object to perform mapping and configuration.

lame:	uio - Input 4
_ink to object:	▼ ○
Write to bus:	Does not apply to virtual objects
Value send delta:	\$
Jnits / suffix:	V
Tags:	
Comments:	

- Name mapping entry name
- *Link to object* link this value to a new or existing object
- Write to bus whether to write object value to KNX/TP bus
- Value send delta (only applies to registers) value is sent when the difference between the current and previously sent values is larger than the defined delta. Leave blank to always send the new value
- Units / suffix (only applies to registers) object units
- Tags object tags
- Comments entry comments

4.13. Alerts

Contains a list of alert messages from scripts (*alert(*) function), KNX connection status messages and system start messages.

L	ogicMachine Neighbours: Select neighbour Language: English Start page Logout					
+	Vis. graphics Utilities	User access Dali Modb	us EnOcean 1-wire	Alerts	Logs Error log Abour	t 🔸
	Alert time	Script name	Apessade			
	17.02.2022.10:40:25	Event for my object (1/1/1)	Alert example			^
	17.03.2022 10.49.33		Alert example			- ^
	17.03.2022 10:32:56	Event for my_object (1/1/1)	Alert example			~
	Clear Pa	age 1 of 6 🕨 🔰 🍣			Displaying alerts 1 - 38 of 2	200

4.14. Logs

Contains a list of log messages from scripts (*log(*) function).

Ŀ	ogicMachine Neig	hbours: Select neighbour	Language: English	Start page Logout
+	Vis. graphics Utilities	User access Dali Modbus	EnOcean 1-wire Alerts Logs	Error log About 🔶
	Log time	Script name	Message	
	17.03.2022 10:49:35	Event for my_object (1/1/1)	* string: example of log 1	^
	17.03.2022 10:49:35	Event for my_object (1/1/1)	* string: example of log 2	~
	🗒 Clear 🛛 📀 Show logs	window	of 6 🕨 🔰 🖉 Disp	playing logs 1 - 38 of 200

Click an entry to show a window with full log text in a readable format.

4.15. Error log

Error messages from scripts and applications are displayed in the Error log tab.

LogicMachine	Neighbours: Select neighbour	✓ Language: English	Start page Logout
← Vis. graphics Utilities	G User access Dali Mod	Ibus EnOcean 1-wire Alerts Logs	Error log About 🔸
Error time	Script name	Error description	
14.03.2022 15:57:17	zigbee		^
10.03.2022 11:08:55	Event for my_object (1/1/1)	User script:1: module 'user.dal' not found: no fie	eld package.preloa
Clear 4	Page 1 of 6	Displa	aying errors 1 - 38 of 200

Click an entry to show a window with full error log text.

4.16. User Interface status information

 CPU/IO - Load average. The load average represents the average system load over a period of time. It conventionally appears in the form of three numbers which represent the system load during the last one-, five-, and fifteen-minute periods. The lower a number the better.
 Note! Inspect your running tasks if the load exceeds a level of 0.70!

More on UNIX style load calculation can be found here: http://en.wikipedia.org/wiki/Load_(computing)#Unix-style_load_calculatio n

- *Memory* RAM usage in %
- *KNX/IP / KNX/TP* type of the KNX bus connection. Current connection status is provided for KNX/TP mode
- Sync project data save all project data to the internal storage. The project is synchronised automatically every 30 minutes, or when *Reboot* or *Shutdown* commands are executed
- *KNX/TP load graph* shows average KNX bus load, click the graph to open full KNX/TP statistics

5. System configuration

System configuration allows changing system parameters, configure services, upgrade firmware and check system status.



5.1. System

5.1.1. Hostname

Hostname can be changed in System \rightarrow Hostname. This name is displayed in the browser title, it is also added to the backup file names. It appears when searching for the device using LogicMachine applications.

Hostname	×
Hostname	LogicMachine
	OK Cancel

5.1.2. Packages

Displays a list of currently installed packages. Click 💿 to add new packages.

Packages		-	×
openvpn	2.4.9-1	0	^
openvpn-lm	20200417	0	
opkg	9c97d5ecd795709c8584e972bfdf3aee3a5b846d-	0	
owserver	3.2p2-1	0	
procmon	20201214	0	
pthsem	2.0.8-1	0	
px5g	4	0	
redis	3.0.7-7	0	
rrdtool	1.4.7-3	0	
stm32flash	0.3.0-8	0	
uci	2016-04-15.1-1	0	
uclibcxx	0.2.5-3	0	
usb-modeswitch	20170322	0	
vsftpd	3.0.3-7	0	
zerotier	1.6.5-1	0	
zlib	1.2.11-1	0	
zziplib	0.13.72-1	0	
Actions: 📀			

5.1.3. Admin access

Allows changing the admin user password.

Admin access	×
Login	admin
Current password	•••••
New password	•••••
Repeat password	•••••
🕕 Warning: default admin	password is set, please change it as soon as possible
	OK Cancel

5.1.4. Upgrade firmware

Used to perform a full system upgrade (both OS and LogicMachine parts).



Note! It is recommended to perform a project backup in *LogicMachine* \rightarrow *Utilities* \rightarrow *Backup* before upgrading the firmware.

Make sure that the new firmware matches the hardware model that is being used.

5.1.5. Backup configuration

System configuration backup contains all LM service configuration files (including password) and the KNX filtering table.

5.1.6. Restore configuration

Allows restoring a system configuration backup. Note that this might change the device IP address.

Restore cor	figuration ×	
File	Browse No file selected.	
 Device will r been restor 	eboot automatically after configuration has ed	
	OK Cancel	

5.1.7. Reboot

Performs project save to disk and reboots the system.

5.1.8. Shutdown

Performs project save to disk and shuts down the system. Power can be safely removed once LED1 stops blinking and LED2 turns off. To prevent accidental shutdowns the system will be restarted automatically after several minutes.

5.2. Network

5.2.1. Interfaces

Interfaces					- ×		
Name	MAC address	IP address	мти	TX Bytes	RX Bytes	Errors	
eth0	00:1B:C5:00:46:0B	192.168.1.59	1500	1 MB	2 MB	0/0	

Click the interface name to change parameters.

Interface eth0		×
Protocol	Static IP	~
IP address	192.168.1.59	
Network mask	255.255.255.0	
Gateway IP	192.168.1.1	
IPv6	Disabled	~
DNS server 1	8.8.8.8	
DNS server 2	8.8.4.4	
MTU		

- Protocol:
 - o Static IP static IP address
 - o DHCP use DHCP protocol to get IP configuration automatically
- *IP address -* static IP address
- Network mask network mask. (255.255.255.0 by default)
- Gateway IP gateway IP address
- IPv6 enable or disable IPv6
- DNS server DNS server IP address
- *MTU* maximum transmission unit, the largest size of the packet which could be passed in the communication protocol (1500 by default)
- Use DHCP NTP servers accept NTP server addresses from the DHCP server (only in DHCP mode)

Interface eth0		×
Protocol	DHCP	~
Current IP	192.168.1.59	
Use DHCP NTP servers		
IPv6	Enabled	~
IPv6 address/prefix		
IPv6 gateway		
Duplicate IP messages	1	
DNS server 1	8.8.8.8	
DNS server 2	8.8.4.4	
MTU		

- IPv6 address/prefix static IPv6 address and subnet prefix
- IPv6 gateway gateway IPv6 address
- Duplicate IP messages how many times the system checks for duplicate addresses before determining if the IPv6 address is unique

Click 💷 to view a real-time graph of the interface traffic flow.

Network usage for interface eth0	- ×
In 9 Kbps	
Out 2 Kbps	
	60 Kbps
	40 Kbps
IIA AA AA AAAA AA AA AA AA AA AA AA AA A	
HAMMA A DAMA A . A . A MA MA HAMA MA H.	A 20 Kpps
1/1/WHW W/WW WE KALW/WW.W WH WY N 1/2/14	RIVINUN I
FRAMAARAM AMAAAMAMAAMAAMAAAA	JVQVWI

5.2.2. Routes

Routes - >						
Interface	Destination	Gateway	Network mask			
eth0	0.0.00	192.168.1.1	0.0.00			
eth0	192.168.1.0	0.0.00	255.255.255.0			
eth0	224.0.0.0	0.0.0.0	240.0.0.0			

Displays a list of current network routes.

5.2.3. ARP table

Displays a list of known IP and MAC addresses.

ARP table – ×					
Interface	IP address	Mask	MAC address		
eth0	192.168.1.1	*	4c:5e:0c:3a:24:0b		
eth0	192.168.1.213	*	a4:bb:6d:7a:a6:b4		

5.2.4. KNX connection

KNX connection	×
General IP > Local filter	Local > IP filter
Mode	TP-UART v
ACK all group telegrams	
KNX address	15.15.255
Enable IP Routing	
Pass ind. telegrams via IP Routing	
Accept IP Tunneling connections	
Multicast IP	224.0.23.12
Multicast TTL	1
Maximum telegrams in queue	100
TOS priority level (0 = no priority)	0 ~
Backbone key (encryption)	
Enable only secure communication	
 Setting the Backbone key will en 32 bexadecimal characters. Rec 	able the encryption of routing telegrams. The Key must consist of

communication" is enabled then Tunneling and non-secure Routing will be disabled.

- *Mode* KNX connection mode:
 - TP-UART KNX/TP bus connection over a built-in TP-UART interface.
 KNX/IP communication is still possible with this mode when KNX IP features are enabled
 - *IP Routing* KNX/IP Routing multicast mode with unacknowledged data exchange
 - IP Tunneling KNX/IP Tunneling connection to an external router. Router IP address must be specified in this mode, router port can be added using IP:PORT format. This is a unicast mode with acknowledged data exchange
 - *IP Tunneling (NAT mode)* same as *IP Tunneling* but allows connecting to a router outside of the LM subnetwork.
- ACK all group telegrams acknowledge reception of all group telegrams received via KNX/TP
- KNX address physical KNX address of the device
- Enable IP Routing turns on routing of KNX group telegrams over IP
- Pass ind. telegrams via IP Routing allows individual device-specific telegrams to be routed over IP; Only telegrams belonging to the same line are accepted (e.g. if LM address is 1.0.255 then only telegrams from the 1.0.x address range are accepted)
- Accept IP Tunneling connection enables external clients to connect to the KNX bus via IP using tunneling
- *Multicast IP* multicast IP address for KNX/IP Routing
- *Multicast TTL* Time-To-Live for multicast telegram (maximum number of hops)
- Maximum telegrams in queue maximum number of telegrams that can be queued
- TOS priority level (0 = no priority) Type-Of-Service priority for KNX/IP telegrams, requires a router/switch with TOS support
- Backbone key (encryption) backbone key for secured telegrams for KNX/IP Routing
- Enable only secure communication disables KNX/IP Tunneling and non-secure KNX/IP Routing, only encrypted KNX/IP Routing is supported in this mode

5.2.4.2. IP > Local filter

Filtering table for incoming telegrams from KNX/IP.

General IP > Local filter	Local > IP filter
Apply filter to tunneling	
SRC policy	No filter 🗸 🗸
Ind. address list	
 One address/range per line. Use 	* (e.g. 1.1.*) to filter all addresses in the given line.
DST group policy	No filter 🗸 🗸
Group address list	
One address/range per line. Use Note: by default Local > IP filter telegrams are also filtered. Filtering lists are updated at once	* (e.g. 1/1/*) to filter all addresses in the given line. only applies to telegrams from TP connection, unless update e, changing policies requires restart.

- *Apply filter to tunneling* whether to apply filter policy to telegrams in tunneling mode. If ETS is used it is recommended to turn this feature off
- SRC policy [No filter / Accept selected individual addresses / Drop selected individual addresses] policy for source individual addresses
- Ind. address list list of individual addresses. One address/range per line. Use * (e.g. 1.1.*) to filter all addresses in the given line
- DST group policy [No filter / Accept selected group addresses / Drop selected group addresses] policy for destination group addresses
- Group address list list of group addresses. One address/range per line. Use * (e.g. 1/1/*) to filter all addresses in the given line

It is also possible to set filtering per-object in LogicMachine \rightarrow Objects tab:

Lo	LogicMachine													
6	objects	Object logs	Scripting	Schedulers	Trend logs	Scenes	Vis. structure	Visualization	Vis. graphics	Utilities	User access	Dali	Modbus	EnOcean
_														
	Object filter 🕜 Group address 🔺 Object name IP > Loc filter Loc > IP filter Event script Data type Current value						urrent value							
	Name or group address:		1/1/1	my_	object					01.001 swite	h	of	f	
			20/1/4 🕅	Liab	for mocole					01.001 cwite	h	off	,	

5.2.4.2. Local > IP filter

Filtering table for outgoing telegrams to KNX/IP.

KNX connection		×			
General IP > Local filter	Local > IP filter				
Filter local update telegrams					
SRC policy	No filter	~			
Ind. address list					
One address/range per line. Use	* (e.g. 1.1.*) to filter all addresses in the given line.				
DST group policy	No filter	~			
Group address list					
 One address/range per line. Use * (e.g. 1/1/*) to filter all addresses in the given line. Note: by default Local > IP filter only applies to telegrams from TP connection, unless update telegrams are also filtered. Filtering lists are updated at once, changing policies requires restart. 					
	OK Cancel				

- Filter local update telegrams whether to apply filter rules to update telegrams (called by grp.update() or when Write to bus is disabled)
- SRC policy [No filter / Accept selected individual addresses / Drop selected individual addresses] policy for source individual addresses
- *Ind. address list* list of individual addresses. One address/range per line. Use * (e.g. 1.1.*) to filter all addresses in the given line
- DST group policy [No filter / Accept selected group addresses / Drop selected group addresses] policy for destination group addresses
- Group address list list of group addresses. One address/range per line. Use * (e.g. 1/1/*) to filter all addresses in the given line

5.2.5. KNX statistics

Displays KNX/TP and KNX/IP statistics, including TP bus load, number of TP repeat telegrams and a number of sent and received KNX/TP and KNX/IP telegrams.

enou	TP load	TP repeats	TP RX/TX	IP RX/TX
ast minute	23.34%	0	86 / 124	124 / 74
ast hour	11.27%	1	325 / 486	486 / 280
otal	11.27%	1	325 / 486	486 / 280
80%				
10070				
· · · · · · · · · · · · · · · · · · ·				(C-2014)
60%				\wedge
60% 40%				\wedge
60%				

BACnet settings	×
Server enabled	
Device ID	127001
Device name (optional)	
Password	mybacpwd
Object priority	16
Add group address to object name	
Use comment as object description	
Convert object units to BACnet units	
Port	47808
BBMD IP	
BBMD port	
BBMD lease time (seconds)	
	OK Cancel

- Server enabled whether the BACnet server is enabled
- Device ID BACnet device ID
- Password device password
- *Object priority* priority array position for values that are written from any other source than BACnet
- Add group address to object name append group address (X/Y/Z) to object names
- Use comment as object description use object comment field value as BACnet object description
- Convert object units to BACnet units whether to convert textual object units to BACnet units automatically
- *Port* server port number
- BBMD IP BACnet router IP. When a router IP and port are set, LogicMachine will act as a foreign device and will attempt to register with a BACnet router
- BBMD port BACnet router port. When router IP and port are set, LogicMachine will act as a foreign device and will attempt to register with a BACnet router
- BBMD lease time (seconds) registration resend interval

Only binary and numeric objects with *Export* enabled can be accessed via BACnet.

5.2.7. BACnet objects

Displays a list of exported BACnet objects. It is possible to download a CSV report containing all objects.

BACnet obje	cts			$\in \times$
Device name: L Device ID: 222 Object priority Port: 47808	ogicMachine_222 : 16			Download CSV
• Туре	◆ Instance	Device name	Current value	
2 (AV)	6500	PassivPluss 1 (3.1.100)	29	

29

5.2.8. BACnet COV settings

6501

2 (AV)

Change Of Value (COV) delta can be set for each numeric object. The maximum number of COV subscriptions can be increased up to 4096.

PassivPluss 2 (3.1.101)

BACnet COV settings	×
Maximum COV subscriptions	256
Changing COV values will cause will be reset	all active COV subscriptions to be cancelled, priority array values
Temperature	1

5.3. Services

5.3.1. NTP client/server

Network Time Protocol (NTP) service synchronizes LM date and time with external servers. Up to four NTP servers can be specified. LM can also act as an NTP server for other devices on the same network.

NTP (clock synchronization)		×
Client status	Enabled	~
Server 1	0.europe.pool.ntp.org	
Server 2	1.europe.pool.ntp.org	
Server 3	2.europe.pool.ntp.org	
Server 4	3.europe.pool.ntp.org	
Local server status	Disabled	~
	ОК	Cancel

5.3.2. HTTP server

Allows adding an additional HTTP and HTTPS port. Unsecure HTTP can be disabled. Up to four CORS client IP addresses can be provided to allow certain applications to make external requests to the LM via HTTP(s).

HTTP server	3	×
Additional HTTP port		
Additional HTTPS port		
HTTPS mode	HTTP and HTTPS enabled	•
🕕 Default HTTP port: 80, d	efault HTTPS port: 443	
CORS origin 1		
CORS origin 2		
CORS origin 3		
CORS origin 4		
	OK Cancel	

5.3.3. HTTP SSL certificate

Allows setting a custom private key and certificate. It is also possible to generate a new self-signed key/certificate pair.

HTTP SSL certificate		×
Mode	Upload new private key / certificate	~
Private key (RSA)		
Certificate (SHA256)		

5.3.4. FTP server

FTP server	×
Free space	6.9G
Server status	Disabled v
Require encryption (FTPS)	
Port	21
Username	ftp
Password	
Username	apps
Password	
External IP	
Passive mode min port	
Passive mode max port	
Leave password blank to keep i ports must be set when you wa FTP port and passive mode por	it unchanged. External IP and passive mode ant to access FTP behing NAT. Make sure both rt range are forwarded on your router.
	OK Cancel

- Server status whether the FTP server is enabled
- *Require encryption (FTPS)* whether to force FTP encryption
- Port FTP server port
- Password password for the ftp and apps users
- Passive mode min port, Passive mode max port port range for external clients to use in passive mode

Remote services		×
Service status	Disabled	~
Allow only exported objects		
Username	remote	
Password		
Leave password blank to k	eep it unchanged.	
	ОК	Cancel

- Service status whether the remote services are enabled
- Allow only exported objects if enabled then only objects with Export mark can be access via remote services
- Password password for the remote user

Request parameters and examples: <u>kb.logicmachine.net/misc/remote/</u>

5.3.6. Remote diagnostics

Should only be enabled for remote support provided by Embedded Systems.

Remote diagnostics		×
Service status	Enabled	~
() Port 22 must be	forwarded on your router	
	ОК	Cancel

5.3.7. OpenVPN client

OpenVPN can be used for secure external access to your LogicMachine. An external OpenVPN server is required.

OpenVPN client confi	guration	×
Service status	Disabled	×
Username (optional)		
Password (optional)		
Configuration file (client.ov	pn)	
tls-client		^
remote 127.0.0.1 1194		

- Service status whether OpenVPN client is enabled
- Username / Password optional client credentials
- Configuration file contents of client.ovpn configuration file

5.3.8. OpenVPN status

Displays the OpenVPN client connection logs.

OpenVPN status	- ×
Tunnel status: unknown / no connection	

5.3.9. ZeroTier

ZeroTier is a technology for secure external access to your LogicMachine.

ZeroTier set-up example: <u>kb.logicmachine.net/misc/zerotier/</u>

ZeroTier	×
Service status	Enabled V
Join network ID 1	12345678abcdef
Join network ID 2	
Join network ID 3	
Join network ID 4	
Port	9993
Network status Address: 1234567890	
	OK Cancel

- Service status whether ZeroTier is enabled
- Join network ID 1..4 network IDs to join
- Port UDP port to use
- Network status LogicMachine ZeroTier address and a list of statuses for each configured network

802.1x EAP-TLS provides certificate-based authentication for secure network access.

802.1X EAP-TLS			×
Service status	Enabled		~
Device identity			
Private key	Browse No file selected.		
Private key password			
Certificate	Browse No file selected.		
CA chain	Browse No file selected.		
		OK Can	cel

- Service status enable/disable service
- Device identity identifier that the client (the device trying to connect) presents during the authentication
- Private key client private key in PEM format
- *Private key password* optional password to protect the *Private key*
- Certificate client certificate key in PEM format
- CA chain certificate authority (CA) certificate chain in PEM format

5.3.11. WireGuard

WireGuard is a highly secure VPN protocol.

WireGuard	×
Service status	Enabled v
Private key	
Public key	HIQbaD9E3uN4XyV09Ws5GjmAlLDzhUmLvQW3JbX6k1A=
Local address	
Server address	
Server public key	
Pre-shared key	
Keep-alive interval	
Listen port	
Allowed IP 1	
Allowed IP 2	
Allowed IP 3	
Allowed IP 4	
 Local address and Allowed IF 	es must be specified in CIDR notation
	OK Cancel

- Service status enable/disable service
- Private key private key for authentication and encryption
- Public key public key, shared with peers for secure communication
- Local address internal IP address inside the VPN network
- Server address public IP of the WireGuard server
- Server public key server's public key used for encryption data sent to the server
- *Pre-shared key* optional additional layer of encryption between the client and server
- *Keep-alive interval* frequency at which keep-alive packets are sent to maintain the connection
- *Listen port* the UDP port number where WireGuard listens for incoming VPN traffic
- Allowed IP single IP address or an IP address range in CIDR notation with which the client should be able to communicate

5.4. Status

5.4.1. System status

Displays general system information including CPU usage, Memory, Partitions and Serial port list.

System status		- ×
General Memory Partitie	ons Serial ports	
CPU model	ARMv7 Processor rev 5 (v7l)	
Linux kernel version	4.4.279	
System uptime	0d 1h 29m	
Load averages	0.00 0.00 0.00	

5.4.2. Network utilities

Ping and *Traceroute* utilities are available. Both IP addresses and DNS names are accepted.

Network utilities		= x
Ping Traceroute		
IP / Hostname	192.168.1.100	
PING 192.168.1.100 (19	2.168.1.100): 56 data bytes	
64 bytes from 192.168. 64 bytes from 192.168.	1.100: seq=0 ttl=64 time=0.665 ms 1.100: sea=1 ttl=64 time=0.407 ms	
64 bytes from 192.168.	1.100: seq=2 ttl=64 time=0.403 ms	
64 bytes from 192.168.	1.100: seq=3 ttl=64 time=0.400 ms	
192.168.1.100 ping	statistics	
<pre>4 packets transmitted, round-trip min/avg/max</pre>	4 packets received, 0% packet loss = 0.400/0.468/0.665 ms	
5.4.3. System log

Displays the operating system log. Log entry data/time is in UTC format.

System log –
Mar 18 11:08:47 LogicMachine kern.notice kernel: [21.714268] random: nonblocking pool is initialized
Mar 18 11:08:32 LogicMachine kern.info kernel: [5.573928] fec 2188000.ethernet eth0: Link is Up - 100Mbps/Full -
Mar 18 11:08:30 LogicMachine user.info sysinit: /lib/genohm-scada/storage/db/current.db: OK
Mar 18 11:08:30 LogicMachine authpriv.info dropbear[1001]: Running in background
Mar 18 11:08:30 LogicMachine kern.info kernel: [3.240360] EXT4-fs (mmcblk0p3): mounted filesystem with ordered
Mar 18 11:08:30 LogicMachine user.info sysinit: /dev/mmcblk0p3: clean, 793/468640 files, 70021/1873920 blocks
Mar 18 11:08:29 LogicMachine user.info sysinit: /dev/mmcblk0p3: recovering journal
Mar 18 11:08:29 LogicMachine user.info sysinit: e2fsck 1.45.6 (20-Mar-2020)
Mar 18 11:08:29 LogicMachine kern.info kernel: [2.560180] fec 2188000.ethernet eth0: Freescale FEC PHY driver
Mar 18 11:08:28 LogicMachine kern.info kernel: [1.490620] fec 2188000.ethernet eth0: Freescale FEC PHY driver

5.4.4. Running processes

Displays currently running system processes.

Only script processes can be stopped.

Running proce	sses	-	×
PID	Command		^
713	/sbin/syslogd -C16	0	
715	/sbin/klogd	0	
717	/sbin/hotplug2overridepersistentset-rules-file /etc/hotplug2.rulesset-coldplug-cmd	0	
914	/sbin/watchdog -t 5 /dev/watchdog	0	
990	/usr/sbin/gpiod -l /lib/restore/defaults.sh -d /lib/restore/restore.sh -b 9	0	
1001	dropbear -R -p 22 -K 300	0	

6. Other examples

Various examples, 3rd party protocol integration and other useful applications can be found in our knowledge base and forums:

kb.logicmachine.net

forum.logicmachine.net