

# Technical Manual

## MDT VisuControl Easy



VC-EASY.01

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## 2 Overview

### 2.1 Overview and Usage

VisuControl Easy is an object server, which can establish a connection between a KNX bus and each point on the LAN. Together with the VisuControl Easy APP, which is available for iOS devices in the iTunes Store, an access to your own KNX system of mobile IOS devices is possible.

The VisuControl Easy and thus also the presentation of the APP can be parameterized with 10 different areas and 15 different functions. A total of 250 communication objects can be displayed, which can be integrated in the KNX system. Furthermore Webcam-URL's, Weather data and extensive logic functions for status indication can be integrated via the database.

**The app can be downloaded for free via the iTunes Store (search word: VisuControl for KNX). In the APP a demo version is preinstalled, which can be started and tested without acquisition of the object server.**

The figure below gives a brief overview of the functions of the VisuControl Easy:

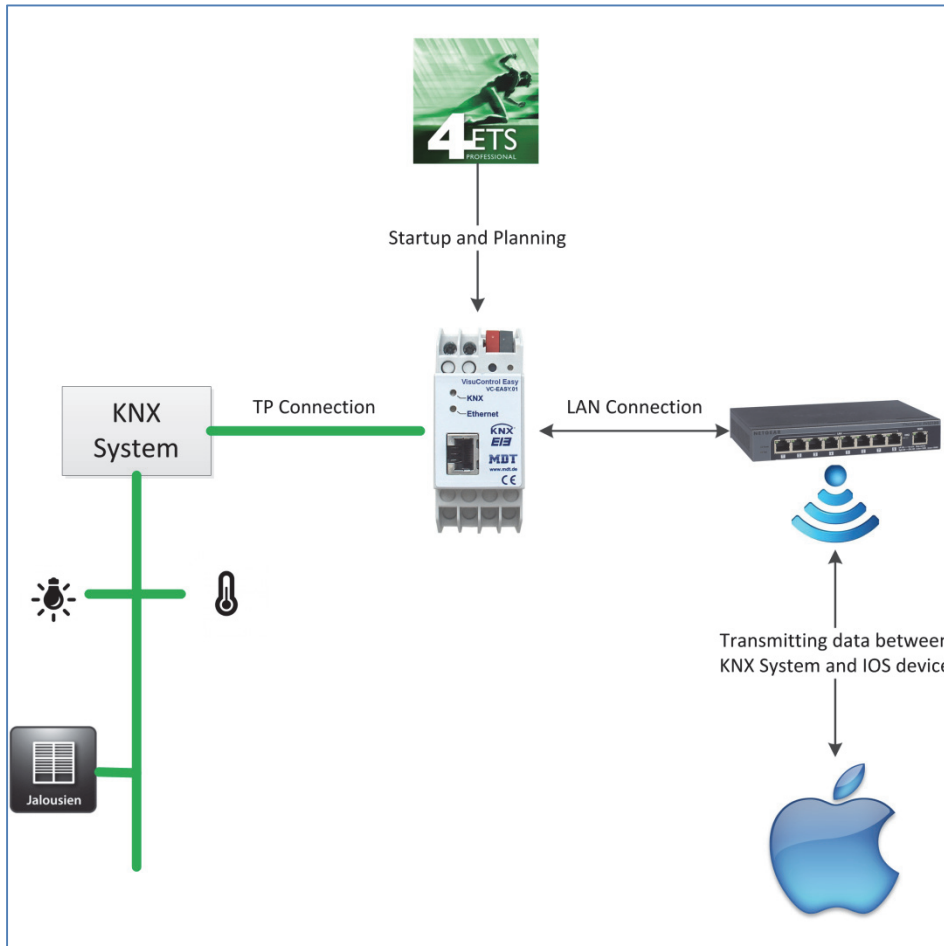


Figure 1: Overview

It is also possible to use the VisuControl Easy as a IP-interface.

## 2.2 Exemplary circuit diagram

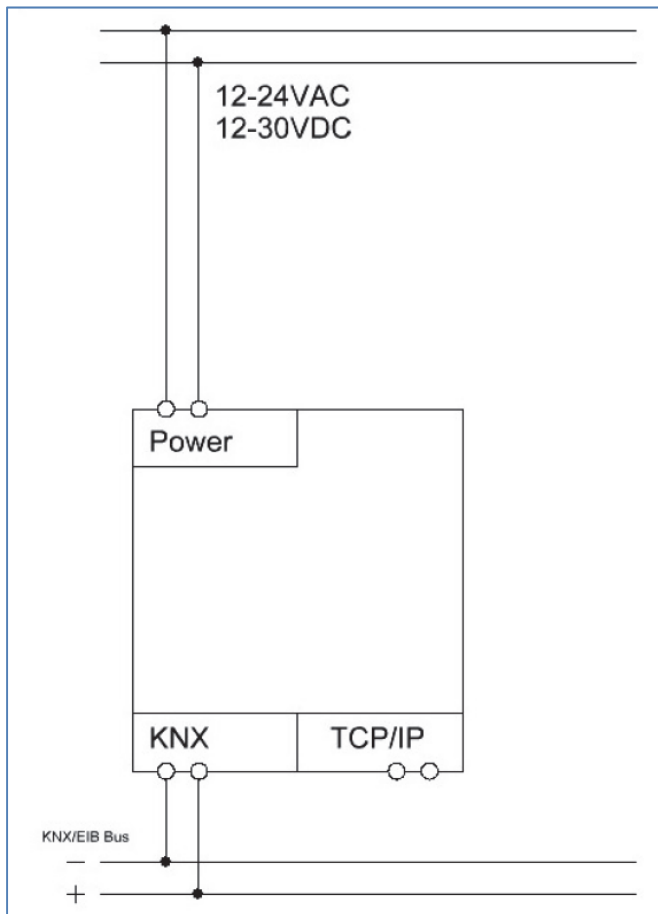


Figure 2: Exemplary circuit diagram

## 2.3 Structure & Handling

The VisuControl Easy is a top hat mounted rail device and has the following operating and display elements:



Figure 3: Hardware module

- 1 = 12/24V Connector (only necessary if no PoE available)
- 2 = Bus connector
- 3 = KNX - Status LED: lights green when bus voltage present  
flashes green when receiving / sending KNX telegrams
- 4 = Ethernet – Status LED lights yellow when Ethernet connection present  
flashes yellow at telegram traffic
- 5 = RJ 45 socket for connection to the LAN
- 6 = Programming button
- 7 = Programming-LED (red)

## 2.4 Settings at the ETS-Software

Selection at the product database:

Manufacturer: MDT Technologies

Product family:

Product type:

Medium Type: Twisted Pair (TP)

Product name: Visu Control Easy

Order number: VC-Easy.01

## 2.5 Starting up

After wiring the device, the assignment of the physical address and the download of the selected functionality can be done.

**The illustration in the APP is achieved by the transfer of the database to the object server VisuControl Easy. It needs no further settings in the app itself. After loading a new parameterization in the object server, the App must be simply reloaded via the settings.**

Procedure:

- (1) Connect the interface with the bus, e.g. MDT USB interface
- (2) Set bus power up
- (3) Connect Ethernet
- (4) Set auxiliary voltage up if no Power over Ethernet is available
- (5) Press the programming button at the device (red programming LED lights)
- (6) Loading of the physical address out of the ETS-Software by using the interface (red LED goes out, as well this process was completed successful)
- (7) Loading of the application, with requested parameterization
- (8) Load App with desired server (Free to download from iTunes Store, keyword: "VisuControl Easy")

At every restart and download of the VisuControl Easy, the device performs a read access of all linked group addresses. In this case, all group addresses at a distance of 1s are being requested.

## 2.6 Using VisuControl Easy as Communication interface

At valid IP configuration (see 5.1.2 Connection settings) of the Easy VisuControl, the device can be used as an interface to the KNX. The following settings are necessary:

In the main view of ETS 4, the Settings must be chosen and here the button communication. All available connections are listed below configured connections. After clicking on the desired connection, it can be selected via the corresponding button. The “Local settings” button allows the adjustment of additional physical address that is used for the bus:

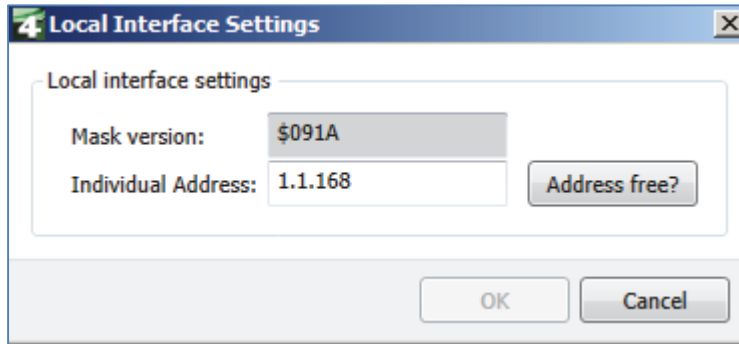


Figure 4: Local settings

To reserve this address, a dummy device can be inserted in the ETS project. The VisuControl Easy supports up to 5 simultaneous connections. For each compound, an additional physical address must be reserved.

The first additional physical address is assigned via the ETS as described above. The remaining additional addresses can be assigned directly from the device itself. For this purpose, the learn button is at least a second to press during normal operation of the device. Then, the address assignment is as follows:

Connection 2 is replaced by the next higher address than Connection 1, Connection 3 the next higher address than Connection 2, etc.

**Example:** Connection 1 has the additional physical address 15.15.250. Connection 2 is then obtained 15.15.251, Connection 3: 15.15.252, Connection 4: 15.15.253, Connection 5: 15.15.254.

The allocation of additional physical addresses is indicated by rapid flashing of the learning LED. Prior to the assignment of the additional physical addresses is to examine whether these addresses are free. On delivery, only the additional physical address of the first connection is active, this is preset with 15.15.250. To be able to use more than one connection at the same time, first the address assignment must be performed.



## 2.7 Connection settings for the APP

To configure the APP access, the VisuControl Easy makes a distinction between external and internal access. An internal access means an access from a device that is like the VisuControl Easy on the same Wi-Fi network. An external access means an access from a device which is not located in the same Wi-Fi network, eg via the mobile Internet phone service provider. Below the procedure for the internal and external access is described.

### 2.7.1 Internal access

To prepare the VisuControl Easy for internal access, the device must only have a valid IP configuration (see 5.1.2 Connection settings). The easiest way to achieve this is using the setting "DHCP". After downloading the application, the the APP starts with the following screen:

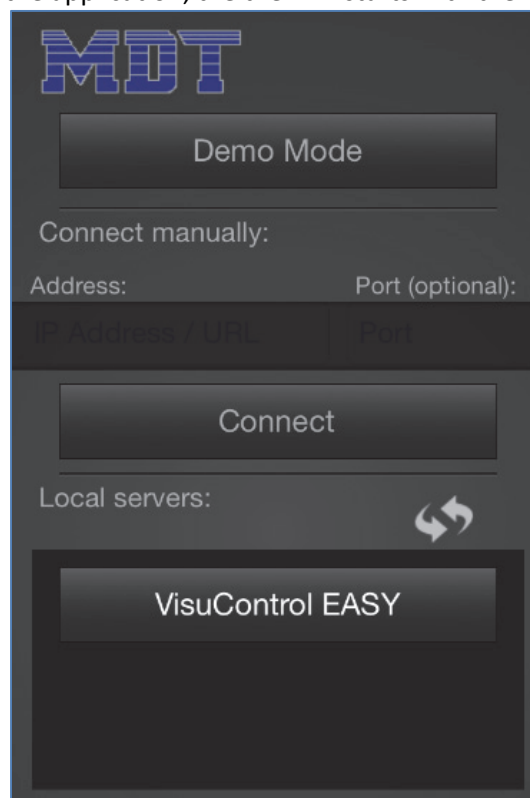


Figure 5: Internal access

The VisuControl Easy, which is currently located in the local network, is displayed directly to the selected device name under local server (here MDT VC Easy). This can be selected now.

### 2.7.2 External access

The external access is usually implemented by using a DNS service. The DNS service allows to make the VisuControl Easy accessible via a host name.

The following data is required:

- **Port 12004**
- **adjusted IP of the VisuControl Easy**

The following figure gives an overview of the operation:

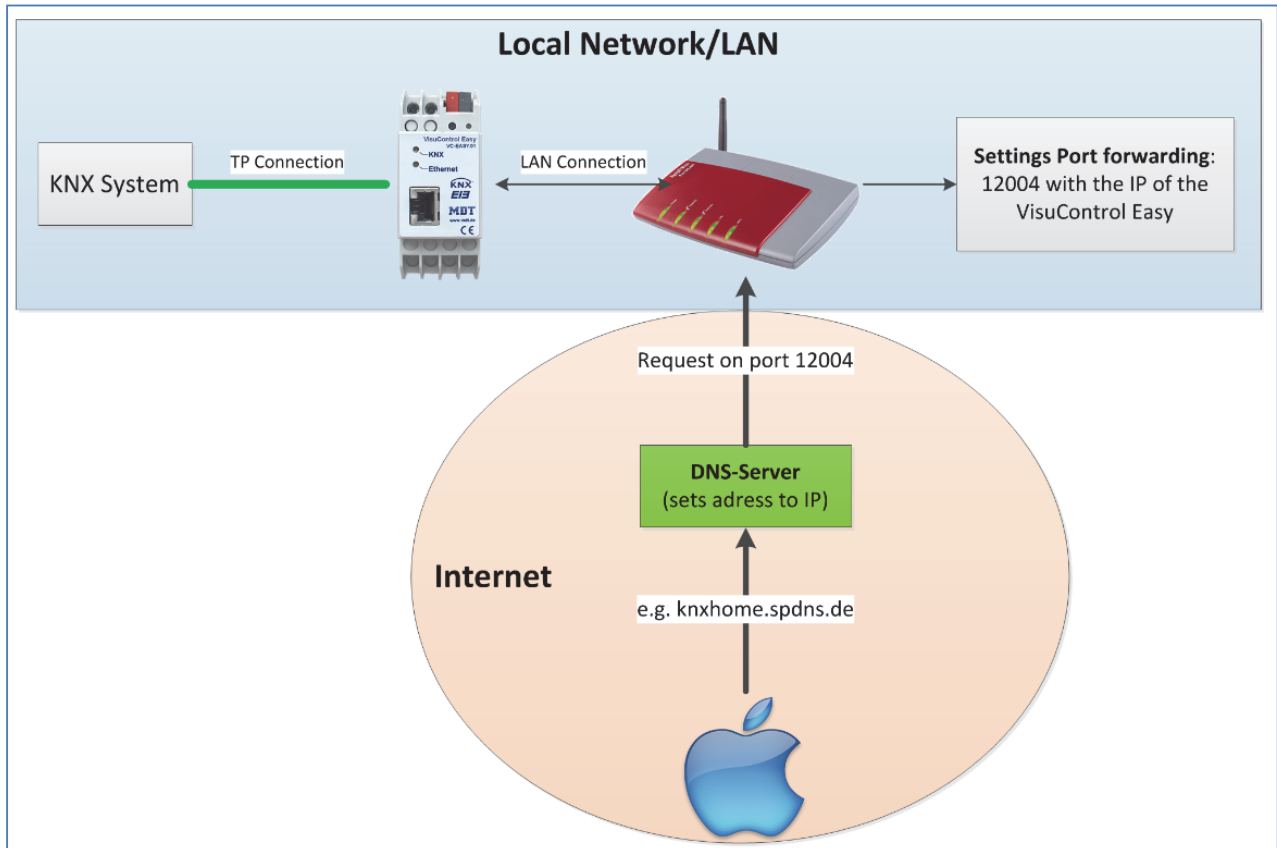


Figure 6: External access

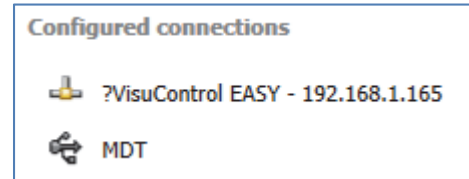
#### Adjust DNS-Address:

To set up the external access, at first a host name must be applied with a DNS service, e.g. on the page [www.spdns.de](http://www.spdns.de). Here you can register for free and then, a new IPv4 host can be added.

For our example, the hostname knxhome.spdns.de with the IP 192.168.1.165 was created.

**Router-Settings:**

At first the port 12004 must be forwarded in the router. At Fritzbox routers this setting is found under Internet-> Shares-> port clearances. There you can forward the port 12004 with the registered IP of the VisuControl Easy. The IP of the VisuControl Easy can be found either under the connection settings, if you have set a static IP address, or in the ETS under Settings-> Communication. Here all available connections are listed, including the VisuControl Easy. In this example, the VisuControl Easy has the IP 192.168.1.165.



Now the DNS settings must be made in the router. This is done in a Fritzbox under the DynDNS settings, which you can find in the Advanced Settings menu -> Dynamic DNS -> Internet -> releases. Instructions for various routers can be found on the wiki pages of spdns.de -> [http://wiki.securepoint.de/index.php/SPDNS\\_FAQ](http://wiki.securepoint.de/index.php/SPDNS_FAQ).

**Settings in the App:**

When starting the app, the host name must be entered below "Connect Manually" , here knxhome.spdns.de. Also, the forwarded port 12004 is entered here (standard in VisuControl Easy):

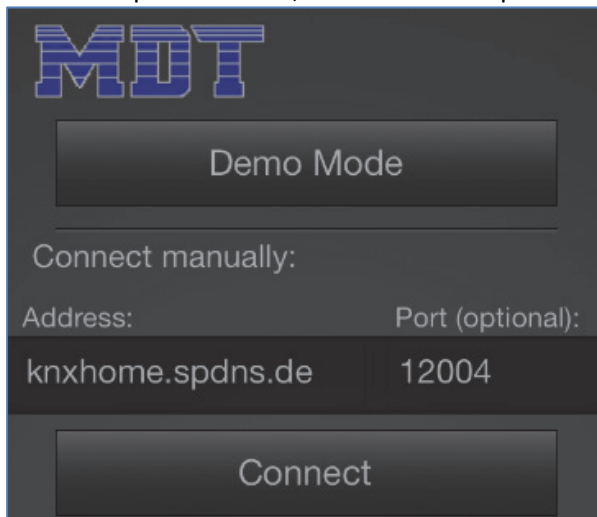


Figure 7: App-Settings external connection#

Now the mobile device can be connected tot he KNX system via the App.

### 3 App-Representation & available Menus

#### 3.1 App Representation

The App can be sorted as well after functions as after areas. The functions and areas are already defined in the database for the most common functions. But it is also possible to change them arbitrary.

The following pictures show the different sorts:



Figure 8: App-View: Sort after functions



Figure 9: App-View: Sort after areas

## 3.2 Available Menus

The following menus are available for adjusting the VisuControl Easy:

- **General**  
Here the password settings for the access protection of the app can be set. Furthermore, the connection settings and the settings for the server name and logo, which will appear later in the app, can be made here.
- **Formatting of the areas**  
Here 10 areas can be defined and any name can be given, which will appear later in the app. Later, the functions can be assigned to the areas.
- **Formatting of the function types**  
Here 15 function types can be defined. These function types can be assigned a text and an icon, which are displayed in the app. Later, the functions can be assigned to the types of functions.
- **Function Selection**  
In the function selection, the actual link between VisuControl Easy and KNX system is established. Up to 49 functions can be activated for each sub-menus, for which then function 1 ... 49 are displayed. The individual functions can be assigned to the areas and types of functions in these sub-menus. Furthermore, here the type of the function is defined. The functions can also be split and settings for visibility and advanced sorting can be made here. Depending on the settings, the communication objects are displayed for this function, which can be linked to the group addresses. So the connection between App and KNX is established.
- **Status logic selection**  
With the status logic objects, communication objects of the same data point type can be linked and collecting objects are created, such as Light floor or window EC.
- **Weather data**  
In the Weather Data menu, the data from weather stations or temperature sensors can be linked and displayed in the app.

## 4 Approach to project planning

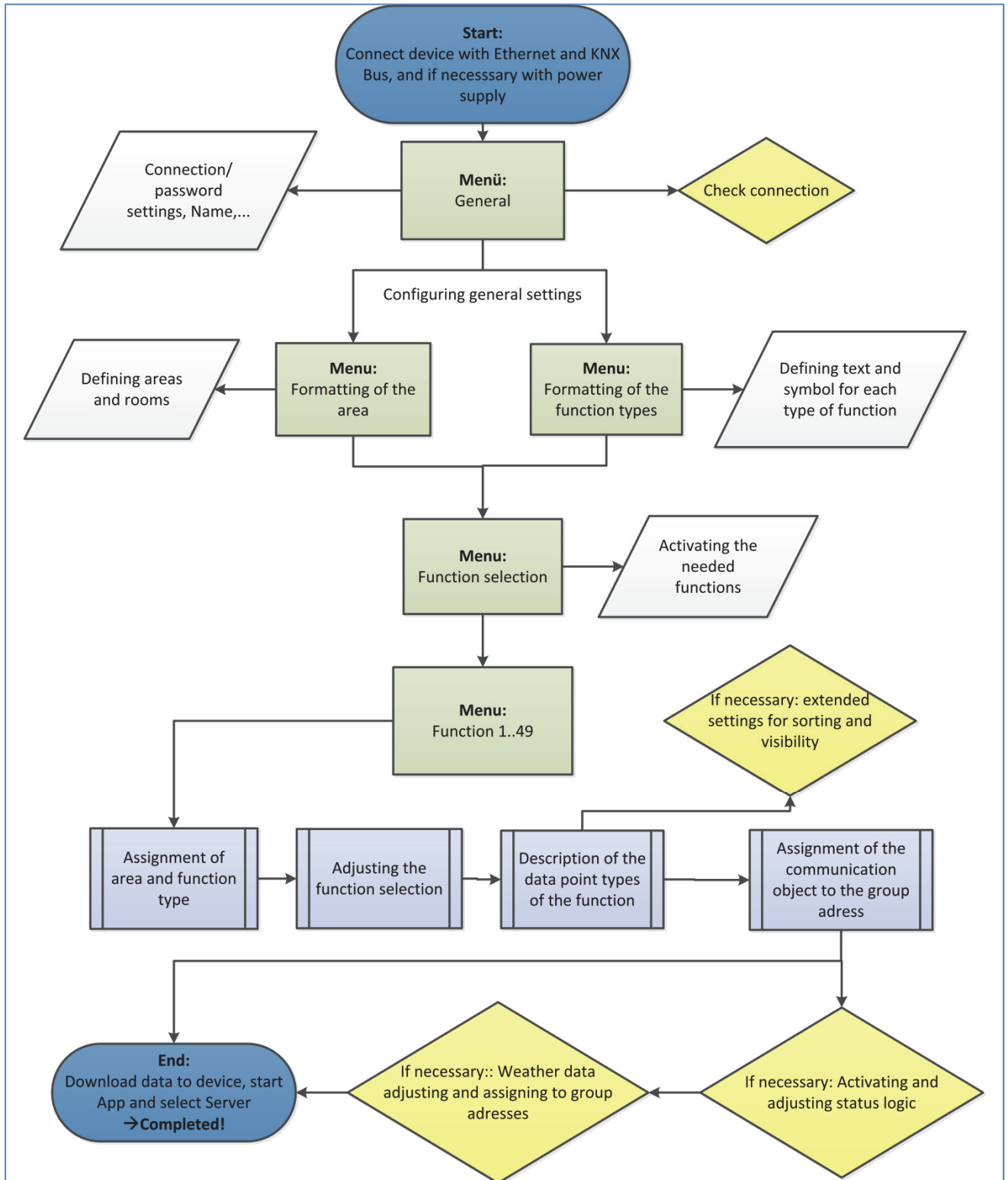


Figure 10: Approach to project planning

## 5 Reference ETS-Parameter

### 5.1 Menu General

The following picture shows the menu general:

|                        |                  |
|------------------------|------------------|
| Use the password       | with password    |
| Logo-Selection         | MDT              |
| Device name            | VisuControl EASY |
| IP-Address assignment  | DHCP             |
| User password          | admin            |
| Administrator Password | admin            |
| Webcam URL             |                  |

Figure 11: Menu General

The settings for password, Logo, Device name, Webcam-URL and Connection can be done in the menu general.

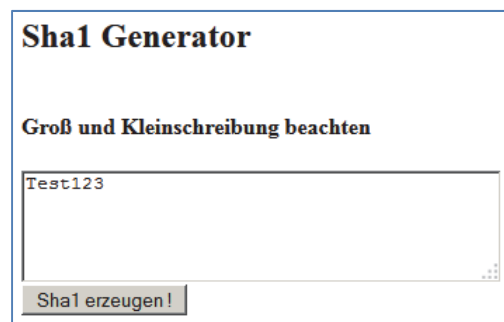
- Logo Selection**  
 The MDT Logo, KNX-Logo or the VisuControl Easy Logo can be chosen. The logo appears in the app on the menu and when you start the app.
- Device Name**  
 The device name is also the server name. Up to max. 29 characters are adjustable. If the app runs on multiple VisuControl Easy access server, we recommend a more meaningful name.
- Webcam URL**  
 With the parameter Webcam URL a webcam can be integrated. This is then stored in the app as a URL on the home page and be called by a simple click.



### 5.1.1 Password settings

The password defines the access to the App. The following settings are available:

- **without password**  
Es wird kein Passwort für den App-Zugriff benötigt.
- **with password**  
Accessing the app requires a password. Distinction can be made between the user and administrator password. The password will be transmitted unencrypted.
- **with encrypted password**  
Accessing the app requires a password. Distinction can be made between the user and administrator password. To encrypt the password, the corresponding link from the ETS must be copied out and copied into the browser. Here the desired password can be entered in the following screen:



Now the encrypted text:

Die sha1-Prüfsumme von **Test123** ist: **8308651804facb7b9af8ffc53a33a22d6alc8ac2**

can be copied into the password box of the ETS. Now the password will be transmitted encrypted. When you start the app the password is entered in clear text, so in this case: **Test 123**

The app can be configured for both the general access as well as for the user to access. Different passwords for administrator and users will be given. For each function can be selected whether this feature is only available to the administrator or user and administrator. Thus, for example, simple switching functions and critical functions, such as heating control, are separated.

If the same password is selected for the administrator and for the user, so user and administrator are the same.

### 5.1.2 Connection settings

In the setting "IP Address Assignment" you can choose between DHCP and manual configuration. If the DHCP option is selected, the VisuControl Easy is automatically assigned a free IP address on the network. For manual configuration, the following sub-menu where the IP address can be assigned manually static appears:

|                   |               |
|-------------------|---------------|
| IP-Address        | 192.168.1.168 |
| IP-Subnet         | 255.255.255.0 |
| IP-Gateway adress | 0             |

Figure 12: manual IP-Configuration

In home networks, the IP assignment via DHCP is common.

## 5.2 Menu Formatting of the areas

The following picture shows the menu formatting of the areas:

|                                  |                |
|----------------------------------|----------------|
| Area 1                           | activated      |
| Name in parameter selection      | living room    |
| Description of the visualization | Living room    |
| Area 2                           | activated      |
| Name in parameter selection      | dining room    |
| Description of the visualization | Dining         |
| Area 3                           | activated      |
| Name in parameter selection      | child's room 1 |
| Description of the visualization | Room Jonas     |
| Area 4                           | deactivated    |
| Area 5                           | deactivated    |
| Area 6                           | deactivated    |
| Area 7                           | deactivated    |
| Area 8                           | deactivated    |
| Area 9                           | deactivated    |
| Area 10                          | deactivated    |

Figure 13: Menu formatting of the areas

The areas represent rooms or separated areas in the house. The functions can be assigned to the adjusted areas.

A name must be selected from the drop-down list for each area. This name is used in the other parameter settings. For the display in the app any name up to 30 characters can be specified.

The app can sort on the selected areas in the settings (accessed by clicking the wrench icon) by setting Sort by - select> area.

### 5.3 Menu Formatting of the function types

The following picture shows the menu formatting of the function types:

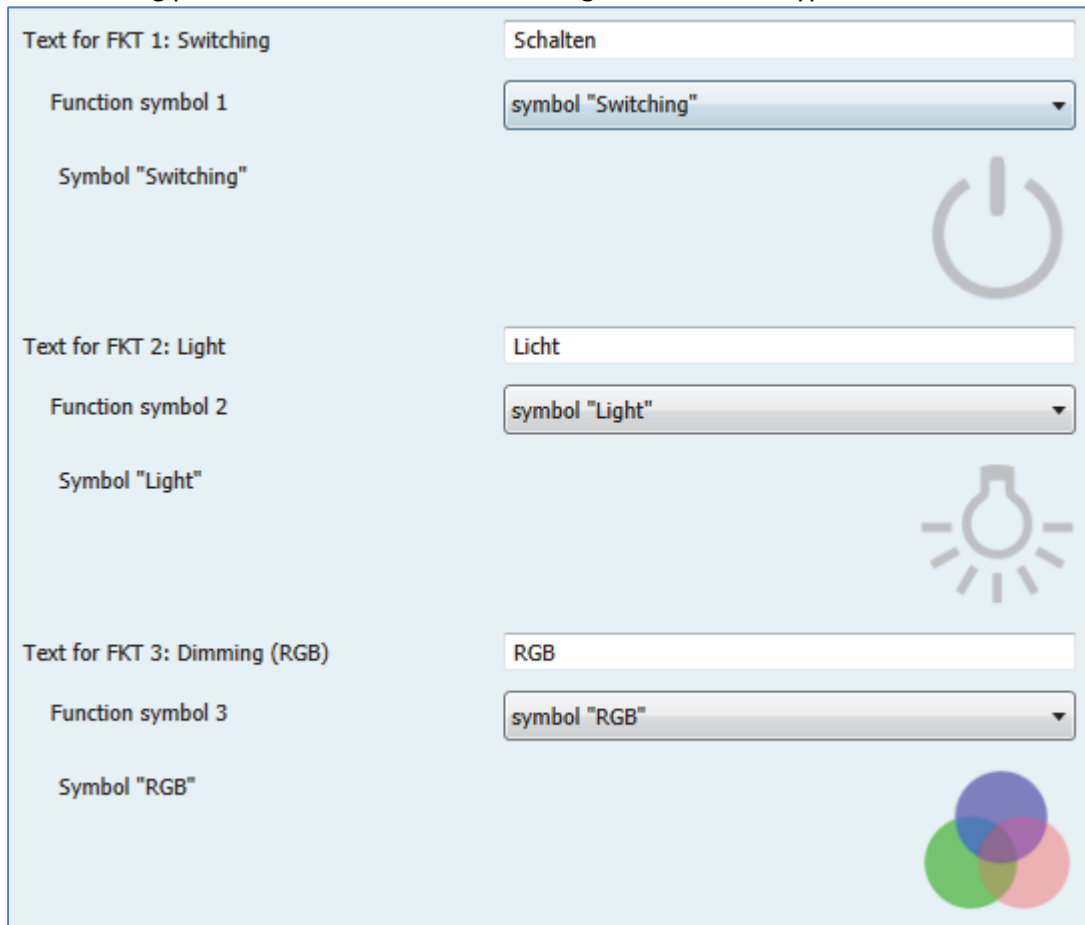


Figure 14: Menu formatting of the function types

The function types are similar to the trades in the ETS-view. By the function types functions with similar functionality can be grouped together. For each functional type any text can be specified, which then appear in the app. However, the standard text is used for the assignment of the individual functions to the types of functions, e.g. FKT1: Switching.

In addition, a symbol can be selected for each type of function, which appears later in the app. The icon is displayed in the ETS as a preview

The app can sort on the selected areas in the settings (accessed by clicking the wrench icon) by setting Sort by - select> function.

## 5.4 Menu Function selection

The functions that are to be used must be activated in the function selection menu. For activated functions, a submenu, function 1 .49, in which the function can be parameterized appears on the left:

|            |             |
|------------|-------------|
| Function 1 | activated   |
| Function 2 | deactivated |
| Function 3 | deactivated |

Figure 15: Menu Function selection

The submenu for the functions has the following structure:

|                               |                                    |
|-------------------------------|------------------------------------|
| Area number                   | Area 1                             |
| Name for area 1               | living room                        |
| Function type 1               | FKT 1: Switching (General / Light) |
| Function selection            | switching                          |
| Description of the function 1 |                                    |
| Datapoint type Object 1A      | DPT 00 - Switching On/OFF - 1 Bit  |
| Presentation format           | two buttons                        |
| Invert Object 1A              | no                                 |
| Visibility on the home page   | not display                        |
| Function visible              | only for admin                     |
| Setting of the sorting        | normal                             |

Figure 16: Submenu function 1..49

### 5.4.1 Area allocation

Each function can be assigned to a specific area. In order this function is stored in the adjusted area in the app.

The following parameters are relevant to the area of assignment:

|                 |   |             |
|-----------------|---|-------------|
| Area number     | 1 | Area 1      |
| Name for area 1 | 2 | living room |

Figure 17: Area allocation

1 --> Select the area in which the function is assigned to

2 --> For a better orientation the name of the area is automatically supplemented for a better orientation, see 5.2 Menu Formatting of the areas.

### 5.4.2 Function allocation

Each function can be assigned to a particular type of function. In order this function is stored in the adjusted function type in the app.

The following parameters are relevant for the functional assignment:

|                               |   |                                    |
|-------------------------------|---|------------------------------------|
| Function type 1               | 1 | FKT 1: Switching (General / Light) |
| Function selection            | 2 | switching                          |
| Description of the function 1 | 3 | Light TV                           |

Figure 18: Function allocation

1 --> Select the type of function in which the function is assigned to

2 --> Allocation of the function; displayed selection is dependent on the function type, which is used, each function type has a number of predefined functions.

3 --> The description is the text which you will see in the App.

For a complete overview of all functions and their data point types and symbols have a look in chapter 6 .

### 5.4.3 Visibility

For each function can be determined whether this is set to the home page. Furthermore, functions can either be made visible only for administrators or for users and administrators.

The following settings are available for this purpose:

|                             |   |                |
|-----------------------------|---|----------------|
| Visibility on the home page | 1 | not display    |
| Function visible            | 2 | only for admin |

Figure 19: Visibility of functions

1 --> Setting to display function on the homepage

2 --> Setting whether function should be visible only for administrator or for administrator and user

### 5.4.4 Sorting

Functions are normally automatically sorted according to the selected function type. In some situations, however, this is not useful, for example, when switched with a switching function between the operating modes of a room thermostat. For this case it is possible to cancel the default sorting and assign the function itself to a another function type.

For this purpose, the following parameters are available:

|                          |                      |
|--------------------------|----------------------|
| Setting of the sorting   | extended             |
| Sorting in function type | FKT 3: Dimming (RGB) |

Figure 20: Sorting of the functions

## 5.5 Menu Status logic

It can be displayed and configured up to 10 different extended objects for the status. The following figure shows the status logic menu selection, in which each object can be activated:

|                |             |
|----------------|-------------|
| Status logic 1 | activated   |
| Status logic 2 | deactivated |

Figure 21: Selection of the status logic

For an activated status logic submenus status logic 1..10 appears. The following figure shows the submenu for status logic 1..10:

|  |                |
|--|----------------|
| Area number                            | Area 1         |
| Name for area 1                        | living room    |
| Description                            |                |
| Operator                               | AND            |
| Hint: Object number = 0 -> deactivated |                |
| Object number 1A                       | 0              |
| Object number 1B                       | 0              |
| Object number 1C                       | 0              |
| Object number 1D                       | 0              |
| Object number 1E                       | 0              |
| Object number 1F                       | 0              |
| Object number 1G                       | 0              |
| Object number 1H                       | 0              |
| Object number 1I                       | 0              |
| Object number 1J                       | 0              |
| Visibility on the home page            | not display    |
| Status logic visible                   | only for admin |
| Sorting in function type               | FKT 8: Status  |

Figure 22: Status logic 1..10



### 5.5.1 Area allocation

Each status logic can be assigned to a specific area. In order this function is stored in the adjusted area in the app.

The following parameters are relevant to the area of assignment:

|                 |   |             |
|-----------------|---|-------------|
| Area number     | 1 | Area 1      |
| Name for area 1 | 2 | living room |

Figure 23: Area allocation

1 --> Select the area in which the function is assigned to

2 --> For a better orientation the name of the area is automatically supplemented for a better orientation, see 5.2 Menu Formatting of the areas.

### 5.5.2 Logical connections and function name

Every status logic can be connected to 10 internal objects and an individual name can be assigned:

|  |   |                |
|--|---|----------------|
| Description                            | 1 | Window contact |
| Operator                               | 2 | AND            |
| Hint: Object number = 0 -> deactivated |   |                |
| Object number 1A                       |   | 5              |
| Object number 1B                       |   | 10             |
| Object number 1C                       |   | 0              |
| Object number 1D                       |   | 0              |
| Object number 1E                       | 3 | 0              |
| Object number 1F                       |   | 0              |
| Object number 1G                       |   | 0              |
| Object number 1H                       |   | 0              |
| Object number 1I                       |   | 0              |
| Object number 1J                       |   | 0              |

Figure 24: Logical connection & Function name

- 1 --> The description is the text, which is displayed in the App
- 2 --> The adjusted objects are connected with the adjusted logical operator. The settings AND, OR, NAND, NOR are available.
- 3 --> Here, the inputs of the logic function are determined. The object numbers of VisuControl Easy must be entered. If, for example, the object 10 and the object 11 should be inputs for the status logic, the value 10 must be entered for object number 1A and for object number 1B the value 11 must be entered. For the remaining object number 1C 1J .. a 0 (= disabled) is entered. So, we obtain a logic function with 2 inputs.

**Only objects of the length 1 Bit can be compared at the status logic!**

### 5.5.3 Visibility

For every status logic can be specified whether this is set to the home page. Furthermore, status logics are can be made visible either only for administrators or for users and administrators. The following settings are available:

|                             |   |                |
|-----------------------------|---|----------------|
| Visibility on the home page | 1 | not display    |
| Status logic visible        | 2 | only for admin |

Figure 25: Visibility of the status logic

- 1 --> Setting whether to display status logic to the home page
- 2 --> Setting whether status logic should be visible only for administrator or for administrator and user

### 5.5.4 Sorting

Status logics are normally automatically sorted in the function type FKT 8: Status. In some situations, however, this is not useful and you want to assign a different function type in status logic. For this case it is possible to cancel the default sorting and assign the function itself another function type. For this purpose, the following parameters are available:

|                          |               |
|--------------------------|---------------|
| Sorting in function type | FKT 8: Status |
|--------------------------|---------------|

Figure 26: Sorting of the function

## 5.6 Menu Weather data

The following picture shows the menu for the weather data:

|   |   |  |
|---|---|--|
| Display weather data                              |   | yes                                      |
| Area number                                       | 1 | no assignment                            |
| Description of the function                       | 2 | Wetterdaten                              |
| Data point A                                      |   | activated                                |
| Datapoint type Object 1A: Temperature status      |   | DPT 17 - Floating-point number - 2 Bytes |
| Unit DPT A  |   | °C                                       |
| Data point B                                      | 3 | activated                                |
| Datapoint type Object 1B: Wind speed status       |   | DPT 17 - Floating-point number - 2 Bytes |
| Unit DPT B  |   | m/s                                      |
| Data point C                                      |   | activated                                |
| Datapoint type Object 1C: Brightness value status |   | DPT 17 - Floating-point number - 2 Bytes |
| Unit DPT C  |   | Lux                                      |
| Data point D                                      |   | activated                                |
| DPT Object 1D: Rain alarm                         |   | DPT 00 - Switching - 1 Bit               |
| Data point E                                      | 4 | activated                                |
| DPT Object 1D: Wind alarm                         |   | DPT 00 - Switching - 1 Bit               |

Figure 27: Menu weather data

1 --> About the area allocation, the weather data can be assigned to a specific area / room. If not they will be displayed only on the home.

2 --> The description of the function is the name which is displayed in the app for the weather data.

3 --> Up to 3 objects of DPT 9.0xx can be enabled. These objects have a length of 2 bytes and can be combined with the following data point types:

- DPT 9.001 – Temperature – Unit: °C
- DPT 9.004 – Luminous intensity – Unit: Lux
- DPT 9.005 – Wind speed – Unit: m/s
- DPT 9.006 – Air pressure – Unit: Pa
- DPT 9.007 – Percental, e.g.: Humidity – Unit: %
- DPT 9.008 – Air quality – Unit: ppm (parts per million)
- DPT 9.025 – Volume Flow – Unit: l/h
- DPT 9.026 – Rain amount – Unit: l/h
- DPT 9.027 – Temperature – Unit: F
- DPT 9.028 – Wind speed – Unit: km/h

The unit which is displayed in the App can be selected for each object.

4 --> Additionally, up to two objects of size 1 bit can be activated, e.g. for weather alerts

In the app the weather display is displayed, for example as follows:

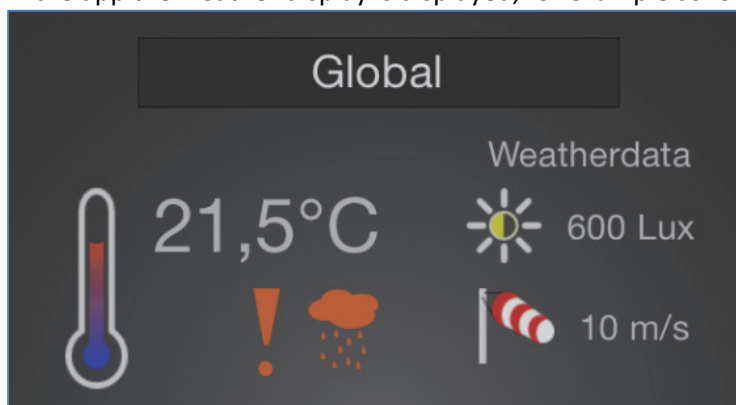


Figure 28: Weather data

## 6 Overview functions

### 6.1 Function type: Switching

The following picture shows the available settings for the parameter function selection:

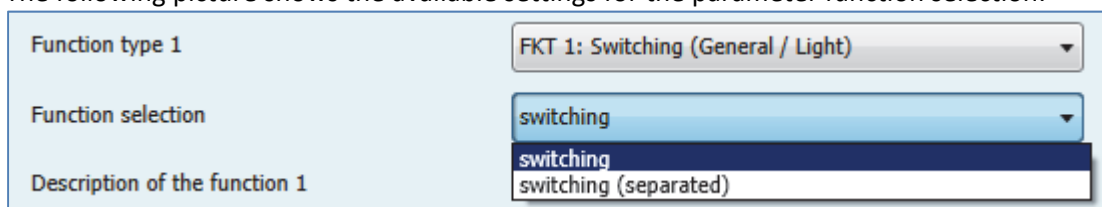


Figure 29: Function type Switching

The function type switching can be parameterized as normal switching or as switching separated.

**Switching:** For this function, only one communication object can be parameterized. This function can have a name with up to 30 signs and can be assigned to an arbitrary area.

**Switching (separated):** For this function, up to 5 communication objects can be parameterized. Each object/function can have a name with up to 15 signs. The assignment to the area is valid for all 5 objects.

So, the separation of the functions allows using more than one object, but the flexibility is limited.

#### 6.1.1 Function selection: Switching & Switching (separated)





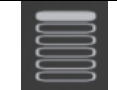






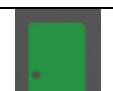


| Name                          | Length | DPT       | Description   | Representation in the App   |   |
|-------------------------------|--------|-----------|---|---|---|
| DPT 00 – Switch On/Off        | 1 Bit  | DPT 1.001 | Normal switching function for activating/deactivating |  |  |
| DPT 01 – Locking/Unlocking    | 1 Bit  | DPT 1.003 | Function for locking/unlocking                        |  |  |
| DPT 02 – Blinds Up/Down       | 1 Bit  | DPT 1.008 | Driving function for shutter and blinds               |  |  |
| DPT 03 – Open/Closed (garage) | 1 Bit  | DPT 1.009 | Driving function for garage doors                     |  |  |
| DPT 04 – Open/Closed (window) | 1 Bit  | DPT 1.009 | Driving functions for electrical windows              |  |  |
| DPT 05 – Open/Closed          | 1 Bit  | DPT 1.009 | General driving function                              |  |  |
| DPT 06 – On/Off (socket)      | 1 Bit  | DPT 1.001 | Switching function for sockets                        |  |  |

Table 1: Function selection switching

## 6.2 Function type: Light

The function type can be parameterized as light On/off, light On/Off(divided) or as dimmer.

**Light On/Off:** Only one communication object can be parameterized for this function. This function can have a name with up to 30 signs and can be assigned to an arbitrary area.

**Light On/Off (divided):** For this function, up to 5 communication objects can be parameterized. Each object/function can have a name with up to 15 signs. The assignment to the area is valid for all 5 objects.

So, the separation of the functions allows using more than one object, but the flexibility is limited.

**Dimmer:** For tis function, standardly 3 objects are shown. These objects are one coherent function. So, only one name can be given and only one area and function type assignment can be done for this function. The presentation format can be choosen.

### 6.2.1 Function selection: Light On/Off & Light On/Off (divided)


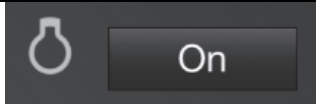
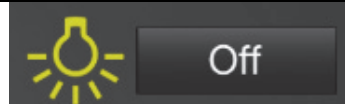
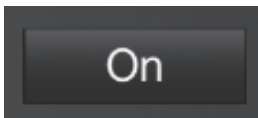
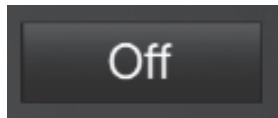
| Name                  | Length | DPT       | Description   | Representation in the App  |   |
|-----------------------|--------|-----------|---|--|---|
| Two buttons           | 1 Bit  | DPT 1.001 | Normal switching function with two buttons  |   |   |
| One button toggle     | 1 Bit  | DPT 1.001 | Toggle with one button  |  |  |
| One button send value | 1 Bit  | DPT 1.001 | Switching function, which sends only one value, e.g. centrall On/Off and sends no state |  |  |

Table 2: Function selection light

### 6.2.2 Function selection: Dimmer

At the dimmer function, you can choose between two presentation formats. The functions are identical.

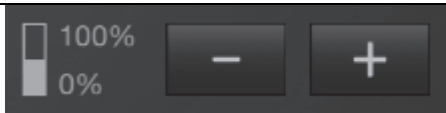

| Presentation format | Description  | Representation in the App  |
|---------------------|--|--|
| Symbol              | Presentation as 0-100% bar, which represents the also the state                                  |  |
| Slider              | Presentation as Slider, which can also send absolute dimming commands by picking a certain value |  |

Table 3: Function selection Dimmer

The following table shows the relevant communication objects:

| Type  | Name               | Length | Usage  |
|-------|--------------------|--------|--|
| Licht | Switch On/Off      | 1 Bit  | Switching function for the dim channel, must be connected with the switching and state objects of the dimmer     |
| Licht | Dimming relatively | 4 Bit  | Step function of the dim channel   |
| Licht | Dimming absolutely | 1 Byte | Sends absolute values to the dimmer, must be connected with the absolute and the state object of the dim channel |

Table 4: Communication objects dimmer

### 6.3 Function type: Dimming (RGB)

The dimming function(RGB) can control RGB devices. It can be divided between two presentation formats:

#### RGB objects:

When controlling via RGB, a color wheel for direct dialing of each color is displayed. It can be controlled over 3 individual objects 0 to 100% or a 3 byte object. In addition the switching function must be connected. The view in the app is independent of the choice of control.



- 1 = Switching the RGB function
- 2 = Selection of the color
- 3 = Actual adjusted color
- 4 = Selection of the brightness via slider

The following table shows the relevant communication objects for the controlling via 3 individual objects for green, blue and red:

| Type | Name           | Length | Usage  |
|------|----------------|--------|--|
| RGB  | Total On/Off   | 1 Bit  | Switching function for RGB actuator must be connected with switching function and status         |
| RGB  | Red absolute   | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |
| RGB  | Green absolute | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |
| RGB  | Blue absolute  | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |

Table 5: Communication object individual objects - RGB



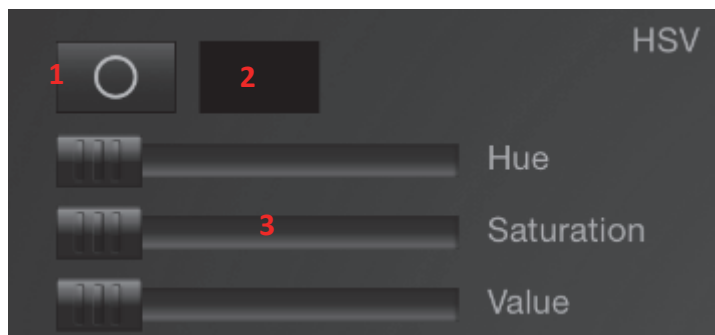
The following table shows the relevant communication objects for the controlling via one 3 Byte-object:

| Typ | Name                | Größe  | Verwendung   |
|-----|---------------------|--------|--|
| RGB | Total On/Off        | 1 Bit  | Switching function for RGB actuator must be connected with switching function and status           |
| RGB | RGB combined object | 3 Byte | Transmit the absolute value for all channels, must be connected to 3-byte value, and 3-byte Status |

Table 6: Communication object RGB combined object

**HSV objects:**

When controlling via HSV, 3 single slider are displayed which can adjust the color, saturation and brightness manually. It can be controlled over 3 individual objects or a 3 byte object. In addition the switching function must be connected. The view in the app is independent of the choice of control.



- 1 = Switching the RGB function
- 2 = Actual adjusted color
- 3 = Selection of hue, saturation and brightness via slider

The following table shows the relevant communication objects for the controlling via 3 individual objects for hue, saturation and brightness:

| Typ | Name            | Größe  | Verwendung   |
|-----|-----------------|--------|--|
| RGB | Total On/Off    | 1 Bit  | Switching function for RGB actuator must be connected with switching function and status         |
| RGB | H(Hue) absolute | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |
| RGB | S(Sat) absolute | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |
| RGB | V(Val) absolute | 1 Byte | Transmit the absolute value for this channel has to be connected to an absolute value and status |

Table 7: Communication objects HSV individual objects

The following table shows the relevant communication objects for the controlling via one 3 Byte-object:

| Typ | Name                | Größe  | Verwendung   |
|-----|---------------------|--------|--|
| RGB | Total On/Off        | 1 Bit  | Switching function for RGB actuator must be connected with switching function and status           |
| RGB | HSV combined object | 3 Byte | Transmit the absolute value for all channels, must be connected to 3-byte value, and 3-byte Status |

Table 8: Communication objects HSV combined objects

## 6.4 Function type: Shutter/Blinds

By using the Shutter/Blinds function, shutter and blinds can be driven. This can either be run as a simple drive function or additionally with absolute position commands.

### 6.4.1 Function selection: Shutter/Blinds

The function “Shutter/Blinds” is an easy driving function without any informations about the state of the absolute position.


| Presentation format            | Description   | Representation in the App  |
|--------------------------------|---|--|
| no further selection available | A short press activates the Stop/Step function, a long press activates the driving function |  |

Table 9: Function selection Shutter/Blinds

The following table shows the relevant communication objects:

| Type            | Name             | DPT   | Usage  |
|-----------------|------------------|-------|--|
| Blinds/ Shutter | Blinds Up/Down   | 1 Bit | Must be connected to the drive object of the blind /shutter function     |
| Blinds/ Shutter | Blinds Stop/Step | 1 Bit | Must be connected to the stop/step object of the blind /shutter function |

Table 10: Communication object Shutter/Blinds function

### 6.4.2 Function selection: Shutter/Blinds with height position

The function “Shutter/Blinds” is an easy driving function which sends additional informations about the state of the absolute position.

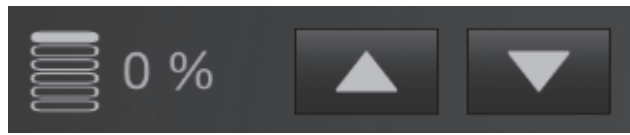

| Presentation format | Description  | Representation in the App  |
|---------------------|--|--|
| Symbol              | A short press activates the Stop/Step function, a long press activates the driving function  |  |
| Slider              | A short press activates the Stop/Step function, a long press activates the driving function. Additional, the absolute position can be selected via the slider. |  |

Table 11: Function selection Shutter/Blinds with height position

The following table shows the relevant communication objects:

| Type               | Name             | DPT    | Usage  |
|--------------------|------------------|--------|--|
| Blinds/<br>Shutter | Blinds Up/Down   | 1 Bit  | Must be connected to the drive object of the blind /shutter function   |
| Blinds/<br>Shutter | Blinds Stop/Step | 1 Bit  | Must be connected to the stop/step object of the blind /shutter function   |
| Blinds/<br>Shutter | Blind position   | 1 Byte | Must be connected with the objects for the selection of the absolute position and the status of the absolute position of the channel which could be controlled |

Table 12: Communication objects shutter/Blinds with height position

### 6.4.3 Function selection: Shutter/Blinds with height position and slats

The function “Shutter/Blinds” is an easy driving function which sends additional informations about the state of the absolute position of the blinds and slats.

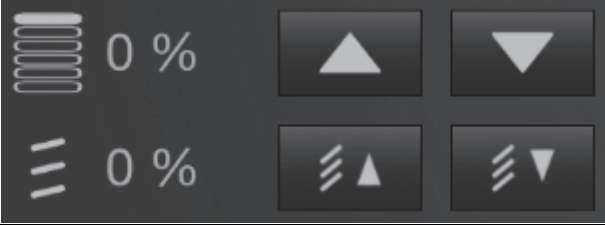
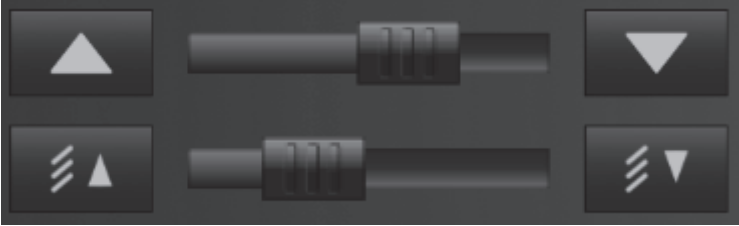
| Presentation format | Description   | Representation in the App  |
|---------------------|---|--|
| Symbol              | A short press acticates the Stop/Step function, a long press activates the driving function.<br>Above: Driving function<br>Below: Slat function   |   |
| Slider              | A short press acticates the Stop/Step function, a long press activates the driving function. Additional, the absolute position can be selected via the slider.<br>Above: Driving function<br>Below: Slat function |  |

Table 13: Function selection shutter/blinds with height position and slats

Die nachfolgende Tabelle zeigt die dazugehörigen Kommunikationsobjekte:

| Type               | Name             | DPT    | Usage  |
|--------------------|------------------|--------|--|
| Blinds/<br>Shutter | Blinds Up/Down   | 1 Bit  | Must be connected to the drive object of the blind /shutter function   |
| Blinds/<br>Shutter | Blinds Stop/Step | 1 Bit  | Must be connected to the stop/step object of the blind /shutter function   |
| Blinds/<br>Shutter | Blind position   | 1 Byte | Must be connected with the objects for the selection of the absolute position and the status of the absolute position of the channel which could be controlled                           |
| Blinds/<br>Shutter | Slat position    | 1 Byte | Must be connected with the objects for the selection of the absolute position of the slats and the status of the absolute position of the slats of the channel which could be controlled |

Table 14: Communication objects shutter/Blinds with absolute height and slats

## 6.5 Function type: Room temperature controller

The room temperature controller function enables the adjustment of the current setpoint temperature and displays the current room temperature. At the function selections with HVAC mode, also a mode switching is possible.

### 6.5.1 Function selection: Room temperature controller

The setpoint can be shifted via 1-bit objects as well as a new basic comfort value can be entered via a 2 Byte object. The presentation and function is the same in the app in both cases.

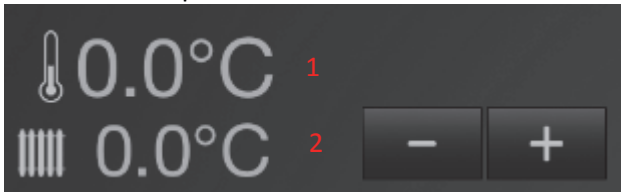
| Adjust the setpoint on           | Description   | Representation in the App  |
|----------------------------------|---|--|
| Setpoint shift with 1 Bit object | The setpoint is shifted via a normal 1 Bit-object, which changes the setpoint according to the setting in the room temperature controller.                                      | 1 = current temperature<br><br>2 = on the left: current setpoint, on the right: setpoint shift |
| Base setpoint                    | The setpoint is set as new base setpoint. The change per press is adjusted to +/- 0,2°C. The setpoint shift works in this mode only when the controller is in the comfort mode. |  |

Table 15: Function selection room temperature controller

The following table shows the relevant communication objects:

| Type                                | Name                   | DPT   | Usage   |
|-------------------------------------|------------------------|-------|---|
| Room temperature controller         | Status temperature     | 9.001 | Must be connected with the current temperature  |
| Room temperature controller         | Set point temperature  | 9.001 | Must be connected with the current set point  |
| Set point shift via 1 Bit object    |                        |       |   |
| Room temperature controller         | Set point shift 1 Bit  | 1.001 | Must be connected with the object for the set point shift of the room temperature controller.   |
| Set point shift via basic set point |                        |       |   |
| Room temperature controller         | Basic set point 2 Byte | 9.001 | Must be connected with the object basic set point of the room temperature controller. This object sends directly a new set point, which is calculated of the current set point and the sending difference of +/- 0,2°C. |

Table 16: Communication objects room temperature controller

### 6.5.2 Function selection: Room temperature controller with HVAC mode

The setpoint can be shifted via 1-bit objects as well as a new basic comfort value can be entered via a 2 Byte object. The presentation and function is the same in the app in both cases. In addition, the modes can be switched via the HVAC mode.


| Adjust the setpoint on           | Description   | Representation in the App  |
|----------------------------------|---|--|
| Setpoint shift with 1 Bit object | The setpoint is shifted via a normal 1 Bit-object, which changes the setpoint according to the setting in the room temperature controller.                                      | <p>1 = current temperature</p>  <p>2 = on the left: current setpoint, on the right: setpoint shift</p> <p>3 = Selection of the operating modes, green = active</p> |
| Base setpoint                    | The setpoint is set as new base setpoint. The change per press is adjusted to +/- 0,2°C. The setpoint shift works in this mode only when the controller is in the comfort mode. |  |

Table 17: Function selection room temperature controller with HVAC

The following table shows the relevant communication objects:

| Type                                | Name                   | DPT    | Usage   |
|-------------------------------------|------------------------|--------|---|
| Room temperature controller         | Status temperature     | 9.001  | Must be connected with the current temperature  |
| Room temperature controller         | Set point temperature  | 9.001  | Must be connected with the current set point  |
| Room temperature controller         | HVAC Mode              | 20.102 | Must be connected with the object HVAC mode for switching the operating modes of the controller   |
| Set point shift via 1 Bit object    |                        |        |   |
| Room temperature controller         | Set point shift 1 Bit  | 1.001  | Must be connected with the object for the set point shift of the room temperature controller.   |
| Set point shift via basic set point |                        |        |   |
| Room temperature controller         | Basic set point 2 Byte | 9.001  | Must be connected with the object basic set point of the room temperature controller. This object sends directly a new set point, which is calculated of the current set point and the sending difference of +/- 0,2°C. |

Table 18: Communication objects room controller with HVAC

### 6.5.3 Function selection: Room temperature controller with HVAC mode and -Status

The function selection "Room temperature controller with HVAC mode and status" is equal to the function selection under 6.5.2 Function selection: Room temperature controller with HVAC mode described.

The function selection is only extended to the object HVAC status, which returns the current status of the controller. The display of the currently selected mode is displayed in this case according to the output of the status object. Therefore, it is in this case also possible that the display of the currently active mode is slightly late, depending on the internal processing in the room controller.

The function is completely identical to the under 6.5.2 Function selection: Room temperature controller with HVAC mode described, only the following communication object is in addition to:

| Type                  | Name       | DPT  | Usage   |
|-----------------------|------------|------|---|
| Raumtemperatur-regler | HVAC State | ohne | must be connected to the HVAC state of the controller |

Table 19: Communication object room temperature controller with HVAC mode & HVAC state

The HVAC state is compatible with all MDT devices and is evaluated as follows:

| Bit | DPT HVAC State        |                          | Hex-Value |
|-----|-----------------------|--------------------------|-----------|
| 0   | Comfort               | 1=Comfort                | 0x01      |
| 1   | Standby               | 1=Standby                | 0x02      |
| 2   | Night                 | 1=Night                  | 0x04      |
| 3   | Frost/Heat protection | 1= Frost/Heat protection | 0x08      |
| 4   |                       |                          |           |
| 5   | heating/Cooling       | 0=Cooling/ 1= Heating    | 0x20      |
| 6   |                       |                          |           |
| 7   | Frost alarm           | 1=Frost alarm            | 0x80      |

Table 20: Evaluation DPT HVAC state

## 6.6 Function type: Scenes

Scenes allow controlling all trades various functions. The scene function can be activated with the ability to store as well as without.

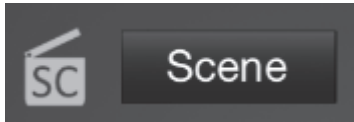
| Data point type        | Description  | Representation in the App   |
|------------------------|--|---|
| Scene number<br>1..64  | In this function, only the calling of scenes is enabled. The scene which could be called can be specified separately.  |  |
| Scene control<br>1..64 | In this function, a short press calls the scene and a long press saves the scene with the new values. The scene which could be called can be specified separately. |   |

Table 21: Function type scenes

The following chart shows the relevant communication objects:

| Type   | Name           | DPT    | Usage  |
|--------|----------------|--------|--|
| Szenes | Activate scene | 18.001 | Calling a scene sends the adjusted scene number  |
| Szenes | Save scene     | 18.001 | Calling and saving scenes, sends at a short press the adjusted scene number and at a long press the saving command for the adjusted scene number |

Table 22: Communication objects function type scene



## 6.7 Function type: Multimedia

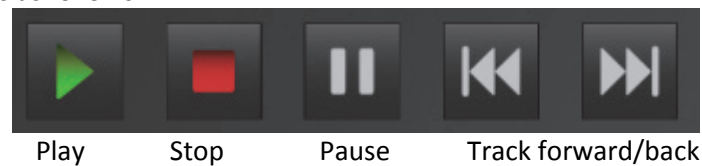
The function type multimedia enables the control of multimedia gateways, such as the SCN MMG01.01.

The multimedia control can be adjusted via the function selection in terms of functionality

### 6.7.1 Funktion selection: Multimedia control

With the function selection Multimedia control 4 objects are displayed and the user has the option to select the functions of play, stop, pause and track forward / back.

The view in the app is as follows:



The following table shows the relevant communication objects:

| Type       | Name            | DPT   | Usage  |
|------------|-----------------|-------|--|
| Multimedia | Play            | 1.001 | Must be connected with the Start/Stop functionality of the controlled device |
| Multimedia | Pause           | 1.003 | Must be connected with the Pause functionality of the controlled device      |
| Multimedia | Stop            | 1.001 | Must be connected with Start/Stop functionality of the controlled device     |
| Multimedia | Title selection | 1.007 | Sends a zero for track back and a one for track forward                      |

Table 23: Communication objects function type multimedia

### 6.7.2 Function selection: Multimedia control with volume

With the function selection Multimedia control 4 objects are displayed and the user has the option to select the functions of play, stop, pause and track forward / back as well as volume +/-

The view in the app is as follows:



The following table shows the relevant communication objects:

| Type       | Name            | DPT   | Usage  |
|------------|-----------------|-------|--|
| Multimedia | Play            | 1.001 | Must be connected with the Start/Stop functionality of the controlled device |
| Multimedia | Pause           | 1.003 | Must be connected with the Pause functionality of the controlled device      |
| Multimedia | Stop            | 1.001 | Must be connected with Start/Stop functionality of the controlled device     |
| Multimedia | Title selection | 1.007 | Sends a zero for track back and a one for track forward                      |
| Multimedia | Volume          | 1.007 | Sends a zero for reducing volume and a one for increasing volume             |

Table 24: Communication objects function type multimedia control with volume

### 6.7.3 Function selection: Volume

The function selection volume offers an easy function for controlling the volume. The view in the app is as follows:



The following table shows the relevant communication objects:








| Type       | Name   | DPT   | Usage  |
|------------|--------|-------|--|
| Multimedia | Volume | 1.007 | Sends a zero for reducing volume and a one for increasing volume |

Table 25: Communication objects function type volume

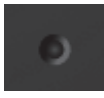




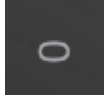
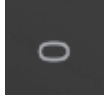

## 6.8 Function type: Status

The function type status enables the representation of different functions. The status functions are the confirmation of certain switching states and can not send any values.

Subsequently, all available status functions are tabulated:

| Data point type               | Functional description  |   | Communication object description |       |  |
|-------------------------------|---|---|----------------------------------|-------|--|
|                               | Description   | Representation in the App   | Name                             | DPT   | Usage  |
| DPT 00 – Switching 1 Bit      | Function for displaying of normal switching functions, function can be inverted             |    | Switch On/Off                    | 1.001 | Must be connected with state of switching actuator   |
| DPT 01 – Locking/Unlocking    | Function for displaying of a locking process, function can be inverted                      |    | Lock/Unlock                      | 1.003 | Must be connected with state of locking process      |
| DPT 02 – Up/Down              | Function for displaying of a driving function, function can be inverted                     |    | Up/Down                          | 1.008 | Must be connected with state of the driving function |
| DPT 03 – Open/Closed          | Function for displaying whether doors/windows/ garages are closed, function can be inverted |    | Open/Close                       | 1.009 | Must be connected with state of door/window contact  |
| DPT 04 – Open/Closed (garage) | Function for displaying whether garage doors are closed, function can be inverted           |  | Open/Close                       | 1.009 | Must be connected with state of garage door          |
| DPT 05 – Open/Closed (window) | Function for displaying whether windows are closed, function can be inverted                |  | Open/Close                       | 1.009 | Must be connected with state of indow contact        |
| DPT 06 – On/Off (socket)      | Function for displaying whether sockets are switched, function can be inverted              |  | Switch On/Off                    | 1.001 | Must be connected with state of switching actuator   |

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| DPT 07 – LED Display               | Function for showing a switching state in LED design, Color of the LED can be selected as Red/Green or blue and off, function can be inverted |    | LED display                         | 1.001 | Must be connected with the state of the monitored function  |
|------------------------------------|---|---|-------------------------------------|-------|---|
| DPT 09 – Unsigned value (0..255)   | Function for displaying of continuous values (0..255)   |    | Decimal unsigned (0..255)           | 5.005 | Must be connected with the state of the monitored function  |
| DPT 10 – Signed value (-128..127)  | Function for displaying of continuous, signed values (-128..127)  |    | Decimal signed (-128..127)          | 6.010 | Must be connected with the state of the monitored function  |
| DPT 11 – Percent unsigned          | Function for showing percental values   |     | Unsigned percent (0..100%)          | 5.001 | Must be connected with the state of the monitored function  |
| DPT 12 – Percent signed            | Function for displaying of continuous, signed percental values (-128..127%)   |     | Signed percent (-128..127%)         | 6.001 | Must be connected with the state of the monitored function  |
| DPT 15 – Unsigned value (0..65536) | Function for displaying of 2 Byte, unsigned counts, Unit can be selected arbitrary  |    | Decimal (0...65536)                 | 7.001 | Must be connected with the state of the monitored function  |
| DPT 16 – Decimal-difference        | Function for displaying count differences, Unit can be selected arbitrary   |    | Decimal difference (-32768...32767) | 8.001 | Must be connected with the state of the monitored function  |
| DPT 17 – Floating point number     | Function for displaying of floating point values as current measurement, voltage, temperature..., Unit can be selected arbitrary              |  | Floating point number               | 9.*   | Must be connected with the state of the monitored function; DPT depends to the monitored function |


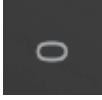
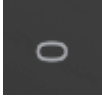

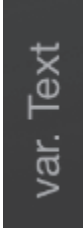




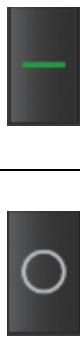
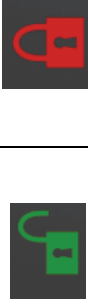
| DPT                            | Function for displaying of the current color  | Visual Representation   | RGB                   | Address  | Description   |
|--------------------------------|---|---|-----------------------|----------|---|
| DPT 18 – RGB                   | Function for displaying of the current color  |  | RGB                   | 232..600 | Must be connected with the 3 Byte state of a RGB actuator   |
| DPT 19 – Unsigned value        | Function for displaying of 4 Byte, unsigned counts; Unit can be selected arbitrary        |  | Decimal unsigned      | 12.001   | Must be connected with the state of the monitored function  |
| DPT 20 – Signed value          | Function for displaying of 4 Byte, signed counts; Unit can be selected arbitrary          |  | Decimal signed        | 13.001   | Must be connected with the state of the monitored function  |
| DPT 21 – Floating point number | Function for displaying of 4 Byte, floating point numbers; Unit can be selected arbitrary |  | Floating point number | 14.*     | Must be connected with the state of the monitored function, DPT depends to the monitored function |
| DPT 22 – String                | Function for displaying strings   |   | String                | 16.000   | Must be connected with the state of the monitored function  |
| DPT 23 – HVAC Status           | Function for displaying of the HVAC state of room temperature controller                  |  | HVAC Status           | without  | Evaluation: have a look at 6.5.3 Function selection:  |
| DPT 24 – HVAC Mode             | Function for displaying of the HVAC mode of room temperature controller                   |   | HVAC Mode             | 20.102   | Muts be connected with the HVAC mode of a room temperature controller                             |
| DPT 25 – RHCC Status           | Function for displaying of the RHCC state of room temperature controller                  |   | RHCC Status           | 22.102   | Muts be connected with the RHCC mode of a room temperature controller                             |















Table 26: Overview function type state





## 6.9 Function type: Other

The function type "Other" is a kind of collecting function for all functions, which can be accessed through the app.







Subsequently, all available functions are tabulated, which are sorted in the function type "Other":

| Functional description   |   | Communication object description g   |               |       |  |
|--------------------------|---|--|---------------|-------|--|
| Data point type          | Description   | Representation in the App  | Name          | DPT   | Usage  |
| DPT 00 – Switching 1 Bit | The data point types DPT 00 to 06 can be implemented in a "two-button", "One button toggle" or "One button send value". The icon, which reflects the status of each function is different for each function, and is shown separately for this. In the presentation format "One button toggle" always the complementary value of the status is displayed on the control button, so the action is executed with the next keystroke. | <p><b>Two buttons:</b></p>  <p><b>One button toggle:</b></p>  <p>→ Value toggles with every switching</p> <p><b>One button send value:</b></p>  <p>→ Value is constant "On" or "Off"</p> |               |       | The communication object is shown for every data point type separately                   |
| DPT 01 – Lock/Unlock     | Function for normal switching functions   |   | Switch On/Off | 1.001 | Must be connected with function, which should be switched, and the state of the function |
|                          | Function for locking/unlocking  |    | Lock/Unlock   | 1.003 | Must be connected with function, which should be locked, and the state of the function   |

|                              |  |   |  |       |  |
|------------------------------|--|---|--|-------|--|
| DPT 02 – Up/Down             | Function for driving Shutter/Blinds...   |    |    | 1.008 | Must be connected with function, which should be driven and the state of the function    |
| DPT 03 – Open/Close          | Function for driving all trades  |    |    | 1.009 | Must be connected with function, which should be driven and the state of the function    |
| DPT 04 – Open/Close (garage) | Function for driving garage doors  |    |    | 1.009 | Must be connected with function, which should be driven and the state of the function    |
| DPT 05 – Open/Close (window) | Function for driving windows   |    |    | 1.009 | Must be connected with function, which should be driven and the state of the function    |
| DPT 06 – On/Off (socket)     | Function for switching sockets   |    |    | 1.001 | Must be connected with function, which should be switched, and the state of the function |
|                              |  |   |  |       |  |
| DPT 07 – Dimmer step         | Function for sending relative dim commands, step size per keystroke must be adjusted in the dimming actuator   |   |   | 3.007 | Must be connected with the relative dimming of the dim channel                           |
| DPT 08 – Shutter step        | Function for sending relative drive commands, step size per keystroke must be adjusted in the shutter actuator |  |  | 3.008 | Must be connected with the step object of the shutter channel                            |

| DPT 09 – Unsigned value (0..255)  | Function for sending continuous, unsigned values (0..255)  | <p><b>Presentation format:</b></p>  <p>Eine Taste mit festem Wert</p>  <p>Slider</p>  | Decimal unsigned (0..255) | 5.005                       | Must be connected with function, which should be controlled and the state of the function |  |
|-----------------------------------|--|---|---------------------------|-----------------------------|---|--|
| DPT 10 – Signed value (-128..127) | Function for sending continuous, signed values (-128..127)   |   |                           | Decimal signed (-128..127)  | 6.010   | Must be connected with function, which should be controlled and the state of the function                          |
| DPT 11 – Percent unsigned value   | Function for sending percental values  |   |                           | Unsigned percent (0..100%)  | 5.001   | Must be connected with function, which should be controlled and the state of the function                          |
| DPT 12 – Percent signed value     | Function for sending percental signed values (-128..127%)  |   |                           | Signed percent (-128..127%) | 6.001   | Must be connected with function, which should be controlled and the state of the function                          |
| DPT 13 – Call scene 1..64         | This function can only call scenes. The calling scene can be adjusted separately.  |   | Scene number 1..64        | 18.001                      | Calling scenes, sends the adjusted scene number   |  |
| DPT 14 – Save scene 1..64         | Function calls scenes with a short keystroke and saves scenes with a long keystroke. The calling scene can be adjusted separately. |   |                           | Scene control 1..64         | 18.001  | Calling scenes, sends the adjusted scene number by a short keystroke, sends the saving command by a long keystroke |



|                                     |  |   |                                     |         |   |
|-------------------------------------|--|---|-------------------------------------|---------|---|
| DPT 15 – Unsigned value (0...65536) | Function for sending 2 Byte unsigned counts                            | <p><b>Presentation format:</b><br/>Input field</p>    | Decimal (0...65536)                 | 7.001   | Must be connected with function, which should be controlled and the state of the function   |
| DPT 16 – Decimal-difference         | Function for sending 2 Byte count differences                          | <p>One button with fixed value</p>  <p>Slider</p>   | Decimal-difference (-32768...32767) | 8.001   | Must be connected with function, which should be controlled and the state of the function   |
| DPT 17 – Floating point number      | Function for sending current value, voltage value or temperature value |   | Floating point number               | 9.*     | Must be connected with function, which should be controlled and the state of the function   |
| DPT 18 – RGB                        | Function for setting RGB-colors  | <p><b>Presentation format:</b><br/>Three RGB bars:</p>  <p>One button with fixed value:</p>  | RGB                                 | 232.600 | Must be connected with 3 Byte object of the RGB actuator, which should be controlled. Object of the 3 RGB bars must additional connected to the 3 Byte RGB state. |








|                                |  |   |                       |        |   |
|--------------------------------|--|---|-----------------------|--------|---|
| DPT 19 – Unsigned value        | Function for sending of 4 Byte unsigned counts                                 | <b>Presentation format:</b><br>Input field<br>  | Decimal unsigned      | 12.001 | Must be connected with function, which should be controlled and the state of the function |
| DPT 20 – Signed value          | Function for sending of 4 Byte signed counts                                   | One button with fixed value<br><br>Slider<br>                                     | Decimal signed        | 13.001 | Must be connected with function, which should be controlled and the state of the function |
| DPT 21 – Floating point number | Function for sending 4 Byte floating point numbers                             | <b>Presentation format:</b><br>Input field<br><br>One button with fixed value<br> | Floating point number | 14.*   | Must be connected with function, which should be controlled and the state of the function |
| DPT 22 – String                | Function for sending strings   | <b>Presentation format:</b><br>Input field<br>   | String                | 16.000 | Must be connected with function, which should be controlled                               |
| DPT 24 – HVAC Mode             | Function for switching the operating modes in the room temperature cobntroller |    | HVAC Mode             | 20.102 | Must be connected with the HVAC Mode of the room temperature controller                   |

Table 27: Overview function type "Other"

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## 8 Attachment

### 8.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.

Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

### 8.2 Routine disposal

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

### 8.3 Assemblage



#### **Risk for life of electrical power!**

All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

## 8.4 Sample projects

Both sample projects can be downloaded using the provided links and can be downloaded without any further settings in your device. Only the communication objects must be connected to the corresponding communication objects.

Sample can be downloaded at [www.mdt.de/download/VisuControlEasyDemo.zip](http://www.mdt.de/download/VisuControlEasyDemo.zip)

### 8.4.1 Example 1 (easy)

Example 1 shows the VisuControl Easy as it could be set for a single family home with a few KNX functions.

Example 1 can be downloaded via the following link:

Sample project 1 is optimized for sorting after areas.

### 8.4.2 Example 2 (advanced)

Example 2 shows the VisuControl Easy as it could be set for a single family home with a extended KNX functions.

Example 2 can be downloaded via the following link:

Sample project 2 is optimized for sorting after functions.

**MDT Object server VisuControl Easy, MDRC**

|            |                                    |          |
|------------|------------------------------------|----------|
| Version    |                                    |          |
| VC-EASY.01 | Object server with iPhone/iPad APP | 2SU MDRC |

The MDT VisuControl Easy object server is used for the visualisation of the current building status and to control building functions. The visualisation is displayed only on iPhone or iPad with the free **VisuControl for KNX** app. 10 iPhones/iPads can establish a connection to the object server simultaneously. Additionally the app has a demo mode for presentation without connected object server.

The visualisation can be arranged individually in rooms, zones or groups. Within these ranges at most 250 datapoints can be associated (50 functions, each with up to 5 datapoints). After the parameterisation the graphical user interface is created automatically.

The object server can be also used as programming interface for the ETS. External power supply or Power over Ethernet (PoE) is possible.

The MDT Objects server is a modular installation device for fixed installations in dry rooms. It fits on DIN 35mm rails in power distribution boards or closed compact boxes.

For project design and commissioning of the MDT Object server it is recommended to use the ETS4 or later. Please download the application software at [www.mdt.de/Downloads.html](http://www.mdt.de/Downloads.html)

VC-EASY.01



- Production in Germany, certified according to ISO 9001
- VisuControl for KNX app (with demo function) available in the App Store
- Visualization and switching, dimming, shutter/blind control
- Fast commissioning with ETS
- Graphical user interface is created automatically
- Individual arrangement in rooms, zones or groups
- Possible to visualize up to 50 functions
- External power supply or PoE required
- 2SU modular installation device for DIN 35mm rails
- Integrated bus coupling unit
- 3 years warranty

|                                      |   |  |
|--------------------------------------|---|--|
| <b>Technical Data</b>                | VC-EASY.01  |  |
| <b>Interface</b>                     | KNX/Ethernet  |  |
| <b>Max number of datapoints</b>      | 250   |  |
| <b>Permitted wire gauge</b>          |   |  |
| Screw terminal                       | 0,5 - 4,0mm <sup>2</sup> solid core<br>0,5 - 2,5mm <sup>2</sup> finely stranded |  |
| KNX busconnection terminal           | 0,8mm Ø, solid core   |  |
| <b>Power Supply</b>                  | 12-24VAC / 12-30VDC / PoE   |  |
| <b>Power consumption</b>             | < 0,8W  |  |
| <b>Operation temperature range</b>   | 0 to + 45°C   |  |
| <b>Enclosure</b>                     | IP 20   |  |
| <b>Dimensions MDRC (Space Units)</b> | 2SU   |  |

### Exemplary circuit diagram VC-EASY.01

