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## Overview

The MT701 **econ** serves to display and influence building functions from a central point.

The display medium is a freely programmable monochrome LC graphics display unit. You can operate it through a seven-key membrane keypad.

By its complex internal structure, the MT 701 **econ** facilitates bi-directional communication via the EIB, using the conventional "interworking standards" (EIS1-15). In this connection, both basic functions such as

switching, dimming, shutter and complex functions such as valuator, date, limit values, etc. can be executed.

To process the time functions, a synchronisable internal real-time clock is available.

The user interface is freely configurable, i. e. the display texts should be individually coordinated with the respective application. It is possible to integrate ground plans in the BMP format.

In case of setpoint overshooting or fault messages, "POP UP" functions and/or acoustic status messages can be generated.

The panel must be programmed with the **econ** ELKA programming software.

## Scope of key functions

Separately programmable for each key:

- No function
- Switching
- Dimming
- Shutter
- Lightscape
- Value display
- Operator prompting
- Page call

## Scope of MT701 functions

The MT701 **econ** serves to display information (texts, values, time), send telegrams as well as to handle fault messages and is responsible for the lightscape management.

It comprises 50 freely programmable pages which, in each case, consist of a heading and of eight lines which can be parameterised as you like. You can assign display elements and four function keys to one line. You can also store black-and-white bitmaps for each page, limits only being set by the memory. The monitoring of limit values is handled under the "Value" function and can only be assigned to display elements.

## Special pages:

- System page
  - offering access to the date, the time, to passwords, to the message list, and to the display unit contrast setting.
- Timer page
  - covering up to 16 channels with 8 switching times each. You can assign the switching times to any number of days of the week. Various functions can be assigned to the switching times occurring.
- Lightscape page
  - with 24 lightscapes consisting of up to 32 group addresses. Within a lightscape, you can set "unchanged" the value for a group address so that this group address will not be sent when the lightscape is being called.
- Message list
  - with freely programmable message texts. A maximum of 50 freely programmable fault messages, out of which up to 20 of them can be activated at the same time. They can be shown in a message list with a maximum of 100 entries.

#### **Other:**

- Firmware updating is possible through a serial interface.
- Cyclic sending of the date and the time ((1 min. / 1 h / 1 day).
- Receiving (and synchronising the internal clock) of the date and the time.

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## Message Box

- **Description**

The message box is a page which will open upon an active fault message if this has been correspondingly parameterised in the **econ** for the fault message.

The MT701 message box is of pop-up type containing the date and time of the incoming fault message, the message text and, if necessary, additional information text. For the freely programmable info text, two text lines are available. In the message boxes, the key assignments (e. g. acknowledging) are given by default and cannot be parameterised as you like. Both EIB telegrams and internal connections can be used for acknowledging. If several message boxes are shown the most current one will always be in the foreground.

- **Configuring a message box**

"Open Message Box" parameter

When this field is active a pop-up window containing the date and the time of the incoming fault message, the message text and, if necessary, some additional information text will be opened upon the arrival of a corresponding fault message telegram at the MT701. For the freely programmable info text, two text lines are available.

If this parameter is deactivated and the "Acoustic Signal" parameter (fault message) activated the piezo crystal will start buzzing upon the arrival of a corresponding fault message telegram, however, with no pop-up window going open. Thus, you cannot use a pre-parameterised key to directly and easily acknowledge the message (1-bit switching).

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## Message List

- **Description**

The message list is a page indicating the fault messages which have accumulated and have been correspondingly parameterised in the **econ**. Only those fault messages will get into the list for which the storage option was parameterised during configuring.

From the system page, you can call and view the message list by pressing the "Show" key. A maximum of 100 messages can be stored in it. If further fault messages arrive the oldest messages of the list will be overwritten. In case of an active fault message, the message list will not appear in the foreground like a message box. A fault message to be stored will be indicated together with its date, time, status (if parameterised) and message text (refer to fault message, no info text of the message box) and stored in the memory. The fault message status distinguishes among "incoming", "outgoing" and "acknowledged" messages. Any status change of the messages (e. g. after acknowledging) will bring about a new memory entry. If there are more than eight memory entries, you can use the "Up" and "Down" keys to scroll the list. You cannot delete a single memory entry from the list. It is only possible to delete the entire message list. You can delete the list from the system page by pressing the "delete" key.

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## Group Addresses

- **Group addresses**

A group address is some kind of a pool to which you can assign communication objects of an EIB device. This connection enables the objects to communicate with one another. The telegrams directed to a group address will be noted by the objects connected to it. The objects will change their value according to the telegram and trigger a corresponding reaction. The objects connected with a group address must be of the same EIS type. The latter is specified by the first assignment to a group address.

Example:

The switching object of a touch sensor is connected with group address 1/1/2. To be able to actuate a lamp, for example, the switching object of a switching actuator must also be connected with group address 1/1/2.

- **Status query**

The "Query Status" parameter for **econ** communication objects fulfils the same function as the "Query Status" parameter for group addresses in the EibTab.

After a re-start or reset of the MT701, a read telegram will be sent to query the status of this group address when the status query function is active.

- **Assigning group addresses**

Variant 1: Drag & drop

(- Open a second configuration window (MT701 Plugin/Configuration/New Configuration Window)) / optional.

(- Arrange both windows vertically) / optional.  
- Click on the group address, hold it pressed (left mouse button), draw it to the corresponding object of the device and drop it.

Variant 2: Parameter box dialogue

- Click on the object (left mouse button).  
- Use the left mouse button to click on the yellow field of the "Group Address" parameter in the parameter box.  
- Click on the "..." field (also left mouse button).  
- The group address table will list all group addresses which correspond to the object type or are of no type.  
- You can have the group addresses listed in alphanumerical or alphabetical order. Depending on your choice, click on the "Addresses" or "Name" field.  
- Highlight the corresponding group address/es in the "Selectable Group Addresses" field and click on the ">" button to assign it/them. You can also assign a single address by double-clicking on it.  
- The search function will make it easier to find an address. Simply type in the group address and click on the "Search" button. The address searched for will then appear highlighted.  
- Click on the "OK" button to confirm assignment.  
- You can cancel an assignment by highlighting it in the "Assigned Group Addresses" field and clicking on the "<" button.  
- You can use the ">>" and "<<" keys to assign or cancel all valid group addresses at once without highlighting them.  
- Click on the "OK" button to confirm.

Variant 3: Dynamic dialogue

- Click on the object (right mouse button).  
- Select the "Connect with Group Address ..." option.  
- Type the group address an a name into the new dialogue box going open. The suggested address is a new group

address. It will be created under the name given. You cannot type in a new name to rename a group address already existing.  
- Click on the "OK" button to confirm.

- **Internal group addresses**

In the MT701, you can also create and use internal group addresses. They are device-incorporated, i. e. they cannot be accessed from the bus. The internal group addresses trigger internal actions without sending telegrams to the bus. Assigning the objects to internal group addresses is identical with the assignment of normal group addresses.

- **Physical address**

The physical address is a unique identity number (ID) which may be assigned only to one single device within the entire system.

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## Internal Group Addresses

- **Description**

Internal group addresses behave in the same way as "normal" group addresses, with the exception that they do not send any telegrams to the bus. Communication takes place internally in the MT701. The internal group addresses trigger internal actions without sending telegrams to the bus.

- **Renaming an internal group address**

Use the right mouse button to highlight the internal group address you want to rename. A dynamic dialogue will appear which includes the "Rename" option. If you select this option an input box will appear into which you can enter the desired name.

- **Note**

You can create more than 2000 internal group addresses in the MT701, however, only three of them appearing in the standard list. If required, the user can create further internal group addresses.

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## Set Format

This dialogue offers the possibility of setting the representation of the value to be displayed.

**Field width**

The number of all value characters to be displayed, including decimal point and digits behind the decimal point.

**Digits behind the decimal point**

Number of digits behind the decimal point to be displayed.

**Leading zeros**

Activated: If the value is smaller than the specified field width it will be filled with leading zeros.

**Entry**

To check the format you have set you can enter a value which corresponds to the values to be displayed later.

### Preview

To display the value typed in under *Entry*, taking into consideration its format setting. If the value cannot be represented (e. g. field width too small) '#' characters will be displayed.

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## Objects

- **Description**

The corresponding objects will be created automatically, depending on the elements (display elements, keys, etc.) created. You can use the drag-and-drop function or the assignment dialogue to connect such objects with normal group addresses or internal group addresses.

- **Flags**

*Communication*

ON: Normal connection of the device with the bus.  
OFF: The object value can no longer be changed.

*Reading*

ON: The object value can be read through the bus.  
OFF: The object value can no longer be read through the bus.

*Writing*

ON: The object value can be written through the bus.  
OFF: The object value cannot be written through the bus.

*Transmitting*

ON: The object value can be transmitted to the bus.  
OFF: The object value cannot be transmitted to the bus.

*Updating*

The updating flag is not supported by the BCU1 and is therefore greyed.

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## EIS Types

- EIS (EIB Interworking Standards)

EIS Type	Name	Object Size
EIS 1	Switching	1 bit
EIS 2	Dimming	1 bit / 4 bits / 8 bits
EIS 3	Time	3 bytes
EIS 4	Date	3 bytes
EIS 5	Value	2 bytes
EIS 6	Rel. value	1 byte
EIS 7	Shutter	1 bit / 1 bit
EIS 8	Priority/operator prompting	1 bit / 2 bits
EIS 9	IEEE - Float	4 bytes

EIS10	16-bit counter	2 bytes
EIS11	32-bit counter	4 bytes
EIS12	Access	4 bytes
EIS13	ASCII - Char	1 byte
EIS14	8-bit counter	1 byte
EIS15	String	14 bytes

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## Physical Address

- **Physical address**

The physical address is a unique identity number (ID) which may be assigned only to one single device within the entire system.

The MT701 comes with its physical address programmed to 15/15/255 as default. For the device and its function, it will not be necessary to change the physical address.

Nevertheless, it is recommended to assign a suitable physical address to enable possible later modifications of the application to be loaded into the device through the EIB.

- **Programming the physical address**

You can programme the physical address in the same way as for standard devices:

Under the "Commissioning/Test" option of the ETS2, highlight the MT701 application, whose physical address you want to programme, and select the "Download" option. Click on the "Physical Address" button in the "Programming" dialogue box going open. Follow the instructions of the ETS2 and click on the programming button.

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## Application Software

- **Description**

The application software comprises the parameterisations made by the user in the ETS2 or in the **econ**, respectively, and the information the device needs to be operated and to function in the described way. The group addresses must be created in the ETS2 and the parameterisation of the MT701 in the **econ**. The application software must be downloaded into the device (download) to make the data accessible for it.

- **Application programme**

The application programme determines the specific functions of the device. After you have first programmed the physical address and then the corresponding application software, the device will function correctly.

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## Firmware

- **Description**

Firmware is to be understood the software of a device the manufacturer has placed in a ROM module. Such kind of software has mainly very elementary tasks in the respective device.

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## Download

- **Description**

By the download, i. e. programming, you can load the application software and, possibly, the firmware into the device. The firmware, in general, contains all the routines and functions the MT701 needs for operation, and which you can parameterise in the **econ**. The application software comprises the specific, user-parameterised data and information. Programming is possible through both the EIB and an RS232 interface port. To optimise the time of subsequent downloads only the modifications of the specific MT701 functions made will be transferred. However, you can reload the firmware only through the RS232 interface port.

- **Making a download through the EIB**

Configure and parameterise the MT701 with the **econ**. After having completed parameterisation, quit the **econ** and return to the ETS2. Save your settings under "Commissioning/Test", select "Download" and start the download. Due to the huge amount of data, transfer will take some time.

- **Making a download through the RS232 port**

Configure and parameterise the MT701 with the **econ**. After having completed parameterisation, select the "RS232 Download" menu item from the **econ** menu bar and start the "Setup" option. Set the serial interface in the dialogue box now going open and actuate the "OK" button to activate it. Now you can use the "Start Download" option to begin with your download.

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## Overwriting User Data

- **Description**

You are enabled to make your own timer, lightscape and limit value settings on the device. If the sequence or the data type changes within a group, for example, by deleting, inserting, moving or changing the assigned function the assignment of the values stored in the device in association with the configured data will get lost. In other words, relocation of the data settings may occur. In such case, you must delete the user data during a download and re-enter them.

The parameters which control this behaviour have been stored at the main node under "Download Behaviour".

The behaviour of the individual groups is as follows:

### **Timer**

Parameters: Delete all timer switching times

Yes

No

If you set parameter **NO** the parameterised switching times will not be downloaded, i. e. the events entered by the user will be maintained.

**Deleting, inserting, changing the object type and moving** the channels will change the assignments of the switching times to the switching times/channels entered by the user, i. e. parameter **YES** set by the download must be used to

- => delete the switching times of all channels.
- => re-enter the switching times of all channels by the user.

### **Lightscape**

Parameters: Overwrite lightscape names, delete values

Yes

No

If you set parameter **NO** the parameterised lightscape names will not be downloaded, i. e. the lightscape names and values entered by the user will be maintained, the parameterised lightscape names and values being discarded.

**Deleting, inserting, changing the object type and moving** will change the assignments of the lightscapes/channels entered by the user, i. e. parameter **YES** set by the download must be used to

- => overwrite/delete the lightscape names of all channels.
- => delete the lightscape values of all channels.
- => reset the lightscape values of all channels by the user.
- => to possibly reset/change the lightscape names by the user.

### ***Limit values***

Parameters: Overwrite *limit values*

Yes

No

If you set parameter **NO** the parameterised limit values will not be downloaded, i. e. the events entered by the user will be maintained.

**Deleting, inserting, changing the object type and moving** will change the assignments to the limit values/channels entered by the user, i. e. parameter **YES** set by the download must be used to

- => overwrite/delete the limit values, and
- => to possibly reset/change the limit values by the user.

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## Radio

### • **Description**

You can also remotely control the MT701 **econ** Funk via instafunk during the running time. Through the Komfort instafunk remote control system, you can select three pages. The corresponding pages will be assigned to the "Radio Reception at Group A", "Radio Reception at Group B" or "Radio Reception at Group C" parameters from the MT701 general parameters. The eight lines of a page are assigned to the eight switch rockers of the instafunk remote control. When you press the instafunk remote control keys only the parameterised functions will be executed, the page not being called. The remote control must have been "taught-in" on the MT701 beforehand.

### • **instafunk remote control key functions**

The Komfort instafunk remote control has three keys, "A", "B", and "C". They serve to specify the channel, i. e. the group. The eight switch rockers are one by one assigned to the eight lines of a page. The left-hand rocker side is linked with the function of key 1 of the corresponding display element, while the right-hand rocker side is assigned to key 2. The five remote control keys numbered "1" to "5" are lightscape keys and call the first parameterised lightscapes, when being pressed.

Example:

The function of key 2 of the third line of page 18 is to be executed. Page 18 has been assigned to the "radio reception at group C" parameter, the third display element has been parameterised with the "Switching" function, and for keys 2 of this element the "Switching" and "OFF" functions have been selected. On the instafunk remote control, you must now press key "C" (for the page) and then the right-hand side (for key 2) of rocker "3" (for the line). The MT701 will send an OFF telegram thus causing corresponding response.

To call the fourth lightscape parameterised in the MT701, you will only need to press key "4".

A key for "All ON" and "All OFF" as well as a switch rocker for "General Dimming" are not provided.

- **Teach-in procedure**

Two preconditions must be fulfilled to teach the instafunk remote control. You must define "Yes" the "Activate INSTA-Funk" parameter, and the panel must have been equipped with a radio module. The system page will now contain the additional "Radio Teach-In Mode" menu item. If you press the "ON" key for a long time (> 5 s) the MT701 will change into the radio teach-in mode, indicating this by its "ON" status and a beep. When the device in the teach-in mode you must press any rocker or lightscape key for a long period (> 2 s). If no transmitter has been taught in yet, or if the transmitter to be taught in is unknown, its data will be saved, the status will read "Learned", and an acoustic signal will be released. If the transmitter is already known to the MT701 its data will be deleted, the status will read "Forgotten", the piezo buzzer signalling the end of the procedure. You can press the "OFF" key to exit the teach-in mode.

## general parameters

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## Date/Time

- **Real-time clock**

The MT701 contains a real-time clock module. Thus, the device is capable of managing the time and the date (including months, years, leap years, ...). This means that the date will be correspondingly updated if the time jumps, for example from 23:59 to 00:00 hours.

The time drift is four seconds per day at maximum (worst case). In case of supply voltage failure, the time and the date will be buffered for about 2 days.

- **Assignments**

The "Time" and "Date" functions can only be assigned to display elements.

- **Time usage**

The time can be parameterised for device-internal purposes, as master clock of a system, or for synchronisation with a system clock.

- **Internal time:**

After the MT701 programming, you can set the internal time on the device itself from the system page. The internal time does not require synchronisation with an external system clock, for it can run independently.

Parameterisation will take place solely by the selection of the "Time" or "Date" function as a function of the display element and by the "Internal" option of the "Source" parameter.

- **Master clock:**

The internal time can also be used as a master clock for a system. The difference with respect to "Internal Time" is that cyclic telegrams containing the current time or the current date will be sent. You can parameterise cyclic sending together with the MT701 general settings under "Date/Time", "Send Date" or "Send Time", respectively. The frequency of cyclic sending can also be parameterised. A telegram can be released once per day, once per hour or once per minute. Specifying the time of sending is not possible. The telegram will be automatically triggered, once the selected parameter is changed.

**- Synchronisation with an external clock:**

After programming or resetting the MT701, the internal time will be waiting for a telegram from the system clock (status flag of the objects set, or cycling sending of the master clock). If such a telegram is received the internal clock will synchronise with the external one. Refreshing will be done after each further telegram from the external system clock. In the meantime, the internal time will keep running independently.

You can parameterise this together with the MT701 general settings under "Date/Time", "Synchronisation with External Clock".

**• "Time" or "Date" and "EIB" source functions**

Once the function of a display element has been parameterised as "Time" or "Date" and as "EIB" source, the external time or date received will be displayed in the associated line when being sent through the bus. This value will not be changed and will be retained until the object receives a new value. The new value will overwrite the previous one.

**• Objects**

**- Internal time:**

The connection of a display element with the internal clock does not require an object but is established internally.

**- Master clock:**

Sending the time or the date to the bus is effected through the "time object[sending]" or the "date object[sending]", respectively. These two objects should, in general, be created under the MT701 instead of the display element.

**- Synchronisation with an external clock:**

Receiving the time or the date from the bus is realised through the "MasterTime[external synchronisation]" or "MasterDate[external synchronisation]" objects, respectively. These two objects should, in general, be created under the MT701 instead of the display element.

**- "EIB" source**

Receiving the time or the date from the bus is realised through the "time object[time]" or "date object[date]" objects, respectively. These objects must be created under the display element.

**• Display format**

You can choose between 12h and 24h for the time display format.

The date offers four different display formats:

- DD.MM.YYYY
- DD.MM.YY
- MM.DD.YY
- MM.DD.YYYY

(D = day, M = month, Y = year)

**• Setting the time**

After having programmed the MT701, you can set the internal time on the device itself from the system page or tune it by an external telegram after corresponding parameterisation.

To set the time from the system page you must call the latter and use the cursor to highlight the "Time" display element. When you actuate the key pre-parameterised "Change" the changes page will open. Use the "<" and ">" keys to change the cursor to the time hours or minutes. You can use the "Up" and "Down" keys (at the right-hand margin of the page) to change the value. Accept the time you have entered by pressing the "Set" key. Press the "Back" keys to exit the setting mode.

- **Time offset**

You can offset the time. This will facilitate the display of the times of various time zones on one page. The offset will be indicated in hours.

- **Setting the date**

After having programmed the MT701, you can set the date on the device itself from the system page or tune it by an external telegram after corresponding parameterisation.

To set the date from the system page you must call the latter and use the cursor to highlight the "Date" display element. When you actuate the key pre-parameterised "Change" the changes page will open. Use the "<" and ">" keys to change the cursor to the day, month or year. You can use the "Up" and "Down" keys (at the right-hand margin of the page) to change the value. Accept the date you have entered by pressing the "Set" key. Press the "Back" keys to exit the setting mode.

- **Day**

The day is indicated in the MT701 display during the running time together with the date and can be set there.

The day is of decisive significance for the parameterisation of the switching times of the timer channels.

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## Display Unit

- **Display**

The display is realised by a backlit 240 \* 128 pixel monochrome LC display unit.

- **Lighting**

You can press the keys or, alternatively, use EIB telegrams to switch the background lighting on or off. The period of time the background lighting is on can be parameterised. Permanently "ON" is not recommended due to the restricted life of the LCD lighting. You can deactivate the function of the lighting key.

- **Contrast**

You can set the contrast from the system page using some keys.

If you select the contrast setting line from the system page the function keys will be assigned the associated functions. Use the "Contrast +" and the "Contrast -" keys to readjust the contrast. After you have found the suitable contrast, press the "Save Contrast" key to save the value you have set. This contrast setting will now be retained, even after a reset. If you just change the contrast without saving it a reset will restore the value saved last.

The contrast depends on the user's angle of view at the display unit.

- **Background**

You can assign images (bitmaps) to the individual MT701 pages to use them as wallpaper.

# Sites

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## Display Elements

- **Description**

The MT701 display is sub-divided into pages composed of lines. A line, in turn, contains one or several display elements. A display element can be assigned a function. In addition, the four horizontal keys which you can parameterise with a key function or with the function of the display element (display element function) are subordinate to it. The positions of the display element and output values can be specified through X- and Y-coordinates.

One line offers space for 40 characters, the first four of them, however, being reserved. Therefore, you can represent a text with up to 36 characters in the display.

- **Assignment of functions**

The following functions can be assigned to a display element:

- Text display
- Switching
- Dimming
- Shutter
- Operator prompting
- Date
- Time
- ASCII text
- Lightscape
- Access control
- Value

- **Display element keys**

You can parameterise the keys with any function or with the function of the associated display element.

- **Linking a display element with a key**

A detailed description is given under "Display Element Functions".

- **Configuring a display line**

You can enter some text into the "Name" input field to describe the display element in the plug-in tree structure. In the "Text" input field, you can indicate the desired static text for the line.

The X- and Y-position of the line text will be set to a default value for each line, but can also be altered. For dynamic properties, i. e. the values, which can be influenced through bus telegrams, you can parameterise default texts (e. g. ON or OFF) or any custom texts. For 1-bit values such as switching/shutter, you can enter into the "Display Text for 1" and "Display Text for 0" fields texts to be displayed for values 1 and 0.

If the data to be displayed concerns 8-bit, 16-bit or 32-bit values a gain and an offset can be specified for conversion to represent the value. Furthermore, the display format for such data can be selected from a list.

The "Line Selectable" combo box fixes the type of cursor representation in the respective line. This can indicate the user whether entries can be made into this line. If you select option "No" for this parameter the associated keys will be removed from the tree structure.

- **Accepting the entry of a parameter field**

Important:

If you have entered some text or a value into a parameter field you must exit this field (the input line) to accept the new entry before you can make a download, for example. It is sufficient to press the tab key, however, you can also activate a different parameter field or select a different element or component in the **econ** tree structure. (Pressing the enter key will not be sufficient.)

- **Selecting a line**

During the running time, you can select the individual lines with a cursor. The line in which the cursor is located is the active one, i. e. this line determines the assignment of the keys, depending on how it has been parameterised. If you have parameterised a line to be not selectable the cursor will skip this line and go to the next one. You can use the "Up" and "Down" keys on the right of the MT701 to move the cursor.

- **Note - Several display element within a line**

If you assign several display elements to a line on a page (by the same Y-position value) such elements will overlay one another. Although all of them are physically present, only one of them will be optically indicated. If you move the cursor the latter will "stop" in the line, for it will point at one of the other display elements assigned to this line.

- **Note**

You can create and parameterise a maximum of 16 lines in the MT701. It may happen that not all lines are shown in the standard list. If required, the user can create further lines and configure them.

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## Display Element Functions

### Description

A display element is a part of a line. One line may be comprised of one or several display elements which can be parameterised with the functions listed below:

- Text display
- Switching
- Dimming
- Shutter
- Operator prompting
- Date
- Time
- ACSII text
- Lightscape
- Access control
- Value display

## Linking a display element with a key

### "...Line Function" key function

The function a display element has been parameterised with can also be assigned to a key of such element. Such key function is named "... Line Function". In this case, the key sends telegrams on the group address of the display element. The display element will indicate any changes caused by the actuation of the key.

### "X" key function

If you want to link a display element with any key you must parameterise the display element and the key with the same function and assign the objects (of the element or of the key) to the same group address/es.

In both cases, the display element will read the information of the parameterised function.

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## Keys

- **Description**

The MT701 can be operated through a seven-key membrane keypad. Three keys of them are arranged vertically and four horizontally below. The three left keys move the cursor in the LC display from line to line and switch the lighting.

The four horizontal keys can be parameterised as you like.

The display shows parameterised pages made up of lines. Such lines are described by display elements which the keys are assigned to.

You can parameterise the keys with any function or with the function of the associated display element.

- **Linking a display element with a key**

A detailed description is given under "Display Element Functions".

- **Accepting the entry of a parameter field**

Important:

If you have entered some text or a value into a parameter field you must exit this field (the input line) to accept the new entry before you can make a download, for example. It is sufficient to press the tab key, however, you can also activate a different parameter field or select a different element or component in the **econ** tree structure. (Pressing the enter key will not be sufficient.)

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## Key Functions

### Description

The MT701 has seven keys, out of which four can be parameterised with any functions.

All the key functions are listed in the following. The functions with the "... Line Function" additional remark will only be available if you have assigned the corresponding function to the associated display element before. All "... Line Function" key functions are referred to the same objects as the line. This saves resources and, if necessary, parameter settings.

- No function
- Switching

- Dimming
- Shutter
- Lightscape
- Value display
- Operator prompting
- Page call
- Line switching function
- Line dimming function
- Line shutter function
- Line value display function
- Line operator prompting function
- Line limit value changing function

### **Linking a display element with a key**

#### *"..Line Function" key function*

The function a display element has been parameterised with (display element function) can also be assigned to a key of such element. Such key function is named "... Line Function". In this case, the key sends telegrams on the group address of the display element. The display element will indicate any changes caused by the actuation of the key.

#### *"X" key function*

If you want to link a display element with any key you must parameterise the display element and the key with the same function and assign the objects (of the element or of the key) to the same group address/es.

In both cases, the display element will read the information of the parameterised function.

## **Pages**

### **• Description**

In the **econ**, you can create a maximum of 50 pages with any parameterisation to configure the MT701. One page is composed of up to 16 lines or display elements, respectively, however, only eight of them being freely programmable. The display elements, in turn, may have four keys each. A page cannot be assigned a function, you can only change the "Name", "Caption", "Password Level" and "Wallpaper" settings. Assigning a function is only possible for display elements and keys. In addition to arbitrarily parameterisable pages, the MT701 includes the so-called special pages.

#### **- Name**

"Name" is the name under which the page is included in the **econ** tree structure.

#### **- Caption**

"Caption" indicates what title the page will be given in the display.

#### **- Password level**

You can assign each page to a password level to protect it from undesired access. To access a password level you must enter a password.

#### **- Wallpaper**

You can insert several bitmaps as wallpapers for the pages.

#### Special pages:

- System page
- Lightscape page
- Timer page
- Message list

With the aid of a page, you can display data and information and influence building functions such as light. A page will always be captioned. Within one line, several display elements can be represented, for example, date and time. The date and the time are, in each case, display elements independent of each other which are then assigned the same Y-positions. However, great caution will be necessary, as otherwise the elements will overlay and overwrite each other, with only one being visible in the line although both of them exist therein. The lower portion of the page will read the text which has been parameterised in conjunction with the keys. Through the X-coordinates of the text, you can specify the position of the function key texts. The positions of the other line texts and output values can be specified through X- and Y-coordinates. Depending on the parameterisation, a return to the main page (e. g. page 1) may take place after a presettable time period.

- **Note**

You can create and parameterise a maximum of 50 pages in the MT701. It may happen that not all pages are shown in the standard list. If required, the user can create further pages and configure them.

- **Calling a page**

You can call a different page during the MT701 running time by a correspondingly parameterised key. If, for example, you want to go from page 1 to page 2 you must parameterise a key of any display element of page 1 with the "Page Call" function and specify page 2 under "goto page". For going back to page 1, you can correspondingly find a key on page 2. The MT701 general settings include the "Back to Start Page" and "start page" parameters. With their aid, you can specify a start page and a time period, at the end of which a return to the start page will be automatically caused.

- **Calling a special page**

You must use a key to call a special page such as the system page. For this purpose, assign the "Page Call" function to this key and then select the corresponding special page.

- **Password level**

When configuring any page, you can provide it with a password level which will protect such page from undesired access. To call such protected page you must enter the corresponding password for this level if the presently current password level is lower than that of the page to be called. You can change passwords on the system page.

- **Selecting a line**

During the running time, you can select the individual lines with a cursor. The line in which the cursor is located is the active one, i. e. this line determines the assignment of the keys, depending on how it has been parameterised. If you have parameterised a line to be not selectable the cursor will skip this line and go to the next one. You can use the "Up" and "Down" keys on the right of the MT701 to move the cursor.

- **Accepting the entry of a parameter field**

Important:

If you have entered some text or a value into a parameter field you must exit this field (the input line) to accept the new entry before you can make a download, for example. It is sufficient to press the tab key, however, you can also activate a different parameter field or select a different element or component in the **econ** tree structure. (Pressing the enter key will not be sufficient.)

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## Wallpaper

- **Bitmaps**

You can store black-and-white bitmaps for each page. The number of bitmaps to be integrated depends on the memory (128 kB). For optimised download periods, you must specify the memory area for the bitmaps to facilitate partial download. This means that you can store a maximum of 25 different bitmaps. You can use these bitmaps several times (on different pages).

- **Assigning a wallpaper to a page**

Parameter box dialogue

- Click on the page (left mouse button).
- Use the left mouse button to click on the yellow field of the "Wallpaper" parameter in the parameter box.
- Click on the "..." field (also left mouse button).
- The picture list will show all available wallpapers. If there is no picture in the list yet you can use the "Add" button to insert a bitmap into the list. Use the "Delete" button to remove a picture from the list. With the aid of the "New" button, you can create a new picture.
- Highlight the desired picture as wallpaper for the selected page.
- Click on the "OK" button to assign it.

## System Page

- **Description**

The system page is a special page which will be created automatically and contains MT701 system-incorporated settings such as the date, the time and passwords. Such parameters of the page cannot be influenced in the **econ**. You can make the settings directly on the mini panel after the configuration. In the **econ**, you can only change the "Name", "Caption", "Password Level" and "Wallpaper" settings.

The following settings or displays, respectively, are possible on the system page:

- Contrast
- Date
- Time
- Password
- Message list

- **Contrast**

How to set the contrast is described under "Display".

- **Setting the date**

How to set the date is described under "Date/Time".

- **Setting the time**

How to set the time is described under "Date/Time".

- **Password level**

You can assign a page to a password level to avoid undesired access to such page. If you call a protected page you will be prompted to enter a password. If you enter the correct password the page called will open, or you will return to the page from where you initiated such call. The function keys serve to enter the password.

How to change the passwords for the individual levels is described under "Password".

- **Viewing the message list**

How to call this list is described under "Message List".

- **Calling a special page**

You must use a key to call a special page such as the system page. For this purpose, assign the "Page Call" function to this key and then select the corresponding special page.

- **Note**

It is recommended to put the system page and the lightscape page on a high password level in your configuration in order to obtain protection from undesired or unauthorised access which may entail change of the settings.

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## Password

- **Description**

When configuring the system, you can assign a password level to each page to avoid undesired access to such page during the running time. To call such protected page you must enter the corresponding password for this level if the presently current password level is lower than that of the page to be called. If you enter the correct password the page called will open, or you will return to the page from where you initiated such call. The function keys serve to enter the password. You can change the passwords for the individual levels from the system page.

- **Password levels**

The MT701 comprises five different password levels. The choice ranks from "No Password Protection" through "Password Level 1" to "Password Level 4". Pages without password protection are accessible without the entry of a code word. Password-protected pages are either accessible by entering the correct password, or the current password level is higher or equal to the preset password level. Returning from a higher to a lower level will reset the current password level to such lower level. This ensures that the setting of a high level will not be permanently retained.

It is recommended to put the system page and the lightscape page on a high password level in your configuration in order to obtain protection from undesired or unauthorised access which may entail change of the settings.

Example:

Page 1 (without password protection)



Call page 2 (level 1) --> enter level 1 password (the current level will then be 1).



Call page 5 (level 4) --> enter level 4 password (the current level will then be 4).

□

Call page 8 (level 2) --> no password required (the current level will then be 2).

□

Call page 4 (level 3) --> enter level 3 password (the current level will then be 3).

□

Call page 1 (no password protection) --> no password required (the current level will then not be password-protected).

- **Passwords**

The following default passwords have been pre-defined:

- Level 1: "11111"
- Level 2: "22222"
- Level 3: "33333"
- Level 4: "44444"

- **Entering a password**

You can use the function keys to enter the five-digit passwords. In this connection, the function keys will be given values 1 to 4 from left to right.

In the display, the cursor is at the first digit of the password. If you press one of the keys an asterisk will appear in the display, the cursor advancing to the next digit. Consequently, you must press the first key from the left for a "1", the second key from the left for a "2", the third one for a "3", and the fourth key from the left for a "4".

You can change the passwords for the individual levels on the MT701 from the system page.

- **Entering a wrong password**

If you call a page which belongs to a higher password level you must enter the password for this higher level. Entering a wrong password will result in a return to the original page from where call came. A limitation of the erroneous entries has not been implemented in the MT701. If you do not enter any password when prompted so an automatic return will take place after a certain time has elapsed.

- **Changing a password**

You can change the passwords for the individual levels on the MT701 from the system page. For this purpose, use the cursor to select the "Passwords" option. If you now press the "Change" key the MT701 will list the passwords for levels one to four. The cursor will enable you to select the level, whose password you wish to change. Pressing the "Change" key once more will assign the figures and the values from one to four to the first four keys, the first digit of the highlighted password blinking. You can now use these four keys to enter a new password. Key "1" will assign the value of one to the blinking digit, key "2" correspondingly the value of two, key "3" the value of three, and key "4" the value of four. A programmed digit will be represented by an asterisk. After you have programmed all five digits you can press the "Save" key to save the new password or press the "Back" key to discard it.

- **Resetting passwords**

A download on the MT701 will not overwrite or reset the passwords, even though you have selected the "Transfer All in Next Download" option (Settings/Options/Hardware) in the **econ**. You can reset passwords as follows:

Create a new project in which you configure an option to go to the system page. Parameterise the system page without password protection. Load the project into the MT701 (download) and change the passwords on the system page.

- **Note**

It is recommended to put the system page and the lightscape page on a high password level in your configuration in order to obtain protection from undesired or unauthorised access which may entail change of the settings.

## Timer

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### Timer Page

- **Description**

The timer page is a special page and serves to programme the internal timer in the MT701. You can programme the switching times on the device itself during its running time after configuration.

The timer page covers up to 16 channels with 8 switching times each. The timer works with a week programme. Depending on the configuration, you can create both simple switching telegrams and value telegrams (lightscapes, desired temperatures, etc.) as switching times. The types supported are EIS1, EIS5 and EIS6.

After voltage failure, the internal clock will keep running for about two days. Depending on the parameterisation (under "General Settings" in the **econ**), you can, for example, firmly store the switching times so that they will be retained after an MT701 reset or download.

- **Calling a special page**

You must use a key to call a special page such as the timer page. For this purpose, assign the "Page Call" function to this key and then select the corresponding special page.

- **Programming the switching times**

During the running time, all programmed channels with their specified names will be listed on the MT701 timer page. The cursor highlights the selected channel.

You can parameterise the keys in accordance with the function of the channel. Two keys have already been pre-parameterised with the following default functions:

"Change" key

Actuating the "Change" key will call the current settings of the highlighted timer channel. Change the key assignments. Use the ">" key to move the prompt cursor to the right in the line highlighted by the line cursor. First of all, you can use the right arrow keys (up, down) to specify the time hours and the minutes. This is followed by seven placeholders for the weekdays. The first letter of the weekday marks the activation of the corresponding day. Indicate the state or value to complete entering the switching time. If you press the ">" key again the line cursor will re-appear. Press the "Save" key to store the switching time. To undo your settings, press the "Delete" key. Press the "Back" key to return to the timer page, any data not saved getting lost.

#### *"Back" key*

If you press the "Back" key you will return to the page from where you called the timer page.

#### • **Password level**

When configuring any page, you can provide it with a password level which will protect such page from undesired access. To call such protected page you must enter the corresponding password for this level if the presently current password level is lower than that of the page to be called. You can change passwords on the system page.

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## Timer Channel

#### • **Description**

The MT701 manages a maximum of 16 timer channels. You can set up to eight switching times per channel. The switching times can be assigned to any number of weekdays on which they are to become active. After completing the configuration, you can program the switching times of the channels directly on the MT701 from the timer page. You can call this page by actuating a key parameterised with the "Page Call" and "Timer Page" key functions. When the internal clock reaches a programmed switching time the associated switching event will be triggered.

After voltage failure, the internal clock will keep running for about two days. Depending on the parameterisation (under "General Settings" in the **econ**), you can, for example, firmly store the switching times so that they will be retained after an MT701 reset or download.

#### • **Channel functions**

The following functions can be assigned to a channel:

- Mode change
- Lightscape
- Switching
- Value

#### *Shutter:*

The "Shutter" function does not exist. Nevertheless, you can implement it by a little trick.

For shutter control by the timer, only the long-time mode (or moving to a certain position) is considered to make sense, but not the angular adjustment of the slats in the short-time mode. Therefore, telegrams sent to the long-time object will be sufficient.

Parameterise the channel with the "Switching" function. To enable the switching event to move the shutter up or down to its end position you must assign the switching object of the channel to the same group address to which you have assigned the shutter long-time object.

#### • **Key functions**

Four parameterisable keys have been assigned to a timer channel. However, as not all key functions make sense they have been correspondingly adapted to the channel.

Key functions:

- No Function
- Change channel timer setting
- Page call

Key functions depending on the channel function:

- Line mode change
- Line lightscape
- Line switching function
- Line value display

- **Programming the switching times**

A detailed description of how to programme the switching times is given under "Timer Page".

- **Note**

You can create and parameterise a maximum of 16 timer channels in the MT701. It may happen that not all channels are shown in the standard list. If required, the user can create further timer channels and configure them.

## Fault Messages

- **Description**

Fault messages fulfil a signalling function. You can parameterise them in the **econ**, a maximum of 50 fault messages being possible, and up to 20 of them can be activated at the same time. They have a fault message object (EIS1) and, depending upon their parameterisation, also an acknowledging object. A fault message will be activated by a write operation onto the fault message object. In addition, an acoustic signal and the opening of a message box is possible. Corresponding parameterisation permitting, the message will be recorded into the message list you can view from the system page.

- **Configuring a fault message**

You can choose from various parameters for configuring a message box:

- "Log Transmitter Address"

The display of the physical address of the fault message sender can be parameterised.

- "Acoustic Signal"

The presence of an active fault message can be signalled by the internal piezo buzzer. This parameter determines the behaviour of the piezo crystal during an active fault message. In addition, you can use the "Acoustic Signal Period" parameter to set the period of the signal.

- "Open Message Box"

When this field is active a pop-up window containing the date and the time of the incoming fault message, the message text and, if necessary, some additional information text will be opened upon the arrival of a corresponding fault message telegram at the MT701. For the freely programmable info text, two text lines are available. In the message boxes, the key assignments (e. g. acknowledging) are given by default and cannot be parameterised as you like.

If this parameter is deactivated and the acoustic signal activated the piezo crystal will start buzzing upon the arrival of a corresponding fault message telegram, however, with no pop-up window going open. Thus, you cannot use a pre-parameterised key to directly and easily acknowledge the message.

#### - "Acknowledge by Key"

When configuring the system, the user can specify whether the acknowledging key will send a telegram to the acknowledging object (1-bit switching) or use an internal connection, or will be disabled. When these options are enabled you can acknowledge the fault message with a function key. However, such acknowledging key will only be available when the message box is active.

#### - "Entry into Message List"

The message list serves to log fault messages in the MT701. In the MT701, you can store up to 100 messages and their statuses (incoming fault message, outgoing fault message and acknowledgement of a fault message) together with their date and time information. If the number of messages exceeds 100 the oldest fault message will be overwritten. The message list is contained in the system page and can be viewed from there.

You can divide fault messages into three categories:

I = incoming fault message

A fault has occurred, and a fault message has been released. This message has not been acknowledged, and the cause of the fault still exists.

O = outgoing fault message

A fault has occurred, and a fault message has been released. This message has not been acknowledged, the cause of the fault does no longer exist or has been eliminated, respectively. The fault message object has been reset.

A = acknowledgement

A fault has occurred, and a fault message has been released. This message has been acknowledged.

#### - "Acoustic Signal Period"

The acoustic signal indicates an active fault message. You can set the period of the signal under the MT701 general parameters, not directly in conjunction with the fault messages, and applies to all fault messages. It can be varied from ten seconds up to five minutes.

The acoustic signal (piezo buzzer) will sound in case of an active fault message until the latter is acknowledged or the parameterised time period for the acoustic signal has elapsed.

If you get an active fault message with an acoustic signal and disabled acknowledgement you can use the "Back" key to switch off the buzzer.

- **Objects**

The communication object of a fault message is of EIS1 type.

- **Note**

You can create and parameterise a maximum of 50 fault messages in the MT701. It may happen that not all fault messages are shown in the standard list. If required, the user can create further fault messages and configure them.

## Timing Elements

### • Description

A timing element combines a filter function with a time and an inhibit function. Telegrams addressing the input object will be transferred to the respective output without any delay. This means that the incoming telegram will be converted to an equivalent (outgoing) telegram with a different group address. The telegrams must be of EIS1 type (switching telegrams).

#### - Inhibit function

The output belonging to the inhibit object will be blocked, once the inhibit object is receiving an inhibit telegram. In addition, all started times will be reset during the inhibit phase. The output will remain blocked until an enable telegram is sent to the inhibit object. You can parameterise the inhibit object with the "Inhibit Object Function" of the timing element.

#### - Time function

The output may respond to the input telegram both without delay and with some delay. You can parameterise the type of delay with the "Output Time Function" option, the delay time being determined through the product from the "base" and the "factor". For reasons of accuracy, it is recommended to choose a big factor and a base as small as possible.

#### - Filter function

Furthermore, you can specify the response of the output telegram to the input telegram. In this case, you can use the "Input -> Output" parameter for this setting. The left side of the selected line describes the response to an IN telegram, and the right side that of an OUT telegram.

#### Examples:

When you select "IN -> IN / OUT -> OUT" an IN telegram will trigger an IN telegram, and an OUT telegram an OUT telegram.

When you select "IN -> OUT / OUT -> CHANGE" an IN telegram will trigger no telegram, and an OUT telegram a CHANGE telegram.

### • Parameterising the delay periods

You can specify all the parameterisable delay periods through the product from the "base" and the "factor". For reasons of accuracy, it is recommended to choose a big factor and a base as small as possible.

(The base timers will be started in cycles. The time of activating a time span can or is expected to take place after the corresponding base timer has already been started. Therefore, for a period with a small base (and a big factor) a lower deviation from the parameterised period will occur than for a period with a big base (and a small factor).)

- **Note**

You can create and parameterise a maximum of 40 timing elements in the MT701. It may happen that not all timing elements are shown in the standard list. If required, the user can create further timing elements and configure them.

## Functions

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### No Function

- **Description**

You can use the "No Function" option if you want a key not to respond when being actuated. It will then virtually not exist. Pressing such key will not trigger a telegram.

- **Assignment**

Only keys can be parameterised with the "No Function" option.

- **Object**

No communication object for the "No Function" option will be created.

---

### Text Display

- **Description**

The "Text Display" function is used to show some text in an MT701 line. In the **econ**, you can type in some text which will be displayed in the line at a certain position. The position can be specified by the "Text X-Position" and "Line Y-Position" parameters. The maximum text length per line may be 36 characters.

- **Assignment**

Only display elements can be parameterised with the "Text Display" function.

- **Object**

No communication object for the "Text Display" function will be created.

---

### Switching

- **Description**

The "Switching" function serves to release switching telegrams on the EIB and for the indication of switching states. Switching telegrams are of EIS1 type. With this function, you can, for example, activate a switching actuator to turn on or off light.

- **Assignments**

You can use the "Switching" function to parameterise display elements or keys.

- **Behaviour**

If you press the corresponding button a switching telegram (EIS1) will be released, with some response taking place in accordance with what functionality you have parameterised.

- **Functionality**

- Types of switching:

ON  
OFF  
CHANGE

- Switching point:

Upon pressing the key  
Upon releasing the key

- **Communication object**

For the "Switching" function, a "Switching" communication object (EIS1) will be created.

---

## Dimming

- **Description**

With this function, you can, for example, activate a dimming actuator to dim and turn on or off light. A dimmer function consists of a switching, a dimming and of a value object. You must assign a group address to both the switching and the dimming object. The value object only needs to be assigned if actuation by brightness values (8 bits) is intended.

- **Assignments**

You can use the "Dimming" function to parameterise display elements or keys.

- **Behaviour**

If you shortly press the key a switching telegram (EIS1) will be released which, for example, turns on or off light. Holding the key pressed for a longer period will send dimming telegrams (EIS2) to the bus according to what you have parameterised to dim the brightness of the light.

- **Functionality**

- Time between switching and dimming

The time can be set by the base and the factor.

- Types of switching:

Brighter/ON  
Darker/OFF  
Change

- Telegram repetition:

If you have deactivated telegram repetition only a dimming telegram will be released. If repetition is active dimming telegrams will be sent at regular intervals as long as the key remains actuated.

- Time between two telegrams:

The time between two telegrams specifies the time interval at which the successive dimming telegrams will be sent when telegram repetition has been activated.

- Stop telegram:

A stop telegram will be generated when the key is being released during the dimming process. This is useful, for example, when telegram repetition has been deactivated to be able to stop the dimming process at the desired brightness.

- **Communication object**

A "Switching" communication object (EIS1) will be created for the "Switching" function and a "Dimming" object (EIS2) for the "Dimming" function.

- **Parameterising the time periods**

You can specify the parameterisable time periods through the product from the "base" and the "factor". For reasons of accuracy, it is recommended to choose a big factor and a base as small as possible. (The base timers will be started in cycles. The time of activating a time span can or is expected to take place after the corresponding base timer has already been started. Therefore, for a period with a small base (and a big factor) a lower deviation from the parameterised period will occur than for a period with a big base (and a small factor).)

- **Linking a display element with a key**

Linking a display element with a key is described under "Display Element Function" or under "Key Functions".

For the "Dimming" function, you must specify a time. The time you set for a display element having the "Dimming" function will only apply to the keys of this element having been parameterised with the "Line Dimming Function" option. If you also have parameterised a key of this element with the "Dimming" function the time period of this key will be decisive for the key, the display element merely serving for display.

---

## Shutter

- **Description**

With this function, you can, for example, activate a shutter actuator to move a shading system. For this procedure, various operating concepts are available. A shutter function consists of a short-time and a long-time object. You must assign a group address to each of these objects.

- **Assignments**

You can use the "Shutter" function to parameterise display elements or keys.

- **Behaviour**

Pressing the key for a short time will release a step telegram (EIS7) (short-time mode), by means of which you can readjust the slats (angle). If you press the key for a longer period a move telegram (EIS7) (long-time mode) will be sent to the bus, the shutter or roller blind beginning to move.

- **Functionality**

- Time between short-time and long-time mode:  
The time can be set by the base and the factor.
- Types of switching:  
UP  
DOWN  
CHANGE

- Slat adjustment time:

The time can be set by the base and the factor.

(The slat adjustment time is the time required to change the angle of the slats so that the shutter can begin to move up or down.)

- **Communication object**

A "Step" communication object (EIS7) will be created for the "Short-Time Mode" function and a "Move" object (EIS7) for the "Long-Time Mode" function.

- **Operating concepts**

Step-move-step:

Actuating the key will release a step telegram. This will start the step-move time. Releasing the key before the step-move time has elapsed will not cause any other telegram. However, if this time has elapsed and you keep pressing this key a move telegram will be triggered. This will start the slat adjustment time. If the slat adjustment time has not elapsed yet and you release the key a step telegram will be sent. If this period has elapsed at the time when you release the key no other telegram will be released.

Parameterisation in the **econ**:

In the **econ**, the "time between short-time/long-time mode" period and the "slat adjustment time" period will be assigned a value of not equal to zero.

Move-step:

Actuating the key will release a move telegram. This will start the slat adjustment time. Releasing the key before the slat adjustment time has elapsed will cause the sending of a step telegram. If this period has elapsed at the time when you release the key no other telegram will be released.

Parameterisation in the **econ**:

In the **econ**, the "time between short-time/long-time mode" period will be assigned a factor value of equal to zero and the "slat adjustment time" period a value of not equal to zero.

Step-move:

Actuating the key will release a step telegram. This will start the step-move time. Releasing the key before the step-move time has elapsed will not cause any other telegram. If this time has elapsed and you keep pressing this key a move telegram will be triggered. After this, releasing the key will not cause any other actions.

Parameterisation in the **econ**:

In the **econ**, the "time between short-time/long-time mode" period will be assigned a value not equal to zero, and the "slat adjustment time" period factor will be set to equal to zero.

- **Parameterising the time periods**

You can specify the parameterisable time periods through the product from the "base" and the "factor".

For reasons of accuracy, it is recommended to choose a big factor and a base as small as possible.

(The base timers will be started in cycles. The time of activating a time span can or is expected to take place after the corresponding base timer has already been started. Therefore, for a period with a small base (and a big factor) a lower deviation from the parameterised period will occur than for a period with a big base (and a small factor).)

*Time between short-time and long-time mode*

The "time between short-time/long-time mode" period will be started after you press the key, the sending of a step telegram being triggered. If the key is released before this period has elapsed nothing will happen; if the time, however, has elapsed and you keep pressing the key a move telegram will be sent.

*Slat adjustment time*

The slat adjustment time will be started immediately after the triggering of a move telegram. Releasing the key before the slat adjustment time has elapsed will cause the sending of a step telegram. If this period has elapsed at the time when you release the key no other telegram will be released.

- **Linking a display element with a key**

Linking a display element with a key is described under "Display Element Function" or under "Key Functions".

For the "Shutter" function, you must specify time periods. The time you set for a display element having the "Shutter" function will only apply to the keys of this element having been parameterised with the "Line Shutter Function" option. If you also have parameterised a key of this element with the "Shutter" function the time period of this key will be decisive for the key, the display element merely serving for display.

---

## Lightscapes

- **Description**

A lightscape can be allocated in the MT701 only **once**. You can assign a maximum of 32 different group addresses of the "Switching" (EIS1) or "Shutter" (EIS7) or "Value / 1 Byte" (EIS6) type to such lightscape. These 32 group addresses can represent a maximum of 24 lightscapes. The MT701 thus corresponds to a lightscape touch sensor which controls 32 group addresses and makes the different lightscapes respond through 24 keys. It manages the lightscapes from the lightscape page.

You can form various groups of lightscapes. This means, for example, that you can assign eight group addresses to the living room, eight to the kitchen, eight to the bedroom, four to the bathroom and four to the garden. Using these 32 group addresses, you can now arrange and save 24 lightscapes, for example, eight for the living room, four for the kitchen, four for the bedroom, three for the bathroom and five for the garden. So as to prevent the lightscape groups (living room, kitchen, ...) from influencing one another you must set "unchanged" those group addresses which you do not want to be influenced by a lightscape, i. e. when such lightscape is called no EIB telegrams will be sent for those group addresses.

The lightscape collection lists the internal lightscapes stored.

The lightscape group shows the group addresses involved in the internal lightscapes.

- **Assignments**

You can use the "Lightscape" function to parameterise display elements or keys.

- **Operating the lightscapes**

- Calling an internal lightscape

When you press the MT701 key parameterised "lightscape x" internal lightscape "x" will be called, the MT701 sending corresponding telegrams to the actuators involved. You can also call an internal lightscape from an external key. The latter will send lightscape number "x" to the EIB, the MT701 will evaluate the telegram and, as a result, send the corresponding telegrams to the group addresses (actuators) involved.

- Calling and saving an internal lightscape

You can save or call an internal lightscape from the MT701 lightscape page during the runtime. Saving will cause group address status or value sampling. You can also save an internal lightscape from an external key. The latter will send lightscape number "x" and an additional memory call to the lightscape extension object, the MT701 will evaluate the telegram, thereupon reading out and saving the values and states of the corresponding group addresses (actuators).

- Calling an external lightscape without saving function

When you actuate a correspondingly parameterised key of the MT701 or an external lightscape extension key the number of the desired lightscape will be sent to the bus. The lightscape touch sensor in which this lightscape has been stored will receive this telegram, evaluate it and will cause telegrams for the corresponding actuators.

- Calling an external lightscape with saving function

When you actuate a correspondingly parameterised key of the MT701 or an external lightscape extension key a memory telegram of the desired lightscape will be sent to the bus. A lightscape touch sensor will receive this telegram, thereupon reading out and saving the values and states of the corresponding group addresses (actuators).

- **Communication object**

Communication objects for lightscapes are of the following types:

- "Switching" (EIS1)
- "Value Display" (EIS6), 1 byte (0...100%)

- **Creating a lightscape**

The lightscapes are contained in the tree structure of the **econ** under the menu item of the same name.

The "Lightscape Collection" lists the internal lightscapes. A lightscape is a scene for which the values and states of the associated group addresses have been stored in the MT701. A maximum of 24 lightscapes can be created. To create further components you can use the mouse menu or the icon in the toolbar. You can assign a name to the lightscape in the "name" parameter field.

The "Groups" menu item covers the lightscape groups. A lightscape has an object defining its type and being assigned to a group address. Such object can be of EIS1 (switching) or EIS6 (relative value) type, whose state or value can be parameterised from the lightscape page (during the MT701 runtime). You can give the lightscape group a name in the "Name" parameter field. To create further components you can use the mouse menu or the icon in the toolbar.

The extension object facilitates the calling or saving of an internal lightscape by an external key (or by an MT701 key) which sends a corresponding telegram to the object.

To call an internal lightscape through a key of the MT701 you must parameterise a key with the "Lightscape" function. Over the associated key, the display unit shows the texts entered into the two text boxes. From the "Lightscape" parameter field, you can select the desired lightscape from the collection of available lightscapes.

The lightscape will be called internally, i. e. the call will not cause an EIB telegram (such as a call through the extension object).

You can also use an MT701 key to call a lightscape through the extension object. For this purpose, however, you must parameterise this key with the "Value" function (or alternatively with the "Line Value Display" function if you have parameterised the display element with the "Value" function), the "EIS6" value display and with the "0 ... 255" display format. In addition, you must assign the EIS6 value object to the group address which you have assigned the extension object to. For a call, indicate the lightscape number minus 1 as "value to be sent", while indicating the lightscape number plus 127 for saving. (For example, if you want to call lightscape 1 the value to be sent must be 0; if you want to save it the value must be 128.)

The lightscape will be called by a telegram sent to the extension object.

- **Parameterising a lightscape**

Parameterising a lightscape is described on the lightscape page.

- **Display reading**

If you want the MT701 display unit to read the current lightscape you must parameterise a display element with the "Lightscape" function. This element will then read the name of the current lightscape called.

---

## Value Display

- **Description**

The MT701 can send, receive, process and display values. In this connection, the values correspond to the various formats (EIS types) listed below.

With the aid of a value, you can, for example, directly move the shutter to a definite position or to set the brightness of the lighting. A range can be monitored and its state indicated. But you can, for example, also display the status of some access control. You can parameterise a key so that it will send a value to the bus when being actuated.

- **EIS types**

The tables listed below shows all EIS types which you can use for the value display function:

Values	Remark	Range	Size
<b>EIS5</b>	value	-671088.63 ... +670760.94	2 bytes
<b>EIS6</b>	scaling	0 ... 100%	1 byte
<b>EIS6</b>	scaling	0 ... 255	1 byte
<b>EIS6</b>	scaling	0 ... 360°	1 byte
<b>EIS6</b>	scaling	(0 ... 255) * a + offset	1 byte
<b>EIS6</b>	scaling	bit-oriented	1 byte
<b>EIS9</b>	float value	-214748364.80 ... +214748364.70	4 bytes
<b>EIS10</b>	16-bit counter signed	-32768 ... +32767	2 bytes
<b>EIS10</b>	16-bit counter unsigned	0 ... 65535	2 bytes
<b>EIS11</b>	32-bit counter signed	-2147483648 ... +2147483647	4 bytes
<b>EIS11</b>	32-bit counter unsigned	0 ... 4294967295	4 bytes
<b>EIS14</b>	8-bit counter signed	-128 ... 127	1 byte
<b>EIS14</b>	8-bit counter unsigned	0 ... 255	1 byte

### **EIS6: (for line function)**

- 0 ... 255

MT701 display range from 0 to 255. Amplification and/or offset cannot be set. If you wish to do so you should select "Custom".

- 0 ... 100%

MT701 display range from 0 to 100.

- 0 ... 360°

MT701 display range from 0 to 360.

- Custom

Value range from 0 ... 255 with adjustable amplification and offset.

- Bit-oriented

For evaluation of a specific bit of the byte.

- Note

The position is a default value (X-position of the value) which can be changed. If several values are to be displayed on one page they will be "left-aligned" by default. You can use the "Format" parameter and check the "Leading Zeros" option to parameterise the display to be "right-aligned" (leading digits will be filled with zeros). You might as well obtain "right-aligned" representation of the values in the MT701 display by corresponding matching of the X-position.

#### **EIS9:**

This value range is not entirely available. It is restricted to a part of its span, as you can see in the above table.

- **Changing values**

Depending on the configuration, you can change the corresponding display value ((EIS5, EIS6, EIS9, EIS10, EIS11 or EIS14) from an input window through the keys and send it to the bus, facility being given to specify the minimum and maximum values as well as the incrementation when setting up the configuration.

The "Value" key function only offers the possibility of sending a parameterised value. On the other hand, the "Line Value Display" key function offers the "Send" and "Edit" options for the "Value Function" parameter. If you select "Edit" you can specify limits between which changing the value will be allowed.

During the running time, a key with the parameterised "Line Value Display" key function and the "Edit" option will, if actuated, call a menu for changing the value shown by the display elements. The "Previous Value" display represents the current value, while the cursor will be blinking upon the selection of the "New Value" option and can thus be moved by the "<" and ">" arrow keys to the digit of the value you want to influence. Use the right "Up" and "Down" arrow keys to increase or decrease the value, respectively. The "Enter" key will accept the new value and send it to the bus. By pressing the "Back" key you can trigger the return to the original page. If you have not accepted the new value with the "Enter" key and pressed the "Back" key the previous value will be retained.

How to change a limit value is described under "Limit Values".

- **Representing values in the MT701 display**

You can parameterise the display element with the "Value" function to represent values in the MT701 display. The communication element will be assigned to that group address, whose current values you want to appear in the display.

How to link the display element with a key is described in detail under "Display Element Functions".

For the value display, distinction is made between the "Value" and "Line Value Display" key functions. The "Value" function only represents the sending of a parameterised value upon the actuation of the key, whereas the "Line Value Display" function comprises the sending of a parameterised value or the editing of the displayed value,

- **Value display**

- Key value = displayed value (same as info display)

- Displayed value = transmitted value \* amplification + offset (same as info display)

□ - Displayed value = (displayed value - offset) / gain

Depending on the EIS type, you can parameterise the digits before and behind the decimal point as you like.

- **Value format**

A default format of the values has been preselected which can be changed, if required. For the EIS5 type, for example, a field width of seven digits with one digit behind the decimal point has been parameterised. This means that a value having five digits before the decimal point and one behind it will be represented. Like the decimal point, a sign also takes one digit of the field width.

If a value having more than five digits before the decimal point should appear several "#" characters will be displayed. By extending the field width, you can increase the number of digits before the decimal point, the value being represented in figures again after you have found a suitable choice.

- **Units**

The displayed values can also be assigned units. You can select default units or enter your own units. If you do not want any units to appear in the MT701 display you should parameterise the blank line.

- **Limit value monitoring**

You can only assign limit value monitoring to those display elements you have parameterised with the "Value" function. You can apply limit value monitoring to all values of the parameterisable EIS types. Only for EIS6, "bit-oriented" display format, this setting is not possible. It is possible to monitor the upper and/or the lower limit value. You can parameterise these values as you like. Provided you have done the corresponding parameterisation, you can change the limit values during the MT701 running time. Alternatively, telegrams (switching) or fault messages can also be released when a limit value is overrun or underrun.

It is recommended that you first determine the offset and the amplification (e. g. for EIS5 or EIS9) and then activate limit value monitoring to avoid value range conflicts.

---

## Limit Values

- **Description**

If you assign the "Value" (EIS5, EIS6, EIS9, EIS10, EIS11 und EIS14) function to a display element you can, in this connection, set additional monitoring on an upper or lower parameterisable limit value (not possible for EIS6, "bit-oriented" format display). You can change such values in the display during the running time if you have enabled them in the configuration. If a limit value is overrun and/or underrun an EIB telegram (1-bit switching) can be created. Alternatively, a message (refer to "Message Box") can be created on the panel. You can parameterise a hysteresis for each of the two limit values. The limit value message can also be released at some delay. What you can achieve thereby is that a message will only be released if the value is present for a parameterisable time. In the MT701, you can assign a limit value functionality to a maximum of 16 lines. Overlapping of the settings for the upper and lower limit values will not be checked.

Alternatively, telegrams (switching) or fault messages can also be released when a limit value is overrun or underrun, respectively.

- **Parameterising limit value monitoring**

How to parameterise limit value monitoring is described under "Value Display".

- **Changing a limit value**

You can change the upper and lower limit values during the MT701 running time. A precondition to this is that you have specified the "Changeable Limit Value" parameter with "Yes" and assigned the edit function to a key.

For a display element parameterised with the "Value" function, and when you have activated limit value monitoring, the "Line Limit Value Change" key function which you can assign to a key of this element will now be available to the associated keys. You can use the "Limit Value Assignment" key parameter to chose from the upper and lower limit values that one you want to change when you actuate the key.

If you actuate this key during the running time a menu for changing the associated limit value will be called. The "Previous Value" display represents the current value, while the cursor will be blinking upon the selection of the "New Value" option and can thus be moved by the "<" and ">" arrow keys to the digit of the value you want to influence. Use the right "Up" and "Down" arrow keys to increase or decrease the value, respectively. Press the "Enter" key to accept the new limit value. By pressing the "Back" key you can trigger the return to the original page. If you have not accepted the new value with the "Enter" key and pressed the "Back" key the previous value will be retained.

- **Transmit delay**

The "Transmit Delay" parameter offers you the possibility to signal a limit value overrun or underrun, respectively, at some delay. The transmit delay is the time for which the limit value must be overrun or underrun, respectively, before a telegram is sent.

---

## ACSII Text

- **Description**

The ASCII text function is a pure display function. Only display elements can be parameterised with this function. Via the bus, EIS15 type telegrams can be sent to these display elements. The ASCII text displayed in the MT701 line is limited to 14 characters.

- **Assignment**

The ASCII text function can only be assigned to a display element.

---

## Access Control

- **Description**

The access control function (EIS12) serves to identify persons who have authorised access. It is to prevent unauthorised access and will grant access only to those persons who know the correct code or have the right "key", respectively. This is no verification or even authentication, i. e. the person will not be checked whether he/she is really the person he/she passes himself/herself off as, neither will it be checked whether such person is really authorised to have access.

Under the access control function, the MT701 only serves for display. Actual control will be done by a different external device which will send a telegram to the MT701 after checking. The telegram consists of four bytes. It can contain a time stamp and some information on the movement direction or information for the release of some reaction in case of authorised access, or information on the indication of access events (e. g. the code). The control status is also included in the telegram. It is broken down as follows:

Status byte:

<b>Bit</b>	7	6	5	4	3	2	1	0
<b>Function</b>	E	P	D	C	N3	N2	N1	N0

E = Detection Error

P = Permission

D = Read Direction

C = Access Information Encrypted

## N3 - N0 = Index of access identification code

Either the code or one of the status bits can be chosen as display value for the MT701 line. You must parameterise with "code number" the code taken from the telegram and one of the four status bits mentioned with "Status byte bit to be displayed".

The code number is a six-digit number. It only serves as display. No entry of change of the code by the MT701 is intended. The first three bytes of the telegram contain the six digits, i. e. the six figures of the code.

The four status bits give information on the check made and on its result.

- Detection error indicates whether an error in reading the code has occurred or been detected.
- Permission gives information on the decision taken by the control device concerning access.
- Read direction contains specific information concerning the control device.
- Access information encrypted indicates whether the access information is normal or encrypted.

For each state of the parameterised status bit, some "Display Text for ..." text is available (e. g. for reading the code, "OK" and "Error"). The user is given the opportunity to define his own text or to select the given text.

- **Assignment**

The "Access Control" function can only be assigned to display elements.

- **Communication objects:**

The "Access Control" function needs an EIS12 object (4 bytes).

- **Note**

Do not confuse the access control code number with the password for the password levels of the individual pages. Both of them, i. e. the code number and the password, have nothing to do with each other and are entirely independent of each other. Same as the "Switching" function, the "Access Control" function is a parameterisable application which, however, represents a pure display function on the MT701.

---

## Operator Prompting

- **Description**

The "Operator Prompting" (EIS8) function has an operator prompting and a switching object. When operator prompting is deactivated the output state is determined by the switching object. If operator prompting is activated the operator prompting value specifies the output state.

The "Operator Prompting" function can, for example, be used as protection against storm damage. In connection with an anemometer and a weather station, alarm activating the operator prompting object will be triggered when a limit value is overrun. The operator prompting function will then, for example, close skylights and move the shutter into a safe position. For this purpose, the operator prompting object must be connected with the operator prompting objects of the actuators through the group address.

- **Assignment**

You can parameterise display elements and keys with the "Operator Prompting" function.

- **Objects:**

Operator prompting object	EIS 8	2 bits
Switching object	EIS 1	1 bit

- **EIS 8:**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
x	x	x	x	x	x	control	value

- **Truth table:**

Control	Value	Switching	Description	Function	Output
0	x	0	No control	Operator prompting OFF	0
0	x	1	No control	Operator prompting OFF	1
1	0	x	Control, value 0	Operator-prompted OFF	0
1	1	x	Control, value 1	Operator-prompted ON	1

- The operator prompting object and the associated switching object of the MT701 must be connected with the corresponding objects of the actuator through the group addresses to enable operator prompting to exercise active control.

- If bit 1 of the operator prompting object (control) is "0" there will be no operator prompting. Bit 0 (value) will be disregarded. The switching object can switch freely and determines the output value.

- If bit 1 of the operator prompting object (control) is "1" operator prompting will be active. Bit 0 (value) will determine the output value. The switching object will be disregarded.

---

## Page Call

- **Description**

"Page Call" is a function which enables the user to directly go from one page of the MT701 to a definite other (parameterised) page. This function can be assigned to a key of a display element. The jump will be made upon the actuation of this key.

- **Assignments**

"Page Call" is a function which can only be assigned to keys.

- **Parameterisation**

When you parameterise the "Page Call" function a "Goto Page" input box will appear where you must indicate the page which you want to go to when pressing the key. All pages created, the system page, the timer page, the lightscape page and the return to the selection list will be offered.

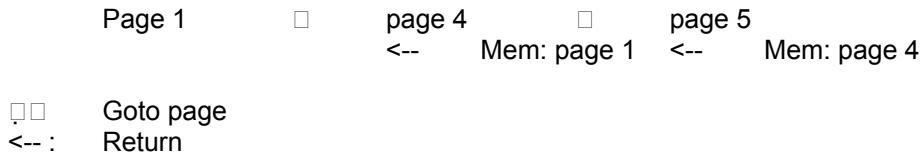
- **Notes on the use of the "Goto Page" and "Return" key functions:**

For the "Goto Page" key function, the address of the **calling** page will be stored in the memory area of the page **to be called**. This information serves to return to the original page when you use the "Return" key function.

If, for example, you are going from page 4 to page 5 the address of page 4 will be stored in page 5 as return address. However, if you are now going from page 5 directly to page 4 (no "return") the address of page 5 will be stored in page 4 as return address. **In this case, you can use the "Return" key function still to change between pages 4 and 5 only.**

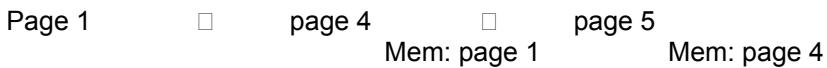
## Example 1:

You are going from page 1 to page 4, and from there to page 5. You can use the "Return" function to go back to page 1.

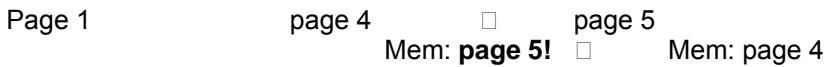


## Example 2:

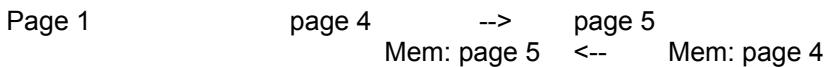
You are going from page 1 to page 4, and from there to page 5.



Now, you are going from page 5 to page 4. This will overwrite the return address on page 4.



The result will be that you can use the "return" key function still to change between pages 4 and 5 only.



□□ Goto page  
<-- : Return

## ETS-functions

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ETS

Please observe the following instructions in conjunction with the ETS.

## Shrink Database

The "Shrink Database" ETS function must not be executed. This will destroy important configuration information for the MT701.

\*\*\*\*\*

## Automatic Data Saving in the ETS

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When the MT701 software is opened the "Auto Save" ETS dialogue will possibly appear. This dialogue is created by the ETS. If this dialogue is closed with "Yes" the ETS will access the database in parallel with the MT701 software. Double access will lead to crashing of the ETS database. Data losses cannot be ruled out in such case. Therefore, always quit the "Auto Save" ETS dialogue with "No" when it appears in the MT701 software.

The "Save Device/Backup Data Now" menu function serves to save the data within the MT701 software.

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## Project Export/Import

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For a project export, the ETS will be given additional data as a file. To make the ETS take into consideration such additional data the MT701 software must have been installed and the unzipped MT701.vd2 product database imported prior to the project import.

Without the MT701 software installed, error messages will be displayed during the project import, and the devices included in the project can no longer be used, even after the installation of the MT701 software.

This means that the following steps are necessary:

1. Delete the erroneously imported project.
2. a) Install the MT701 software and  
b) import the MT701.vd2 product database.
3. Re-import the project.

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## Prog. LED ON, OFF, Blinking Read Phys. Addr.

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The functions of turning ON, OFF and blinking of the programming LED as well as reading the physical address will not be supported in this case.

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## Objects and Group Addresses

---

The MT701 software manages the communication objects. For each EIS type (object transport size), the ETS has an object under which all group addresses of this type are collected. This structure presupposes that group addresses can only be assigned in the MT701 software (parameter box). The group addresses indicated in the ETS only serve to create filter tables of the range/line couplers.

This means:

- The dragging/dropping of the group addresses to the communication objects will no longer be supported in the ETS.
- Displaying the group addresses in the object window together with showing the flags will no longer be possible.
- The management of the flags (particularly those of the sending group

addresses) will be done by the MT701 software.

- The "Change" function in the pop-up menu for the objects will no longer be supported.

\*\*\*\*\*  
Copy Device/Project, Merge/Split Projects  
\*\*\*\*\*

The "Copy Device", "Copy Project" ETS functions will not be supported. An alternative is described in the MT701 software help under: "Copy Device":

1. Open the MT701 parameter box.
2. Duplicate the device to be copied by template export.
3. Exit the parameter box.
4. Create a new MT701 by the product finder.
5. Open the parameter box.
6. By the template import (with/without group addresses), change the device parameters/group addresses to that of the template.

The "Split Projects", "Merge Projects" ETS functions will not be supported. Further information is given in the MT701 software help under: "Copy Project".

\*\*\*\*\*  
Optimising Download  
\*\*\*\*\*

Refer to Options.

\*\*\*\*\*  
Optimising Configuration  
\*\*\*\*\*

Refer to Options.

---

## Copy Device

For technical reasons, the "Copy Device" ETS function cannot be implemented.

To duplicate a device proceed as follows:

- Open the device you want to copy and create a new template of the existing device under *Export Device/Template*.
- Create and open a new device.
- Now, import the template you have created before (*Import Device/Template*). For this purpose, select the *Import with Group Addresses* item. **CAUTION:** Please note that this function will only connect group addresses which exist in the project. If some group addresses have been deleted or changed between the export and import of templates this can lead to import errors.
- Ready. You have now copied the device with group addresses remaining the same. If you do not want to include the group addresses into the copying process select the *Import without Group Addresses* option in the import box.

Refer to:

Copy, Split, Merge Project

Template Import/Export

---

## Copy, Split, Merge Project

For technical reasons, the "Copy Project", "Split Project" and "Merge Project" ETS function cannot be implemented.

Therefore, you should insert the device into your project only after a necessary splitting, combining process. If this cannot be avoided you can proceed as follows:

- Save all data of the projects you want to edit.
- Open the device and save the current configuration data of the device under *Export Device/Template*.
- Remove the device from the project.
- Execute the *Copy Project* or *Merge Project* ETS function.
- Now, create a new device in the corresponding project.
- Open the device and import the data under *Import Device/Template*. In this connection, activate the *Copy with Group Addresses* item. **CAUTION:** Please note that this function will only connect group addresses which exist in the project. If some group addresses have been deleted or changed between the export and import of templates this can lead to import errors.
- Ready.

You can use the *Project Export/Import* ETS function to avoid the *Copy Project* function.

Refer to:

Copy Device    Template Import/Export

# Logic-functions

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## Logic

- **Description**

The M T701 also offers parameterisable logic devices. You can create a maximum of 12 multiplexers with up to three channels each and a maximum of 80 logic gatings with up to eight inputs and one output each. The logic facilitates the comfortable linking and processing of statuses and events. You can disable the outputs of the logic devices with the aid of an inhibit object.

---

## Logic Gatings

- **Description**

You can create logic AND, OR and exclusive OR gatings. For one logic gate, a maximum of eight inputs and one output are available. You can configure the behaviour of the output so that an inversion of the function (NAND, etc.) will also be possible. It is also possible to cascade gates. The creation of circular connections (feedbacks) will not be prevented. The logic gates are event-driven, i. e. updating an output object will only be possible after updating the input object (no cyclic transmitting). Inputs which have not been updated yet bear object value 0.

You can realise the "AND with Feedback" function.

Such functions serve to link several switching states. For this purpose, only group addresses of the "Switching" type (EIS1) can be linked. The result of such operation can be assigned to an output or an LED.

- **Types of logic gatings**

The following types of logic gatings are available:

- AND operation (AND)
- NAND operation (NAND, inverted output)
- OR operation (OR)
- NOR operation (NOR, inverted output)
- Exclusive OR operation (XOR)

- **XOR Truth Table**

I3	I2	I1	O
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

- **Telegrams**

It is possible to release bus telegrams upon each input event or as a result of an output change of the logic operation.

- **Disabling the output**

You can disable the output of a gating with the aid of an inhibit object. It can be parameterised whether the disabling will become active upon a 1-telegram or a 0-telegram. During the disabling of the output, the output state present immediately before the disabling will be retained and can no longer be changed. Its state can only change again after the output has been enabled.

- **Note**

You can create and parameterise a maximum of 80 logic gatings in the MT701. It may happen that not all logic gatings are shown in the standard list. If required, the user can create further logic gatings and configure them.

Each logic gating (gate) can be extended to a maximum of eight inputs. Creating further inputs is analogous to creating further components.

---

## Multiplexers

- **Description**

You can use these gates to transfer an input value (EIS1, EIS5, EIS6 or EIS9) to one of the outputs, in dependence on the control objects. Each gate may comprise a maximum of three channels, the control objects acting on all channels. Via the inhibit object, you can prevent output. After initialisation, the inhibit object and the control objects bear object value 0.

- **Controlling the outputs**

The following examples of truth tables clearly show the function of the control objects:

*Example: 1-to-2 multiplexer*

Input	Control object	Output 1	Output 2
E	0	E	-
E	1	-	E

*Example: 1-to-4 multiplexer*

Input	Control object 1	Control object 2	Output 1	Output 2	Output 3	Output 4
E	0	0	E	-	-	-
E	0	1	-	E	-	-
E	1	0	-	-	E	-
E	1	1	-	-	-	E

- **Disabling the multiplexer**

You can disable the multiplexer with the aid of an inhibit object. It can be parameterised whether the disabling will become active upon a 1-telegram or a 0-telegram. During the disabling of the multiplexer, the output state present immediately before the disabling will be retained and can no longer be changed. Its output and state can only change again after the multiplexer has been enabled.

- **Note**

You can create and parameterise a maximum of 12 multiplexers in the MT701. It may happen that not all multiplexers are shown in the standard list. If required, the user can create further multiplexers and configure them.

Each multiplexer can be extended to a maximum of three channels. Creating further channels is analogous to creating further components.

## Lightscapes

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### Lightscape Page

- **Description**

The lightscape page is a special page and can comprise and manage a maximum of 24 lightscapes consisting of up to 32 group addresses of the "Switching" (EIS1) or "Shutter" (EIS7) or "Value / 1 Byte" (EIS6) type. To call a lightscape you must assign the "Lightscape" function of a key or a line to a line on the panel.

For each of the possible 24 lightscapes, you can specify a text of its own in the "Lightscape" input field of the **econ** under which the lightscapes will be displayed on the MT701 later. Names "[1] Lightscape" ... "[24] Lightscape" have been preset. You can also change such names on the MT701 later.

You can set to "unchanged" any group addresses which are not to be influenced by a lightscape. This means that no EIB telegram will be released for such groups when this lightscape is called. You can call/save a lightscape either directly from the lightscape page or through an extension input by an EIB telegram, or through an internal connection.

The lightscape collection lists the internal lightscapes stored.

The lightscape group shows the group addresses involved in the internal lightscapes.

After voltage failure, the internal clock will keep running for about two days. Depending on the parameterisation (under "General Settings" in the **econ**), you can, for example, firmly store the lightscapes so that they will be retained after an MT701 reset or download.

- **Creating a lightscape**

How to create a lightscape is described under "Lightscape".

- **Operating/parameterising a lightscape**

During the running time, all programmed lightscapes with their specified names will be listed on the MT701 lightscape page. The cursor will highlight the selected lightscape.

#### *"Call, Save" key*

If you press the "Call, Save" key for a short time (< 5 s) the highlighted lightscape will be called. The states and values of the lightscape groups stored in conjunction with this lightscape will be sent to the bus. Pressing the "Call, Save" key for a long time (> 5 s) will cause group address status or value query (a short beep will sound). If no statuses or values are sent by the actuators in response to this query the current statuses and values will be saved. (This means, for example, that the settings for the individual actuators for a certain lightscape can be made and that the current settings will be saved if the actuators do not respond to the MT701 saving request.)

#### *"Change Lightscape" key*

You can also change the highlighted lightscape directly through the MT701. When you press the "Change Lightscape" key the lightscape groups with their saved states or values, respectively, will be listed. You can use the cursor to scroll the list. The "ON/DOWN" + "OFF/UP -" keys change the value or state, the change being sent to the bus. EIS1-type lightscape groups can take statuses "ON", "OFF" and "Unchg."."Unchg." stands for unchanged and offers the possibility, not to influence a group address, i. e. to leave it unchanged when a lightscape is called. Lightscape groups of EIS6 type can take the values from 0 % to 100 % or the "Unchg." statuses.

#### *"Change Text" key*

You can also change the name of a certain lightscape from the lightscape page. Pressing the "Change Text" key will enable you to type in a different text. The display will read the current and the new texts. You can use the character set shown to compose the new text. You can use the cursor to highlight the character you want to select. Move the cursor down, up, right or left with the four arrow keys. Press the "Enter" key to accept the highlighted character for your new text. Press the "Level 2" key to change the key assignment. This will be necessary to delete a character with the "Back" key (press the "Level 1" key to return to the entry), to save your new text, or to cancel your entry.

#### *"Back" key*

If you press the "Back" key you will return to the page from where you called the lightscape page.

#### **• Password level**

When configuring any page, you can provide it with a password level which will protect such page from undesired access. To call such protected page you must enter the corresponding password for this level if the presently current password level is lower than that of the page to be called. This will be necessary to delete a character with the "Back" key (press the "Level 1" key to return to the entry), to save your new text, or to cancel your entry.

#### **• Passwords**

You can use the function keys to enter the passwords. In this connection, the function keys will be given values 1 to 4 from left to right.

You can change the passwords for the individual levels on the MT701 from the system page. It is recommended to put the system page and the lightscape page on a high password level in your configuration in order to obtain protection from undesired or unauthorised access which may entail change of the settings.

#### **• Calling a special page**

You must use a key to call a special page such as the system page. For this purpose, assign the "Page Call" function to this key and then select the corresponding special page.

---

## Lightscape Collection

#### **• Description**

In the lightscape collection, the parameterised **internal** lightscapes are listed together with their names assigned by the user or with their default names ([x] lightscape), respectively. The list comprises up to 24 scenes, as a maximum of 24 lightscapes can be stored.

The lightscape group shows the group addresses involved in the internal lightscapes.

- **Note**

You can create and parameterise a maximum of 24 lightscapes in the MT701. It may happen that not all lightscapes are shown in the standard list. If required, the user can create further lightscapes and configure them.

---

## Lightscape Group

- **Description**

In the lightscape group, the group addresses of the **internal** lightscapes parameterised by the user are listed as they have been created. The list comprises up to 32 group addresses, as a maximum of 32 group addresses is available for the "Lightscape" function.

The lightscape collection lists the internal lightscapes stored.

- **Note**

You can create and parameterise a maximum of 32 lightscape groups in the MT701. It may happen that not all lightscapes are shown in the standard list. If required, the user can create further lightscapes and configure them.

## Software-handling

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## General

- **Status report**

Immediately after a reset, the MT701 will make a self-test, with a status report appearing in the display. This report will give you information on the hardware and firmware versions and will list the individual test points checked as well as their corresponding states. If an incomplete application has been loaded into the device, for example, caused by aborting the download, the MT701 will report erroneous configuration data. A project which does not contain any timer channels or lightscapes will cause an "Error" status message at a "Timer" or "Lightscape" test point, respectively. Once a timer channel or a lightscape is created, the status will change to "OK".

- **Creating further components**

For the sake of clarity and user-friendliness, specific components and applications are not included in the **econ's** standard tree structure. These can be created, if required.

It concerns the following components and applications:

- Pages
- Display elements
- Multiplexers
- Logic gatings
- Gate inputs
- Timing elements
- Fault messages
- Timer channels
- Lightscapes
- Lightscape groups
- Internal group addresses

You can create such components as follows:

For example, create another line for a page.

Variant 1:

Highlight the higher-order component (i. e. "Page") for which something (line) is to be created. Click the right mouse button and select "Add ...". In the example cited, this would be "Add Line". Another line will be created for the highlighted page and can be parameterised.

Variant 2:

Highlight "Pages" in the **econ** tree structure. This will activate the "Add Page" icon in the toolbar. Click on the icon to add a new page.

- **Deleting a component**

Highlight the element or component to be deleted, click the right mouse button and select "Delete ...". This will remove the highlighted component.

- **Moving a component**

You can drag and drop a component. Moving can be done by icons in the toolbar (red arrows to "Move Node Up/Down") or a by dynamic menu (highlighting with the right mouse button). The component to be moved can only be moved in its valid range within the **econ** tree structure.

- **Copying a component**

Copying a component is not possible.

- **Accepting the entry of a parameter field**

Important:

If you have entered some text or a value into a parameter field you must exit this field (the input line) to accept the new entry before you can make a download, for example. It is sufficient to press the tab key, however, you can also activate a different parameter field or select a different element or component in the **econ** tree structure. (Pressing the enter key will not be sufficient.)

- **Programming the physical address**

The MT701 comes with its physical address programmed to 15/15/255 as default. It is recommended to suitably alter the physical address to enable possible later modifications of the application to be loaded into the device through the EIB.

How to program the physical address is described under "Physical Address".

- **Calling a page**

You can call a different page during the MT701 running time by a correspondingly parameterised key. If, for example, you want to go from page 1 to page 2 you must parameterise a key of any display element of page 1 with the "Page Call" function and specify page 2 under "Goto Page". For going back to page 1, you can correspondingly find a key on page 2. The general settings include the "Back to Start Page" and "Start Page" parameters. With their aid, you can specify a start page and a time period, at the end of which a return to the start page will be automatically caused.

- **MT701 general parameters**

*Automatically back to start page*

This parameter specifies whether a return from a called page to a defined start page will take place after a certain time period has elapsed, or if the current page will be displayed until a different page is called.

*Start page*

You can specify one of the pages created in a project to be the start page. With the aid of the "Automatically Back to Start Page" parameter, you can specify a time period, at the end of which a return to the start page will be caused.

*Acoustic signal period*

Active fault messages can indicate the presence of such message by an acoustic signal. With this setting, you can specify the period of this signal. The parameterised time will apply to all the created fault messages indicated with an acoustic signal.

*Tune timer after change*

You can use this parameter of the timer to specify that the desired status parameterised for the current time will be established when a switching time has been changed. The selected setting will apply to all programmed switching times.

For example, the two switching times 08:00 hrs. "ON" and 20:00 hrs. "OFF" have been programmed. At 16:00 hrs., the switching time is changed to 14:00 hrs. "OFF". If you now have defined the parameter "Yes" the "OFF" status which eventually is to be active at 16:00 hrs. will be set after saving. If you have specified "No" the switching times changed will come into effect on the next day only.

The change telegrams for parameterised tuning will be sent by the MT701, once you are exiting the page of the switching times of the channel to return to the timer page.

After a device reset, all necessary telegrams of the corresponding day will be sent to establish the parameterised desired status at the current time. This behaviour will not be influenced by the "tune timer after change" parameter.

- **Linking a display element with a key**

Linking a display element with a key is described under "Display Element Functions" or under "Key Function".

For the "Dimming" and "Shutter" functions, you must specify time periods. The time periods you set for a correspondingly parameterised display element will apply to the keys of this element having been parameterised "... Line Function". If you have parameterised a key of this element with associated function "x" the time periods of this key will be decisive for the key, the display element merely serving for display.

---

# Menu

The following is a list of the commands you will find in the menu bar.

## Device

<i>Export template</i>	To save the existing configuration as a template for other projects.
<i>Import template</i>	To import a previously saved template and make corresponding settings in the MT701. Group addresses will not be imported.
<i>Print</i>	To print the tree with all parameters.
<i>Print preview</i>	To show a print preview. You can select the parameters you want to print.
<i>Save backup data now</i>	To save the current parameter settings in the auto backup file.
<i>Restore saved data</i>	After a programme crash, to restore the MT701 settings saved in the last auto backup file. An auto backup file will be created upon the closing of the MT701 software. In addition, you can save it in cycles (refer to "Settings   Options   Options").
<i>Back to the ETS</i>	To close the MT701 software.

## Configuring

<i>New configuration window</i>	To open another configuration window. You can drag and drop data between the windows.
<i>Fold up all</i>	To hide all tree elements.
<i>Fold out all</i>	To unhide all tree elements.
<i>Reset settings</i>	To reset all settings made and load them according to the initialisation parameters (refer to Options).

## RS232 download

<i>Setup</i>	To set the serial interface port for the direct download.
<i>Start download</i>	To start the direct download through the serial interface.

## View

<i>New configuration window</i>	To open another configuration window. You can drag and drop data between the windows.
<i>Resources monitor</i>	To open a monitor for the display of the available resources (RAM, objects, etc.).
<i>Character set</i>	To open the currently loaded character set in an editor.
<i>Preview</i>	To open a view of the selected MT701 type.
<i>Preview (shrunk)</i>	To open the preview without frames and keys.

## Setting

<i>Options</i>	To open a dialogue box to set the view and the behaviour of the MT701 software.
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<b>Window</b>	Various options to customise the view of the windows shown.
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## Help

<i>Context help</i>	To open a section in the project management. It will give you helpful information on the respective activated cell in the table.
<i>Help</i>	To open this help.

---

## Operation

In the MT701 software you will find several windows:

### Preview window

The preview window will show you the device view of the currently selected MT701. The key numbering will show you the assignments of the key nodes in the tree.

Open the preview window with the *Configure/Preview* menu command.

### Configuration window

The configuration window is divided into two sections. From the tree in the left part, you can select the node you want to configure. The right-hand half of the window will show a table or a list in accordance with the node you have selected. From the table, you can make device settings by clicking into the second column with the mouse and entering the desired value (refer to Table). By the *Help/Context* help command, the right half of the window will split to provide an additional box where help texts on each selected table field will be displayed. Click on the cross in the upper left corner of the help box to close the context help.

---

## Print Preview

Use the *Device/Print Preview* command to open the print preview.

---

## Character Set

Use the *View/Character set* option to get into the display and edit dialogue.

The MT701 has a firmly installed character set (grey fields).

In addition, further characters (white fields) can be changed.

The character set is linked with the respective device, i. e. changing the character set will not affect other devices. If you want other devices to take over the character set you can implement this through the "Export/Import" function.

### Menu

#### Import

To load a new character set from the selected file.

#### Export

To save the current character set into the specified file.

### Edit

To bring the highlighted character into the edit mode. This will open a new dialogue where each dot can be activated or deactivated, respectively.

*Ok:* To take over the modified character into the character set.

*Drop:* To restore the original character.

*Cancel:* To discard the modified character.

You can highlight one character per mouse click. This will draw a dotted box around the highlighted character.

**Copy**

To copy the highlighted character into the clipboard.

To use the character click into an input field and select *Insert* from the pop-up menu (right mouse button).

## Behaviour:

Since the MT701 character set differs from the Windows character set it will only be displayed in the preview window. The input fields will show the characters assigned to the corresponding places in the Windows character set. These may be, for example, black bars, text characters or even empty boxes.

## Use character set

## Shortcut keys

If you use the mouse in the character set dialogue to move across the characters in the table the status bar will show their corresponding shortcut keys. You can use such shortcut keys to insert a character directly into an input field. For this purpose, keep the *Alt* key pressed and type in the four-digit number combination through the *numerical keypad*. After you release the *Alt* key, the character will appear in the input field. Please note that a leading '0' must also be entered.

## Character

To show the character from the Windows character set used as placeholder in the input fields.

You will see the correct view of the MT701 character in the preview window.

**Important:** The preview window will only read the fixed texts. Dynamic texts will be symbolically shown as placeholders to identify the required display space.

## Resources Monitor

Open the resources display from *Configure/Resources Monitor*.

It will list what memory space each type of resource has taken so far and can possibly still take.

The available resources can be calculated from:

- the memory space in the RAM,
- the number of objects,
- the number of connections, and
- the number of group addresses.

## Settings | Options

With the *Settings/Options* command, you can open the *Set Options* dialogue box. In the tabs of this dialogue box, you can specify the options to view the resources and table as well as other general options and hardware settings.

Table

This tab shows the colours and the behaviour of the columns of the table.

## Options

## Selection of further software settings.

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## Settings | Options | Options

This tab sets the general software behaviour.

**Auto save:** Activate the auto save function. An image of the device will be saved into a file every x minutes. Also, this file will be updated when the software is being closed.

The file will be saved as \*.mts in the Autosave sub-directory.

**Assign the page-/line name automatically to the text:** Changes at the page / line names are taken over to the text parameter automatically.

Assign the page-/line name automatically to the text

**Check database:** Compares the state of the ETS database with the actual state of the device. Any possible deviations will be corrected.

**Speed optimisation** You will be given the opportunity to initialise a new device immediately upon inserting it into the ETS.

**Check number of texts (characters)** The device can only take up a fixed number of texts. To avoid a memory overflow message you can directly check the memory space when altering display-relevant texts. Deactivate this option if the software is slowing down upon the insert/alter text option.

**Save compiler data into file** To obtain an optimum download the data of a previous download will be saved in the ETS database. If the start/close times of the plug-in software have a disturbing effect after a download you can activate the "Save Compiler Data into File" option to improve the run time behaviour. The data will then be swapped to the hard disk.

CAUTION: After moving/copying of the ETS database, optimised and thus faster download will no longer be possible. If you make a download without comparison data the download will be effected in the "Normal Mode". If you activate this option you must save the data by a project export.

IMPORTANT: To obtain a better start/close behaviour of the plug-in software you should first set the "Save Compiler Data into File" option before making further time optimisation by the "Save Configuration Data into File" option.

**Save configuration data into file** A well utilised device may entail extended loading times when the tool software is started/closed. If this option has been activated the configured data will be saved into a separate file on the hard disk and not in the ETS database.

**CAUTION:** If this option has been activated you can only save the project data by a project export. Copying the ETS database will not be sufficient, as the device configuration data will be externally saved on the hard disk. Before activating this option, make sure first whether you will obtain sufficient speed optimisation by activating the "Save Compiler Data into File" option.

---

## Settings | Options | Table

This tab controls the appearance and behaviour of the table in the configuration window.

### Columns

**Automatic column width:**

The columns of the table will be re-calculated after each change and shown with the required widths.

**Default column width**

Indicates the column width which will be selected when the automatic column width option is deactivated.

### Automatic field activation

Selecting a new node in the tree will automatically activate a field in the table view.

**Automatic activation:**      Switches ON/OFF field activation in the table.

**Field to be activated in line:**      Indicate from which line the field is to be activated.

### Colour settings

You can match the colours of the table.

**Background:**

Table background

**General fields:**

All fields without specific tasks

**Title fields:**

Fields containing the line description.

**Read-only fields:**

Fields which only serve for display and cannot be edited.

**Show gridlines:**

Showing the boundaries between the fields.

**Preview:**

The result set will be shown but not accepted yet. The selected setting will only be accepted if you press the OK key.

---

## Settings | Options | Hardware

In this tab, you can make the compiler and download settings, respectively.

### Compiler

**Firmware version**

The number of the MT701 firmware version the MT701 will notify after you have loaded the MT701 firmware file.

**Firmware file**

This file contains the MT701 firmware which will be written into the MT701 during the compiler/download process.

## Download

### Retries

Number of communication retries before the download will be aborted.

### Choice: Transfer all in next download

The ETS will remember the data last transferred to the MT701. This is the only way to perform a fast download in which only changed data will be transferred.

If the MT701 you want to programme already contains some previous data, or if some error occurs during the download which will be aborted when the number of retries is exceeded, then it will be advisable to use this option.

In such case, all data will be transferred to the MT701 without any optimisation of the data amount and the MT701 synchronised with the ETS.

### **Default**

All settings will be reset to their default values.

---

## Group Addresses

From here, you can assign group addresses to an object.

### **Selectable group addresses**

This list contains the available group addresses which correspond to the object or are typeless.

### **Assigned group addresses**

This list contains the group addresses which have already been assigned to the object.

**Arrow buttons** You can use the arrow buttons to swap group addresses from one list to the other.

**This is the way how you can move all group addresses from one list to another:**

Click on the double-arrow buttons ( >> or << ).

**This is the way how you can move selected group addresses from one list to another:**

Click on the arrow buttons ( > or < ).

### **Find/Add button**

Type the group address you want to find into the field before the button. If the address you have typed in has been found upon the actuation of the button it will be highlighted in the list.  
If it cannot be found you can create this address.

### **Note**

A new address will be directly added to the ETS. Aborting the group address dialogue will only affect the connections already existing, while the newly created group addresses will be retained.

---

## Template Import/Export

### Import/export from the MT701 window

With the aid of this function, you can create templates to make easier the configuration of an MT701 with an application of the same type.

*Export templates* will save the opened MT701 with all its contents and group addresses.

*Import templates* During import, all data and internal connection from the template will be restored. You can select whether the import is to take into consideration the ETS group addresses. For import with ETS group addresses, all group addresses connected in the template must be available in the project and be of the same type. Import with ETS group addresses is, for example, suitable for copying a device within the same project.

You can use the exported templates, for example, as initialising templates.

Refer to:

Copy Device    Copy, Split, Merge Project

---

## Picture List

The MT701 can manage up to 25 different wallpaper pictures. To assign a picture to a page click on *Add* to assign a picture to the list, highlight it, and click on *Ok* to accept the action. This will copy the pictures added and store them in the tool software. Therefore, there will no longer be any connection with the previously selected files.

If you want to cancel an assignment highlight the *[No Picture]* entry in the list and click on *Ok* to quit this dialogue.

The MT701 can take up wallpapers in the 240 x 128 format. Colour pictures will be automatically converted into a monochrome format.

### Add

Select a picture. The latter will then be taken up into the picture list.

### New

To create an empty bitmap. You will be prompted to save this picture. After this, it will be opened in the image processing programme registered by Windows. Now you can make your changes. After completing processing, save the picture and use the *Add* button to insert it into the list.

### Delete

To remove from the list the picture selected in the list.

### Edit

To save into a file the picture selected in the list. After this, this file will be opened in the image processing programme registered by Windows. Now you can make your changes. After completing processing, save the picture and use the *Add* button to insert it into the list.

#### **Ok**

To assign to a page the picture selected in the list.

#### **Cancel**

To discard all changes.

---

## Table View

A mouse click into a field of the table will create a component where you can change data:

#### **Edit**

{bmc Edit.bmp}

From here, you can directly type in texts or numerals.

#### **ComboBox**

{bmc ComboBox.bmp}

Select one of the listed options.

#### **CheckBox**

{bmc CheckBox.bmp}

Activate/deactivate this option by another mouse click.

#### **Ellipse**

{bmc Ellipse.bmp}

Click on this button to open a dialogue box where you can make a selection.

#### **Counter field**

{bmc SpinEdit.bmp}

Type in a numeral or click on the buttons to change the value.

---

## Assigning Group Addresses

You can assign group addresses to the objects in several ways:

- 1) Use the mouse to drag a subgroup address from the tree or list onto an object in the tree.
- 2) Highlight an object in the tree and select the *Group Addresses* field in the table.  
To create or remove group address connection use the mouse to click on the button with the three dots (...). This will open the group addresses dialogue box.

---

## Copy & Paste

The following elements could be copied:

- Pages
- Lines

- Timer
- Fault Messages
- Timing Elements
- Logic Gatings
- Multiplexers

To copy an element, mark the tree knot of the needed element, open the pop-up menu and choose "copy". The data of the marked element will be copied to the clipboard.

To paste the data from the clipboard, mark the parent- tree knot (e.g. for pasting lines, mark the page), open the pop-up menu and choose "paste".

When inserting all parameter settings are taken over.

Exceptions:

- Group addresses are not copied
- The key function "page call" is set automatically when inserting on the characteristic "return". After inserting therefore all key functions "page call" must be controlled

## Operation by keyboard

With the shortcuts "Ctrl+C" (copy) and "Ctrl+V" (paste) the marked element will be copied to the clipboard.

**Attention:**

If you have the automatic field activation switched on (Setting/Options/Table) the desired field is activated after the choice of a tree knot automatically in the right table. Now the shortcuts Ctrl+C / Ctrl+V works on the activated table field. Guarantee before copying by means of keyboard that left window half also owns the focus (tree knot is marked blue), if necessary click a second time on the same tree knot to put the input focus again on left window half.

**Alternative:**

To avoid the effect specified above, deactivate the automatic field activation or use the keyboard abbreviations "Ctrl+Shift+C" (tree knot copy) or " Ctrl+Shift +V" (tree knot paste).

## Copied data as a library use

You have the possibility to save the selected element as a file and to paste it at a later time in any device. So you can store away ready solutions as a library to reuse them with later projects.

The restrictions apply also here to copying / pasting:

- Group addresses are not copied
- The key function "page call" is set automatically when inserting on the characteristic "return". After inserting therefore all key functions "page call" must be controlled

---

## Reconstruction/Reverse engineering

The reconstruction or reverse engineering item permits reading out data from programmed devices in an EIB installation. The parameter and object settings of the devices concerned can then be analyzed and stored in the ETS database. Non existing or lost projecting information can thus be restored in a simple way.

During the reconstruction procedure, an on-line bus link is established with the device. To ensure troublefree operation, a local connection to the bus must be existing and the device must be in place on the BCU. As an alternative, the device can be reconstructed over the RS232-Interface, therefore the device has to be connected with the serial port of the computer directly.

By selecting the menu item "*Reconstruction - reconstruct the device*" in the plug-in of the device to be reconstructed, the device-related reconstruction procedure is started. Reconstruction presupposes that the device concerned is existing as such in the project of the ETS and that the physical address is known and has been entered.

As an alternative, an auxiliary module in the [ETS 3](#) permits starting the reconstruction of a complete and possibly unknown project in the projecting window of the ETS. This auxiliary software module is not part of the basic ETS and must be bought from the ETS software distributor. For more details, please refer to the documentation of the respective supplier.

### **Reconstruction procedure (device-related reconstruction started in the plug-in)**

The reconstruction requires the following two easy steps.

1. After initiating the reconstruction procedure, a confirmation request is displayed. Confirming with "Yes" continues the procedure. Note that all device data existing in the database will be replaced by the data read out in the following procedure. Selecting "No" aborts the reconstruction without affecting the data stored in the database.
2. The reconstruction procedure is then started. Projecting data are read out step by step from the target device: target system identification, read-out of parameters, group address table, object settings and taking over of the values read out into the ETS database. The read-out progress is displayed by a bargraph.

When the device reconstruction is completed without errors, a confirmation dialog is displayed at the end of the procedure.

### **Reconstruction info**

- Only parameters and other settings programmed directly into the device memory of the EIB component can be restored by a reconstruction procedure. For this reason, some of the plug-in settings such as text markers or function names cannot be reconstructed and will therefore be replaced during a reconstruction by the default values in the device database.

The same applies to functions which were deactivated in the device at the time of reconstruction and which will be enabled in the plug-in only in the further course of the projecting task. Enabled parameters will also be set with their default values.

It is always advisable to check all parameters, group addresses and settings for correctness after a reconstruction.

- During the reconstruction, the bus connection must not be interrupted. If the bus connection is disturbed, the reconstruction will be immediately aborted with an error message. The original values in the ETS database will then remain unchanged.

If no communication with the device can be established at the beginning of the procedure, the plug-in reports a general communication error.

Remedial action: in the ETS 2, the reconstruction must be activated out of the commissioning menu in order to have access to the bus. With the help of the ETS diagnosis functions (line scan / press on programming button and reading out of devices in the programming mode) the user should be able to find out whether the device is connected to the bus and whether it can be contacted via its physical address.

- To reconstruct the device with the auxiliary ETS3 module, note the following hints:

Before scanning ('Scan Devices') the device has to be switched to programming mode (by pushing the programming button or disconnecting the device from power supply).

Afterwards, before reading ('Read Devices'), reset the device to the normal mode (by pushing the programming button again, or connect the device with power supply).