

Manual KNX Visualization

Touch_IT-V-C3

Touch_IT-V-IP65

Touch_IT-V-SMART

Version: V2 / July_01 / 2020

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Manual KNX Visualization

Touch_IT V2

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Imprint

Introduction

3,5" TFT Colour Touch Display

Touch_IT V2

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Content



Introduction

3.5" TFT Display with 256K colors and touchscreen for visualisation and control in KNX systems.

The display has a resolution of 320x240 pixels with 256K colors (RGB). We use a 32-bit ARM processor with 200 MHz clock frequency. It is equipped with a Linux operating system and features a mini-USB port and a microSD slot for data storage.

The Touch_IT contains a wide range of functions:

Switching and dimming, Display of the switching status, RGB control, On / Off Switching of several devices, Alarm functions, Display and setting of heating control parameters, Multiroom Functions, Astronomic clock timer, Clock timer, Datenlogging, Each page and element can be protected by global or dedicated passwords, Possibility for user defined layouts.

You can choose different housings



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Product Page – Touch_IT V C3 / IP65

The following section describes the installation, the existing connections, the specifications and the commissioning and parameterisation by the ETS.

The **Touch_IT-V-C3-IP65** (on-wall, outdoor / damp room, IP65) is mounted with 2 screws onto the wall.

Installation **Touch_IT-V-C3-xxx** is carried out using a mounting ring. The locking screw is used for fixation in a standard 60 mm in-wall socket.

The Touch_IT features an integrated KNX bus coupler and requires additional voltage 9 .. 32VDC / 1,5W.

Different control elements are available for the application software.

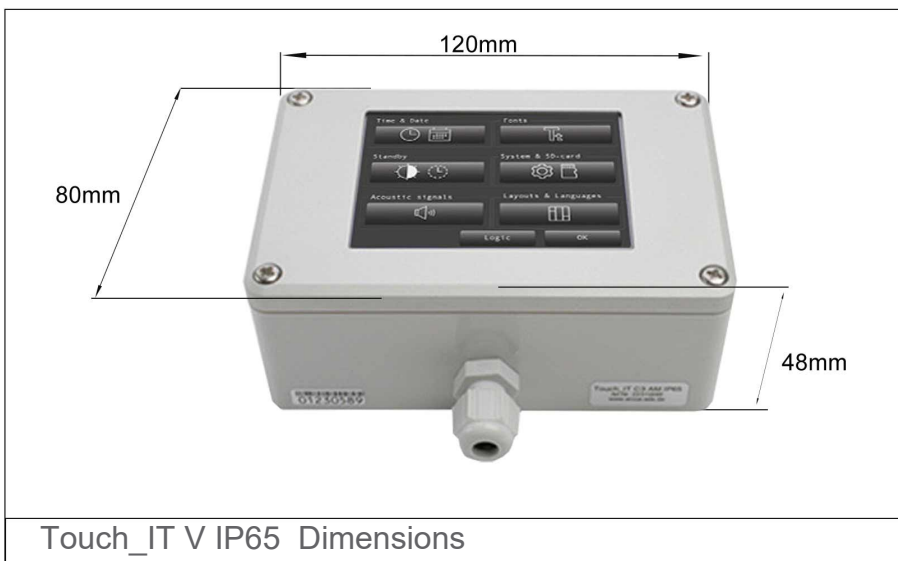
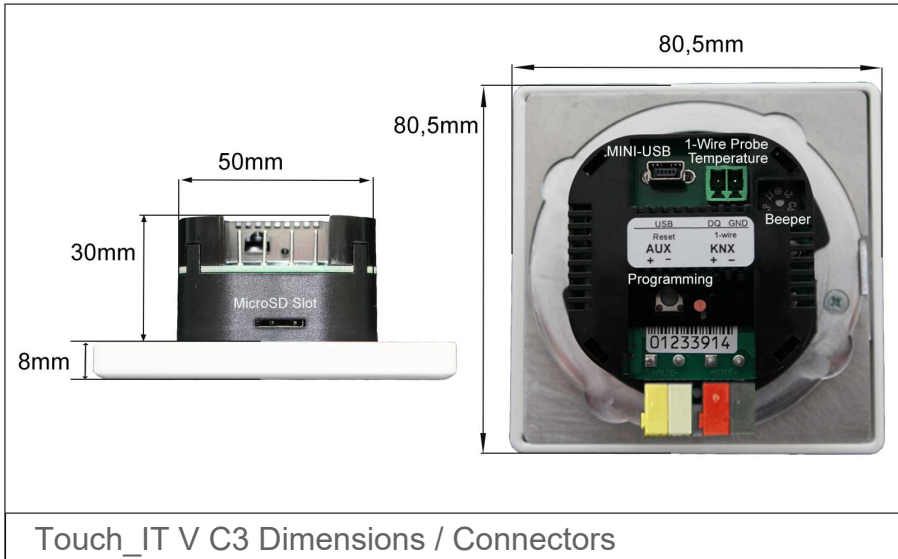
The Touch_IT must be projected using the ETS (EIB Tool Software) and the application program. V2 Control elements and page layout can be parametrized using the ETS.

Touch_IT-V-C3-IP65	On wall mounting Aluminium anodized	22410265
Touch_IT-V-C3-AE	Metal housing with bevel Aluminium sandblasted anodized	22410200
Touch_IT-V-C3-AW	Metal housing with bevel Aluminium white powder-coated	22410201
Touch_IT-V-C3-SAE	Metal housing square-edged Aluminium sandblasted anodized	22410300
Touch_IT-V-C3-SAS	Metal housing square-edged Aluminium sanded anodized	22410303
Touch_IT-V-C3-SAB	Metal housing square-edged Aluminium sanded black anodized	22410304
Touch_IT-V-C3-SAW	Metal housing square-edged Aluminium white powder-coated	22410301

Areas of Application

- Switching and dimming of lighting
- RGB control with colorchooser
- Display of the switching status in building
- Control of various devices in the KNX-Bus
- Handling of shutters/blinds
- Acoustic and optic alarm functions
- Display of object states as plain text
- Display and setting of heating control parameters
- Control of multi room audio-systems
- Display of temperatures
- Weekly clock timer
- Astronomic clock timer for sunset/sunrise driven controls
- Datalogging and on display diagram facility
- Internal scenes with 32 action objects and programmable delays
- Logic functions can be implemented in a scripting language
- Separate display page for alarm purposes
- Each page and element can be protected by global or dedicated passwords
- Different Layouts, visual styles and standby options
- Many languages available
- Character sizes and styles are selectable
- Possibility for user defined layouts, icons, screensavers etc.





Technical Data

Display	3,5" TFT color display (320x240 RGB) (256k color) touchscreen
Processor	200MHz 32-Bit ARM
Operating system	Linux
Background	Adjustable LED background light
Parameterization	ETS
Max. number of elements / Max. number of pages	8 / (5 control pages + 1 alarm page or 6 control pages)
Ambient temperature, storage	-5 .. +60 °C
Ambient temperature in operation	-5 .. +55 °C
Operational voltage	EIB/KNX bus voltage 21 .. 32VDC
Approx. power consumption	10 mA (at 24V DC)
Additional voltage	9 .. 32VDC / approx. 1.5 W
Bus coupler	Integrated AUX KNX
Commissioning via ETS	Touch_IT_xxx.pr5
Connections	EIB-2-polar terminal (red / black) AUX-2-polar terminal (yellow / white)
Optional Temperature Probe (1-Wire)	Yes
On-Wall	
Degree of protection	IP65
Installation type	On wall mounting
Casing	Aluminium anodized
Casing measurements	120 x 80 x 48 mm (W x H x D)
Articlenumber	22310265
In-Wall	
Degree of protection	IP20
Installation type	Installation with a mounting ring
Casing	Various
Casing measurements with bevel	82 x 82 x 8 mm (W x H x D)
Casing measurements square-edged	80,5 x 80,5 x 8 mm (W x H x D)
Articlenumber	22410xxx

Behaviour at Bus Voltage Recovery

All settings carried out using the ETS will be preserved.

Discharging Program and Resetting Device

If the visualization does not react due to a malfunction or incorrect configuration of the programming, the entire project work can be deleted by pressing the programming button. The device will be reset to delivery status. Please hold the programming button while connecting power supply and wait until the application for touch screen calibration appears. Normally, this takes 40-60 seconds. After entering the 5 calibration points, you can transmit your application once again.

Product Page – Touch_IT V SMART

The following section describes the installation, the existing connections, the specifications and the commissioning and parameterisation by the ETS.

3,5" Display for visualisation and control in KNX systems.

The **Touch_IT V SMART-xxx** variants have a very low mounting depth of 10.5mm and have an integrated infrared temperature sensor. The SD card is accessible without disassembly of the unit.

The device is carried out using a mounting ring. A locking screw are used for fixation in a standard (60/68 mm) in-wall socket.

The Touch_IT features an integrated KNX bus coupler and requires additional voltage 9 .. 32VDC / 1,5W.

Different control elements are available for the application software.

The Touch_IT must be projected using the ETS (EIB Tool Software) and the application program. V2 Control elements and page layout can be parametrized using the ETS.

Touch_IT-V-SMART -SAE	Metal housing without bevel Aluminium sandblasted anodized	22410500
Touch_IT-V-SMART -SAW	Metal housing without bevel Aluminium sandblasted white powder-coated	22410501
Touch_IT-V-SMART -SAS	Metal housing without bevel Aluminium sanded anodized	22410503
Touch_IT-V-SMART -SAB	Metal housing without bevel Aluminium sanded eloxiert black	22410504

Areas of Application

- Switching and dimming of lighting
- RGB control with colorchooser
- Display of the switching status in building
- Control of various devices in the KNX-Bus
- Handling of shutters/blinds
- Acoustic and optic alarm functions
- Display of object states as plain text
- Display and setting of heating control parameters
- Control of multi room audio-systems
- Display of temperatures
- Weekly clock timer
- Astronomic clock timer for sunset/sunrise driven controls
- Datalogging and on display diagram facility
- Internal scenes with 32 action objects and programmable delays
- Logic functions can be implemented in a scripting language
- Separate display page for alarm purposes
- Each page and element can be protected by global or dedicated passwords
- Different Layouts, visual styles and standby options
- Many languages available
- Character sizes and styles are selectable
- Possibility for user defined layouts, icons, screensavers etc.



<p>Display: 3,5" TFT Touchscreen Processor: 200MHz 32-Bit ARM Operating System: Linux</p> <p>Additional Voltage: 9 .. 32VDC / 1,5W</p> <p>Ambient Temperature Operation: -5 .. +55 °C Ambient Temperature Storage: -5 .. +60 °C</p> <p>Case dimensions: (80 x 80 x 12) mm Very low mounting depth: 10,5 mm</p> <p>Optional Temperature-Probe: Infrared-Sensor I²C</p> <p>Protection class: IP20</p>	
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Commisioning and Connector Description

Commissioning the KNX display is carried out using the ETS (EIB Tool Software) and the corresponding application software. At delivery, the device is unprogrammed. All functions must be parameterized and programmed using the ETS. Please review the documentations belonging to the ETS.

The touch screen is designed for in-wall installation. The degree of protection is IP20. Installation is carried out using the support ring and the magnetic fixing. A locking screw type Torx-6 serves for fixation.

Please make sure that electronic parts do not get damaged by tools or cable ends during installation.

MicroSD Slot Integrated Infrared-Temperature Sensor

Mini-USB

Additional Power Supply 9 .. 32 VDC / 1,5 W KNX Terminalblock

Touch_IT V SMART Assembly View

Technical Data

Display	3,5" TFT color display (320x240 RGB) (256k color) touchscreen
Processor	200MHz 32-Bit ARM
Operating system	Linux
Background	Adjustable LED background light
Parameterization	ETS
Max. number of elements / Max. number of pages	8 / (5 control pages + 1 alarm page or 6 control pages)
Ambient temperature, storage	-5 .. +60 °C
Ambient temperature in operation	-5 .. +55 °C
Operational voltage	EIB/KNX bus voltage 21 .. 32VDC
Approx. power consumption	10 mA (at 24VDC)
Additional voltage	9 .. 32VDC / 1.5W
Bus coupler	Integrated
Commissioning via ETS	Touch_IT_xxx.v2
Connections	EIB-2-polar terminal (red / black) AUX-2-polar terminal (yellow / white)
Integrated Temperature Sensor	Infrared
Degree of protection	IP20
Installation type	In wall mounting
Casing	various
Casing measurements	(80 x 80 x 12) mm (W x H x D)
Articlenumber	2241050x

Behaviour at Bus Voltage Recovery

All settings carried out using the ETS will be preserved.

Discharging Program and Resetting Device

If the visualization does not react due to a malfunction or incorrect configuration of the programming, the entire project work can be deleted by pressing the programming button. The device will be reset to delivery status. Please hold the programming button while connecting power supply and wait until the application for touch screen calibration appears. Normally, this takes 40-60 seconds. After entering the 5 calibration points, you can transmit your application once again.

Installation Instructions Touch_IT-V-x

in-wall 60/68 Ø / depth ≥ 47 mm



1. Fix the frame on the flush-mounted box.



2. Turn the Touch_IT slightly to the left and insert it into the box. Then turn clockwise until the unit is sitting straight.



3. For fixture use the screw on the underneath (Allen Key 1.5).

1 Application Description

Touch_IT V2

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1.1 General Settings

- 1.1.1 A) Master Password
- 1.1.2 B) Use Pin for settings dialog
- 1.1.3 C) Layout
- 1.1.4 D) Icon theme
- 1.1.5 E) Display menu page
- 1.1.6 F) User language chooser
- 1.1.7 G) Pages
- 1.1.8 H) Use RTC
- 1.1.9 I) Use logic functions

1.2 ETS Objects

Main
≡

1 Application Description

1.1 General Settings

Touch_IT_V2-01 > General

General

Master PIN A) 0

Use PIN for settings dialog B) No Yes

Layout C) 2X4-Layout

Icon theme D) Bright Dark (for bright surfaces)

1	2
3	4
5	6
7	8

Display menu page E) No Yes

Display user language chooser F) No Yes

Page scheme 5 Pages / 1 Alarm Page 6 Pages

Global format identifiers ;MTYPE=1

Additional identifiers

Page 1 Name [;Format] Seite 1 ;ICO=RTR_NIGHT

Use PIN for Page2 No Yes

Page 2 Name [;Format] Seite 2 ;ICO=RTR_PROTECTION

Use PIN for Page6 No Yes

Page 6 Name [;Format] Seite 6

Use RTC H) No Yes

Use logic functions I) No Yes

Logic scheme IO-Schema 3

Group Objects Channels Parameters

1 Neue Linie 1.1.2 Touch_IT_unten Las

1.1.1 A) Master Password

A Pin can be assigned to protect the different pages or object functions. In case that the value is "0", this function is inactive. e.g.

In case that Pin is "1", "0001" must be entered on the Touch_IT in order to access the protected page or to execute a function of the protected element.

Application Description

3,5" TFT Colour Touch Display

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1.1.2 B) Use Pin for settings dialog

YES, if the system settings page is to be secured via the PIN.

1.1.3 C) Layout

There can be layouts **2 x 4** with 2 columns of 4 rows
or a **2 + 6** layout with 2 large elements and 6 small elements arranged in two columns
and a layout which can be **customized**

Custom Layout

Only reduced settings are available in the custom layout, the graphical user interface is defined using the **TouchIT-Creator tool** from Arcus-EDS GmbH (available 4th quarter 2020).

Master PIN

Use PIN for settings dialog No Yes

Layout

Icon theme Bright Dark (for bright surfaces)

Object Identifiers

Layout

Icon theme D) Bright Dark (for bright surfaces) Bright Dark (for bright surfaces)

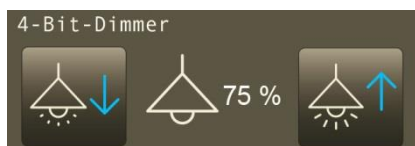
1	2
3	4
5	6
7	8

	3
1	4
	5
	6
2	7
	8

1.1.4 D) Icon theme

With light backgrounds, dark icons are used and reversed. All internal icons are available in both versions.

Icon theme : **Bright** (ICONS)



Icon theme : **Dark** (ICONS)



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1.1.5 E) Display menu page

Display menu page E) No Yes

Display user language chooser F) No Yes

Page scheme G) 5 Pages / 1 Alarm Page 6 Pages

Global format identifiers

Additional identifiers

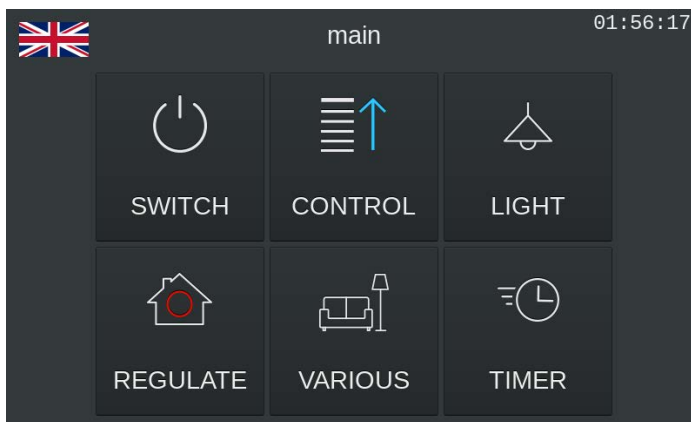
Page 1 Name [;Format]

An additional page (page 0) is inserted, which represents a menu selection of the defined pages. The visual representation can be adjusted with the parameter MTYPE:

MTYPE=0 (default) : List view of the page names
MTYPE=1 : Tile view with page names
MTYPE=2 : Tile view with page names and small symbols
MTYPE=3 : Tile view with large symbols

the symbols are defined with ICO = in the page parameters

example: MTYPE=2



1.1.6 F) User language chooser

Different translation files can be created between which the user can choose. The language is selected using flag symbols in the menu or on the first page. The display elements are then changed automatically.

1.1.7 G) Pages

G1	Page scheme
Page 0	MENU optional see E)
Page1	Control Page 1
Page 2 ... 5	Control Pages
Page 6	optional Control Page / Alarm Page

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G2 Global format identifiers / additional identifiers

These fields are used for global parameter setting. For example the following parameters can be used.

STDLONG	Interpretation of a manual input as LONG (Default 500ms)
STDLONG=xx	Determines the time (in ms) from which the manual input will be taken as LONG.
STDREP	Default use of the general repetition rate. (Default 300ms)
STDREP=xx	Sets the repetition rate (in ms)
CUSTOMLAYOUT	Disables Layout (4x2 and 2+4). Forces widget placement with x,y-koodinates in Element [;Format].

G3 Pages Name ; Format

General

+ Page 1	Page 1 Name [;Format]	\$SWITCH;ICO=ONOFF_b_off
+ Page 2	Use PIN for Page2	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Page 3	Page 2 Name [;Format]	\$CONTROL;ICO=SHUTTER_b_off
+ Page 4	Use PIN for Page3	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Page 5	Page 3 Name [;Format]	\$LIGHT;ICO=ILLUMINATION
+ Page 6	Use PIN for Page4	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Page 4 Name [;Format]	\$REGULATE;ICO=HEATING
	Use PIN for Page5	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Page 5 Name [;Format]	\$VARIOUS;ICO=LIVING
	Use PIN for Page6	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Page 6 Name [;Format]	\$TIMER;ICO=TIMER

Page 2-5

Except for control page 1, all service pages can be protected/locked with a password.
 (Exception: When 6 control pages are defined, page 6 also can be protected with a password.)

Page 6 (Alarm) Name; Format

The name of the control or alarm page that appears in the layout menu can be assigned here. In addition, global alarm settings can be set here.

- RESCAN : Defines the time (in s) when alarm object is rescanned.
- BEEPOFF : Number of acoustic alarm signals
- AUTOHIDE : Leave alarm page if alarm condition is changed or confirmed in a different point.

1.1.8 H) Use RTC

General

Temperature controller	Use PIN for Page3	<input checked="" type="radio"/> No <input type="radio"/> Yes
H) Heating	Page 3 Name [;Format]	Seite 3 ;ICO=RTR_COMFORT
+ Page 1	Use PIN for Page4	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Page 2	Page 4 Name [;Format]	Seite 4
+ Page 3	Use PIN for Page5	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Page 4	Page 5 Name [;Format]	Seite 5
+ Page 5	Use PIN for Page6	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Page 6	Page 6 Name [;Format]	Seite 6
H) I)	Use RTC	<input type="radio"/> No <input checked="" type="radio"/> Yes
	Room temperature controller	1 Stage Heating
	Use logic functions	<input type="radio"/> No <input checked="" type="radio"/> Yes
	Logic scheme	IO-Schema 3

If room temperature control is to be used, several control types are available. These are dealt with in an additional document.

Page 4 Name [;Format]	2 Stage Heating
Use PIN for Page5	1 Stage Cooling
Page 5 Name [;Format]	2 Stage Cooling
Use PIN for Page6	1 Stage Heating/Cooling Switched
Page 6 Name [;Format]	2 Stage Heating/Cooling Switched
Use RTC	1 Stage Heating/Cooling Gap
Room temperature controller	2 Stage Heating/Cooling Gap
	Fancoil Heating
	Fancoil Cooling
	Fancoil H/C Gap 4-Pipes
	Fancoil H/C switched 4-Pipes
	Fancoil H/C Gap 2-Pipes
	2 Stage Heating

1.1.9 I) Use logic functions

If logic written in LUA is to be used, the IO scheme must be selected. Depending on the scheme, various KNX objects are available that are not used otherwise in the GUI.

Schema	1-Bit	1-Byte	2-Byte	4-Byte
Schema 1	10	8	8	5
Schema 2	23	4	2	2
Schema 3	15	12	2	2

1.2 ETS Objects

If no elements in the pages are activated yet, only the system objects (1 – 5) within topology are displayed.

Nu	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type	Priority
1	I Time	System Time input		3 bytes	C	R	W	T	U	time of day	Low
2	I Date	System Date input		3 bytes	C	R	W	T	U	date	Low
3	IO On/Off	System On/off		1 bit	C	R	W	T	U	switch	Low
4	IO Standby	System Standby		1 bit	C	R	W	T	U	switch	Low
5	I LED	System LED		1 byte	C	R	W	T	U	percentage (0..100%)	Low

The **date / time objects** can be used for receiving and / or reading. These are used to synchronize the times in the KNX bus.

The **ON / OFF object** can be used for receiving and / or reading.

It shows the activity status of the TouchIT. (0 -> OFF 1-> ON or SCREENSAVE).

Sending a 1 to the device sets it in ON mode (1st page or menu is displayed) regardless of whether the device is in OFF or in SCREENSAVE mode.

Sending a 0 puts the device in the OFF state, regardless of whether the device is in the ON or SCREENSAVE state.

The **standby object** can be used for receiving and / or reading.

It shows the activity status of the TouchIT. (0 -> OFF or ON 1-> SCREENSAVE).

Sending a 1 to the device brights it in SCREENSAVER mode regardless of whether the device is in OFF or ON mode.

Sending a 0 puts the device in the OFF state.

The SYSTEM-LED object actuates the optional notification LED (accessory)

and is connected to the usual SIMPLE ALARM.

If **RTC** or **logic function** are used are the corresponding objects (6 – 31) respectively (32 – 62)

HVAC Objects

Nu	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type	Priority
6	O Temperatur	HVAC Temperature		2 bytes	C	R	W	T	U	temperature (°C)	Low
7	I External temperature	HVAC Temperature		2 bytes	C	R	W	T	U	temperature (°C)	Low
8	I HVAC mode	HVAC Mode		1 byte	C	R	W	T	U	HVAC mode	Low
...
29	I Heating/Cooling	HVAC Mode		1 bit	C	-	W	-	U	cooling/heating	Low
30	O Status 1	HVAC Status		2 bytes	C	R	W	T	U	RHCC status	Low
31	O Status 2	HVAC Status		1 byte	C	R	W	T	U	8-bit unsigned value	Low

Logic Objects

Nu	Name	Obj	De Gr	Length	C	R	W	T	U	Data Type
32	IO Logic 1-Bit 0	Logic		1 bit	C	R	W	T	U	boolean
33	IO Logic 1-Bit 1	Logic		1 bit	C	R	W	T	U	boolean
34	IO Logic 1-Bit 2	Logic		1 bit	C	R	W	T	U	boolean
...
60	IO Logic 2-Byte 2	Logic		2 bytes	C	R	W	T	U	2-byte unsigned value, 2-byte signed value, 2-byte float value
61	IO Logic 4-Byte 1	Logic		4 bytes	C	R	W	T	U	4-byte unsigned value, 4-byte signed value, 4-byte float value
62	IO Logic 4-Byte 2	Logic		4 bytes	C	R	W	T	U	4-byte unsigned value, 4-byte signed value, 4-byte float value

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Objects in page elements

Additional objects are displayed when the page elements are selected.

Element 1 ist active on page 1 and defined as a 1-Byte object.

Topology will change as follows:

Every element includes function-specific objects that can be linked.

The exact analogy between parameter view and object view within topology will be displayed as follows:

e.g. Page 1,element 1 equals 1.1 -A within topology and 1.1-B

Nu	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
63	1.1-A IO, Value_	1-Byte Value	Ventil 1	6/3/0	1 byte	C	R	W	T	U	percentage (0..100%)	Low
64	1.1-B Input, Feedback_	1-Byte Value			1 byte	C	R	W	T	U	percentage (0..100%)	Low
67	1.2-A IO, Value_	1-Byte Value	Ventil 2	6/3/1	1 byte	C	R	W	T	U	percentage (0..100%)	Low
68	1.2-B Input, Feedback_	1-Byte Value			1 byte	C	R	W	T	U	percentage (0..100%)	Low
71	1.3-A IO, Value_	1-Byte Value	Ventil 3	6/3/2	1 byte	C	R	W	T	U	percentage (0..100%)	Low
72	1.3-B Input, Feedback_	1-Byte Value			1 byte	C	R	W	T	U	percentage (0..100%)	Low
75	1.4-A IO, Value_	1-Byte Value	Ventil 4	6/3/3	1 byte	C	R	W	T	U	percentage (0..100%)	Low

Content

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2 Description Widgets

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2.1 Control Elements

- 2.1.1 Arrangement of the Control Elements
- 2.1.2 Description of the Control Elements

2.2 Object & Element Types

- 2.2.1 1 Bit
- 2.2.2 1 Byte
- 2.2.3 2 Byte
- 2.2.4 3 Byte
- 2.2.5 4 Byte
- 2.2.6 14 Byte
- 2.2.7 Scene Control
- 2.2.8 Light/ RGB Control
- 2.2.9 Dimmer Control
- 2.2.10 Shutter Control
- 2.2.11 HVAC Control
- 2.2.12 Timer
- 2.2.13 Datalogging

2.3 Elements Attribut Assignment

- 2.3.1 Elements Size etc.
- 2.3.2 Element Format

Appendix

- Table 2 Listing of Identifiers and Elements
- Table 2A Identifier: Universal Button
- Table 2B Identifier: Toggle Button
- Table 2C Identifier: Incremental / Decremental Button
- Table 2D Identifier: Timer / Scenes
- Table 2E Identifier: Dimming RGB / HVAC
- Table 2F Identifier: Alarm

Main

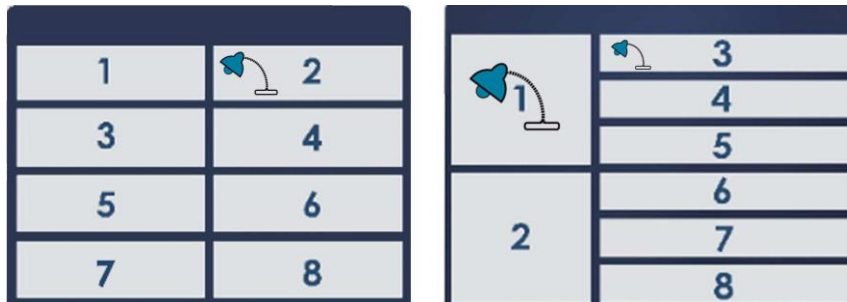
2 Description Widgets

The following section describes the usable widgets and their special parameterizing and displaying

2.1 Control Elements

2.1.1 Arrangement of the Control Elements

A maximum of 8 elements can be placed on a Touch_IT page.



After uploading the parameters, the pages will be formatted automatically.

If there is a smaller number of elements on a page, they will be maximized to the available surface (in case that the expand- settings (vertically and horizontally) are enabled).

2.1.2 Description of the Control Elements

Selecting and Presetting Control Elements

The selection of control elements is carried out through a parameterization within the ETS.

1.1.2 Touch_IT_V2-01 > Page 1 > Element 1:

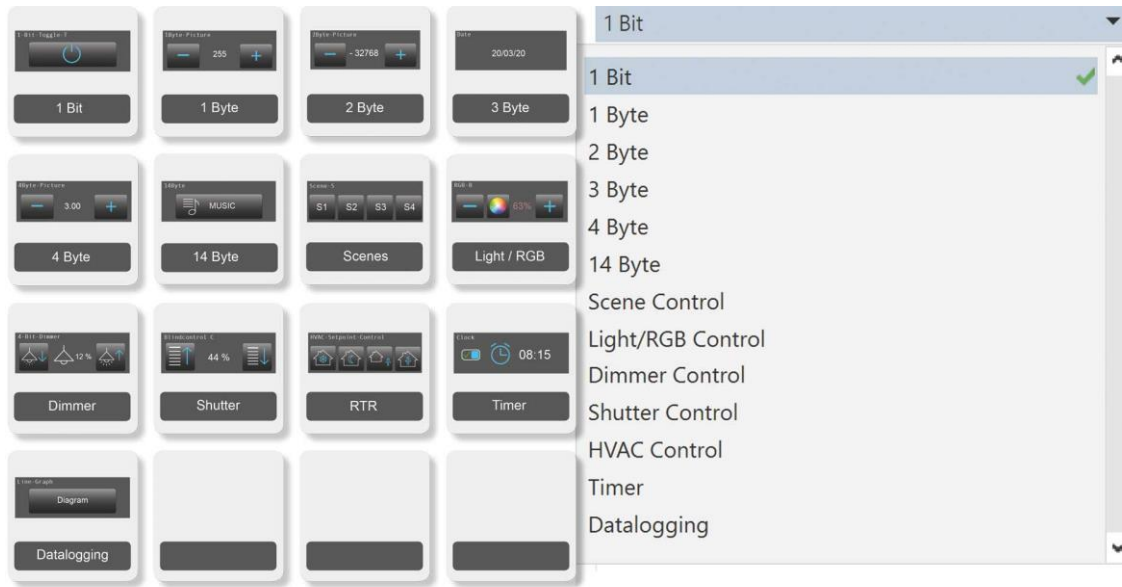
General	Descriptor	
Page 1	Object Type	a) 1 Byte
Element 1:	Element Type	b) 1-Byte-Value-Picture-Button 0..100%
Element 2:	Element Size	c) Normal
Element 3:	Interactive	d) <input type="radio"/> No <input checked="" type="radio"/> Yes
Element 4:	Use Element PIN	e) <input checked="" type="radio"/> No <input type="radio"/> Yes
Element 5:	Align steps	f) <input type="radio"/> No <input checked="" type="radio"/> Yes
Element 6:	Expand horizontal	g) <input checked="" type="radio"/> No <input type="radio"/> Yes
Element 7:	Expand vertical	h) <input checked="" type="radio"/> No <input type="radio"/> Yes
Element 8:	Name [:Format]	i) BAD

Parameters Channels Group Objects

1.1.2 Touch_IT_V2-01

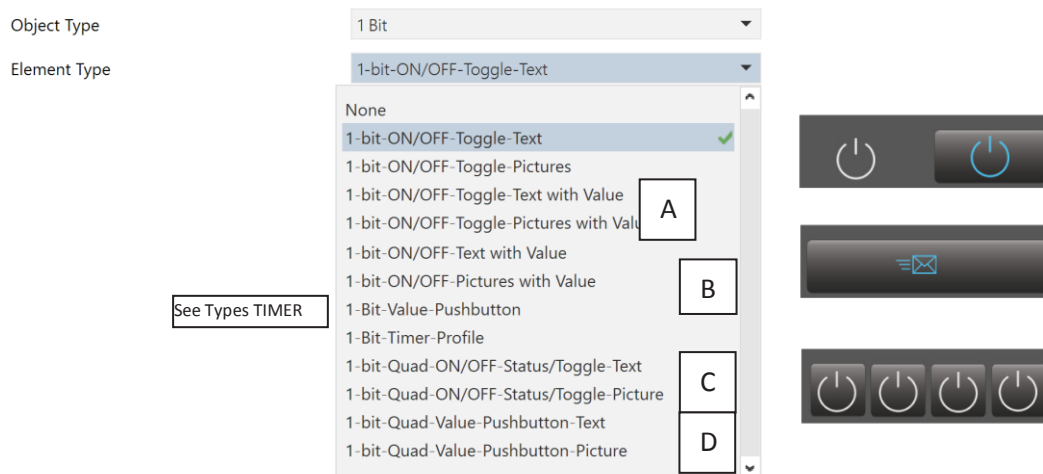
2.2 Object & Element Types

a) Object Types



b) Element Types

2.2.1 Element Types 1 Bit



See Types TIMER

Description Widgets

3,5" TFT Colour Touch Display

Touch_IT V2

arcus-eds

A
VISU

A

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Switching_	Switch			1 bit	C	R	W	T	U	switch
64	1.1-B Input, Feedback_	Switch			1 bit	C	R	W	T	U	switch

B

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Value_	1-Bit Value Button			1 bit	C	R	W	T	U	1-bit
64	1.1-B Output, Value B_	1-Bit Value Button			1 bit	C	R	W	T	U	1-bit

C

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Switching 1_	Switch			1 bit	C	R	W	T	U	switch
64	1.1-B IO, Switching 2_	Switch			1 bit	C	R	W	T	U	switch
65	1.1-C IO, Switching 3_	Switch			1 bit	C	R	W	T	U	switch
66	1.1-D IO, Switching 4_	Switch			1 bit	C	R	W	T	U	switch

D

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Switching 1_	Switch			1 bit	C	R	W	T	U	switch
64	1.1-B Output, Switching 2_	Switch			1 bit	C	R	W	T	U	switch
65	1.1-C Output, Switching 3_	Switch			1 bit	C	R	W	T	U	switch
66	1.1-D Output, Switching 4_	Switch			1 bit	C	R	W	T	U	switch

Content
—
—
—


e7 / Subject to change

2.2.2 Element Types 1 Byte

Object Type: 1 Byte

Element Type: 1-Byte-Value-Text-Button 0..255

- 1-Byte-Value-Text-Button 0..255 (A)
- 1-Byte-Value-Picture-Button 0..255 (B)
- 1-Byte-Value-Slider 0..255 (C)
- 1-Byte-Value-Text-Button -128..127 (D)
- 1-Byte-Value-Picture-Button -128..127 (E)
- 1-Byte-Value-Slider -128..127 (F)
- 1-Byte-Value-Text-Button 0..100% (G)
- 1-Byte-Value-Picture-Button 0..100% (H)
- 1-Byte-Value-Slider 0..100% (I)
- 1-Byte-Value-Text-Button 0..360°
- 1-Byte-Value-Picture-Button 0..360°
- 1-Byte-Value-Slider 0..360°
- 1-Byte-Value-Pushbutton
- 1-Byte-Quad-Value/Change 0..255
- 1-Byte-Quad-Value/Change -128..+127
- 1-Byte-Quad-Value/Change 0..100%
- 1-Byte-Quad-Value/Change 0..360°



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)
64	1.1-B Input, Feedback_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)

B

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)
64	1.1-B Input, Feedback_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)

C

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)
64	1.1-B Input, Feedback_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)

D

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)
64	1.1-B Input, Feedback_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)

E

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Value_	1-Byte Value Button		1 byte	C	R	W	T	U	8-bit unsigned value, 8-bit signed value
64	1.1-B Output, Value B_	1-Byte Value Button		1 byte	C	R	W	T	U	8-bit unsigned value, 8-bit signed value

F

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Input, Value 1_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)
64	1.1-B Input, Value 2_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)
65	1.1-C Input, Value 3_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)
66	1.1-D Input, Value 4_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (0..255)

G

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Input, Value 1_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)
64	1.1-B Input, Value 2_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)
65	1.1-C Input, Value 3_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)
66	1.1-D Input, Value 4_	1-Byte Value		1 byte	C	R	W	T	U	counter pulses (-128..127)

H

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Input, Value 1_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)
64	1.1-B Input, Value 2_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)
65	1.1-C Input, Value 3_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)
66	1.1-D Input, Value 4_	1-Byte Value		1 byte	C	R	W	T	U	percentage (0..100%)

I

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Input, Value 1_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)
64	1.1-B Input, Value 2_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)
65	1.1-C Input, Value 3_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)
66	1.1-D Input, Value 4_	1-Byte Value		1 byte	C	R	W	T	U	angle (degrees)

2.2.3

Element Types 2 Byte

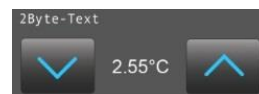
Object Type

2 Byte

Element Type

2-Byte-Value-Text-Button 0..65535

- 2-Byte-Value-Text-Button 0..65535
- 2-Byte-Value-Picture-Button 0..65535 A
- 2-Byte-Value-Slider 0..65535
- 2-Byte-Value-Text-Button -32768 .. 32767
- 2-Byte-Value-Picture-Button -32768 .. 32767 B
- 2-Byte-Value-Slider -32768 .. 32767
- 2-Byte-Float-Text-Button
- 2-Byte-Float-Picture-Button C
- 2-Byte-Float-Slider
- 2-Byte-Value-Pushbutton D
- 2-Byte-Float-Value-Pushbutton E



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	2-Byte Value		2 bytes	C	R	W	T	U	pulses
64	1.1-B Input, Feedback_	2-Byte Value		2 bytes	C	R	W	T	U	pulses

B

Description Widgets

3,5" TFT Colour Touch Display

Touch_IT V2

arcus-eds

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	2-Byte Value			2 bytes	C	R	W	T	U	pulses difference
64	1.1-B Input, Feedback_	2-Byte Value			2 bytes	C	R	W	T	U	pulses difference

C

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	2-Byte Float Value			2 bytes	C	R	W	T	U	2-byte float value
64	1.1-B Input, Feedback_	2-Byte Float Value			2 bytes	C	R	W	T	U	2-byte float value

D

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Value_	2-Byte Value Button			2 bytes	C	R	W	T	U	2-byte unsigned value, 2-byte signed value
64	1.1-B Output, Value B_	2-Byte Value Button			2 bytes	C	R	W	T	U	2-byte unsigned value, 2-byte signed value

E

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Value_	2-Byte Float Value Button			2 bytes	C	R	W	T	U	2-byte float value
64	1.1-B Output, Value B_	2-Byte Float Value Button			2 bytes	C	R	W	T	U	2-byte float value

2.2.4

Element Types 3 Byte

Object Type
Element Type
Element Size

3 Byte

3-Byte-Time

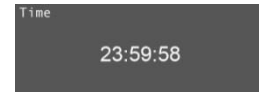
None

3-Byte-Time

3-Byte-Date

A

B



A

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Time_	Time-Value			3 bytes	C	R	W	T	U	time of day
64	1.1-B Input, Feedback_	Time-Value			3 bytes	C	R	W	T	U	time of day

B

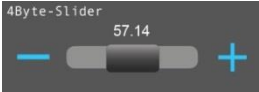
Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Date_	Date-Value			3 bytes	C	R	W	T	U	date
64	1.1-B Input, Feedback_	Date-Value			3 bytes	C	R	W	T	U	date

2.2.5 Element Types 4 Byte

Object Type: 4 Byte

Element Type: 4-Byte-Float-Text-Button

- None
- 4-Byte-Float-Text-Button ✓
- 4-Byte-Float-Picture-Button
- 4-Byte-Float-Slider
- 4-Byte-Value-Pushbutton
- 4-Byte-Float-Value-Pushbutton



A

B

A

Number	Name	Object Function	De Gri	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Value_	4-Byte Float Value		4 bytes	C	R	W	T	U	4-byte float value
64	1.1-B Input, Feedback_	4-Byte Float Value		4 bytes	C	R	W	T	U	4-byte float value

B


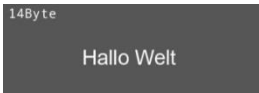
Number	Name	Object Function	De Gri	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Value_	4-Byte Value Button		4 bytes	C	R	W	T	U	4-byte unsigned value, 4-byte signed value
64	1.1-B Output, Value B_	4-Byte Value Button		4 bytes	C	R	W	T	U	4-byte unsigned value, 4-byte signed value

2.2.6 Element Types 14 Byte

Object Type: 14 Byte

Element Type: 14-Byte-String-Pushbutton

- None
- 14-Byte-String-Pushbutton ✓
- 14-Byte-String

A

B

A

Number	Name	Object Function	De Gri	Length	C	R	W	T	U	Data Type
63	1.1-A Output, String_	14-Byte String Button		14 bytes	C	R	W	T	U	Character String (ASCII)

B


Number	Name	Object Function	De Gri	Length	C	R	W	T	U	Data Type
63	1.1-A Input, String_	String Value		14 bytes	C	R	W	T	U	Character String (ASCII)

2.2.7 Element Types Scene Control

Object Type: Scene Control

Element Type: Scene-Control-Recall-Save

- None
- Scene-Control-Recall-Save ✓ **A**
- Scene-Control-Recall-Only
- Scene-Control-Save-Only
- Internal-Scenes **B**



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Scene Control 1_	Scene Control		1 byte	C	R	W	T	U	scene control
64	1.1-B Output, Scene Control 2_	Scene Control		1 byte	C	R	W	T	U	scene control
65	1.1-C Output, Scene Control 3_	Scene Control		1 byte	C	R	W	T	U	scene control
66	1.1-D Output, Scene Control 4_	Scene Control		1 byte	C	R	W	T	U	scene control

B


Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Input, Trigger_	Internal Scenes		1 bit	C	R	W	T	U	start/stop
64	1.1-B IO, Enable_	Internal Scenes		1 bit	C	R	W	T	U	enable

2.2.8 Element Types Light / RGB Control

Object Type: Light/RGB Control

Element Type: RGB-Dimmer-A

- None
- RGB-Dimmer-A ✓
- RGB-Dimmer-B
- RGB-Dimmer-C
- RGB-Dimmer-D



Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Red_	RGB-Dimmer		1 byte	C	R	W	T	U	percentage (0..100%)
64	1.1-B Output, Green_	RGB-Dimmer		1 byte	C	R	W	T	U	percentage (0..100%)
65	1.1-C Output, Blue_	RGB-Dimmer		1 byte	C	R	W	T	U	percentage (0..100%)
66	1.1-D Output, White_	RGB-Dimmer		1 byte	C	R	W	T	U	percentage (0..100%)

2.2.9 Element Type Dimmer Control

Object Type: Dimmer Control

Element Type: 4-Bit-Dimmer-Start-Stop

None
4-Bit-Dimmer-Start-Stop ✓
4-Bit-Dimmer-Repeat
8-Bit-Dimmer-Repeat

A

B



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, ON/OFF_	4-Bit Dimmer		1 bit	C	R	W	T	U	switch
64	1.1-B Input, ON OFF Feedback_	4-Bit Dimmer		1 bit	C	R	W	T	U	switch
65	1.1-C Output, Dimming_	4-Bit Dimmer		4 bit	C	R	W	T	U	dimming control
66	1.1-D Input, Value Feedback_	Dimming Control		1 byte	C	R	W	T	U	percentage (0..100%)

B

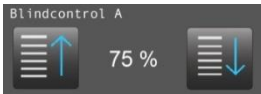
Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, ON/OFF_	8-Bit Dimmer		1 bit	C	R	W	T	U	switch
64	1.1-B Input, ON OFF Feedback_	8-Bit Dimmer		1 bit	C	R	W	T	U	switch
65	1.1-C Output, Value_	8-Bit-Dimmer		1 byte	C	R	W	T	U	percentage (0..100%)
66	1.1-D Input, Value Feedback_	Dimming Control		1 byte	C	R	W	T	U	percentage (0..100%)

2.2.10 Element Type Shutter Control

Object Type: Shutter Control

Element Type: Shutter-Blinds-Control-A

None
Shutter-Blinds-Control-A ✓
Shutter-Blinds-Control-B
Shutter-Blinds-Control-C



Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, LONG_	Shutter Control		1 bit	C	R	W	T	U	up/down
64	1.1-B Output, SHORT_	Shutter Control		1 bit	C	R	W	T	U	up/down
66	1.1-D Input, Position Feedback_	Shutter Control		1 byte	C	R	W	T	U	percentage (0..100%)

2.2.11 Element Type HVAC Control

Object Type: HVAC Control

Element Type: HVAC-Setpoint-Control

- None
- HVAC Setpoint Control** ✓
- HVAC-Mode-Control
- HVAC-Mode-Control-Text
- HVAC-Fan-Control

A
B
C



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Protection Setpoint_	Thermostat Control		2 bytes	C	R	W	T	U	temperature (°C)
64	1.1-B Output, Night Setpoint_	Thermostat Control		2 bytes	C	R	W	T	U	temperature (°C)
65	1.1-C Output, Standby Setpoint_	Thermostat Control		2 bytes	C	R	W	T	U	temperature (°C)
66	1.1-D Output, Comfort Setpoint_	Thermostat Control		2 bytes	C	R	W	T	U	temperature (°C)

B

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, HVAC-Mode_	HVAC-Mode		1 byte	C	R	W	T	U	HVAC mode
64	1.1-B Input, Temperatur Feedback_	HVAC-Mode		2 bytes	C	R	W	T	U	temperature (°C)

C

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A IO, Switch Manual/Auto_	HVAC-Fan-Control		1 bit	C	R	W	T	U	enable
64	1.1-B IO, Fan Speed_	HVAC-Fan-Control		1 byte	C	R	W	T	U	percentage (0..100%), fan stage (0..255)

2.2.12 Element Type Timer

Object Type: Timer

Element Type: Alarmclock

- None
- Alarmclock** ✓
- Alarmtimer
- Astroclock
- 1-Bit-Timer-Profile
- 1-Byte-Timer-Profile 0..100%
- 1-Byte-Timer-Profile 0..255
- 1-Byte-Timer-Profile-HVAC
- 2-Byte-Float-Timer-Profile

A
B
C
D
E
F
G
H



A

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Alarmclock_	Alarmclock		1 bit	C	R	W	T	U	alarm
64	1.1-B IO, Alarmclock Enable_	Alarmclock		1 bit	C	R	W	T	U	enable

B

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Timer_	Timer		1 bit	C	R	W	T	U	switch
64	1.1-B IO, Timer Enable_	Timer		1 bit	C	R	W	T	U	enable

C

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Timer_	Astroclock		1 bit	C	R	W	T	U	switch
64	1.1-B IO, Timer Enable_	Astroclock		1 bit	C	R	W	T	U	enable

D

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Profile_	1-Bit Profile		1 bit	C	R	W	T	U	switch
64	1.1-B IO, Profile Enable_	Profile		1 bit	C	R	W	T	U	enable

E

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Profile_	1-Byte Profile		1 byte	C	R	W	T	U	percentage (0..100%)
64	1.1-B IO, Profile Enable_	Profile		1 bit	C	R	W	T	U	enable

F

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Profile_	1-Byte Profile		1 byte	C	R	W	T	U	counter pulses (0..255)
64	1.1-B IO, Profile Enable_	Profile		1 bit	C	R	W	T	U	enable

G

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Profile_	1-Byte Profile		1 byte	C	R	W	T	U	HVAC mode
64	1.1-B IO, Profile Enable_	Profile		1 bit	C	R	W	T	U	enable

H

Number	Name	Object Function	De Gr	Length	C	R	W	T	U	Data Type
63	1.1-A Output, Profile_	2-Byte Float Profile		2 bytes	C	R	W	T	U	2-byte float value
64	1.1-B IO, Profile Enable_	Profile		1 bit	C	R	W	T	U	enable

2.2.13

Element Type Datalogging

Object Type	Datalogging
Element Type	<ul style="list-style-type: none"> Telegrams None Telegrams <input checked="" type="checkbox"/> Line-Graph Bar-Graph

2.3 Elements Attribute Assignments

Element Size	c)	<input type="text" value="Normal"/>
Interactive	d)	<input type="radio"/> No <input checked="" type="radio"/> Yes
Use Element PIN	e)	<input checked="" type="radio"/> No <input type="radio"/> Yes
Align steps	f)	<input type="radio"/> No <input checked="" type="radio"/> Yes
Expand horizontal	g)	<input checked="" type="radio"/> No <input type="radio"/> Yes
Expand vertical	h)	<input checked="" type="radio"/> No <input type="radio"/> Yes
Name [;Format]	i)	<input type="text"/>

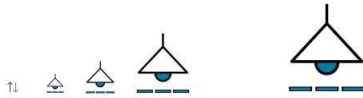
2.3.1. Element Size etc.

c) Size

Determines, which element size is used.
There are 4 sizes available (**Small, Normal, Large, X-Large**).

The fine adjustment of the **fonts** can be carried out directly via the Touch_IT.

The sizes corresponding with the **Icon Sizes** (18 / 28 / 48 / 88px) special size 128px. (only internal icons)



Subsequently, various presets can be adjusted.

d) interactive

YES: Element is used as a display with a control element.
NO: Control element is solely used as a display.

e) Use Element PIN

YES: protect control element with a PIN

f) Align Steps

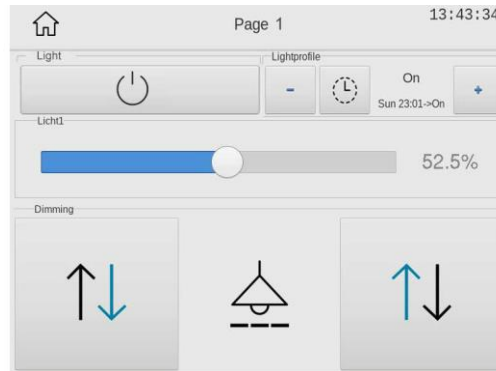
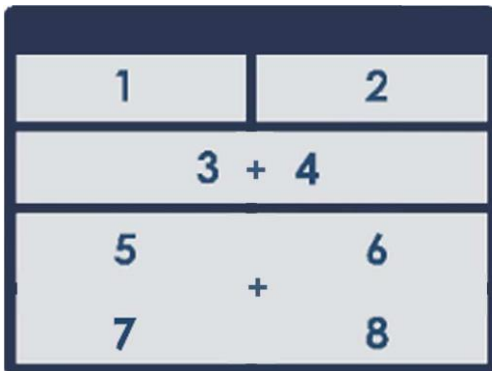
Round value up or down to a multiple of the stepwidth.

g) **Expand Horizontal**

Maximize control element horizontally.

f) **Expand Vertical**

Maximize control element vertically.



2.3.2

Element name, Format

Element name : This name appears top/left of the widget

Element name = ELEMENT 1




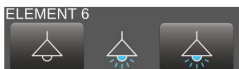
Format : Different identifiers (see Table 2A,2B,2C,2D,2E) allow the assignment of values as well as the desired design of the appearance of the elements according to the respective data type of the widget.

ELEMENT 11;ICO=DINING;IMGVAL=LIGHT2;MIN=0;MAX=255;STEPS=3 (see more Table2)



Table 2 - Listing of Identifiers and Elements

01 1-Bit Elements

Image	Element	Element Type
	Range	Format
	1	1-bit-ON/OFF-Toggle-Text
	0/1	B0,B1,AL,AH,NOBG,LOGIC,BSWAP, RDRQ,PIN
	2	1-bit-ON/OFF-Toggle-Picture
	0/1	IMGSET,AL,AH,NOBG,LOGIC,BSWAP, RDRQ,PIN
	3	1-bit-ON/OFF-Toggle-Text with Value
	0/1	W,L0,L1,B0,B1,AL,AH,NOBG,LOGIC,BSWAP, LSWAP,RDRQ,PIN
	4	1-bit-ON/OFF-Toggle-Picture with Value
	0/1	W,L0,L1,B0,B1,AL,AH,NOBG,LOGIC,BSWAP,LSWAP,RDRQ,PIN
	5	1-bit-ON/OFF-Text with Value
	0/1	W,L0,L1,B0,B1,AL,AH,NOBG,LOGIC,BSWAP, LSWAP,RDRQ,PIN
	6	1-bit-ON/OFF-Picture with Value
	0/1	W;B0,B1,IMGSET,AL,AH,NOBG,LOGIC, BSWAP,LSWAP,RDRQ,PIN
		Example: ELEMENT 6 ;IMGSET=LIGHT
	40	1-Bit-Value-Pushbutton
	0/1	IMG, ,RELEASE,PRESS,LABEL,NOBG,JUMP,LOGIC,LOGICR,PIN
		Examples: ELEMENT 40 ;PRESS=1 ;IMG=BELL_b_on ;RELEASE=1; LABEL=STOP
	85	1-bit-Quad-ON/OFF-Status/Toggle-Text
	4x 0/1	LABELS,N,W,NOBG,ALARM,RDRQ,PIN
	86	1-bit-Quad-ON/OFF-Status/Toggle- Picture
	4x 0/1	IMGSETS,N,W,NOBG,ALARM,RDRQ,PIN
		Example: ELEMENT 86 ;IMGSETS=BELL,AL,LIGHT3 ;N=3
	87	1-bit-Quad-Value-Pushbutton-Text
	4x 1	LABELS,N,W,NOBG,PRESS,PIN
	88	1-bit-Quad-Value-Pushbutton-Picture
	4x 1	IMGSETS,N,W,NOBG,PRESS,PIN
		Default: IMGSETS=ONOFF ;PRESS=1,0,1,0 Example: IMGSETS=window,door; N=2 ;PRESS=0,1

02 1-Byte Elements

Image	Element	Element Type
	Range	Format
	10	1-Byte-Value-Text-Button 0 .. 255
	0 .. 255	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	Default: ;B+=UP;B-=DOWN;MIN=0;MAX=255;STEPS=37;REP=1000;	
	11	1-Byte-Value-Picture-Button 0 .. 255
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,IMGVAL,RDRQ,PIN
	Default: ;IMGSET=PLUSMINUS; MIN=0;MAX=255;STEPS=37;REP=1000;	
	12	1-Byte-Value-Slider 0 .. 255
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,
	EXAMPLE:(expand Horizontal) ELEMENT 12 ;ICO=SOUND ;W=200 ;MIN=20 ;MAX=100 ;REP=500	
	13	1-Byte-Value-Text-Button -128 .. 127
	-128 .. 127	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	14	1-Byte-Value-Picture-Button -128 .. 127
	-128 .. 127	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,IMGVAL,RDRQ,PIN
	15	1-Byte-Value-Slider -128 .. 127
	-128 .. 127	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	16	1-Byte-Value-Text-Button 0 .. 100%
	0 .. 255	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	17	1-Byte-Value-Picture-Button 0 .. 100%
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,IMGVAL,RDRQ,PIN
	18	1-Byte-Value-Slider 0 .. 100%
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	19	1-Byte-Value-Text-Button 0 .. 360°
	0 .. 255	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	20	1-Byte-Value-Picture-Button 0 .. 360°
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,IMGVAL,RDRQ,PIN
	21	1-Byte-Value-Slider 0 .. 360°
	0 .. 255	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN

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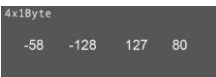

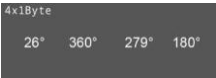
Appendix – Table 1

3,5" TFT Colour Touch Display
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Content

Image	Element	Element Type
	Range	Format
	41	1-Byte-Value-Pushbutton
	0 .. 255	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP, LOGIC,LOGICR,PIN
	63	1-Byte-Timer-Profile 0 .. 100%
	0 .. 255	W,PF,MIN,MAX,STEP,OVRTO,NOBG,IMG, RDRQ,PIN,PPIN
	64	1-Byte-Timer-Profile 0 .. 255
	0 .. 255	W,MIN,MAX,STEP,OVRTO,NOBG,IMG, RDRQ,PIN,PPIN
	89	1-Byte-Quad-Value/Change 0 .. 255
	4x (0 .. 255)	W,PF,N,RDRQ
	90	1-Byte-Quad-Value/Change -128 .. 127
	4x (-128 .. 127)	W,PF,N,RDRQ
	91	1-Byte-Quad-Value/Change 0 .. 100%
	4x (0 .. 255)	W,PF,N,RDRQ
	92	1-Byte-Quad-Value/Change 0 .. 360°
	4x (0 .. 255)	W,PF,N,RDRQ

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03 2-Byte Elements

Image	Element	Element Type
	Range	Format
	22	2-Byte-Value-Text-Button 0 .. 65535
	0 .. 65535	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
		ÖSÖT ÖP VGG Water limit ΛÖUMÖÜÖÖB/ÖPΛÖM;IT ÖM EET ÖM' EELVÖÖÜMÖE
	23	2-Byte-Value-Picture-Button 0 .. 65535
	0 .. 65535	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	24	2-Byte-Value-Slider 0 .. 65535
	0 .. 65535	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	25	2-Byte-Value-Text-Button -32768 ..32767
	-32768 .. 32787	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	26	2-Byte-Value-Picture-Button -32768 ..32767
	-32768 .. 32787	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,RDRQ,PIN
		ELEMENT26_Temperature limit ;ICO=RTR_PROTECTION_b;PF=°C;MIN=-270;MAX=260;STEPS=10
	27	2-Byte-Value-Slider -32768 .. 32767
	-32768 .. 32787	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,PIN
	30	2-Byte-Float-Text-Button
	-671088.64 .. 670760,96	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,DC,PIN,*
	31	2-Byte-Float-Picture-Button
	-671088.64 .. 670760,96	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,DC,PIN,*
		ELEMENT32_Setpoint ;ICO=TEMPERATURE;PF=°C;MIN=15;MAX=25;STEPS=90;DC=1
	32	2-Byte-Float-Slider
	-671088.64 .. 670760,96	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG, REP,RDRQ,DC,PIN,*
	42	2-Byte-Value-Pushbutton
	0 .. 65535	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP, LOGIC,LOGICR,PIN
	43	2-Byte-Float-Value-Pushbutton
	-671088.64 .. 670760,96	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP, LOGIC,LOGICR,PIN
		ELEMENT43_SEND_2Byte_default ICON
	66	2-Byte-Float-Timer-Profile
	-671088.64 .. 670760,96	W,PF,MIN,MAX,STEP,OVRTO,NOBG,IMG,RDRQ,PIN,PPIN

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04 3-Byte Time / Date Elements

Image	Element	Element Type
	Range	Format
<small>Time</small> 23:59:58	50	3-Byte-Time
	Time	LONG,NOBG,ACTUAL,RDRQ,PIN
<small>Date</small> 20/03/20	51	3-Byte-Date
	Date	LONG,NOBG,ACTUAL,RDRQ,PIN

Content

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3,5" TFT Colour Touch Display



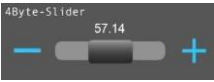


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05 4-Byte Elements

Image	Element	Element Type
	Range	Format
	33	4-Byte-Float-Text-Button
	IEEE 754	W,B-,B+,PF,STEPS,MIN,MAX,AL,AH,NOBG,REP,RDRQ,DC,PIN,*,INT,UINT
	34	4-Byte-Float-Picture-Button
	IEEE 754	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,RDRQ,DC,PIN,*,INT,UINT
	35	4-Byte-Float-Slider
	IEEE 754	W,PF,IMGSET,STEPS,MIN,MAX,AL,AH,NOBG,REP,RDRQ,DC,PIN,*,INT,UINT
	44	4-Byte-Value-Pushbutton
	IEEE 754	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP,LOGIC,LOGICR,PIN
	45	4-Byte-Float-Value-Pushbutton
	IEEE 754	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP,LOGIC,LOGICR,PIN

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Appendix – Table 1

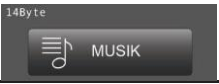

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06 14-Byte Elements

Image	Element	Element Type
	Range	Format
 <small>14Byte</small> MUSIK	46	14-Byte-String-Pushbutton
	14 Byte	IMG,PRESS,RELEASE,LABEL,NOBG,JUMP, LOGIC,LOGICR,PIN
 <small>14Byte</small> Halo Welt	52	14-Byte-String
	14 Byte	NOBG,TEXT,RDRQ

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Appendix – Table 1

3,5" TFT Colour Touch Display



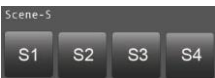

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07 Scene Elements

Image	Element	Element Type
	Range	Format
	55	Scene-Control-Recall-Save
	0 .. 63	TO,N,IMAGES,LABELS,SCENES,MOD, NOBG,PIN,PPIN
	56	Scene-Control-Recall-Only
	0 .. 63	TO,N,IMAGES,LABELS,SCENES,MOD, NOBG,PIN
	57	Scene-Control-Save-Only
	0 .. 63	TO,N,IMAGES,LABELS,SCENES,MOD, NOBG,PIN
	58	Internal-Scene
		SELECT,NOBG,ONSTART,SCGRP,TRIGINV, IMG,PLAYONLY,PLAYSTOP

Element No. 55

TO,N,MOD,Nx,Sx (x = 1..4),NOBG,PIN,PPIN

Element No. 56

N,MOD,Nx,Sx (x = 1..4),NOBG,PIN

Element No. 57

N,MOD,Nx,Sx (x = 1..4),NOBG,PIN

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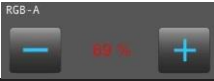

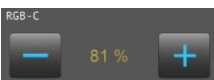
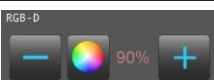
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08 RGB Elements

Image	Element	Element Type
	Range	Format
	76	RGB-Dimmer-A
	4x (0 .. 255)	W,STEPS,IMGSET,B-,B+,NOBG,RGBH,RGBW, RDRQ,PIN
	77	RGB-Dimmer-B
	4x (0 .. 255)	W,STEPS,IMGSET,B-,B+,NOBG,RGBH,RGBW, RDRQ,PIN
	78	RGB-Dimmer-C
	4x (0 .. 255)	W,STEPS,IMGSET,B-,B+,NOBG,RGBH,RGBW, RDRQ,PIN
	79	RGB-Dimmer-D
	4x (0 .. 255)	W,STEPS,IMGSET,B-,B+,NOBG,RGBH,RGBW, RDRQ,PIN

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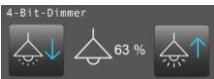
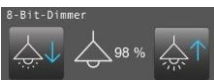
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09 Dimmer Elements

Image	Element	Element Type
	Range	Format
	70	4-Bit-Dimmer-Start-Stop
	0 .. 15	W,B-,B+,STEP,REP,TO,IMGSET,NOBG, RDRQ,PIN
	71	4-Bit-Dimmer-Repeat
	0 .. 15	W,B-,B+,STEP,REP,TO,IMGSET,NOBG, RDRQ,PIN
	72	8-Bit-Dimmer-Repeat
	0 .. 255	W,B-,B+,STEP,REP,TO,IMGSET,NOBG, RDRQ,PIN

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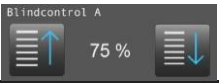
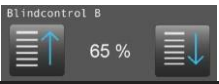
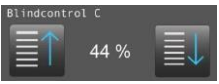
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10 Shutter-Blinds Elements

Image	Element	Element Type
	Range	Format
	73	Shutter-Blinds-Control-A
	0/1	W,B-,B+,REP,TO,IMGSET,NOBG, RDRQ,PIN
	74	Shutter-Blinds-Control-B
	0/1	W,B-,B+,REP,TO,IMGSET,NOBG, RDRQ,PIN
	75	Shutter-Blinds-Control-C
	0/1	W,B-,B+,REP,TO,IMGSET,NOBG, RDRQ,PIN

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Appendix – Table 1

3,5" TFT Colour Touch Display



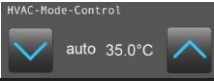


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11 HVAC Elements

Image	Element	Element Type
	Range	Format
	80	HVAC Setpoint-Control
	-671088,64 .. 670760,96	W,TO,DC,STEP,T,MIN,MAX,NOBG,MASK, INTERN,RDRQ,PIN
	81	HVAC Mode-Control
	0 .. 4	W,NOBG,MASK,INTERN,TSET RDRQ,PIN
	82	HVAC Mode-Control-Text
	0 .. 4	W,NOBG,MASK,INTERN,TSET, RDRQ,PIN
	83	HVAC-Fan-Control
	0 .. 255	W,NOBG,STEPS,FANSTAGE
	65	1-Byte-Timer-Profile HVAC
	0 .. 255	W,OVRTO,NOBG,IMG,RDRQ,PIN,PPIN

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12 Overview Time / Date Elements

Image	Element	Element Type
	Range	Format
	60	Alarmclock
	0/1	W,ALTO,SILENT,NOBG,RDRQ,PIN,PPIN
	61	Alarmtimer
	0/1	W,ALTO,SILENT,NOBG,RDRQ,PIN,PPIN
	59	Astroclock
	0/1	INV,L0,L1,B0,B1,PIN,PPIN
	62	1-Bit-Timer-Profile There are also different timer profiles
	63	1-Byte-Timer-Profile 0 .. 100%
	64	1-Byte-Timer-Profile 0 .. 255
	66	2-Byte-Float-Timer-Profile
	65	1-Byte-Timer-Profile HVAC

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Appendix – Table 1

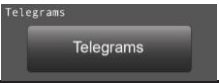
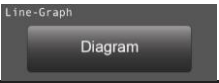
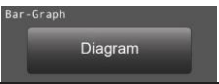
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13 Datalogging


Image	Element	Element Type
	Range	Format
	95	Telegrams
		OBJS,LABEL,PIN
	96	Line-Graph
		DGRM,LABEL,PIN
	97	Bar-Graph
		DGRM,LABEL,PIN

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Table 2A

Identifier : UNIVERSAL & PUSHBUTTON		
! Identifier assign in CAPITAL LETTERS		
Format		DEFAULT / EXAMPLE
ICO	Defines an Icon which appears on left side of the Widget	ICO=TERRACE
TC	Text color in widget	TC = #404404
BFONT	Userdefined Font size on Button	BFONT=16
LFONT	Userdefined Font size on Label	LFONT=16
BCOL	Text color on Button	BCOL=GREEN
LCOL	Text color on Label	LCOL=#196F3D
NOBG	No button background	
IMG	Choosing an image (icon) for pushbutton	IMG=SEND
LABEL	Text default for button	LABEL= send off
PRESS	Value that will be sent when pressing button	
RELEASE	Value that will be sent when releasing button	
JUMP	Command to jump to any page	JUMP=3
LOGIC	Function call or direct incorporation of a logical function	
LOGICR	Function call or direct incorporation of a logical function	
N	Number of buttons displayed (up to N=4)	;N=3
PRESS/RELEASE	Value can be set for each Quad element	
LABELS	Labeling of Buttons with Text	;LABELS =1,2,3
J(N)	Command to jump to any page	;J1=2;J2=4
PIN	In case "Use PIN" is selected, an individual password can be assigned using PIN	

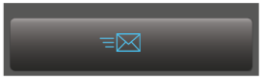


ELEMENT 1 ;ICO=TERRACE ;LABEL=CLOSE

NOBG eliminates the button's surface and the display is visualized directly on the background.



Value Button (Pushbutton)




For 1-Bit Pushbutton
Default value : PRESS = 1

JUMP changes to Page n
(JUMP=3 > landing page is page3)

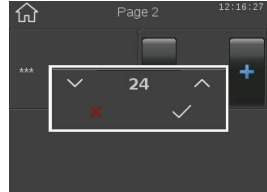
Using **LOGIC**, LUA functions can be activated or manually incorporated in a LUA syntax-based logical function which is triggered when **pressing** the button.

Using **LOGICR**, LUA functions can be activated or manually incorporated in a LUA syntax-based logical function which is triggered when **releasing** the button.

Quad elements (Pushbutton)



1 Bit Value ;PRESS =1,0,1
1 Byte Value with POP UP



;J1=1;J2=4
Pushbutton 1 > jump to page1
Pushbutton 2 > jump to page4

Using **PIN**, an individual password can be assigned. If "Use PIN" is selected, the default master password will be used in case **PIN** is not set.

TABLE 2B




Identifier : TOGGLE BUTTON			
!		Identifier assign in CAPITAL LETTERS	
Format		DEFAULT / EXAMPLE	
W	Determines width of button/display surface		 <p>Display area Button area</p> <p>W defines the relation between Display- and Button-area. W = 40 (Standard) sets Display area = Button area W >40 (Standard) sets Display area > Button area</p>
IMGSET	Choosing set of images	IMGSET=LIGHT	<p>ON/OFF Toggle Button</p> <p>IMGSET defines the use of ICONS in Buttons and Labels IMGSET=LIGHT (PNG-files)</p>  <p>LIGHT_I_off LIGHT_I_on LIGHT_b_off LIGHT_b_on</p>
B0	Text for button on "0"	B0=OFF	
B1	Text for button on "1"	B1=ON	
L0	Text for display on "0"	L0=OFF	
L1	Text for display on "1"	L0=ON	
BSWAP	Switch between display of the current state and the subsequent state (button)		
LSWAP	Switch between display of the current state and the subsequent state (display)		
RDRQ	Read Request		<p>RDRQ sent a read request at start-up for the used widgets. This parameter only works when Communication Address and Receive Flag are set.</p>
AL	Alarm lower limit		<p>AL/AH They serve as a limit setting the temporal point from which an alarm is detected</p>
AH	Alarm upper limit		
IMGSETS	Labeling of Buttons in a Quad element with Imagesets	only	<p>Quad elements (TOGGLE BUTTON)</p>
ALARM	Occurs when the transition from "0"to"1"		<p>;IMGSETS=BELL,AL,LIGHT3;N=3;ALARM</p> 

TABLE 2C





Identifier : INCREMENTAL / DECREMENTAL BUTTON			
! Identifier assign in CAPITAL LETTERS			
Format		DEFAULT / EXAMPLE	
IMGSET	Choosing set of images for up&down	IMGSET=PM	  PM_down.png PM_up.png  ELEMENT11 ;ICO=TERRACE ;IMGSET=SOUND
IMGVAL	measured value-oriented image incorporation	IMGVAL=LIGHT	 LIGHT_0 LIGHT_85 LIGHT_170 LIGHT_255 Use B- and B+ to determine the on increasing and decreasing Buttons
B+	Text for button on incrementing	B+= UP	Using PF , a unit of measurement can be adjusted according to the measured value.
B-	Text for button on decrementing	B-= DOWN	
PF	Declaration of the unit	PF=°C	2 Byte Value Float > PF=°C is predefined eliminating PF set PF=
STEPS	Setting step quantity	STEPS=3	DC defines the displayed decimal places.
MIN	Setting of lower limit	MIN=0	Use * to determine a multiplication factor.
MAX	Setting of upper limit	MIN=255	STEPS determines the step quantity for adjusting the value between MIN and MAX.
REP	Setting repetition rate		REP When pressing the buttons a little longer, REP sets the interval by which the values are sent. (in milliseconds)
DC	Number of displayed decimal places	DC=2	
*	Multiplication factor		Using INT the number range can be changed from floating point (float) to integers (integer).
INT	Shift of number range to integer		
UINT	Shift of number range to unsigned integer		Using UINT the number range can be changed from floating point (float) to unsigned integers (unsigned Integer).

TABLE 2D

Identifier : TIMER / SCENES		
! Identifier assign in CAPITAL LETTERS		
Format		
OVRTO	Determines the time (in minutes) until manual settings are overwritten	
LONG	Activating weekday statement	
ACTUAL	Visualising internal time	
TO	Time allowance in ms for input analysis	
SCENES	Determination of locations in use	
MOD	Setting output parameters	
	SINGLE	Saving and activation via SC1
	DUAL	Saving control via SC2 and retrieving control via SC1
	DIFF	SC1..SC4 are working independently
SELECT		
ONSTART	response to Power On	
SCGRP	group of scenes	
TRGINV	Inverts the trigger function	
IMG	picture to the left edge	
PLAYONLY	play only operate	
PLAYSTOP	without Pause button	

OVRTO determines the span of time, after which the settings made manually by the user are overwritten by the values set in the time table.
(in minutes)

Use **LONG** to add weekday to time.

Use **ACTUAL** to visualise internal time. (Without use of communication objects)

Using **TO**, it is possible to determine from what point onwards (in milliseconds) the manual input is interpreted as holding the button down.)

Using **MOD**, the output control can be adjusted.

SINGLE:
Displayed buttons communicate via Scene Control 1. SC2-SC4 have no functions.

DIFF:
Displayed buttons communicate via the corresponding Scene Control objects.

DUAL:
Displayed buttons communicate via SC1 and SC2. Use SC1 to retrieve and SC2 to save scenes. SC3-SC4 have no functions.

SELECT limits the internal used object by their object number.

With **ONSTART**, an automatic start at Power or when the power returns are initiated.

SCGRP=a : a = 1 .. 16 defines a group of scenes. If one of the scenes in this group is enabled all other scenes are stopped.

IMG : image to set in front of the start-button.

PLAYONLY, only the play button is displayed. Stopped only by the bus with trigger or enable.

PLAYSTOP, the play and stop button will be displayed. The pause button is hidden.

TABLE 2E

Identifier : DIMMING RGB / HVAC / FAN CONTROL			
	! Identifier assign in CAPITAL LETTERS		
Format			
RGBH	RGB + brightness		Using parameter RGBH , channel 4 (White) transmits the brightness value, and channels 1-3 determine the colour. (only for RGB illuminants that support this feature)
RGBW	RGB + white		Parameter setting RGBW provides a 4th channel (White). Using this channel, an additional white LED can be gated.
			RDRQ sent a read request at start-up for the used widgets. This parameter only works when Communication Address and Receive Flag are set.
RDRQ	Read Request		
TO	Setting, after how much time, expressed in seconds the display returns to its standard position		Using TO , you can determine after how much time the display returns to its standard position.
DC	DC Number of displayed decimal places		DC defines the displayed decimal places.
STEP	Setting step size		STEP determines the step size for adjusting the value between MIN and MAX. Use T to initialize the temperatures (Syntax: T=T1:T2:T3:T4)
T	T Initialization values for temperatures		MIN determines lower limit of the respective temperatures (Syntax: MIN=T1:T2:T3:T4)
TSET	Shifting set point		MAX determines upper limit of the respective temperatures (Syntax: MAX=T1:T2:T3:T4)
MIN	Default setting of temperature's lower limit		The masking will be conducted as follows: (Syntax:0=showing; 1=masking out) masking sequence: MASK =Protection:Night:StandBy: Comfort:Automatic
MAX	Default setting of temperature's upper limit		In case the internal control is used and the selection for the Touch_IT is activated, a communication via GA is unnecessary, as soon as INTERN is set.
MASK	Masking displayed buttons		TSET changes the display of the control element. Use it only in combination with INTERN. Use it to raise or to lower the comfort temperature. (Depends on the parameter setting of the setpoint adjustment range.)
INTERN	Direct connection with internal RTR		OVRTO determines the span of time, after which the settings made manually by the user are overwritten by the values set in the time table. (in minutes)
OVRTO	Determines the time (in minutes) until manual settings are overwritten		
STEPS	Setting step quantity		
FANSTAGE	Controlling ventilation with STEPS		HVAC FAN – Control default is STEPS=3 Example: FANSTAGE;STEPS=4 Fan Speed > 25% 50% 75% 100%

3 System Settings and Customizing

Touch_IT V2

3.1 Settings and Defaults

- 3.1.1 Main
- 3.1.2 Time and date
- 3.1.3 Standby
- 3.1.4 Audio Signals
- 3.1.5 Fonts
- 3.1.6 System & SD-Card
- 3.1.7 Layouts & language

3.2 Screensaver

- 3.2.1 Default
- 3.2.2 Internal Settings on Device
- 3.2.3 Additional Identifiers in ETS General Settings

Appendix

Table 3A Additional Identifier: Screensaver

3.3 Custom Properties

- 3.3.1 General
- 3.3.2 User Defined

3.4 Update Tool

- 3.4.1 Software Installation
- 3.4.2 Driver Installation
- 3.4.3 Service Tool

Appendix

Table 3B Internal Icons

3.1 System Settings

The sensitive area for switching in settings is placed top/middle in headline of the first page.

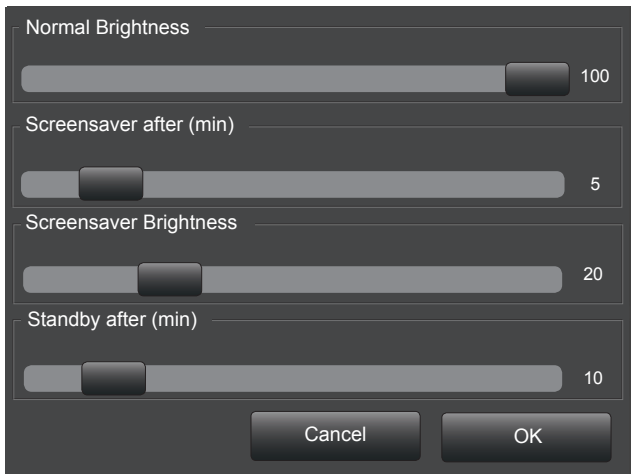
3.1.1 Main

<p>In the main display of the system page, the following settings can be set directly on the Touch_IT.</p> <ul style="list-style-type: none"> • Time and date • Standby • Audio signals • Fonts • System & SD-card • Layouts & language <p>These settings can be changed and adjusted to individual defaults by the user at any time.</p>	
---	--

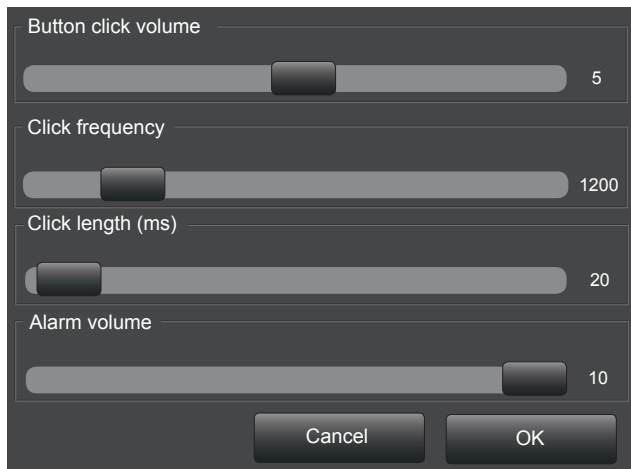
3.1.2 Time & Date

<p>Use the time zone setting for localization. It is required also for logical operations. (For more information see chapter 10, miscellaneous)</p> <p>An automatic switch to daylight saving time can be activated. The clock will then shift automatically.</p> <p>As soon as the communication objects 1 (System Time) and 2 (System Date) are connected, the Touch_IT can either be used as a timer in the bus, or be adjusted by a timer.</p>	
--	--

3.1.3 Standby

<p>Two brightness settings can be defined.</p> <ul style="list-style-type: none">• Standard operation• Screen saver operation <p>Additionally, two time allowances can be set.</p> <ul style="list-style-type: none">• Screen saver operation• Standby <p>If the setting is 0, the respective function will be inactive. As soon as a minute default between 1 and 60 is set, the respective function will be effected after this time has elapsed.</p>	
---	--

3.1.4 Audio Signals

<p>The operation sound and the volume of the alarm sound can be defined individually.</p> <p>Volume of click and alarm can vary within the scope of 0 to 10.</p> <p>The frequency of the operation sound can set between 100 and 8000 Hz.</p> <p>The duration or running time of the operation sound can be adjusted within the scope of 10 to 300 ms.</p>	
--	---

3.1.5 Fonts

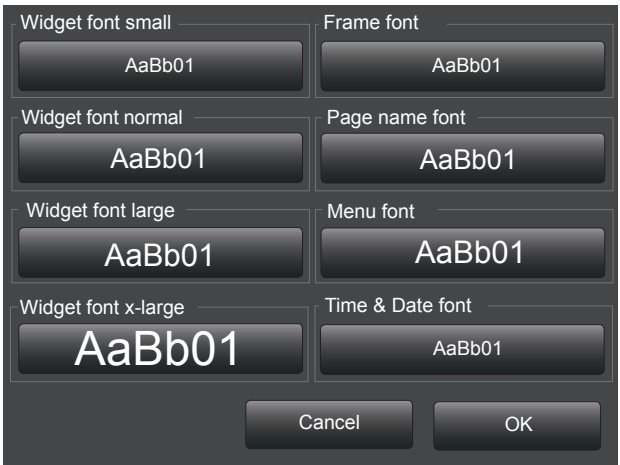
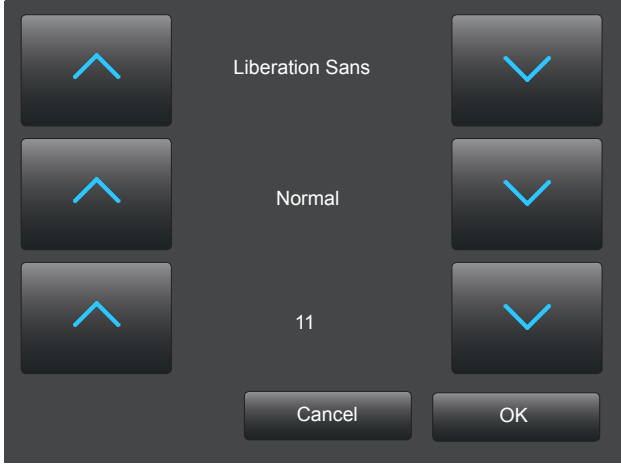
The element sizes that are selectable in the ETS can be freely parameterized.		
ETS (Element Size)	↔	Touch_IT
Small	↔	small
Normal	↔	normal
Large	↔	large
X-Large	↔	extra large

It is also possible to change

- Frame label
- Page name
- Menu label

The alterable parameters are

- Type face
- Type form
- Type size

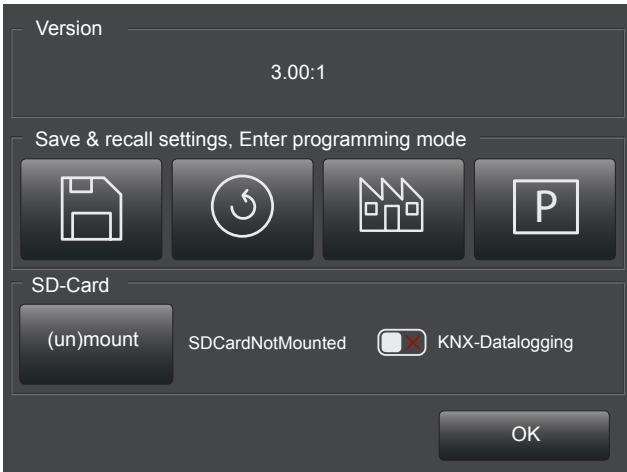
3.1.6 System & SD Card

All these settings can optionally be

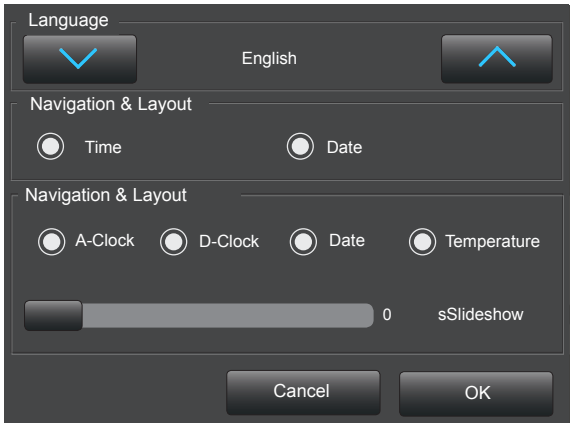
- written to the internal memory
- downloaded from the intern memory
- reset to factory setting

The programming button is additionally materialised in the software. It can be activated on demand, using the „P“ button.

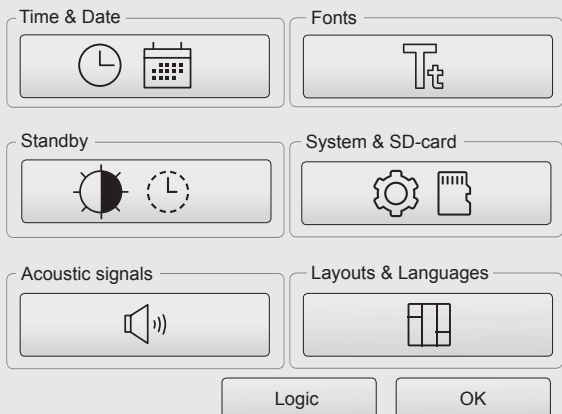
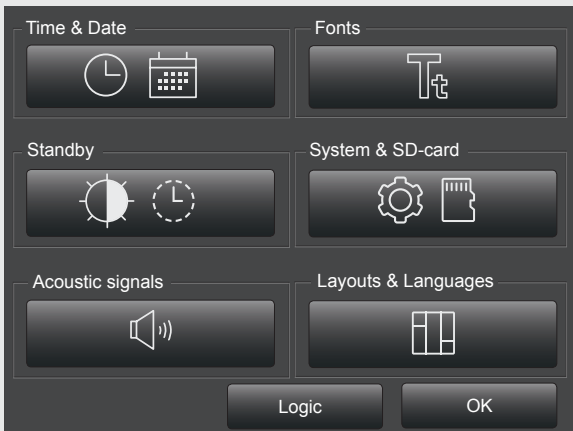
In case data logging is carried out on the Touch_IT, an SD card has to be included. After inclusion, the free memory space will be displayed and the logging starts automatically.



3.1.7 Language / page header / screensaver

<p>In the overview below you can find examples of different themes and navigation options to choose from.</p> <p>Currently, the following languages are supported:</p> <ul style="list-style-type: none"> • German • English • Hebrew • Italian • Chinese • Spanish • Turkish • French • Russian <p>Please note that your system software as well as ETS must support these languages in order to ensure a proper use.</p> <p>If you choice time or/and date it is placed Top / right in page heade</p> <p>Sreensaver see chapter 3.2</p>	
--	--

Themes (choiceable only in ETS)

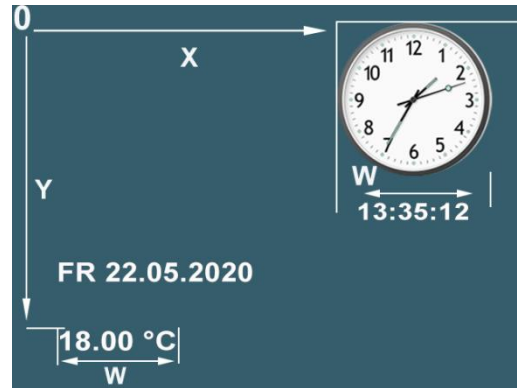
Dark Icon	
Bright Icon	

3.2 Screensaver

3.2.1 Default



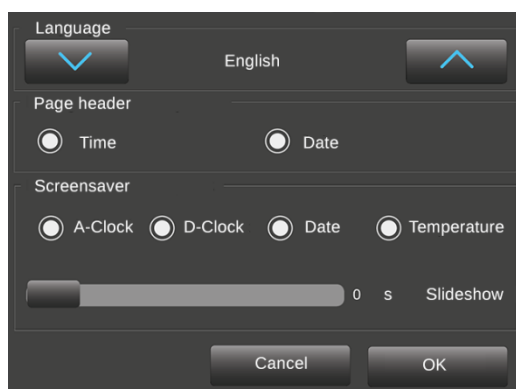
Slideshow blue01.... 04.png



Background color "#365d6b" (see 3.3)

Analog Clock	X=203	Y= 11	W=101
Digital Clock	X=215	Y=121	W= 75
Date	X= 28	Y=157	W=167
Actual (HVAC) temperature	X= 28	Y=201	W= 78

3.2.2 Internal settings on device



You can activate the individual components.

The `sidehow_seconds_` parameter determines how long an image is displayed.

If `slideshow_seconds = 0` > only one image of the set is shown as a static screen.

Size and coordinates of the activated components can be determined with Additional identifiers in the ETS application

3.2.3 Additional identifiers in ETS general settings

General	
Page scheme	<input type="radio"/> 5 Pages / 1 Alarm Page <input checked="" type="radio"/> 6 Pages
Global format identifiers	<input type="text" value=";MTYPE=1"/>
Additional identifiers	<input type="text" value="SCRBG=#365D6B"/>

- Analog Clock **SCRACLK**
- Digital Clock **SCRDCLK**
- Date **SCRDATE**
- Actual (HVAC) temperature **SCRTEMP**
- Selectable Display_object **SCROBJ** (object must be linked in KNX-Bus)

- Color of the Background **SCRBG** (covers loaded background images)
- Color of Textarea **SCRTXTBG**

- Time in seconds **SLIDETIME** (overwrites the time in the display settings)

There are different attributes to describe and place the objects on the screen see **Appendix Table 3A**

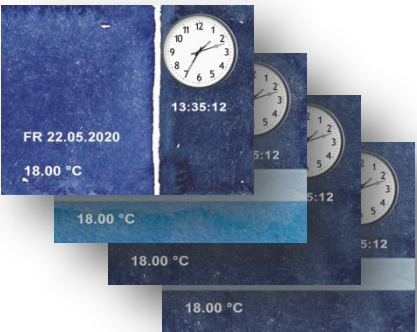
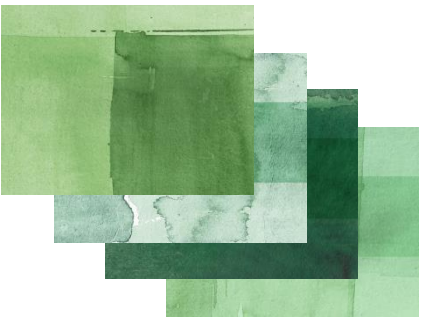

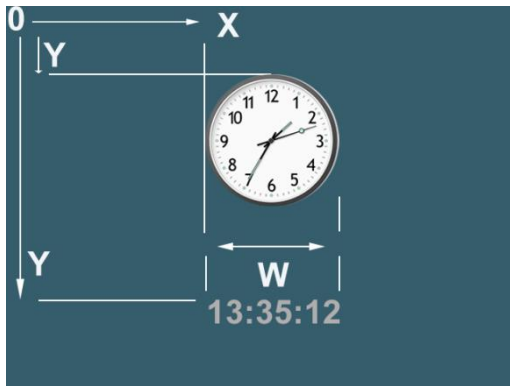
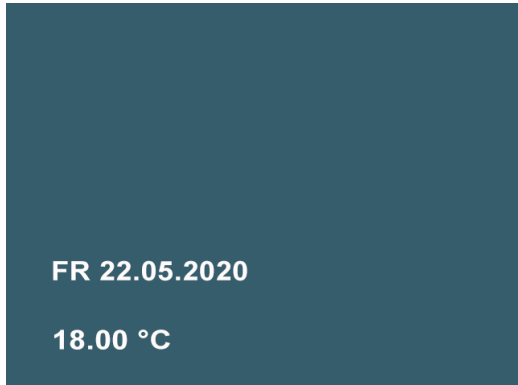
Slideshows can be uploaded with Update Tool	
	
	<p>See examples (blue,green,red) www.arcus-eds.de/download_visu if using snapshot (UPDATE_TOOL) Images are filed in opt/images/usr</p>

TABLE 3A

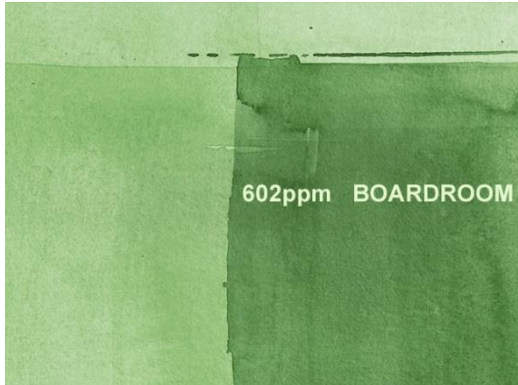
Additional Identifier : SCREENSAVER	
! Identifier assign in CAPITAL LETTERS	
IDENTIFIER1=[A1,A2,...]; IDENTIFIER2=[A1,A2,...]; ..NEXT	
IDENTIFIER=ATTRIBUTE1 , ATTRIBUTE2 ,	
ATTRIBUTE	
color	Textcolor RED, GREEN; LIGHTGREY ...etc or #RRGGBB
x,y	Coordinates of Images and Texts in pixel
w	Width of Images & Texts in pixel
SCRBG	Color of the Background (covers loaded images) SCRBG = color RED, GREEN; LIGHTGREY ...etc or #RRGGBB
SCRACKL	Analog Clock SCRACKL =N > deactivated SCRACKL =x,y,w,style
style	Default style = radium
SCRDCLK	Digital Clock SCRDCLK =N > deactivated SCRDCLK =x,y,w,color
SCRDATE	DATE SCRDATE =N > deactivated SCRDATE =x,y,w,color
SCRTEMP	TEMPERATURE INTERN (RTC) SCRTEMP =N > deactivated SCRTEMP =x,y,w,d,color
d	Digits
SCROBJ	Touch_IT Object SCRTEMP =N > deactivated SCRTEMP =objnr,x,y,w,d,PF,color
objnr = Display Object_Nr. (In this example linked with Output, measured value CO2)	
PF	PostFix
SCRXTBG	Color Background Textarea SCRXTBG = color
SLIDETIME	(overwrites the time for slideshow images in the display settings) SLIDETIME = time in seconds



SCRBG=#365D6B
;SCRACKL=125,125,90 ;SCRDCLK=125,200,90,#B1AEAF



SCRBG=#365D6B;SCRACKL=N ;SCRDCLK=N
;SCRDATE= 28,157,167,#BFC9CD
;SCRTEMP= 28,201,78,2,#BFC9CD



;SCROBJ=63,147,111,169, ,ppm BOARDROOM,#E6F8CE

SCRXTBG = bluegreen

;SLIDETIME=6s > every picture in slideshow appears for 6s

3.3 Custom Properties

The following section describes the characteristics and requirements of the given and the highly customizable icons.

3.3.1 General

Object Type: 1 Bit

Element Type: 1-bit-ON/OFF-Toggle-Text

Element Size: Normal

Interactive: Normal Small Large X-Large

Use Element PIN: No Yes

Align steps: No Yes

Expand horizontal: No Yes

Expand vertical: No Yes

The element size can be defined using the ETS. There are four sizes available:

- Small
- Normal
- Large
- X-Large



Classification		
ETS Element Size	Button	Label
Small	18 x 18 Pixel	18 x 18 Pixel
Normal	28 x 28 Pixel	28 x 28 Pixel
Large	48 x 48 Pixel	48 x 48 Pixel
X-Large	88 x 88 Pixel	88 x 88 Pixel

Remark:

Custom icons are not classified.

3.3.2 User Defined

Button ON/OFF

Naming convention		
Button	xxx_b_on.png	xxx_b_off.png
Label	xxx_l_on.png	xxx_l_off.png

Icons can be named with a freely selectable prefix. The suffix must be chosen according to the naming convention.

Examples	
	ONOFF_l_on.png
	ONOFF_l_off.png
	ONOFF_b_on.png
	ONOFF_b_off.png
ETS Parameter Element name;format	;IMGSET= ONOFF





Control elements working with this naming convention:

- 1-bit-ON/OFF-Toggle-Picture
- 1-bit-ON/OFF-Toggle-Picture with value
- 1-bit-ON/OFF-Picture with value

Button UP/DOWN

Naming convention		
Button	xxx_up.png	xxx_down.png
Label	xxx_l_on.png	xxx_l_off.png

Icons can be named with a freely selectable prefix. The suffix must be chosen according to the naming convention.

Beispiele	
	DIMMER_up.png
	DIMMER_down.png
	LIGHT_l_on.png
	LIGHT_l_off.png
ETS Parameter Element name;format	;IMGSET= LIGHT;





Control elements working with this naming convention:

- 1-Byte-Value-Picture-Button
- 1-Byte-Value-Slider
- 2-Byte-Value-Picture-Button
- 2-Byte-Value-Slider
- 2-Byte-Float-Picture-Button
- 2-Byte-Float-Slider
- 4-Byte-Float-Picture-Button
- 4-Byte-Float-Slider
- RGB-Dimmer
- 4-Bit-Dimmer
- 8-Bit-Dimmer
- Shutter-Blinds-Control

Pushbutton

Naming convention	
Button	xxx.png

Names of icons can be freely selected.

Examples	
	RING.png
	ILLUMINATION.png
	SEND.png
	CLOCK_ICO.png
ETS Parameter Element name;format	;IMG= ONOFF;




Control elements working with this naming convention:

- 1-Bit-Value-Pushbutton
- 1-Bit-Timer-Profile
- 1-Byte-Value-Pushbutton
- 1-Byte-Timer-Profile
- 2-Byte-Value-Pushbutton
- 2-Byte-Float-Value-Pushbutton
- 2-Byte-Float-Timer-Profile
- 4-Byte-Value-Pushbutton
- 4-Byte-Float-Value-Pushbutton
- 14-Byte-String-Pushbutton

IMGVAL

Naming convention	
Label	xxx

Names of icons can be freely selected.

Examples	
	AMPEL_0.png
	AMPEL_1.png
	AMPEL_2.png
ETS Parameter Element name;format	;IMGVAL= AMPEL;

Control element working with this naming convention:



- 1-Byte-Value-Picture-Button

Remark:
For the value "0" must be an image defined.
The format must be PNG. To upload the extension must be removed.

Quad Widgets

Naming convention		
Label	xxx_l_on.png	xxx_l_off.png

Icons can be named with a freely selectable prefix. The suffix must be chosen according to the naming convention.

Examples	
	BELL_l_on.png
	BELL_l_off.png
ETS Parameter Element name;format	;IMGSET= BELL;

Control elements working with this naming convention:

- 1-bit-Quad-ON/OFF-Status/Toggle-Picture
- 1-bit-Quad-Value-Pushbutton-Picture



Table 3B - Internal Icons

Dark Icons

Image Set - on / off

28 / 48 / 88 / 128 px

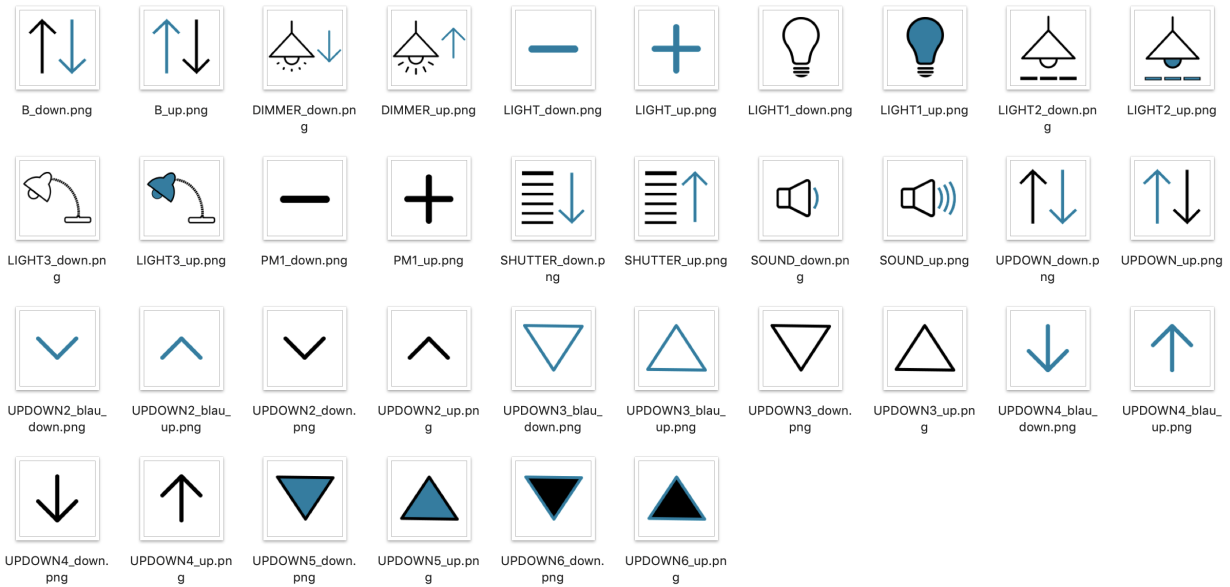
ACK_b_on.png	ACK_l_on.png	ACT_b_off.png	ACT_b_on.png	ACT_l_off.png	ACT_l_on.png	AL_b_off.png	AL_b_on.png	AL_l_off.png	AL_l_on.png
BELL_b_off.png	BELL_b_on.png	BELL_l_off.png	BELL_l_on.png	BIN_b_off.png	BIN_b_on.png	BIN_l_off.png	BIN_l_on.png	BOOL_b_off.png	BOOL_b_on.png
BOOL_l_off.png	BOOL_l_on.png	CHECK_b_off.png	CHECK_b_on.png	CHECK_l_off.png	CHECK_l_on.png	CLEAN_b_off.png	CLEAN_b_on.png	CLEAN_l_off.png	CLEAN_l_on.png
DND_b_off.png	DND_b_on.png	DND_l_off.png	DND_l_on.png	DOOR_b_off.png	DOOR_b_on.png	DOOR_l_off.png	DOOR_l_on.png	EN_b_off.png	EN_b_on.png
EN_l_off.png	EN_l_on.png	HC_b_off.png	HC_b_on.png	HC_l_off.png	HC_l_on.png	INV_b_off.png	INV_b_on.png	INV_l_off.png	INV_l_on.png
LIGHT_b_off.png	LIGHT_b_on.png	LIGHT_l_off.png	LIGHT_l_on.png	LIGHT1_b_off.png	LIGHT1_b_on.png	LIGHT1_l_off.png	LIGHT1_l_on.png	LIGHT3_b_off.png	LIGHT3_b_on.png
LIGHT3_l_off.png	LIGHT3_l_on.png	OCC_b_off.png	OCC_b_on.png	OCC_l_off.png	OCC_l_on.png	ONOFF_b_off.png	ONOFF_b_on.png	ONOFF_l_off.png	ONOFF_l_on.png
RESET_b_on.png	RESET_l_on.png	SCENE_AB_b_off.png	SCENE_AB_b_on.png	SCENE_AB_l_off.png	SCENE_AB_l_on.png	SHUTTER_b_off.png	SHUTTER_b_on.png	SHUTTER_l_off.png	SHUTTER_l_on.png
START_b_off.png	START_b_on.png	START_l_off.png	START_l_on.png	STEP_b_off.png	STEP_b_on.png	STEP_l_off.png	STEP_l_on.png	SUMMERWINTER_b_off.png	SUMMERWINTER_b_on.png
SUMMERWINTER_l_off.png	SUMMERWINTER_l_on.png	SW_b_off.png	SW_b_on.png	SW_l_off.png	SW_l_on.png	TRIGGER_b_off.png	TRIGGER_b_on.png	TRIGGER_l_off.png	TRIGGER_l_on.png
UPDOWN_b_off.png	UPDOWN_b_on.png	UPDOWN_l_off.png	UPDOWN_l_on.png	WINDOW_b_off.png	WINDOW_b_on.png	WINDOW_l_off.png	WINDOW_l_on.png		

e7 / Subject to change

Dark Icons

Image Set - up / down

28 / 48 / 88 / 128 px



Dark Icons

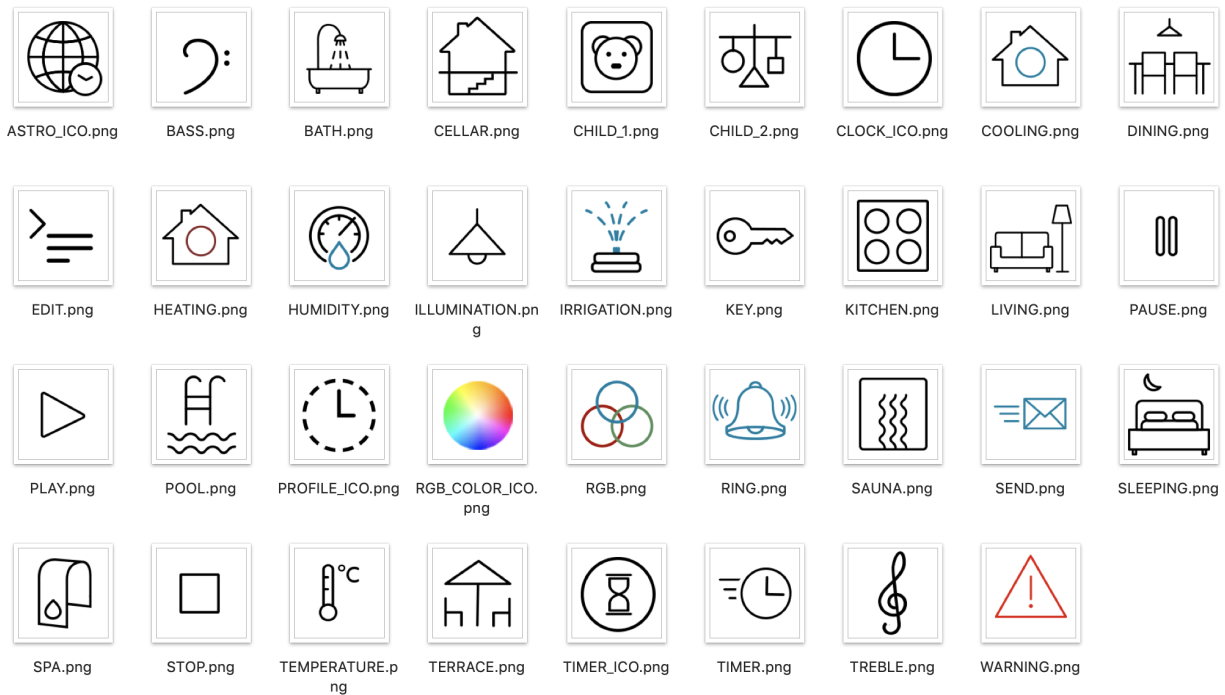
Image Value

28 / 48 / 88 / 128 px



Image

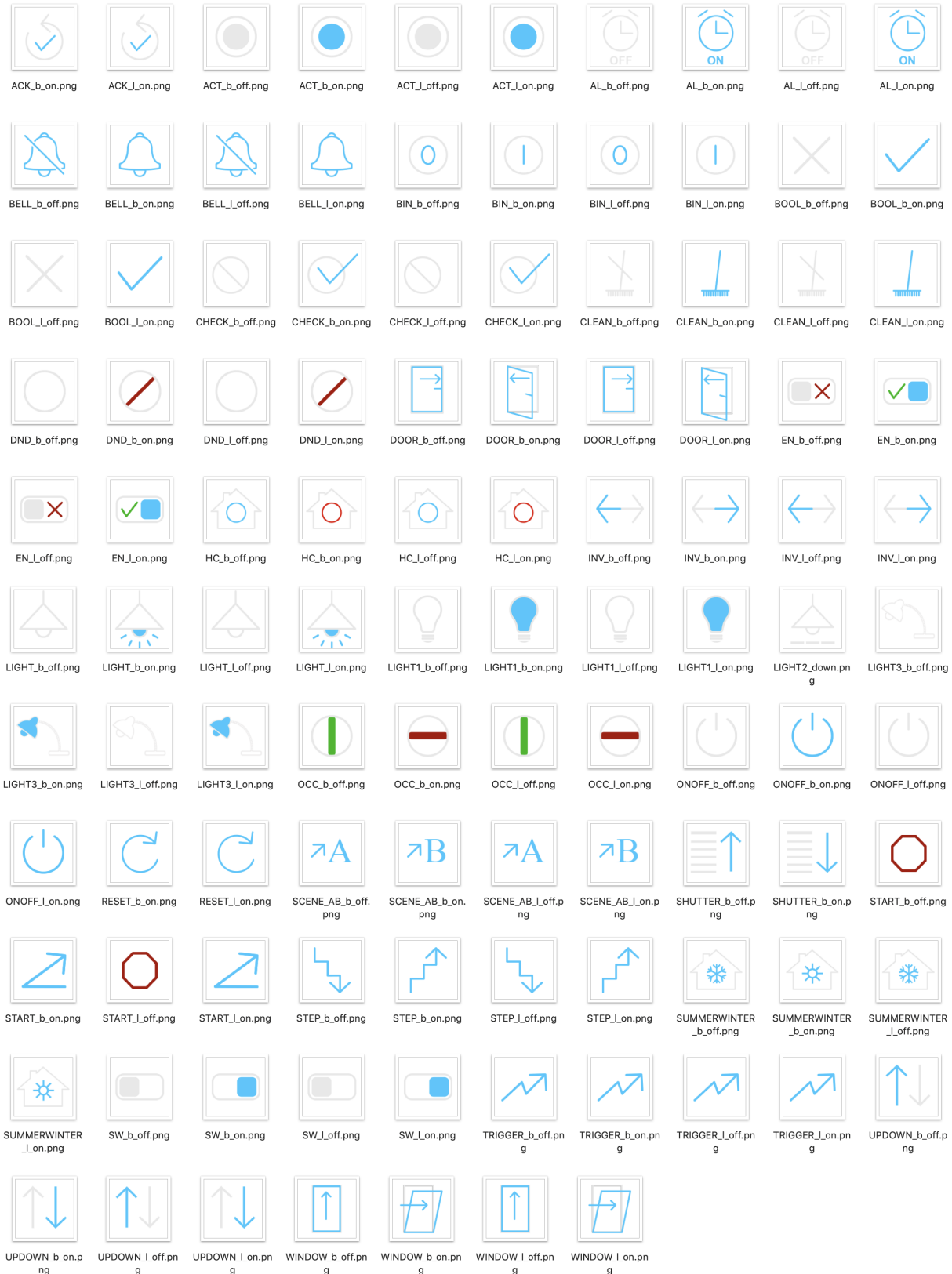
28 / 48 / 88 / 128 px



Bright Icons

Image Set - on / off

28 / 48 / 88 / 128 px

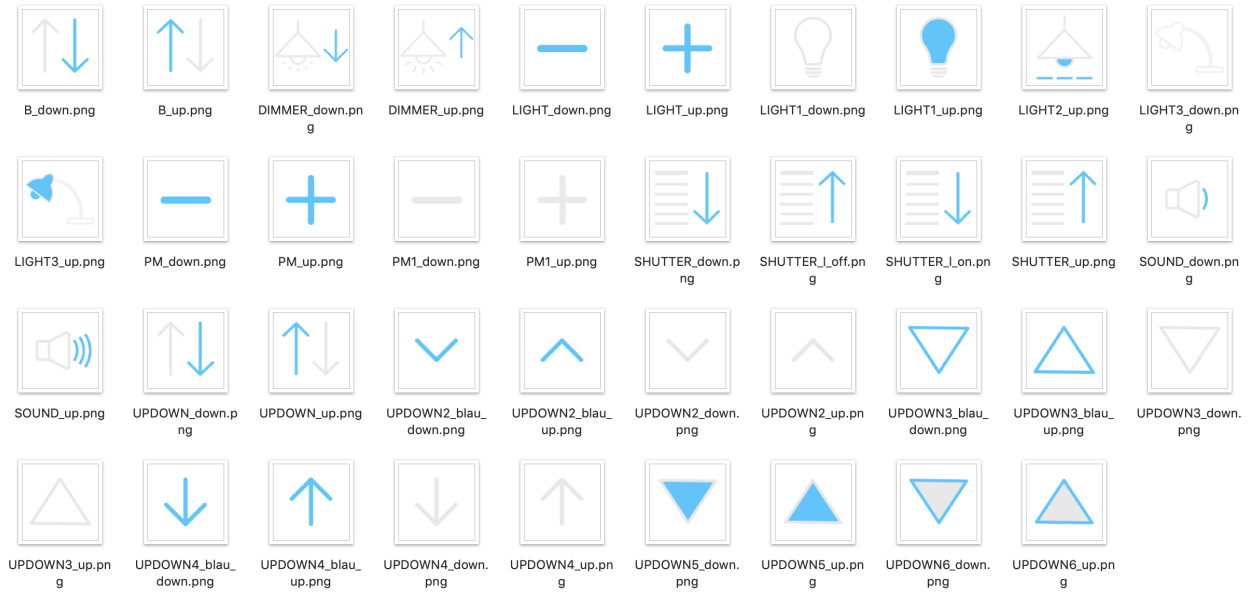


Bright Icons

Image Set

up / down

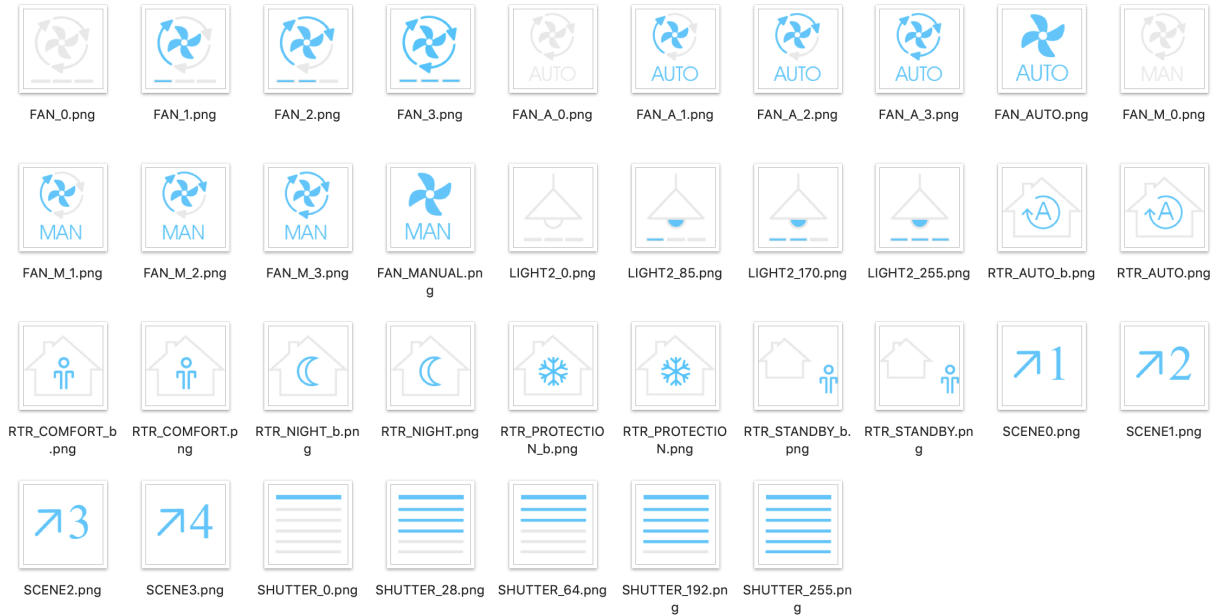
28 / 48 / 88 / 128 px



Bright Icons

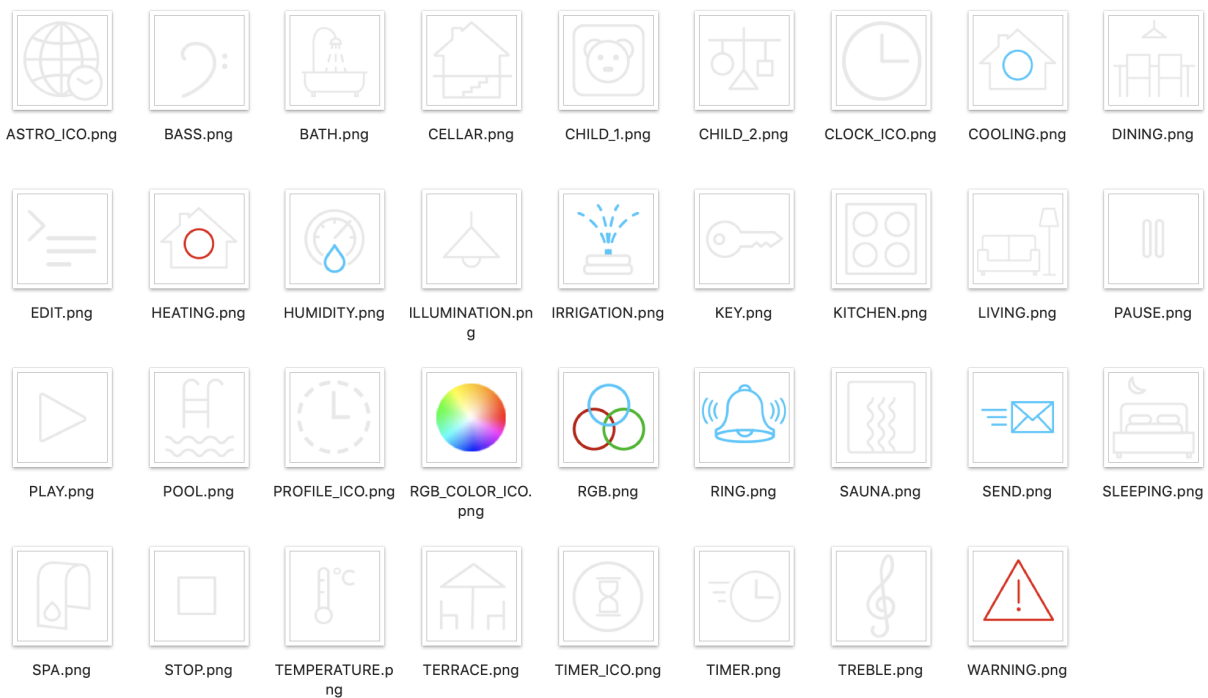
Image Value

28 / 48 / 88 / 128 px



Image

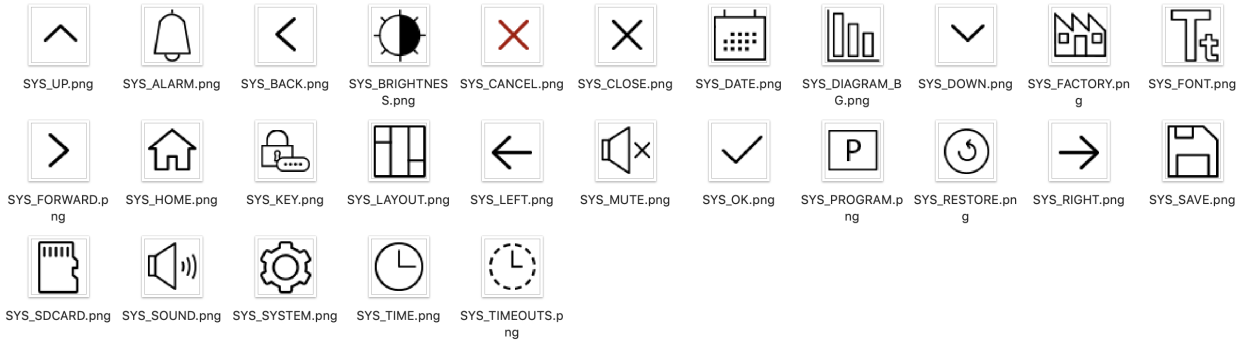
28 / 48 / 88 / 128 px



Dark Icons

System

32 / 48 px



Bright Icons

System

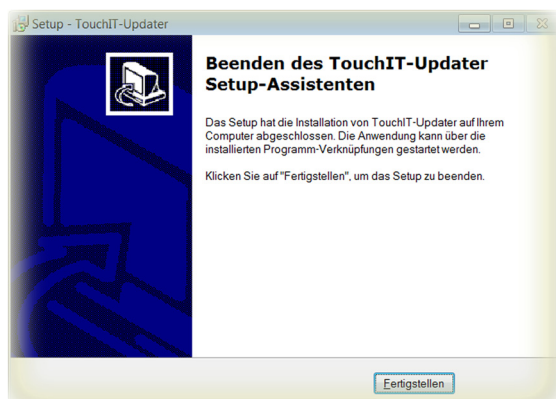
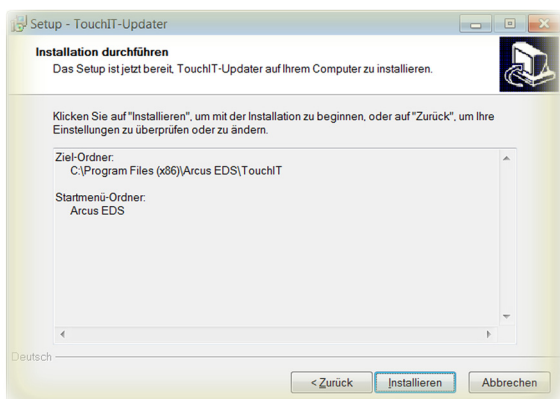
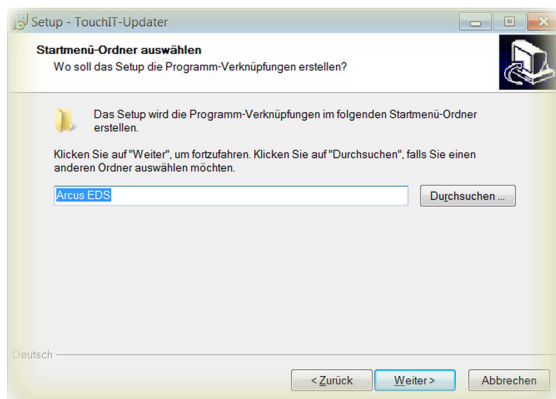
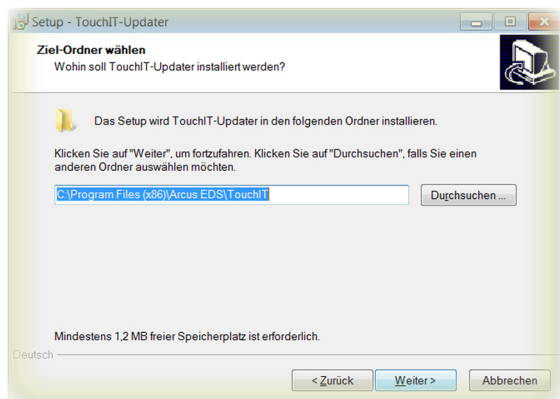
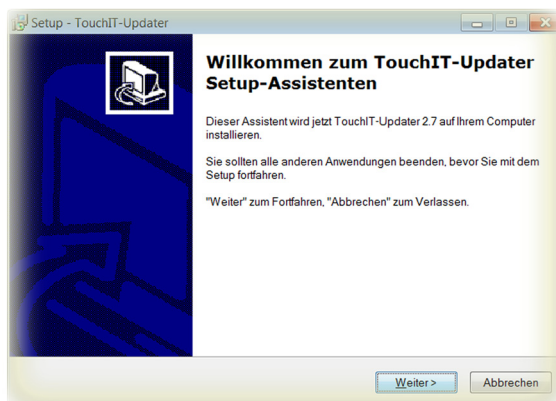
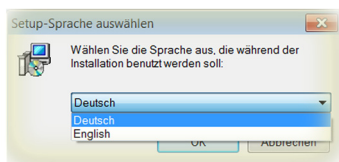
32 / 48 px



3.4 Update Tool

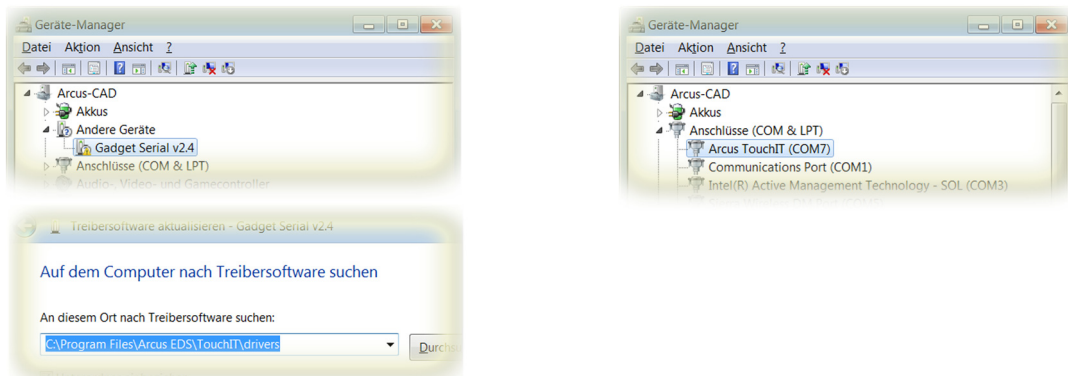
The following section describes the different functionality of the Touch_IT Updater.
The Tool contains several functions e.g.:
Firmware update, Upload Screensavers, User Icons, , Logic files, etc.

3.4.1 Software Installation



When finishing the installation, a folder containing the 32-Bit and the 64-Bit Touch_IT drivers will be created.

3.4.2 Diver Installation

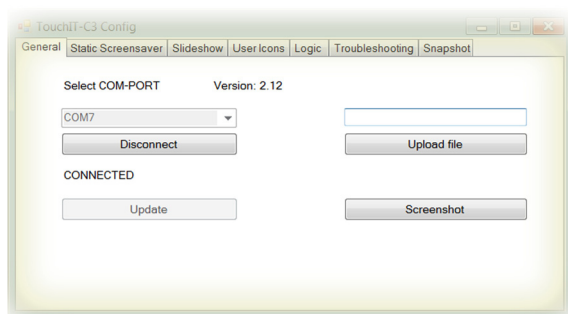


The drivers are located in the folder **drivers** of the installation path.

When the installation of the drivers is finished, an additional serial interface will be registered in the Device Manager. In this example, the serial interface **COM7** was assigned to the Touch_IT.

3.4.3 Service Tool

The update tool is located in the folder **Arcus-EDS** of the start menu and can be started by operating **Run Touch_IT-Updater**.



General

Select COM-PORT

must be set to the port that was assigned to the Arcus-EDS Touch_IT by the system. (See also Control Panel / System / Device Manager - connections) (here: COM7)

Update

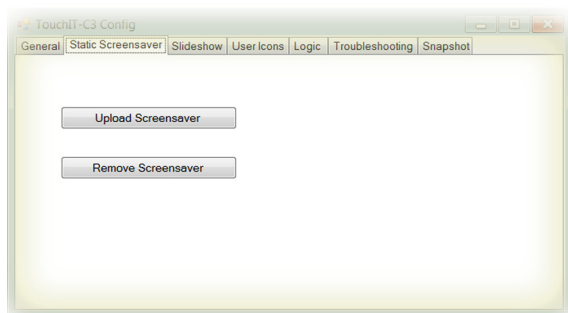
It will be updated all system components.

Upload File

makes it possible to directly transfer files to any desired storage position of the Touch_IT.

Screenshot

saves the current display of the Touch_IT as an image file on your computer.



Static Screensaver

Upload Screensaver

can be used to upload an image that is to be used as static screensaver.

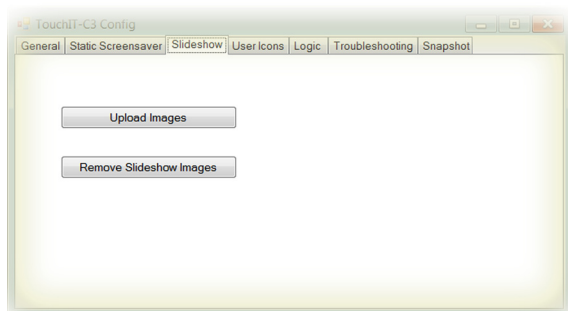
Remove Screensaver

deletes the current static screen saver

supported formats:

PNG	BMP	JPG
-----	-----	-----

The resolution of the display is 320x240 pixels.



Slideshow

Upload Images

can be used to upload slideshow images that are to be used in the screensaver.

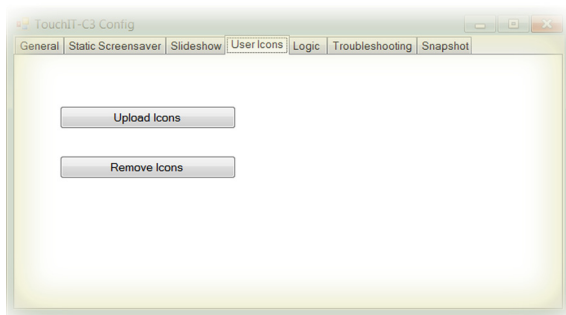
Remove Slideshow Images

can be used to upload slideshow images that are to be u

supported formats:

PNG	BMP	JPG	GIF
-----	-----	-----	-----

The resolution of the display is 320x240 pixels.



User Icons

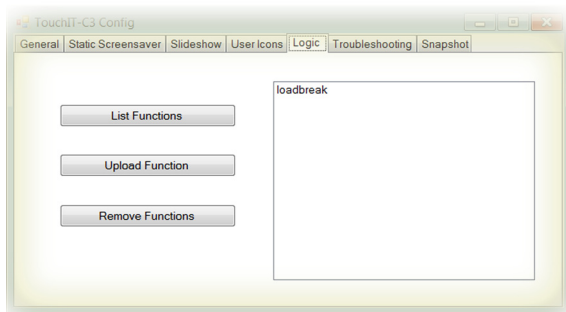
Upload Icons

can be used to upload custom symbols and icons that are to be used as operating elements.

Remove Icons

deletes custom symbols and icons

The specification of the size and the assignment of names will be explained in chapter 8, **Custom Properties**.



Logic

List Functions

lists all logical functions

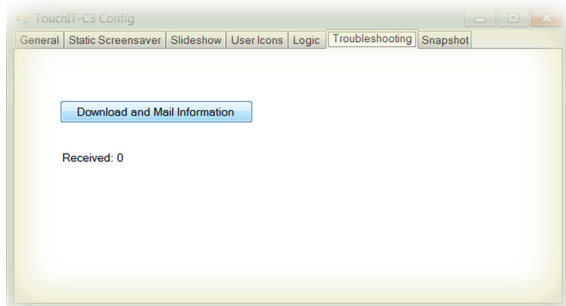
Upload Function

serves to upload logical functions

Remove Funktion

deletes selected logical functions

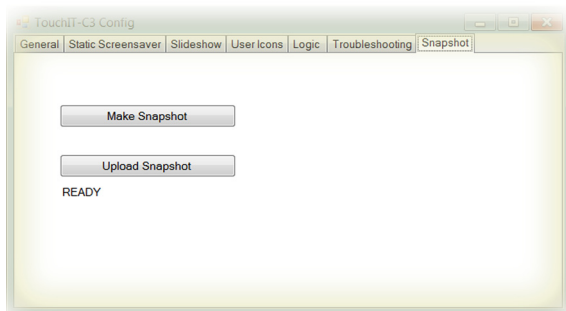
More information on logic can be found in chapter 6, **Logic**.



Troubleshooting

Download and Mail Information

If downloading via ETS is not possible or other malfunctions occur, all settings and parameters of the Touch_IT can be downloaded using the Troubleshooting tab. The file can be sent to Arcus-EDS GmbH via email (service@arcus-eds.de) for error analysis.



Troubleshooting

Make Snapshot

creates an exact copy of the configuration of a Touch_IT.

The snapshot includes:

- all predefined system settings (font size, time presets for screensaver and standby, etc.)
- Static screensaver image
- Slideshow images for the screensaver
- Custom icons and symbols
- Logical functions

Upload Snapshot

serves to upload an existing snapshot

SNAPSHOT: tgz/tar					
opt					
bin	icons	images	languages	settings	
logik	usr	usr	usr	system	widgets
function		screensaver			
		slideshow	static		
..lua	..png	..png	..png	en.txt	settings.txt
				de.txt	
				gr.txt	

A VISU	4 Logic
	Touch_IT V2
	4.1 ETS
	4.2 Functions
	4.3 Source Code

- 4.2.1 KNX Functions
- 4.2.2 System Functions
- 4.2.3 Callback Functions
- 4.2.4 Example Applications



4 Logic

The logical functions are developed in the scripting language LUA. The available implemented functions will be described more on the following pages. 31 communication objects are reserved for logical functions. As the necessary object types can vary depending on the requirements, there are 6 different object schemas available.

4.1 ETS

Use logic functions No Yes

Logic scheme

IO-Schema 1 ▾

Internal Only

IO-Schema 1 ✓

IO-Schema 2

IO-Schema 3

Object Schemas	Quantity	Communication Objects
No / Internal Only		No Objects
Scheme 1	10 x 8 x 8 x 5 x	1 Bit 1 Byte 2 Bytes 4 Bytes
Scheme 2	23x 4x 2x 2x	1 Bit 1 Byte 2 Bytes 4 Bytes
Scheme 3	15x 12x 2x 2x	1 Bit 1 Byte 2 Bytes 4 Bytes

4.2 Functions

4.2.1 KNX Functions

Function	Example
knx.get_string(a,b,...)	X,Y,Z=knx.get_string(CO1,CO2,CO3)
Reads one or more 14-Byte strings from the objects a,b,...	
knx.set_string(a,b)	knx.set_string(CO1,"Hello World".. 3)
Writes the 14-Byte string b (Hello World 3) to a communication object (a)	
knx.get_integer(a,b,...)	X,Y,Z=knx.get_integer(48,52,56)
Reads one or more integer value(s) from the objects a,b,... (1Bit, 1Byte, 2Byte, 4Byte (un-)signed).	
knx.get_float(a,b,...)	X,Y,Z=knx.get_float(20,24)
Reads one or more float value(s) from the objects a,b,... (4Byte float).	
knx.set_integer(a,b,c)	knx.set_integer(4,2,344)
Outputs the integer value c with the length b=1..4 to a communication object a.	
knx.set_float(a,b)	knx.set_float(8,27.8)
Outputs the float value b to the communication object a.	
knx.dpt9_to_int(a)	b=knx.dpt9_to_int(Value);
Converts a 2-Byte float value into an integer value (*100).	
knx.int_to_dpt9(a)	b=knx.int_to_dpt9(Value)
Converts an integer value into a 2-Byte float value.	
knx.tx_idle(a)	knx.tx_idle(6)
Tests a communication object whether it has completed the sending process.	

4.2.2 System Functions

Function	Example
sys.timeout(a[,b])	sys.timeout(1000,233)
When a (1000 milliseconds) has elapsed, the function timeout() with the value b (233) will be executed.	
sys.set_page(a)	sys.set_page(0)
Displaying page a, leaving stand-by.	
sys.set_brightness(a)	sys.set_brightness(100)
Setting brightness to a value a (given in %).	
sys.beep(a,{b[,c]})	sys.beep(100,1500,15)
The internal beeper is activated for a (100) milliseconds, with the frequency b (1500 Hz) and the volume c (100%).	
sys.put_setting(a,b)	sys.put_setting(„test value“,10)
Creates a variable named a (test value) and sets it to the value b (10). Will be saved in the flash memory.	
sys.get_setting(a)	sys.get_setting(„test value“)
Outputs the value of the variable a (test value).	
sys.signal_obj(a)	sys.signal_obj(48)
Outputs a signal to the graphical elements that the value of object a (48) has changed.	
sys.message(a)	sys.message(„Hallo Welt“)
Opens a message dialog with the message a („Hello World“).	
sys.settings_dialog(a)	sys.settings_dialog(„table“)
Opens a dialog in order to change the settings table named a („table“).	
sys.read_settings(a)	sys.read_settings(„table“)
Reads a settings table named a („table“).	
sys.write_settings(a)	sys.write_settings(„table“)
Saves the values of the settings table a („table“) in the flash memory.	

Function	Example
settings={ {name;min;max;val;dc} }	settings={ {name="Limit1 kW";min=0.5;max=6.0;val=1.0;dc=1}; {name="Limit2 kW";min=0.5;max=6.0;val=2.5;dc=1}; }
Defines a settings table. „dc“ ist the number of decimal places displayed in the settings dialog.	

4.2.3 Callback Functions

Function	Example
knx_value_changed(x)	
Is carried out when the value of an object changes. X is the object number.	
knx_value_update(x)	
Is carried out when the value of a logical object is updated. X is the object number.	
settings_set(x)	
Is carried out when a settings dialog (x = name of the table) is closed by pressing "OK".	
timeout(x)	
Is carried as soon as a sys.timeout() occurs. x is 0 or as set in sys.timeout(a[,b]). Return 1 to stop the timeout-source 0 to continue cyclically.	

4.2.4 Example Applications

In the following example, three 4-Byte float values coming from a KNX three-phase electricity meter are analyzed and then output as graphic depictions of three 1-Byte values (0,1,2). The figure shows a traffic light. Depending on the performance one of the three colors red, yellow or green will be displayed.

ETS

Parameter Setting **Main**

Global format identifiers

Additional identifiers

Use logic functions No Yes

Logic scheme

ETS **Topologie**

- 1: I Time - System Time input
- 2: I Date - System Date input
- 3: IO On/Off - System On/off
- 4: IO Standby - System Standby
- 5: I LED - System LED
- 32: IO Logic 1-Bit 0 - Logic
- 33: IO Logic 1-Bit 1 - Logic
- 34: IO Logic 1-Bit 2 - Logic
- 35: IO Logic 1-Bit 3 - Logic
- 36: IO Logic 1-Bit 4 - Logic
- 37: IO Logic 1-Bit 5 - Logic
- 38: IO Logic 1-Bit 6 - Logic
- 39: IO Logic 1-Bit 7 - Logic
- 40: IO Logic 1-Bit 8 - Logic
- 41: IO Logic 1-Bit 9 - Logic
- 42: IO Logic 1-Byte 0 - Logic

Touch_IT	
	<p>Operating the button „Logic“ will open the limits preset page.</p>
	<p>It is possible to predefine 2 different limits.</p> <ul style="list-style-type: none"> • Limit 1 (e.g. 1000W) • Limit 2 (e.g. 2500W)
	<p>The operating page displays the current performance values. The graphics depend on the pre-defined limits.</p>



4.3 Source Code

```
settings={
  {name="Limit1 kW";min=0.5;max=6.0;val=1.0;dc=1.0};
  {name="Limit2 kW";min=0.5;max=6.0;val=2.5;dc=1.0};
}
```

```
last_states={ -1;-1;-1 }; --last-state
```

```
function settings_set(x)
  sys.write_settings(x)
  knx_value_changed(248) --KO 248
  knx_value_changed(249) --KO 249
  knx_value_changed(250) --KO 250
end
```

```
function knx_value_changed(x)
  if ( x == 248 ) then
    val=knx.get_float(x);
    state=0;
    if (val>(settings[2].val*1000)) then
      state= 2;
    elseif (val >(settings[1].val*1000)) then
      state= 1;
    end
    if (state ~= last_states[1]) then
      last_states[1]=state;
      knx.set_integer(232,1,state)
    end
  end
  if ( x == 249 ) then
    val=knx.get_float(x);
    state=0;
    if (val>(settings[2].val*1000)) then
      state= 2;
    elseif (val >(settings[1].val*1000)) then
      state= 1;
    end
    if (state ~= last_states[2]) then
      last_states[2]=state;
      knx.set_integer(233,1,state)
    end
  end
  if ( x == 250 ) then
    val=knx.get_float(x);
    state=0;
    if (val>(settings[2].val*1000)) then
      state= 2;
    elseif (val >(settings[1].val*1000)) then
      state= 1;
    end
    if (state ~= last_states[3]) then
      last_states[3]=state;
      knx.set_integer(234,1,state)
    end
  end
end
```

```
function knx_value_update(x)
  knx_value_changed(x)
end
```

```
sys.read_settings("settings")
```

Imprint

Editor: Arcus-EDS GmbH, Rigaer Str. 88, 10247 Berlin

Responsible for the contents: Hjalmar Hevers, Reinhard Pegelow

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