Arcus-EDS GmbH

Manual

ArcSuite 2.1.2

MicroVis
MicroVis II
MicroFM

Version: 21.05.2006

Index

Introduction

Welcome to Software Suite Help. On these pages you will get instructions on how to carry out your ideas with ARC- Suite step by step. The most important points are illustrated directly with simple examples, so you only have to follow the described actions. If you still have further questions visit our website (www.arcus-eds.de). We regularly offer free updates (documents& programs) to make the work easier for you.

Abstracts

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1. ArcSuite

The ArcSuite is a base module for all Java© based Arcus-EDS GmbH modules.

1.1. Installation

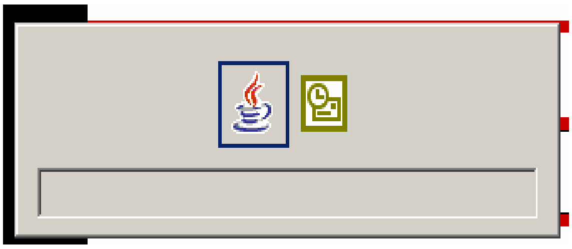
- Download the newly packed setup “arcsuite_2_1_2.zip” for our ArcSuite from our homepage www.arcus-eds.de. Open the file “setup.exe.” under “Arcsuite2.1.2” on the CD delivered with your package.
- Unzip the file “arcsuite_2_1_2”.zip
- Start the Setup.exe by double-clicking
- ArcSuite requires approx. 17 Mb of disc drive capacity
- You will be asked to choose a language (English or German) while the file is being unzipped.
- Follow the setup-assistant
- If the Java-platform on your computer is not up to date, you will be requested to install a new platform from the internet or from the CD included in your package.

When the installation is complete, open ArcSuite under Programs.

- You can now connect your MicroVis or FM-module to the USB-port through the mini-USB cable delivered with your package.
- After the initial connection the computer will tell you that “new hardware was found”.
- Follow the assistant.
- When the option “connection to windows update” appears, choose the option “no, not this time”.
- When the subsequent window opens choose “install automatically”
- A window opens stating “the software for the equipment e.g. MicroVis 1 was installed”.
- You can now download your products.

1.2. Recommendations for the use of Arcsuite

- If you have more than one window at a time open on your computer, it can happen that a sub window of ArcSuite, for instance “setting” is not visible on your monitor anymore. To get to this window press ALT key + TAB key on the side of the Java symbol.

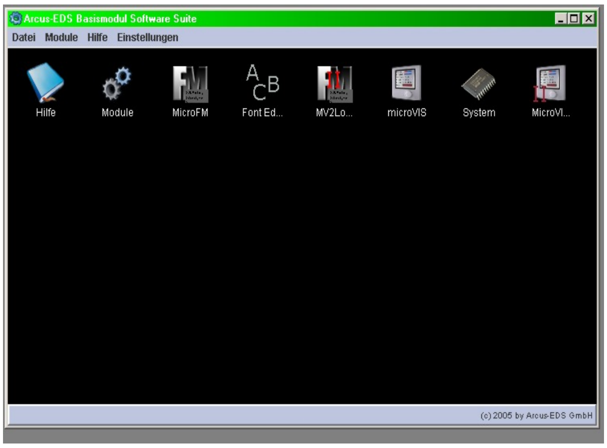


- It may also happen sometimes, that you cannot access your display. To get a defined re-set modus you have to carry out the following activities.

  1. Disconnect EIB-Bus
  2. Unplug the USB cable
  3. Plug in the USB cable again while holding the button
  4. Transfer your programm as usual
  5. Unplug the USB cable again

  After this procedure you can use the MicroVIS display as usual.

1.3. Modules



Modules are Java© based Programs from Arcus-EDS GmbH to run in the ArcSuite

At the time we provide the following modules:

Help online help for all modules

Module an overview of the installed ArcSuite modules

MicroVis to build the interactive graphic user interface

MicroFM to program the MicroFM device in FORTH

MV2 Logic for the interactive programming of the logic part within MicroVis II

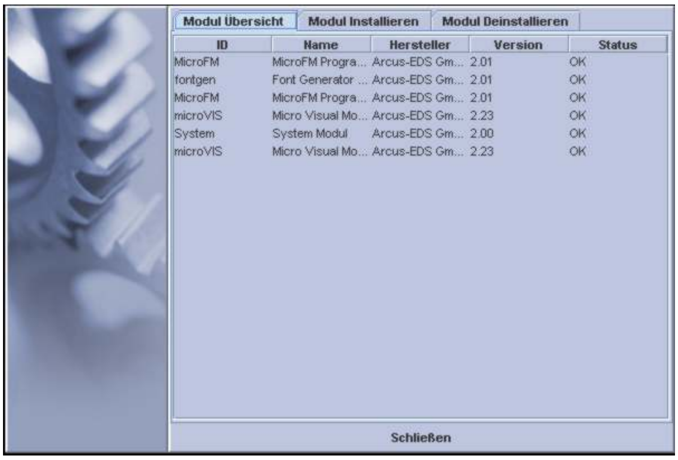
Font Editor create your own MicroVis Fonts

System module displays the used system resources on the PC

MicroVis II creates and programs the MicroVis II interface

Start the system module by pressing the button “show system administrator”

.

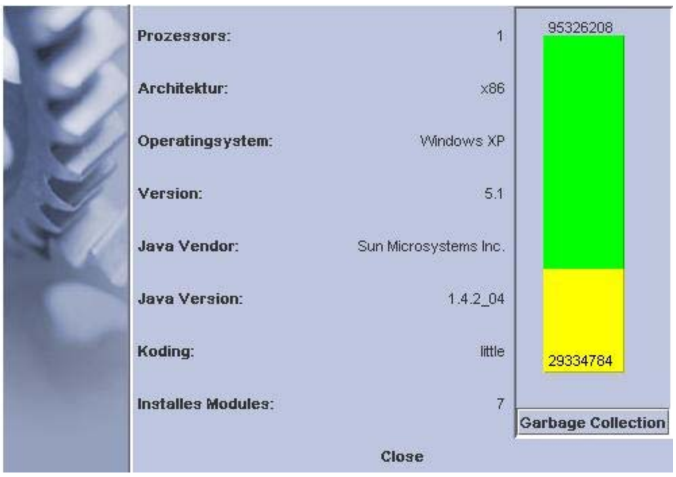


ID	Name	Hersteller	Version	Status
MicroFM	MicroFM Progra...	Arcus-EDS Gm...	2.01	OK
fontgen	Font Generator ...	Arcus-EDS Gm...	2.01	OK
MicroFM	MicroFM Progra...	Arcus-EDS Gm...	2.01	OK
microVIS	Micro Visual Mo...	Arcus-EDS Gm...	2.23	OK
System	System Modul	Arcus-EDS Gm...	2.00	OK
microVIS	Micro Visual Mo...	Arcus-EDS Gm...	2.23	OK

1.4. System

Start the system module by clicking the button “show system overview”.

This system module shows you the important software properties of your computer configuration that can be helpful in clearing up questions regarding support.



Prozessors: 1

Architektur: x86

Operatingsystem: Windows XP

Version: 5.1

Java Vendor: Sun Microsystems Inc.

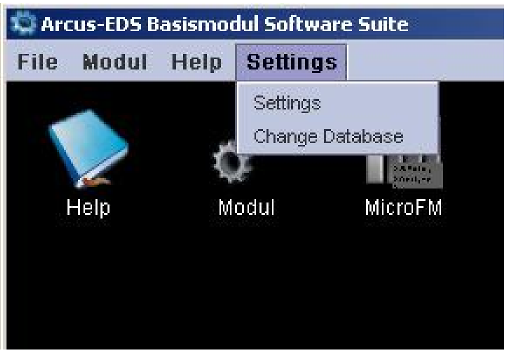
Java Version: 1.4.2_04

Koding: little

Installes Modules: 7

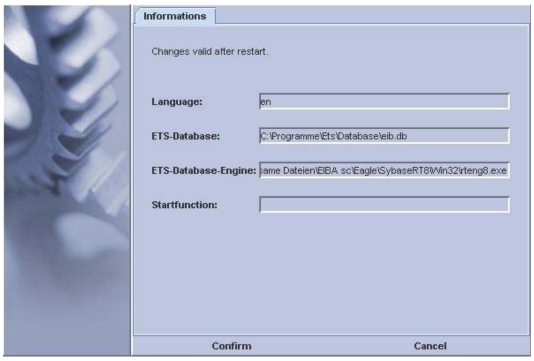
1.5. Settings

Define the general settings in the ArcSuite.



1.5.1. Settings

Here you can change the menu drive and the help file. Enter on the line either the abbreviation “en” or “de”.



Changes valid after restart.

Language: en

ETS-Database: C:\Programme\Ets\Database\eib.db

ETS-Database-Engine: ;ame Dateien\EIBA sc\Eagle\SybaseRT8\Win32\rteng8.exe

Startfunction:

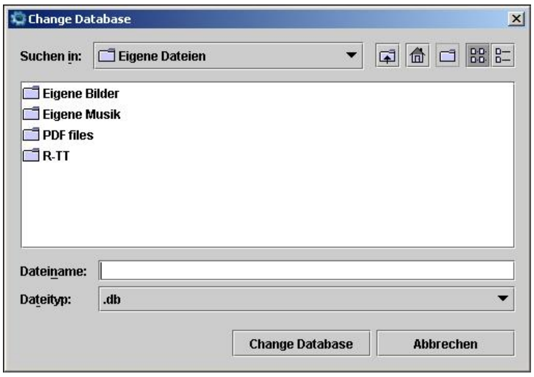
The database engine used here is the databank administrator of your ETS. If a connection to your databank is not possible, your ETS–installation may be unusual and the path to your databank program may have to be adapted.

The standard path for your databank is “C:/program/ETS3/eib.db

The usable database engine is usually under “C:/programs/shared files/EIBA sc/eagle/SybaseRT8/Win32/rteng8.exe”. If you are using ETS2 you should apply this engine (Rteng8) anyway, if you are not getting any function.

1.5.2. Changing database

In this dialogue you can locate the ETS-Database which should be used for the import of group addresses in your projects .



2. The MicroFM Module

2.1. Introduction

This document contains information such as data, illustrations, measurements and others which are subject to change without prior notice. Additional information is available at http://www.arcus-eds.de

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2.2. System Information

This device is a product for the System InstaBus- -EIB/KNX.
For understanding the InstaBus-EIB/KNX- System, specialised, in-depth knowledge is essential. The functions of the device are software-dependant. For detailed information about which software can be loaded and which function-capacity is then available, as well as information about the software itself, look at the software-details of the manufacturer.
The system is operated with the software- tool "ArcSuite" and is available for downloading at http://arcus-eds.com.
The communication between your PC and MicroFM is carried out by a USB- interface of your PC.

The device operates with a real- time operating- system FreeRTOS (www.freertos.org).

2.3. Control element

Your MicroFM has free programmable elements of **operating & instruction** control.

There are 3 programmable LEDs, a ten-step switch and one enter-key. MicroFM will also be delivered optionally with an integrated **DCF-77- time- signal receiver**.

The LEDs can be switched on or off by the command: „setled“. The step switch can be polled with the command: "getsw".

.When operated, the pushbutton calls up the function "onpb", which can be freely defined by the user.

2.4. DCF-77-Receiver

The integrated **DCF-77 time-signal receiver** is directed by a program in FORTH code. The code gives you the values for **sunrise and sundown** over an **astronomical clock**. In the standard package this code is pre-programmed (eibzeitmaster1.code + eib.tbl).You can also download the code from our homepage (dcf_uhr.zip) onto your computer

2.4.1. Frequency Search

When switching on the receiver, the green LED blinks every second, unless it has been rewritten with another value. This takes place independently of the programming.

The blinking light shows that the DCF-77 signal is being received. After one minute of constant blinking, the controller adjusts to the time received. The blinking then stops and turns into a permanent light. If a dysfunction is received while searching (in the blinking phase), the process will start anew.

2.4.2. Receiving the Time Signal

The reception is dependant on several factors, which may change in the course of the day. These are e.g. machines or other electronic devices in the proximity of the DCF-77 Receiver, weather conditions (sun, rain), nearby radio communication, etc…. However, because the receiver has a built-in clock, an irregular reception is sufficient. If however, reception is very poor or non-existent alltogether, the clock will not be set. The building or its alignment are among the factors determining this. The antenna of the DCF-77 is fitted in the MicroFM module. It should always be positioned in a right angle to the transmitter of the Mainflingen station (Frankfurt on Main). No metal objects, e.g. racks in leightweight construction material, or reinforcements in steel beton buildings should, if possible, be near the receiver. Position the receiver as closely as possible to an opening in the building. It is possible that you will have to search for a location where you can receive the signal. The blinking light indicates that it is being received.

2.4.3. Programming

Through FORTH code the commands „systime“ and „sysdate“ give you access to the received timecode. You can feed this data into your EIB-Net through a short program. “syst” and “sysd” also feed back the information “daylight saving time” in Bit number 24 and “synchronized” in Bit number 25.

Beforehand you have to initialize and transfer the required group adresses on the MicroFM module. In our examples these are:

Bustime	EIB Typ Time	send	Group address ZB 9/0/0
Busdate	EIB Typ Date	Send	Group address ZB 9/0/1
sonnenunt (sundown)	EIB Typ Time	Send	Group address ZB 9/0/2
sonnenauf (sunrise)	EIB Typ Time	Send	Group address ZB 9/0/3

Please note, the declarations in FORTH are case-insensitive .

Transfer the address-table to the MicroFM-Modul and start anew.

Afterwards you can transfer the application into the MicroFM-Module and save it with “fsave”.

Now you can automatically receive the time and let the time of sunrise and sundown be calculated.

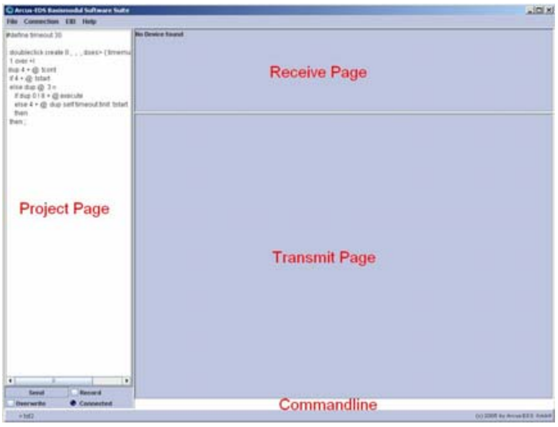
To import the Code "eibzeitmaster1.code" into your project, import it with "Import Text".

2.4.4. Code example

eibzeitmaster1.code

```
: tagnr (  -- Tagnr )
1 pick 10 + 13 /
3 roll 3 roll 2 + 3055 * 100 /  2 pick 2 * - 91 - +
1 3 roll 4 mod 3 + 4 / - rot * + ;

: declination sysd ddate tagnr float 79.35 f- 0.0172 f*
  sin 0.40954 f*
;

: zeitgl sysd ddate tagnr float 2dup
  0.033430 f* 0.5474 f+ sin 0.1752 f*
  2swap 0.018234 f* 0.1939 f- sin 0.134 f*
  f+ ;

( PI als constante )
1.0 atan 4.0 f* 2const pi

( geographische Breite )

52.5 ( Berlin )
pi f* 180.0 f/ 2const G_Breite

( geographische Länge )
13.4  ( Berlin )

15.0 2swap f- 4.0 f* 60.0 f/ 2const L_comp ( Compensation der Länge )

( Definition Sonnenaufgang/untergang )

-0.0145 sin 2const s_aufunt ( -50 Bogenminuten unterm horizont)
: zeitdiff
  declination
  2dup sin G_Breite sin f* s_aufunt 2swap f-
  2swap cos G_Breite cos f* f/ acos 12.0 f* pi f/
  ;

( Sommerzeit / Winterzeit )

: wochentag ( T M J -- WT )
  dup 4 / + swap 1+ 13 * 5 / + + -2 + 7 mod 1+
;

: sommerzeit
  sysd -24 shift 1 and ;

: Sonnenaufgang
  12.0
  zeitdiff f-
  zeitgl f+
  L_comp f+
  sommerzeit 0<> if 1.0 f+ then
  2dup fix -rot 60.0 f* fix 60 mod
;

: Sonnenuntergang
  12.0
  zeitdiff f+
  zeitgl f+
  L_comp f+
  sommerzeit 0<> if 1.0 f+ then
  2dup fix -rot 60.0 f* fix 60 mod
;

: updtime
   syst eib.Buszeit eibset
   sysd eib.Busdatum eibset
   3 tstart ;

: setdatetime
  eib.Buszeit eibtx
  eib.Busdatum eibtx
  0 sonnenuntergang 0 ctime eib.sonnenunt eibset
  0 sonnenaufgang 0 ctime eib.sonnenauf eibset
  eib.sonnenunt eibtx
  eib.sonnenauf eibtx
;

: checksync syst -25 shift 0 <> ;

: syncloop checksync if
   1 tstart 3 tstart setdatetime 0 0 setled
    else 0 tstart
then ;

: newsync syst 0x1FFFFFF and setsyst 1 0 setled 2 tstart ;

: oninit
0 ['] syncloop 100 tinit
1 ['] syncloop 6000 tinit
2 ['] newsync 360000 tinit
3 ['] updtime 20 tinit
0 tstart newsync ;
```

2.5. Program module



```
#define timeout 30

 doubleclick create 0 , , , does> ( timema
 1 over +!
dup 4 + @ tcnt
if 4 + @ tstart
else dup @ 3 =
  if dup 018 + @ execute
  else 4 + @ dup setTimeout tmit tstart
  then
then ;
```

After starting the MicroFM- Module from ArcSuite, the programming surface is at your disposal.

Input data executed in the prompt can be transmitted to MicroFM directly. These input data are on record at the send page.

The receive page shows the text output data of MicroFM.

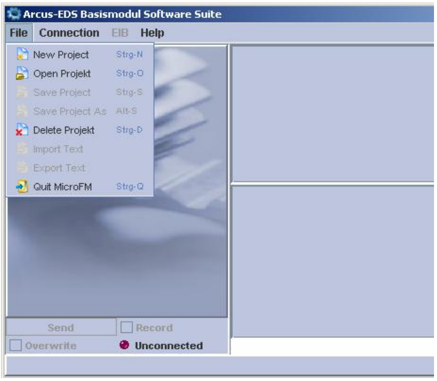
The latest input data executed in the prompt are called up by SHIFT-UP and SHIFT- DOWN.

The project page is saved together with the project. If the option “recording” is marked, all input data from the prompt are transferred to the project page.

Through the option “overwrite” already defined functions from the project page will be replaced automatically by updated definitions. By operating the push button “send”, the whole project page is transferred to MicroFM Module.

2.6. Programming

2.6.1. Projects

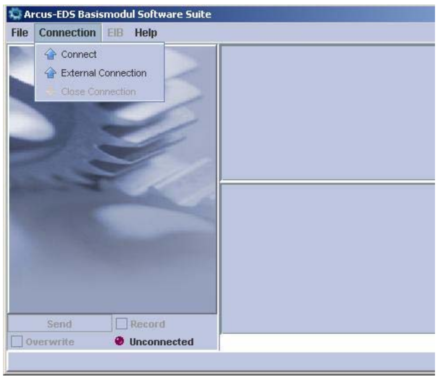


Projects can be newly installed, stored or opened through the menu item “File”.

Additional to the project name, a description together with the name of the author and a client can be added. The project-name has to be unique and should not contain any special characters.

.

2.6.2. Connection



With the menu item “connect” your PC is connected with MicroFM, if a USB cable is plugged in. You don’t need to connect MicroFM with the EIB/KNX- network.

By opening “connection” the connection is carried out. The MicroFM answers connected, and the information “connected” shows up at the bottom of the display.

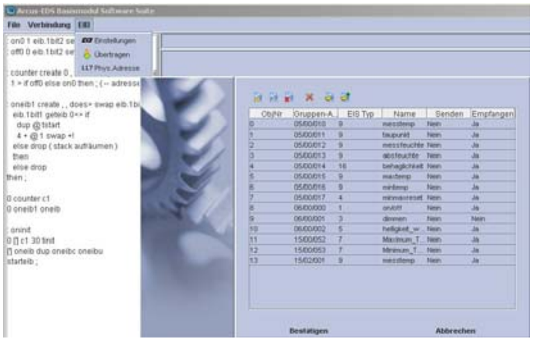
Now you can communicate with MicroFM. When you start the USB-server, delivered in your package, by a remote computer you can have access to it and to a connected MicroFM over external connection. You can use it as if it were locally connected to your PC..

2.6.3. EIB Settings

Here you need specialised knowledge about the European Installation Bus. Ask your system-integrator or your EIB service-provider.

2.6.3.1. Import and edit EIB- objects

64 EIB group-addresses can be used. The import of group- addresses is carried out by direct selection from the ETS3 database. Each address- point can also be entered manually and processed separately. If you are working with ArcSuite parallel to ETS, start ArcSuite before ETS.



```
: on0 1 eib.1bit2 se
: off0 0 eib.1bit2 se

: counter create 0 ,
  1 = if off0 else on0 then ; ( -- adress
: oneib1 create , , does> swap eib.1b
  eib.1bit1 geteib 0<> if
    dup @ tstart
    4 + @ 1 swap +!
  else drop ( stack aufräumen )
  then
  else drop
then ;

0 counter c1
0 oneib1 oneib

: onint
0 [] c1 30 tinit
[] oneib dup oneibc oneibu
starteib ;
```

ObjNr	Gruppen-A.	EIS Typ	Name	Senden	Empfangen
0	05/00/010	9	messtemp	Nein	Ja
1	05/00/011	9	taupunkt	Nein	Ja
2	05/00/012	9	messfeuchte	Nein	Ja
3	05/00/013	9	absfeuchte	Nein	Ja
4	05/00/014	16	behaglichkeit	Nein	Ja
5	05/00/015	9	maxtemp	Nein	Ja
6	05/00/016	9	mintemp	Nein	Ja
7	05/00/017	4	minmaxreset	Nein	Ja
8	06/00/000	1	on/off	Nein	Ja
9	06/00/001	3	dimmen	Nein	Nein
10	06/00/002	5	helligkeit_w...	Nein	Ja
11	15/00/052	7	Maximum_T...	Nein	Ja
12	15/00/053	7	Minimum_T...	Nein	Ja
13	15/02/001	9	messtemp	Nein	Ja

to create a new EIB-object

to edit an EIB-object

to clear a single EIB-object

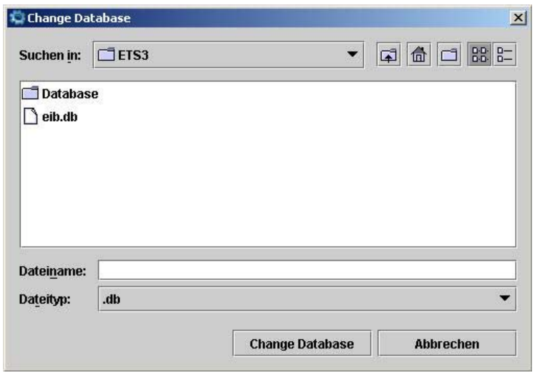
to clear the whole EIB-table (EIB.tbl)

to import EIB-Objects from the ETS and to create a new EIB.tbl

To import EIB-objects the path to the EIB-database and the EIB- databank-engine has to be set. (See 1.1 Introduction/Settings)

Caution! When imports are made with this function, all EIB-objects in the EIB-list of the ArcSuite project are deleted.

Choose your EIB project from the ETS. To attach single data points from the ETS, click on “confirm” or “skip” if you want to import each data point separately. To attach the whole list, choose “all”. Please note that the number of group addresses that appear in the list does not exceed the maximum.



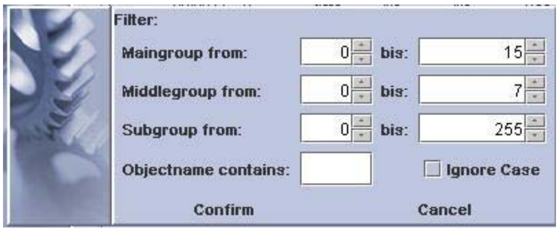
importing filtered EIB- Objects

The procedure for importing EIB-objects is similar to that described above. Here you can attach data points to your already existent list, without deleting extant data points. Please note that the number of group addresses that appear in the list does not exceed the maximum. To add new data points, you have to clear up memory space on the list through manually entering delete.

You can choose between several filters.

The selective data- import can be carried out by pressing the button: **„Add EIB- objects filtered"** out of the ETS over the primary-, secondary- or sub- groups or with the full text search **contains object- name**.

Input text contents under „object name contains“. Click „ignore case“ if you want to ignore capital lettering. The filter function also takes into account substrings within the object names.

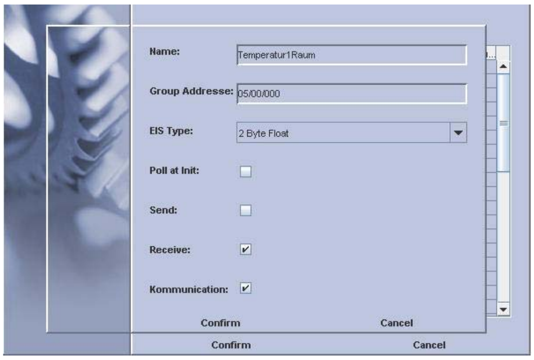


Filter:

Maingroup from:	0	bis:	15
Middlegroup from:	0	bis:	7
Subgroup from:	0	bis:	255
Objectname contains:		□ Ignore Case	

2.6.3.2. Manual processing/handling EIB- Objects

Polling at start: When the system is started, the data point is scanned. For this the communications- and receiver-flag has to be set.

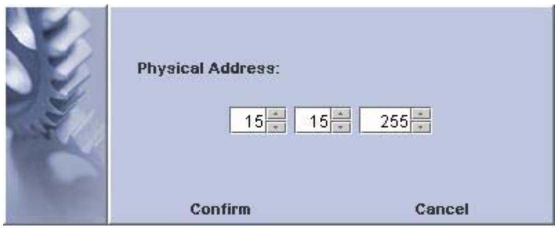

Name: Temperatur1Raum
Group Addresse: 05/00/000
EIS Type: 2 Byte Float
Poll at Init: □
Send: □
Receive: ☑
Kommunication: ☑

Send: The elements that are connected with this object can output data to the Bus. The communications flag has to be set .

Receive: The elements that are connected with this object can output data to the Bus. The communications flag has to be set.

Communication: Communication has to be permitted to send or receive. These settings can viewed or changed by double-clicking on the entry of the overview.

2.6.3.3. Physical Address


Physical Address: 15 15 255

Under the menu level **“Physical Address”** you can enter the address of the MicroFM. This address is unique in the EIB/KNX-system. On the **“Transmit”** level the carried out settings are transferred to the MicroFM. Before you can access the objects, the MicroFM has to be restarted once. (Command **“reset”** in the command line).

2.6.4. Command Interface

Enter the commands to your MicroFM into the prompt (command line) line-wise. The answer of the MicroFM appears on the receiving- page. The programming of MicroFM is processed in FORTH-dialect. You can get further information about FORTH, the syntax and about the stack- and heap- use from literature reference (bibliography) and/or the internet. Using this language for MicroFM you have the advantage of its compact, fast code and self-compiling attributes. Functions programmed and commands entered are executed by multitasking. As there exists only one common stack, every function processed in the background has to take care of an empty stack. A short summary of the functions available you will find in the chapter: language- components.

We wish you a lot of fun with your MicroFM

Your Arcus-EDS developing team

2.6.5. Language Components

All floating- point figures are operated by 8 byte (double). You need 2 stack- or heap-positions for storing. The integer- variables are resolved into 4 bytes.

+	n1 n2	□	n3	n3 = n1 + n2	Adds *n1* and *n2* and leaves sum on stack.	
-	n1 n2	□	n3	n3 = n1˜ n2	Subtracts *n2* from *n1* and leaves difference on stack.	
*****	n1 n2	□	n3	n3 = n1 □ n2	Multiplies *n1* and *n2* and leaves product on stack.	
/	n1 n2	□	n3	n3 = n1 □ n2	Divides *n1* by *n2* and leaves quotient on stack.	
' *word*		□	caddr	Obtain compilation address	Places the compilation address of the following word on the stack.	
,	n	□		Store in heap	Reserves four bytes of heap space, initializing it to *n*.	
.	n	□		Print top of stack	Prints the number on the top of the stack.	**CONIO**
.(*str*		□		Print constant string	Immediately prints the string that follows in the input stream.	**CONIO**
.S		□		Print stack	Prints entire contents of stack.	**CONIO**
." *str*		□		Print immediate string	Prints the string literal that follows in line.	**CONIO**
: *w*		□		Begin definition	Begins compilation of a word named *w*.	
;		□		End definition	Ends compilation of word.	
<	n1 n2	□	flag	Less than	Returns ˜1 if *n1<n2*, 0 otherwise.	

<=	n1 n2	□	flag	Less than or equal	Returns ˜1 if *n1*□*n2*, 0 otherwise.	
<>	n1 n2	□	flag	Not equal	Returns ˜1 if *n1*□*n2*, 0 otherwise.	
=	n1 n2	□	flag	Equal	Returns ˜1 if *n1*=*n2*, 0 otherwise.	
>	n1 n2	□	flag	Greater	Returns ˜1 if *n1*>*n2*, 0 otherwise.	
>=	n1 n2	□	flag	Greater than or equal	Returns ˜1 if *n1*□*n2*, 0 otherwise.	
?	addr	□		Print indirect	Prints the value at the address at the top of the stack.	**CONIO**
!	n addr	□		Store into address	Stores the value *n* into the address *addr*.	
+!	n addr	□		Add indirect	Adds *n* to the word at address *addr*.	
@	addr	□	n	Load	Loads the value at *addr* and leaves it at the top of the stack.	
[		□		Set interpretive state	Within a compilation, returns to the interpretive state.	
['] *word*		□	caddr	Push next word	Places the compile address of the following word in a definition onto the stack.	
]		□		End interpretive state	Restore compile state after temporary interpretive state.	
0<	n1	□	flag	Less than zero	Returns ˜1 if *n1* less than zero, 0 otherwise.	**SHORTCUTC**
0<>	n1	□	flag	Nonzero	Returns ˜1 if *n1* is nonzero, 0 otherwise.	**SHORTCUTC**
0=	n1	□	flag	Equal to zero	Returns ˜1 if *n1* is zero, 0 otherwise.	**SHORTCUTC**
0>	n1	□	flag	Greater than zero	Returns ˜1 if *n1* greater than zero, 0 otherwise.	**SHORTCUTC**
1+	n1	□	n2	Add one	Adds one to top of stack.	**SHORTCUTA**
1-	n1	□	n2	Subtract one	Subtracts one from top of stack.	**SHORTCUTA**
2+	n1	□	n2	Add two	Adds two to top of stack.	**SHORTCUTA**
2-	n1	□	n2	Subtract two	Subtracts two from top of stack.	**SHORTCUTA**
2*	n1	□	n2	Times two	Multiplies the top of stack by two.	**SHORTCUTA**
2/	n1	□	n2	Divide by two	Divides top of stack by two.	**SHORTCUTA**
2!	n1 n2 addr	□		Store two words	Stores the two words *n1* and n2 at addresses *addr* and *addr*+4.	**DOUBLE**
2@	addr	□	n1 n2	Load two words	Places the two words starting at *addr* on the top of the stack	**DOUBLE**

2CONSTANT *x*	n1 n2	□		Double word constant	Declares a double word constant *x*. When *x* is executed, *n1* and *n2* are placed on the stack.	**DOUBLE**
2DROP	n1 n2	□		Double drop	Discards the two top items from the stack.	**DOUBLE**
2DUP	n1 n2	□	n1 n2 n1 n2	Duplicate two	Duplicates the top two items on the stack.	**DOUBLE**
2OVER	n1 n2 n3 n4	□	n1 n2 n3 n4 n1 n2	Double over	Copies the second pair of items on the stack to the top of stack.	**DOUBLE**
2ROT	n1 n2 n3 n4 n5 n6	□	n3 n4 n5 n6 n1 n2	Double rotate	Rotates the third pair on the stack to the top, moving down the first and second pairs.	**DOUBLE**
2SWAP	n1 n2 n3 n4	□	n3 n4 n1 n2	Double swap	Swaps the first and second pairs on the stack.	**DOUBLE**
2VARIABLE *x*		□		Double variable	Creates a two cell (8 byte) variable named *x*. When *x* is executed, the address of the 8 byte area is placed on the stack.	**DOUBLE**
ABORT		□		Abort	Clears the stack and performs a **QUIT**.	
ABORT" *str*		□		Abort with message	Prints the string literal that follows in line, then aborts, clearing all execution state to return to the interpreter.	
ABS	n1	□	n2	n2=|n1|	Replaces top of stack with its absolute value.	
ACOS	f1	□	f2	f2=arccos f1	Replaces floating point top of stack with its arc cosine.	**MATH**
AGAIN		□		Indefinite loop	Marks the end of an indefinite loop opened by the matching **BEGIN**.	
ALLOT	n	□		Allocate heap	Allocates *n* bytes of heap space. The space allocated is rounded to the next higher multiple of 4.	
AND	n1 n2	□	n3	Bitwise and	Stores the bitwise and of *n1* and n2 on the stack.	
ARRAY *x*	s_1 s_2 □ s_n n esize	□		Declare array	Declares an array *x* of elements of *esize* bytes each with *n* subscripts, each ranging from 0 to s_n1.	**ARRAY**
ASIN	f1	□	f2	f2=arcsin f1	Replaces floating point top of stack with its arc sine.	**MATH**
ATAN	f1	□	f2	f2=arctan f1	Replaces floating point top of stack with its arc tangent.	**MATH**

ATAN2	f1 f2	□	f3	f3=arctan f1/ f2	Replaces the two floating point numbers on the top of the stack with the arc tangent of their quotient, properly handling zero denominators.	**MATH**
BEGIN		□		Begin loop	Begins an indefinite loop. The end of the loop is marked by the matching **AGAIN**, **REPEAT**, or **UNTIL**.	
>BODY	cfa	□	pfa	Body address	Given the compile address of a word, return its body (parameter) address.	
BRANCH		□		Branch	Jump to the address that follows in line.	
?BRANCH	flag	□		Conditional branch	If the top of stack is zero, jump to the address which follows in line. Otherwise skip the address and continue execution.	
C!	n addr	□		Store byte	The 8 bit value *n* is stored in the byte at address *addr*.	
C@	addr	□	n	Load byte	The byte at address *addr* is placed on the top of the stack.	
C,	n	□		Compile byte	The 8 bit value *n* is stored in the next free byte of the heap and the heap pointer is incremented by one.	
C=		□		Align heap	The heap allocation pointer is adjusted to the next four byte boundary. This must be done following a sequence of **C,** operations.	
CLEAR		□		Clear stack	All items on the stack are discarded.	
COMPARE	s1 s2	□	n	Compare strings	The two strings whose addresses are given by *s1* and *s2* are compared. If *s1* is less than *s2*,˜ 1 is returned; if *s1* is greater than *s2*, 1 is returned. If *s1* and *s2* are equal, 0 is returned.	**STRING**
CONST *x*	n	□		Declare constant	Declares a constant named *x*. When *x* is executed, the value *n* will be left on the stack.	
COS	f1	□	f2	Cosine	The floating point value on the top of the stack is replaced by its cosine.	**MATH**
CR		□		Carriage return	The standard output stream is advanced to the first character of the next line.	**CONIO**

CREATE		□		Create object	Create an object, given the name which appears next in the input stream, with a default action of pushing the parameter field address of the object when executed. No storage is allocated; normally the parameter field will be allocated and initialised by the defining word code that follows the **CREATE**.	
DEPTH		□	n	Stack depth	Returns the number of items on the stack before **DEPTH** was executed.	
DO	limit n	□		Definite loop	Executes the loop from the following word to the matching **LOOP** or **+LOOP** until *n* increments past the boundary between *limit*1 and *limit*. Note that the loop is always executed at least once (see **?DO** for an alternative to this).	
?DO	limit n	□		Conditional loop	If *n* equals *limit*, skip immediately to the matching **LOOP** or **+LOOP**. Otherwise, enter the loop, which is thenceFORTH treated as a normal **DO** loop.	
DOES>		□		Run-time action	Sets the run-time action of a word created by the last **CREATE** to the code that follows. When the word is executed, its body address is pushed on the stack, then the code that follows the **DOES>** will be executed.	
DROP	n	□		Discard top of stack	Discards the value at the top of the stack.	
DUP	n	□	n n	Duplicate	Duplicates the value at the top of the stack.	
?DUP	n	□	0 / n n	Conditional duplicate	If top of stack is nonzero, duplicate it. Otherwise leave zero on top of stack.	
ELSE		□		Else	Used in an **IF—ELSE—THEN** sequence, delimits the code to be executed if the if-condition was false.	
EXECUTE	addr	□		Execute word	Executes the word with compile address *addr*.	

EXIT		□		Exit definition	Exit from the current definition immediately. Note that **EXIT** cannot be used within a **DO—LOOP**; use **LEAVE** instead.	
EXP	f1	□	f2	$f2=e^{f1}$	The floating point value on the top of the stack is replaced by its natural antilogarithm.	**MATH**
F+	f1 f2	□	f3	f3=f1+f2	The two floating point values on the top of the stack are added and their sum is placed on the top of the stack.	**REAL**
F-	f1 f2	□	f3	f3=f1f2	The floating point value *f2* is subtracted from the floating point value *f1* and the result is placed on the top of the stack.	**REAL**
F*	f1 f2	□	f3	f3=f1□f2	The two floating point values on the top of the stack are multiplied and their product is placed on the top of the stack.	**REAL**
F/	f1 f2	□	f3	f3=f1□f2	The floating point value *f1* is divided by the floating point value *f2* and the quotient is placed on the top of the stack.	**REAL**
F.	f	□		Print floating point	The floating point value on the top of the stack is printed.	**REAL**
F<	f1 f2	□	flag	Floating less than	The top of stack is set to 1 if *f1* is less than *f2* and 0 otherwise.	**REAL**
F<=	f1 f2	□	flag	Floating less than or equal	The top of stack is set to 1 if *f1* is less than or equal to *f2* and 0 otherwise.	**REAL**
F<>	f1 f2	□	flag	Floating not equal	The top of stack is set to 1 if *f1* is not equal to *f2* and 0 otherwise.	**REAL**
F=	f1 f2	□	flag	Floating equal	The top of stack is set to 1 if *f1* is equal to *f2* and 0 otherwise.	**REAL**
F>	f1 f2	□	flag	Floating greater than	The top of stack is set to 1 if *f1* is greater than *f2* and 0 otherwise.	**REAL**
F>=	f1 f2	□	flag	Floating greater than or equal	The top of stack is set to 1 if *f1* is greater than or equal to *f2* and 0 otherwise.	**REAL**
FABS	f1	□	f2	f2=|f1|	Replaces floating point top of stack with its absolute value.	

FIND	s	□	word flag	Look up word	The word with name given by the string *s* is looked up in the dictionary. If a definition if not found, *word* will be left as the address of the string and *flag* will be set to zero. If the word is present in the dictionary, its compilation address is placed on the stack, followed by a *flag* that is 1 if the word is marked for immediate execution and 1 otherwise.	**DEFFIELDS**
FIX	f	□	n	Floating to integer	The floating point number on the top of the stack is replaced by the integer obtained by truncating its fractional part.	**REAL**
(FLIT)		□	f	Push floating point literal	Pushes the floating point literal that follows in line onto the top of the stack.	**REAL**
FLOAT	n	□	f	Integer to floating	The integer value on the top of the stack is replaced by the equivalent floating point value.	**REAL**
FMAX	f1 f2	□	f3	Floating point maximum	The greater of the two floating point values on the top of the stack is placed on the top of the stack.	**FLOAT**
FMIN	f1 f2	□	f3	Floating point minimum	The lesser of the two floating point values on the top of the stack is placed on the top of the stack.	**FLOAT**
FNEGATE	f1	□	f2	f2 = f1	The negative of the floating point value on the top of the stack replaces the floating point value there.	**FLOAT**
FORGET *w*		□		Forget word	The most recent definition of word *w* is deleted, along with all words declared more recently than the named word.	
HERE		□	addr	Heap address	The current heap allocation address is placed on the top of the stack.	
I		□	n	Inner loop index	The index of the innermost **DO—LOOP** is placed on the stack.	
IF	flag	□		Conditional statement	If *flag* is nonzero, the following statements are executed. Otherwise, execution resumes after the matching **ELSE** clause, if any, or after the matching **THEN**.	

IMMEDIATE		□		Mark immediate	The most recently defined word is marked for immediate execution; it will be executed even if entered in compile state.	
J		□	n	Outer loop index	The loop index of the next to innermost **DO—LOOP** is placed on the stack.	
LEAVE		□		Exit **DO—LOOP**	The innermost **DO—LOOP** is immediately exited. Execution resumes after the **LOOP** statement marking the end of the loop.	
(LIT)		□	n	Push literal	Pushes the integer literal that follows in line onto the top of the stack.	
LOG	f1	□	f2	f2=ln f1	The floating point value on the top of the stack is replaced by its natural logarithm.	**MATH**
LOOP		□		Increment loop index	Adds one to the index of the active loop. If the limit is reached, the loop is exited. Otherwise, another iteration is begun.	
+LOOP	n	□		Add to loop index	Adds *n* to the index of the active loop. If the limit is reached, the loop is exited. Otherwise, another iteration is begun.	
MAX	n1 n2	□	n3	Maximum	The greater of *n1* and *n2* is left on the top of the stack.	
MEMSTAT		□		Print memory status	The current and maximum memory usage so far are printed on standard output. The sizes allocated for the stack, return stack, and heap are edited, as well as the percentage in use.	**MEMSTAT**
MIN	n1 n2	□	n3	Minimum	The lesser of *n1* and *n2* is left on the top of the stack.	
MOD	n1 n2	□	n3	Modulus (remainder)	The remainder when *n1* is divided by *n2* is left on the top of the stack.	
/MOD	n1 n2	□	n3 n4	n3 = n1 mod n2, n4 = n1 □ n2	Divides *n1* by *n2* and leaves quotient on top of stack, remainder as next on stack.	
NEGATE	n1	□	n2	n2=̃n1	Negates the value on the top of the stack.	
(NEST)		□		Invoke word	Pushes the instruction pointer onto the return stack and sets the instruction pointer to the next word in line.	

NOT	n1	□	n2	Logical not	Inverts the bits in the value on the top of the stack. This performs logical negation for truth values of 1 (True) and 0 (False).	
OR	n1 n2	□	n3	Bitwise or	Stores the bitwise or of *n1* and *n2* on the stack.	
OVER	n1 n2	□	n1 n2 n1	Duplicate second item	The second item on the stack is copied to the top.	
PICK	□ n_2 n_1 n_0 index	□	□ n0 n_{index}	Pick item from stack	The *index*th stack item is copied to the top of the stack. The top of stack has *index* 0, the second item *index* 1, and so on.	
POW	f1 f2	□	f3	$f3=f1^{f2}$	The second floating point value on the stack is taken to the power of the top floating point stack value and the result is left on the top of the stack.	**MATH**
QUIT		□		Quit execution	The return stack is cleared and control is returned to the interpreter. The stack is not disturbed.	
>R	n	□		To return stack	Removes the top item from the stack and pushes it onto the return stack.	
R>		□	n	From return stack	The top value is removed from the return stack and pushed onto the stack.	
R@		□	n	Fetch return stack	The top value on the return stack is pushed onto the stack. The value is not removed from the return stack.	
REPEAT		□		Close **BEGIN—WHILE—REPEAT** loop	Another iteration of the current **BEGIN—WHILE—REPEAT** loop having been completed, execution continues after the matching **BEGIN**.	
ROLL	□ n_2 n_1 n_0 index	□	□ n_0 n_{index}	Rotate *index*th item to top	The stack item selected by *index*, with 0 designating the top of stack, 1 the second item, and so on, is moved to the top of the stack. The intervening stack items are moved down one item.	
ROT	n1 n2 n3	□	n2 n3 n1	Rotate 3 items	The third item on the stack is placed on the top of the stack and the second and first items are moved down.	
-ROT	n1 n2 n3	□	n3 n1 n2	Reverse rotate	Moves the top of stack to the third item, moving the third and second items up.	

S!	s1 s2	□		Store string	The string at address *s1* is copied into the string at *s2*.	**STRING**
S+	s1 s2	□		String concatenate	The string at address *s1* is concatenated to the string at address *s2*.	**STRING**
SHIFT	n1 n2	□	n3	Shift n1 by n2 bits	The value *n1* is logically shifted the number of bits specified by *n2*, left if *n2* is positive and right if *n2* is negative. Zero bits are shifted into vacated bits.	
SIN	f1	□	f2	Sine	The floating point value on the top of the stack is replaced by its sine.	**MATH**
SQRT	f1	□	f2	f2 = sqrt f1	The floating point value on the top of the stack is replaced by its square root.	**MATH**
STATE		□	addr	System state variable	The address of the system state variable is pushed on the stack. The state is zero if interpreting, nonzero if compiling.	
STRCAT	s1 s2	□		String concatenate	The string at address *s1* is concatenated to the string at address *s2*.	**STRING**
STRCHAR	s1 s2	□		String character search	The string at address *s1* is searched for the first occurrence of the first character of string *s2*. If that character appears nowhere in *s1*, 0 is returned. Otherwise, the address of the first occurrence in *s1* is left on the top of the stack.	**STRING**
STRCMP	s1 s2	□	n	String compare	The string at address *s1* is compared to the string at address *s2*. If *s1* is less than *s2*, 1 is returned. If *s1* and *s2* are equal, 0 is returned. If *s1* is greater than *s2*, 1 is returned.	**STRING**
STRCPY	s1 s2	□		Store string	The string at address *s1* is copied into the string at *s2*.	**STRING**
STRING *x*	size	□		Declare string	Declares a string named *x* of a maximum of *size*1 characters.	**STRING**
STRINT	s1	□	s2 n	String to integer	Scans an integer from *s1*. The integer scanned is placed on the top of the stack and the address of the character that terminated the scan is stored as the next item on the stack.	**STRING**

STRLEN	s	□	n	String length	The length of string *s* is placed on the top of the stack.	**STRING**
(STRLIT)		□	s	String literal	Pushes the address of the string literal that follows in line onto the stack.	**STRING**
STRREAL	s1	□	s2 f	String to real	Scans a floating point number from *s1*. The floating point number scanned is placed on the top of the stack and the address of the character that terminated the scan is stored as the next item on the stack.	**STRING**
SWAP	n1 n2	□	n2 n1	Swap top two items	The top two stack items are interchanged.	
TAN	f1	□	f2	Tangent	The floating point value on the top of the stack is replaced by its tangent.	**MATH**
THEN		□		End if	Used in an **IF—ELSE—THEN** sequence, marks the end of the conditional statement.	
TRACE	n	□		Trace mode	If *n* is nonzero, trace mode is enabled. If *n* is zero, trace mode is turned off.	**TRACE**
TYPE	s	□		Print string	The string at address *s* is printed on standard output.	**CONIO**
UNTIL	flag	□		End **BEGIN— UNTIL** loop	If *flag* is zero, the loop continues execution at the word following the matching **BEGIN**. If *flag* is nonzero, the loop is exited and the word following the **UNTIL** is executed.	
VAR *x*		□		Declare variable	A variable named *x* is declared and its value is set to zero. When *x* is executed, its address will be placed on the stack. Four bytes are reserved on the heap for the variable's value.	
WALKBACK	n	□		Walkback mode	If *n* is nonzero, a walkback trace through active words will be performed whenever an error occurs during execution. If *n* is zero, the walkback is suppressed.	**WALKBACK**
WHILE	flag	□		Decide **BEGIN□WHILE— REPEAT** loop	If *flag* is nonzero, execution continues after the **WHILE**. If *flag* is zero, the loop is exited and execution resumed after the **REPEAT** that marks the end of the loop.	

WORDS		□		List words defined	Defined words are listed, from the most recently defined to the first defined. If the system supports keystroke trapping, pressing any key will pause the display of defined words; pressing carriage return will abort the listing—any other key resumes it. On other systems, only the 20 most recently defined words are listed.	**CONIO**
XOR	n1 n2	□	n3	Bitwise exclusive or	Stores the bitwise exclusive or of *n1* and *n2* on the stack.	
(XDO)	limit n	□		Execute loop	At runtime, enters a loop that will step until *n* increments and becomes equal to *limit*.	
(X?DO)	limit n	□		Execute conditional loop	At runtime, tests if *n* equals *limit*. If so, skips until the matching **LOOP** or **+LOOP**. Otherwise, enters the loop.	
(XLOOP)		□		Increment loop index	At runtime, adds one to the index of the active loop and exits if equal to the limit. Otherwise returns to the matching **DO** or **?DO**.	
(+XLOOP)	incr	□		Add to loop index	At runtime, increments the loop index by the top of stack. If the loop is not done, begins the next iteration.	
SYST		□	Time	Get Systemtime	Returns the actual System Time	**TIME**
SETSYST	TIME	□		Set Systemtime	Sets the Systemtime	**TIME**
DTIME	TIME	□	WD,H,M,S	Decode Time	Splits the 32-Bit Timevalue into 4 values: Weekday, Hour, Minute, Second	**TIME**
CTIME	WD H M S	□	TIME	Code Time	Concantenates the values for Weekday, Hour, Minute, Second to one 32-Bit Time-value	**TIME**
SYSD		□	Date	Get Systemdate	Returns the actual System Date	**DATE**
SETSYSD	DATE	□		Set Systendate	Sets the Systemdate	**DATE**
DDATE	DATE	□	J M D	Decode Date	Splits the 32-Bit Datevalue into 3 values: Jear Month and Day	**DATE**
CDATE	J M D	□	Date	Code Date	Concantenates the values for year Month and Day to one 32-Bit Date-value	**DATE**

TICKS		□	Ticks	Get Systemticks	Get the Number of Milliseconds the device is running	**SYSTEM**
TINIT	Nr Function Timeout	□		Init Timer	Init Timer Nr (0 to 15) with timeout and let it execute the function after timeout. Timeout is set in 1/100 second intervalls	**TIMER**
TSTART	Nr	□		Start Timer	Starts the Timer Nr (0 to 15)	**TIMER**
TSTOP	Nr	□	Flag	Stop Timer	Stops the Timer, Flag is 0 if timer was running, -1 otherwise	**TIMER**
TCONT	NR	□	Rest	Continue Timer	Timer is restarted without reset, this function returns the rest amount of time, even if the timer was not stopped before	**TIMER**
SIGNAL	Function	□		Execute Function asynchron	Send a signal to the system, that the function should be executed	**SYSTEM**
FSAVE		□		Save Heap	Saves all functions and data defined in the heap into nonvolatile memory , so that the heap is present on the next startup	**SYSTEM**
FERASE		□		Clear NVM	Clears the nonvolatile memory	**SYSTEM**
SELF		□	Addr	Return Runtime-address	The address of the running Function is pushed on the stack. Used inside a create does> statement, you get the functions adress in the create statement	**SYSTEM**
FLOAT2DBL	4-Byte-Float	□	8-Byte-Double	Convert Float to Double		**EIB-CONVERT**
DBL2FLOAT	8-Byte-Double	□	4-Byte-Float	Convert Double to Float		**EIB-CONVERT**
RESET		□		Reset System	Systemreset and restart	**SYSTEM**
STARTEIB		□			Activate EIB functions	**EIB**
STOPEIB		□			Stop EIB functions	**EIB**
EIBGET	Objnr	□	Value	Get EIB Value	Get the value from object and push it on the stack.	**EIB**
EIBSET	Value, Objnr	□		Set EIB value	Set the object to value	**EIB**
EIBPOLL	OBJNR	□		Poll EIB value	Requests the value from the Bus	**EIB**
EINTX	Objnr	□		Send value	Initiates a send of the objects value	**EIB**
EIS2INT	Value	□	Value	Convert 2-Byte-float value to integer	Multiplies the 2-byte float with 100 and makes it integer	**EIB-CONVERT**

INT2EIS	Value	□	Value	Convert Integer to 2-Byte float	Divides the integer by 100 and makes it 2-byte-float	**EIB-CONVERT**
ONEIBC	Address	□		On eib change	Defines a function to be executed by an incoming eib telegram which changes the value of an element	**EIB**
ONEIBC	Address	□		On eib update	Defines a function to be executed by an incoming eib telegram which does not chang the value of an element	**EIB**
Xlock		□		Lock program	Locks all console input exept ferase	**SYSTEM**
GETSW		□	Value	Get switch	Polls the value of the switch	**SYSTEM**
PRINT	Addr n	□	Addr	Print integer	Print integer n in readable form	
FPRINT	Addr f	□	Addr	Print double	Print double f in readable form	
SETLED	0/1 nr	□		Set LED	Sets led nr on or off	**SYSTEM**
ONPB					Function to be defined that is executed by pressing the button	**SYSTEM**
ONINIT					Function to be defined that is executed at startup	**SYSTEM**

There are two special functions, not predefined, but called up by the system.

ONINIT, called up by starting the system, provides an initialisation and the start of all needed programmes and functions.

ONPB will be called up by operating the pushbutton.

2.6.6. Example

If you would like to have a look for starters:

```
1 0 setled
```

Notice: the red LED (with the number 0) is flashing

```
0 0 setled
```

Now it’s off again.
Now you don’t want to enter anything, but use the key:

```
var ledstat
: onpb ledstat @ 1 xor dup ledstat ! 1 setled ;
```

When you press the key, the green LED goes on and then off. The function onpb will be completed automatically by pressing the key.
What’s going on, in detail:

```
: onpb          -> start of function onpb
ledstat @       -> get the content of the variable ledstat
```

1 xor	-> exclusive or with 1, the value switches from 0 to 1
dup	-> the obtained value is duplicated on the stack.
ledstat !	-> the value will be written to the address of ledstat
1 setled	-> the duplicated value will be written on led 1 as well (green)
;	-> end of definition

Now let’s forget the whole thing!!

```
forget ledstat
```

Now let’s switch on/ off the LED governed by the rotary -switch

```
: onpb getsw
dup 1 and 0= if 0 else 1 then 0 setled
dup 2 and 0= if 0 else 1 then 1 setled
4 and 0= if 0 else 1 then 2 setled ;
```

getsw gets the switch-setting, binary represented by the LEDs, when you press the key.
forget onpb deletes all again.

Now we try to work with a timer:

```
: ledon 1 0 setled ;
: ledoff 0 0 setled ;
```

```
0 ' ledoff 100 tinit
```

```
: onpb ledon 0 tstart ;
```

Operating the pushbutton, the LED goes on for a second.
We can recognise the first and second line as functions switching on and off the red LED.
In the third line a timer will be initialised (number 0 out of 0 to15) which carries out “ledoff) after 100/100 seconds. (The term “ledoff” gets the runtime-address).
In the FORTH line the function onpb switches on the LED and starts the timer (number 0).

If the timeout should be governed by the rotary-switch e.g. it is possible to declare the timer as runtime.

```
: onpb ledon 0 ['] ledoff getsw 100 * tinit 0 tstart ;
```

Now the rotary-switch determines the number of seconds.
Notice the change (`’) ledoff with which the runtime- address can be determined in functions to functions.

Enough about the operating control:

```
forget ledon
```

You bought the device because of the EIB- interface.
Now construct a 1 bit group-object of your choice under EIB- settings (best is a lightthat you can see from where you are).
Name it testobj without setting the flags (You don’t want to receive this object, and it should not answer any recalls from the Bus).
Transfer your new group- table to the device and carry out a reset. (enter:“ reset”).
With the new connection working, the term „connected“ shows up once more.
By now your MicroFM should be connected to the EIB/KNX- Bus.

```
: on0 1 eib.testobj eibset eib.testobj eibtx ;
on0
```

Your have switched on your light (lamp).

```
: off0 0 eib.testobj eibset eib.testobj eibtx ;
off0
```

Now it’s off again.
EIBset sets the internal group- object and EIBTX sends the information to the Bus.

To send is one thing, to receive another.
Again add a 1 bit group- object (this time a pushbutton) under EIB-settings.
Name it pushbutton 1 and set the receive-flag (we watch our flags by our MicroFM)
Now again transmit and reset.

```
var ledstat
: toggle ledstat @ 1 xor dup ledstat ! 0 setled ;
```

You recognise an acquaintance: the red LED will be switched (turned, shifted).

```
: eibin eib.Taster1 =  if toggle then ;
' eibin dup oneibc oneibu
```

You defined a function, which tests if the stack-value at the top corresponds with the object-number of your pushbutton- signals.
If this is the case, the LED will be turned and you have passed on the function-address of this function to the call parameter oneibc and oneibu.
The function will then be registered for incoming EIB-telegrams (both at changed values and at value-update).
When a telegram is coming in, the object-number is written on the stack and the function eibin is carried out.
Now everything just needs to be activated.

```
starteib
```

Now you can switch on/off the LED with your pushbutton.

`stopeib` stopeib stops the reception again.

If you want everything to function and start up again immediately after a reset, you have to define the start-function oninit.

```
: oninit ['] eibin dup oneibc oneibu starteib ;
```

Until now all is stored in RAM, but has to be transferred to the persistent memory (ROM).

```
fsave
```

Now take a look at the memory capacity:

```
memstat
```

The following output appears:

```
Stack:
Curr:  0 Items: 100 0 %
Return stack:
Curr:  0 Items: 100 0 %
Heap:
Curr:  49 Items: 2176 2 %
Flash:
Curr:  192 Items: 8192 2 %
```

2% of the memory is already used.
After a reboot all appears as it was programmed before, and your LED-switch functions without your assistance.

With *ferase* you can delete the persistent memory again.
The device starts automatically anew.
If you would like to protect the device against unauthorised access, type in *xlock*, then you have still have console-output, but no command input except *ferase.*

If you make a mistake in the programming and you have no further access because the device says shuts down directly after the start, you can start the device by pressing down the pushbutton.
Now delete the bad program with *ferase* and begin anew.

2.6.7. Preprocessor

Pre-processor

Each text, sent from the project- page, runs through a pre- processor, which recognises the following commands, not passed on to the MicroFM.

#define xx yyy, Any xx occurring later on will be replaced with yyy.

#include filename The file`s filename will be read. The file is searched in relation to the folder microfm/includes.

#........Any line, beginning with #, will be aborted.

3. MicroVis Module

3.1. Introduction

This document contains information such as data, illustrations, values and others that are subject to change without prior notice. Additional information is available under www.arcus-eds.de.

We reserve the right to make technical changes!

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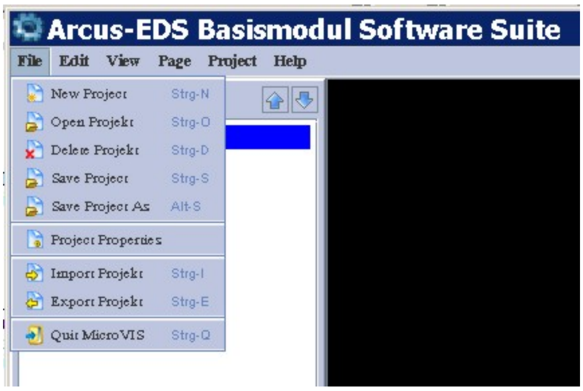
3.2. System Information

This device is a product for the InstaBus- EIB/KNX- System. Detailed knowledge in depth of the InstaBus- EIB/KNX- System is essential. The functions of the device are software- dependant. For detailed information about which software can be downloaded and which function capacity is then available as well as information about the software itself, have a look at the software details of the manufacturer.
It is operated with the software tool „ARC Suite“ and is ready for downloading under http://www.arcus-eds.de

This device works with a real- time operating system FreeRTOS (www.freertos.org).

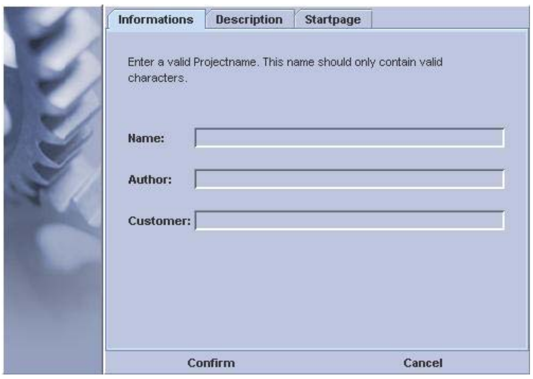
3.3. Project Administration

In the menu item “file” you find the tools for the project- administration



3.3.1. New Project

A new project demands a unique name and contains further optional instructions.



Enter a valid Projectname. This name should only contain valid characters.

Name:

Author:

Customer:

Under its project- name the project can later be selected or deleted. The entry of the author’s and client’s name or a description is optional. The instruction for the start page enables you to enter the selected background colour as well as the use of a blueprint, which can be selected from any of your blueprints.

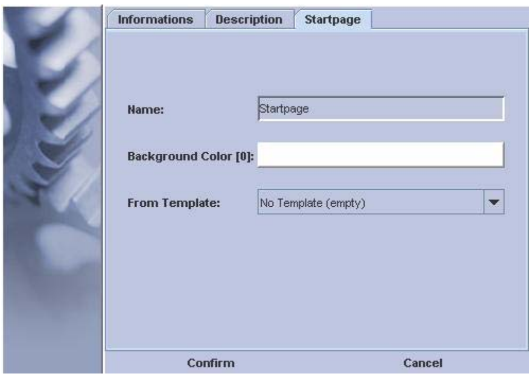
If you do not have any blueprints, choose the indication: ”empty” displays.

The settings can be changed under project details at any time.

3.3.2. Open Project

An option dialog shows up to open your projects.

The projects are displayed under the project name you have chosen.



Name: Startpage

Background Color [0]:

From Template: No Template (empty)

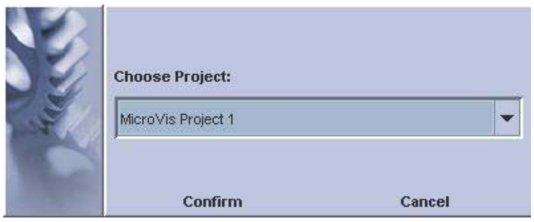
3.3.3. Delete Project

Displays an option dialog to delete your projects

The projects are displayed under the project name you have chosen

3.3.4. Save Project

Saves the active project with all changes you have made. To transport your projects from one computer to another or to another version of ArcSuite choose the option “export” or “import”.



Choose Project: MicroVis Project 1

3.3.5. Save Project As

Saves the active project with all the changes you have made under another name.

3.3.6. Project Properties

Here you can display settings you have made carrying out your project, and change them if necessary.

3.3.7. Export Project

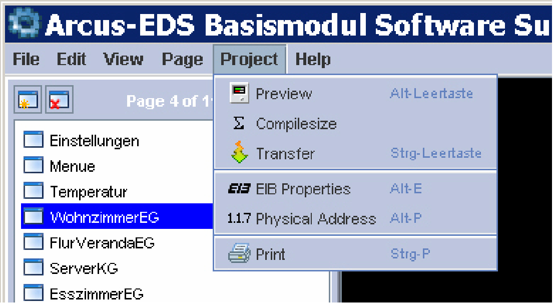
The current project can be packed together in an export- file under a chosen name. You can export it e.g. to another PC or save the current version for the purpose of documentation.

3.3.8. Import Project

An earlier exported project can be imported under a chosen name.

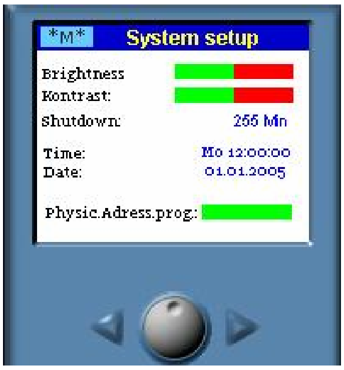
3.4. Current Project

Tools for your current project



3.4.1. Preview

With the project-preview you will get a realistic preview of the optical impression of your project. The display scale corresponds approximately to the scale of the MicroVis-display, so you can test the operability of the page sequence.


M System setup

Brightness:

Kontrast:

Shutdown: 255 Min

Time: Mo 12:00:00

Date: 01.01.2005

Physic.Adress.prog:

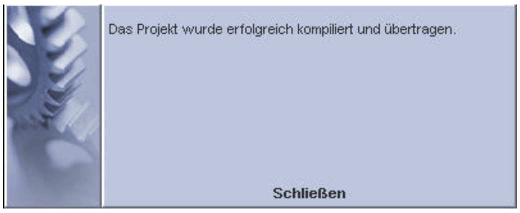
Using the arrow buttons you can skip from one page to another.

3.4.2. Project Size

The current memory space being used by your Micro VIS is calculated and shown. The display is carried out in k- byte and shows the % of the memory available.

3.4.3. Transmission

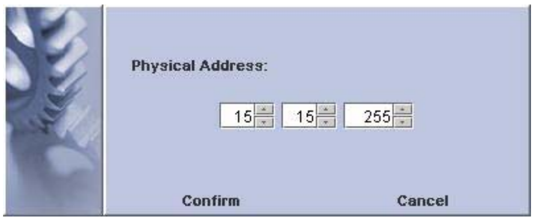
The current project is transmitted to MicroVis, which is connected with a USB-cable. An error occurring during the transmission can usually be solved by a second transmission. Sometimes you have to disconnect the device from the USB-cable and connect it anew by pressing down the button; the transmission should then definitely be accurate.


Das Projekt wurde erfolgreich kompiliert und übertragen.

Please keep in mind, that the transmission executed with a connected EIB/KNX Bus usually works, but not always!

3.4.4. Physical Address

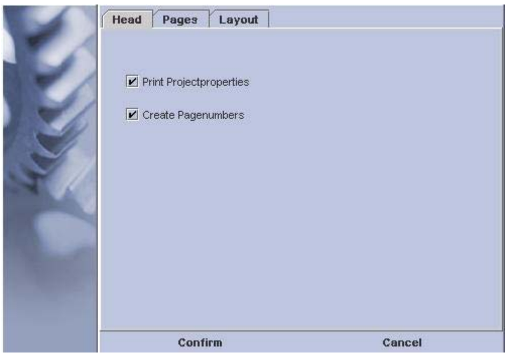
The physical address of the MicroVis display is transmitted together with the project. It has to be a unique address within an EIB/KNX network.


Physical Address: 15 15 255

3.4.5. Print

After selecting and installing your printer you can install information and pages ready for printing on your document as well as the page set-up.

Project information is the information you have declared developing the project.

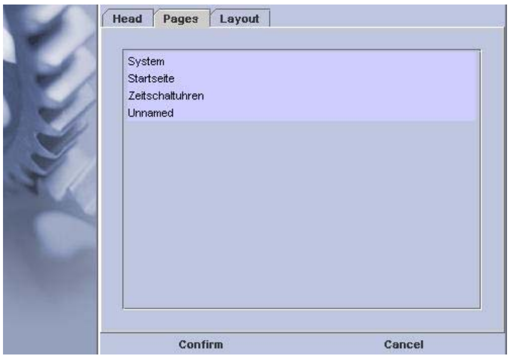


☑ Print Projectproperties

☑ Create Pagenumbers

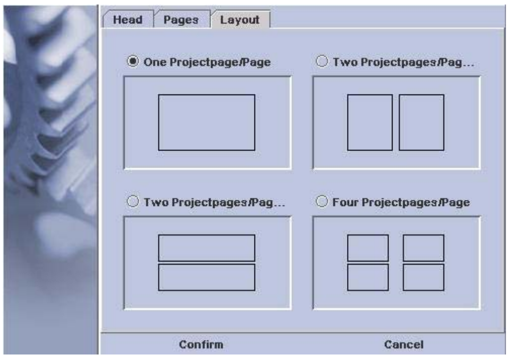
All pages are marked by default and therefore printed.

Pages, which should not be printed, can be taken out.



System
Startseite
Zeitschaltuhren
Unnamed

Up to 4 pages can be printed on one document page; the set up can be selected. All sides are marked per default and therefore are printed.



● One Projectpage/Page

○ Two Projectpages/Pag...

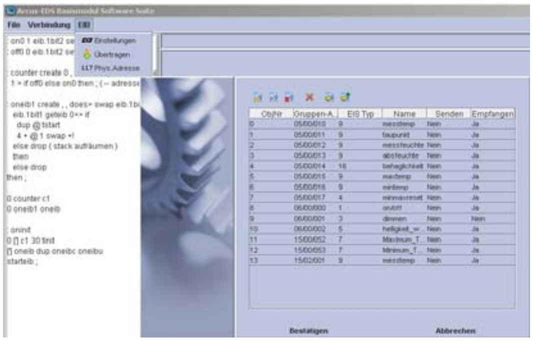
○ Two Projectpages/Pag...

○ Four Projectpages/Page

3.4.6. EIB-Settings

To go on you need special knowledge about the European Installation- Bus. You can ask your system-integrator or your EIB- service provider.

3.4.6.1. Import and Editation of EIB- Objects



ObjNr	Gruppen-A.	EIS Typ	Name	Senden	Empfangen
0	05/00/010	9	messtemp	Nein	Ja
1	05/00/011	9	taupunkt	Nein	Ja
2	05/00/012	9	messfeuchte	Nein	Ja
3	05/00/013	9	absfeuchte	Nein	Ja
4	05/00/014	16	behaglichkeit	Nein	Ja
5	05/00/015	9	maxtemp	Nein	Ja
6	05/00/016	9	mintemp	Nein	Ja
7	05/00/017	4	minmaxreset	Nein	Ja
8	06/00/000	1	on/off	Nein	Ja
9	06/00/001	3	dimmen	Nein	Nein
10	06/00/002	5	helligkeit_w...	Nein	Ja
11	15/00/052	7	Maximum_T...	Nein	Ja
12	15/00/053	7	Minimum_T...	Nein	Ja
13	15/02/001	9	messtemp	Nein	Ja

44 EIB group-addresses can be used in MicroVis and 128 group addresses for MicroVis II. The import of group-addresses is carried out by direct selection from the ETS3 database. Each address- point can also be entered and processed separately. If you are working with ArcSuite parallel to ETS, start ArcSuite before ETS.

To create a new EIB-object

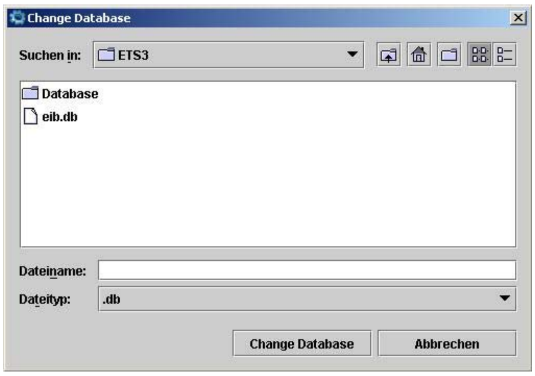
To edit a EIB-object

To clear a single EIB-object

To clear the whole EIB-table (EIB.tbl)

To import EIB-Objects from the ETS and to create a new EIB.tbl

To import EIB-objects the path to the EIB-database and the EIB- databank-engine has to be set. (See 1.1 Introduction/Settings)



Suchen in: ETS3

Dateiname:

Dateityp: .db

Caution! When imports are made with this function, all EIB-objects in the EIB-list of the ArcSuite project are deleted.

Choose your EIB project from the ETS. To attach single data points from the ETS, click on "confirm" or "skip" if you want to import each data point separately. To attach the whole list, choose "all". Please note that the number of group addresses that appear in the list does not exceed the maximum.

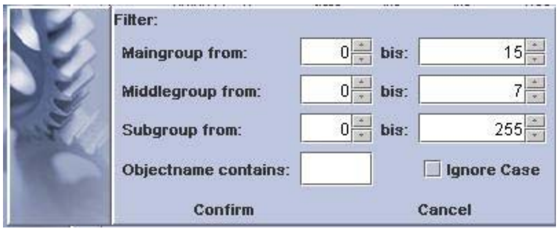
Importing filtered EIB- Objects

The procedure for importing EIB-objects is similar to that described above. Here you can attach data points to your already existent list, without deleting extant data points. Please not that the number of group addresses that appear in the list does not exceed the maximum. To add new data points, you have to clear up memory space on the list through manually entering delete.

You can choose between several filters.

The selective data- import can be carried out by pressing the button:**" Add EIB- objects filtered"** out of the ETS over the primary-, secondary - or sub - groups or as well with the full text search **object name contains**.

Input text contents under „objectname contains". Click



Maingroup from: 0 bis: 15

Middlegroup from: 0 bis: 7

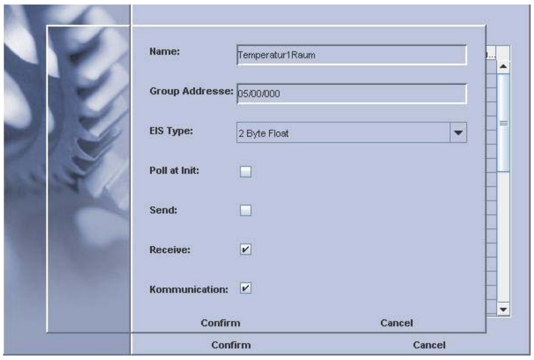
Subgroup from: 0 bis: 255

Objectname contains:

□ Ignore Case

„ignore case“if you want to ignore capital lettering. The filter function also takes into account substrings within the object names.

3.4.6.2. Manual handling of EIB- Objects



Name: Temperatur1Raum

Group Addresse: 05/00/000

EIS Type: 2 Byte Float

Poll at Init: □

Send: □

Receive: ☑

Kommunication: ☑

Group addresses: The group address can be entered in a two- or three-part form.

Poll at start: When the system is started, the data point is scanned. For this the communications- and receiver-flag has to be set.

Send: The elements that are connected with this object can output data to the Bus. The communications flag has to be set.

Receive: The elements that are connected with this object can output data to the Bus. The communications flag has to be set.

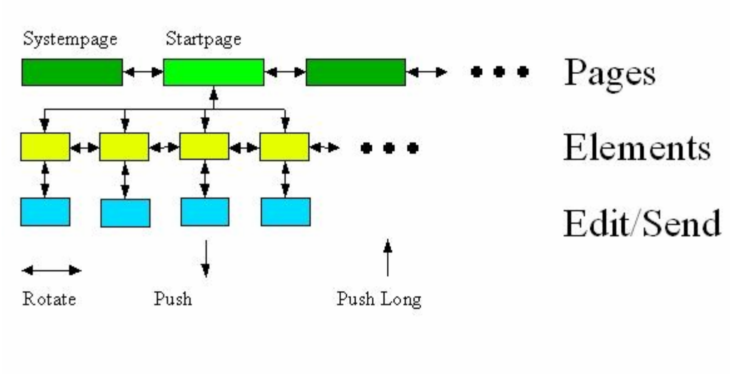
Communication: Communication has to be permitted to send or receive. These settings can viewed or changed by double-clicking on the entry of the overview.

3.5. Page Architecture and Navigation

3.5.1. Navigation

The navigation is executed by turning and pressing the operating button.

The page set up is organised hierarchically:



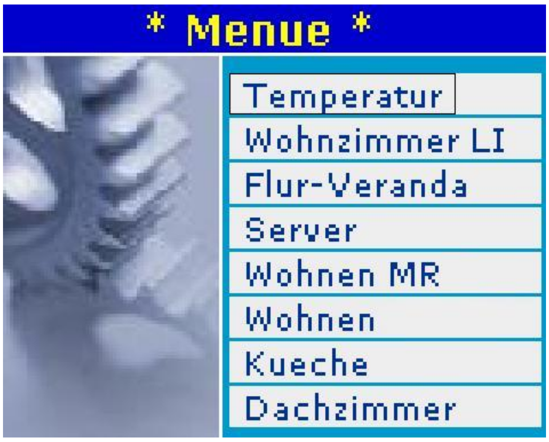
After the system is started the start page will be displayed. By turning the button the displayed page can be selected.

By pressing the operating button the page is opened and the first selectable element is marked. By turning the button the selectable elements are marked in the order in which they can be selected in the software. Operating the button once more selects the element. According to the kind of its function, a value can be installed or selected and a telegram can be sent to the Bus.

By pressing the operating button for 2 seconds the level is abandoned and the user reaches one level up.

With the Firmware- version 1.5 and later versions, a page- change can also be initiated by operating a special element.

Complex menu conducts can be realised with this as well. Go to “static text field” – elements, for page design.



* Menue *

Temperatur
Wohnzimmer LI
Flur-Veranda
Server
Wohnen MR
Wohnen
Kueche
Dachzimmer

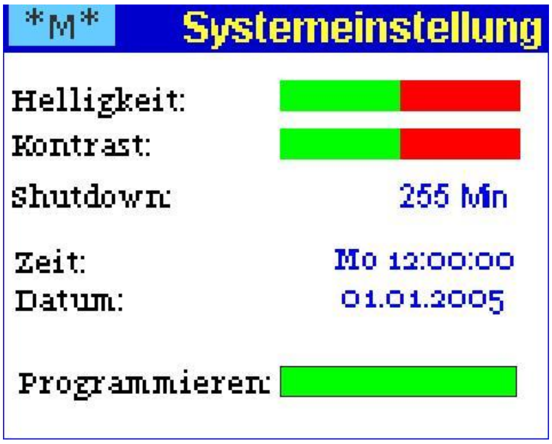
3.5.2. System page

The page for system- setting normally contains the system- parameter: **Contrast, brightness, shutdown- time of display, time, date and mode of programming**.

- Contrast and brightness with a bar- display from 0 to 100 %.

- The shutdown- time can be programmed from 0 to 255 minutes.

- Time and date can be set up manually, if the system- time is not taken over the EIB/KNX- Bus.



M Systemeinstellung

Helligkeit:
Kontrast:
Shutdown: 255 Min
Zeit: Mo 12:00:00
Datum: 01.01.2005
Programmieren:

- With the programming key the display can be switched to the programming mode to program the physical address over the EIB/KNX- Bus. The physical address can also be changed in the ETS- program. By downloading the project, the address programmed over ETS is overwritten. When the programming mode is activated, it is not possible to operate the device until the programming mode has finished.

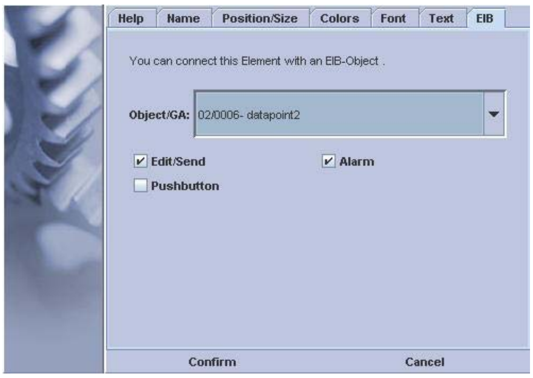
The set system page can be freely shaped in the ETS -program.

Functions can also be deleted, if the user should not have access to the settings (especially the programming mode).

3.5.3. Alarm Functions

Optic Alarm Function:

One element of a Micro VIS page can be marked as an alarm function. By receiving fresh data from this element the responding page is displayed automatically.



You can connect this Element with an EIB-Object .

Object/GA: 02/0006- datapoint2

☑ Edit/Send ☑ Alarm

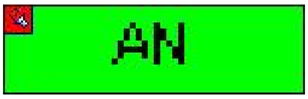
□ Pushbutton

Acoustic Alarm Function:

An acoustic alarm function for elements, which have a text output (buttons, text- lists), can be generated additionally.
A signal tone can be switched on or off with one text (e.g. a button display), beginning with "#1" and another text with "#0". An alarm is generated, which goes off, when the alarm mode has ended or can continue, until the device is operated with the service- button. The characters in front (#1/#0) are not given out.

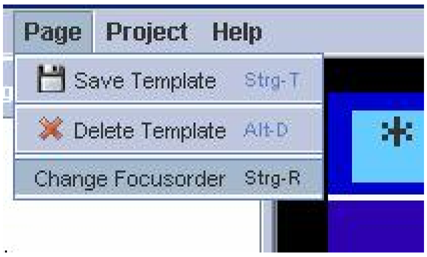
The EIB-element hast to be set on "send" in order to receive a permanent sound; otherwise you will only receive a short Beep.

In the page overview a "speaker" symbol will be shown within the respective object.



3.5.4. Focus order

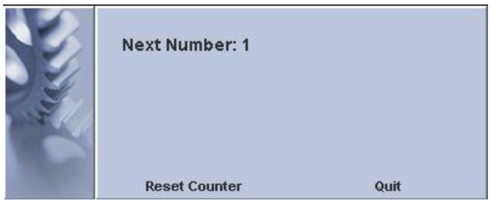
The order of the focus and therefore the order, in which the elements will be called up on the page, can be defined anew at any time.



Fixing the focus order:

Open the function at the top of the page, change focusorder and press: reset.

When you mouse click all editable fields one by one, a new order is established. The new focus order is then fixed anew.



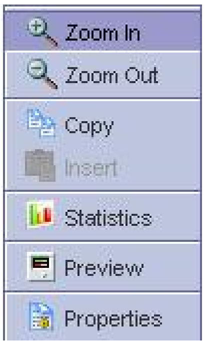
Next Number: 1

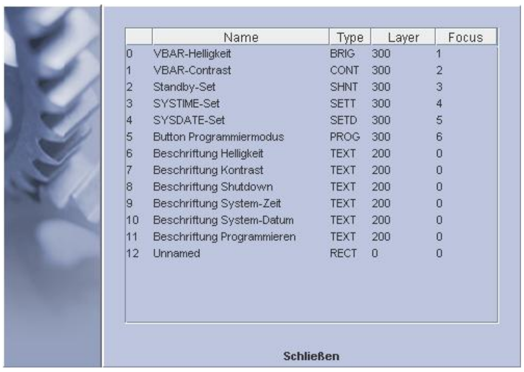
Order control:

Clicking on the page with the right side of the mouse opens a pull down menu.

Click: Statistics.

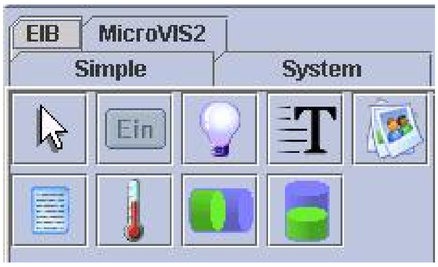
In the statistic the focus sequence is shown and can be changed. It is helpful if you have given your object a name before.





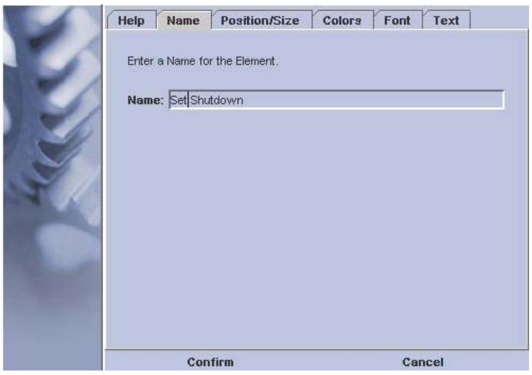
	Name	Type	Layer	Focus
0	VBAR-Helligkeit	BRIG	300	1
1	VBAR-Contrast	CONT	300	2
2	Standby-Set	SHNT	300	3
3	SYSTIME-Set	SETT	300	4
4	SYSDATE-Set	SETD	300	5
5	Button Programmiermodus	PROG	300	6
6	Beschriftung Helligkeit	TEXT	200	0
7	Beschriftung Kontrast	TEXT	200	0
8	Beschriftung Shutdown	TEXT	200	0
9	Beschriftung System-Zeit	TEXT	200	0
10	Beschriftung System-Datum	TEXT	200	0
11	Beschriftung Programmieren	TEXT	200	0
12	Unnamed	RECT	0	0

3.6. Elements for Page Layout



Each page is composed of elements. Simple elements, system-elements and EIB/KNX- elements are distinguished. Elements are inserted by selecting the corresponding element in the option “elements” and positioned as you like with the mouse. A dialogue about the details of the respective element pops up automatically. Please notice, that a valid EIB- object has always to be assigned to the EIB/KNX- elements, otherwise the program refuses to save the element.

3.6.1. Properties of the Elements



Enter a Name for the Element.

Name: Set Shutdown

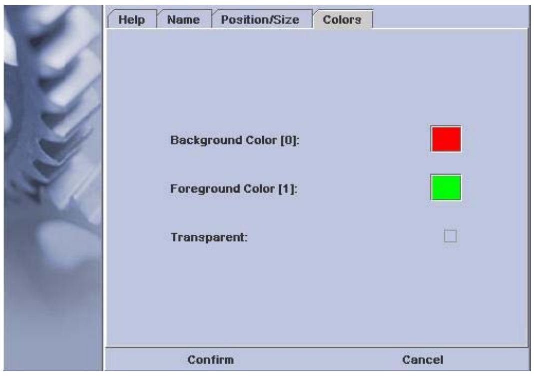
Some elements have special qualities, which are listed in detail below the elements. Commonly used qualities are shown as details below; they can be set up in the displayed dialogue.

Name:

The name is used for a clear presentation within the different dialogues, but is not required for the transmitted project.

Colours:

The colours for foreground (font) and background can be determined through the colour dialogue. At the button-display the background colour shows the value 0 and the foreground colour the value 1. Colours are determined by a colour option dialogue. Some elements can be drawn transparently: only the foreground will be drawn, e.g. for solid texts over pictures or images.



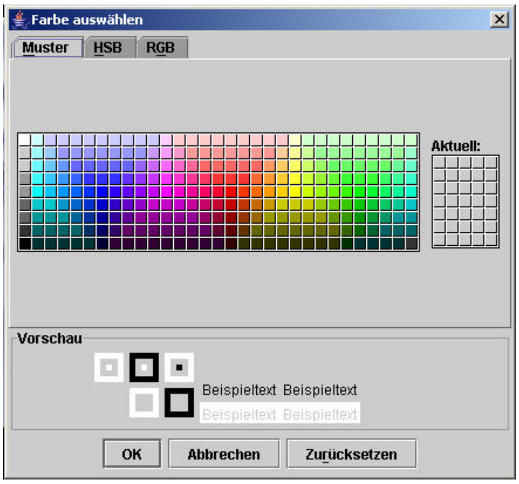
Background Color [0]: 🟥

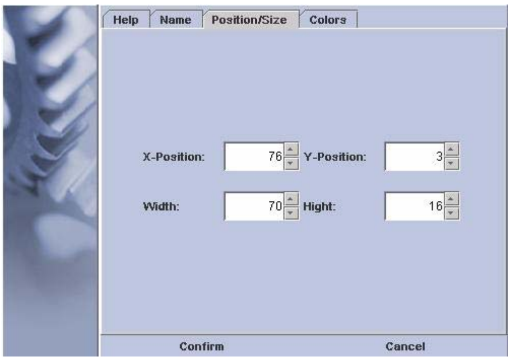
Foreground Color [1]: 🟩

Transparent: □

Choose colours:

The colours can be chosen from a HSB- or RGB-register.





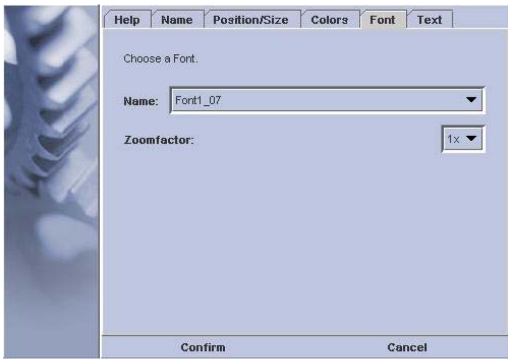
X-Position: 76 Y-Position: 3

Width: 70 Hight: 16

Position and dimension:

Position and dimension of the element can be determined with the mouse or through the dialogue.

Character set:



Choose a Font.

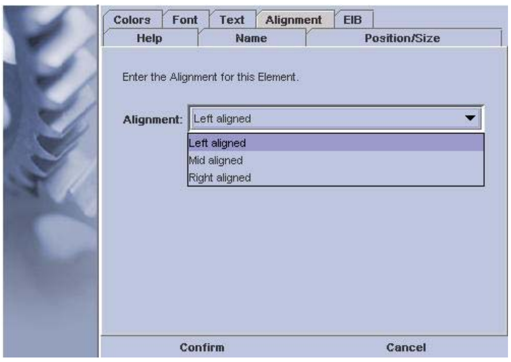
Name: Font1_07

Zoomfactor: 1x

By elements with fonts the used character set can be selected.

The installed character sets could be used, but character sets of one’s own could also be produced with Font Editor. Using as few character sets as possible is recommended, as this saves memory space.

Big script fonts need a lot of internal memory, therefore big fonts can also be produced with a zoom of smaller character sets. The respective outlines are not as smooth as the original big character sets. ***Attention:*** If the object-size is designed smaller than the current font size, or is placed outside the display screen, it could happen that the field is not shown in its entirety or not shown at all.



Enter the Alignment for this Element.

Alignment: Left aligned

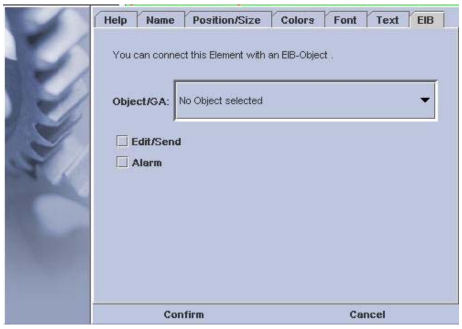
Left aligned
Mid aligned
Right aligned

In many elements the organisation of the texts can be adjusted. You can choose: left aligned, centre or right aligned. This is especially important for an optimal appearance of varying texts and decimal number displays.

Dialogue window EIB:

Under the dialogue window “EIB” the data point for this element can be selected, if it is an EIB/KNX- element. The settings for Send options, Push-button-options and Alarm options are optional.

Here choosing the alarm option means that you can define the page to display the reception of the EIB- elements in the foregound.

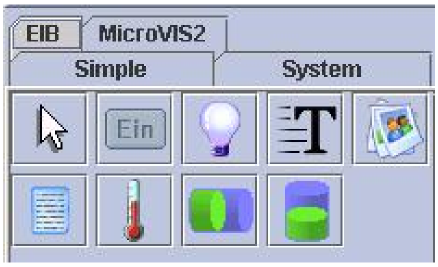


You can connect this Element with an EIB-Object .

Object/GA: No Object selected

□ Edit/Send

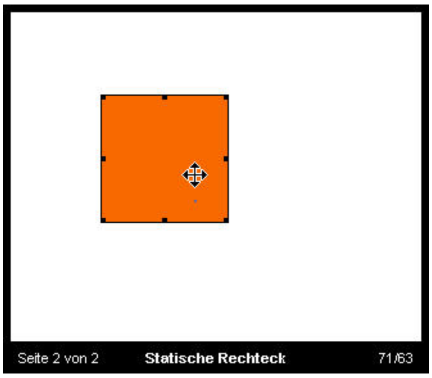
□ Alarm



3.6.2. Static Elements

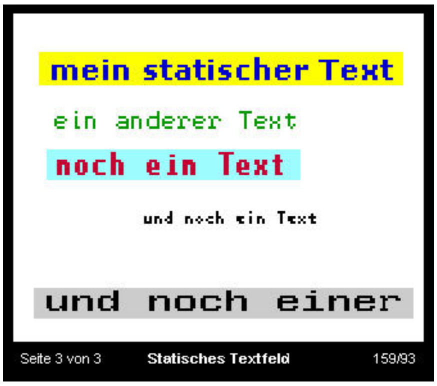
Static elements are typically used for the optical page design or for marking and short explanations.

3.6.2.1. Static Rectangle



Static rectangles are square coloured elements used for an optical page design. They can be freely positioned and their size freely chosen.

3.6.2.2. Static Text field

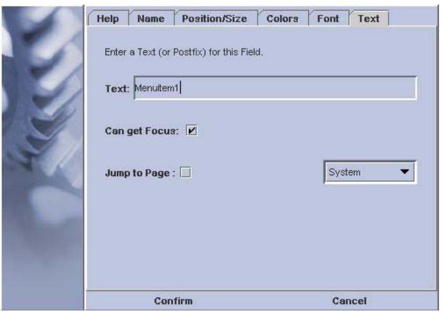


As many static texts as you want can be positioned on one page. Position, font- and background- colour as well as character- sets can be chosen freely.

Texts, not selectable by an operating button, can be turned transparent, so that images underneath are not disturbed by a background text.

Focus:

„Allow focus“makes it possible to make your choice with the operating button. This function can be used, to get a focus for turning pages. ***In detail:*** If only switching badges with keyboard function are shown on the page, you aren’t offered the option of leaving the page by means of keeping the button pressed longer. For easier navigation on the pages, we recommend first setting up a text button as a first focus



Enter a Text (or Postfix) for this Field.

Text: Menuitem1

Can get Focus: ☑

Jump to Page : □ System

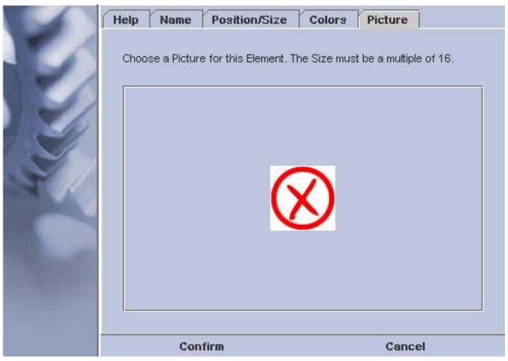
element. This way an inadvertent switching-off of EIB-elements becomes impossible.

Making a menu:

Static texts can also be defined as menu- items to call up particular pages specifically. To be used as a menu- item, the call (focus) has to be permitted and the page skip has to be defined.
Several jump texts on a side make it possible for you to jump fast onto certain topics.

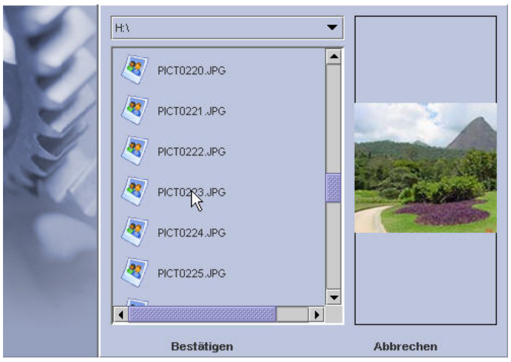
3.6.2.3. Static image

Static images can be used for the page configuration. They can cover the whole monitor or only parts of it. Any JPEG files can be used and if necessary, scaled by the program.



Choose a Picture for this Element. The Size must be a multiple of 16.

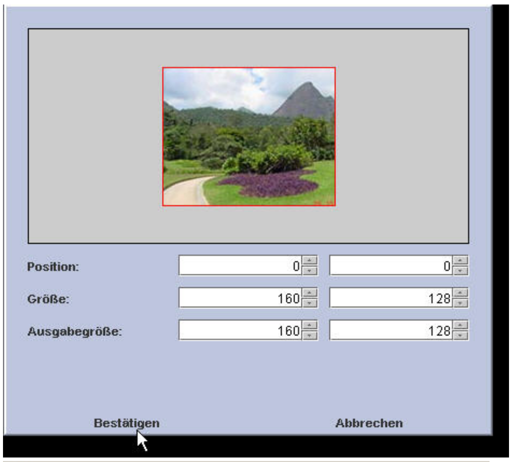
For image selection click on the red element -- an option dialogue opens.



The selected image now has to be scaled to the desired size.

Images need a lot of memory space, so your display could easily reach the limit of your memory capacity. Please check your memory requirement under project > “project size”.

Tip: Pictures can be tied repeatedly in the same size without needing substantially more storage.

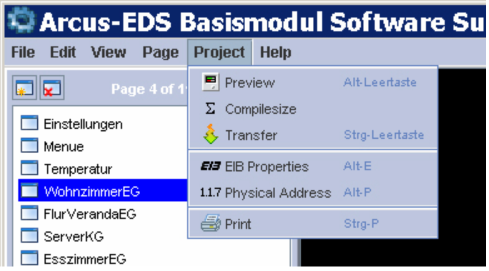


Position: 0 0
Größe: 160 128
Ausgabegröße: 160 128

Before you paste (insert) your images, edit them with an image editing program and optimise the size (scale) of image and memory. Some image programs offer a function like: “save for web” to further minimise your image memory.

With a memory-scale from 3 to 6 KB for every background-complete image (128px high, 160px broad), you can get very good image qualitiy.

3.6.2.4. Showing System Time



The system time is a regularly updated element of the operating system, which cannot be edited or selected.

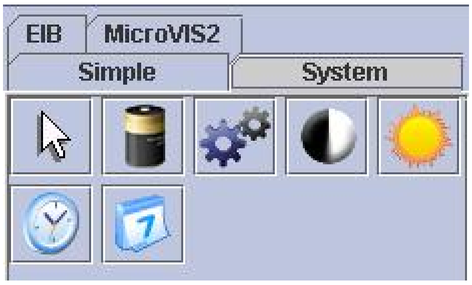
The system time can be displayed by a long (containing a weekday) or short format.

The character set on the display and the foreground- and background colour can be freely chosen.

3.6.2.5. Showing System Date

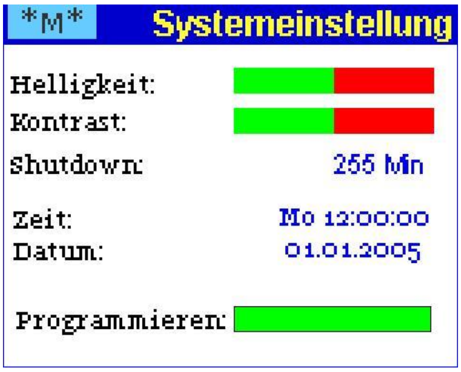
The system date is a regularly updated element of the operating system, which cannot be edited or selected. The system date can be displayed with a long (4 digit year) or short (2 digit year) format. The character set to display as well as the foreground colour and background colour can be freely chosen.

3.6.3. System Elements



System- elements are elements for setting system details. Typically they are summarised on one page, the system- page. None of the elements may be available, often some are useless, or the user- access is not desirable.

A typical system page:



M Systemeinstellung

Helligkeit: 🟩🟥

Kontrast: 🟩🟥

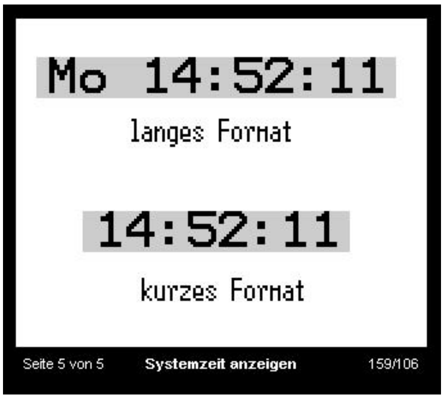
Shutdown: 255 Min

Zeit: Mo 12:00:00

Datum: 01.01.2005

Programmieren: 🟩

3.6.3.1. System time



Mo 14:52:11

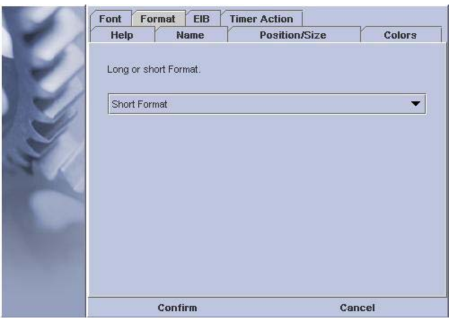
langes Format

14:52:11

kurzes Format

Seite 5 von 5 Systemzeit anzeigen 159/106

The system time is an element updated constantly in the operating process. Time and date can be adjusted manually if you don't fetch the system time over the EIB/KNX Bus.



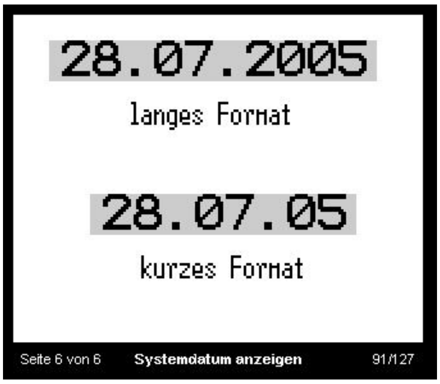
Long or short Format.

Short Format

The system- time can be displayed by a long (containing a weekday) or short format. The character- set to display can be chosen freely.

3.6.3.2. System date

The system- date is a regularly updated element of the operating system, which cannot be edited or selected. The system- time can be displayed with a long (containing a weekday) or short format. The system- date can be displayed with a 4- or 2 digit date. The character- set to display can be freely chosen.



28.07.2005

langes Format

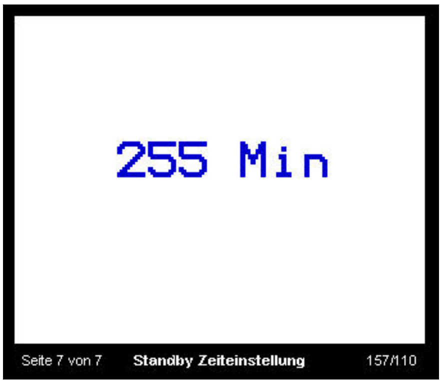
28.07.05

kurzes Format

Seite 6 von 6 Systemdatum anzeigen 91/127

3.6.3.3. Standby Timeout:

With the system- element „time standby“ you can adjust the time, after which the monitor and the background light of an inactive appliance should be switched off. The value can vary from 1 to 255 minutes. Character- set, colours, adjustment and position can be set.



255 Min

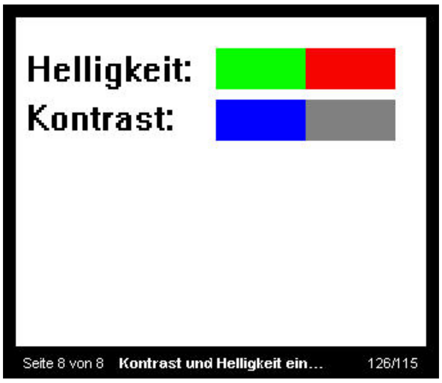
Seite 7 von 7 Standby Zeiteinstellung 157/110

3.6.3.4. Programming the Physical Address

To program the physical address with a dummy- application of ETS, the Micro VIS- display has to be switched to the programming- modus with the operating button “programming physical address”. By operating the programming- element, the LCD display at the ETS is in the programming- modus. It cannot be operated any more, all functions are stopped. The physical address is also transmitted with the USB download (look at „actual/ current project”), an existing ETS- programming will be overwritten and has to be repeated. At the menu- item “physical address” the appropriate address has to be installed. The physical address will be transmitted anew with each USB download.

3.6.3.5. Contrast and Brightness

With these elements the user has the possibility to adapt brightness and contrast of the display to his requirement. Foreground and background colours of the element-details define the colours of the left and right side of the bar- display.



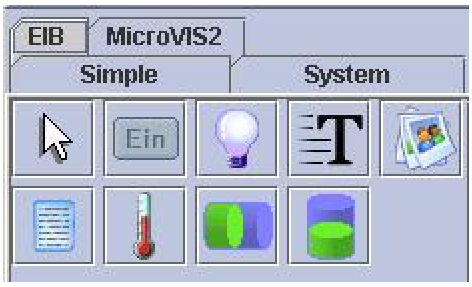
Helligkeit: 🟩🟥

Kontrast: 🟦⬜

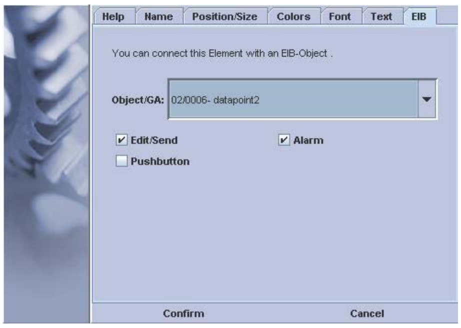
Seite 8 von 8 Kontrast und Helligkeit ein... 126/115

3.6.4. EIB/KNX Elements

EIB/KNX- elements are elements for display and setting of values in the EIB/KNX- Bus system. These elements offer the appropriate group- address by choice.



The field “editing / sending “has to be activated, if the element should be selectable on the page and a value can be sent to the Bus. If the field “alarm- function” is active, the page of this element is called up at value- change automatically. The field “pushbutton- function” enables operating buttons to send a 1 by pressing the field, a 0 by releasing the field.



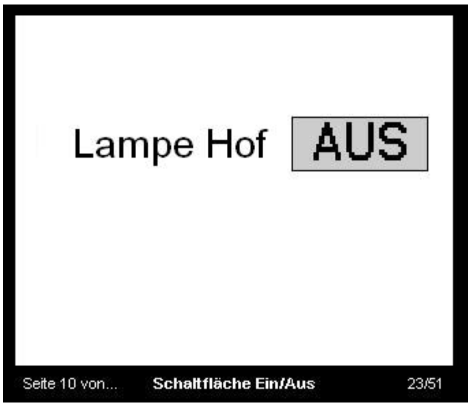
You can connect this Element with an EIB-Object .

Object/GA: 02/0006- datapoint2

☑ Edit/Send ☑ Alarm

□ Pushbutton

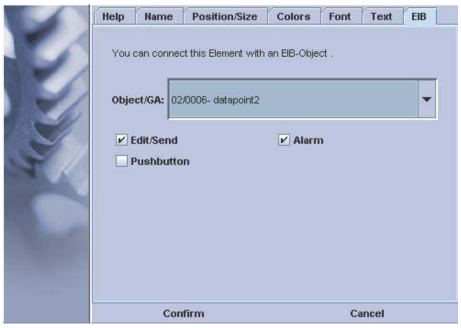
3.6.4.1. Switches and Buttons



Operating- and pushbutton- areas can be distinguished in the object- setting through the field “pushbutton- function”.

Operating- buttons change their value from 0 to 1 by each operation.

Pushbuttons send a 1 when pressed and a 0 by release



You can connect this Element with an EIB-Object .

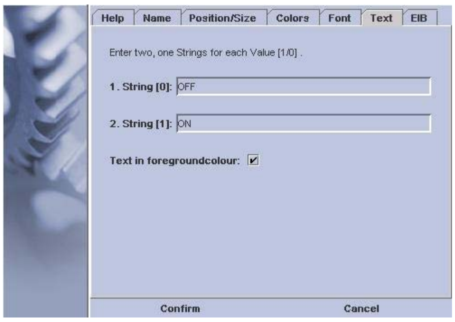
Object/GA: 02/0006- datapoint2

☑ Edit/Send ☑ Alarm

☐ Pushbutton

.

The function “long pressing” is deactivated at the pushbutton.
For detail: If you exclusively work with push-button functions on the side, you should put a static text with focus on the side to leave by "pushing for a long time".



Enter two, one Strings for each Value [1/0] .

1 . String [0]: OFF

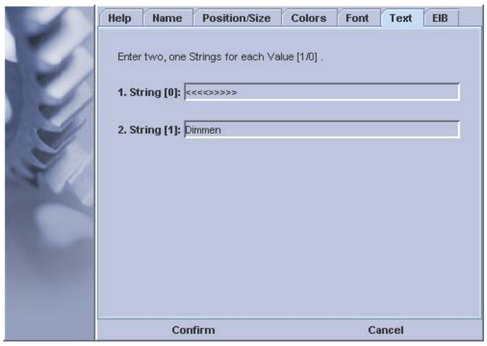
2. String [1]: ON

Text in foregroundcolour: ☑

Depending on the operating state the colour of the element changes between fore - and background- colour. The text- setting “font always black” or the setting “font in a complementary colour” can be selected. Complementary colour refers to the fore- and background colours.

3.6.4.2. Dimmer

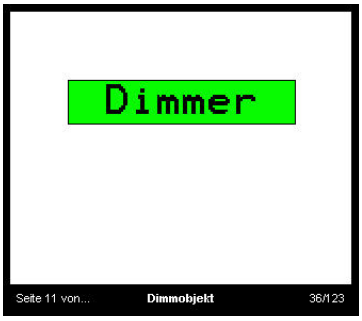
Dimmer elements can only be connected with a 4 bit dimmer object. By selecting an object, text and colours can change in accordance with the settings. Turning the rotary- switch initiates sending the dimmer value directly, left >dimmer down, right< dimmer up.



Enter two, one Strings for each Value [1/0] .

1. String [0]: <<<<>>>>>

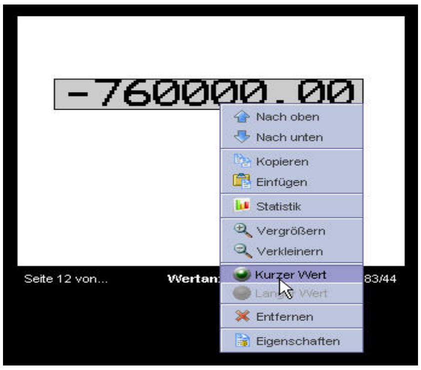
2. String [1]: Dimmen



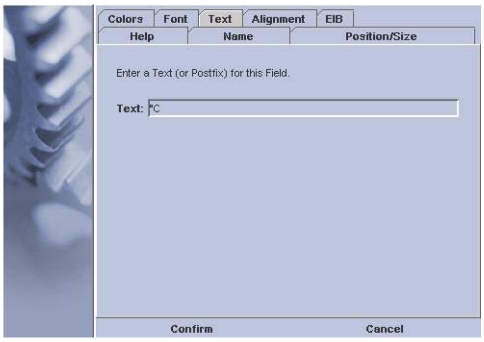
3.6.4.3. Values

Value text elements show values of a data-point in clear (e.g.”25.40° C”).

Details of the value elements are character set, alignment, position, colours and units. The unit is attached at the number-value and aligned with it.



The orientation of value displays can be left- adjusted, centred or right- adjusted to show changing display lengths optimally. The effect of a different text length on the optical impression can be tested through changing the length in the pop up menu between “long value” and “short value”.



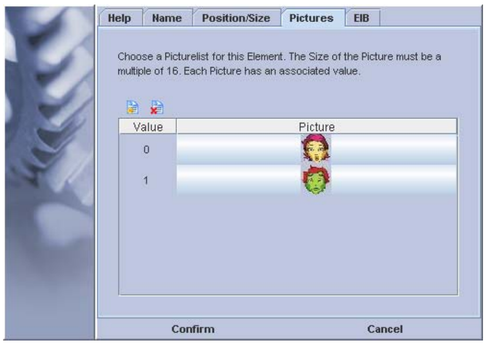
Enter a Text (or Postfix) for this Field.

Text: °C

3.6.4.4. Lists of Pictures and Values

An image list is an allocation list between images and object values. The object values are of threshold- value character. In the following case the first image is shown from 10.00, the second from 20.00 and so on.

If a list contains only one element, the appropriate value is sent immediately when operated (no choice available). This can be used for single telegrams (send by pressing “1”). If a list contains two elements, it is converted (switched) directly, when operated.



Choose a Picturelist for this Element. The Size of the Picture must be a multiple of 16. Each Picture has an associated value.

Value	Picture
0	
1	

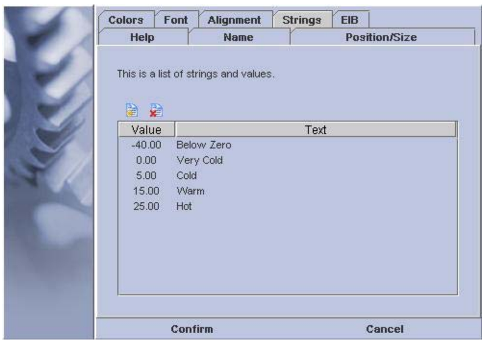
Image lists can only be used for objects with a 2 byte data capacity.

3.6.4.5. Lists of Caption and Values

A text list is an allocation list between text and object values. The object values have a threshold value character. In the following case the text “sub 0” will be displayed from -40. 00, the text “cold“from 0. 00 and so on.

If a list contains only one element, the value will be sent immediately (no choice).

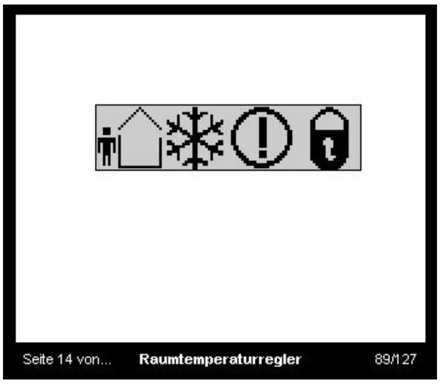
Text lists can be used only for objects with up to 2 byte data capacity.



This is a list of strings and values.

Value	Text
-40.00	Below Zero
0.00	Very Cold
5.00	Cold
15.00	Warm
25.00	Hot

3.6.4.6. Room temperature-thermostat (RTR)



The room temperature thermostat (controller) represents the state of RTR symbolically. The following symbols are integrated:

- Present, absent

- Night standby, frost/ heat prevention

- Heating- or cooling service

- Alarm- and block function

General controller, 1 byte

Bit 0: 1: comfort- service active

Bit 1: 1: standby- service active

Bit 2: 1: night- service active

Bit 3: 1: frost/heat- service active

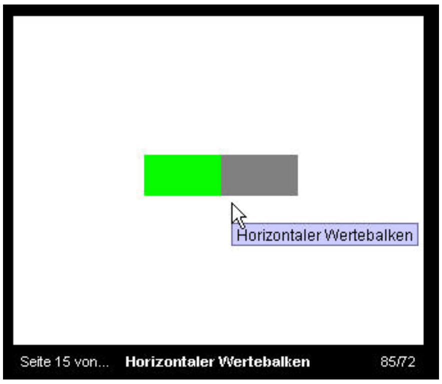
Bit 4: 1: thermostat blocked

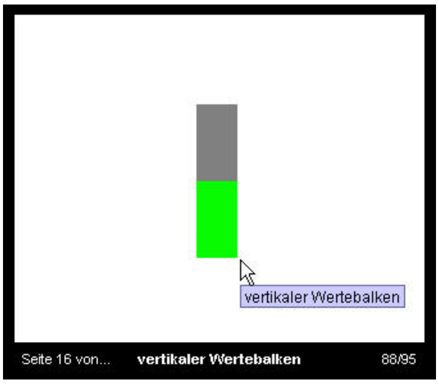
Bit 5: 1: heating; 0: cooling

Bit 6: 1: thermostat not active

Bit 7: 1: frost- alarm

3.6.4.7. Value Bars



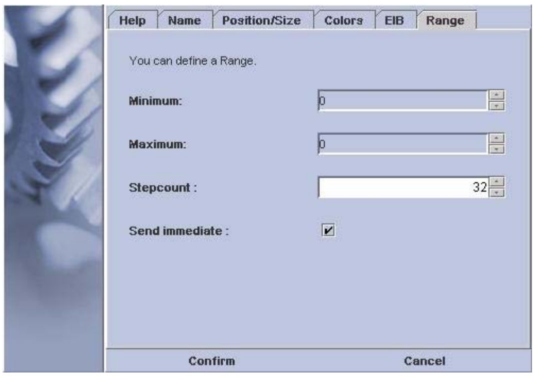


Value- Bars are horizontal and vertical.

Value bars are displays and buttons with selectable colours and minimum- maximum details.

If the value- bar has a send function you can choose: sending by confirmation (only once) or by rotation. *Detail: Direct dimming hereby becomes possible through a byte value.*

The indication: step-number shows how many rotation steps are located between the minimum and maximum value. The encoder can be tuned to the habits of the customer with the desired precision.



You can define a Range.

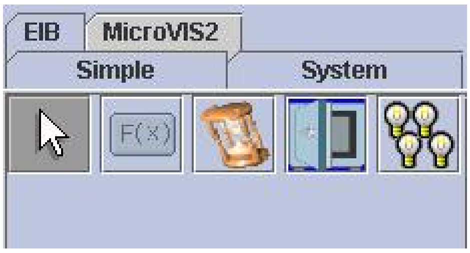
Minimum: 0

Maximum: 0

Stepcount : 32

Send immediate : ☑

3.6.5. MicroVis II Functions



MicroVis2-Logic Module: Online Documentation
The MicroVIS2-Logic is an extension to the MicroVis.
All elements and functions available in MicroVis are available in MicroVIS2-Logic as well.

Additional Elements and Extensions:

- Up to 128 Group addresses
- 128KByte Memory for pages, images and fonts.
- Freely programmable due to integration of the logic elements of the MicroFM Module with up to 48KByte of memory for code and data.
- User functions, timers, security PIN as well as scene management are additionally available elements.

3.6.5.1. Selection

Use choice to access MicroVis II elements. Please use the right mouse key only to make changes in the properties. This prevents an inadvertent displacement of the objects.

3.6.5.2. User functions

Introduction

A User function is a virtual element that is programmed by the user in the programming language FORTH and that can be placed anywhere on any page in a project.

Under the name you’ve given to this element there is a function created in the FORTH-logic module. With this function you can design your own programs interactively, assume the EIB-Bus input and operating button, as well as having the results shown on your display.

Set parameters like position, colour and character set are available in this function.

Without corresponding programming this element is not visible and has no function.

Additional information about the program can be obtained from Arcus-EDS on demand.

Sequence

First read the help file for the MicroFM module. All functions are explained there in detail.

Generate or import a FORTH code with the ArcSuite-tool MV2Logic (obtainable on the main page of ArcSuite) and send it to the connected and ready-to-receive MicroVis II through the USB-connection.

Open your project, which you have already created in MicroVis II, in MV2Logic (e.g.: “diagram”).

Import the desired code by text (e.g.:”diagram code”) or write it directly into the send window.

Through connect/connection make a connection to the attached USB cable.

Write “ferase” directly into the entry line, and confirm by pressing enter. Now The Logic memory is deleted. Generate a new connection.

Click send to download the code. Then type in “fsave” and confirm by pressing enter. Now generate a new connection.

Place a user function in the desired size on the page of your MicroVis II. Under properties you can name the user function after the name of the used code. After a complete reset (EIB and USB connection have to disconnected) the function is visible on your display.

Label

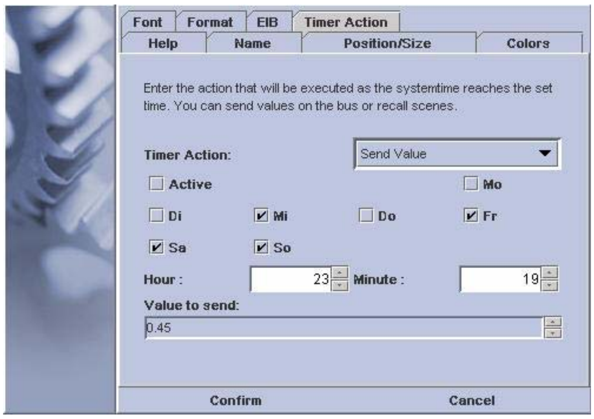
With the name that you enter here, you can generate a data structure that you can access at a later time.

E.g.: You have labelled the FORTH code “diagram” and sent it to your MicroVis II through the FM II module. To call up this FORTH-program, you have to put in the name “diagram” under labels.

3.6.5.3. Timer

Timers are elements that can automatically do some actions like sending data to the Bus or recalling scenes at user definable times.

The preset time can be changed on the device, and the timer can be activated or deactivated by the user. The user can also change the timer through the display. If necessary this function can be protected against unauthorised access through a password. (See safety pin 3.6.5.4)



Enter the action that will be executed as the systemtime reaches the set time. You can send values on the bus or recall scenes.

Timer Action: Send Value

□ Active □ Mo

□ Di ☑ Mi □ Do ☑ Fr

☑ Sa ☑ So

Hour : 23 Minute : 19

Value to send:

0.45

- Character set

The size of the timer shown on your display can be chosen in character set.

- Format

Here you can choose between a long and short format.

Short format: the timer is a day timer and only evaluates the daytime.

Long format: The timer is a week timer and also evaluates weekdays.

- EIB

Choose the data object to be sent, e.g. the lamp that is to be switched on or off.

- Activating the Timer

Enter the action that is to be carried out after the timecyle has expired. You can send data points or recall scenes.

- Selection field

Sending the data field: An assigned value is sent to the chosen EIB object in the EIB folder.

Scene "label": If you have configured a scene to your project the name with which you have labelled it will appear in the chosen scene.

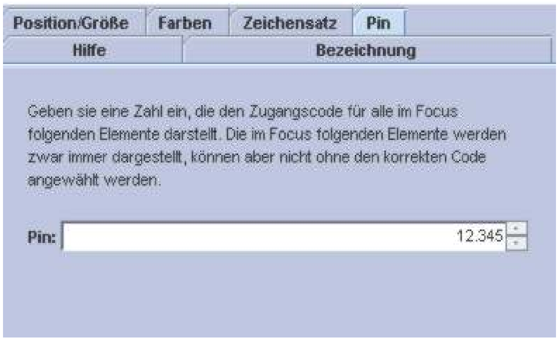
Active: Here the timer is activated. This can also be done on the display of the user. Activate the display timer on the square point.

Weekday and time: Enter the default-value here. This can be changed by the user on the display. You can activate the time of day directly and the weekday through underlining.

Value to be sent: A value corresponding to the EIB-object can be selected here.

3.6.5.4. Security PIN

The use of a security pin enables the user to protect certain objects on a page through a password. The password protection is focus oriented, i.e. all objects in the focus sequence standing behind the safety pin are protected through a password. If a page is to be protected in its entirety, the pin focus has to be entered at the beginning. If only an object on the page is to be protected, enter the password at the end of the page. The user has to enter the correct pin code on the display, and activates it by pressing it.



Geben sie eine Zahl ein, die den Zugangscode für alle im Focus folgenden Elemente darstellt. Die im Focus folgenden Elemente werden zwar immer dargestellt, können aber nicht ohne den korrekten Code angewählt werden.

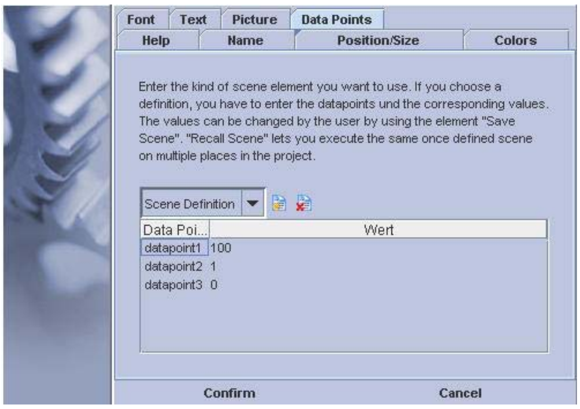
Pin: 12.345

- Pin:

The default value is „12345"and can be given out with ArcSuite.

3.6.5.5. Scene Management

Define, recall or save scenes with this element.
The data points to be used are selected in scene definitions, furthermore the values that are used in the scene after a project download are shown.
These can be given out anew in operation through "save scene". Use "scene recall" if the scene is to be used more than once in your project. Scenes are referenced through their label.



Enter the kind of scene element you want to use. If you choose a definition, you have to enter the datapoints und the corresponding values. The values can be changed by the user by using the element "Save Scene". "Recall Scene" lets you execute the same once defined scene on multiple places in the project.

Scene Definition

Data Poi...	Wert
datapoint1	100
datapoint2	1
datapoint3	0

- Text:

Here you can enter the text that appears on the button for the allocated scene. The text is not visible in the case of a picture object.

- Picture:

The function **“**recall scene x” and “save scene x” can be allocated as a picture to the button function.

- Data points:

Choose the type of scene element. The data points and the values of the scene definition to be sent are set here. The values can be overwritten with the function “save scene”.

- **Selection field:**

Scene definition with recall: here you can choose EIB-objects that you want to recall or save from a moment of the scene. Assume the allocated values during the project download as default values. These can be changed by the user.

3.7. Services and Suggestions

Send your suggestions and wishes to: info@arcus-eds.de

Services: If you are interested in our services for the realisation of an actual project, we are happy to make you an offer.

4. Project Examples

You can download several projects from our website: all projects have to be inserted in ArcSuite with file/import. Please note that the Mvis2 project can only be downloaded on the MicroVis II display. It is, however, possible to save single pages from the Mvis2-projects by filing it with the function “page/save as template” in the menu bar. It can then be put on the page index of your project with “add page” on the MicroVis-module.

MVIS:

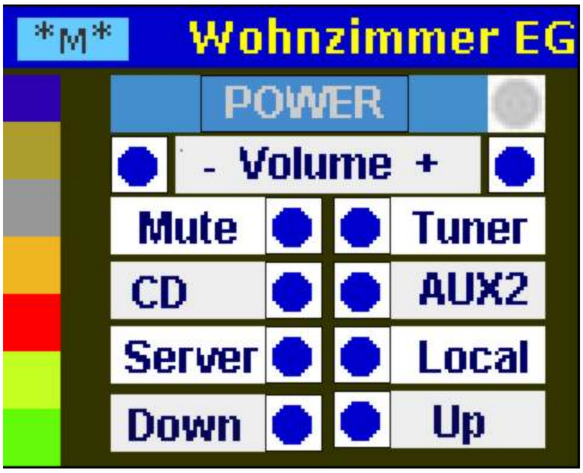
- Example4-mvis

MVIS2:

- Example1-mvis2
- Example2 -mvis2
- Example3-mvis2

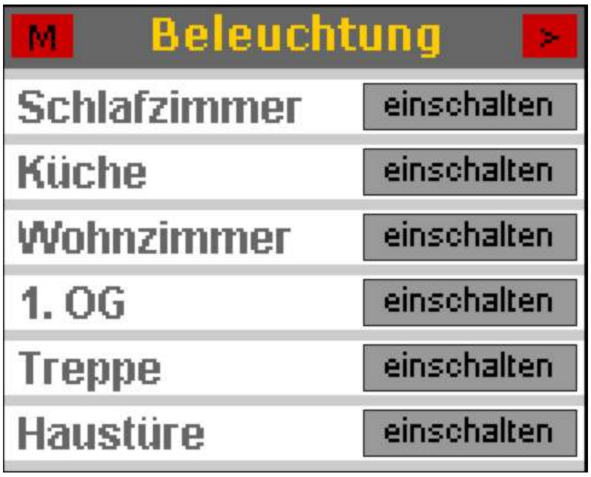
4.1. Example4-mvis

On this page you will see how you can employ the key function for multi-room-control. The blue dot is built up with a specific font object from the font “special characters”. This procedure allows you to build buttons as you wish.



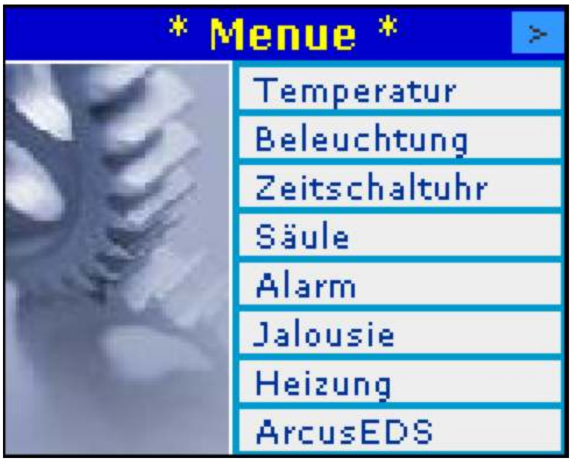
4.2. Example1-mvis2

This page shows you a simple set up of a lighting system with switches

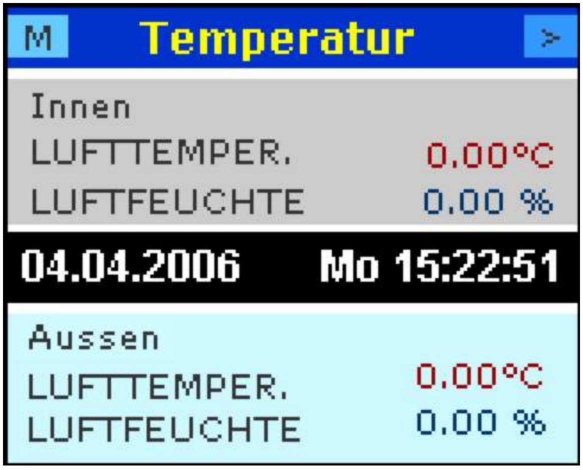


4.3. Example2-mvis2

Here a menu is realised through static text fields with the function „allow focus“and “skip to page”. On the upper right hand corner is a text field with the same functions that makes turning over to the next page simpler. The yellow text element on the top of the page only offers “allow focus” and thus warrants that the page can be touched while preventing an infringement.



On this page display elements are arranged.



Innen
LUFTTEMPER. 0.00°C
LUFTFEUCHTE 0.00 %

04.04.2006 Mo 15:22:51

Aussen
LUFTTEMPER. 0.00°C
LUFTFEUCHTE 0.00 %

On this page you can dim lights over a 1-byte value. The value bar allows for a direct output when turning the operating button. The value bar for the first three objects is set for the purpose of demonstration to show different sections. This way you can test the desired haptic.

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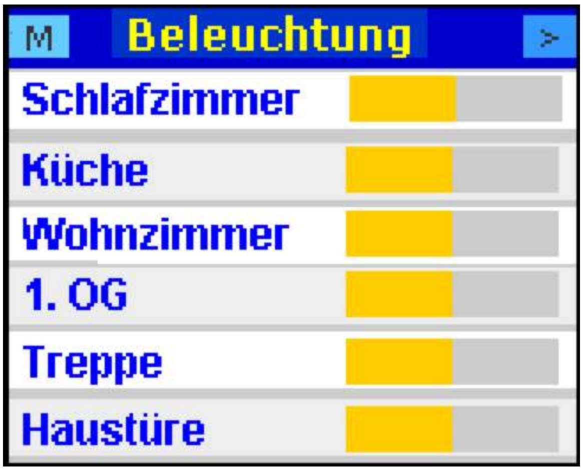
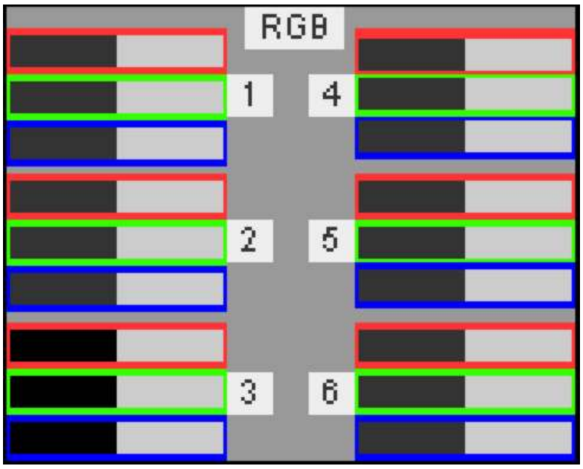


This page shows how an LED-RGB lighting group is set in three basic colours.

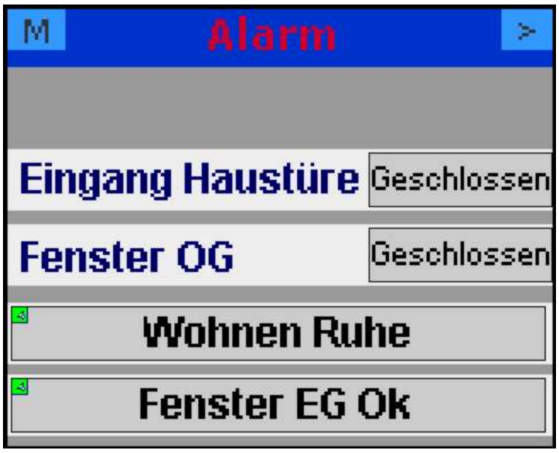


This page shows a small realisation for alarm functions.

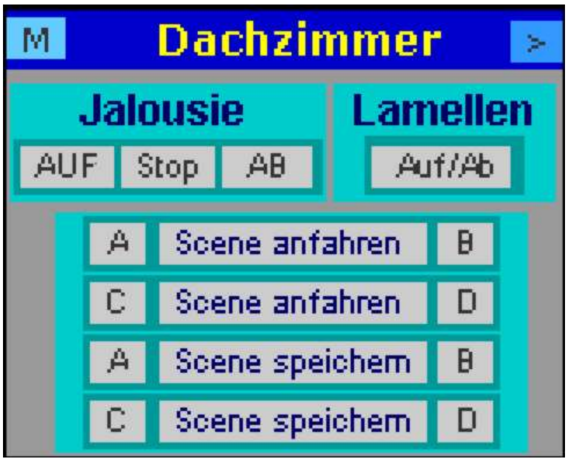
„Eingang Haustüre“ “Entrance door” is a pure display function.

„Fenster OG“ “Window upper floor” is a display function with an activatable alarm, i.e., when the EIB-value is changed this page is recalled and appears on the display.

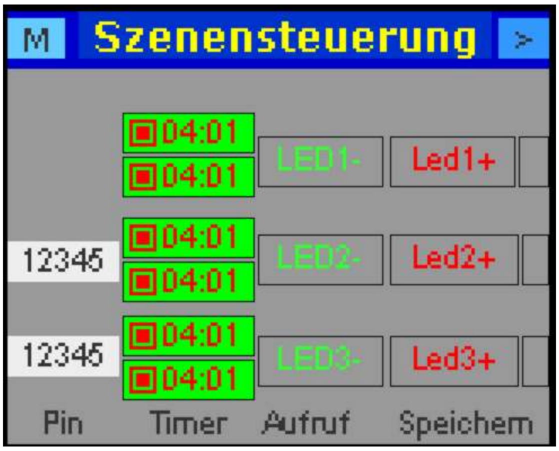
“Wohnen Ruhe” “Residing quiet” is a display function



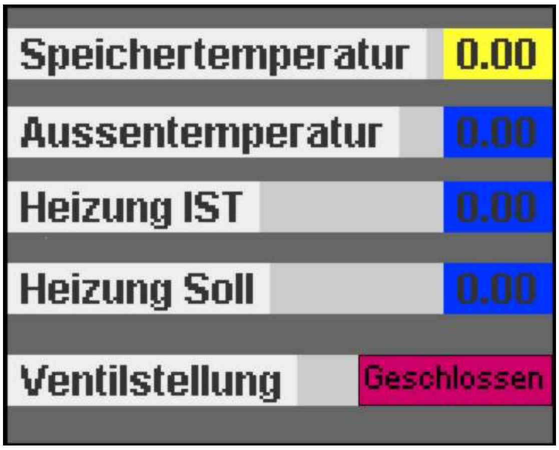
This page shows how you how to switch blinds up ”Auf”, down “Ab” and “stop” by means of a text list.



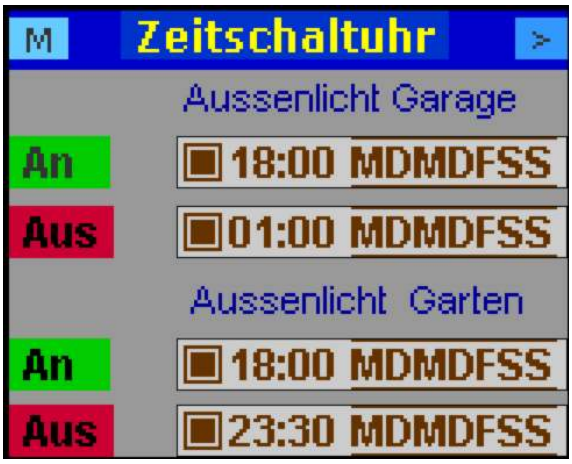
This page shows you how to create scene control by means of timer call and pin code.



This is a simple presentation page



This page shows you a simple timer structure



Zeitschaltuhr

Aussenlicht Garage

An ■18:00 MDMDFSS

Aus ■01:00 MDMDFSS

Aussenlicht Garten

An ■18:00 MDMDFSS

Aus ■23:30 MDMDFSS

5. Products

5.1. Funktionsmodul MicroFM-Modul

The 50 MHz arm processor permits fast 32 bits upright operations and 64 bits of floating point calculations.

It is programmed in a FORTH dialect. A self-compiling interpreter of command lines produces a compact and fast code.

No compiling of programs is necessary. Any defined function is immediately available.

Functions:

- 8 Kbytes RAM-loft for programs and data
- DCF-77 real time hours for precise time controls
- 16 programmable timers with a 1/100 sec dissolution
- programs and data can be stored permanently in flash
- 3 free programmable LED's
- 1 ten-step switch evaluable through programs
- 1 push-button for starting a self- defined function customised
- for EIB communication, user elements, the date and time for individual EIB/KNX solutions adapted especially (PWM, ad transducer, serial interface, digital one/exits).
- up to 64 EIB addresses supply USB or EIB, no help tension required, programming with ArcSuite software.

5.2. LCD-Color-Display MicroVis

Arcus-EDS MicroVis I with coloured LCD-graphic display, interactive navigation, jog and push button and acoustic alarm.

The LCD display is used for operating, displaying, monitoring and reporting in EIB/KNX systems. It is intended to serve visualisation and operation in the central part of a building. It is compatible with most series of switch programs (e.g. Gira, Jung, Merten standard 55). It is mounted on a standard flush-mounting box. No external electricity is needed.

MicroVis has a freely programmable graphic display with background lighting (160x128 pixels). Navigation is through jog and push button. Start up and parameterization with the graphic java-based software-tool “ArcSuite” through a mini-USB cable.

Graphic:

- free design of page contents
- 32 elements can be defined free in size and position
- The number of pages is limited only by the internal memory space (31kB).
- Different character fonts, font size, editable fonts
- Attachment of jpg-graphics as background picture for representation elements
- Freely programmable surfaces and text elements
- Freely programmable EIB-elements for buttons, dimmers, etc
- Freely editable menue structure with skip function
- System settings for contrast, brightness, standby-time

EIB-elements:

- Up to 44 group addresses through polling with start
- 17 EIS-types incl. 14byte ASCI-character string
- Direct dimming function with rotating operating button
- Assignment of pictures as value elements
- Assignment of text as value elements
- Horizontal, vertical value bars
- Value bars regulable with rotating knob (free number of steps)
- dimming through stop telegram
- Buttons as switch or key elements with stop telegram
- System time/system date
- All EIS-types callable as alarm function
- Skip to relevant page in the event of an alarm call
- Acoustic alarm freely programmable
- Filtered acceptance of group addresses from the ETS

Technical data:

- Supply: directly on the EIB-Bus, DC 24V, approx. 10mA, no auxiliary voltage necessary
- No Bus-coupling necessary
- USB-port on the side (covered by the design frame)
- Standard flushed-mounting switch box
- Environment temperature: storage by –5 C° to + 60 C°, operate by –5 C° to + 55 C°
- Dimensions: W x H x L, 55 x 55 x 22 mm without design frame
- Safeguard: IP20
- Available colours: white, charcoal grey, charcoal grey with V2A-aperture, other colours available on request.

Mounting:

- The metal frame delivered with your package is mounted onto the standard flushed-mounting box
- The MicroVis is stuck onto the metal frame. An additional design frame is necessary
- 1-, 2-, or more frames can be set up

Delivery includes a frame for mounting, USB-cable and ArcSuite software

5.3. LCD-Colour - Display MicroVis II

The MicroVis II is identical in construction with the MicroVis I and contains entirely the same functions. It differs only in internal memory size and built-in firmware.

Extended memory area:

- 128 group addresses
- 128 Kbytes memory size for use e.g. 24 jpg. pictures for one project

The new firmware for the MicroVis II has the following additional functions:

- User function

  This function allows you to independently generate objects that are not slated for ArcSuite, e.g. extra switches, logic functions or graphic applications (diagrams)

- Scene control

  Different EIB-data points can be recalled and saved by a button that has the respective values assigned to it.

- Timer functions

  EIB-data points and scenes can be recalled on a day and week timer

- PIN code

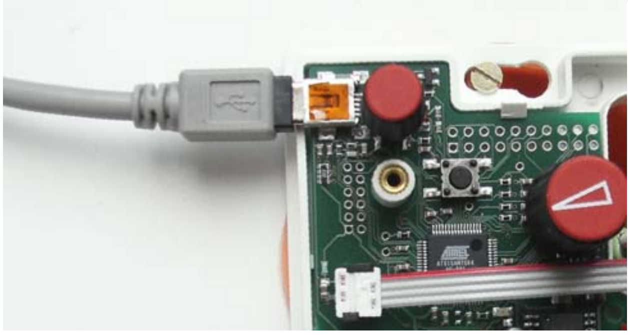
  different objects on a page in the project can be protected with a password

6. Fitting

6.1. Fitting FM-Modul

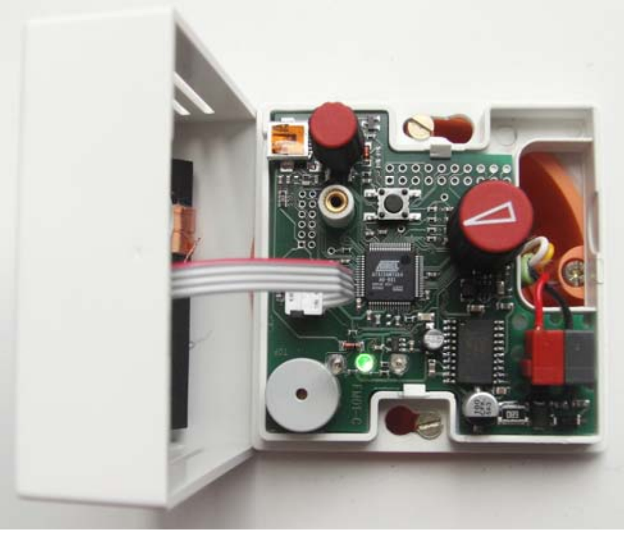
The function module is screwed onto a 68mm box.
The function module is supplied as an AP-apparatus by the EIB-Bus from behind.
ArcSuite is programmed through the USB-plug on the upper left hand/right hand.

The programming of the physical interface over ETS is done through the button on the circuit board (see picture).



6.1.1. Opening of the FM-Modul

Loosen the cover of the screw on the upper part of the apparatus and unscrew covering cap. In the “FM-module DC77” version the DC-77 receiver is fitted in the covering of the screw top. Open the connected screw top covering carefully, **without** interrupting the connection to the four-pole plug on the circuit board. You can now connect the EIB-Bus to the mini-USB plug through an EIB-clamp and press the programming key.

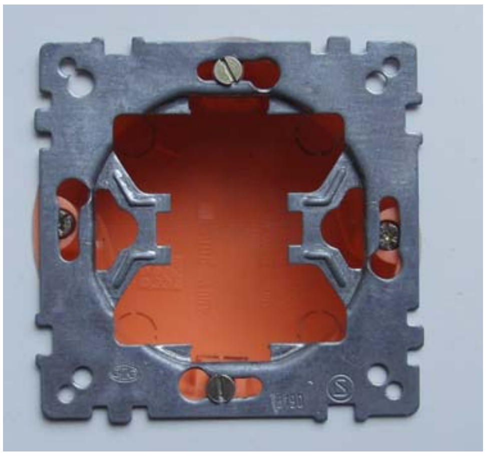


6.1.2. Plastic Foil

You can use the plastic foil on the function module for inscription. If you want to make your own foil, we (www.arcus-eds.de) can make the file available to you.

6.2. Fitting MicroVis

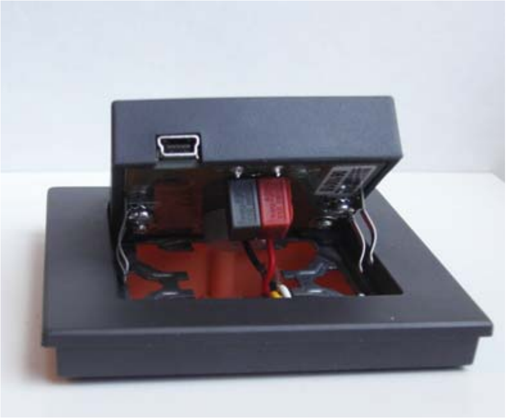
6.2.1. Supporting Frame



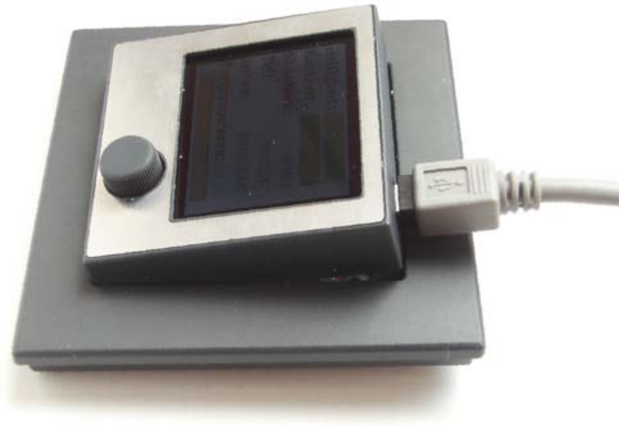
The MicroVis is delivered with a portable frame to be fitted on a 68mm flushed-mounting box, a USB cable and the software on CD.

The MicroVis can be fitted into switch systems with a 55mm frame measure. Make an optical test of the combination of your preferred frame model with our MicroVis before fitting.

6.2.2. USB- und EIB- Connection



The EIB-cable is stuck from underneath directly on to the circuit board with an EIB-clamp. The display can then be clicked into the box with the suitable single frame.



To connect the USB-cable, pull the display slightly out of the frame and plug the USB-cable into the socket from the upper side. It is not necessary to interrupt an EIB-connection