JUMO mTRON T

Measuring, control, and automation system
Multifunction Panel 840

Operating Manual

70506000T90Z001K000

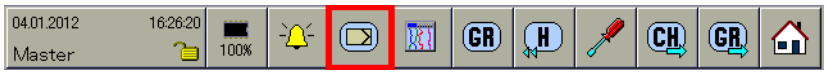
V4.00/EN/00575639

Menu structure of the multifunction panel 840

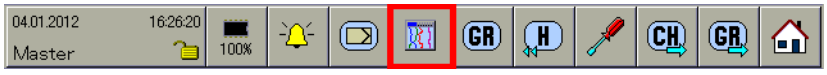
⇨ Chapter 11 "Device manager", page 101

⇨ Chapter 10 "Memory manager", page 97

⇨ Chapter 9 "Alarm and event lists", page 89



⇨ Chapter 6 "Multichannel controller module", page 51



⇨ Chapter 7 "Visualization", page 53

⇨ Chapter 8 "Memory display (History)", page 85

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1.1 Available technical documentation

The documents specified below are available for the measuring, control, and automation system (previous document number in parentheses).

1.1.1 General information

Product	Type of documentation	No.	Printed	PDF file
Measuring, control, and automation system	Data sheet	70500000T10...	-	X
	System manual[1]	70500000T90... (B 705000.0)	X	-
	Setup program manual	70500000T96... (B 705000.6)	-	X
	System description[2]	70500000T98... (B 705000.8)	-	X

[1] Accessory subject to charge

[2] Includes an overview of the purpose and content of all documents

1.1.2 Base units

Product	Type of documentation	No.	Printed	PDF file
Central processing unit	Data sheet	70500100T10...	-	X
	Operating manual	70500100T90... (B 705001.0)	-	X
	Modbus interface description	70500100T92... (B 705001.2.0)	-	X
	PROFIBUS-DP interface description	70500103T92... (B 705001.2.3)	-	X
	digiLine interface description	70500106T92...	-	X
	Installation instructions	70500100T94... (B 705001.4)	X	X
	CODESYS OPC server operating manual	70500151T90... (B 705001.5.1)	-	X
	Process engineering application operating manual	70500152T90...	-	X
	Operating manual Thyristor power controller (type 70906x; integration in the measuring, control, and automation system)	70500153T90...	-	X

1.1.3 Input/output modules

Product	Type of documentation	No.	Printed	PDF file
Multichannel controller module	Data sheet	70501000T10...	-	X
	Operating manual	70501000T90... (B 705010.0)	-	X
	Installation instructions	70501000T94... (B 705010.4)	X	X
Relay module 4-channel	Data sheet	70501500T10...	-	X
	Operating manual	70501500T90... (B 705015.0)	-	X
	Installation instructions	70501500T94... (B 705015.4)	X	X
Analog input module 4-channel	Data sheet	70502000T10...	-	X
	Operating manual	70502000T90... (B 705020.0)	-	X
	Installation instructions	70502000T94... (B 705020.4)	X	X
Analog input module 8-channel	Data sheet	70502100T10...	-	X
	Operating manual	70502100T90... (B 705021.0)	-	X
	Installation instructions	70502100T94... (B 705021.4)	X	X
Analog output module 4-channel	Data sheet	70502500T10...	-	X
	Operating manual	70502500T90...	-	X
	Installation instructions	70502500T94...	X	X
Digital input/ output module 12-channel	Data sheet	70503000T10...	-	X
	Operating manual	70503000T90... (B 705030.0)	-	X
	Installation instructions	70503000T94... (B 705030.4)	X	X

1.1.4 Special modules

Product	Type of documentation	No.	Printed	PDF file
Router module	Data sheet	70504000T10...	-	X
	Installation instructions	70504000T94... (B 705040.4)	X	X

1.1.5 Operating, visualization, recording

Product	Type of documentation	No.	Printed	PDF file
Multifunction panel 840	Data sheet	70506000T10...	-	X
	Operating manual	70506000T90... (B 705060.0)	-	X
	Modbus interface description	70506000T92... (B 705060.2.0)	-	X
	Installation instructions	70506000T94... (B 705060.4)	X	X
Operating panels	Data sheet	70506500T10...	-	X
	Operating manual	70506500T90...	-	X

1.1.6 Power supply units

Product	Type of documentation	No.	Printed	PDF file
24 V power supply units	Data sheet	70509000T10...	-	X
	Operating instructions QS5.241		X	-
	Operating instructions QS10.241		X	-

1 Introduction

1.2 Safety information

1.2.1 Warning symbols

DANGER!
This symbol indicates that **personal injury caused by electrical shock** may occur if the respective precautionary measures are not carried out.

WARNING!
This symbol in connection with the signal word indicates that personal injury may occur if the respective precautionary measures are not carried out.

CAUTION!
This symbol in connection with the signal word indicates that **damage to assets or data loss** will occur if the respective precautionary measures are not taken.

CAUTION!
This symbol indicates that **components could be destroyed** by electrostatic discharge (ESD = Electro Static Discharge) if the respective cautionary measures are not taken.
Only use the ESD packages intended for this purpose to return device inserts, assembly groups, or assembly components.

READ DOCUMENTATION!
This symbol – placed on the device – indicates that the associated **device documentation has to be observed**. This is necessary to recognize the kind of the potential hazards as well as the measures to avoid them.

1.2.2 Note signs

NOTE!
This symbol refers to **important information** about the product, its handling, or additional use.

REFERENCE!
This symbol refers to **further information** in other sections, chapters, or manuals.

FURTHER INFORMATION!
This symbol is used in the tables and refers to **further information** in connection with the table.

DISPOSAL!
This device and the batteries (if installed) must not be disposed in the garbage can after use! Please ensure that they are disposed properly and in an **environmentally friendly manner**.

1.2.3 Intended use

The modules described are intended for measuring, control, and automation tasks in an industrial environment, as described in the technical data. Other uses or uses beyond those defined are not viewed as intended uses.

The modules are built according to the relevant standards and directives as well as the applicable safety regulations. Nevertheless, incorrect use may lead to bodily injury or property damage.

To avoid danger, the modules may only be used:

- For the intended use
- When in good order and condition
- When taking into account the technical documentation provided

Even if a module is used correctly and according to the intended use, it may still cause application-related dangers (e.g. due to missing safety devices or incorrect settings).

1.2.4 Qualification of personnel

This document contains the necessary information for the intended use of the modules to which it relates.

It is intended for technically qualified personnel who have received special training and have the appropriate knowledge in the field of automation technology (measuring, process, and control technology).

The appropriate level of knowledge and the technically fault-free implementation of the safety information and warnings contained in the technical documentation provided are prerequisites for risk-free mounting, installation, and startup as well as for ensuring safety when operating the described modules. Only qualified personnel have the required specialist knowledge to correctly interpret and implement the safety information and warnings contained in this document in specific situations.

1.3 Acceptance of goods, storage, and transport

1.3.1 Checking the delivery

- Ensure that the packaging and contents are not damaged
- Check that the delivery is complete using the delivery papers and the order details
- Inform the supplier immediately if there is any damage
- Store damaged parts until clarification is received from the supplier

1.3.2 Notes on storage and transport

- Store the module in a dry and clean environment. Observe the admissible ambient conditions (see "Technical data")
- The transport of the module is to be shockproof
- The original packaging provides optimum protection for storage and transport

1.3.3 Returning goods

In the event of repair, please return the module in a clean and complete state.
Use the original packaging to return goods.

Accompanying letter for repair

Please include the completed accompanying letter for repair when returning goods.
Do not forget to state the following:

- Description of the application and
- Description of the error that has occurred

The accompanying letter for repair can be downloaded online from the manufacturer's website (use the search function if necessary).

Protection against electrostatic discharge (ESD)

(ESD = electrostatic discharge)
To prevent damage from ESD, electronic modules or components must be handled, packaged, and stored in an ESD-protected environment. Measures against electrostatic discharge and electrical fields are described in DIN EN 61340-5-1 and DIN EN 61340-5-2 "Protection of electronic devices from electrostatic phenomena".

When returning electronic modules or components, please note the following:

- Sensitive components must only be packaged in an ESD-protected environment. Workspaces such as this divert electrostatic charges to ground in a controlled manner and prevent static charges due to friction capacities.
- Only use packaging for ESD-sensitive modules/components. These must consist of conductive plastics.

No liability can be assumed for damage caused by ESD.

CAUTION!
Electrostatic charges occur in non-ESD protected environments.
Electrostatic discharges can damage modules or components.
For transport purposes, use only the ESD packaging provided.

1.3.4 Disposal

Disposing of the device

DISPOSAL!

Devices and/or replaced parts should not be placed in the refuse bin at the end of their service life as they consist of materials that can be recycled by specialist recycling plants.

Dispose of the device and the packaging material in a proper and environmentally friendly manner.

For this purpose, observe the country-specific laws and regulations for waste treatment and disposal.

Disposing of the packaging material

The entire packaging material (cardboard packaging, inserts, plastic film, and plastic bags) is fully recyclable.

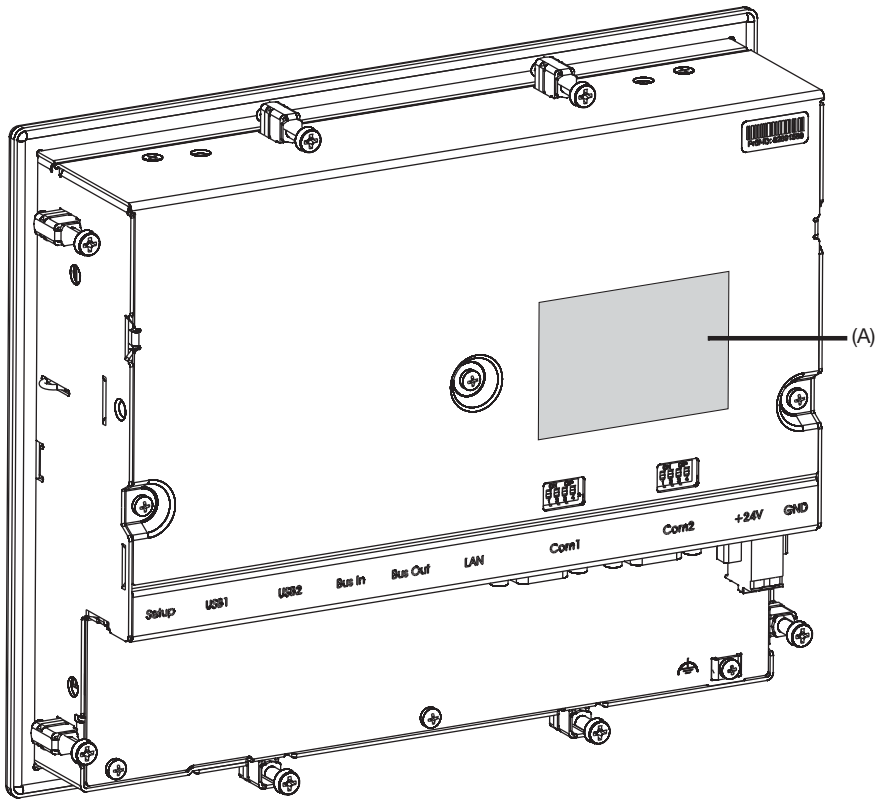
1 Introduction

1.4 Identifying the device version

1.4.1 Nameplate

Position

The nameplate (A) is affixed to the case.



Content

It contains important information. This includes:

Description	Designation on the name-plate	Example
Device type	Typ	705060/8-00-00-36/213
Part no.	TN	00580746
Fabrication number	F-Nr	0070033801211010006
Voltage supply	-	DC 24 V +25/-20 %

Device type

Compare the specifications on the nameplate with the order.

Identify the supplied device version using the order details of the respective module.

Part no. (TN)

The part no. clearly identifies an article in the catalog. It is important for communication between the customer and the sales department.

Fabrication no. (F-Nr)

Among other things, the fabrication number contains the date of production (year/week).
Example: F-Nr = 007003380121101**0006**
The figures concerned are in positions 12, 13, 14, and 15 (from the left).
The device was therefore produced in the 1st calendar week of 2011.

1.4.2 Order details

	(1)	**Basic type**
705060		Multifunction panel 840 (1x Ethernet (RJ45), 1x system bus In (RJ45), 1x system bus Out (RJ45), 2x USB host)
	(2)	**Version**
8		Standard, with factory settings
	(3)	**Interface Com1**
00		Not used
51		RS232 Modbus RTU
54		RS422/485 Modbus RTU
	(4)	**Interface Com2**
00		Not used
51		RS232 Modbus RTU
54		RS422/485 Modbus RTU
	(5)	**Voltage supply**
36		DC 24 V +25/-20 %
	(6)	**Extra codes housing**
000		No extra code
444		Stainless steel front with design foil (neutral)
	(7)	**DNV GL approval**
000		Without approval
062		With DNV GL approval[1]
	(8)	**Extra codes**
000		No extra code
213		Recording function

[1] The power supply unit used must also have a DNV GL or GL type approval (e.g. type 705090).

	(1)		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**
Order code		/		-		-		-		/		,		,	
Order example	705060	/	8	-	00	-	00	-	36	/	000	,	000	,	213

1.4.3 Scope of delivery

1 multifunction panel 840 in the ordered version
8 mounting elements
1 strain relief for interface cable
1 template for panel cut-out
1 Installation Instructions

1.4.4 Accessories

Description	Part no.
Extra codes (activations):	
Recording function (extra code 213)	00569508
Additional accessories:	
Bar code scanner Gryphon GD4130	00407798
Memory stick USB 2.0 (2 GB)[1]	00505592

[1] The specified USB memory stick is tested and designed for industrial use. No liability is assumed for other brands.

1.4.5 General accessories

Description	Part no.
JUMO mTRON T system manual, English	00575577
Setup program with program editor JUMO mTRON T (on MiniDVD), incl. USB cable (A-plug to mini-B-plug, 3 m)	00569494
Program editor JUMO mTRON T (on MiniDVD), incl. USB cable (A-plug to mini-B-plug, 3 m)	00622333
PCA3000/PCC JUMO software package	00431884
PC Evaluation Software PCA3000	00431882
Release automatic print for PC Evaluation Software PCA3000	00505548
PCA Communication Software PCC	00431879
Plant Visualization Software JUMO SVS3000: See data sheet 700755	-
USB cable A-plug mini-B-plug 3 m	00506252

Content of the Mini-DVD:

- Setup program with program editor JUMO mTRON T in case of part no. 00569494
- Program editor JUMO mTRON T in case of part no. 00622333
- CODESYS programming software (free version)
- CODESYS Repository Package - Operating panels (free version)
- GSD file JUMO mTRON T - CPU (free version)
- PC Evaluation Software PCA3000 (30-day trial version)
- PCA Communication Software PCC (30-day trial version)
- Documentation in PDF format

1.5 System version

The system version of the measuring, control, and automation system is determined by the compatibility index of the base unit.

Example composition of a version number for the central processing unit: 248.**xx**.yy

248 = basic version, **xx = compatibility index (system version)**, yy = current version

In this document, functions which depend on the system version are marked accordingly (e.g. "as of system version 02").

1 Introduction

2.1 Brief description

The multifunction panel 840 with TFT-touchscreen allows easy and clearly-arranged measured data visualization, operation, configuration, and parameterization of the system.

The TFT color screen has a screen size of 21.3 cm (8.4“), a resolution of 640 × 480 pixels, 256 colors, and LED backlight.

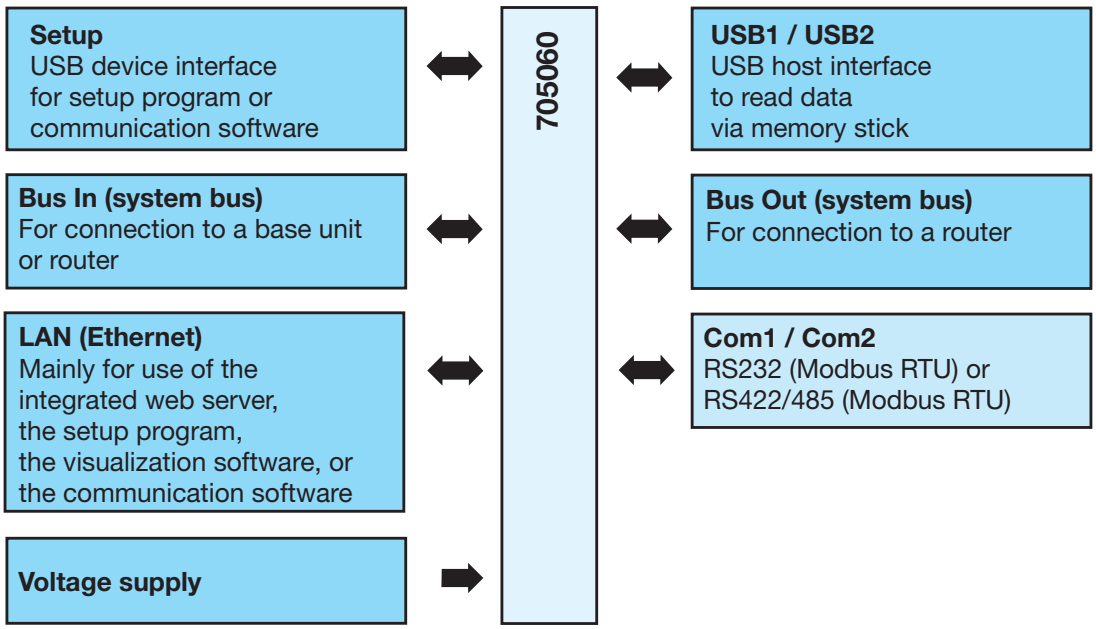
As the interface between man and machine, the panel allows an optimum and clearly-arranged view of the process status and the system parameters. In addition, it is perfectly suitable for the display and operation of controller screens, process screens, the program editor, and the optional recording function. Setpoint values, batch text, parameters, and configuration data can be directly entered and changed by the user on the screen.

The process data that is transmitted by the system bus is shown in real time. Data archiving and evaluation is made possible by established PC-programs.

In addition to the standard interfaces (LAN, USB), two optional serial interfaces can be connected to a barcode scanner, modem, or other Modbus devices (master, slave).

The user can comfortably configure the multifunctional panel 840 with the setup program. And many functions are also configurable directly on the multifunction panel 840.

2.2 Block diagram



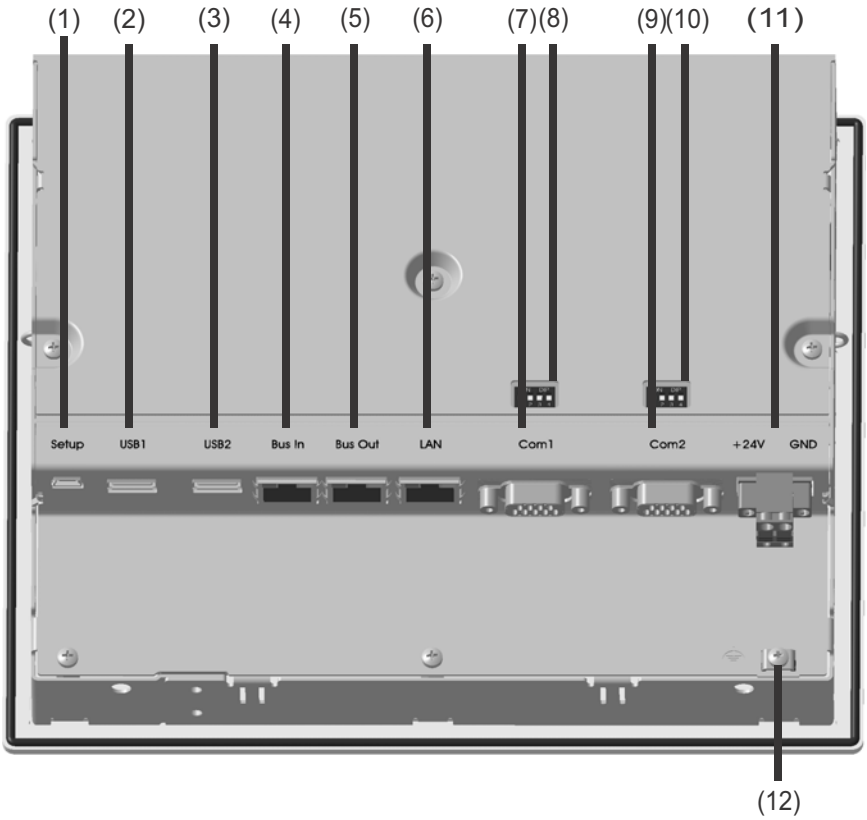
2 Description

2.3 Display and control elements

(1) Front with decor foil

(2) Screen (touchscreen)

2.4 Connection elements



(1) USB device interface (setup)
(2) USB host interface 1
(3) USB host interface 2
(4) System bus In
(5) System bus Out
(6) LAN interface
(7) Com1 interface
(8) Com1 terminating resistor
(9) Com2 interface
(10) Com2 terminating resistor
(11) Voltage supply In, DC 24 V
(12) Functional grounding

CAUTION!
Functional grounding:
Connection terminal for functional ground.
To meet the specified EMC characteristics, this terminal must be connected to functional ground.

2.5 Use of the interfaces

Interface	Used for ...
USB device interface	• Setup program
USB host interface 1	• Connection of a USB memory stick
USB host interface 2	• Connection of a USB memory stick
System bus In	• Connection to base unit • Connection to router module
System bus Out	• Connection to router module
LAN interface	• Setup program • Web server • Mail server
Com1 interface	• Connection to Modbus master device • Connection to Modbus slave devices • Connection of a barcode reader • Connection of a modem
Com2 interface	• Connection to Modbus master device • Connection to Modbus slave devices • Connection of a barcode reader • Connection of a modem

2.6 Operating modes

NOTE!
The operating modes play a role in the configuration of the groups of the multifunction panel. This chapter contains the necessary basic knowledge relating to the operating modes.
⇨ Chapter 13.11.5 "Standard operation", page 161
⇨ Chapter 13.11.6 "Event operation", page 164
⇨ Chapter 13.11.7 "Time operation", page 165

NOTE!
Groups can only be configured if the extra code "Registration function" is active.
The user can see whether this extra code is active via the "Device info" function.
If the extra code is not active, the user can subsequently activate this using the setup program.
⇨ Chapter 11.1 "Device info", page 104
⇨ Setup program:
PROJECT > HARDWARE ARRANGEMENT > HMI > GENERAL > OPTIONS

2.6.1 Standard, time, and event operation

The operating modes decide the rate at which measurement data is saved.

3 operating modes

The multifunction panel has 3 operating modes:
- Standard operation
- Time operation
- Event operation

The following settings are among those that can be made for each of the three operating modes:
- Memory values
- Memory rate

Memory values

The "Memory values" parameter specifies whether the average, minimum, maximum, and current values of the period between two memory rates or the peak values (envelope diagram) will be saved. With the "Min./max. values" setting, the minimum and maximum value of the last capture period (memory rate) are saved.
An additional option for the "Memory value" parameter is "Eco operation". This is a special memory mode that is described separately in Chapter 2.6.2 "Eco operation", page 27.

Memory rate

The "Memory rate" parameter specifies the time between 2 saved values. The diagram feed speed corresponds to the memory rate, i.e. with a memory rate of 5 s, for example, the memory value will be entered into the diagram every 5 s.

Standard operation

If the multifunction panel is **not** in event or time operation, standard operation is active.

2 Description

Time operation

For time operation, the user can enter a time frame (max. 24 hours) during which a specific memory value and a specific memory rate will be active.

Event operation

Event operation is activated via the control signal, which is assigned e.g. to an event or an alarm. For example, event operation can be used to reduce the memory rate when an alarm is activated.

Priority

The priority of the operating modes with regard to one another is allocated as follows:

Operating mode	Priority
Standard operation	Low
Time operation	Medium
Event operation	High

Active operating mode

The active operating mode is shown in the diagram using the various symbols after the current diagram feed speed (memory rate):

Operating mode	Symbol
Standard operation	
Time operation	
Event operation	

Memory requirements

A memory space of 99 MB is available for measurement data recording. The space required depends on the data records which shall be stored. The following information can be used as a basis for a rough estimate:

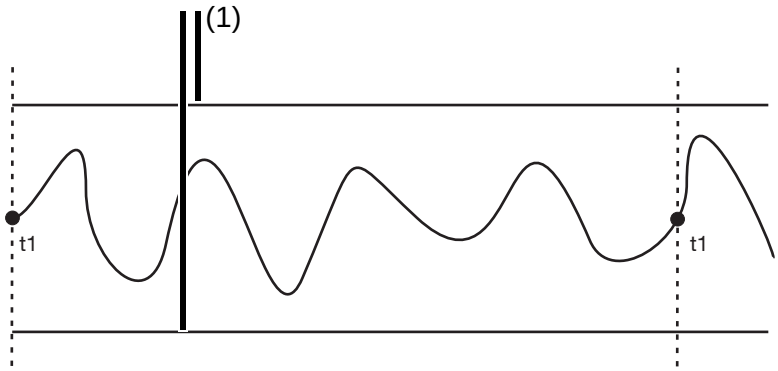
- Group of 6 analog inputs and 6 digital inputs, per storage: max. 48 byte
- Group of 6 analog inputs and 6 digital inputs, memory rate 125 ms, per second: 225 byte
- Report, regardsless of the type of report (daily, monthly, ...): 151 byte
- Counter/integrator (at closing): 25 byte
- Batch (at closing): 2 kB
- Alarm/event entry: 6 byte
- Audit-Trail message: 100 byte

Examples for a group of 6 analog inputs and 6 digital inputs:
Memory rate 1 s: 4.1 MB/day; 124 MB/month
Memory rate 30 s: 0.13 MB/day; 4,1 MB/month
(plus memory required for all other data records)

2.6.2 Eco operation

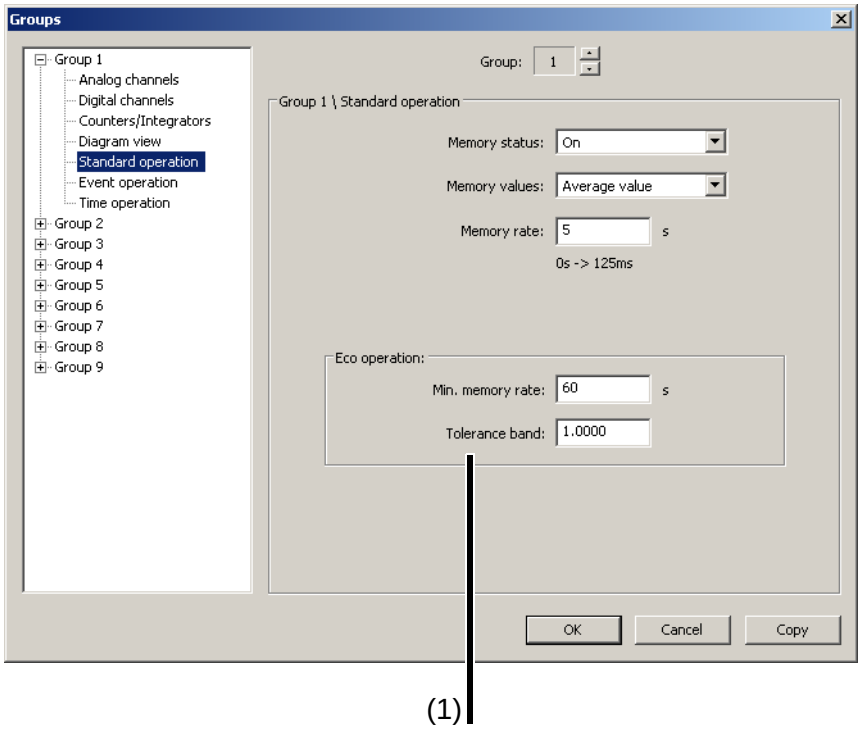
The parameters for eco operation are set in the menu for standard operation. However, eco operation can be used with all three operating modes.

In eco operation, the instantaneous values (current values) are recorded in a specified minimum memory rate (independent of the tolerance band).

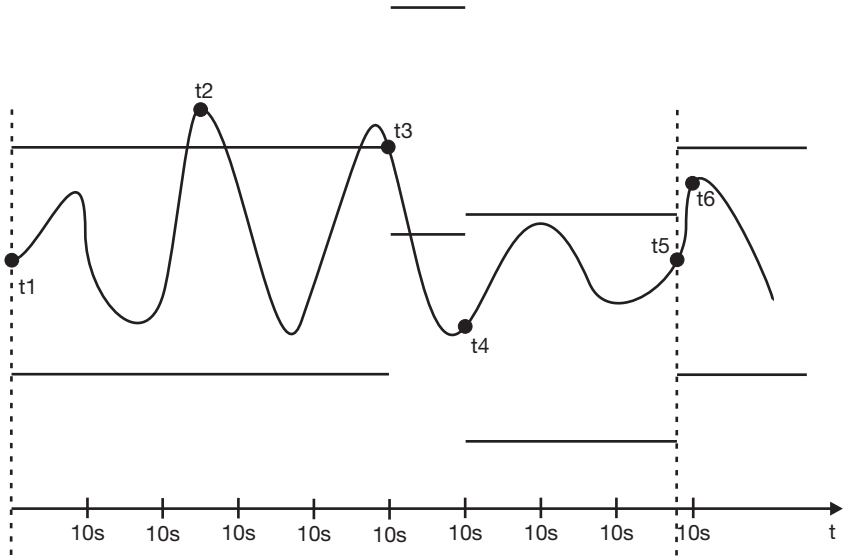


(1) Tolerance band

t1 Saving via "Min. memory rate" (controlled save)



The value for the tolerance band (1) is stated with regard to the unit of the analog channels (e.g. ± 1 °C). If the measured values exit the tolerance band and if the new measured value outside of the tolerance band is present at least for the duration of the memory rate configured in the active operating mode, it will be recorded, saved, and provided with a new tolerance band.



t1 Saved via "Min. memory rate" (controlled save) and new tolerance band is set.

t2 Not saved, as the measured value at the end of the memory rate (10 s) is once again within the tolerance.

t3 The new tolerance band is saved and set, as the measured value at the end of the memory rate had left the tolerance band.

t4 The new tolerance band is saved and set, as the measured value at the end of the memory rate had left the tolerance band.

t5 Saved via "Min. memory rate" (controlled save) and new tolerance band is set.

t6 Not saved, as the measured value at the end of the memory rate (10 s) is once again within the tolerance.

NOTE!
It is not mandatory to register when the tolerance band has been exited. If the measured values return to the tolerance band within the memory rate (t2), no registration takes place; the "Min. memory rate" is always active.

2.7 Batch reporting

NOTE!
Batch reporting (batches) can also be configured and used without the extra code "Registration function".
A typical application of the batches without the extra code "Registration function" is the transmission of texts to the PLC (central processing unit).

The configuration of the batches is described in the following chapter:
⇨ Chapter 13.13 "Batches/Plants", page 170

2.7.1 General information on batches

Batches enable the design of a flexible form for the description of a batch process within the multifunction panel. A maximum of nine batches can be recorded simultaneously.

The batches can be controlled (start/stop) via one of the digital signals (control signals), via the touchpad (interface on the screen), or via a barcode scanner.

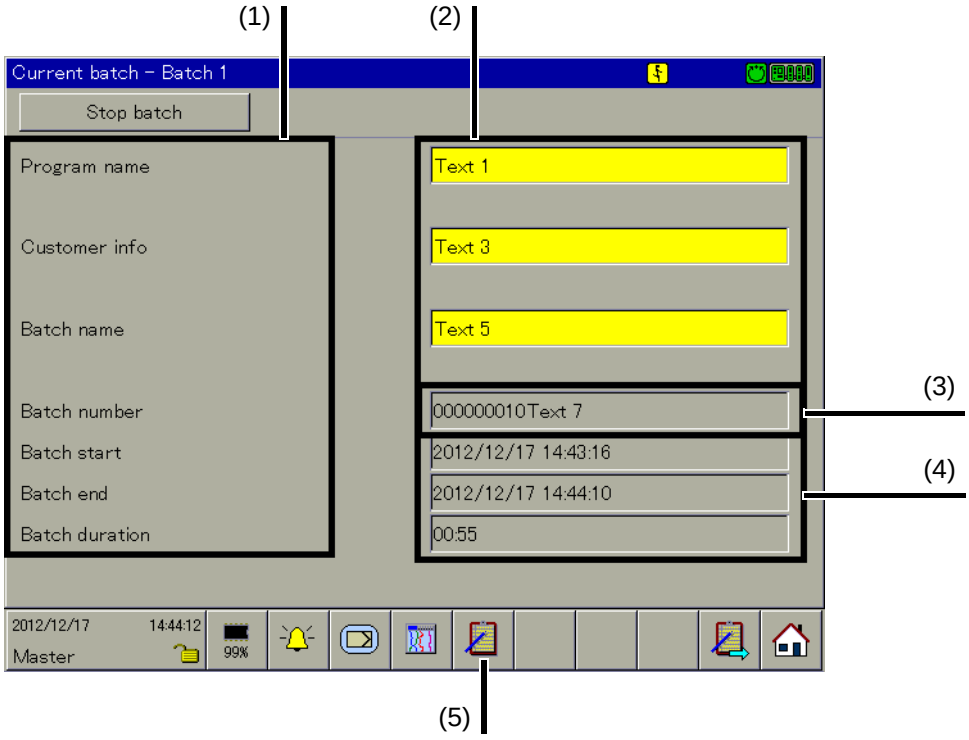
Further information on control using a barcode reader can be found in:
⇨ Chapter 7.8.2 "Batch control via barcode scanner", page 71

For batches, a distinction is made between two visualizations. The following are available:
- Current batch report
- Completed batch report

Further information on visualization can be found in:
⇨ Chapter 7.8 "Current batch", page 69
⇨ Chapter 7.9 "Last completed batch", page 74

2.7.2 Batch texts

How can something be edited?



(1) Text left column
(2) Text right column
(3) Batch number
(4) Batch start, end, duration
(5) Batch selection

Text left column

The text in the left column or the left half of the screen can be edited on the multifunction panel and using the setup program.

⇨ Multifunction panel:
CONFIGURATION > HMI > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO 1 TO 10 > TEXT LEFT COLUMN

⇨ Setup program:
HMI > CONFIGURATION LEVEL > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO > BATCH INFO 1 TO 10 > EDIT > TEXT LEFT COLUMN

Text right column

The text in the right column or half of the screen can be edited on the multifunction panel and using the setup program.

⇨ Multifunction panel:
CONFIGURATION > HMI > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO 1 TO 10 > TEXT RIGHT COLUMN
and
CONFIGURATION > HMI > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO 1 TO 10 > FACTORY SETTING

⇨ Multifunction panel:
VISUALIZATION > CURRENT BATCH
Then change the batch if required and implement the edit by activating the yellow text fields.[1]

⇨ Setup program:
HMI > CONFIGURATION LEVEL > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO > BATCH INFO 1 TO 10 > EDIT > TEXT RIGHT COLUMN
and
HMI > CONFIGURATION LEVEL > BATCHES/PLANTS > BATCH 1 TO 9 > BATCH INFO > BATCH INFO 1 TO 10 > EDIT > FACTORY SETTING

Batch number

Permanent changes to the batch number can only be made on the multifunction panel.

⇨ Multifunction panel:
PARAMETERIZATION > HMI > BATCHES/PLANTS > BATCH NUMBER 1 TO 9

It can be temporarily changed on the multifunction panel;[2] at the end of a batch, the internal HMI batch number will be incremented and reactivated.

Batch start, end, duration

If the batch start, end, and duration are used, the lines can no longer be edited.

Batch selection

This function is used to directly select and display one of the active batches. Simply touch one of the batch names displayed after calling up the function.

NOTE!
The function is only available if more than one batch is active.

[1] Only available if the respective batch parameter "Editable?" is set to Yes.

[2] Only available if the respective batch parameter "Editable?" is set to Yes.

2 Description

3.1 General information on installation/dismounting

DANGER!
With multichannel controller module 705010 and relay module 705015, the load circuits from relay or solid state relay outputs can be operated with a dangerous electrical voltage (e.g. 230 V).
There is a risk of electric shock.
Prior to the installation/dismounting of these modules or the removal of the module insert, the load circuits are to be disconnected from the voltage and the terminal strips are to be removed from the module. This work must only be performed by qualified personnel.

WARNING!
The modules must never be installed in areas with an explosion hazard.
There is the risk of an explosion.
The entire system must only be used outside of areas with an explosion hazard.

Mounting site

All modules have protection type IP20 and are only intended for use in fireproof control cabinets or switch boxes. The mounting site should be virtually vibration-free. Electromagnetic fields caused by equipment such as motors or transformers should be avoided.

Multifunction panel 840 has protection type IP67 at the front and is intended for installation in a panel cut-out. The rear has protection type IP20.

Climatic conditions

The ambient temperature and the relative humidity at the mounting site must correspond to the technical data. Aggressive gases and vapors have a negative effect on the operating life of the modules. The mounting site must be free from dust, powder, and other suspended matter so that the cooling slots do not become blocked.

DIN rail

All modules are mounted on a DIN rail according to DIN EN 60715 (35 mm × 7.5 mm × 1 mm). For reasons of stability, the spacing of the fastening screws for the DIN rail should not exceed 200 mm. The minimum distances for the modules that are specified in the module-specific installation or operating instructions must be observed.

Installation position

The DIN rail should be mounted horizontally so that all modules are arranged vertically. Otherwise the admissible ambient temperature range will be restricted.

Space requirement

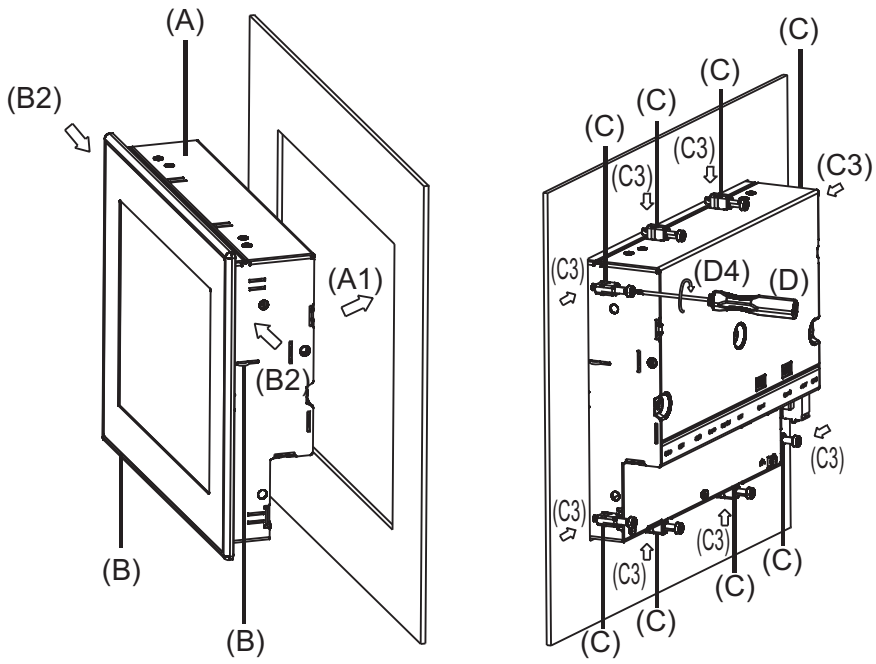
The modules require the minimum distances shown in the following figure for the purpose of installation/dismounting and for future maintenance or replacement. In the event of shorter distances the minimum bending radius of the cables, the performance of the electrical installation, and the clear arrangement of the plant are no longer guaranteed.

3 Installation

3.2 Mounting in a panel

3.2.1 Multifunction panel

Mounting a multifunction panel 840 (705060)

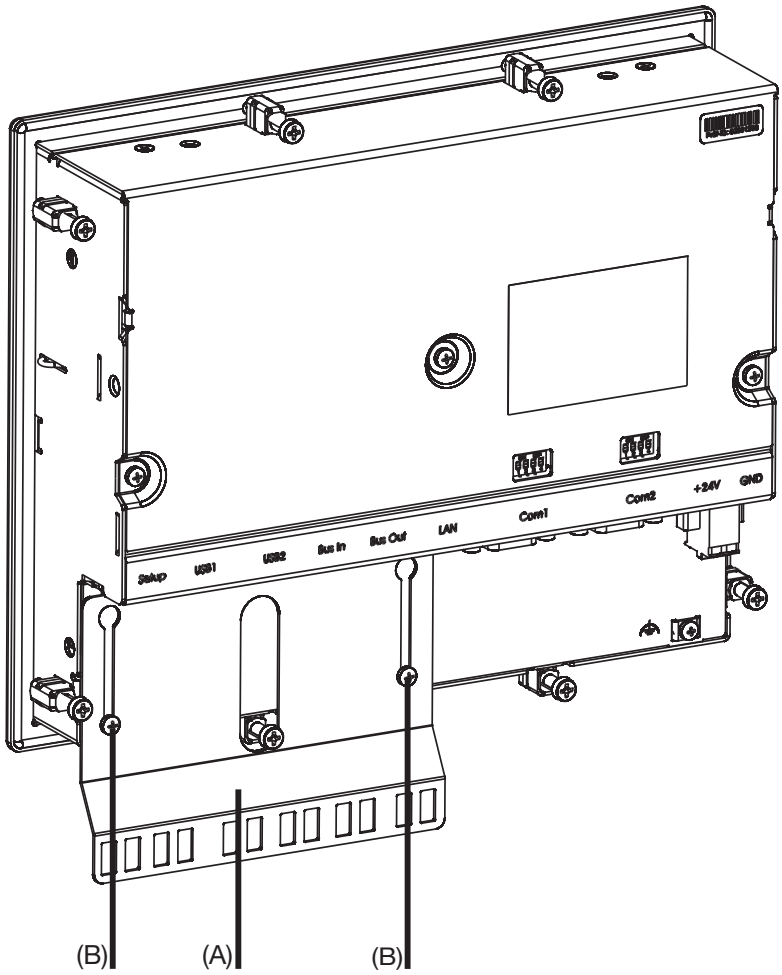


Procedure:

Step	Activity
1	Insert the device (A) into the panel cut-out (A1) from the front until the two side springs (B) click into place (B2). The springs facilitate the mounting, but do not replace the fastening elements (step 2).
2	Insert the fastening elements (C) into the recesses of the case (C3) and use a screwdriver (D) to evenly clamp them against the rear side of the panel with a torque of 0.5 Nm (D4).

NOTE!
The provided template is to be used to create the panel cut-out. This is the only way to guarantee optimum positioning of the multifunction panel.

3.3 Strain relief for interface cable



(A) Panel for strain relief

(B) Fastening screws

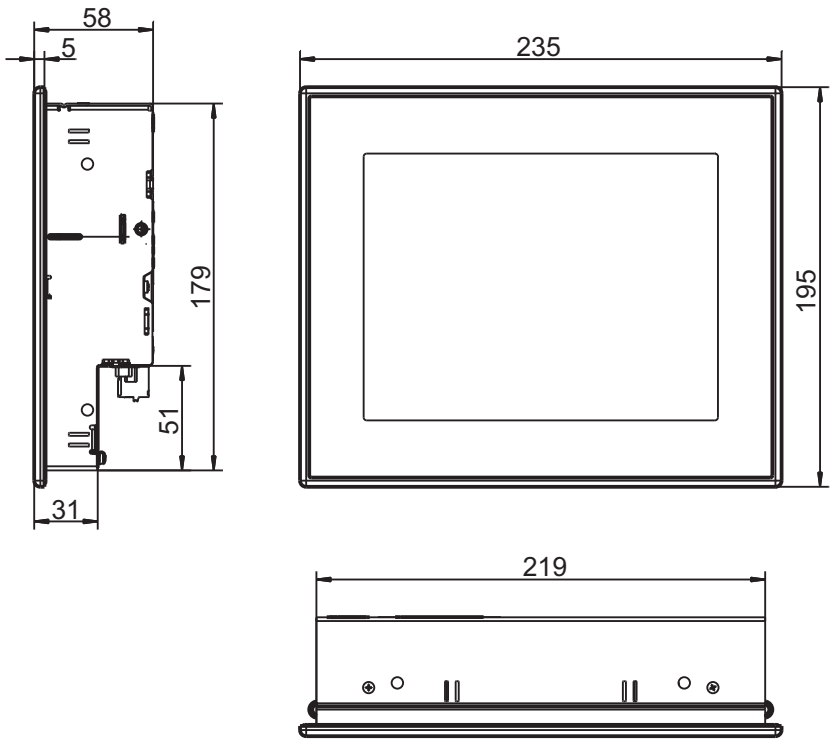
Procedure:

Step	Activity
1	Loosen the fastening screws (B) (do not remove).
2	Place the panel for strain relief (A) on the case and retighten the fastening screws (B).

NOTE!
The interface cables can be attached to the panel using cable ties for strain relief.

NOTE!
If the cable shield is connected to the case of the multifunction panel, the exterior sheathing of the interface cable must be removed at the location of the strain relief.

3.4 Dimensions



4.1 Installation notes

NOTE!
These installation notes apply for the entire measuring, control, and automation system and, on some occasions, are only applicable for a specific module.
The respective connection diagram shows the context.

Requirements for the personnel

- Work on the modules must only be carried out to the extent described and, like the electrical connection, only by qualified personnel.
- Before plugging and unplugging connection cables ensure that the person performing the work is electrostatically discharged (e.g. by touching grounded metallic parts).

Cables, shielding, and grounding

- When selecting the cable material, when installing, and when performing the electrical connection of the module, the regulations of DIN VDE 0100 "Erection of power installations with rated voltages up to 1000 V" and the respective national regulations (e.g. on the basis of IEC 60364) are to be observed.
- Certain cables must be heat resistant up to at least 80 °C at maximum load. The relevant instructions in the connection diagram of the affected modules must be observed.
- Route input, output, and supply cables separately and not parallel to one another.
- Only use shielded and twisted probe and interface cables. Do not route the lines close to current-carrying components or cables.
- For temperature probes, ground the shielding on one side in the control cabinet.
- Do not perform loopthroughs on the grounding cables, but route the cables individually to a shared grounding point in the control cabinet; in doing so, ensure that the cables are as short as possible.
  Ensure that the equipotential bonding is correct.

Electrical safety

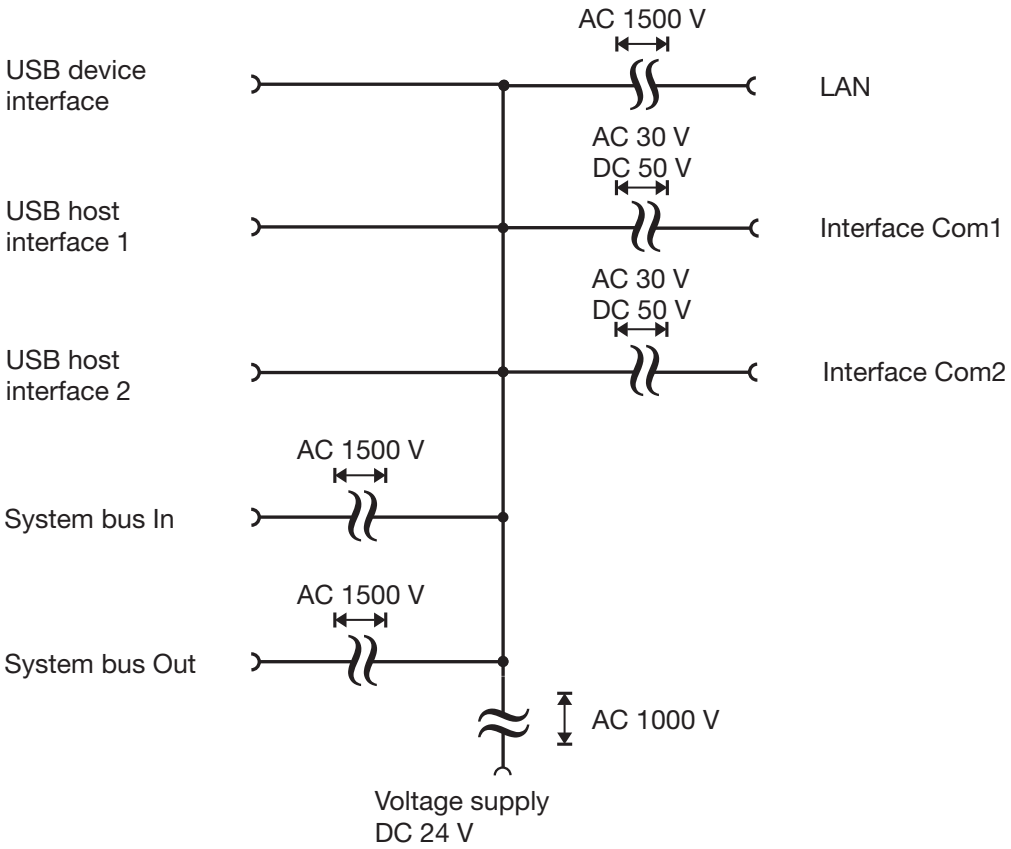
- Isolate power supply units from the voltage supply on the primary side if there is a risk of touching parts with dangerous electrical voltage (e.g. 230 V) in the course of work.
- The fuse rating of the power supply units on the primary side should not exceed a value of 10 A (inert).
- With modules with relay or solid state relay outputs, the load circuits can be operated with a dangerous electrical voltage (e.g. 230 V). Disconnect load circuits from the voltage supply during installation/dismounting and electrical connection.
- In order to prevent the destruction of the relay or solid state relay outputs in the event of an external short circuit in the load circuit, the load circuit should be fused to the maximum admissible output current.
- The modules are not suitable for installation in areas with an explosion hazard.
- In addition to a faulty installation, incorrectly set values on the module could also impair the correct function of the following process. Therefore, ensure that safety devices independent of the module (e.g. overpressure valves or temperature limiters/monitors) are available and that it is only possible for qualified personnel to define settings. Please observe the corresponding safety regulations in this context.

4 Electrical connection

References to other information

- The electromagnetic compatibility meets the standards and regulations cited in the technical data.
- The USB device interface and voltage supply in the central processing unit 705001 are **not** electrically isolated. In general, please observe the specifications regarding electrical isolation.

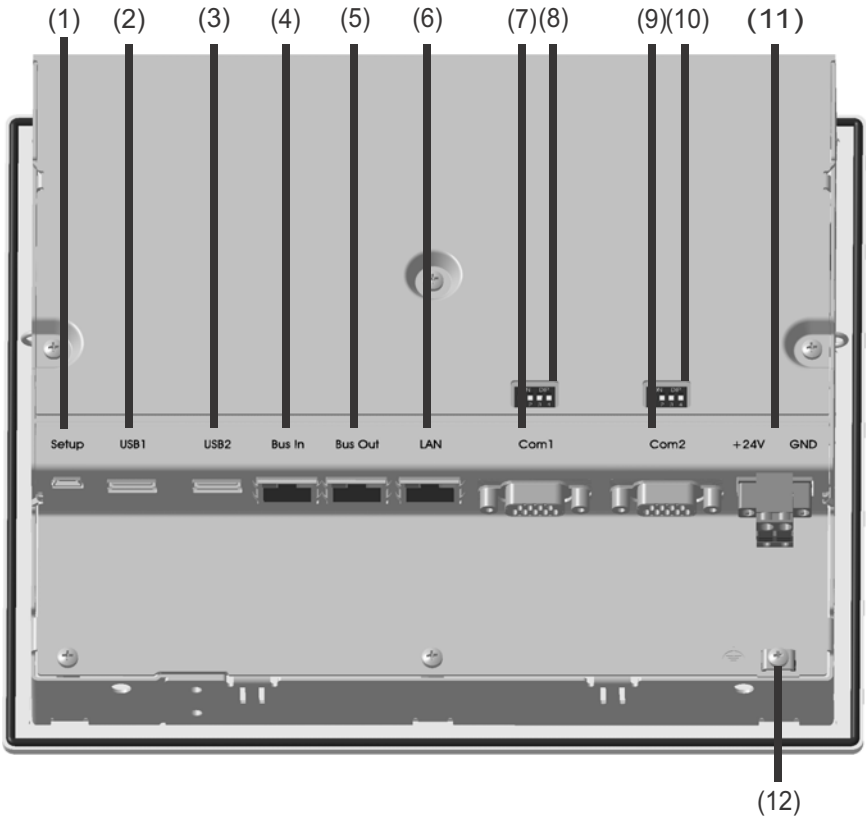
4.2 Electrical isolation



4.3 Connection diagram

CAUTION!
At maximum load, the temperature at the "+24 V" and "GND" terminals (Voltage supply In) may exceed 60 °C.
As a result the insulation of the cable may be damaged.
The cable must be heat resistant up to at least 80 °C.

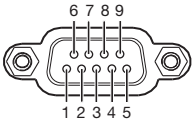
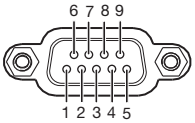
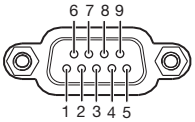
4.3.1 Connection elements



(1) USB device interface (setup)
(2) USB host interface 1
(3) USB host interface 2
(4) System bus In
(5) System bus Out
(6) LAN interface
(7) Com1 interface
(8) Com1 terminating resistor
(9) Com2 interface
(10) Com2 terminating resistor
(11) Voltage supply In, DC 24 V
(12) Functional grounding

CAUTION!
Functional grounding:
Connection terminal for functional ground.
To meet the specified EMC characteristics, this terminal must be connected to functional ground.

4.3.2 Interfaces

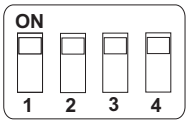
Connection	Designation	Connection element		
USB device	Setup			
USB host	USB1, USB2			
System bus In, System bus Out	Bus In, Bus Out		1 TX+ 2 TX- 3 RX+ 6 RX-	Transmit data + Transmit data - Receive data + Receive data -
Ethernet	LAN		1 TX+ 2 TX- 3 RX+ 6 RX-	Transmit data + Transmit data - Receive data + Receive data -
Serial interface (RS232), optional	Com1, Com2		2 RxD 3 TxD 5 GND	Receive data Transmit data Ground
Serial interface (RS422), optional	Com1, Com2		3 TxD+ 4 RxD+ 5 GND 8 TxD- 9 RxD-	Transmit data + Receive data + Ground Transmit data - Receive data -
Serial interface (RS485), optional	Com1, Com2		3 TxD+/RxD+ 5 GND 8 TxD-/RxD-	Transmit/receive data + Ground Transmit/receive data -

4.3.3 Terminating resistors

The internal terminating resistors for the Com1 and Com2 interfaces are only relevant for RS422/485.

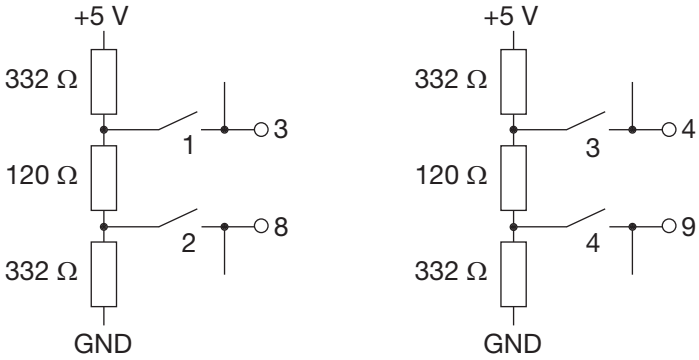
The terminating resistors are deactivated by default. To activate them, DIP switches 1 to 4 for the relevant interface must be pushed upward using a suitable tool such as a ballpoint pen (ON position).

The following figure shows the position of the DIP switches when the terminating resistors are activated.



NOTE!
To ensure fault-free operation, terminating resistors are required at the start and end of an RS422/485 transmission path.

Internal terminating resistors



4.3.4 Voltage supply

Connection	Terminals	Symbol and terminal designation
24 V DC	+24 V and GND	+ U_x - +24 V GND

4.4 Functional test

Once the electrical connection is complete, the following points must be checked:

1) Voltage supply
2) Connection to system bus
3) Errors during initialization

Voltage supply

If	Then
the voltage supply is present	• the multifunction panel starts. • the screen shows a start picture.

Connection to system bus

The "Bus In" input must be connected to a "Bus Out" output of a base unit or a router module.

Errors during initialization

If errors occur during the initialization, the user must monitor the configuration of the system using the setup program and rectify errors.

Startup

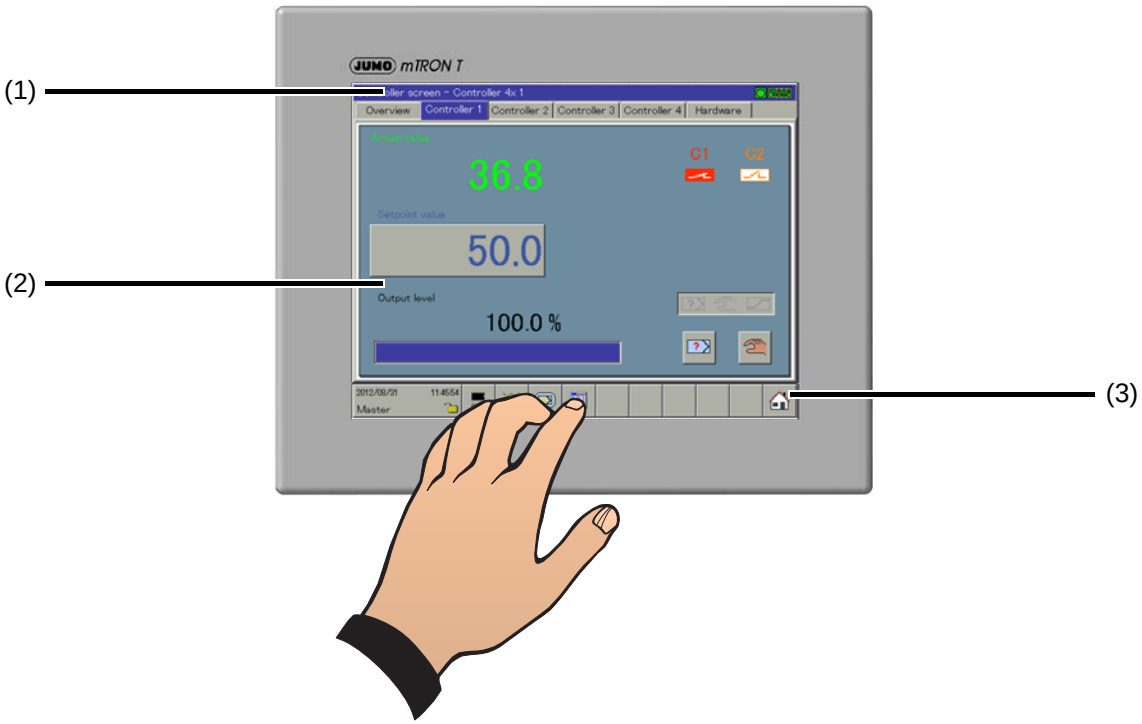
The checks described above complete the process of installation and electrical connection. For startup, use the additional documentation (operating manual or system manual).

The "Introduction" chapter of this document contains an overview of all documentation for the measuring, control, and automation system.

5.1 Operating concept and graphic elements

Operating concept

The operating concept of the multifunctional panel is as clear and simple as you could imagine. The user controls the panel by touching the screen (touchscreen) with a fingertip.



(1) Status and title line
(2) Visualization window
(3) Function selection

NOTE!
Do not use any objects that are sharp or have sharp edges, otherwise the screen may be scratched.

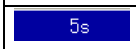
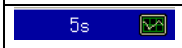
5.1.1 Status line and Title line

This line displays alarm and error messages as well as general information on the active display (e.g. sampling rate). It is automatically hidden by the system if required.

(1) Area for text and error messages; if the text is displayed with a red background, it relates to an alarm (error message)

(2) Area for symbols relating to the panel

(3) Area for symbols relating to communication with other modules

Symbol (2)	Meaning
	Sampling rate (5 s) and operating mode (standard operation)
	Sampling rate (125 ms) and operating mode (event operation)
	Sampling rate (1 s) and operating mode (time operation)
	Data read-out is currently being performed by the PCA communication software PCC.

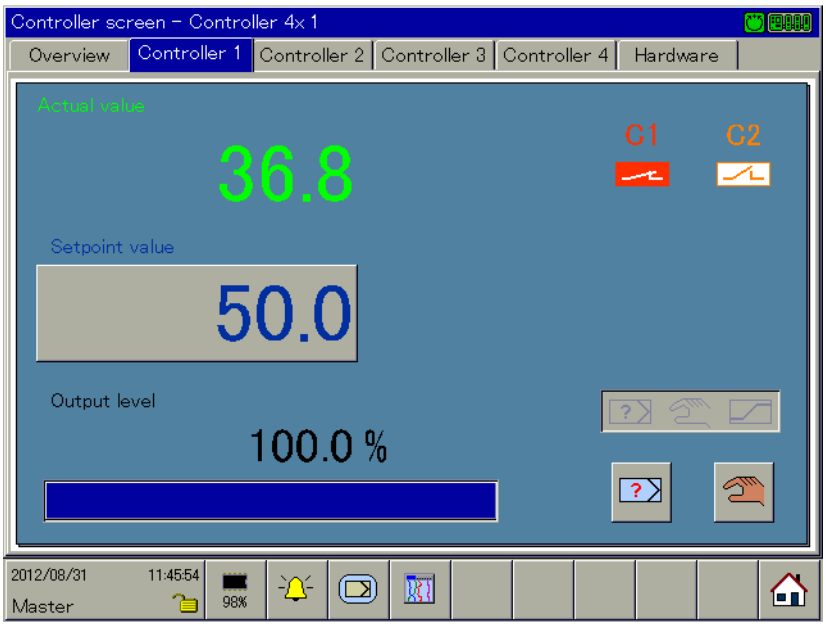
Symbol (3)	Meaning
	Base unit is in RUN status
	Base unit is in STOP status
	Communication with base unit not interrupted
	Communication with base unit interrupted
	Communication with base unit interrupted

NOTE!
If the text is displayed with a read background, it relates to an error message.

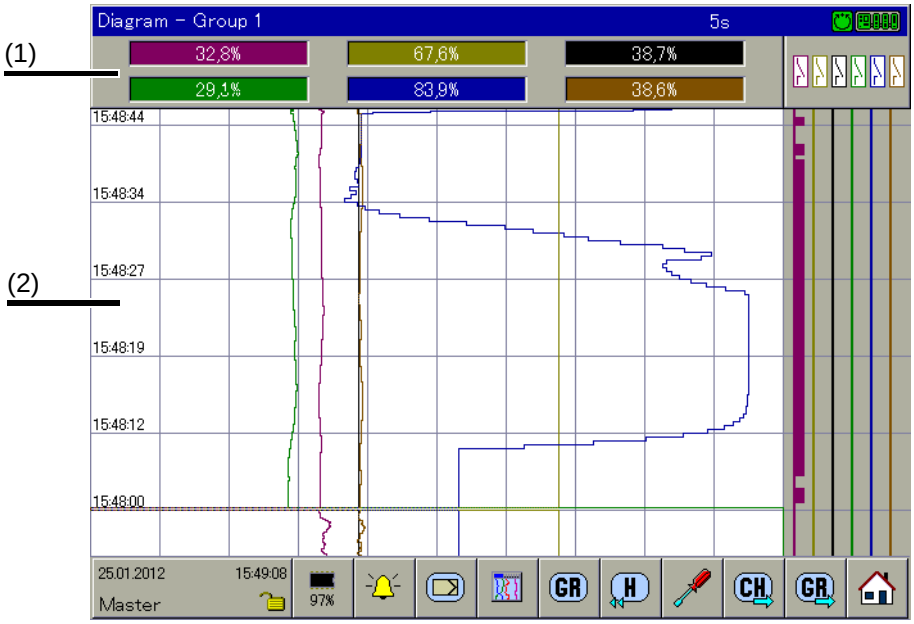
5.1.2 Visualization window

The visualization of the measuring data and control data takes place in this area of the screen (underneath the status and title line and above the function selection). The area for the configuration of the system will continue to be used.

Example: Visualization of a controller (controller screen)



Example: Visualization of an analog channel



(1) Diagram header

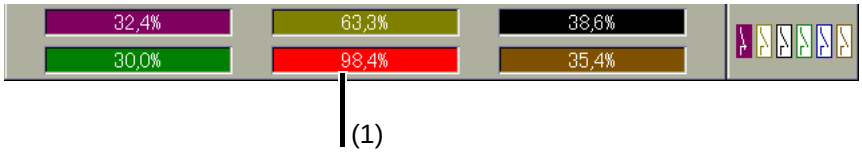
(2) Diagram

Diagram header

The diagram header (the numerical measured value display on the screen) is displayed directly underneath the status and title line and is available in the following display types:

- Diagram
- History (of diagram display)
- Digital

The diagram header can be switched on and off.



(1) Alarm

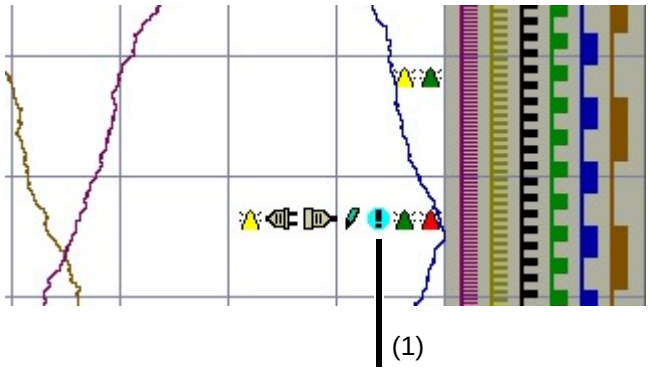
NOTE!
A channel alarm is marked orange (Alarm1) or red (Alarm2).
The colors can be configured in the setup program.

Under History (for the diagram display), the user can switch between the min. and max. display if the diagram header is switched on. Whether the min. and max. values are available simultaneously depends on the current operating mode setting of the group.

Diagram header in the Diagram visualization:

Diagram header in the digital visualization:

Diagram



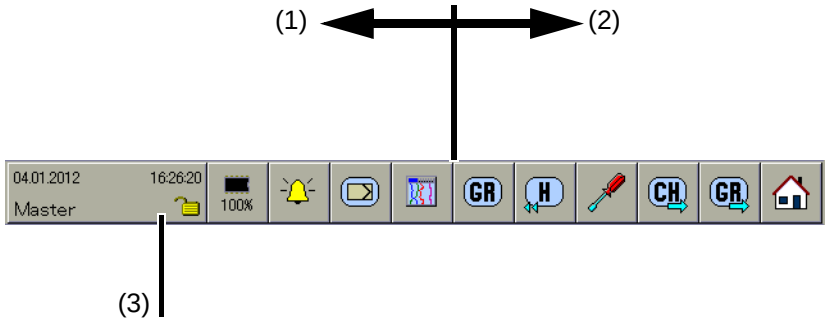
(1) Symbols

In the area of the diagram (graphic measured value display), various symbols are displayed in addition to the measurement data. Alarm diagrams are marked red or orange (this can be configured using the setup program).

Symbol	Meaning
	Comment was entered
	Event has occurred
	Alarm no longer present (on multifunction panel)
	Alarm was reported (on multifunction panel)
	Event has occurred (on base unit)

In addition, the communication with the operator (device configuration, inspection of alarm and event lists, etc.) is performed in the visualization window.

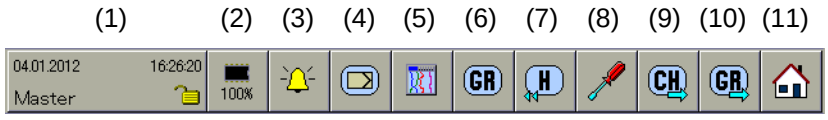
5.1.3 Function selection



(1) Set functions
(2) Variable functions with changing symbols
(3) Function is performed if the user touches the screen

The functions of the multifunction panel are selected in the function selection area. The symbols in area (2) change depending on the function performed.

The function selection of the normal display is subsequently shown if the vertical diagram (diagram display) has been selected.



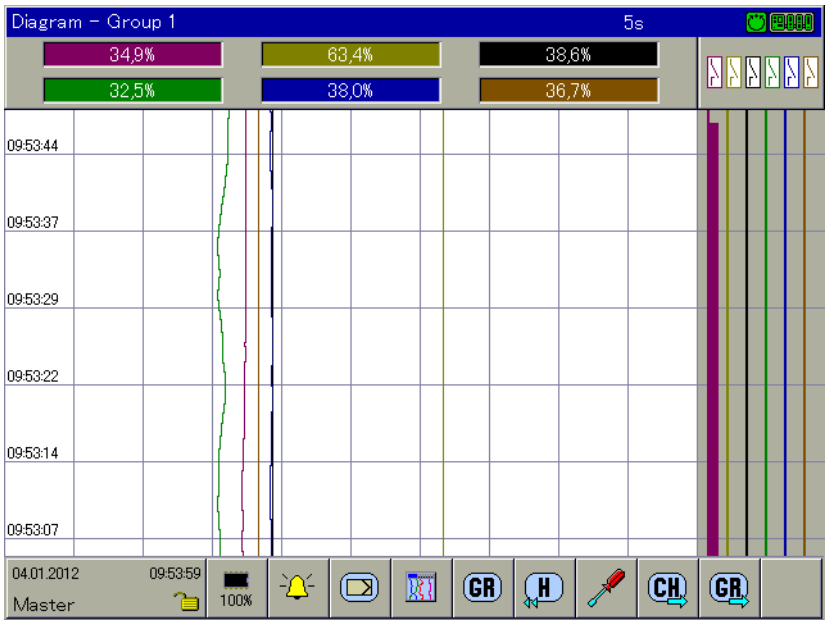
(1) Device manager
(2) Memory manager
(3) Alarm and event lists
(4) Controller
(5) Visualization (visualization of current data)
(6) Group selection
(7) Memory display (History)
(8) Diagram view
(9) Channel rotation
(10) Group rotation
(11) Normal display (Home)

NOTE!
If not all functions can be selected, the functions must first be released by changing the configuration. The setup program may be required for this purpose.

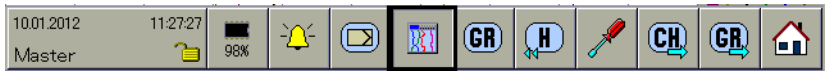
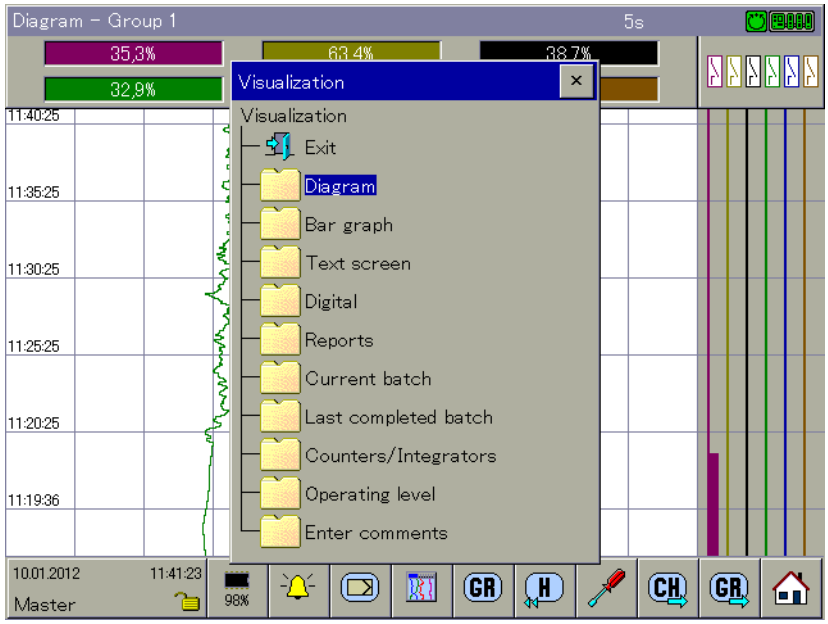
5.2 Operation example

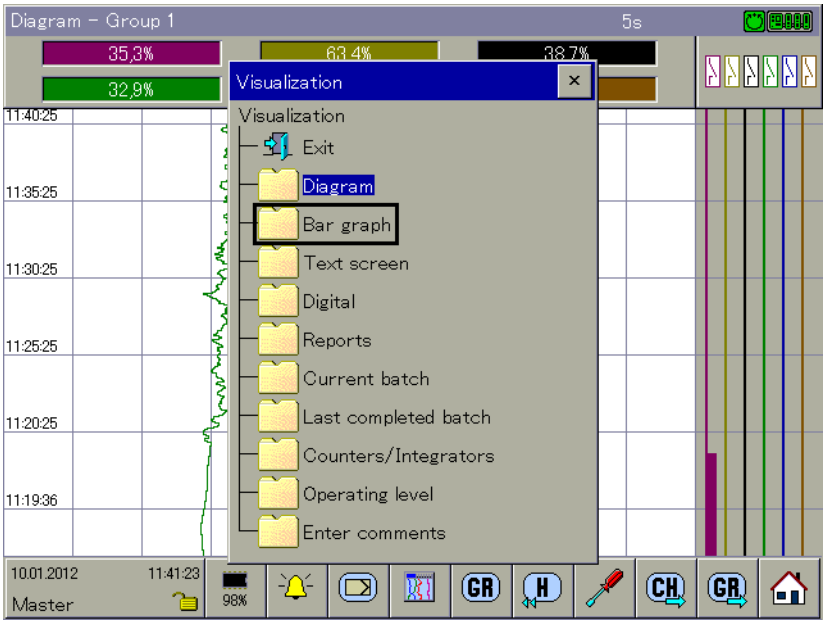
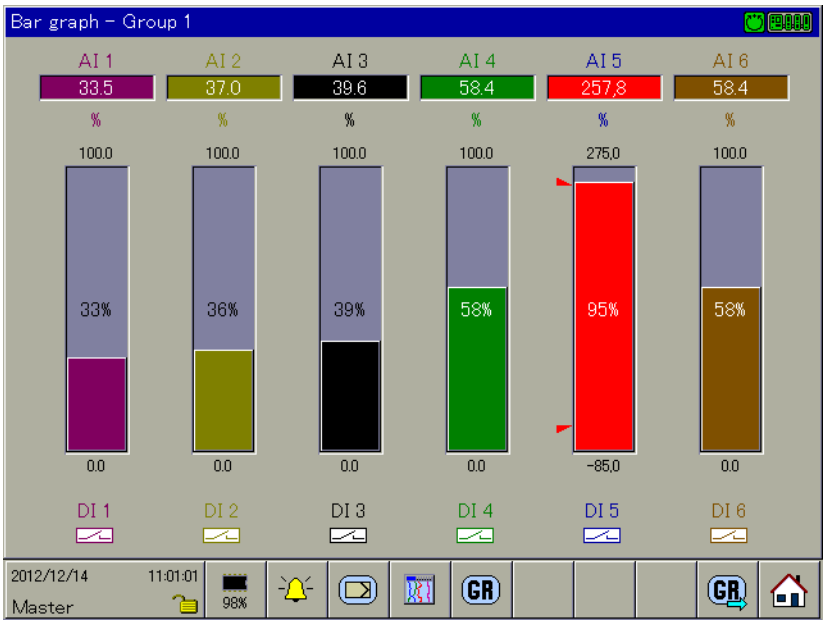
Start

An analog channel is displayed.



Operation

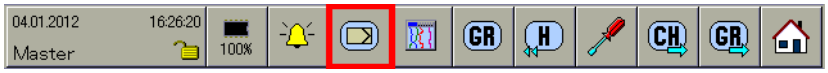
Step	Activity
1	Select the Visualization menu by touching the touchscreen.  ➥ The "Visualization" menu is shown. 

Step	Activity
2	Select bar graph display by touching the touchscreen.  ➥ The "Bar graph" display mode is started. 

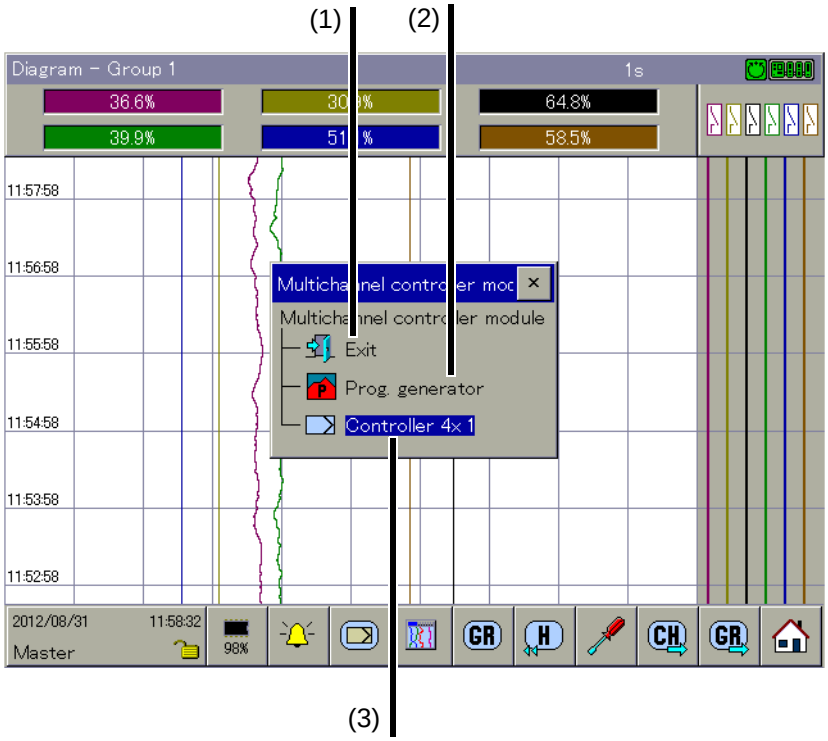
5 Operation

This chapter describes the visualization and operation of the control channels and the program generator.

Select the multichannel controller module or the program generator



The multichannel controller module or the program generator is selected via the button that is highlighted.



(1) Exit function

(2) Program generator

(3) Multichannel controller module (controller screen)

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Prog. generator

After this function is called up, an overview of the nine program generators will be shown. Touching an entry will open the corresponding generator screen.

⇨ The operation of the program generators is described in operating manual B 705001.0 (central processing unit).

The program generators can also be controlled by a barcode scanner (select program number, start and stop program).

⇨ Chapter 16.3.3 "Program generator control", page 277

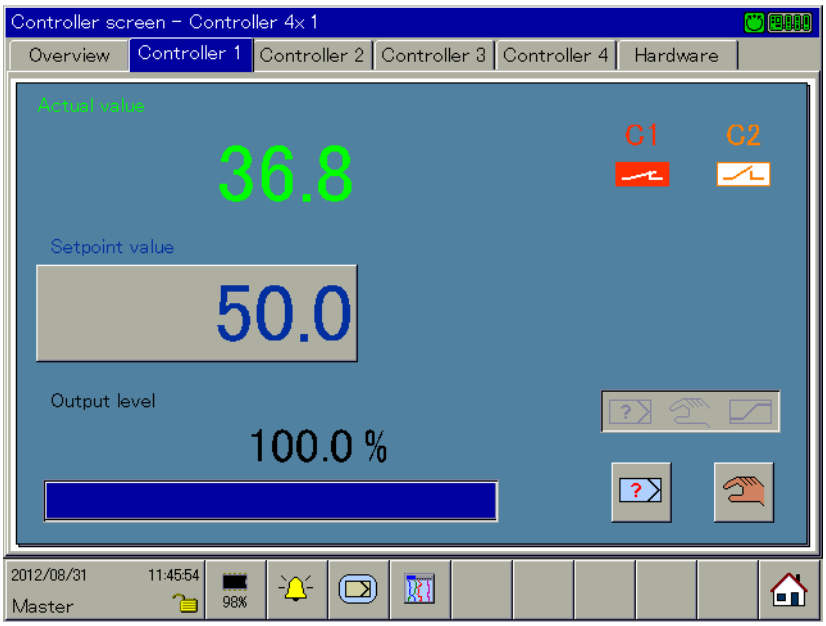
6 Multichannel controller module

Multichannel controller module (controller screen)

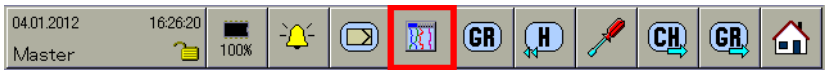
If only one controller channel is configured, then the corresponding controller screen will be displayed immediately.

If multiple controller channels are configured, an overview of the active controller channels will be shown. Selecting a controller channel also opens the corresponding controller screen.

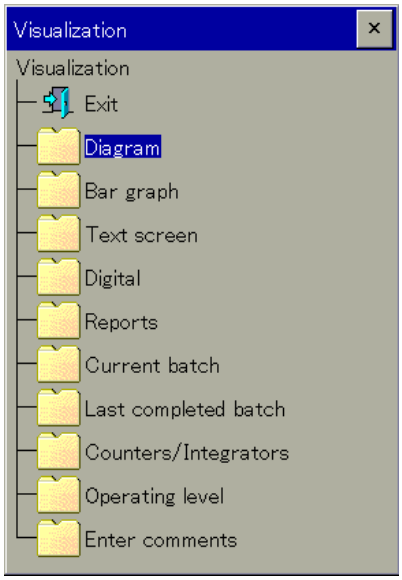
⇨ The operation of the controller channels is described in operating manual B 705010.0 (multichannel controller module).



Selecting visualization



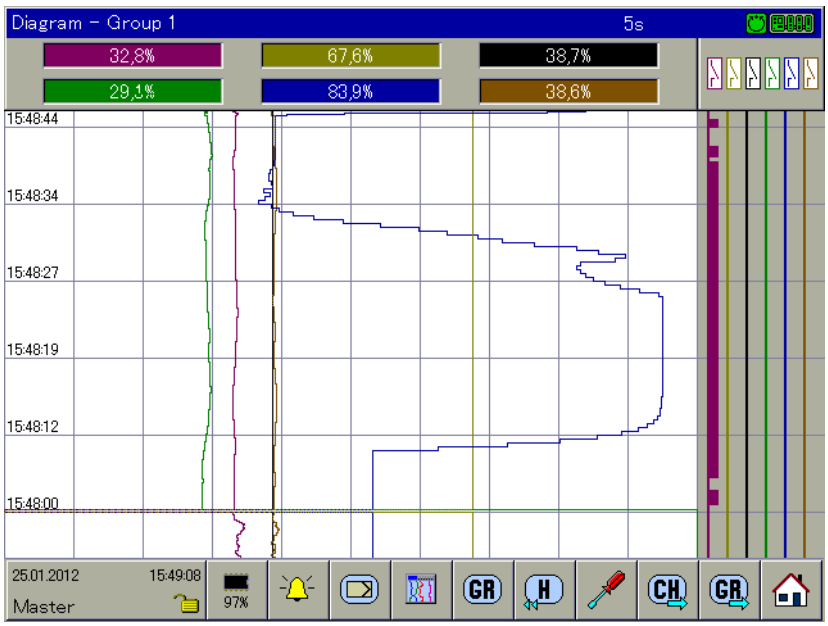
The type of visualization (diagrams, bar graph, etc.) is initiated using the button shown above. The following maximum selection of visualizations is available.



Step	Activity
1	Select the desired visualization by touching the screen.

➥ The visualization is displayed.

Example: Diagram



The available functions at the bottom of the screen vary depending on the visualization selected.

7 Visualization

7.1 Function overview

Diagram

⇨ Chapter 7.2 "Diagram", page 56

Bar graph

⇨ Chapter 7.3 "Bar graph", page 58

Text image

⇨ Chapter 7.4 "Text image", page 60

Process screen

⇨ Chapter 7.5 "Process screen", page 64

Digital

⇨ Chapter 7.6 "Digital", page 65

Reports

⇨ Chapter 7.7 "Reports", page 67

Current batch

⇨ Chapter 7.8 "Current batch", page 69

Completed batches

⇨ Chapter 7.9 "Last completed batch", page 74

Counters/Integrators

⇨ Chapter 7.10 "Counters/Integrators", page 78

User operating level

⇨ Chapter 7.11 "User operating level", page 81

Enter comments

There is no separate function selection for entering comments. The current one is retained until the function is called up. The comment entered is recorded in the event list.

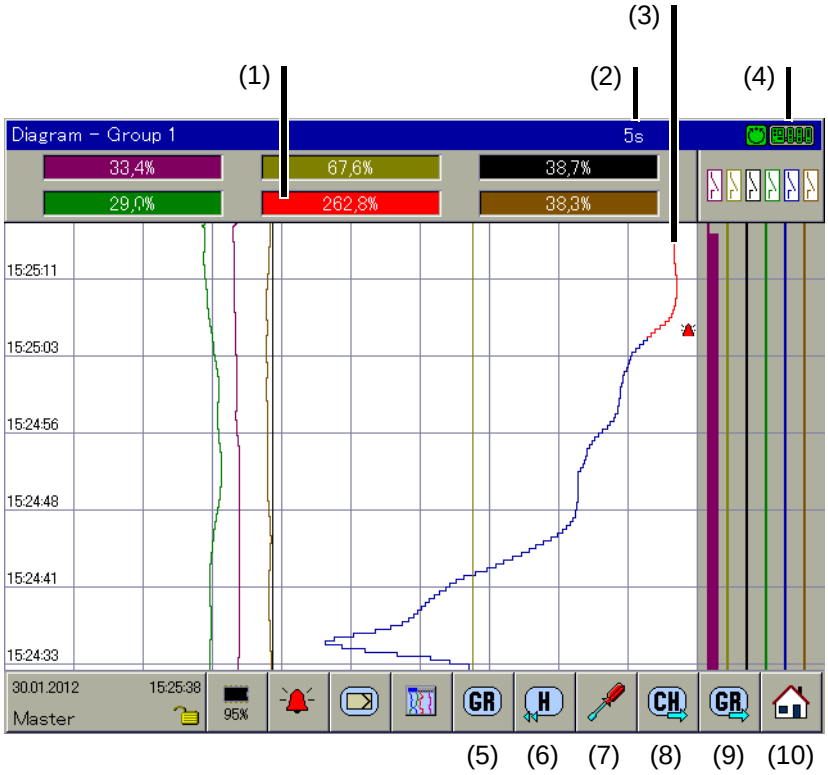
⇨ Chapter 7.12 "Enter comments", page 82

NOTE!
The first five functions in the function selection (from the left) are the same in all five visualizations. These relate to superordinate functions. Changes can only be made to the final six functions.

7 Visualization

7.2 Diagram

In this visualization, the individual signals run across the screen from top to bottom (vertical display).



(1) Alarm
(2) Operating mode
(3) Alarm
(4) Communication status
(5) Group selection
(6) Memory display
(7) Numerical measured value display
(8) Channel rotation
(9) Group rotation
(10) Home button

Horizontal presentation

As of system version 03, the analog and digital channels can also be displayed horizontally. The header rows of the vertical presentation (channel name, analog value, switch symbol) are then shown on the right of the analog and digital traces.

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background and an orange or red diagram. The colors can be configured in the setup program and using the multifunction panel.

Sampling rate and operating mode

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Memory display

This function is used to start the display of the data available in the history memory.

⇨ Chapter 8 "Memory display (History)", page 85

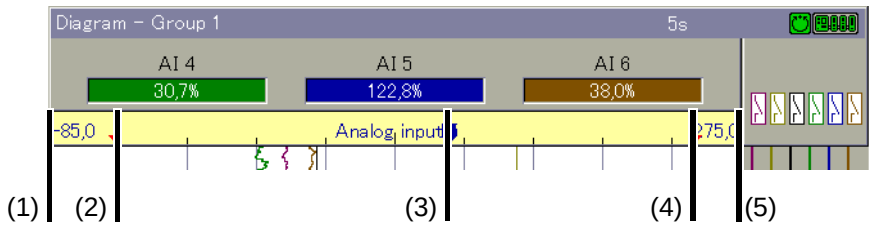
Numerical measured value display

This function can be used to show and hide the numerical measured value display (diagram header) and the digital tracks, and to activate the envelope diagram display.

⇨ Chapter 5.1.2 "Visualization window", page 45

Channel rotation

This function activates the display of various limits. Touching the button repeatedly shifts the channel limits within the group and then subsequently hides them.



(1) Range start
(2) Limit value 1
(3) Current measured value
(4) Limit value 2
(5) Range end
(6) Memory display

NOTE!
The function is only available if more than one analog channel is active in a group.

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1) Group number

NOTE!
The function is only available if more than one group is active.

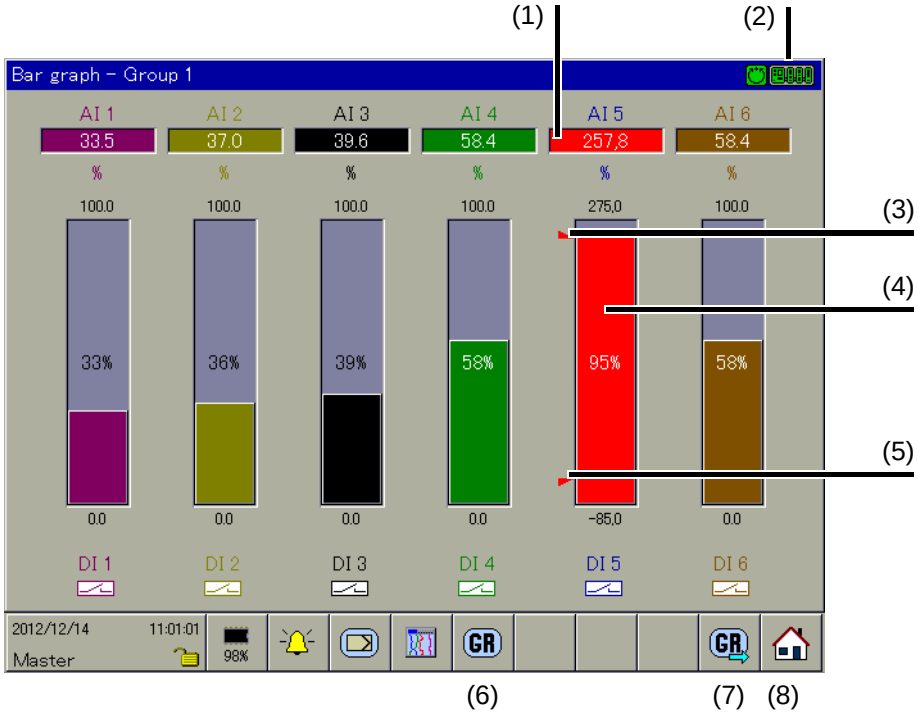
Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.3 Bar graph

In this visualization, the analog channels are displayed numerically and as a bar graph (columns). In addition to the analog channels, the digital channels are displayed at the bottom of the screen.



(1) Alarm
(2) Communication status
(3) Limit value 1
(4) Alarm
(5) Limit value 2
(6) Group selection
(7) Group rotation
(8) Home button

NOTE!
If only the digital channels are to be shown, the "Digital" visualization is recommended.
⇨ Chapter 7.6 "Digital", page 65

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background and an orange or red bar. The colors can be configured in the setup program and using the multifunction panel.

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1)

(1) Group number

NOTE!
The function is only available if more than one group is active.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

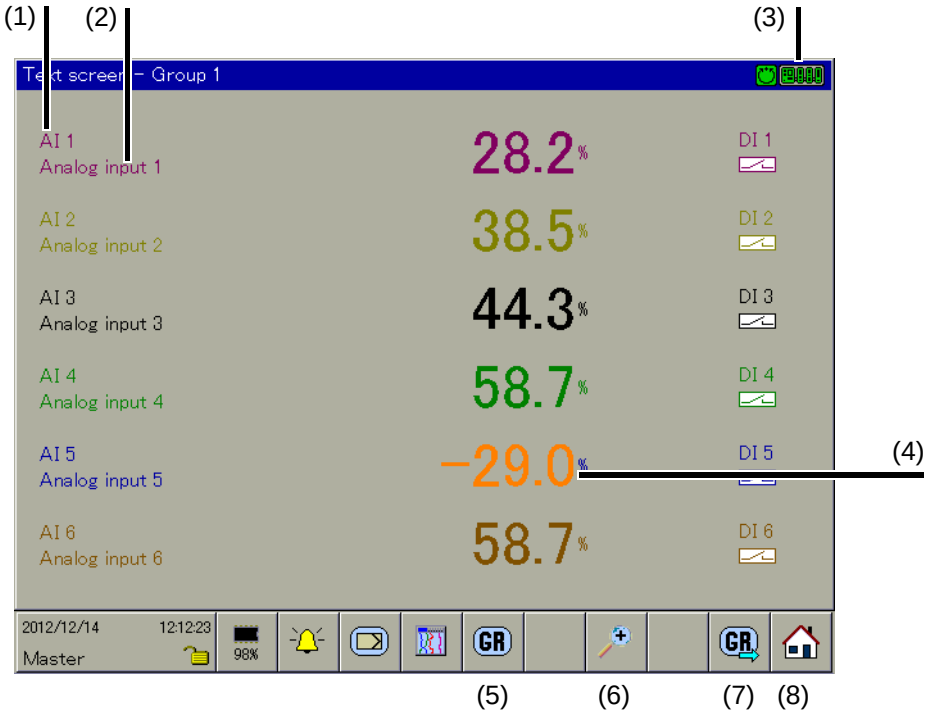
⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7 Visualization

7.4 Text image

In this visualization, the analog channels are displayed numerically together with the channel designation and the channel description. In addition to the analog channels, the digital channels can be visualized on the right side of the screen.

7.4.1 Group display



(1) Channel name
(2) Channel description
(3) Communication status
(4) Alarm
(5) Group selection
(6) Channel display
(7) Group rotation
(8) Home button

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background. The colors can be configured in the setup program and using the multifunction panel.

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Channel display

The function switches to the channel display.

⇨ Chapter 7.4.2 "Channel display", page 62

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1)

(1) Group number

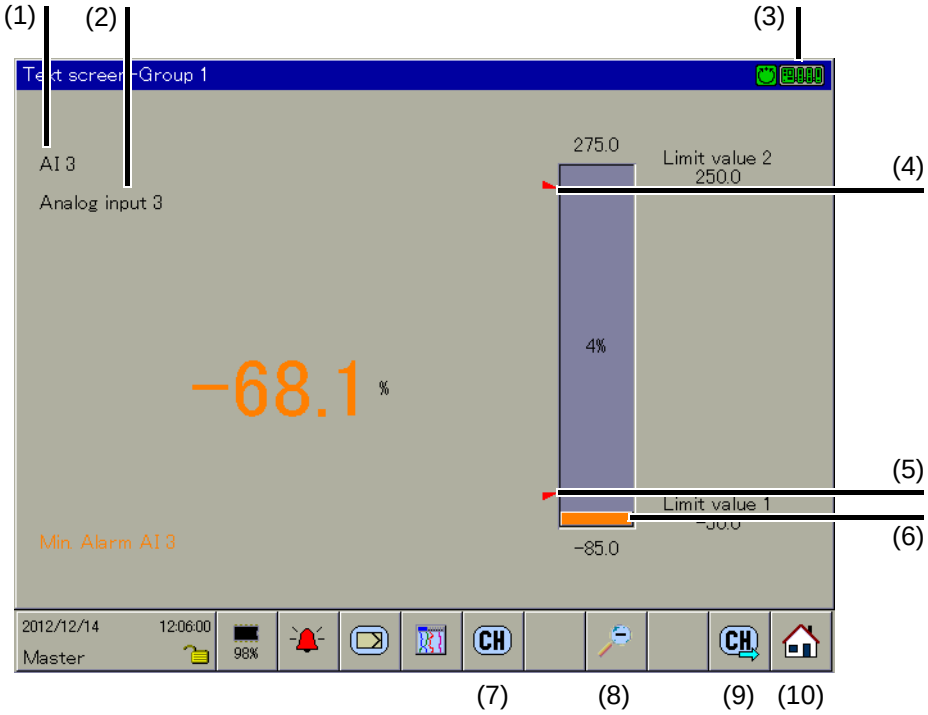
NOTE!
The function is only available if more than one group is active.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.4.2 Channel display



(1) Channel name
(2) Channel description
(3) Communication status
(4) Limit value 2
(5) Limit value 1
(6) Alarm
(7) Channel selection
(8) Group display
(9) Channel rotation
(10) Home button

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background. The colors can be configured in the setup program and using the multifunction panel.

Channel selection

This function is used to select and display one of the active analog channels. Simply touch one of the channel names displayed after calling up the function.

NOTE!
The function is only available if more than one analog channel is active in the selected group.

Group display

The function switches to the group display.

⇨ Chapter 7.4.1 "Group display", page 60

Channel rotation

In contrast to the "Channel selection" function, in which any channel can be selected, this function displays the channels one after the other.

NOTE!
The function is only available if more than one analog channel is active in the selected group.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7 Visualization

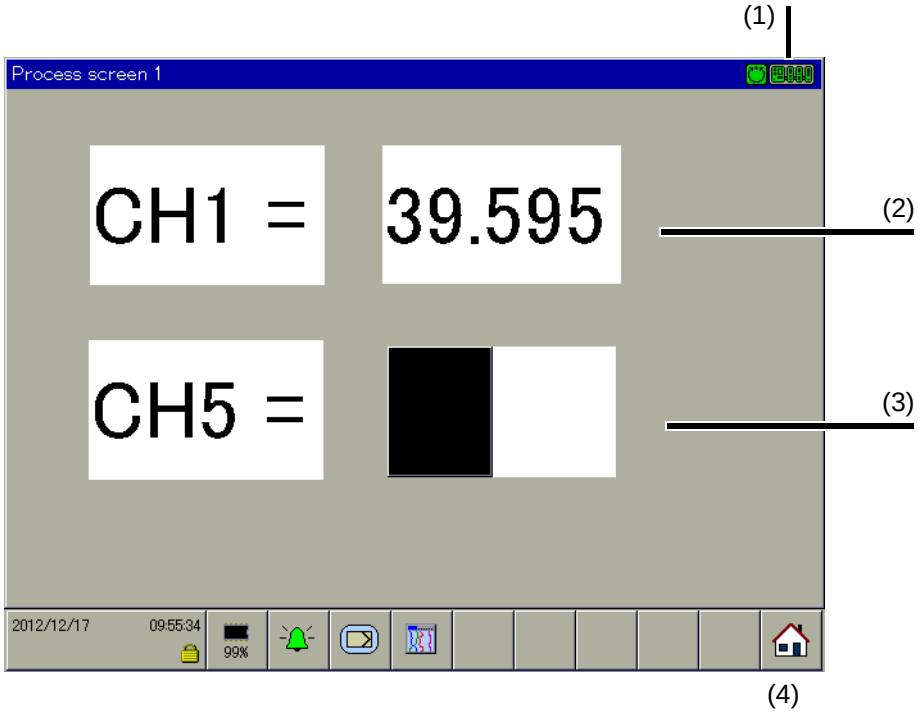
7.5 Process screen

In this visualization, selected measurement signals and backgrounds are displayed in a maximum of 18 process screens. The screens are prepared and configured using the setup program.

Scope per process screen:

- 1 background image, 640 × 480 pixels, max. 256 colors
- 150 objects, such as analog and digital signals, icons, texts, bar graphs, and switch elements

⇨ Setup program:
HMI > SETUP ONLY > PROCESS SCREENS



(1) Communication status

(2) Example: Text and analog channel (numerical)

(3) Example: Text and analog channel (bar graph)

(4) Home button

NOTE!
In the visualization of analog channels in the process screen, there is no color change in the event that a limit value is not reached or is exceeded. A color change can be realized, however, with the PLC function (extra code 224 required for central processing unit 705001).

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

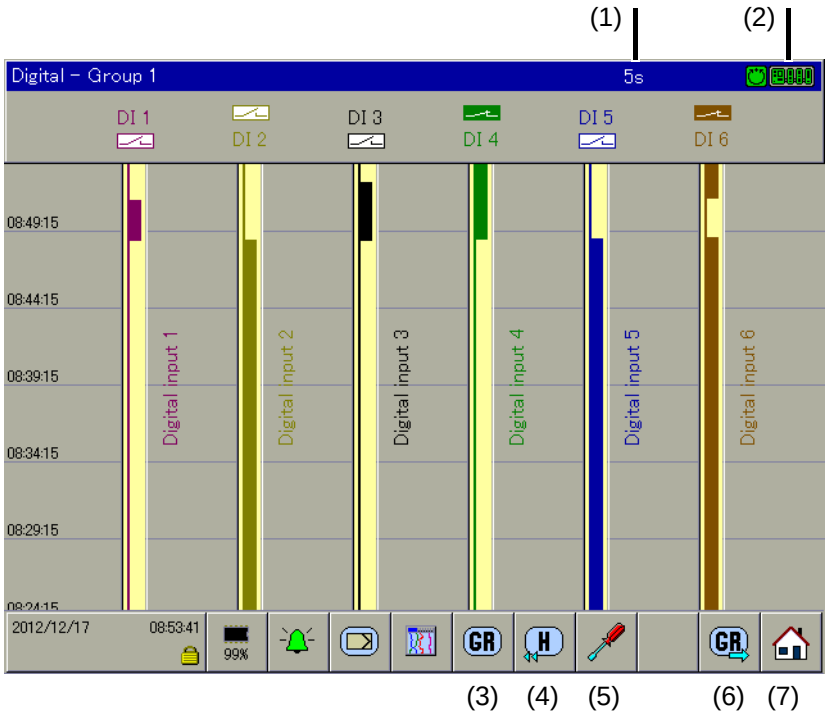
Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.6 Digital

In this visualization, only the digital channels are displayed; the analog channels are not shown.



(1) Operating mode
(2) Communication status
(3) Group selection
(4) Memory display
(5) Numerical measured value display
(6) Group rotation
(7) Home button

Horizontal presentation

As of system version 03, the digital channels can also be displayed horizontally. The header rows of the vertical presentation (channel name, switch symbol) are then shown on the right of the digital traces.

Sampling rate and operating mode

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Memory display

This function is used to start the display of the data available in the history memory.

⇨ Chapter 8 "Memory display (History)", page 85

Numerical measured value display

This function can be used to show and hide the numerical measured value display (diagram header) and the digital tracks, and to activate the envelope diagram display.

⇨ Chapter 5.1.2 "Visualization window", page 45

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1)

(1) Group number

NOTE!
The function is only available if more than one group is active.

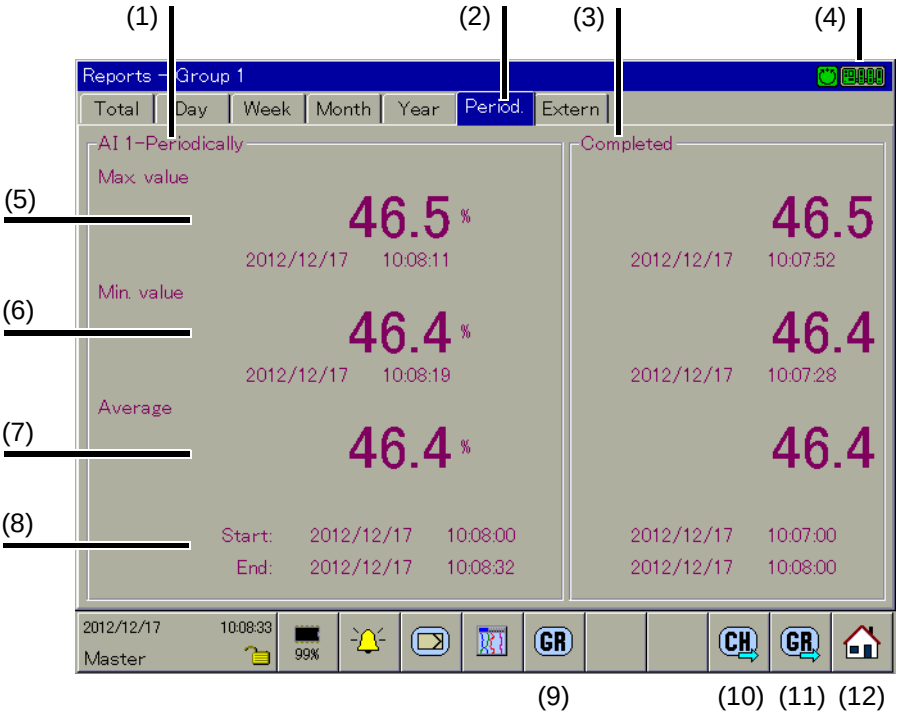
Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.7 Reports

This lists every report on all of the analog channels in a group. Each group has its own configurable report.



(1) Current report
(2) Type of report
(3) Completed report
(4) Communication status
(5) Maximum
(6) Minimum
(7) Average
(8) Period
(9) Group selection
(10) Channel rotation
(11) Group rotation
(12) Home button

Current report

The report data of the current capture period is displayed in this area. The title of the report is composed of the channel name and the report type.

Type of report

This function is used to switch between the individual report types for the current channel. To display a different report type, the user simply needs to touch the corresponding button (in this example, from "Total" to "Extern").

Completed report

The report data of the previous capture period is displayed in this area.

Maximum

The current maximum value of the current capture period is displayed in this area. In addition to the value and the unit, the date is also displayed.

Minimum

The current minimum value of the current capture period is displayed in this area. In addition to the value and the unit, the date is also displayed.

Average

The current average of the current capture period is displayed in this area.

Period

The start (date and time) and the current time of the current capture period are displayed in this area. The current time is saved at the end of a capture period. The start and end are therefore recorded.

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Channel rotation

This function is used to switch between the individual channels of the active group.

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1)

(1) Group number

NOTE!
The function is only available if more than one group is active.

Home button

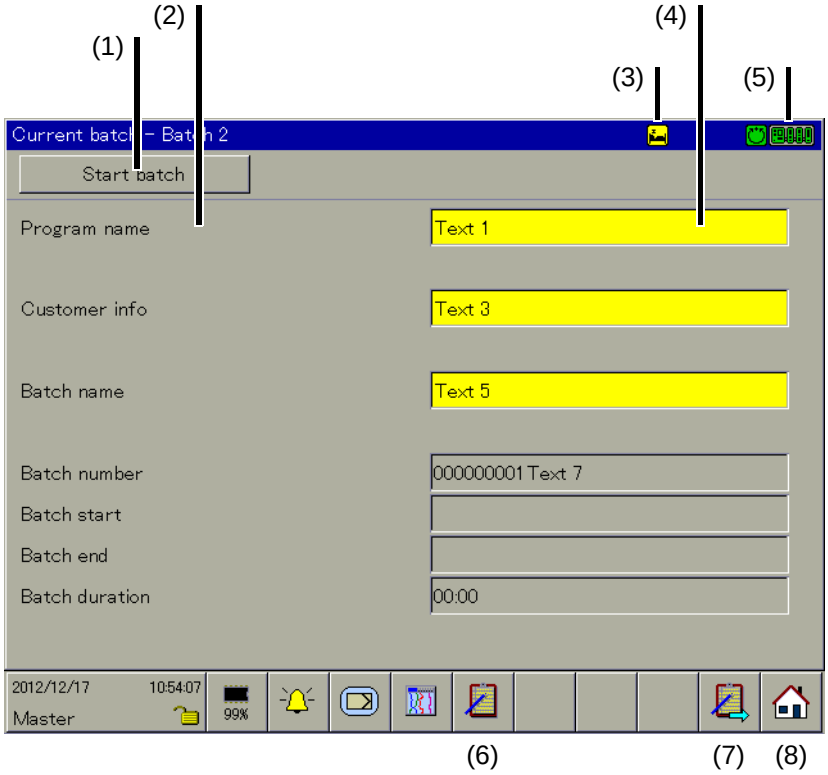
This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.8 Current batch

7.8.1 General information

Using the multifunction panel, nine different batches (batch reports) can be recorded and registered in parallel. In the visualization, a distinction is made between a "current batch" and the last "completed batch". The number of batch reports used and the text in the batch visualization can be configured on the multifunction panel or using the setup program.



(1) Batch start/batch end
(2) Batch texts, "left column"
(3) Batch status
(4) Batch texts, "right column"
(5) Communication status
(6) Batch selection
(7) Batch rotation
(8) Home button

Batch start/batch end

If the batch start was selected using the touchpad, then the batch reporting is started and ended by touching the button. If a different type of batch start has been selected, the button is inactive.

NOTE!
There must be at least 5 seconds between the end of a batch (batch end) and the next start (batch start). A new batch can only be started once this period has elapsed.

Batch texts, "left column"

The texts in the "left column" are predetermined by the configuration and cannot be changed during batch reporting.

Batch status

The batch status indicates whether batch reporting is in progress or is waiting for a start signal.

	Batch reporting is waiting for start signal
	Batch reporting is active, data is recorded

Batch texts, "right column"

The texts in the "right column" are predetermined by the configuration and can be changed in various ways prior to the start of and during batch reporting.

Texts that are displayed on the multifunction panel with a yellow background can be changed directly by the user.

Procedure:

Step	Activity
1	Touch text with yellow background.
2	Select or enter new text (depending on configuration).

➥ The changed batch texts are saved at the end of a batch report together with the batch data. These are subsequently reset to the original texts (depending on the configuration).

⇨ Chapter 7.8.2 "Batch control via barcode scanner", page 71

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Batch selection

This function is used to directly select and display one of the active batches. Simply touch one of the batch names displayed after calling up the function.

NOTE!
The function is only available if more than one batch is active.

Batch rotation

In contrast to the "Batch selection" function, in which any batch can be selected, this function displays the batches one after the other.

(1)

(1) Batch name

NOTE!
The function is only available if more than one batch is active.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.8.2 Batch control via barcode scanner

If a barcode scanner is connected to the multifunction panel and correctly configured, the batch start, the batch end, and the entry of batch texts in a current batch report can be controlled using a barcode scanner. The barcodes used all correspond to the type "Code39".

Prerequisites

- The interface to which the barcode scanner is connected must have the "Report" type configured to Barcode.
- If the batch start and batch end can be activated, the "Batch start" parameter must be configured to Barcode.
- For each line in the right-hand column of the batch visualization that is to be entered using the barcode scanner, the "Text right column" parameter must be configured to Barcode.

Activating the batch

NOTE!
Prior to entering commands using a barcode scanner, the corresponding batch visualization 1 to 9 must be prepared for the barcode commands by scanning "BATCH1 to 9", independent of whether or not this is automatically shown.
Instead of the key words "BATCH1 to 9“ it is possible to scan the batch name. Thereby it is important to pay attention to the exact spelling (allowed are capital letters A-Z, numbers 0-9, special characters $%/+.- and space character).

Showing the batch report

If one of the visualizations is active and nothing is currently being edited or entered, the current batch report can be shown using the barcode scanner. The requirements for this are that the batch is active and the parameter
CONFIGURATION > HMI > SCREEN > BARC. -> CURR. BATCH = Yes
.
Activate batch report for batch 1 and show if required:


BATCH1

Activate batch report for batch 2 and show if required:


BATCH2

Activate batch report for batch 3 and show if required:

⇨ Chapter 16.3 "Barcode", page 273

Starting and ending batch report

If the batch report for start/end is configured using the barcode reader, it is started and ended as follows.

Starting batch report:

Step	Activity
1	Scan barcode for batch reporting (batch 1 to 9).
2	Scan Start. 

Ending batch report:

Step	Activity
1	Scan barcode for batch reporting (batch 1 to 9).
2	Scan Stop. 

NOTE!
If batch reporting is stopped, texts that were activated using a barcode are reset to the default text or retained in the current batch report, depending on the "Delete line" parameter.
The texts are saved in the completed batch report.

Activating batch texts

If a line of a batch report is configured for the barcode activation, the activation is performed as follows.

Activating text:

Step	Activity
1	Scan barcode for batch reporting (batch 1 to 9).
2	Scan text. TOOTHED DI SK 34

➥ The first line of the activated batch report, which is configured for text entry via barcode, is automatically filled with the text corresponding to the barcode. If multiple lines are configured for the barcode activation, these are processed consecutively from top to bottom.

NOTE!
A bar code can contain up to 10 batch texts which are separated by dollar signs (total lenght max. 63 characters). When scanning, the texts are written consecutively from top to bottom in the appropriately configured lines of the activated batch report.

Resetting entry

Scanning Reset:

Step	Activity
1	Scan Reset. RESET

➥ The default texts (parameter factory settings) are displayed and the first line is prepared for the entry again.

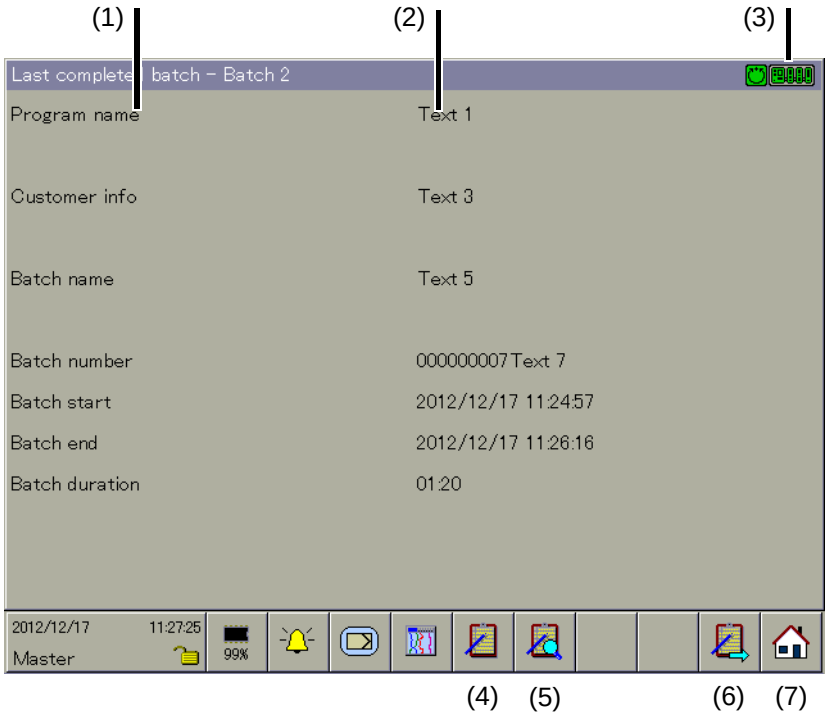
Barcodes summary

All necessary barcodes are summarized again in Chapter 16.3 "Barcode", page 273.

NOTE!
The batch control codes (BATCH1 to BATCH9, START, STOP, RESET) cannot be used to set batch texts.

7 Visualization

7.9 Last completed batch



(1) Batch texts, "left column"
(2) Batch texts, "right column"
(3) Communication status
(4) Batch selection
(5) Batch evaluation
(6) Batch rotation
(7) Home button

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Batch selection

This function is used to directly select and display one of the active batches. Simply touch one of the batch names displayed after calling up the function.

NOTE!
The function is only available if more than one batch is active.

Batch evaluation

Completed batches can be evaluated in two ways:

- Diagrams (graphic visualization)
- Report (numerical visualization)

⇨ Chapter 7.9.1 "Batch evaluation: Diagrams", page 75
⇨ Chapter 7.9.2 "Batch evaluation: Report", page 76

Batch rotation

In contrast to the "Batch selection" function, in which any batch can be selected, this function displays the batches one after the other.

(1)

(1) Batch name

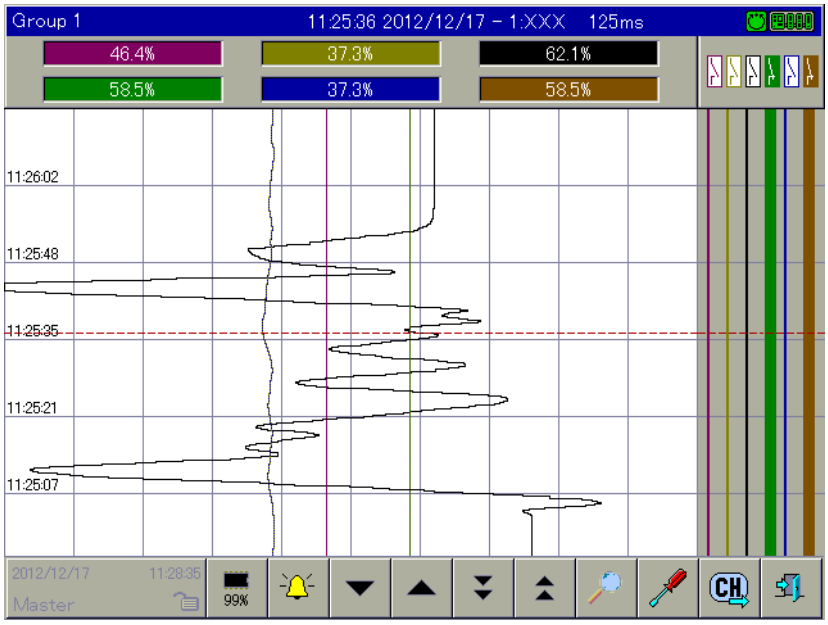
NOTE!
The function is only available if more than one batch is active.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.9.1 Batch evaluation: Diagrams



(1)

(1) End batch evaluation

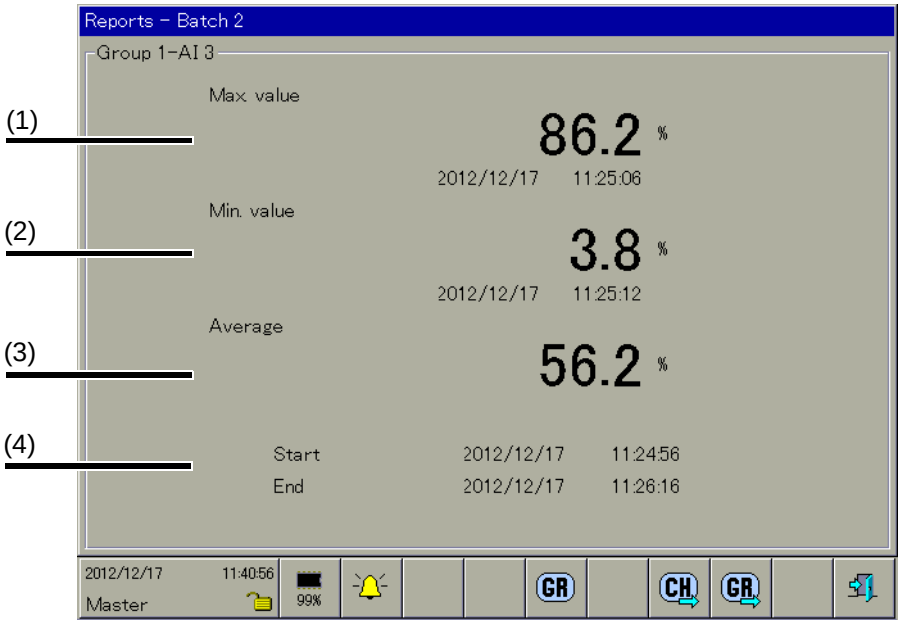
The operation of the batch evaluation corresponds to the operation of the function "Memory display".

⇨ Chapter 8 "Memory display (History)", page 85

End batch evaluation

This function is used to end the evaluation; the "Last completed batch" visualization is called up again.

7.9.2 Batch evaluation: Report



(1) Specifications for maximum
(2) Specifications for minimum
(3) Specifications for average
(4) Specifications for batch start and batch end
(5) Group selection
(6) Channel rotation
(7) Group rotation
(8) End batch evaluation

Group selection

This function is used to directly select and display one of the active groups. Simply touch one of the group designations displayed after calling up the function.

NOTE!
The function is only available if more than one group is active.

Channel rotation

This function is used to switch between the individual channels of the active group.

Group rotation

In contrast to the "Group selection" function, in which any group can be selected, this function displays the groups one after the other.

(1) Group number

NOTE!
The function is only available if more than one group is active.

End batch evaluation

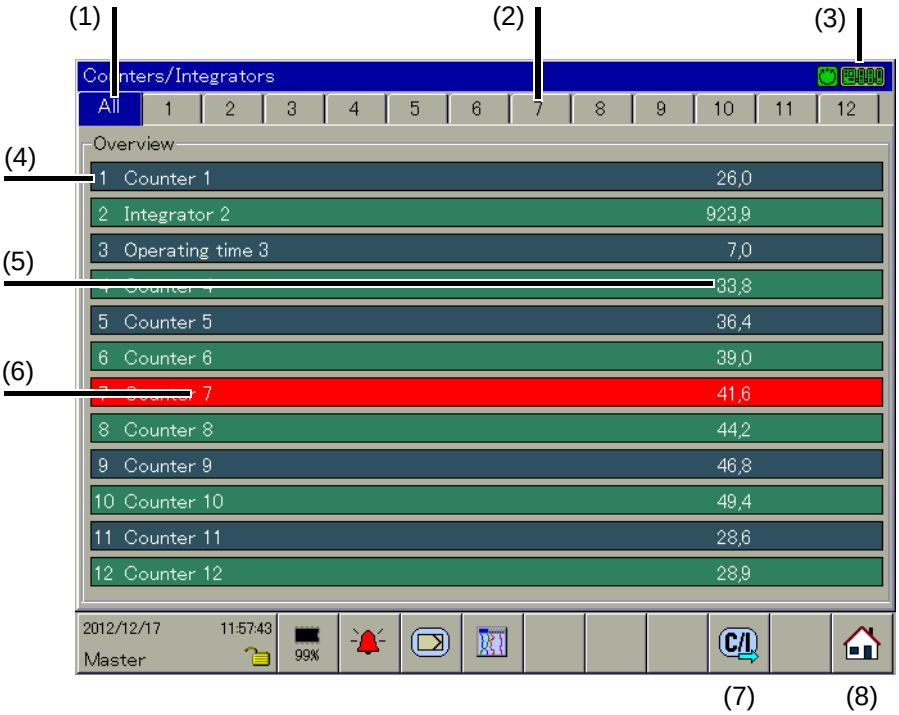
This function is used to end the evaluation; the "Last completed batch" visualization is called up again.

7 Visualization

7.10 Counters/Integrators

This visualization displays the current counter and integrator statuses as well as the operating hours counter. 12 counters/integrators (channels) can respectively be displayed in a joint overview or individually. The counter, integrator, and operating hours counter feature is determined by the configuration of the device.

7.10.1 Group display



(1) Group display
(2) Individual display
(3) Communication status
(4) Channel description
(5) Counter/integrator status
(6) Alarm
(7) Group rotation
(8) Home button

Group display

By touching the respective tab, the user can display 12 counters/integrators in a joint overview.

⇨ Chapter 7.10.1 "Group display", page 78

Individual display

By touching one of the counter/integrator numbers, the user can switch to the corresponding individual display.

⇨ Chapter 7.10.2 "Individual display", page 79

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background. The colors can be configured in the setup program and using the multifunction panel.

Group rotation

The function switches to the next counters/integrators.

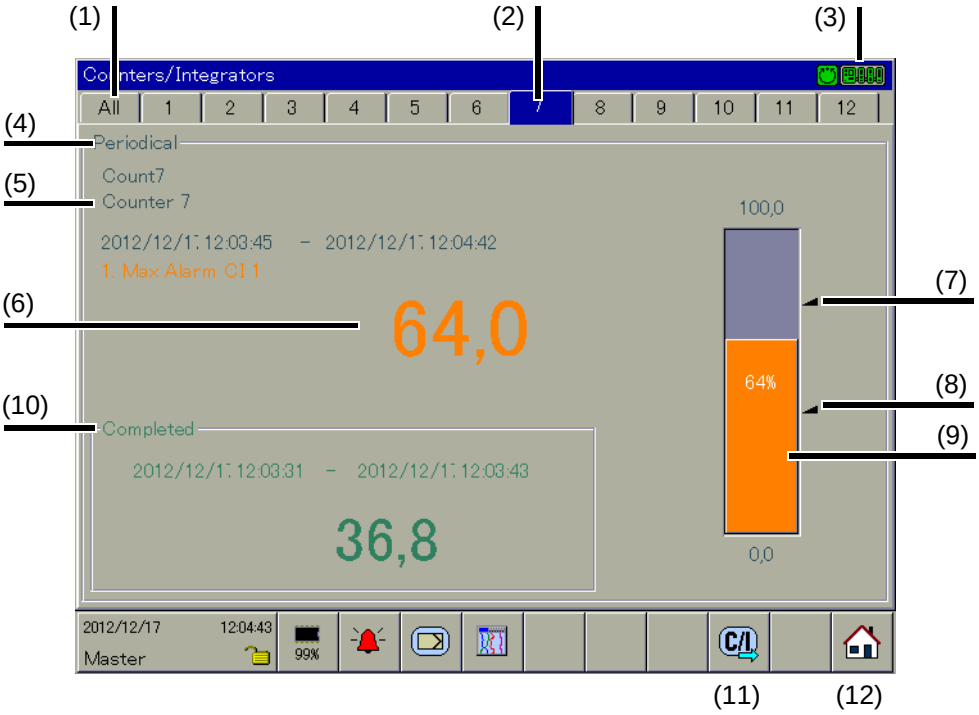
> **NOTE!**
> This function is only available if sufficient counters/integrators have been configured.

Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.10.2 Individual display



(1) Group display
(2) Individual display
(3) Communication status
(4) Type of capture period
(5) Channel name and channel description
(6) Counter/integrator status
(7) Limit value 1
(8) Limit value 2
(9) Alarm
(10) Data of the last recorded period
(11) Group rotation
(12) Home button

Group display

By touching the respective tab, the user can display 12 counters/integrators in a joint overview.

⇨ Chapter 7.10.1 "Group display", page 78

Individual display

By touching one of the counter/integrator numbers, the user can switch to the corresponding individual display.

⇨ Chapter 7.10.2 "Individual display", page 79

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Alarm

An alarm (Alarm1 or Alarm2) is marked with an orange or red background and an orange or red bar. The colors can be configured in the setup program and using the multifunction panel.

Group rotation

The function switches to the next counters/integrators.

NOTE!
This function is only available if sufficient counters/integrators have been configured.

Home button

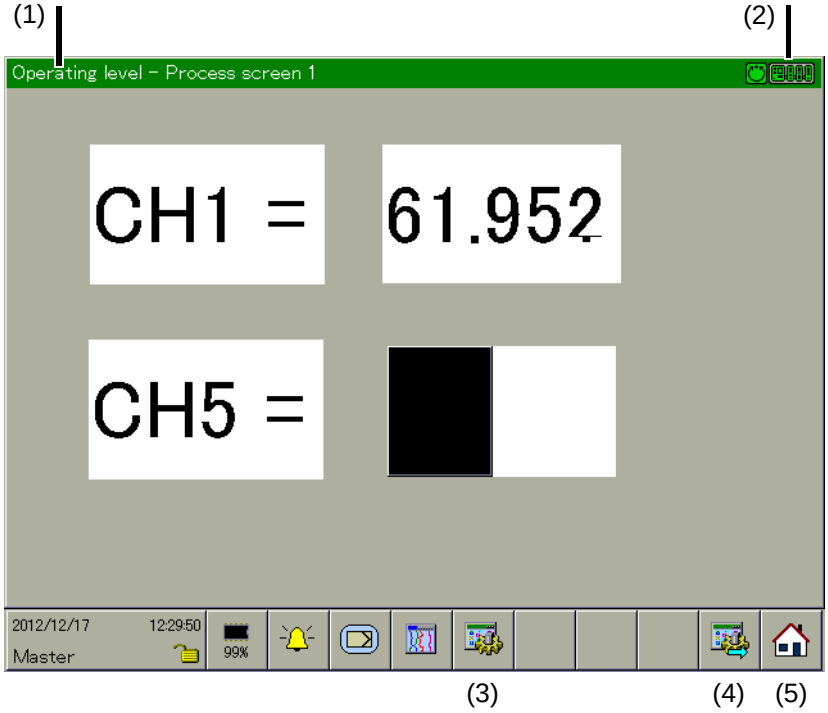
This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.11 User operating level

In this visualization, the displays configured by the user are used by the multifunction panel.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL



(1) Type of visualization
(2) Communication status
(3) Visualization selection
(4) Visualization rotation
(5) Home button

Type of visualization

The visualization to be displayed is shown here. The available function buttons – between (3) and (4) in the image – will be used differently depending on the type. The functions are described in the respective sections in this chapter.

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Visualization selection

This function is used to directly select one of the configured visualizations. Simply touch one of the visualizations displayed after calling up the function.

Visualization rotation

In contrast to the "Visualization selection" function, in which any visualization can be selected, this function displays the available visualizations one after the other.

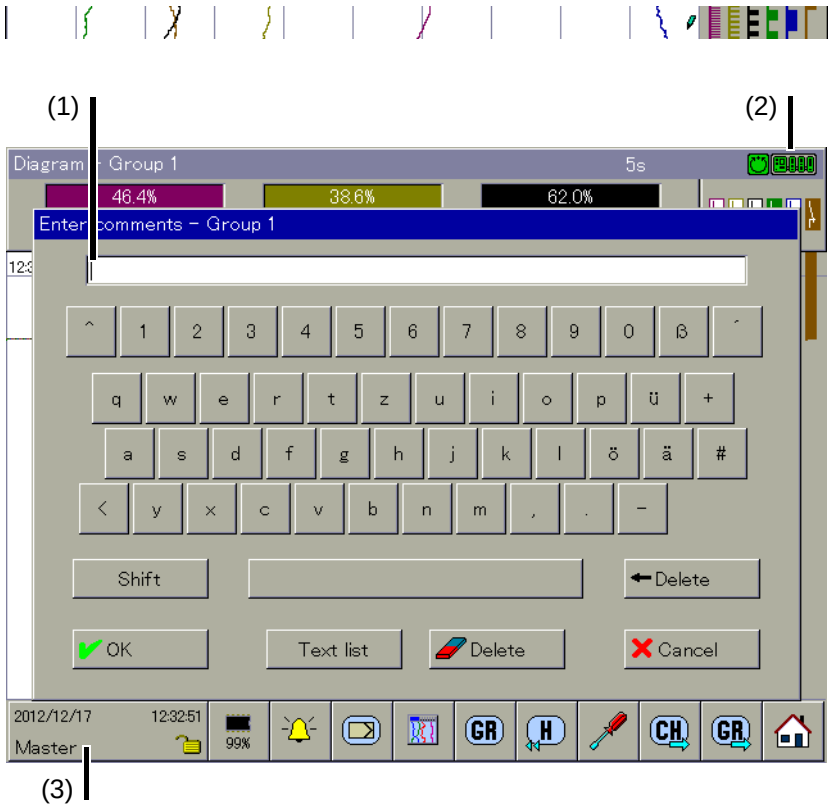
Home button

This function calls up a defined visualization. The function must be activated and configured via the setup program.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > SCREEN > USER OPERATING LEVEL

7.12 Enter comments

This function can be used to enter a text (max. 31 characters) that is entered following the completion of the entry in the event list of the multifunction panel and in the batch reports.
In the diagram display, for example, the text entry is marked with a pencil.



(1) Input mask
(2) Communication status
(3) Function selection

Input mask

Here, the text entered by the user is displayed during the entry phase.

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Function selection

The available functions depend on the active visualization. The functions are described in the respective sections in this chapter.

Further information

⇨ Chapter 9 "Alarm and event lists", page 89

⇨ Kapitel 7.2 „Diagram“

You can find the text again in the event list under the entry "All events", as well as in the corresponding batch.

7 Visualization

The "Memory display" function can be used to display and check data recorded using the multifunction panel. The size of the memory for the memory display can be configured.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > DEVICE DATA > HISTORY MEMORY

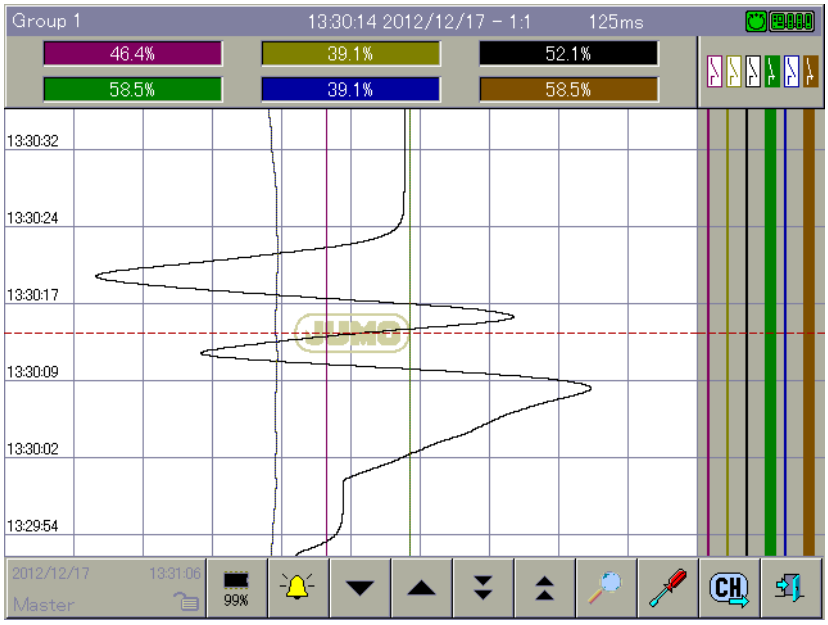
The memory display can be activated in the "Diagram" and "Digital" visualizations and is also used to display completed batch reports.

NOTE!
The memory display can only be called up if the parameter **HMI > CONFIGURATION LEVEL > GROUPS > GROUP x > STATUS** is set to "Display / Save" in the configuration of the group.

Selecting the memory display

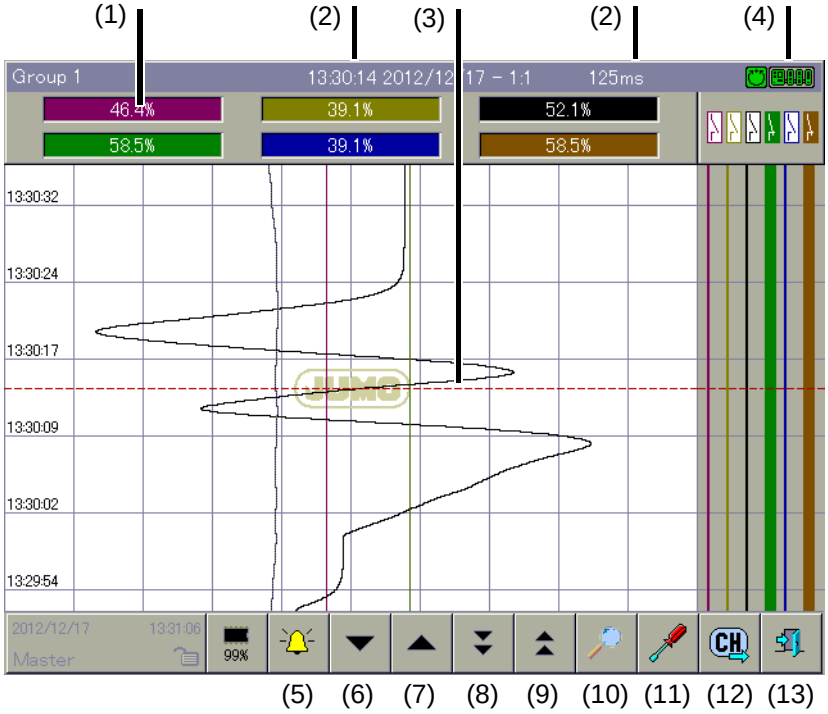
The memory display is selected via the button shown above.

Example: Calling up the memory display in the "Diagram" visualization



8 Memory display (History)

Overview



(1) Diagram header
(2) Recording data
(3) Cursor
(4) Communication status
(5) Event list
(6) Scroll by line (downward)
(7) Scroll by line (upward)
(8) Scroll by page (downward)
(9) Scroll by page (upward)
(10) Zoom and search
(11) Diagram view
(12) Channel rotation
(13) Exit memory display

Diagram header

The diagram header is only displayed if it is also displayed in the visualization from which the "Memory display" function is called up.

Recording data

In the status and title line, the following data on the current cursor position is displayed:

- Date
- Magnification (Zoom factor)
- Memory rate

Cursor

After the "Memory display" function is called up, a cursor is shown in the centre of the visualization window. The corresponding measured values are shown in the diagram header. In the status and title line, the corresponding time of the current position, the memory rate that was applicable at this time, and the magnification are displayed.

The cursor can be controlled by the user by touching the visualization window with a finger and using the functions (6) to (9).

Communication status

⇨ Chapter 5.1.1 "Status line and Title line", page 44

Event list

This function is used to display the event list of the visible groups. In the list, the message nearest to the current cursor position is displayed.

⇨ Chapter 8 "Memory display (History)", page 85

Scroll by line

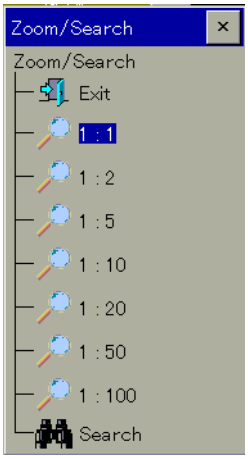
This function is used to move the cursor in the visualization window downward and/or upward. The data in the diagram header and in the status and title line is updated with each movement. If the cursor reaches the edges of the window, the measured value diagram is moved automatically and the desired data is shown.

Scroll by page

This function is used to move the display along by an entire screen (page). The data in the diagram header and in the status and title line is updated with each movement. If required, the sensor automatically positions the cursor at the end of the window.

Zoom and search

This function influences the number of measured values used to calculate a pixel. The user can search for measured values according to date and according to time.



If the user touches "Exit", the dialog window is closed and the display is not changed.

Zoom

The factory setting is "1:1", which means that each measured value in the history memory is displayed. "1:2" means that every second measured value is displayed, etc.

Step	Activity
1	Touch a zoom factor.

➥ The dialog window is closed automatically and the new zoom factor is activated.

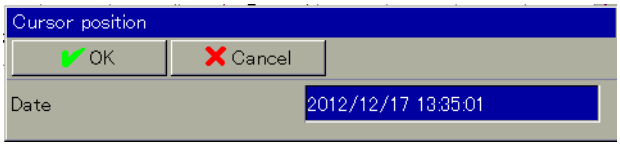
Adjust

8 Memory display (History)

This function is only available when the data of a completed batch is being displayed. If this function is selected, the zoom factor will automatically be adjusted such that the measured value diagram of the completed batch can be displayed in a window. However, the 1:1 display is to be used for evaluating a batch.

Search

Touching "Search" displays the dialog window for entering the date.



Step	Activity
1	Select time and date.
2	Exit the dialog by touching the "OK" button.

➥ If the date entered is in the history memory, the cursor is moved to the desired position and the data is displayed.

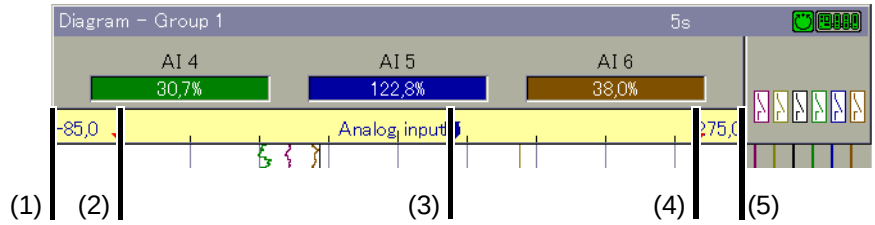
Diagram view

This function determines whether the min. or max. values are displayed in the diagram header (numerical measured value display). Min. or max. values result from there being more measured values recorded than the amount shown. This is the case if "Min./max. value recording" has been activated for an operating mode of a group.

In addition, the user can use this function to decide whether a curve progression is to be shown or hidden.

Channel rotation

This function activates the display of various limits. Touching the button repeatedly shifts the channel limits within the group and then subsequently hides them.



(1) Range start
(2) Limit value 1
(3) Current measured value
(4) Limit value 2
(5) Range end
(6) Memory display

NOTE!
The function is only available if more than one analog channel is active in a group.

Exit memory display

This function is used to exit the display of the data available in the internal working memory of the device.

9 Alarm and event lists

All alarms, events, and faults of the entire system are entered in the alarm and event lists. Alarm lists only relate to the multifunction panel. Events and faults can come from the multifunction panel and from the base unit (e.g. central processing unit).

NOTE!
The alarms of the multifunction panel are only entered in the alarm list for as long as the alarm is present. If the alarm disappears again, the corresponding message will also be removed from the alarm list.

NOTE!
In most cases, the user can configure whether a process (e.g. the exceeding of a specific value at an analog input) constitutes an alarm or event.

NOTE!
Event lists contain all events that have occurred, including all alarms and faults.

NOTE!
Each of the lists can contain a maximum of 150 entries. The lists are deleted in the event of reconfiguration.

NOTE!
The lists are not updated whilst the corresponding window is open.
Remedy: Touch the "Update" button.

9 Alarm and event lists

Detecting alarms and faults

The user can detect the presence of an alarm or a fault on the basis of the color of the bell symbol.

If...	Then...
 (green bell)	there is no alarm and no fault.
 (red bell)	there is an alarm.
 (yellow bell)	there is a fault.

Selecting alarm and event lists

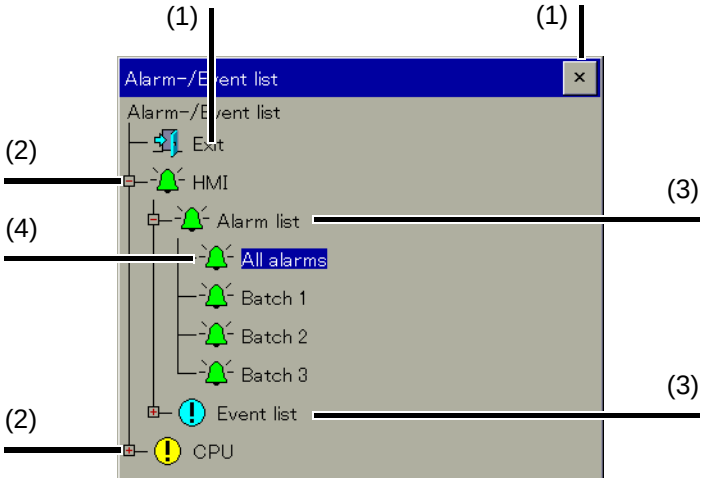
The alarm and event lists are selected via the button that is highlighted.

The user can make the selection in various places:

- Selection from the multichannel controller module
  (Chapter 6 "Multichannel controller module", page 51)
- Selection from one of the visualizations, such as Diagram
  (Chapter 7.1 "Function overview", page 54)
- Selection from the memory display
  (Chapter 8 "Memory display (History)", page 85).

9.1 Selection from the multichannel controller module

Overview



(1) Exit function
(2) Module selection
(3) View list
(4) View list

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Module selection

Touch the screen here to expand or collapse the corresponding branch of a module in the tree.

List type

Touch the screen here to expand or collapse the corresponding branch in the tree.

View list

Touch the screen here to display the corresponding list.

In the lists, in addition to the distinction between alarm and event, there is a further distinction between two types:

- Display of all alarms and/or events (independent of the batch to which these relate)
- Display of alarms and/or events that relate to a specific batch

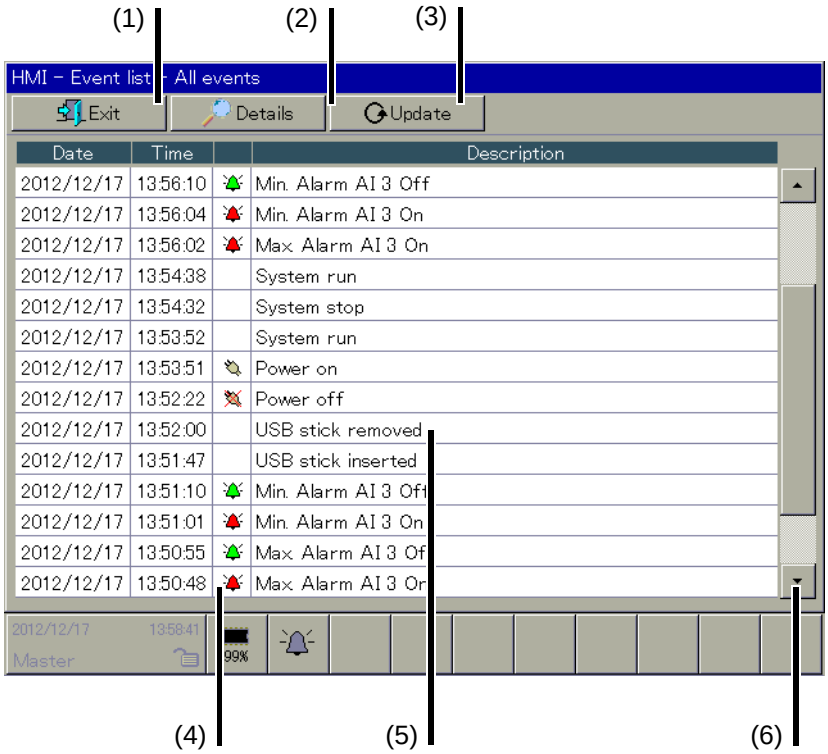
NOTE!
The number of batch-related lists depends on the quantity of the active batch.

⇨ Setup program:
HMI > CONFIGURATION LEVEL > BATCHES/PLANTS

9 Alarm and event lists

Event list (HMI)

The following figure shows "All events" from a multifunction panel.



(1) Exit function
(2) Details
(3) Update
(4) Symbols
(5) Selected entry
(6) Scroll display

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Details

If the space for an entry within the list is insufficient, more information on the selected entry can be shown by touching the button.

Update

The display is not cyclically updated. This function is used to update the display, i.e. the system searches for new entries that are not yet present in the list.

Symbols

⇨ Chapter 9.5 "Symbols", page 95

Selected entry

The user can select or mark an entry by touching it.

The "Details" function can be used to show additional information. This requires there to be additional information available for the selected entry.

9.2 Selection from one of the visualizations

This function corresponds to the previous chapter.

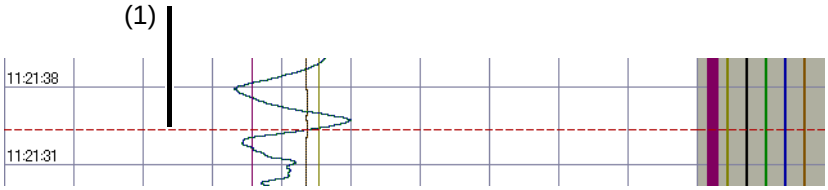
⇨ Chapter 9.1 "Selection from the multichannel controller module", page 91

9.3 Calling up from the memory display

If the "Alarm and event lists" function is selected from a memory display, the system displays the events immediately. There are no alarm lists.

The list is limited to the results that are relevant for the group being displayed.

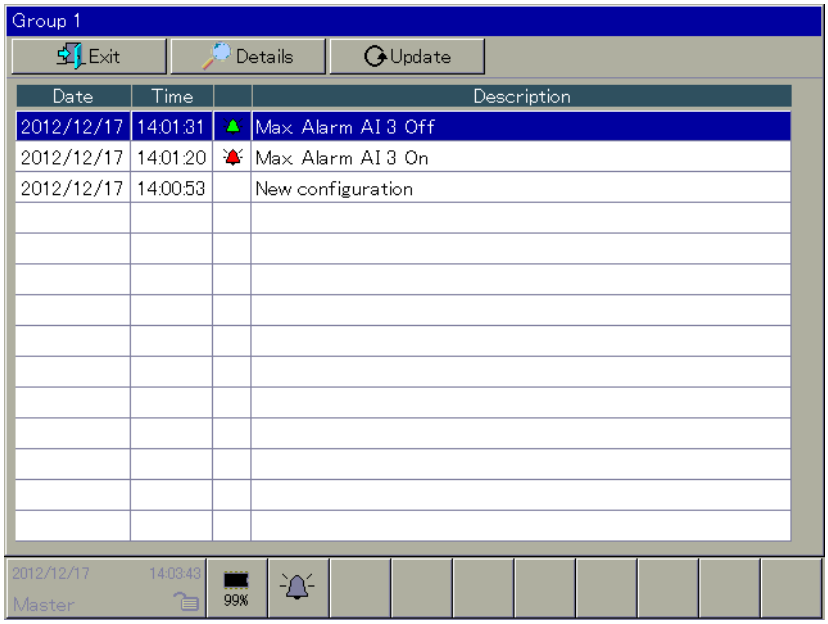
The message located nearest to the position of the cursor is highlighted in the list.



(1) Cursor

Event list (HMI)

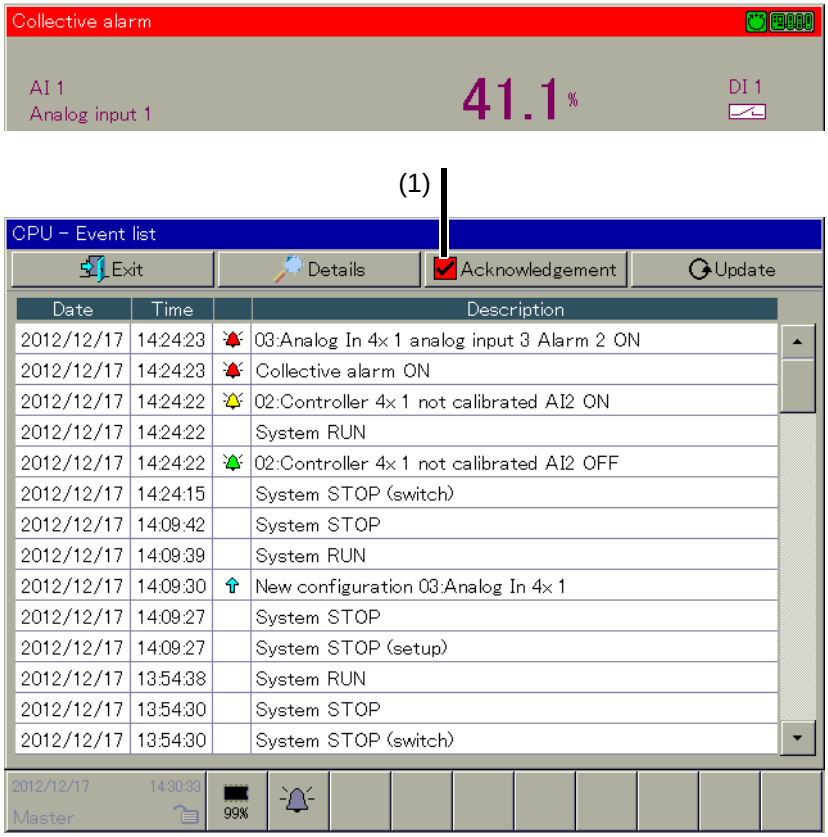
The following figure shows "All events" from a multifunction panel.



9 Alarm and event lists

9.4 Acknowledgement

Alarms that are sent from the base unit to a multifunction panel must be acknowledged by the user.



(1) Acknowledgement

Acknowledgement

With this function, the user must acknowledge an alarm within the alarm list. Until the alarm has been acknowledged, it will remain in various locations on the multifunction panel.

NOTE!
The "Acknowledgement" function is only available if a user is logged on and acknowledgement rights have been allocated to him/her.

NOTE!
The user can configure additional acknowledgements in terms of functions that trigger an alarm. If this is the case, both acknowledgements must be carried out.

9.5 Symbols

	Power on (device was switched on)
	Power off (device was switched off)
 (yellow bell)	Fault
 (green bell)	Outgoing alarm (alarm no longer present)
 (red bell)	Incoming alarm (alarm present)
	Comment
	Incoming event (e.g. digital input is closed)
	Outgoing event (e.g. digital input is opened)
(no symbol)	Additional messages

9 Alarm and event lists

The memory manager contains functions for data exchange between the multifunction panel and a USB memory stick.

Memory manager symbol

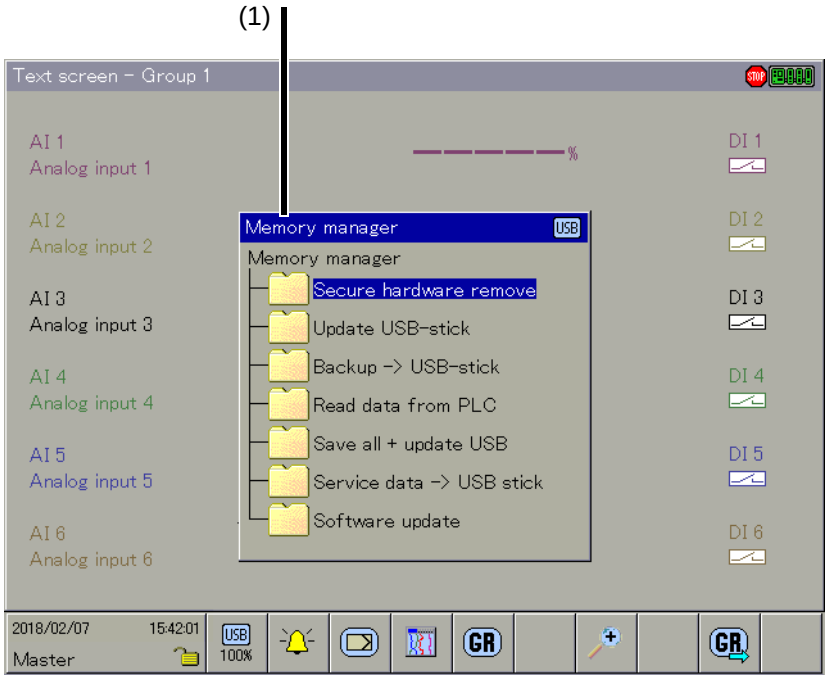
(1) Memory manager symbol

The memory manager can be identified by the system using various symbols.

100%	This displays the free internal memory with regard to data read-out using a USB memory stick.
97%	This displays the free internal memory with regard to data read-out via an interface.
USB 100%	This displays the free memory of the connected USB memory stick.

Selecting memory manager

The memory manager is **not** selected by touching the button that is highlighted; it is selected automatically and always when a USB memory stick is inserted into the multifunction panel.



(1) Memory manager functions

10 Memory manager

NOTE!
The memory manager functions are only available if a user is logged on and he/she has been allocated the rights for the functions.

NOTE!
In some functions – e.g. in the alarm and event lists – the memory manager only becomes active when the user leaves or exits the function.

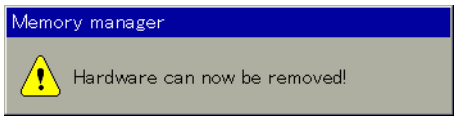
NOTE!
The USB memory stick must not be removed whilst data is being transferred to or from the memory stick.

NOTE!
The "Update USB-stick" function reads out data that has not yet been read out. Once it has been read out, the data is marked as read in the device but is not deleted.
The "Backup -> USB-stick" function reads out all the data of the internal memory, including the data that has already been read out. This function is therefore ideal for test and service work.

NOTE!
The USB memory stick is not intended to be permanently inserted into the USB socket, as the fact that it is not locked in place means there is no protection against accidental removal.

Safely remove hardware

The user should always call up this function before removing a USB memory stick. This is the only way to ensure that the files on the data carrier will be saved correctly.



If the message "Safe To Remove Hardware" appears, the data carrier can be removed.

Update USB-stick

Measurement data that has not been saved to a USB memory stick is written onto the data carrier.

Backup -> USB-stick

All measurement data in the memory (even data that has already been retrieved) is written to the data carrier.

Read data from PLC (as of system version 05)

With this function, data (e. g. measurement data, process data, etc.) that have been recorded using the PLC (extra code 224 required) is copied on a USB flash drive. The user right "Read-out registration data" is required for this function.

Data recording by means of a PLC application allows, for example, to provide files in a generally readable format.

Save all + update USB

All reports that are running are completed and written to the data carrier along with the measurement data that has not yet been saved. The current counter and integrator statuses are also saved.

Service data -> USB stick

Special data is saved onto the USB memory stick.

NOTE!
The update must only be performed by a service technician from the manufacturer.

Software update

This function serves to read in new device software (firmware). For this purpose, a special USB memory stick is required that contains the firmware data. These data are available from the manufacturer if required.

NOTE!
This function must only be performed if the user is requested to do so by a service technician from the manufacturer.

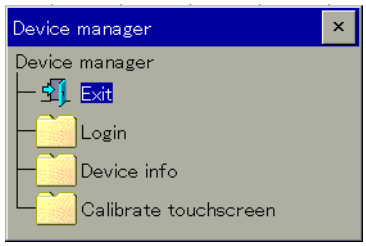
10 Memory manager

Selecting device manager

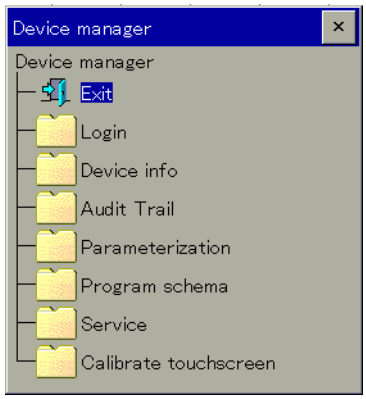
The device manager is selected via the button shown above.

The functions of the device manager differ according to whether or not a user is logged on. They also depend on the respective user rights. Therefore, the following figures only represent examples.

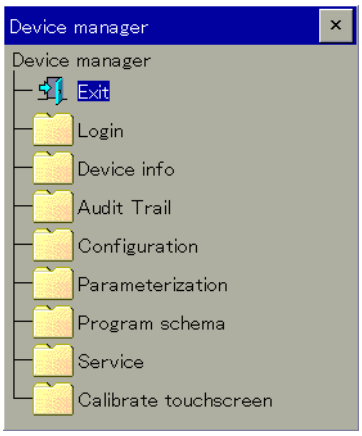
No user logged on



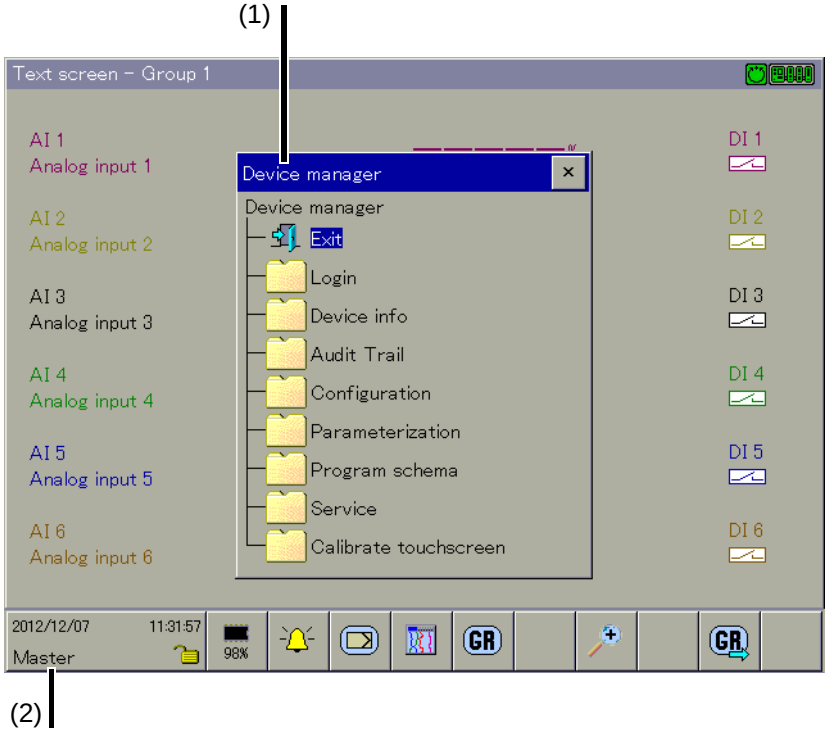
User "User 1" logged on



User "Master" logged on



11 Device manager



(1) Device manager functions

(2) Name of logged on user

Exit

This function exits the device manager.

Login

A user can use this function to logon, logout, and change his/her password.

As of system version 02, additional functions for user administration are available in this menu (add, edit, and delete a user) if the user who is logged on has the "administrate user" right.

⇨ Chapter 12.3.4 "Device settings (as of system version 02)", page 118

As of system version 03, it is possible to restrict the user administration on the device in consideration of hierarchy and function of the users.

⇨ Setup program manual (B 705000.6)

The multifunction panel is supplied with an internal user list ex works, comprising four users.

User	**Password**
Master	9200
User 1	1
User 2	2
User 3	3

Using the setup program, the usernames and their corresponding passwords and rights can be changed and transferred to the multifunction panel.

⇨ Setup program:
PROJECT > USER LIST

Device info

⇨ Chapter 11.1 "Device info", page 104

Audit Trail

⇨ Chapter 11.2 "Audit Trail", page 107

User area

A user area can contain up to 25 parameters. A parameter relates either to a process value (analog, digital, integer, or text variable) or a configuration parameter of the system.

In order for a user area to be available in the device manager, it must be configured in advance. It is possible to have up to three user areas.

⇨ Chapter 14.1 "User area", page 209

Configuration

This function can be used to change the configuration of the system. The description of the configuration is spread across multiple chapters in this operating manual.

⇨ Chapter 13 "Configuration", page 119.

NOTE!
A change to the configuration leads to the current record being closed and the new data being recorded such that it is chronologically separated from the "old" data. The data before and after the reconfiguration cannot be displayed as a whole on the PC. The system works with a new configuration.

Parameterization

⇨ Chapter 12 "Parameterization", page 115

Program schema

⇨ Chapter 11.3 "Program schema", page 108

Service

Special functions are located in the "Service" area.

NOTE!
These functions must only be called up if the user is requested to do so by a service technician from the manufacturer.

Calibrate touchscreen

The user can use this function to calibrate the screen.

Step	Activity
1	Start the program.
2	Follow the instructions on the screen.

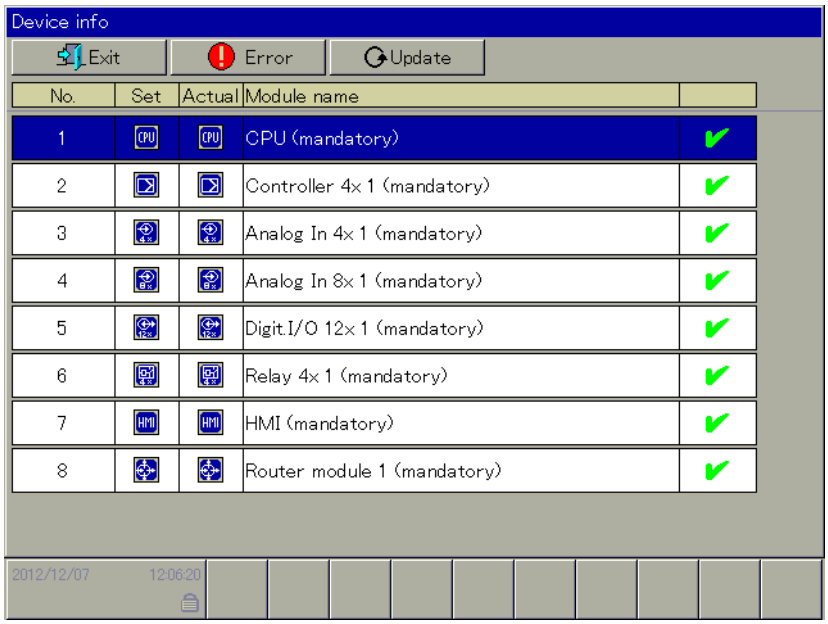
➥ The screen is calibrated.

11 Device manager

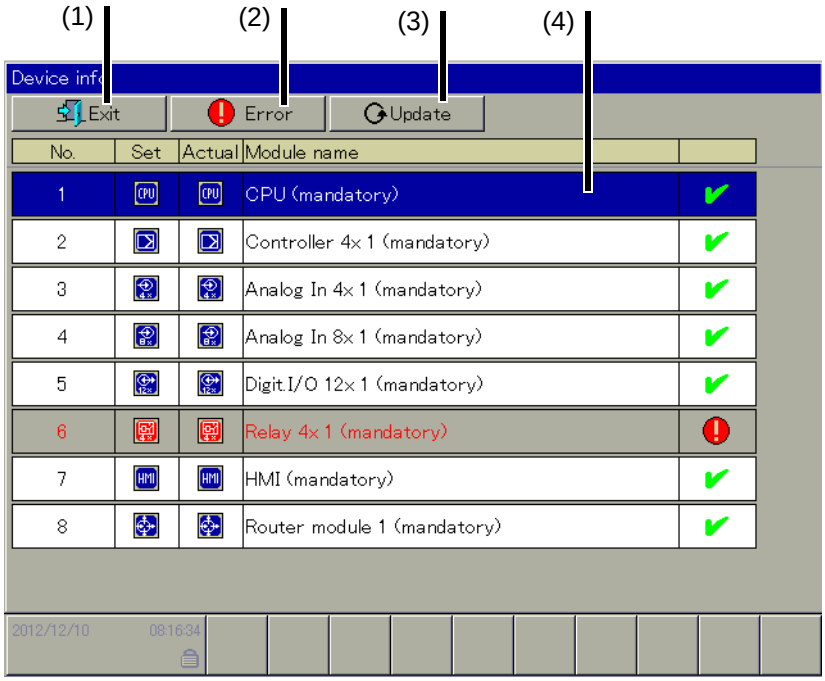
11.1 Device info

11.1.1 General

After the function is called up, the system reads out the current status of all connected modules.



In the event of an error, an entry (or multiple entries, if required) is marked red.



(1) Exit function
(2) Error overview
(3) Update
(4) Device info per module

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Error overview

The user can use this function to display a matrix in which all errors are contained in an overview. This information may be of interest to the manufacturer, if required.

Update

The display is not cyclically updated. This function is used to update the display, i.e. the system searches for new entries that are not yet present in the list.

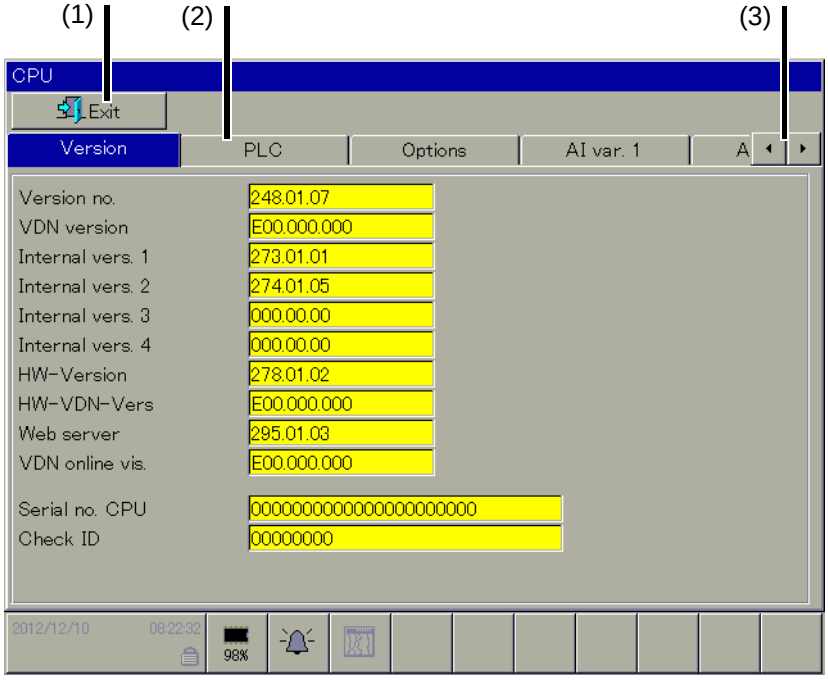
Device info per module

The user can display module-specific device information by tapping this with his/her finger.

⇨ Chapter 11.1.2 "CPU", page 105

11.1.2 CPU

In the following chapter, device information on the central processing unit base unit is shown as an example.



(1) Exit
(2) Tab
(3) Show additional tabs

Exit

Exit to "Device info" function.

Tab

Touching a tab name displays the corresponding part of the information.

Tab: Version

Display of various version numbers. The information may be useful when updating to a new version of the device software.

Tab: PLC

Display of various cycle times. The information may be useful when programming personal PLC programs.

NOTE!
Further information can be found in the online help in the PLC program environment.

Tab: Options

Display of optional hardware and software enhancements. Hardware and software enhancements can be ordered when purchasing the system, or subsequently fitted or released. The manufacturer will provide more information.

Tab: AI var. x

Display of the current analog variables. Analog variables are transferred using the serial interfaces (Com1, Com2) or LAN interface (e.g. via Modbus master function). The display is cyclically updated.

Tab: Digit. var.

Display of the current digital variables. Digital variables are transferred using the serial interfaces (Com1, Com2) or LAN interface (e.g. via Modbus master function). The display is cyclically updated.

Tab: Integer var. x

Display of the current integer variables. Integer variables are transferred using the serial interfaces (Com1, Com2) or LAN interface (e.g. via Modbus master function). The display is cyclically updated.

Tab: Text var.

Display of the current text variables. Text variables are transferred using the serial interfaces (Com1, Com2) or LAN interface (e.g. via Modbus master function). The display is cyclically updated.

Tab: Eth. Info

Display of various data on the Ethernet interface and communication.

Data on the Ethernet interface is shown on the left side of the screen; here, the user can read out the current IP address, etc.

Data relating to the Ethernet communication is shown on the right side of the screen.

Parameter	Description
Ethernet status 1	Received Ethernet packets
Ethernet status 2	Received Ethernet packets with errors

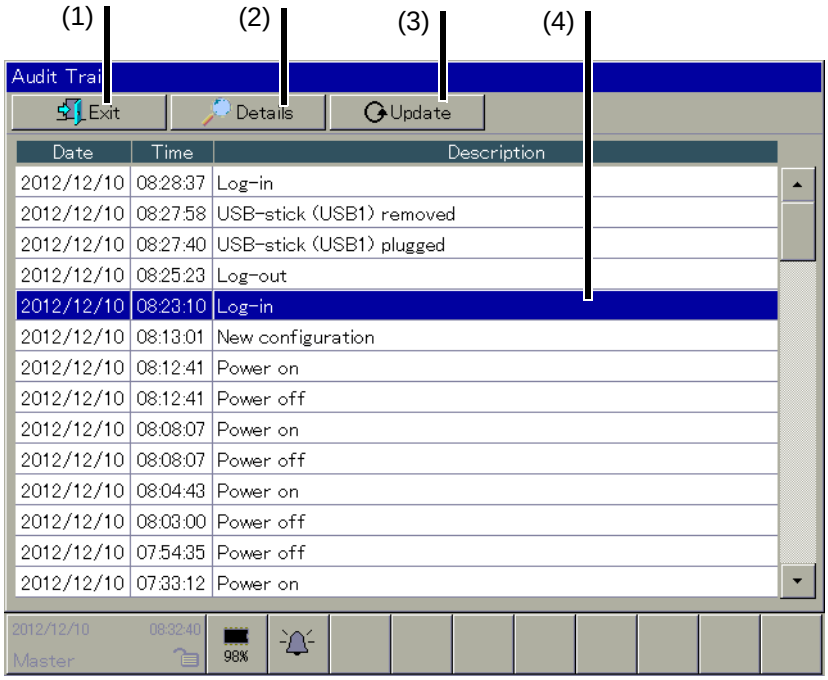
Parameter	Description
Ethernet status 3	Transmitted Ethernet packets
Ethernet status 4	Transmitted Ethernet packets with errors
Ethernet status 5	Received TCP packets
Ethernet status 6	Received TCP packets with errors
Ethernet status 7	Transmitted TCP packets
Ethernet status 8	Transmitted TCP packets with errors
Ethernet status 9	Received lease time

Tab: Status

This tab contains additional information on the respective module, if required.

11.2 Audit Trail

User interventions relating to the multifunction panel are logged in the Audit Trail. Here it can be seen, for example, which user was logged on in which period.



(1) Exit function
(2) Details
(3) Update
(4) Selected entry

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Details

This function displays additional information on the selected entry.

Update

The display is not cyclically updated. This function is used to update the display, i.e. the system searches for new entries that are not yet present in the list.

Selected entry

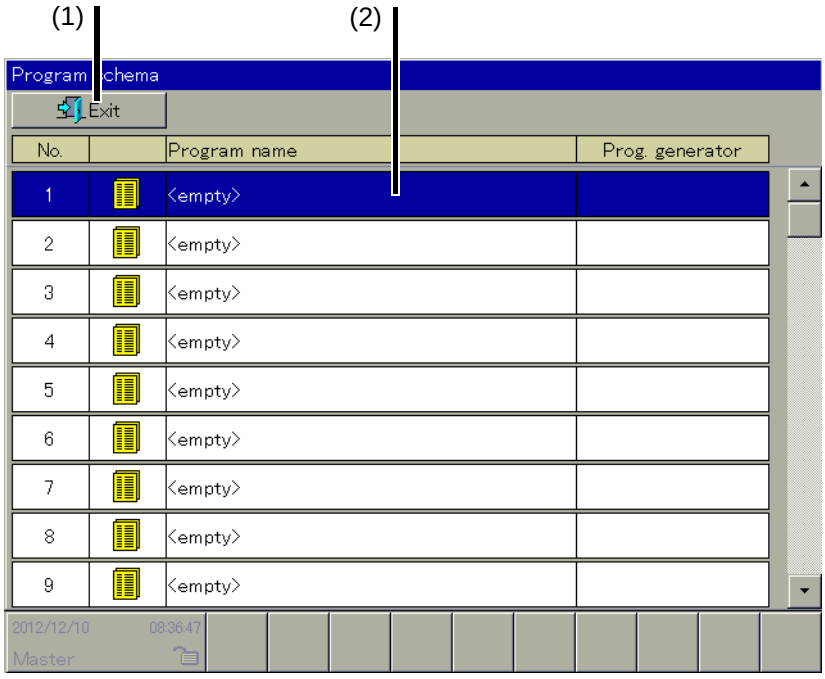
The user can select or mark an entry by touching it.

The "Details" function can be used to show additional information. This requires there to be additional information available for the selected entry.

11.3 Program schema

11.3.1 General

The user can use this function to store up to 100 programs or change existing programs.



(1) Exit function

(2) Selected entry

Exit function

Touch the screen here to exit the function and return to the visualization from which it was called up.

Selected entry

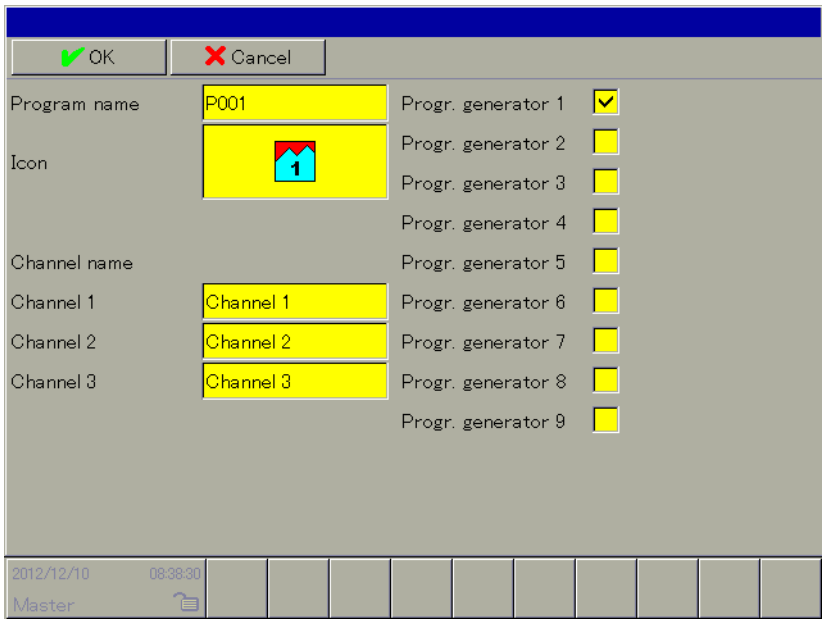
By touching an entry, the user can select the program and open it for editing.

⇨ Chapter 11.3.2 "Editing programs", page 109

11.3.2 Editing programs

Program header

If the selected program is being edited for the first time, the user must first allocate the general program data (program header).

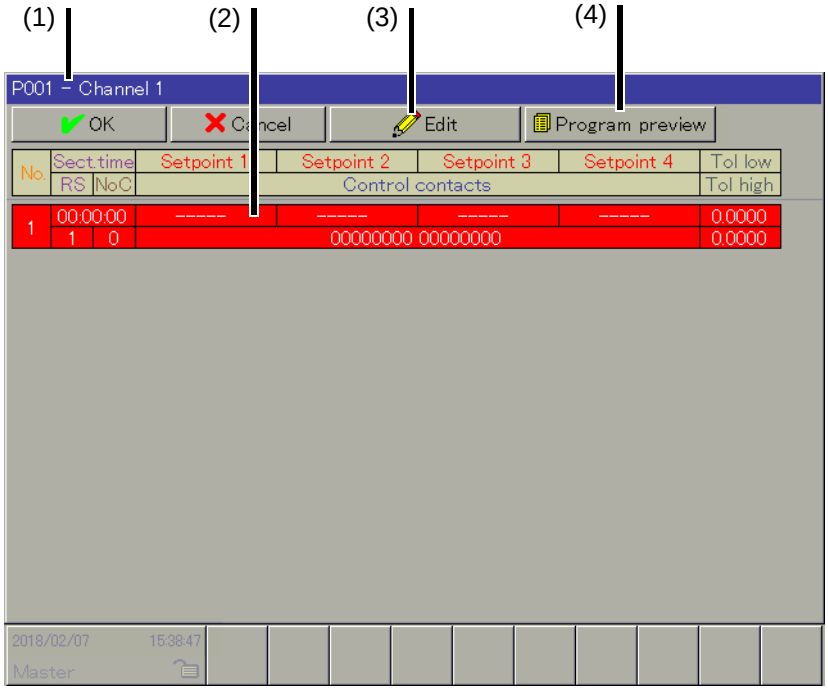


Step	Activity
1	Implement settings.
2	Touch the "OK" button.

➥ The program is created. The first program section for the first program channel must be defined.

NOTE!
You can find more information on the parameters in the operating manual of the base unit central processing unit B 705001.0.

Program section



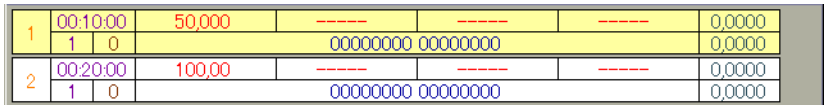
(1) Program name and program channel
(2) Program section
(3) Edit functions
(4) Program preview (as of system version 05)

Program name and program channel

Display of the program name and the program channel.

Program section

The user can enter the section data by touching this section. When the section is marked red, there is an entry error or required data is missing. If all data is available and entered correctly, every section will be alternately displayed with a yellow or white background.



⇨ Chapter 11.3.3 "Section data", page 111

Edit function

The following edit functions are available:

Function	Explanation
Program header	Edit program header.
Copy channel	Copy sections of the current program channel to the cache.
Replace channel	Overwrite current program channel with data from the cache. If this function is not available, there is no data present in the cache.
Delete channel	Delete sections of the current program channel.
Copy program	Copy data from the current program to the cache.

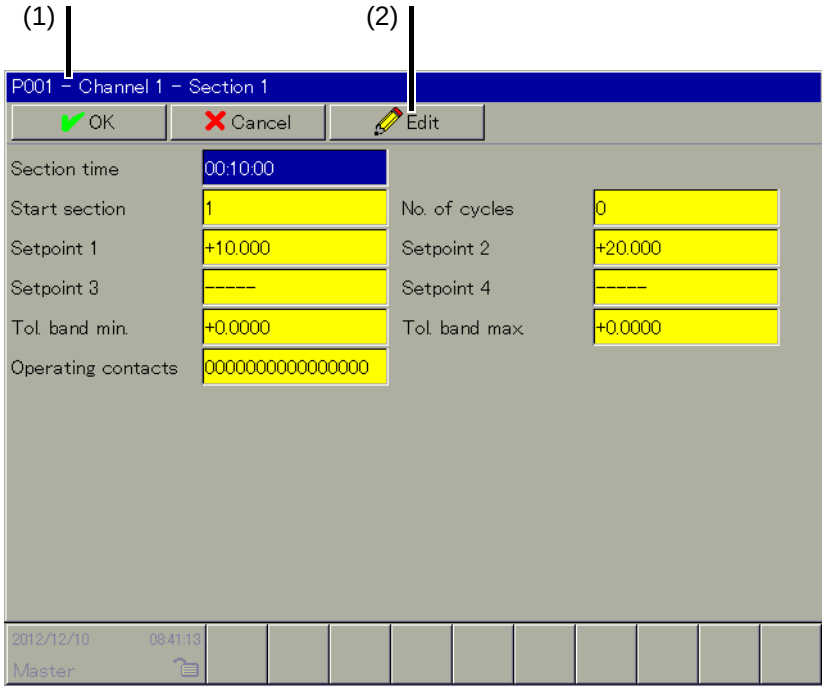
Function	Explanation
Replace program	Overwrite current program with data from the cache. The program name and the pictogram (both from the program header) are not included.
Delete program	Delete current program.
Create new section	Attach new program section at the end.

Program preview

As of system version 05, a program preview function is available (not for programs with process steps).

⇨ Chapter 11.3.4 "Program preview (as of system version 05)", page 113

11.3.3 Section data



(1) Program name, program channel, and section number

(2) Edit functions

NOTE!
You can find more information on the parameters in the operating manual of the base unit central processing unit B 705001.0.

Program name, program channel, and section number

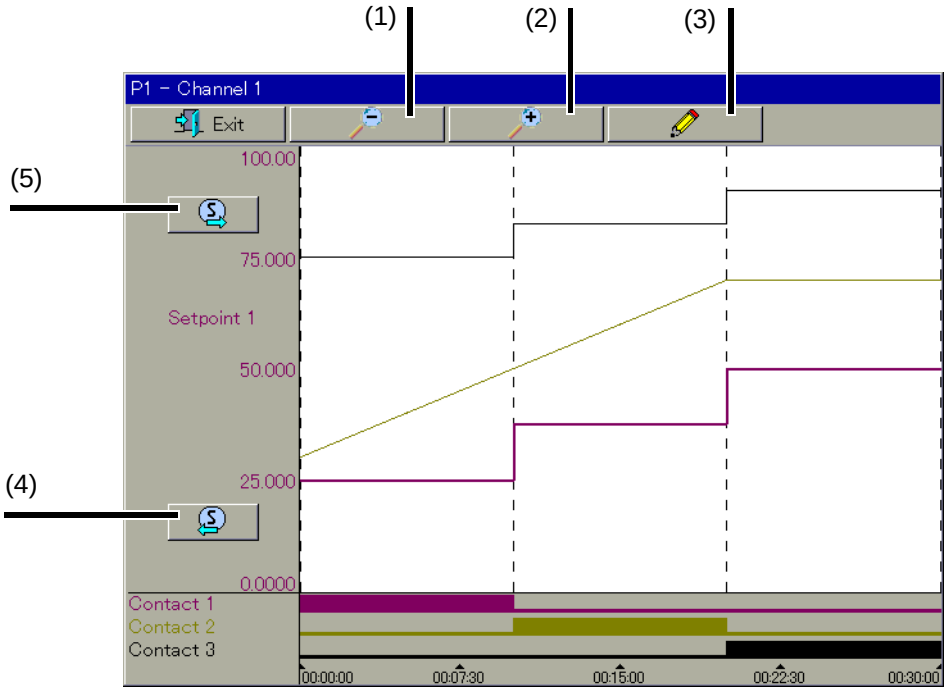
Display of the program name, the program channel, and the section number.

Edit function

The following edit functions are available:

Function	Explanation
Copy section	Copy section data to the cache.
Replace section	Overwrite current section with data from the cache. If this function is not available, there is no data present in the cache.
Insert section	Add a section – before or after the current one – and describe with data from the cache. If this function is not available, there is no data present in the cache.
Delete	Delete section.
Create new section	Add new, empty section – before or after the current one.

11.3.4 Program preview (as of system version 05)



(1) Zoom out
(2) Zoom in
(3) Settings for program preview
(4) Setpoint value backward (select previous setpoint value)
(5) Setpoint value forward (select next setpoint value)

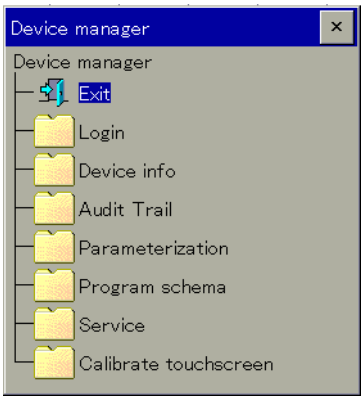
The program preview displays the course of all selected setpoint values and operating contacts of one program channel over all program sections within one single screen. Program or section repetitions are not shown.

With the program preview settings, the setpoint values (max. 4) and operating contacts (max. 16) are selected for display (here: setpoint values 1, 2, 3 and contacts 1, 2, 3).

The scaling of the setpoint value axis depends on the setpoint value limits of the program generator for the currently viewed setpoint value. This setpoint value is selected in the preview window with two buttons (forward, backward). The name of this setpoint value is displayed at the left-hand edge (here: Setpoint 1) and the associated setpoint value curve is highlighted (here: lower curve).

11 Device manager

Selecting parameterization

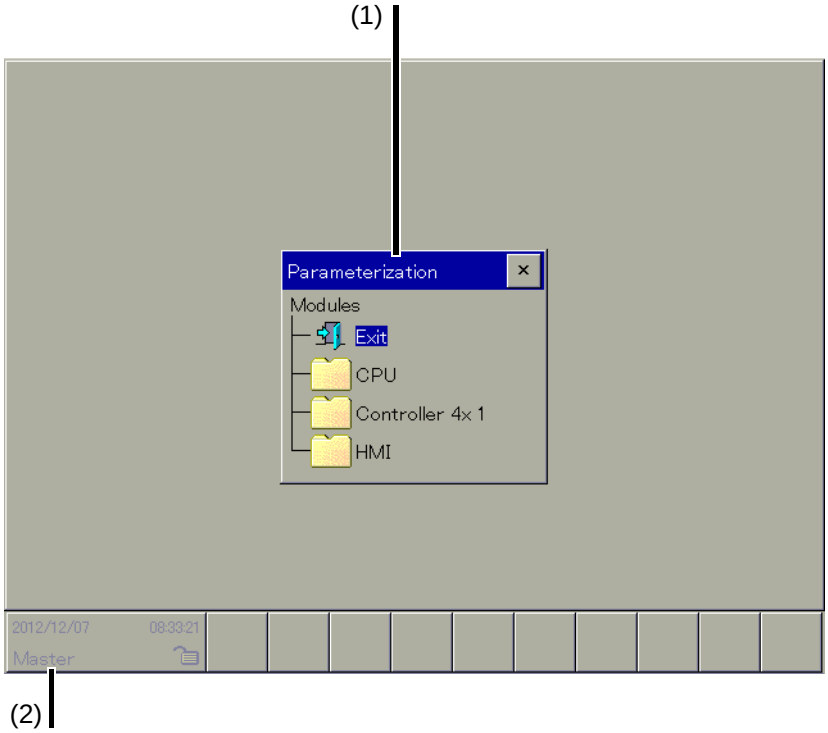


Parameterization (parameter level) is a function of the device manager. It is only available if a user is logged on and the user has the corresponding usage rights.

Step	Activity
1	Touch the "Parameterization" function.

➥ The function starts.

User "Master" logged on



(1) List of available modules

(2) Name of logged on user

Step	Activity
1	Touch the entry (module name) of the desired module.

➥ The parameters can be edited.

12 Parameterization

NOTE!
The base unit (central processing unit or CPU) and multifunction panel (HMI) can only appear once. The controller module can appear multiple times.

12.1 CPU

The user can edit a maximum of 50 (system version 02: 200) PLC parameters. A prerequisite for this is that the user has activated the PLC parameters using the setup program.
The PLC parameters are available for free use within user-specific PLC software.

⇨ Setup program:
CPU > PARAMETER LEVEL > PLC PARAMETERS

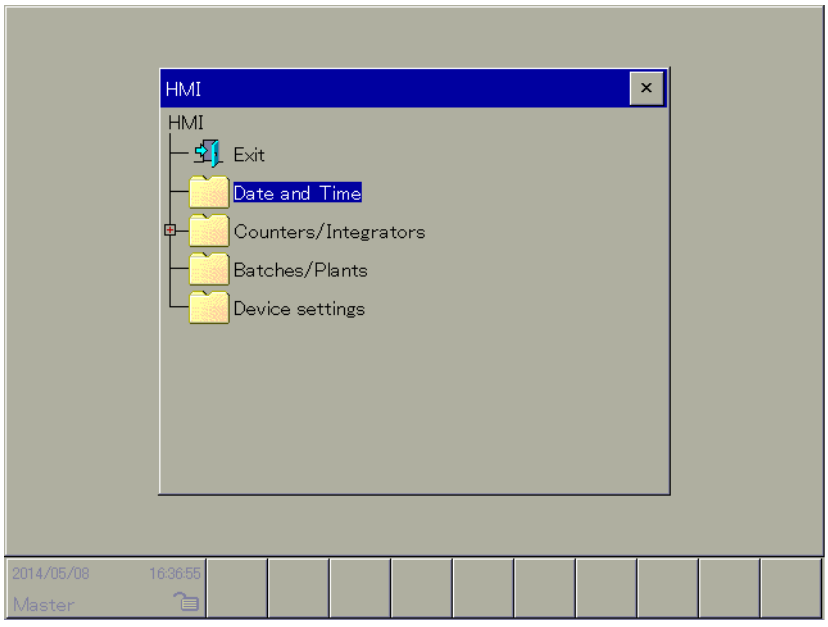
12.2 Controller...

The user can edit both parameter blocks for each controller channel.

⇨ Setup program:
CONTROLLER > PARAMETER LEVEL > PARAMETER SETS

12.3 HMI

The user can edit the following parameters:



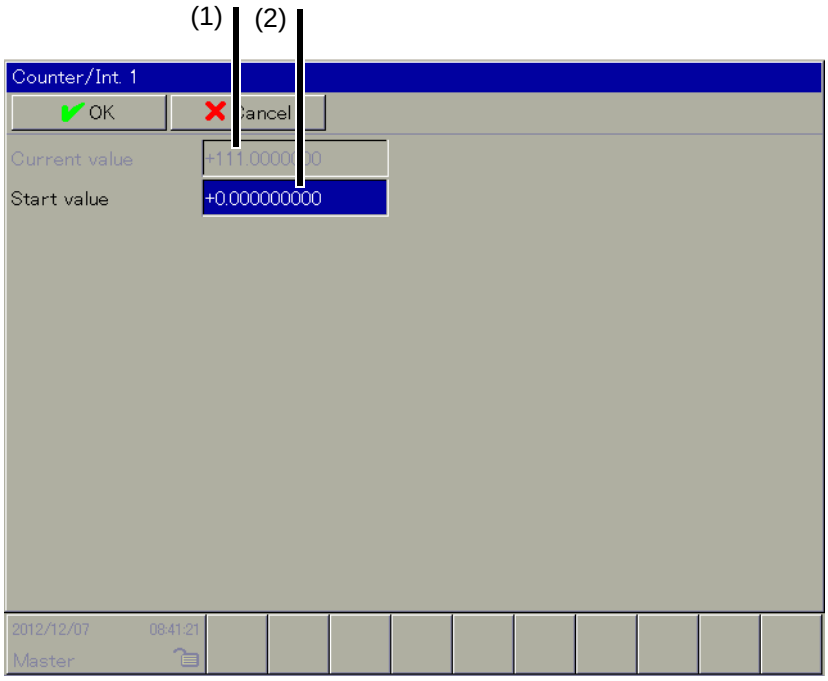
12.3.1 Date and Time

The user can use this function to enter the current date and time of the multifunction panel. It is only possible to perform correct allocation to the recorded data with the use of an exact date and an exact time.

⇨ Setup program:
HMI > ONLINE PARAMETERS > DATE AND TIME

12.3.2 Counters/Integrators

The user can use this function to enter the current value for the counters and integrators.



(1) Display of current value

(2) Entry of new value

Entry of new value

Touch here to enter the new value of the counter or integrator.

CAUTION!
The new value is adopted by the system when the "OK" button is touched.
The value 0, which is preset by the system when the function is called up, is also adopted when "OK" is touched. This may not be desired.
If the current value should only be monitored, the user must exit the function by touching the "Cancel" button.

⇨ Chapter 7.10 "Counters/Integrators", page 78

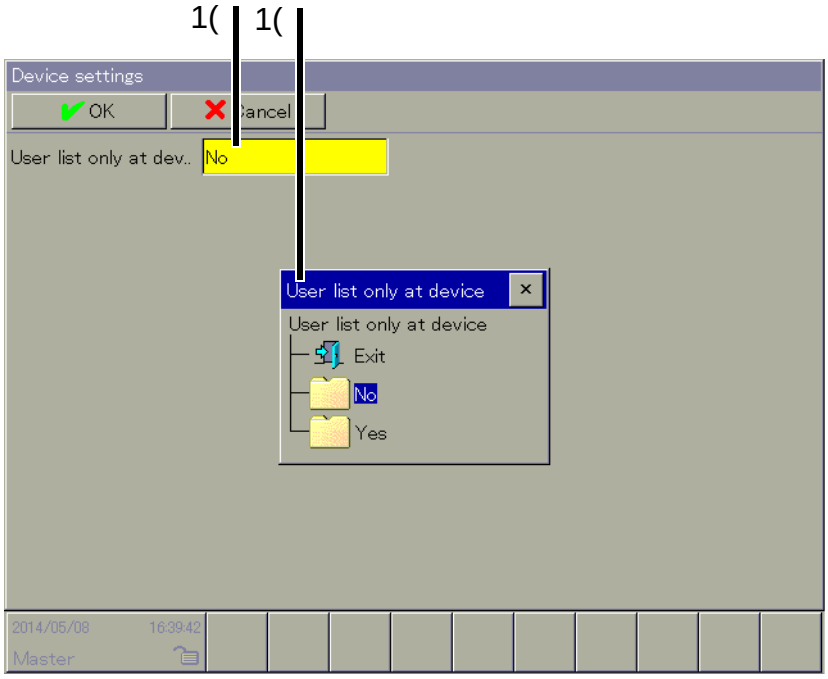
12.3.3 Batches/Plants

The user can use this function to enter the current batch numbers. The batch numbers can be displayed in the batch report.

⇨ Chapter 7.8 "Current batch", page 69

12.3.4 Device settings (as of system version 02)

The parameter "User list only at device" decides whether settings for user administration are performed in the setup program or on the multifunction panel. To change this parameter, the logged on user must have the "Configure" right.



(1) Shows the current setting and works as button for the selection menu.

(2) Selection menu:

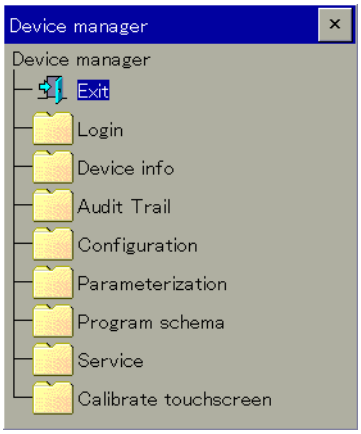
No: User administration is possible in the setup program or on the multifunction panel (settings will be transferred from the setup program to the multifunction panel or vice versa).

Yes: User administration is only possible on the multifunction panel (settings will be transferred to the setup program)

NOTE!
The parameters described in this section can be configured either with the setup program or on the multifunction panel (exception: Setup info in the device data).

13.1 General information

13.1.1 Selecting configuration

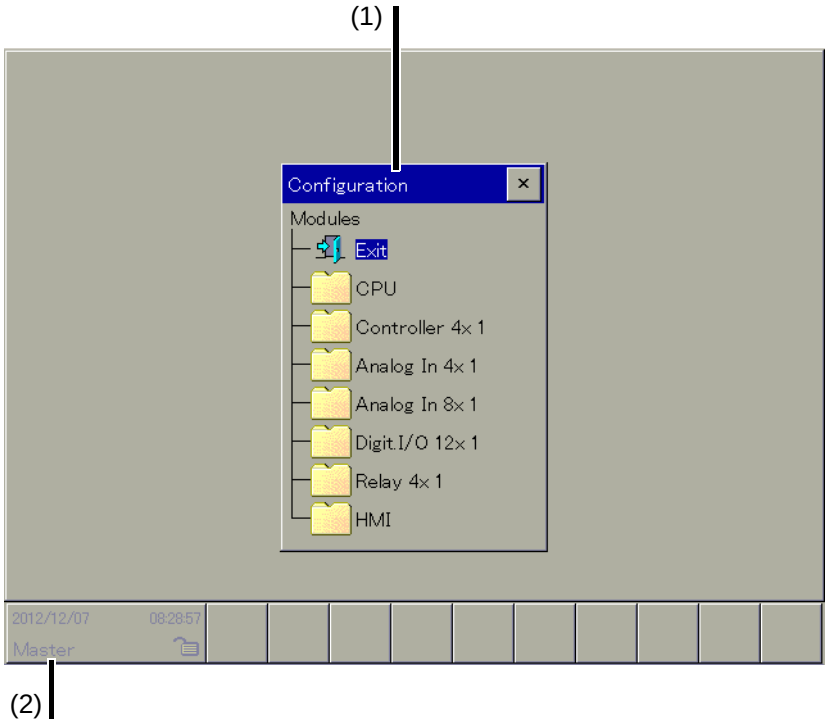


Configuration (configuration level) is a function of the device manager. It is only available if a user is logged on and the user has the corresponding usage rights.

Step	Activity
1	Touch the "Configuration" function.

➥ The function starts.

User "Master" logged on



(1) List of available modules

(2) Name of logged on user

Step	Activity
1	Touch the entry (module name) of the desired module.

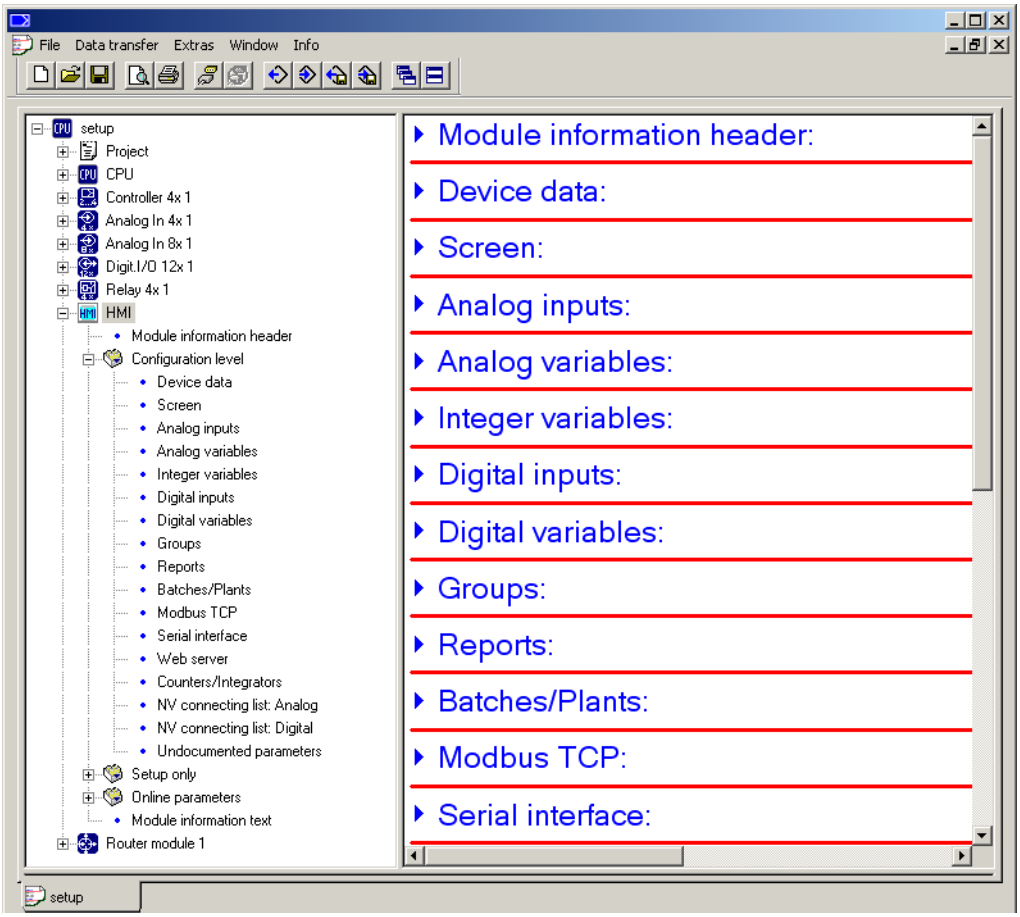
➥ The configuration can be adopted.

NOTE!
The base unit (central processing unit or CPU) and multifunction panel (HMI) can only appear once. The other modules can appear multiple times.

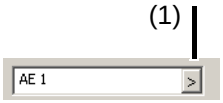
NOTE!
When a new system is started up for the first time, the first configuration must be adopted by the user using the setup program. This is the only way to transfer the allocation to the system. Subsequently, the configuration can also be changed using the multifunction panel.

NOTE!
This operating manual only describes the configuration for the multifunction panel. The description for the other modules can be read in the corresponding operating manual (Chapter 1.1 "Available technical documentation", page 9).

NOTE!
The description of the multifunction panel configuration is derived from the setup program, but it also applies for configuration on the panel itself.



13.1.2 Language



(1) Language

Many texts that the user can enter can be entered in two languages.

The user can enter the text in the second language by touching the "Language" button (1). The user can activate "Language 1" or "Language 2" using the setup program. The active language is used on the multifunction panel.

⇨ Setup program:
PROJECT > PROJECT SETTINGS > GENERAL > LANGUAGE

13 Configuration

13.2 Selectors

Selectors contain signals that are available for configuration in the multifunctional panel. This relates to multifunctional panel signals as well as signals originating from other modules (transfer via the system bus).

13.2.1 Analog selector

Multifunction panel signals

The following analog signals of the multifunction panel are directly available for configuring most functions.

Category	Signal	Description
Inactive		No signal selected
Analog inputs	Analog input 1 to 54	Analog input signal
Analog variables	Analog variable 1 to 54	Value of the analog variables
Counter/Integrator	Counter/Integrator 1 to 27	Current value of counter or integrator
Counter/Integrator closed	Count./Integrator closed 1 to 27	Value of counter or integrator in most recently completed capture period

NOTE!
If a signal originating from another module is required, this must be selected as an input signal for an analog input; the analog signal is then used for configuring the function in question.

The following integer signals of the multifunction panel are also directly available for configuring the counters/integrators.

Category	Signal	Description
Inactive		No signal selected
Integer variables	Integer variable 1 to 16	Value of the integer variables

Signals of the modules

All analog signals that are transferred via the system bus are available for configuring the analog inputs of the multifunction panel (even the signals of the multifunction panel itself). The selector for signal selection is identical to the selector for configuring the NV connections.

⇨ Chapter 13.18.3 "Analog signals (overview)", page 200

13.2.2 Digital selector

Multifunction panel signals

The following digital signals of the multifunction panel are directly available for configuring most functions.

Category	Signal	Description
Inactive		No signal selected
Digital inputs	Digital input 1 to 54	Signal of digital input

Category	Signal	Description
Batches	Batch 1 Start/Stop to Batch 9 Start/Stop	Signal for controlling batch reporting
Alarm digital inputs	Alarm digital input 1 to 54	Alarm signal of the digital input
Digital variables	Digital variable 1 to 54	Value of digital variables
Alarm digital variables	Alarm digital var. 1 to 54	Alarm signal of digital variables
Alarm counters/ integrators	Alarm 1 counter 1 to 27	Alarm signal of alarm type 1 of the counter/ integrator
	Alarm 2 counter 1 to 27	Alarm signal of alarm type 2 of the counter/ integrator
Group alarms	Alarm pos. tol. group 1 to 9	Positive tolerance band alarm signal of group
	Alarm neg. tol. group 1 to 9	Negative tolerance band alarm signal of group
	Alarm_Group 1 to 9	Collective alarm of group
Alarm analog inputs	Alarm 1 analog inp. 1 to 54	Alarm signal of alarm type 1 of the alarm input
	Alarm 2 analog inp. 1 to 54	Alarm signal of alarm type 2 of the alarm input
Alarm analog variables	Alarm 1 analog var. 1 to 54	Alarm signal of alarm type 1 of the analog variables
	Alarm 2 analog var. 1 to 54	Alarm signal of alarm type 2 of the analog variables
Alarm integer variables	Alarm 1 integer var. 1 to 16	Alarm signal of alarm type 1 of the integer variables
	Alarm 2 integer var. 1 to 16	Alarm signal of alarm type 2 of the integer variables
Batch	Batch 1 active to Batch 9 active	Signal is active when batch is active
	Alarm batch 1 to 9	Collective alarm of batch

Category	Signal	Description
Alarms/faults/ misc.	Collective alarm	Collective alarm of the multifunction panel
	Int. mem. alarm (Ext. mem.)	Signal is active if the "External memory" setting was selected for data read-out (device data: "Data download..." parameter), the data was not read out at the correct time, and the free internal memory does not reach the configured limit (device data: "Memory alarm" parameter).
	Int. mem. alarm (Interface)	Signal is active if the "Interface" setting was selected for data read-out (device data: "Data download..." parameter), the data was not read out at the correct time, and the free internal memory does not reach the configured limit (device data: "Memory alarm" parameter).
	Log-in	Signal is active when a user is logged on.
	Fault	Multifunction panel fault (collective signal)
	Ext. memory (USB1)	Signal is active if an external memory (USB memory stick) is connected to the USB1 socket.
	Ext. memory (USB2)	Signal is active if an external memory (USB memory stick) is connected to the USB2 socket.
	Battery empty	Battery alarm (buffer battery of the multifunction panel is empty and must be replaced). Notify service department! Attention: RAM memory content is deleted!
	Battery low	Battery pre-warning (multifunction panel buffer battery can be replaced within 4 weeks without data loss). Notify service department!

NOTE!
If a signal originating from another module is required, this must be selected as an input signal for a digital input; the digital input is then used for configuring the function in question.

Signals of the modules

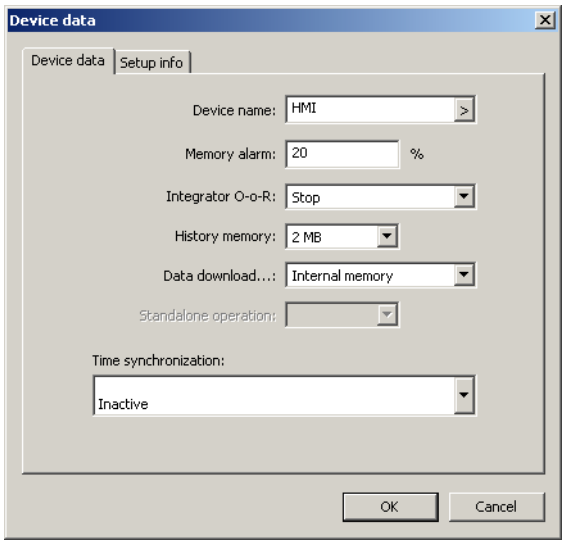
All digital signals that are transferred via the system bus are available for configuring the digital inputs of the multifunction panel (even the signals of the multifunction panel itself). The selector for signal selection is identical to the selector for configuring the NV connections.

⇨ Chapter 13.18.4 "Digital signals (overview)", page 202

13.3 Device data

13.3.1 Device data

Setup dialog



Parameter

Parameter	Selection/settings	Description
Device name	HMI (example) (max. 20 characters)	The device name is used in the setup program, Web server, and the PCC and PCA3000 PC programs.
Memory alarm 🕮	0 to **20** to 100 %	If the value of the free measured data memory (internal memory) falls below the configured size, a memory alarm is triggered.
Integrator O-o-R	The performance of the integrator channels is configured here if the input signal of an integrator has an invalid value.	
	Stop Invalid	The integration is stopped. The integration is set to invalid ("---------").
History memory 🕮	**2 MB**, 4 MB, 8 MB	Size of the history memory (memory value in MB)
Data download... 🕮	The preferred memory read-out type is configured here. The parameter only influences the area of the screen with the function selection and if a USB memory stick is not inserted.	
	External memory Interface	 

Parameter	Selection/settings	Description
Time synchroni-zation	This parameter can be used to influence the time of the multifunction panel. Together with a digital signal, it can therefore be ensured that multiple panels will simultaneously be synchronized to the same time.	
	Inactive	Time synchronization does not take place.
	Digital selector	Signal with which the synchronization is to be performed. The time is synchro-nized when transferring from Low to High (min. pulse duration = 125 ms). The seconds are crucial to changing the time. The time is put forward or back by a maximum of ±30 seconds. E.g.: 12:55:00 to 12:55:30 -> 12:55:00 12:55:31 to 12:55:59 -> 12:56:00

Memory alarm

The memory alarm distinguishes between the following alarms:

- Read-out via external memory
- Read-out via interface

CAUTION!
Data is not read out by the user.
There is a threat of data loss when a memory alarm is set.
Data is to be read out immediately.

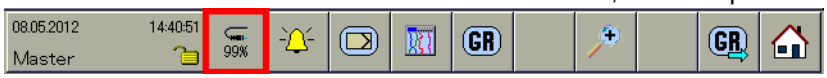
History memory

The history memory is used in order to display measurement data that is outside of the current diagram display.

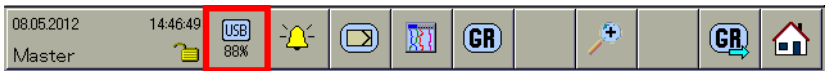
The memory display is started using the following function:

⇨ Chapter 8 "Memory display (History)", page 85

Data download...

External memory	This displays the free memory with regard to data read-out using a USB mem-ory stick. 
Interface	This displays the free memory with regard to data read-out via one of the inter-faces (RS232, RS422/485, setup interface, or Ethernet). The read-out can be implemented via the PCA communication software PCC, for example. 

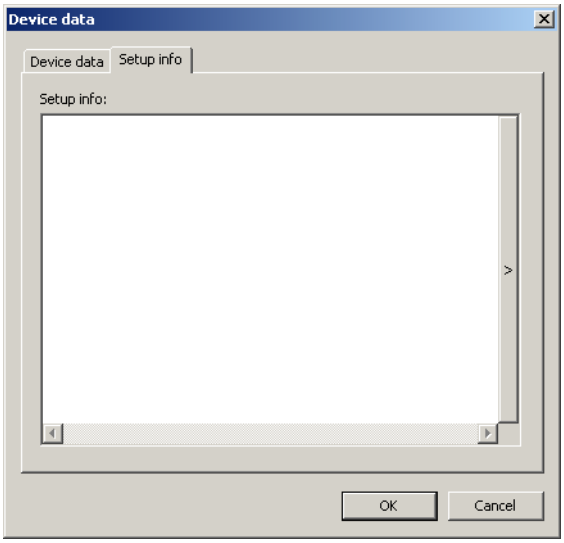
If the symbol is marked red, there is a memory alarm for the corresponding read-out type.
If a USB memory stick is inserted, the free memory on the stick will be displayed. The "Data download..." parameter does not play a role at this point.



NOTE!
The minimum free memory value (in %) is determined by the "Memory alarm" parameter. If less memory is available than the set amount, this generates an entry in the event list.

13.3.2 Setup info

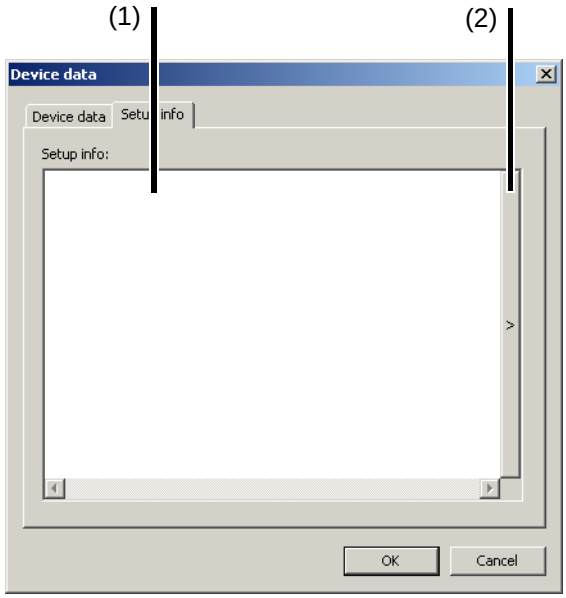
Setup dialog



Parameter

Parameter	Selection/settings	Description
Setup info 🕮	500 characters	The setup info can only be configured using the setup program. It is sent to the multifunction panel and it can be seen within the PC evaluation software PCA3000, and viewed and extended under the menu item "Edit - Extended description".

Setup info



(1) Enter setup info (2) Language

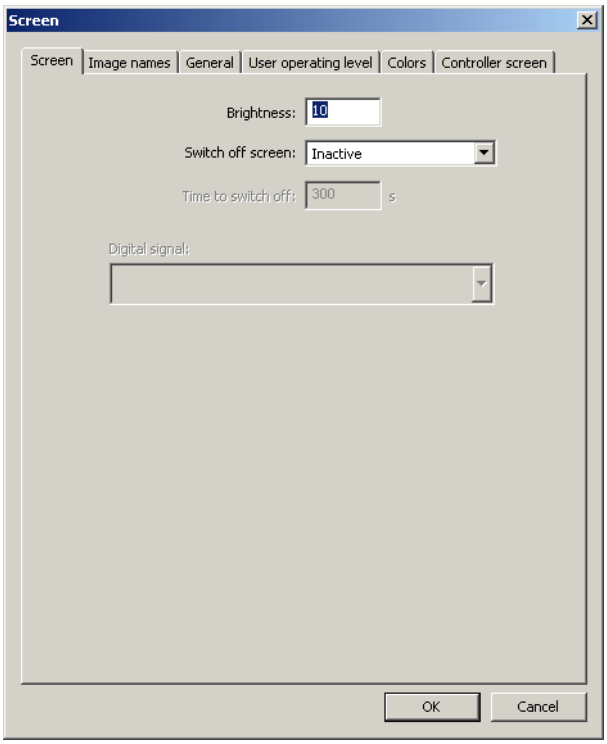
The user can enter the text in the second language by touching the "Language" button (2). The user can activate "Language 1" or "Language 2" using the setup program. The active language is used on the multifunction panel.

⇨ Setup program:
PROJECT > PROJECT SETTINGS > GENERAL > LANGUAGE

13.4 Screen

13.4.1 Screen

Setup dialog



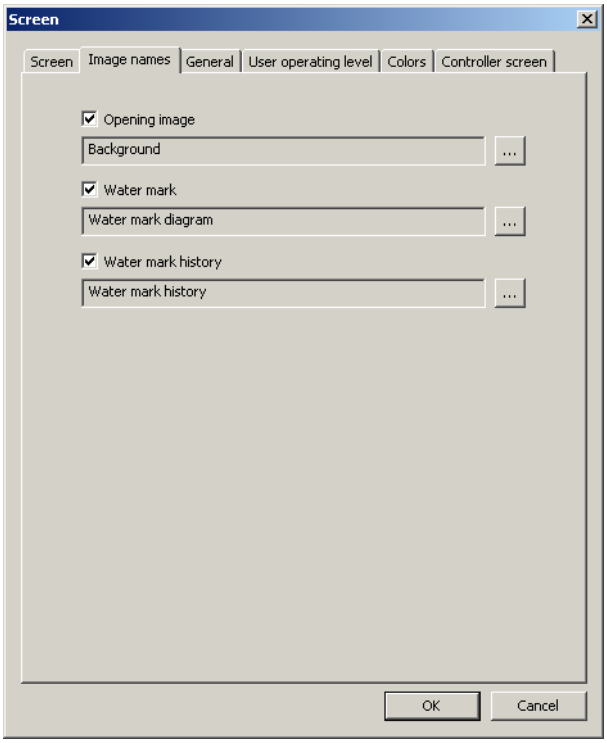
Parameter

Parameter	Selection/settings	Description
Brightness	1 to **10**	Brightness of the multifunction panel screen
Switch off screen	To protect the screen, the user can activate screen switch-off (screensaver) here.	
	Inactive	The switch-off is not active.
	Time to switch off	If the screen is not touched for a period from 10 to 32767 seconds, the switch-off is activated and the screen turns dark.
	Control signal	The switch-off is activated by one of the digital signals (digital selector). A digital signal can be a digital input, a relay status, or a batch activation, for example.
Time to switch off	10 to **300** to 32767	Time in seconds for the screen switch-off

Parameter	Selection/settings	Description
Digital signal		
	Inactive Digital selector	No screen switch-off Signal (high active) for the screen switch-off when selecting the control signal

13.4.2 Image names

Setup dialog



Parameter

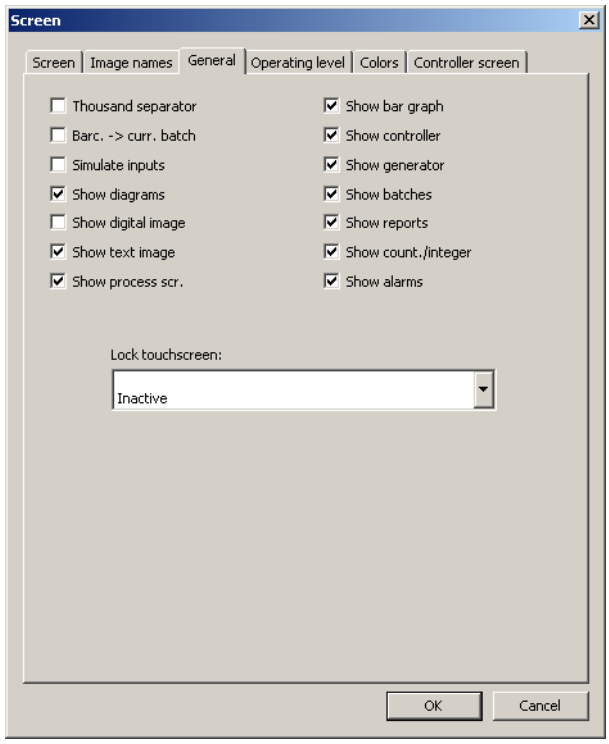
Parameter	Selection/settings	Description
Opening image	Background (example)	The image is displayed after power on during the startup phase of the multi-function panel. Maximum size: 640 × 480 pixels Colors: 256
Water mark	Water mark diagram (example)	The image is displayed in the centre of the screen in the "Diagram" visualization. Maximum size: 200 × 100 pixels Colors: 256 ⇨ Chapter 7.2 "Diagram", page 56

Parameter	Selection/settings	Description
Water mark history	Water mark history (example)	The image is displayed in the centre of the screen in the memory display. Maximum size: 200 × 100 pixels Colors: 256 ⇨ Chapter 8 "Memory display (History)", page 85

NOTE!
The images are only displayed if the corresponding box is checked (☑).

13.4.3 General

Setup dialog



Parameter

Parameter	Selection/settings	Description
Thousand separator	Yes (☑), **No** (☐)	If "Yes", a stroke will be used in certain visualizations as an identification marking for numbers above and including 1000. Example: 215'892,9

Parameter	Selection/settings	Description
Barc.->curr. batch	Yes (☑), **No** (☐)	If "Yes", the "Current batch" visualization will automatically be shown when the corresponding barcode is scanned. ⇨ Chapter 7.8 "Current batch", page 69
Simulate inputs 🕮	Yes (☑), **No** (☐)	If "Yes", all inputs and outputs of the multifunction panel are ignored and pseudo data is displayed on the screen.
Show diagrams	**Yes** (☑), No (☐)	"Yes" releases the "Diagram" visualization for selection by the user. ⇨ Chapter 7.2 "Diagram", page 56
Show digital image	Yes (☑), **No** (☐)	"Yes" releases the "Digital" visualization for selection by the user. ⇨ Chapter 7.6 "Digital", page 65
Show text image	**Yes** (☑), No (☐)	"Yes" releases the "Text image" visualization for selection by the user. ⇨ Chapter 7.4 "Text image", page 60
Show process scr.	**Yes** (☑), No (☐)	"Yes" releases the "Process screen" visualization for selection by the user. ⇨ Chapter 7.5 "Process screen", page 64
Show bar graph	**Yes** (☑), No (☐)	"Yes" releases the "Bar graph" visualization for selection by the user. ⇨ Chapter 7.3 "Bar graph", page 58
Show controller	**Yes** (☑), No (☐)	"Yes" releases the "Controller screens" visualization for selection by the user. ⇨ Chapter 6 "Multichannel controller module", page 51
Show generator	**Yes** (☑), No (☐)	"Yes" releases the "Prog. generator" visualization for selection by the user. ⇨ Chapter 6 "Multichannel controller module", page 51
Show batches	**Yes** (☑), No (☐)	"Yes" releases the "Current batch" and "Last completed batch" for selection by the user. ⇨ Chapter 7.8 "Current batch", page 69 ⇨ Chapter 7.9 "Last completed batch", page 74
Show reports	**Yes** (☑), No (☐)	"Yes" releases the "Reports" visualization for selection by the user. ⇨ Chapter 7.7 "Reports", page 67

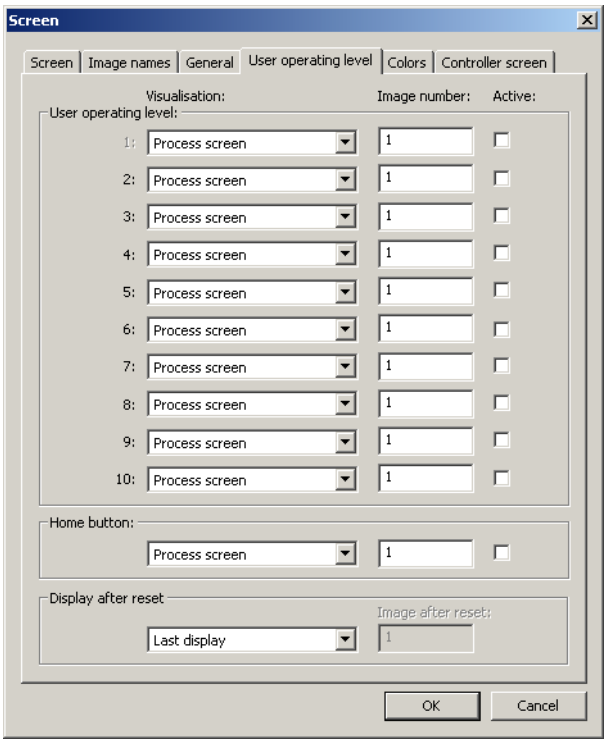
Parameter	Selection/settings	Description
Show count./integer	**Yes** (☑), No (☐)	"Yes" releases the "Counters/Integrators" visualization for selection by the user. ⇨ Chapter 7.10 "Counters/Integrators", page 78
Show alarms	**Yes** (☑), No (☐)	"No" rejects the display of fault and alarm messages in the status and title line. ⇨ Chapter 5.1.1 "Status line and Title line", page 44
Show percent value (as of system version 05)	**Yes** (☑), No (☐)	"Yes" causes the value to be displayed in percent in the "bar graph" visualization (within the bar graph). ⇨ Chapter 7.3 "Bar graph", page 58
Lock touchscreen	Locks the touchscreen such that it cannot be operated. This does not relate to a switch-off.	
	Inactive Digital selector	Not locked Signal (high active) with which the touchscreen (screen) is locked for as long as the signal is active.

Simulation inputs

NOTE!
The inputs and outputs adopt an undefined status. This parameter should only be activated for test purposes and also only if no digital outputs are connected.

13.4.4 User operating level

Setup dialog



Parameter

Parameter	Selection/settings	Description
User operating level 📖	**Process screen** Any visualization	Type of visualization
Home button 📖	**Process screen** Any visualization	Type of visualization
Display after reset 📖	**Process screen** Any visualization	Type of visualization
Image number	**1**	Image number (e.g. for process screens), group number (e.g. for diagrams), or Modbus address of the concerned multichannel controller module (for controller screens)
Active 📖	Yes (☑), **No** (☐)	Only active visualizations are included by the system and can be selected by the user.

User operating level

The user operating level consists of a maximum of ten visualizations which the user is free to put together as preferred. Each of the visualizations can be called up individually or in a loop.

⇨ Chapter 7.11 "User operating level", page 81

Home button

The selected visualization is called up if the user touches the button shown below.

Display after reset

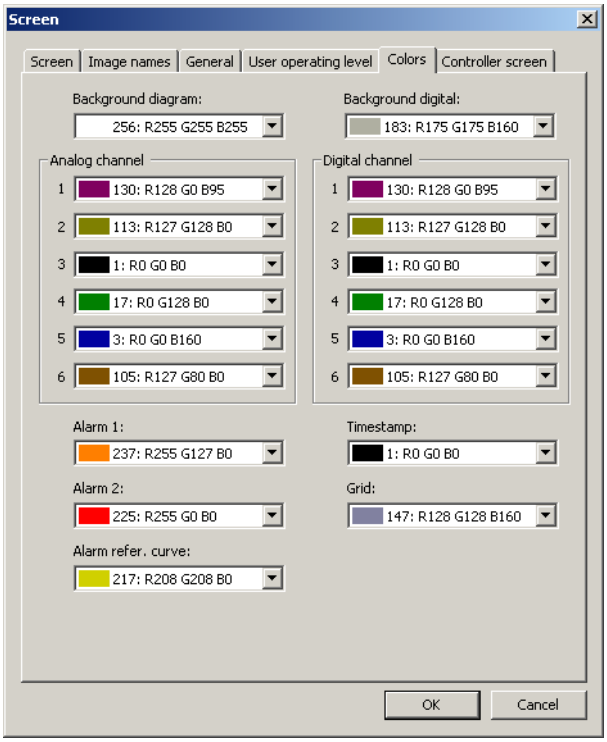
Here, the user can configure which visualization is to be shown after the multifunction panel is restarted. The user operating level will be preferred if it is active.

Active

NOTE!
Additional settings may be required so that a visualization can also be displayed by the system. For example, batches can only be displayed if they are sufficiently configured by the user.

13.4.5 Colors

Setup dialog



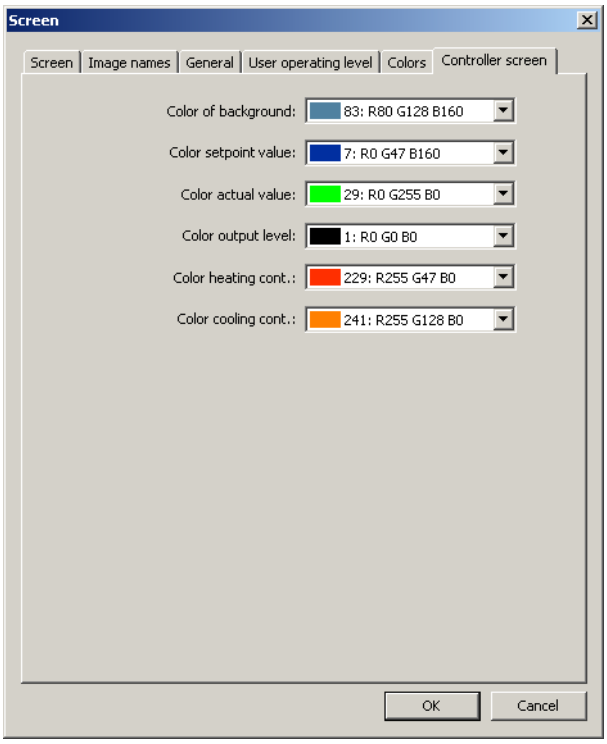
Parameter

Parameter	Selection/settings	Description
Background diagram	Color 256	Background color for the Diagram visualization ⇨ Chapter 7.2 "Diagram", page 56

Parameter	Selection/settings	Description
Background digital	Color 183	Background color for the Digital visualization. ⇨ Chapter 7.6 "Digital", page 65
Analog channel	Color ...	Color used to display the corresponding analog channel (graphically, numerically, and in text form).
Digital channel	Color ...	Color used to display the corresponding digital channel (graphically, numerically, and in text form).
Alarm 1	Color 237	Color used to mark Alarm 1. ⇨ Chapter 7.2 "Diagram", page 56
Timestamp	Color 1	Color used to display the time information. ⇨ Chapter 7.2 "Diagram", page 56 ⇨ Chapter 7.6 "Digital", page 65
Alarm 2	Color 225	Color used to mark Alarm 2. ⇨ Chapter 7.2 "Diagram", page 56
Grid	Color 147	Color used to display the grid in the "Diagram" visualization. ⇨ Chapter 7.2 "Diagram", page 56
Alarm refer. curve	Color 217	Color used to display an analog channel when it leaves a tolerance band. ⇨ Chapter 13.11.1 "Analog channels", page 155

13.4.6 Controller screen

Setup dialog



Parameter

Parameter	Selection/settings	Description
Color of background	Color 83	Background color for the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51
Color setpoint value	Color 7	Color for the numerical display of the setpoint value in the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51
Color actual value	Color 29	Color for the numerical display of the actual value in the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51
Color output level	Color 1	Color for the numerical display of the output level in the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51
Color heating cont.	Color 229	Color for the display of the heating contact (C1) in the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51

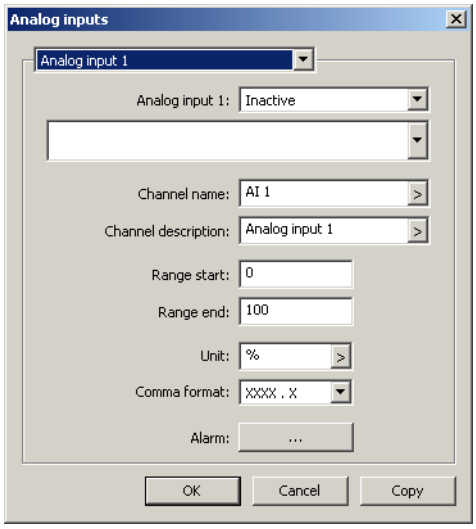
Parameter	Selection/settings	Description
Color cooling cont.	Color 241	Color for the display of the cooling contact (C2) in the controller screens. ⇨ Chapter 6 "Multichannel controller module", page 51

13.5 Analog inputs

The multifunction panel can manage and record 54 analog inputs. The analog inputs relate to inputs and/or signals that reach the multifunction panel via the system bus.

For example, the analog inputs are pooled into groups together with other analog signals via the "Groups" configuration and are available for further use via these groups.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Analog input x 📖	**Inactive** Analog selector	No signal allocated. Signal that is to be allocated to the input.
Channel name	**AI x**	Name with a maximum length of seven characters that is used in the visualizations together with the channel description. ⇨ Chapter 7.4 "Text image", page 60
Channel description	**Analog input x**	Description with a maximum length of 21 characters that is used in the visualizations together with the channel names. ⇨ Chapter 7.4 "Text image", page 60
Range start	**0**	Limitation of the measuring range If measured values appear that are below the configured range, the multifunction panel issues the indication "<<<<<".
Range end	**100**	Limitation of the measuring range If measured values appear that are above the configured range, the multifunction panel issues the indication ">>>>>".

Parameter	Selection/settings	Description
Unit	**%**	Unit in which the recorded signal is to be displayed, with a max. length of five characters. The unit is displayed wherever the measured value is displayed in numerical form.
Comma format	**XXXX.X**	The comma format determines the number of pre-decimal and post-decimal places for the numerical display of the measured values. If required, the multifunction panel automatically switches to a different format in order to display all pre-decimal places. First and foremost, all pre-decimal places must be displayed.
Alarm		The user can configure up to two alarms for monitoring two limit values. ⇨ Chapter 13.5.1 "Alarm", page 141

Analog input x

The user can perform the allocation in this dialog window using the setup program. Further options can be seen in the following list.

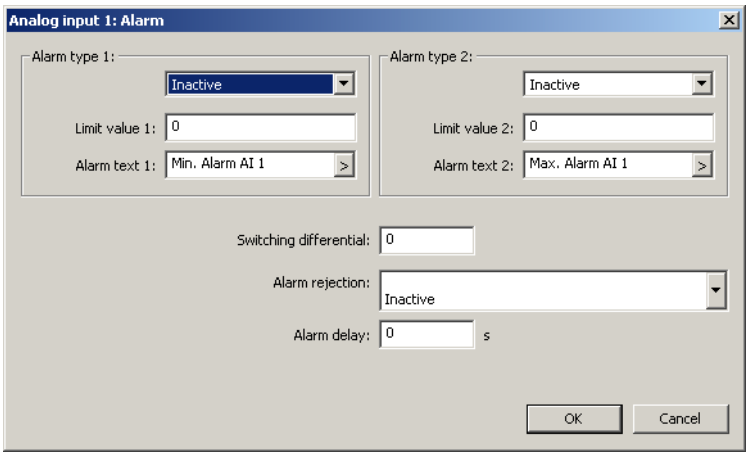
- Setup program: "NV connecting list: Analog" menu
  HMI > CONFIGURATION LEVEL > NV CONNECTING LIST: ANALOG
- Multifunction panel: "HMI analog inputs" menu
  DEVICE MANAGER > CONFIGURATION > CPU > NV CONNECTING LIST > HMI ANALOG INPUTS

13.5.1 Alarm

Limit value monitoring with one or two alarms can be activated for each analog input. The alarm is entered in the status and title line and in the alarm and event list of the multifunction panel.

This type of limit value monitoring is in addition to and independent of the limit value monitoring of the base unit.

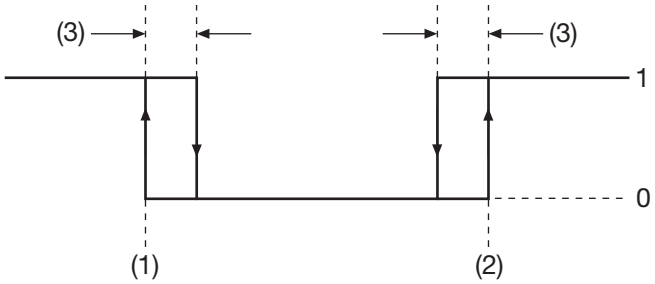
Setup dialog



Parameter

Parameter	Selection/settings	Description
Alarm type 1, 2 🕮	**Inactive** Min. Alarm Max. Alarm	Monitoring is not active. Alarm is issued if the limit value is not met. Alarm is issued if the limit value is exceeded.
Limit value 1, 2	-99999 to **0** to +99999	Limit value at which an alarm is issued.
Alarm text 1, 2	Use default text or enter other text.	Text that is displayed or entered in the status and title line and in the alarm list and event list in the case of an alarm.
Switching differential 🕮	**0** to 99999	Used to reject constant switching operations in the event of minor fluctuations of the input signal around the limit value
Alarm rejection	**Inactive** Digital selector	Signal for activating the alarm rejection
Alarm delay	**0 s** to 65535 s	Delay time for alarm triggering

Alarm type and switching differential



(1) Min. alarm/limit value
(2) Max. alarm/limit value
(3) Switching differential

1 Alarm on
0 Alarm off

Additional information

NOTE!
Additional information on the topic of "Analog variables" can be found in the operating manuals B 705060.2.0 and B 705001.2.0.

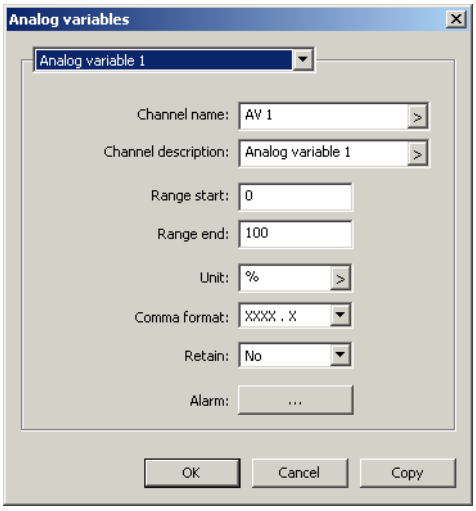
13.6 Analog variables

The multifunction panel can manage and record 54 analog variables. The analog variables relate to inputs or signals that are received via one of the multifunction panel interfaces (RS232, RS422/485, setup interface, or Ethernet).

For example, the analog variables are pooled into groups together with other analog signals via the "Groups" configuration and are available for further use via these groups.

Analog variables are always active. If no value has yet been received, "-----" is shown in the display.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Channel name	**AV x**	Name with a maximum length of seven characters that is used in the visualizations together with the channel description. ⇨ Chapter 7.4 "Text image", page 60
Channel description	**Analog variable x**	Description with a maximum length of 21 characters that is used in the visualizations together with the channel names. ⇨ Chapter 7.4 "Text image", page 60
Range start	**0**	Limitation of the measuring range If measured values appear that are below the configured range, the multifunction panel issues the indication "<<<<<".

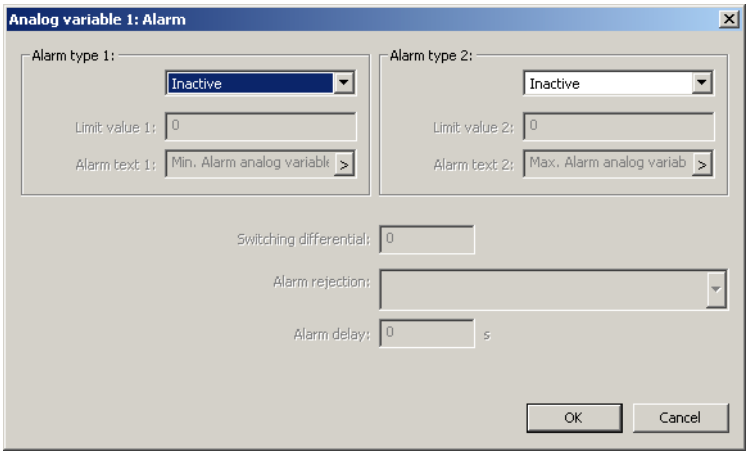
Parameter	Selection/settings	Description
Range end	**100**	Limitation of the measuring range If measured values appear that are above the configured range, the multi-function panel issues the indication ">>>>>".
Unit	**%**	Unit in which the recorded signal is to be displayed, with a max. length of five characters. The unit is displayed wherever the measured value is displayed in numerical form.
Comma format	**XXXX.X**	The comma format determines the number of pre-decimal and post-decimal places for the numerical display of the measured values. If required, the multi-function panel automatically switches to a different format in order to display all pre-decimal places. First and foremost, all pre-decimal places must be displayed.
Retain	Yes (☑), **No** (☐)	If "Yes", the current value is saved upon switch-off (power off) and is available again upon switch-on (power on).
Alarm		The user can configure up to two alarms for monitoring two limit values. ⇨ Chapter 13.6.1 "Alarm", page 144

13.6.1 Alarm

Limit value monitoring with one or two alarms can be activated for each analog variable. The alarm is entered in the status and title line and in the alarm and event list of the multifunction panel.

This type of limit value monitoring is in addition to and independent of the limit value monitoring of the base unit.

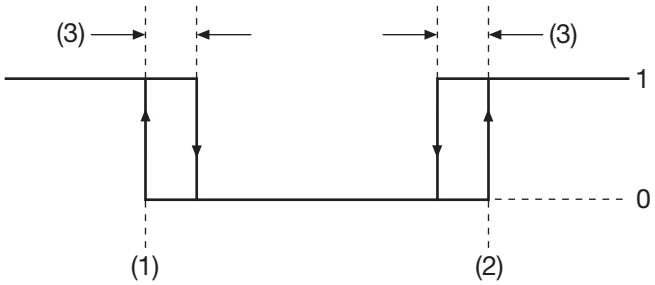
Setup dialog



Parameter

Parameter	Selection/settings	Description
Alarm type 1, 2 📖	**Inactive** Min. Alarm Max. Alarm	Monitoring is not active. Alarm is issued if the limit value is not met. Alarm is issued if the limit value is exceeded.
Limit value 1, 2	-99999 to **0** to +99999	Limit value at which an alarm is issued.
Alarm text 1, 2	Use default text or enter other text.	Text that is displayed or entered in the status and title line and in the alarm list and event list in the case of an alarm.
Switching differential 📖	**0** to 99999	Used to reject constant switching operations in the event of minor fluctuations of the input signal around the limit value
Alarm rejection	**Inactive** Digital selector	Signal for activating the alarm rejection
Alarm delay	**0 s** to 65535 s	Delay time for alarm triggering

Alarm type and switching differential



(1) Min. alarm/limit value
(2) Max. alarm/limit value
(3) Switching differential

1 Alarm on
0 Alarm off

13 Configuration

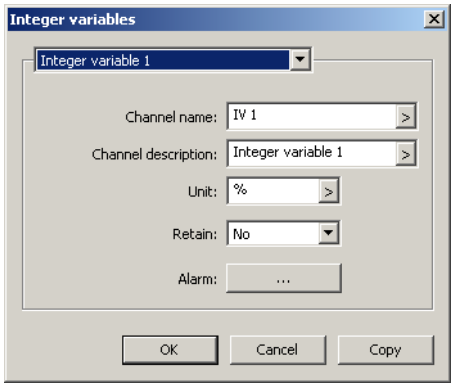
13.7 Integer variables

The multifunction panel can manage and record 16 integer variables. The integer variables relate to inputs or signals that are received via one of the multifunction panel interfaces (RS232, RS422/485, setup interface, or Ethernet).

The integer variables can be used in process screens and in the counters/integrators.

Integer variables are always active. If no value has yet been received, the variables contain the value 0.

Setup dialog



Parameter

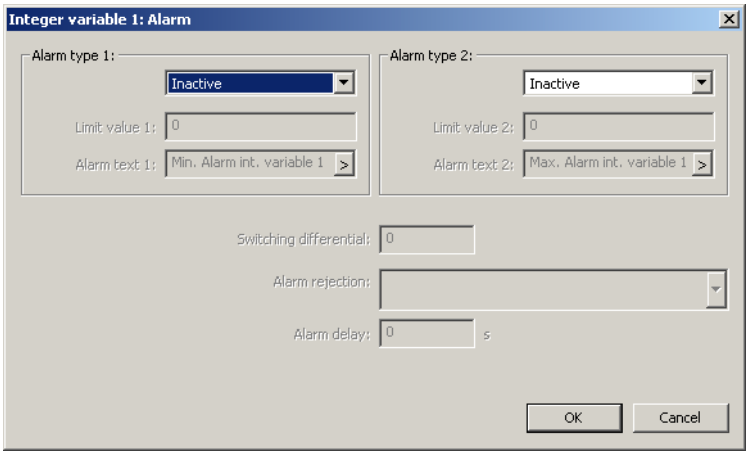
Parameter	Selection/settings	Description
Channel name	**IV x**	Name with a max. length of seven characters
Channel description	**Integer variable x**	Description with a max. length of 21 characters
Unit	**%**	Unit in which the recorded signal is to be displayed, with a max. length of five characters. The unit is displayed wherever the measured value is displayed in numerical form.
Comma format	**XXXX.X**	The comma format determines the number of pre-decimal and post-decimal places for the numerical display of the measured values. If required, the multifunction panel automatically switches to a different format in order to display all pre-decimal places. First and foremost, all pre-decimal places must be displayed.
Retain	Yes, **No**	If "Yes", the current value is saved upon switch-off (power off) and is available again upon switch-on (power on).
Alarm		The user can configure up to two alarms for monitoring two limit values. ⇨ Chapter 13.7.1 "Alarm", page 147

13.7.1 Alarm

Limit value monitoring with one or two alarms can be activated for each integer variable. The alarm is entered in the status and title line and in the alarm and event list of the multifunction panel.

This type of limit value monitoring is in addition to and independent of the limit value monitoring of the base unit.

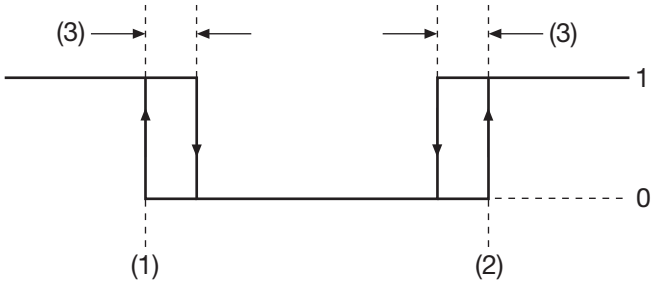
Setup dialog



Parameter

Parameter	Selection/settings	Description
Alarm type 1, 2 📖	**Inactive** Min. Alarm Max. Alarm	Monitoring is not active. Alarm is issued if the limit value is not met. Alarm is issued if the limit value is exceeded.
Limit value 1, 2	-99999 to **0** to +99999	Limit value at which an alarm is issued.
Alarm text 1, 2	Use default text or enter other text.	Text that is displayed or entered in the status and title line and in the alarm list and event list in the case of an alarm.
Switching differential 📖	**0** to 99999	Used to reject constant switching operations in the event of minor fluctuations of the input signal around the limit value
Alarm rejection	**Inactive** Digital selector	Signal for activating the alarm rejection
Alarm delay	**0 s** to 65535 s	Delay time for alarm triggering

Alarm type and switching differential



(1) Min. alarm/limit value
(2) Max. alarm/limit value
(3) Switching differential

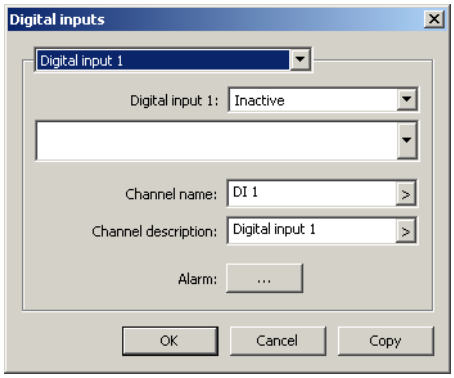
1 Alarm on
0 Alarm off

13.8 Digital inputs

The multifunction panel can manage and record 54 digital inputs. The digital inputs relate to inputs and/or signals that reach the multifunction panel via the system bus.

For example, the digital inputs are pooled into groups together with other digital signals via the "Groups" configuration and are available for further use via these groups.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Digital input x 🕮	**Inactive** Digital selector	No signal allocated. Signal that is to be allocated to the input.
Channel name	**DI x**	Name with a maximum length of seven characters that is used in the visualizations together with the channel description. ⇨ Chapter 7.6 "Digital", page 65
Channel description	**Digital input x**	Description with a maximum length of 21 characters that is used in the visualizations together with the channel names. ⇨ Chapter 7.6 "Digital", page 65
Alarm		⇨ Chapter 13.8.1 "Alarm", page 150

Digital channel x

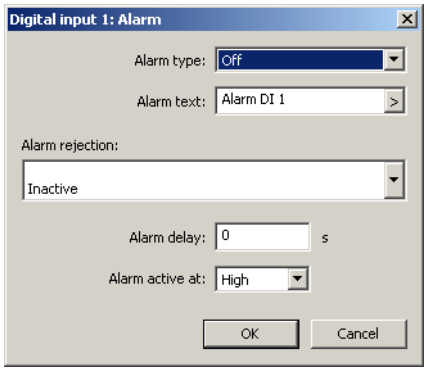
The user can perform the allocation in this dialog window using the setup program. Further options can be seen in the following list.

- Setup program: "NV connecting list: Digital" menu
  HMI > CONFIGURATION LEVEL > NV CONNECTING LIST: DIGITAL
- Multifunction panel: "HMI digital inputs" menu
  DEVICE MANAGER > CONFIGURATION > CPU > NV CONNECTING LIST > HMI DIGITAL INPUTS

13.8.1 Alarm

Monitoring with an event/alarm can be activated for each digital input.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Alarm type	**No** alarm type is set by default.	
	Alarm	The "Alarm" setting leads to an alarm (incl. collective alarm) and to an entry in the alarm list and the event list.
	Event	The "Event" setting leads to an entry in the event list; the alarm signals are not set.
Alarm text	Use default text or enter other text.	Text that is displayed or entered in the alarm list and event list. If the alarm type = Alarm, the text is also displayed in the status and title line.
Alarm rejection	**Inactive** Digital selector	Signal for activating the alarm rejection
Alarm delay	**0 s** to 65535 s	Delay time for alarm triggering
Alarm active at	**High (1)** Low (0)	Alarm at high level (1) Alarm at low level (0)

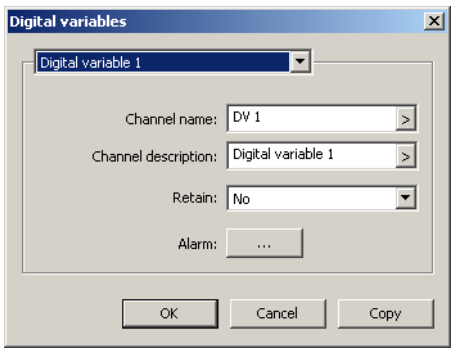
13.9 Digital variables

The multifunction panel can manage and record 54 digital variables. The digital variables relate to inputs or signals that are received via one of the multifunction panel interfaces (RS232, RS422/485, setup interface, or Ethernet).

For example, the digital variables are pooled into groups together with other digital signals via the "Groups" configuration and are available for further use via these groups.

Digital variables are always active. If no value has yet been received, the variables contain the value 0.

Setup dialog



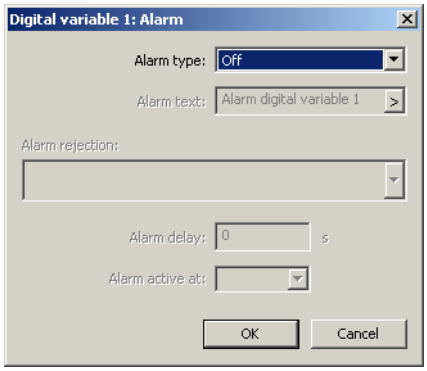
Parameter

Parameter	Selection/settings	Description
Channel name	**DV x**	Name with a maximum length of seven characters that is used in the visualizations together with the channel description. ⇨ Chapter 7.6 "Digital", page 65
Channel description	**Digital variable x**	Description with a maximum length of 21 characters that is used in the visualizations together with the channel names. ⇨ Chapter 7.6 "Digital", page 65
Retain	Yes, **No**	If "Yes", the current value is saved upon switch-off (power off) and is available again upon switch-on (power on).
Alarm		⇨ Chapter 13.9.1 "Alarm", page 152

13.9.1 Alarm

Monitoring with an event/alarm can be activated for each digital variable.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Alarm type	**No** alarm type is set by default.	
	Alarm	The "Alarm" setting leads to an alarm (incl. collective alarm) and to an entry in the alarm list and the event list.
	Event	The "Event" setting leads to an entry in the event list; the alarm signals are not set.
Alarm text	Use default text or enter other text.	Text that is displayed or entered in the alarm list and event list. If the alarm type = Alarm, the text is also displayed in the status and title line.
Alarm rejection	**Inactive** Digital selector	Signal for activating the alarm rejection
Alarm delay	**0 s** to 65535 s	Delay time for alarm triggering
Alarm active at	**High (1)** Low (0)	Alarm at high level (1) Alarm at low level (0)

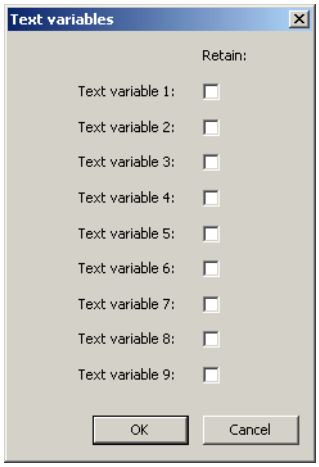
13.10 Text variables

9 (as of system version 02: 27; as of system version 04: 90) text variables are available in the multifunction panel. A text is received via one of the multifunction panel interfaces (RS232, RS422/485, setup interface, or Ethernet) and is written into a text variable. The text of a variable can also be entered via a process image or can be set by the PLC.

The text of a text variable is used in the processs image or for the batch info.

The following settings determine whether the respective variable is saved in the event of power off.

Setup dialog



Parameters

Parameter	Selection/settings	Description
Retain	Retains the text of the relevant text variables in the event of power off	
	Not selected (empty)	Text is not retained.
	Selected (checkmark)	Text is retained.

13 Configuration

13.11 Groups

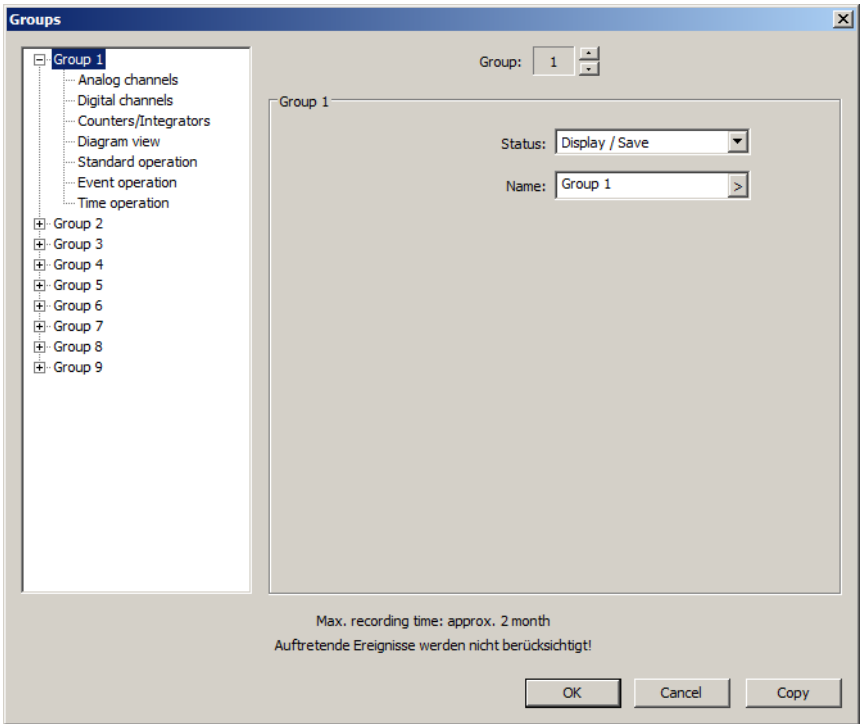
The Groups menu is used to determine which channels (analog channels, digital channels, counters and integrators) are displayed and/or recorded. It also specifies how data is to be recorded (memory rate, memory operation, and eco operation).

The user can configure a maximum of nine groups.

NOTE!
Groups can only be configured if the extra code "Registration function" is active.

NOTE!
If batch reporting is to be used, at least one group must be active.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Status	This parameter determines what happens with the group.	
	Inactive (factory setting for group 4 to 9)	The group data is neither displayed nor saved.
	Display only	The group data is displayed on the screen.
	Display / Save (factory setting for group 1 to 3)	The group data is displayed on the screen and saved. The group data can only be evaluated using a PC if it has been saved.
Name	Use default text or enter other text.	Description of the group, with a max. length of 21 characters. The description is displayed in the individual visualizations.

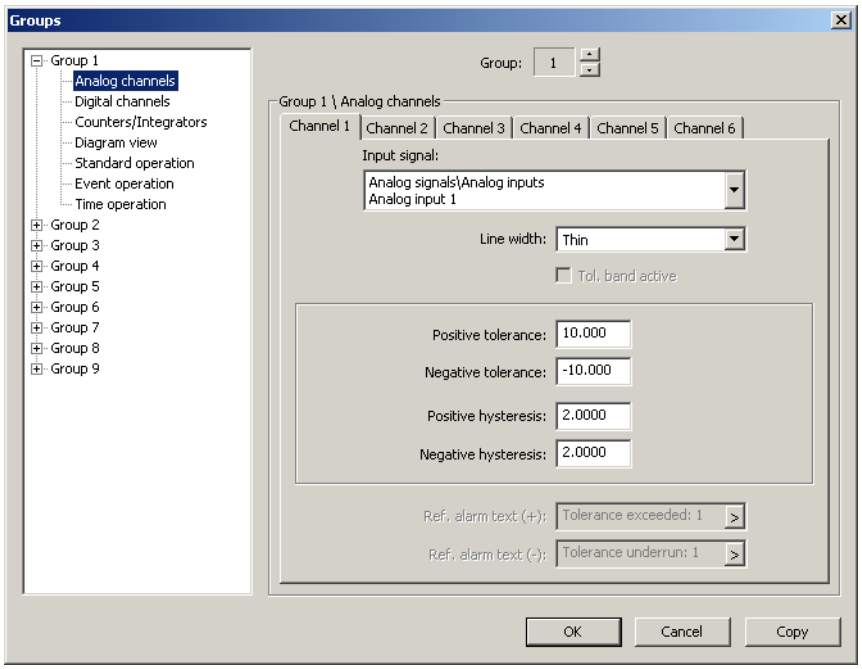
Max. recording time

The maximum recording time is automatically calculated. It depends on several factors, in particular on the set memory cycle (memory rate). In case of one activated group with 6 analog and 6 digital channels in normal operation and storing the average values, the following data apply (entries in the event list reduce the max. recording time).

Memory cycle > max. recording time:
125 ms > 30 days; 1 s > 30 days; 5 s > 5 month; 10 s > 10 month; 60 s > 60 month

13.11.1 Analog channels

Setup dialog



Parameter

Parameter	Selection/settings	Description
Input signal 📖	6 channels can be assigned to each of the 9 groups.	
	Analog input x	Assigned signal
	Analog selector	Signal that is to be allocated to the input.
Line width	Determines the width of the graphic measured value display.	
	Thin	Thin line width (1 pixel)
	Thick	Thick line width (2 pixels)
Tol. band active	Available as from channel 2 of a group.	
	Yes (☑), **No** (☐)	If "Yes", the channel is compared with channel 1 of the group. It must be ensured that channel 1 of the group is active (Input signal <> Inactive).
Positive tolerance	Only available for channel 1 of a group.	
	10	"Positive tolerance" and the current measured value of channel 1 form the upper limit of the tolerance band. Only a positive value can be entered.
Negative tolerance	Only available for channel 1 of a group.	
	-10	"Negative tolerance" and the current measured value of channel 1 form the lower limit of the tolerance band. Only a negative value can be entered.
Positive hysteresis	Only available for channel 1 of a group.	
	2	If there is a violation of the positive tolerance, the current measured value from channel 2 to 6 must fall below the current measured value of tolerance 1, plus the positive tolerance and minus the positive hysteresis, in order for the alarm to be withdrawn again. Only a positive value can be entered for the "positive hysteresis".
Negative hysteresis	Only available for channel 1 of a group.	
	2	If there is a violation of the negative tolerance, the current measured value from channel 2 to 6 must first increase above the current measured value of tolerance 1, plus the negative tolerance and plus the negative hysteresis, in order for the alarm to be withdrawn again. Only a negative value can be entered for the "negative hysteresis".

Parameter	Selection/settings	Description
Ref. alarm text (+)	Available as from channel 2 of a group.	
	Use default text or enter other text.	The text entered (max. 21 characters) is displayed in the "status and title line" and entered in the alarm and event list if the selected channel exits the tolerance in a positive direction.
Ref. alarm text (-)	Available as from channel 2 of a group.	
	Use default text or enter other text.	The text entered (max. 21 characters) is displayed in the "status and title line" and entered in the alarm and event list if the selected channel exits the tolerance in a negative direction.

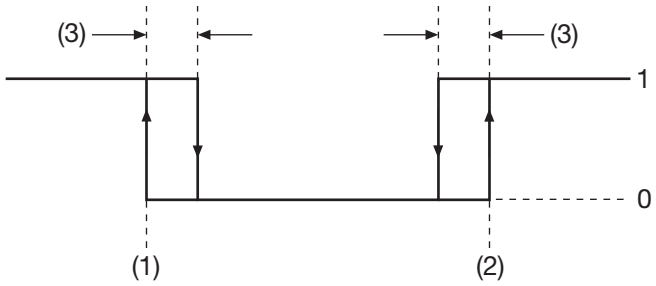
Input signal

Channel 1 has a special task; it is used as the reference curve for the other channels in the group. All other channels in the group can be compared with channel 1 independent of one another. If the configured tolerance band is exited, there is an alarm, and an alarm text is displayed in the "status and title line" and in the alarm list and event list.

NOTE!
The tolerance band comparison is only possible within the scaling limits. If there is a channel that falls below or exceeds the range, this will result in both a min. and a max. alarm as with all other functions (in this case, pos. tolerance and neg. tolerance).

Example of tolerance band being exceeded

The principle of the alarm corresponds to the alarm configuration of the individual analog channels.



(1) Negative alarm
(2) Positive alarm
(3) Hysteresis

1 Alarm on
0 Alarm off

Measured value (channel 1) = 21 °C
Measured value (channel 2) = 21 °C, tolerance band comparison is active.
Positive tolerance = 10 °C
Positive hysteresis = 2 °C
The alarm is generated if the current measured value (channel 2) is above 31 °C.

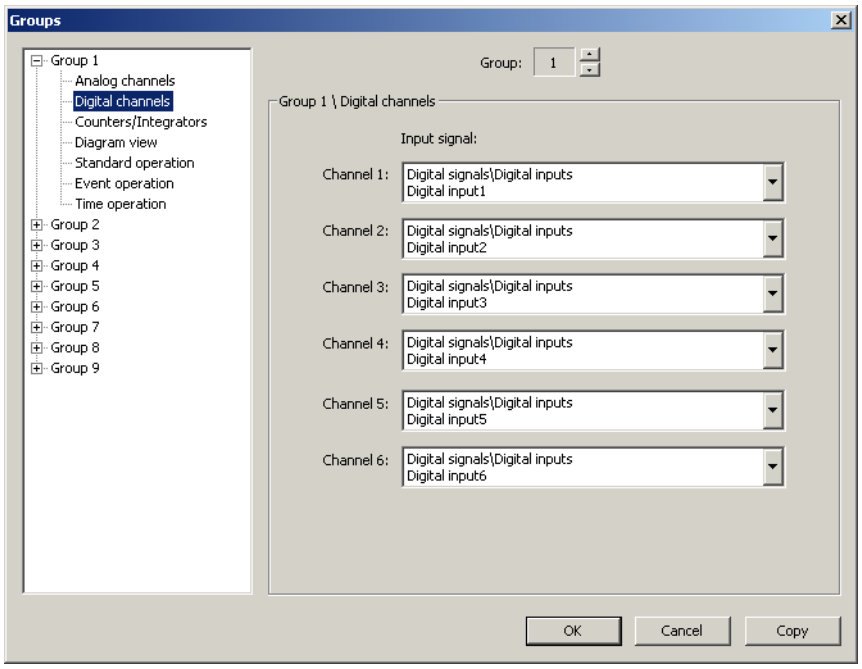
The alarm is deleted again if the current measured value (channel 2) falls below 29 °C.

Measured value (channel 1) = 21 °C
Measured value (channel 2) = 21 °C, tolerance band comparison is active.
Negative tolerance = -10 °C
Negative hysteresis = 2 °C
The alarm is generated if the current measured value (channel 2) is below 11 °C.
The alarm is deleted again if the current measured value (channel 2) rises above 13 °C.

NOTE!
In the example shown, channel 1 is constant and channel 2 changes its measured value. This does not have to be the case. It can also be the case that channel 1 changes or even that both channels change.

13.11.2 Digital channels

Setup dialog

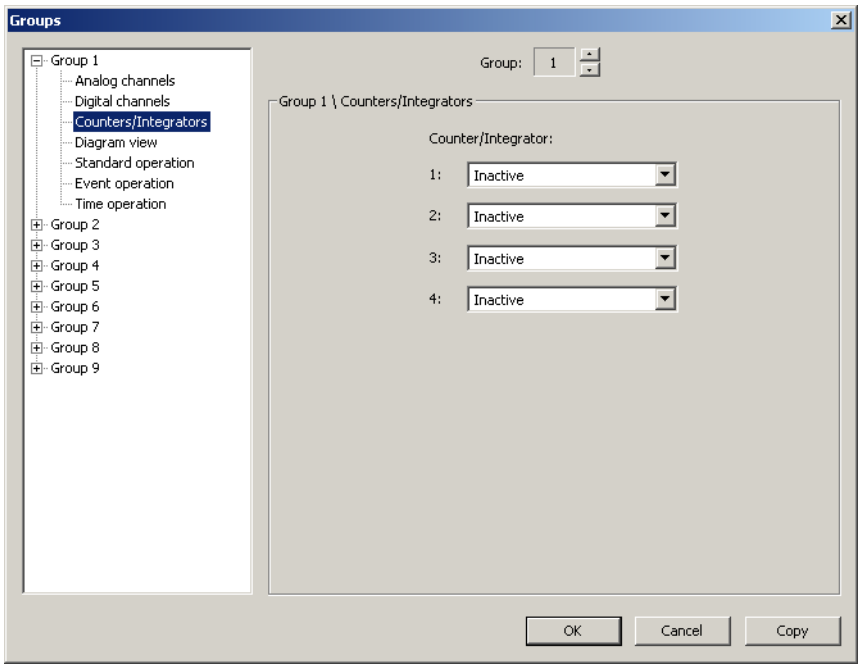


Parameter

Parameter	Selection/settings	Description
Input signal	6 channels can be assigned to each of the 9 groups.	
	Digital input x	Assigned signal
	Digital selector	Signal that is to be allocated to the input.

13.11.3 Counters/Integrators

Setup dialog



Parameter

Parameter	Selection/settings	Description
Counter/Integrator 📖	4 counters or integrators can be assigned to each of the 9 groups.	
	Inactive Counter/Int. X	No signal allocated. Signal that is to be assigned to the counter/integrator.

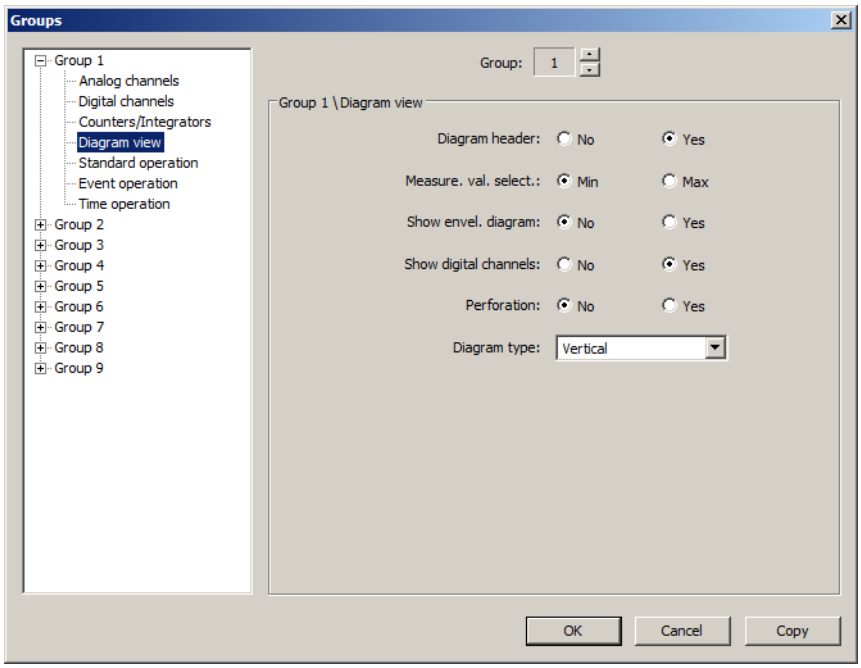
Counter/Integrator

Here, a maximum of 4 of the 27 total available counters/integrators can be assigned to each group. The allocation of the counters to a group means that counter alarms and integrator alarms can be allocated to the batches and entered in the corresponding alarm and event lists.

All 27 counters can be read out in each group in the PCA3000 evaluation software. The 4 allocated here are visible by default and the remainder can be shown if desired.

13.11.4 Diagram view

Setup dialog



Parameter

NOTE!
Some of the stated parameters can also be changed by touching the button on the multifunction panel in the "Diagram" or "Digital" visualization.
The advantage of this is that the configuration is not changed.

Parameter	Selection/settings	Description
Diagram header 🕮	This parameter can be used to switch the diagram header on and off. The diagram header (numerical display of the measured values and/or switch symbols for digital channels) are available in the Diagram and Digital visualizations.	
	No	Diagram header switched off
	Yes	Diagram header switched on
Measure. val. select. 🕮	**Min**	The minimum values are displayed in the diagram header.
	Max	The maximum values are displayed in the diagram header.
Show envel. diagram 🕮	**No**	The min./max. values are displayed as a line.
	Yes	The min./max. values are displayed as an envelope diagram.
Show digital channels 🕮	This parameter determines whether the digital channels (digital signals) in the diagram display are to be displayed together with the analog signals.	
	No	The digital signals are not displayed.
	Yes	Digital and analog signals are displayed.

Parameter	Selection/settings	Description
Perforation 🕮	If perforation is activated, holes are displayed in the diagram display on the left and right at the edge of the screen in the manner made familiar by paper chart recorders. However, this requires the display of the digital channels to be hidden.	
	No	Perforation switched off
	Yes	Perforation switched on
Diagram type (as of system version 03)	The parameter determines how the analog and digital signals are displayed in the visualisation.	
	Vertical	Vertical representation The header rows are shown at the upper edge.
	Horizontal	Horizontal representation The header rows are shown at the right edge.

Measure. val. select.

The measured value selection parameter can be used to choose between min. and max. The setting only influences the numerical display of the measured values in the "Diagram" visualization, but only if min. and max. values are recorded simultaneously. When recording the min. and max. values, the recorder works internally with the maximum sampling rate and saves both the measured minimum and the measured maximum within the active memory rate. The measured value selection determines which value is displayed in the diagram header.

The recording of the min. and max. values is configured using the "Memory values" parameter of the operating modes (standard, event, and time operation).

Show envel. diagram

This parameter determines whether the measured value diagrams (only with recording of min. and max. values activated) in the Diagram display are displayed as an envelope diagram or as a line. If the data recording is not performed in min. and max. value recording mode, the parameter continues to have no effect.

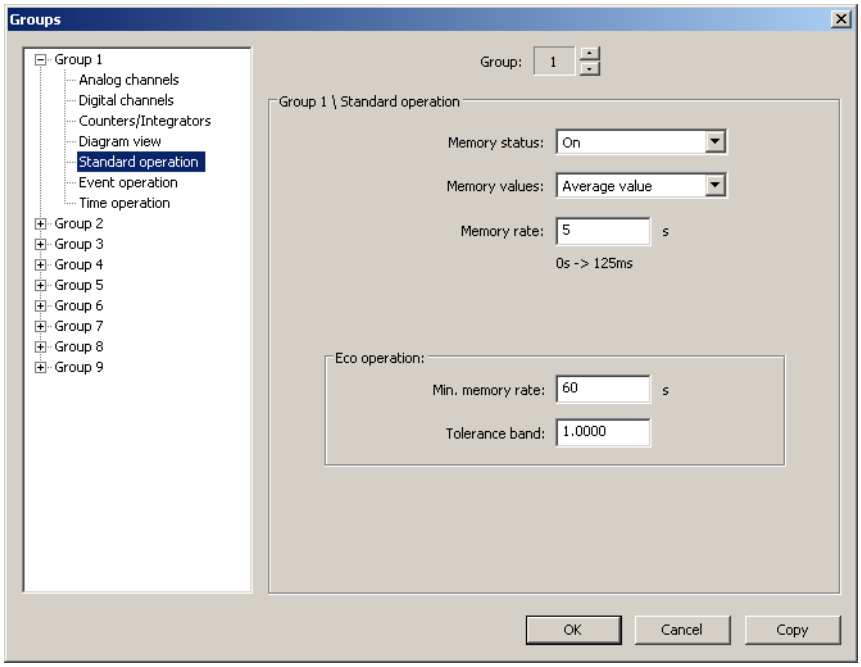
The recording of the min. and max. values is configured using the "Memory values = Min./max. values" parameter of the operating modes (standard, event, and time operation).

13.11.5 Standard operation

NOTE!
Please observe the description of the operating modes!
⇨ Chapter 2.6 "Operating modes", page 25

13 Configuration

Setup dialog



Parameter

Parameter	Selection/settings	Description
Memory status 🕮	**On**	The data is saved if this operating mode is active.
	Off	The data is **not** saved if this operating mode is active.
Memory values 🕮	**Average value**	The average across the configured memory rate is calculated and saved.
	Current value	The current value is saved at the configured memory rate.
	Min. value	The minimum is saved at the configured memory rate.
	Max. value	The maximum is saved at the configured memory rate.
	Min./max. value	The minimum and the maximum (peak value and envelope diagram) are saved at the configured memory rate.
	Eco operation	Using this method, a save operation is performed if the measured value deviates from the previous saved value by a specific amount or if a digital channel belonging to the group changes its status.

Parameter	Selection/settings	Description
Memory rate	0 s to **5 s** to 32000 s	A memory rate is configured here. Depending on the configuration of the "Memory values" parameter, the measurement data is saved when the configured time has elapsed. The smaller the memory rate, the larger the amount of data to be saved. If 0 is configured, the multifunction panel uses the quickest possible rate, i.e. it saves the measured values every 125 ms (high speed mode).
Min. memory rate	0 s to **60 s** to 32000 s	The memory rate configured here is only used when eco operation is active. If no signal changes take place in eco operation, no measurement data is saved. This parameter performs a controlled save at the configured rate. This additionally ensures that the connected sensor is functioning.
Tolerance band	0 s to **1.0 s** to 10.0 s	The tolerance for eco operation is stated here. In eco operation, if the deviation between the previous memory value and the current memory value is greater than the tolerance entered here, the current value will be saved (if the memory rate is running simultaneously). The tolerance always relates to the current scaling of an analog channel within the current group.

Memory status

The operating mode "Standard operation" is only available if memory status is switched on. When standard operation is activated, the measurement data is recorded at the configured memory rate unless one of the following applies.

- Event operation is active.
- Time operation is active.
- The Memory values parameter is configured for eco operation.

NOTE!
If the memory status is switched off and neither event operation nor time operation is active, only events will be recorded but measurement data will not be saved.

Memory values

In eco operation, the configured memory rate is regarded as a max. memory rate. Saving is not performed faster under any circumstances, even if the values change more quickly. The analysis of the tolerance band is always performed using the instantaneous value and only at the times of the configured memory rate.

If a measured value is saved in eco operation, it is simultaneously used as a new reference.

NOTE!
If the memory rate is set to 0 (= 125 ms), 8 measured values will be saved during the save operation, rather than 1.

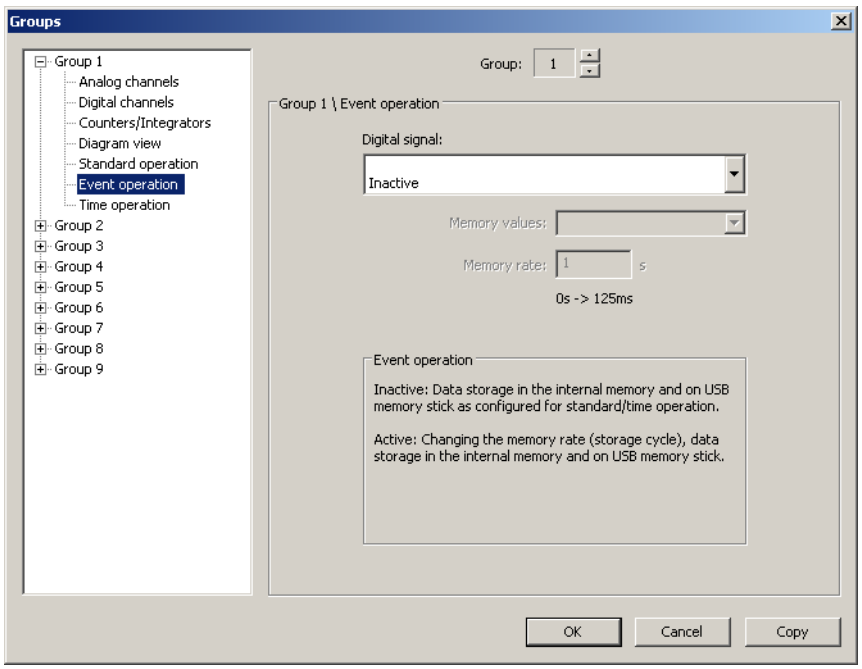
NOTE!
If the "Min. memory rate" is below the "Memory rate", eco operation is disabled; this means that the instantaneous values are saved.

⇨ Chapter 2.6.2 "Eco operation", page 27

13.11.6 Event operation

NOTE!
Please observe the description of the operating modes!
⇨ Chapter 2.6 "Operating modes", page 25

Setup dialog



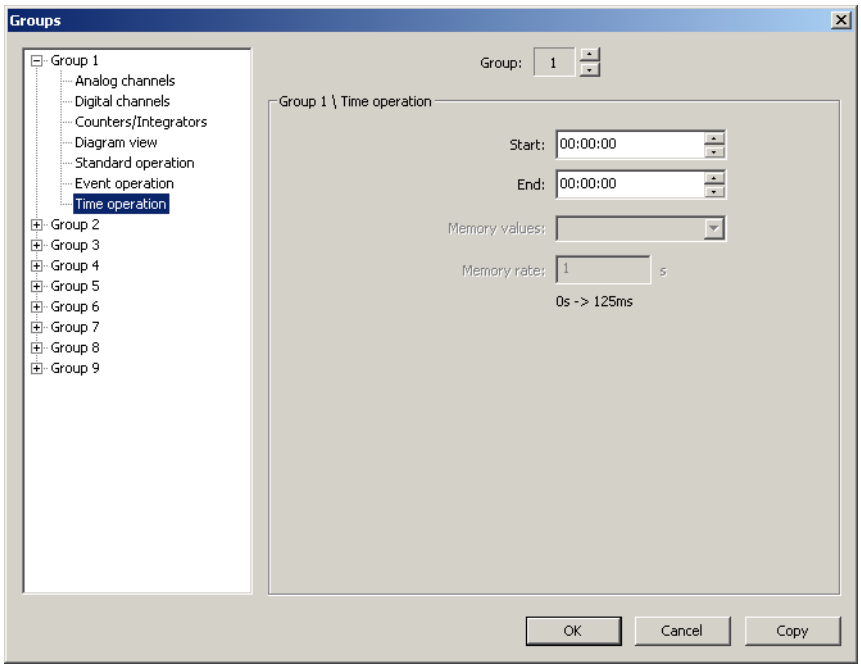
Parameter

Parameter	Selection/settings	Description
Digital signal	**Inactive** Digital selector	Event operation is not active. Signal that starts and stops event operation.
Memory values		⇨ Chapter 13.11.5 "Standard operation", page 161
Memory rate	0 s to **1 s** to 32000 s	⇨ Chapter 13.11.5 "Standard operation", page 161

13.11.7 Time operation

NOTE!
Please observe the description of the operating modes!
⇨ Chapter 2.6 "Operating modes", page 25

Setup dialog



Parameter

Parameter	Selection/settings	Description
Start	**00:00:00**	Start time at which the time operation is to be started. If Start = End, time operation is not active.
End	**00:00:00**	Stop time at which the time operation is to end. If Start = End, time operation is not active.
Memory values		⇨ Chapter 13.11.5 "Standard operation", page 161
Memory rate	0 s to **1 s** to 32000 s	⇨ Chapter 13.11.5 "Standard operation", page 161

13.12 Reports

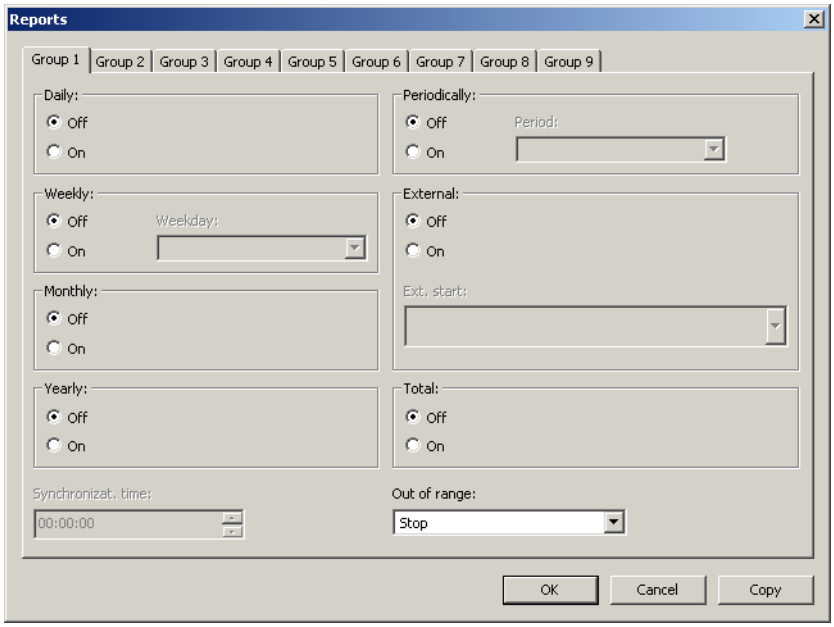
A report can be generated for each of the 9 groups. The maximum value, the minimum value, and the average value of each analog channel are saved in a report.

NOTE!
Processing changes to configuration:
All reports are completed, saved, and restarted. The values of the completed reports in the multifunction panel are set to empty, "----". In this case, the event of the completed reports is only visible using the software PCA3000.

NOTE!
Processing in the Memory manager menu: Using the "Save all + update USB" function, all reports are saved, but not completed. These continue to run.

NOTE!
Automatic intermediate results of the "Total" and "Yearly" reports:
The "Total" and "Yearly" reports are saved once a month at the turn of the month, independent of other reports. These are not completed, but continue to run.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Daily	Daily specifies whether a report is to be run for a day (24 hours). The completion and restart will be determined by the Synchronizat. time parameter.	
	Off, On	If "On", the daily report will be run.
Periodically	Periodically specifies whether a period report is to be run. The completion and restart will be determined by the Period and Synchronizat. time parameters.	
	Off, On	If "On", the periodical report will be run.
Period	1 min to 12 h	Period is used as the report end and restart for the periodical report.
Weekly	Weekly specifies whether a report is to be run for a week. The completion and restart will be determined by the Weekday and Synchronizat. time parameters.	
	Off, On	If "On", the weekly report will be run.
Weekday	Sunday to Saturday	Weekday is used together with the Synchronizat. time parameter as the report end and restart for the weekly report.
External 🕮	External specifies whether an external report is to be run and also whether the external signal (Ext. start) is set (High).	
	Off, On	If "On", the external report will be run.
Ext. start	**Inactive** Digital selector	Ext. start specifies the start signal for the external report.
Monthly	Monthly specifies whether a report is to be run for a month. The completion and restart are performed on the first day of the month at 00:00.	
	Off, On	If "On", the monthly report will be run.
Yearly	Yearly specifies whether a report is to be run for a year. The completion and restart are performed on the first day of the year at 00:00.	
	Off, On	If "On", the yearly report will be run.
Total	Total specifies whether a report is to be run for the total duration of the current configuration of the multifunction panel.	
	Off, On	If "On", the total report will be run.
Synchronizat. time 🕮	Synchronizat. time is used as the report end and restart for the daily, weekly, and periodical report.	
	00:00:00	Time of synchronization
Out of range 🕮	This parameter decides what happens if an analog channel is outside of the valid measuring range (scaling).	
	Stop	The reports for this channel are stopped. If the measured values are within the measuring range limits, these will be restarted.
	Delete	The reports are set to invalid ("-----") and only restarted following the configured report end.

External

NOTE!
Within 5 seconds, only one external report is started in a group, i.e. a new external start prior to 5 seconds having elapsed will be ignored. If the start signal is still on after 5 seconds, the external report is started immediately. If the start signal is no longer on, the report will be not be restarted.

Synchronizat. time

The Synchronizat. time parameter will be explained in more detail below, using the example of a periodical report.

The stop and restart is performed at the next point in time occurring in the time grid – dependent on Synchronizat. time and Period.

Example:
Period = 2 hours
Synchronizat. time = 11:30:00
Power on = 09:11:00

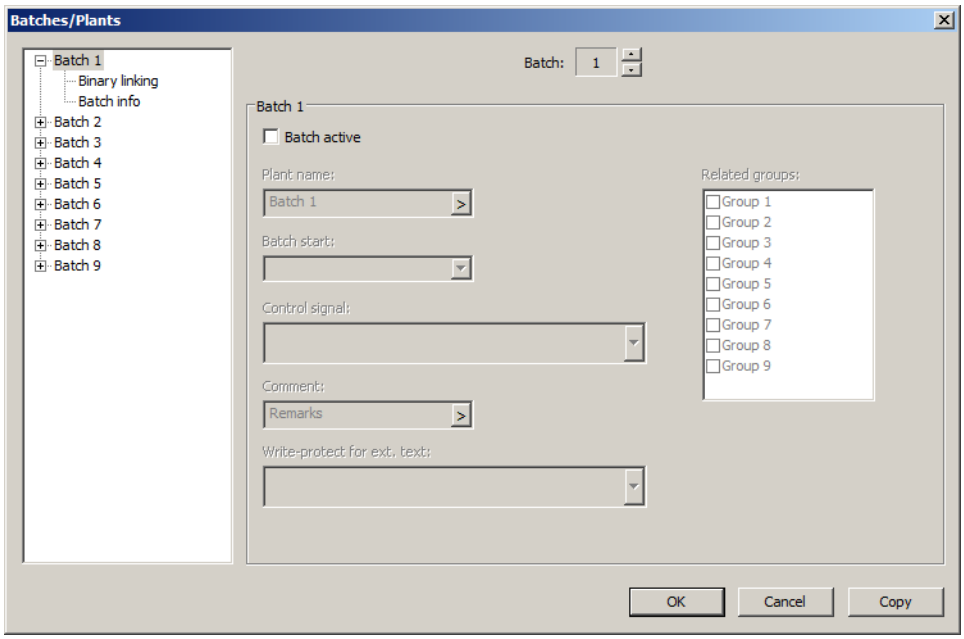
1st period from 09:11 to 09:30 = 19 minutes
2nd period from 09:30 to 11:30 = 2 hours
3rd period from 11:30 to 13:30 = 2 hours
etc.

NOTE!
The principle is the same for all reports relating to the synchronization time (daily, weekly, and periodical report). For a daily report, the first report will usually not run for 24 hours and the first weekly report will usually not run for 7 days.

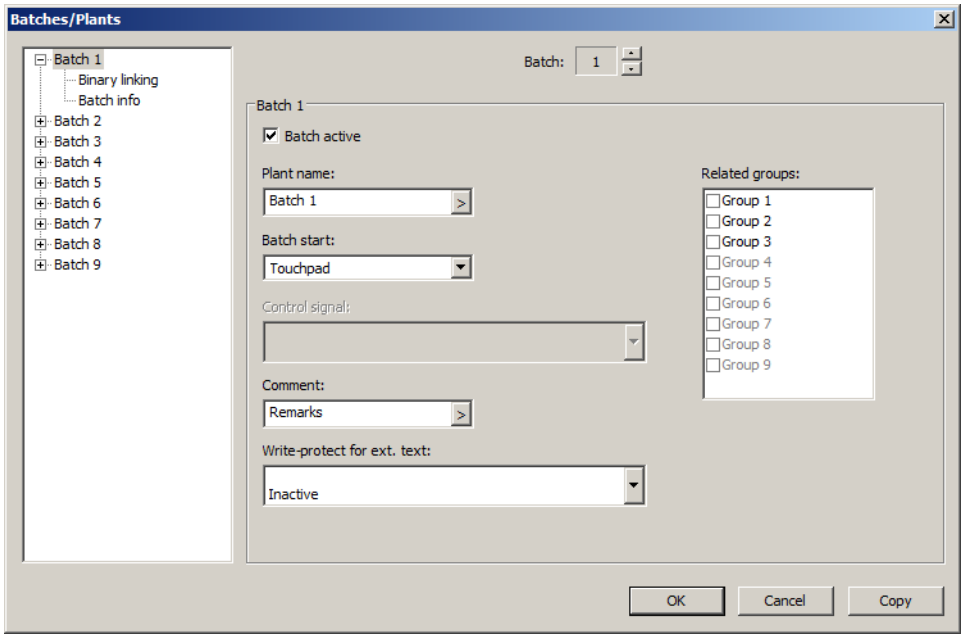
13 Configuration

13.13 Batches/Plants

Setup dialog



No batch is active in the case of a new setup. The user must activate at least one batch. In addition, at least one group must be allocated if the extra code "Registration function" is activated.



Parameter

Parameter	Selection/settings	Description
Batch	**1** to 9	Select batch that is to be monitored or configured.
Batch active	Yes (☑), **No** (☐)	The selected batch can only be configured if "Yes" is selected.
Batch name	**Batch x**	Description with a maximum length of 15 characters that is used in the status and title line of the visualizations.
Related groups	☐ Group	All selected groups () are allocated to the batch and the data relating to the batch is saved. At least one group must be selected if the extra code "Registration function" is activated.☑
Batch start 🕮	Barcode	Start and stop of a batch is controlled by a barcode scanner.
	Digital signal	Start and stop of a batch is controlled by a digital signal (control signal).
	Without function	Batch is not recorded.
	Start generator	Start and stop of a batch is controlled by a digital signal (control signal). In addition, the user has the option of starting the program generator.
	Touchpad	Start and stop of a batch is controlled by a button on the screen.
Control signal	Digital selector	Signal that is used to start and stop the batch reporting. This parameter is only available for the batch start with "Digital signal" or "Start program generator".
Comment 🕮	**Remarks**	Heading for a text that can be sent to the multifunction panel via interface (from Modbus address 0x9000).
Write-protect for ext. text (as of system version 02)	Digital selector	Signal which prevents the editing of certain batch texts. This applies to texts which were transferred to the multifunction panel via interface or from the base module (text variables). It also applies to texts which were read by barcode scanner.

Batch start

If the "Start program generator" setting is selected for batch start, the user can start the batch reporting using a digital signal. In addition, the user has the option of starting the corresponding program generator.

Step	Activity
1	Touch the "Start program generator" button.
2	Select the program.

➥ The program generator is started.

NOTE!
The program generator corresponding to the current batch is started.
Batch 1 starts program generator 1.
to
Batch 9 starts program generator 9.

NOTE!
If a program generator was started successfully, the function of the button "Start program generator" changes to "Stop program generator".

NOTE!
In the program generator configuration, the "Function" parameter must be set to "Program generator".

NOTE!
Program generators are not a standard. They are available as extra code for the central processing unit.

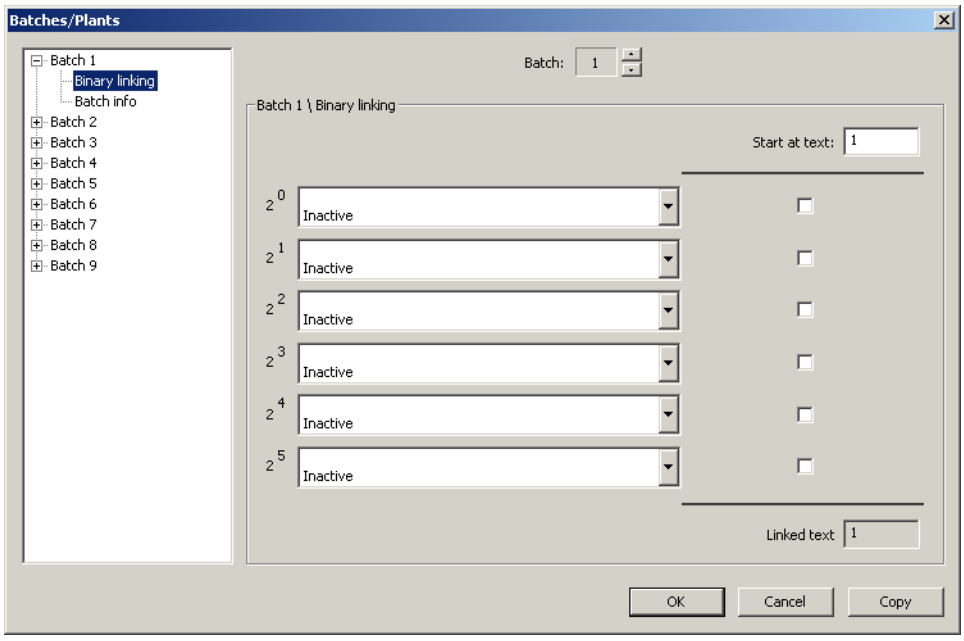
Comment

The comment can be sent to the multifunction panel via interface. It can be displayed using the PC evaluation software PCA3000.

NOTE!
A comment is deleted again at the end of batch reporting. If it is to be used multiple times, the user must resend it to the multifunction panel for each instance of batch reporting.
Different texts are available for each of the nine batches.

13.13.1 Binary linking

Setup dialog



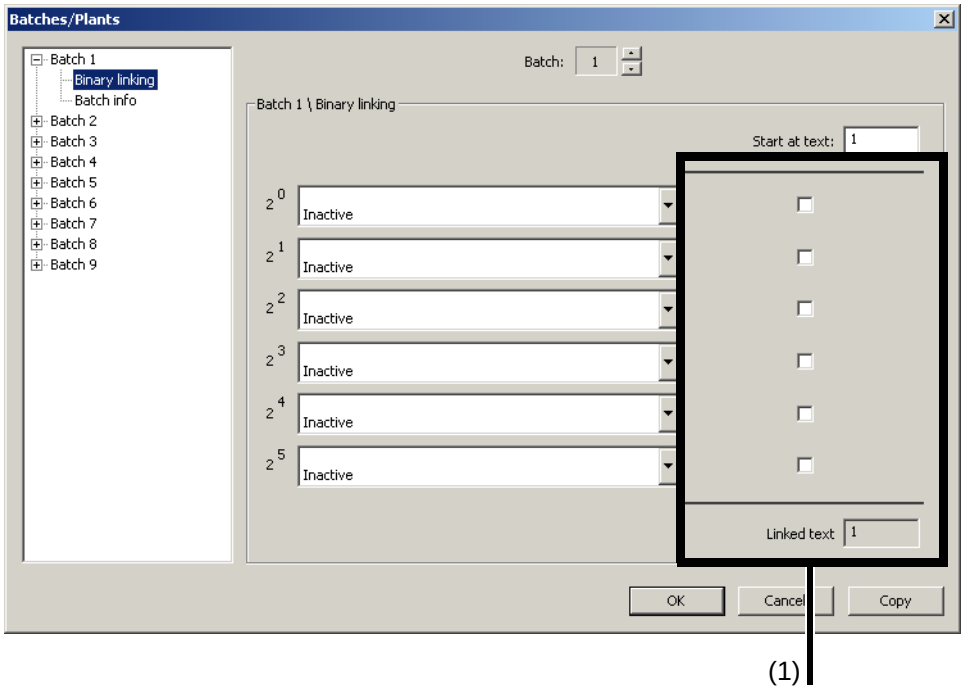
Parameter

Parameter	Selection/settings	Description
Start at text	**1** to 64	This parameter acts as a starting point for binary linking. If binary linking is active for a batch text, one of the 128 internal batch texts of the device can be added to a current batch protocol from the position "Start at text".
2^0 to 2^5	**Inactive** Digital selector	Depending on the configuration, the binary linking can be used to integrate up to 64 different texts into the batch report using the digital signals. There is a total of 128 batch texts that are available and can be defined in the setup program. The batch text used is composed of the "Start at text" parameter and the "Binary linking".

Start at text

NOTE!
Batch text used = Start at text + Binary linking
The user can configure the batch texts using the setup program.
⇨ Setup program:
HMI > SETUP ONLY > BATCH TEXT

Setup dialog



(1) Checkboxes

The user can use the checkboxes to test the binary linking and determine the number of the batch text. The checkboxes do not have any effect of the configuration of the multifunction panel.

Binary linked text

If two digital signals are activated, for example, four texts can be shown; if all six digital signals are activated, 64 different texts can be shown. Binary linking 1 has the valency 2^0, binary linking 2 has the valency 2^1, etc.

B6	B5	B4	B3	B2	B1	Text
0	0	0	0	0	0	0
0	0	0	0	0	1	1
0	0	0	0	1	0	2
0	0	0	0	1	1	3
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1	1	1	1	0	0	60
1	1	1	1	0	1	61
1	1	1	1	1	0	62
1	1	1	1	1	1	63

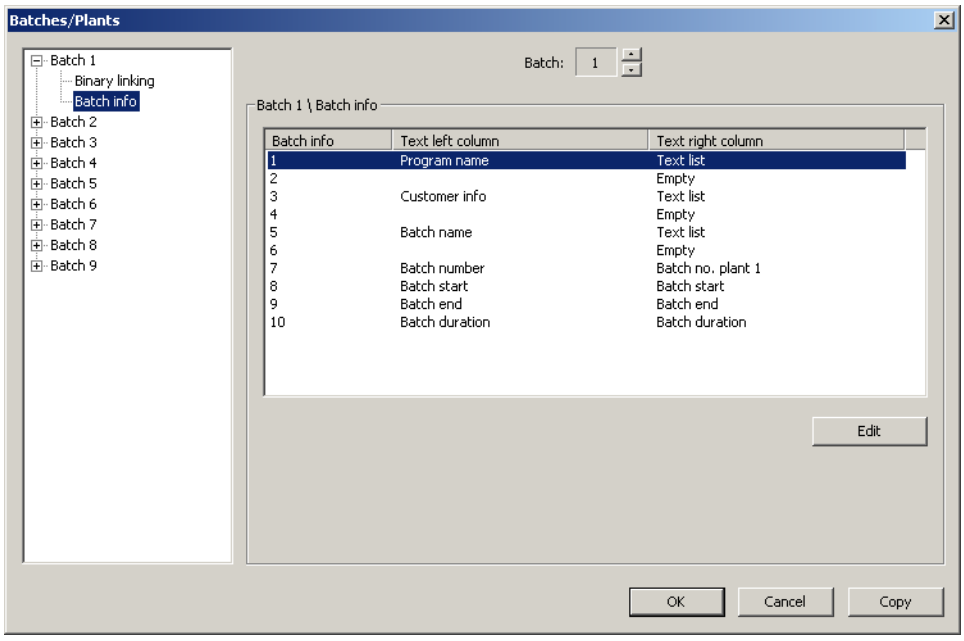
0 = "Inactive" is set or the signal is not active.

1 = "Inactive" is not configured and the signal is active.

For the output of the batch text, the "Start at text" parameter is added to the Text column.

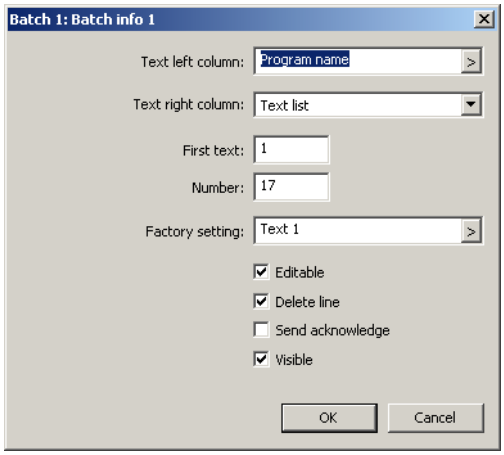
13.13.2 Batch info

Setup dialog



Step	Activity
1	Select Batch 1 to 9
2	Select Batch info 1 to 10
3	Touch the "Edit" button

➥ The batch text in the left and right column can be edited.



Parameter

Parameter	Selection/settings	Description
Text left column		This parameter specifies the text in the left column for the selected line of the batch report.

Parameter	Selection/settings	Description
Text right column	The formation of the text in the right column of a batch report is specified here.	
	Empty	The field remains empty.
	Set text	A set text (defined by the Factory setting parameter) is used.
	Text list	One of the 128 internal batch texts of the device is used. After reconfiguration, the text will initially be displayed under Factory setting; the user must select the desired text from the list in the "Current batch" visualization. The batch texts can be defined in the setup program.
🕮	Bin. linked text	One of the 128 internal batch texts of the device is used. The selection is performed using a maximum of 6 digital signals. ⇨ Chapter 13.13.1 "Binary linking", page 173
	Batch name	The batch name is displayed.
	Batch number 1 to 9	The corresponding batch number is used together with an additional text ("Set text"). The batch number is incremented by the multifunction panel at the end of a batch. It can be pre-assigned using the multifunction panel in the Parameterization menu.
	Batch start	Start (date and time) of batch reporting.
	Batch end	End (date and time) of batch reporting.
	Batch duration	Time difference between batch start and batch end.
	Barcode	The text in the selected line is to be filled by a barcode scanner. ⇨ Chapter 7.8.2 "Batch control via barcode scanner", page 71
	Text variable 1 to ...	Text that can be sent to the multifunction panel via interface. ⇨ Modbus interface description (multifunction panel 840)
	Text variable 1 to ... (base unit)	Text that can be sent to the central processing unit via interface. ⇨ Modbus interface description (central processing unit)
	Program name	If a program of the program generator (corresponding to the batch) is running, the program name is displayed.

Parameter	Selection/settings	Description
First text	**1** to 128	This parameter is available if the text in the right column is formed by the internal text list and if it is the first text in the list that has been allocated to the user for selection.
Number	**128** to 1	This parameter is available if the text in the right column is formed by the internal text list and if it is the last text in the list that has been allocated to the user for selection. 0 < Number ≤ 129 - First text
Factory setting	**Text x**	If active, the text is shown at the end of a batch report. This parameter is directly dependent on the "Editable" and "Delete line" parameters.
Editable	This parameter enables the text within the current batch report to be changed.	
	Yes (☑), No (☐)	If "Yes", the text in the right column – for the current batch report – can be changed. Depending on the "Delete line" parameter, the configured text can be reactivated automatically after the batch report is completed.
Delete line	This parameter decides whether or not an editable batch text (in the right column) is reset after a batch is completed.	
	Yes (☑), No (☐)	If "Yes", the text in the right column will be replaced with its original content at the batch end ("Content right column" and "Factory setting" parameters).
Send acknowledge	Yes (☑), **No** (☐)	"Yes" means that an acknowledgement is sent to the internal PLC following a text change.
Visible	This parameter decides whether or not a batch text (left and right column) is displayed in the "Current batch" visualization.	
	Yes (☑)	If "Yes", the text is displayed and recorded in the left and right column.
	No (☐)	If "No", the text is not displayed in the left and right column; however, it is recorded.

13 Configuration

13.14 Modbus/TCP

This menu is used to implement settings for the Modbus/TCP operating mode.

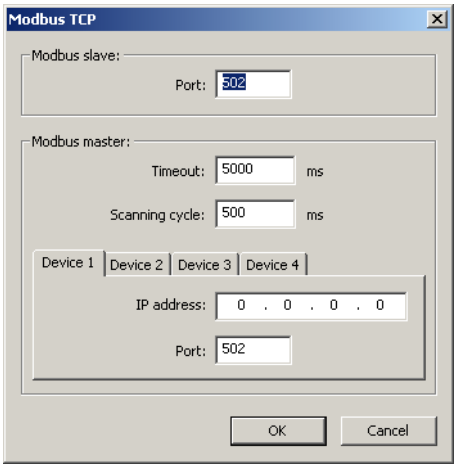
⇨ Chapter 14.4 "Modbus frames for reading", page 216

⇨ Chapter 14.5 "Modbus frames for writing", page 217

If the multifunction panel functions as a Modbus master, it can communicate with up to four external devices (Modbus slaves; device 1 to 4). If it functions as a Modbus slave, two external devices (Modbus masters) can simultaneously access the multifunction panel.

Communication via Modbus is described in more detail in the separate Modbus interface description (B 705060.2.0).

Setup dialog



Parameter

Parameter	Selection/settings	Description
Modbus slave (multifunction panel as Modbus slave)		
Port	0 to **502** to 1024	TCP port for Modbus/TCP Changes to the port are not applied until after the system has been restarted.
Modbus master (multifunction panel as Modbus master)		
Timeout	4000 to **5000** to 10000 ms	A request sent by the master is defined as faulty if no answer is received within this time.
Scanning cycle	60 to **500** to 99999 ms	The Modbus master requests data from the Modbus slave at these intervals.
IP address	**0.0.0.0**	IP address of the external device (Modbus slave) The address must be set.
Port	0 to **502** to 1024	TCP port of the external device for Modbus/TCP

NOTE!
To ensure that fixed IP addresses are used, DHCP must be deactivated in the devices involved, if applicable.

NOTE!
The transfer times in an Ethernet network depend in part on the network architecture and the capacity utilization. This may result in delays during updates of process values.

13 Configuration

13.15 Serial interface

Each serial interface (Com1, Com2) can be executed with two different interface cards in the multifunction panel (optional, see order details). One RS232 interface and one RS422/485 interface are available. The type of interface card used is automatically identified by the multifunction panel (hardware ID).

⇨ Chapter 1.4 "Identifying the device version", page 16

Both serial interfaces can be operated as a master or slave with the Modbus protocol (Modbus RTU).

For more information on using the serial interface with the Modbus protocol, see:

⇨ Chapter 14.4 "Modbus frames for reading", page 216

⇨ Chapter 14.5 "Modbus frames for writing", page 217

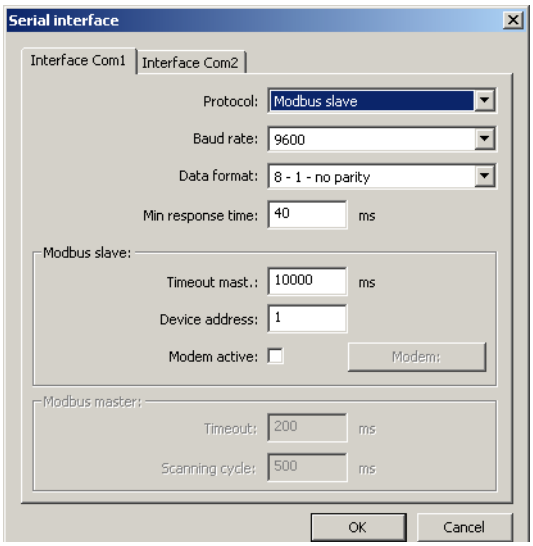
For more information on using the serial interface with a barcode scanner, see:

⇨ Chapter 7.8.2 "Batch control via barcode scanner", page 71

⇨ Chapter 16.3 "Barcode", page 273

Communication via Modbus is described in more detail in the separate Modbus interface description (B 705060.2.0).

Setup dialog



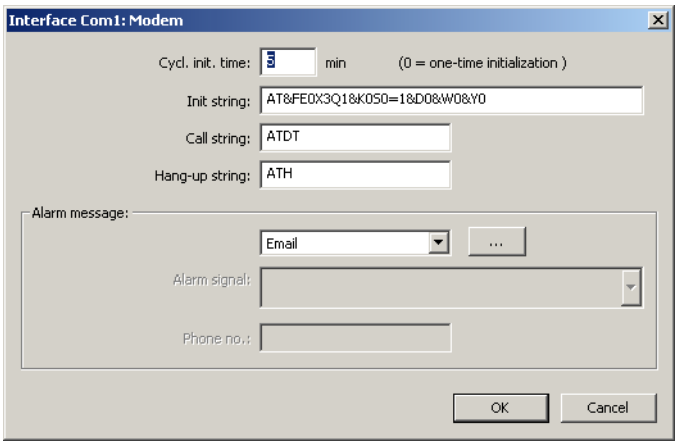
Parameter

Parameter	Selection/settings	Description
Protocol	**Modbus slave**	Modbus RTU (multifunction panel as Modbus slave)
	Modbus master	Modbus RTU (multifunction panel as Modbus master)
	Barcode	A barcode scanner should be operated on the interface.

Parameter	Selection/settings	Description
Baud rate	Baud rate with which the interface is operated.	
	9600	9600 baud
	19200	19200 baud
	38400	38400 baud
Data format	Data format with which the interface is operated.	
	8 - 1 - no parity	8 data bits, 1 stop bit, no parity
	8 - 1 - odd parity	8 data bits, 1 stop bit, odd parity
	8 - 1 - even parity	8 data bits, 1 stop bit, even parity
Min. response time	0 to **40** to 500 ms	The minimum response time is adhered to by the Modbus slave before a response is sent following a data request.
Modbus slave		
Timeout mast.	60 to **10000** to 60000 ms	Master monitoring time After this time, a timeout is identified in the Modbus master. An internal digital signal is set in the event of a timeout.
Device address	**1** to 254	Device address The device address of the multifunction panel may only occur once within a connection for the interface type RS422/485 (multiple devices connected to a bus). This is of little importance for interface type RS232, as only one device may be connected to the serial interface.
Modem active	**No** (☐)	No modem operation (Modbus slave is connected directly to the serial bus).
	Yes (☑)	Modem operation (Modbus slave is connected to the Modbus master via the modem). Additional settings are required here ("Modem" button).
Modbus master		
Timeout	60 to **200** to 10000 ms	A request sent by the master is defined as faulty if no answer is received within this time.
Scanning cycle	60 to **500** to 99999 ms	The Modbus master requests data from the Modbus slave at these intervals.

13.15.1 Modem

Setup dialog



Parameter

Parameter	Selection/settings	Description
Cycl. init. time	0 to **5** to 255 min	Time for cyclical initialization of the modem (if the modem is switched on after the system). 0 = one-time initialization (after system has been switched on)
Init. string 🕮	**AT&FE0X3Q1&K0S0=1&D0&W0&Y0** (ASCII; max. 40 characters)	AT command for modem initialization This default initialization string configures the modem so that it can be called from an external source, answers independently, and receives Modbus commands.
Call string 🕮	**ATDT** (ASCII; max. 24 characters)	AT command for establishing a connection via the modem ATDT = selection with dial tone (DTMF)
Hang-up string 🕮	**ATH** (ASCII; max. 16 characters)	AT command for disconnection via the modem ATH (or ATH0) = hang up
Alarm message		
Alarm type	Output of alarm message	
	E-mail	In the event of an alarm, an e-mail is sent (via the e-mail server after connecting to the Internet).
	PC visualization	In the event of an alarm, a modem connection is established to a PC with process visualization software.

Parameter	Selection/settings	Description
Alarm signal	Signal that triggers the alarm message (only for "PC visualization" alarm type)	
	Inactive Digital selector	No alarm message Alarm message is triggered by a signal (high active), which must be selected from the list of digital signals.
Phone no.	**(None)** (ASCII; max. 24 characters)	Telephone number for establishing connection to a PC with process visualization software (Only for "PC visualization" alarm type)

Init. string

The following Init. string is required for operation as a Modbus slave via a modem:
AT&FE0X3Q1&K0S0=1&D0&W0&Y0

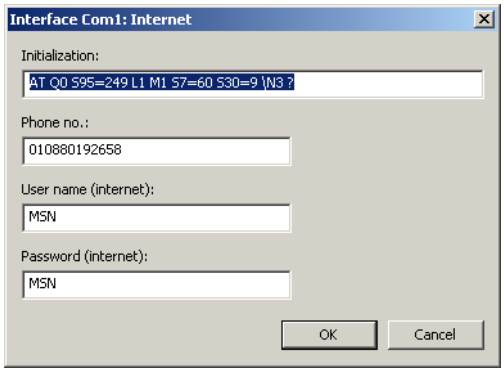
AT&F = Load current manufacturer profile
E0 = Switch off character echo
X3 = Switch off dial tone detection, activate busy tone detection
Q1 = Switch off command responses
&K0 = Switch off data flow control
S0=1 = Auto answer after first ring
&D0 = Ignore DTR signal
&W0 = Save current configuration as profile 0
&Y0 = Use profile 0 after switch-on

Call string, Hang-up string

The call string and hang-up string are required if the modem needs to establish a connection to the Internet (to send e-mail via e-mail server) or a PC with process visualization software in the event of an alarm.

Additional settings

To open this window, use the "..." button:



Parameter

Parameter	Selection/settings	Description
Initialization	**AT Q0 S95=249 L1 M1 S7=60 S30=9 \N3 ?** (ASCII; max. 50 characters)	AT command for modem changeover This default initialization string switches the modem to the mode for connecting to the Internet (e-mail server).
Phone no.	**010880192658** (ASCII; max. 24 characters)	Telephone number for connecting to the Internet (to be requested from the Internet provider)
User name (Internet)	**MSN** (ASCII; max. 64 characters)	User name for logon when connecting to the Internet (to be requested from the Internet provider)
Password (Internet)	**MSN** (ASCII; max. 64 characters)	Password for logon when connecting to the Internet (to be requested from the Internet provider)

13.16 Web server

The integrated Web server provides the user with convenient access via LAN to process values, different visualizations, and the alarm list and event list of the multifunction panel from a PC (Web browser). Access can be protected by a password.

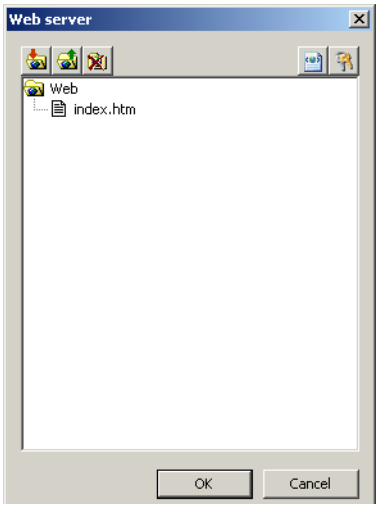
In the multifunction panel, there is a maximum of 1 MB memory available for HTML pages. The start page index.htm is available by default; access with the Web browser is performed by entering the IP address of the multifunction panel.

NOTE!
The plug-in Microsoft Silverlight[1] is required for this function. If the plug-in is not present in the Web browser, a notification offering installation is displayed.

[1] Microsoft and Silverlight are registered trademarks of Microsoft Corporation.

Further information can be found in the interface description B 705060.2.0.

Setup dialog

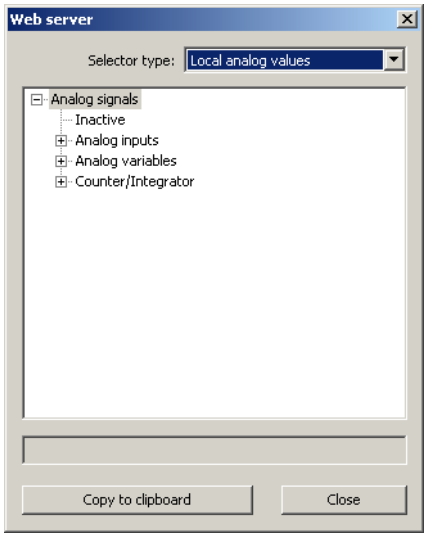


Function of buttons

Button	Description	Description
	Import Web	Select the folder that contains the files required for the Web application (incl. HTML files).
	Export Web	Select the folder to which the files used for the Web application should be exported.
	Delete Web	After answering the security request, all files (except index.htm) are removed from the setup file.
	HTML tags 🕮	HTML tags are used to convert names of variables into addresses for Web server programming.
	Security 🕮	User name, password, and timeout time are specified here.

HTML tags

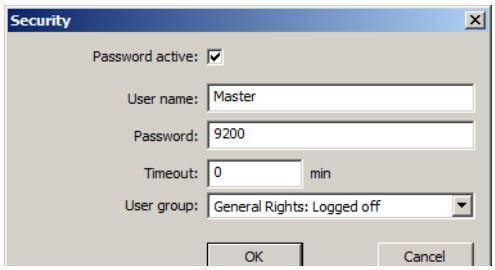
To open this window, use the "HTML tags" button:



Select the required variable names from the relevant selectors.

Security

To open this window, use the "Security" button:



Parameter

Parameter	Selection/settings	Description
Password active	Password request during logon to Web server	
	No (☐)	Password is not requested.
	Yes (☑)	Password is requested.
User name	**Master** (ASCII; max. 31 characters)	User name for logon to the Web server
Password	**9200** (ASCII; max. 31 characters)	Password for logon to the Web server
Timeout	**0** to 1092 min	Time until automatic logout if no user activity is detected. 0 min = No automatic logout
User group (as of system version 02)	No user group User group 1 to User group 15 **General rights**	In the process screen (within the web server), only those layers are displayed, which are assigned to the selected user group here.

13.17 Counters/Integrators

27 counters/integrators are available and can be configured as counters, integrators, and operating time counters:

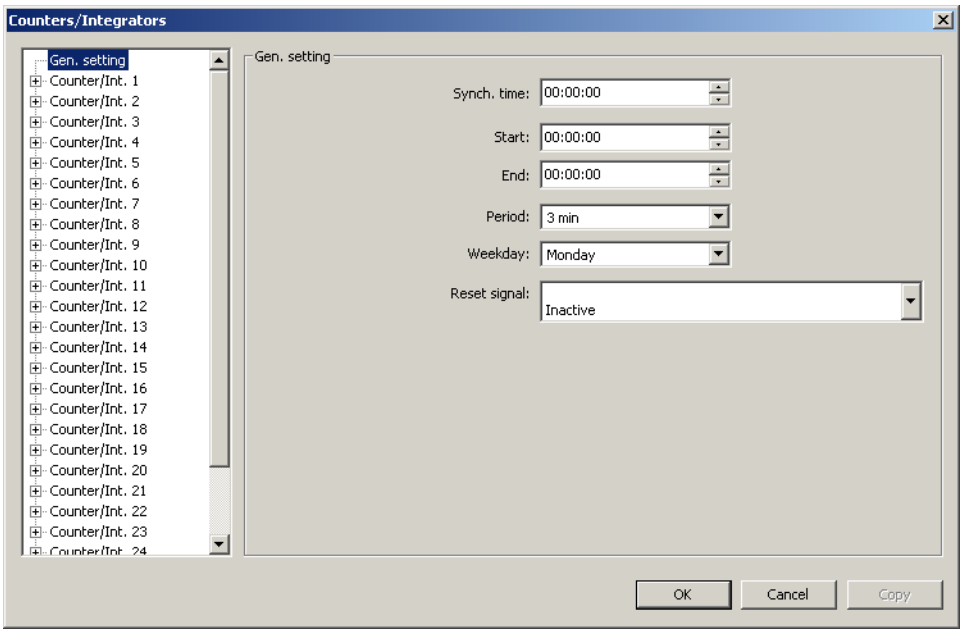
- Counters are used to count digital signals.
- Integrators are used to integrate analog inputs.
- Operating time counters are used to measure the length of time that digital signals have been active.

Saved counter and integrator statuses can be evaluated on a PC using the evaluation software PCA3000. The last saved counter or integrator status can be displayed in the Visualization menu using the Counters/Integrators function.

⇨ Chapter 7.10 "Counters/Integrators", page 78

13.17.1 General settings

Setup dialog



Parameter

Parameter	Selection/settings	Description
Synch. time 🕮	**00:00:00** to 23:59:59	Synchronization time for completion and restart of counters or integrators for which the "Type" parameter is configured as "Periodical", "Daily", or "Weekly".
Start	**00:00:00** to 23:59:59	Start time of counters or integrators for which the "Type" parameter is configured as "Daily (Start...End)".
End	**00:00:00** to 23:59:59	End time of counters or integrators for which the "Type" parameter is configured as "Daily (Start...End)".

Parameter	Selection/settings	Description
Period	1 min, 2 min, **3 min**, 4 min, 5 min, 10 min, 15 min, 30 min, 1 h, 2 h, 3 h, 4 h, 6 h, 8 h, 12 h	Pulse period of counters or integrators for which the "Type" parameter is configured as "Periodical".
Weekday	Sunday, **Monday**, Tuesday, Wednesday, Thursday, Friday, Saturday	Weekday on which the counters and integrators for which the "Type" parameter is configured as "Weekly" are saved at the synchronization time and restarted with the start value 0.
Reset signal 🕮	The reset signal is used to set the counter and integrator statuses to 0 (independent of other parameters).	
	Inactive	No signal selected.
	Digital selector	The signal (high active) can be selected from the list of digital signals.

Synch. time

The synchronization time is used for completion and restart for daily, weekly, and periodical counters and integrators. When the synchronization time is reached, all statuses are saved and the function with the start value 0 is restarted. With the weekly type, the "Weekday" parameter also plays a role.

The Synchronization time will be explained in more detail below, using the example of a periodical counter. The closure and restart is performed at the next point in time occurring in the time grid – dependent on Synchronizat. time and Period.

Example:

Period = 2 hours
Synchronization time = 11:30:00
Power on = 09:11:00 1st period from 09:11 to 09:30 = 19 minutes
2nd period from 09:30 to 11:30 = 2 hours
3rd period from 11:30 to 13:30 = 2 hours
etc.

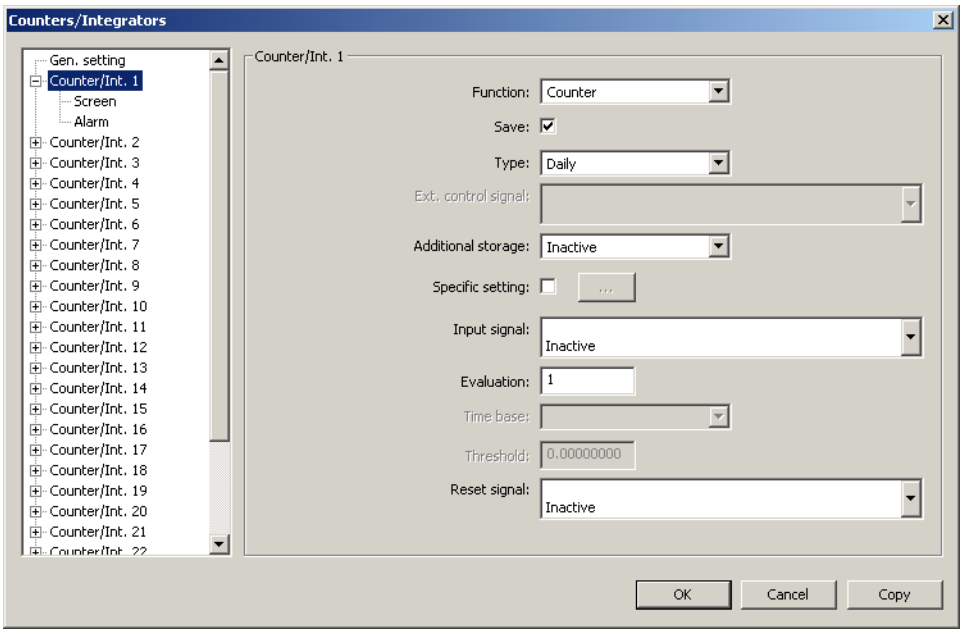
Reset signal

The current statuses are not saved when the counters and integrator statuses are reset. This function can be used when setting up a plant (test run) or as a so-called "Clear switch", for example.

NOTE!
The "General setting" can be deactivated for each counter/integrator using a specific setting.
See Chapter 13.17.2 "Specific settings", page 189.

13.17.2 Specific settings

Setup dialog – Counter/Int. 1 to 27



Parameter

Parameter	Selection/settings	Description
Function	Operating mode of the counter/integrator	
	Inactive	Counter/integrator is switched off.
	Counter	Counter for the pulses of a digital signal
	Integrator	Integration of an analog signal
	Operating time	Determination of the length of time that a digital signal is active.
Save	The result (status of the counter/integrator) can be saved in order to evaluate it with the PCA3000 evaluation software.	
	No (☐)	Event is not saved.
	Yes (☑)	Event is saved.

Parameter	Selection/settings	Description
Type 🕮	This setting decides when the current status of the counter/integrator is saved. Depending on the specific setting (Yes - No), the parameters from Chapter 13.17.1 "General settings", page 187 must also be taken into consideration.	
	Periodically	Completion and restart will be determined by the "Period" and "Synch. time" parameters.
	External	Completion and restart will be determined by an external control signal. The counter/integrator functions when the signal is set (High).
	Daily	The counter/integrator is counted/integrated for a day (24 hours). Completion and restart will be determined by the "Synch. time" parameter.
	Weekly	The counter/integrator is counted/integrated for a week. Completion and restart will be determined by the "Weekday" and "Synch time" parameters.
	Monthly	The counter/integrator is counted/integrated for a month. Completion and restart are performed on the first day of the month at 00:00.
	Yearly	The counter/integrator is counted/integrated for a year. Completion and restart are performed on the first day of the year at 00:00.
	Total	The counter/integrator is counted/integrated for the entire duration of the current configuration.
	Daily (Start ... End)	The counter/integrator is counted/integrated for a period within one day. Restart and completion will be determined by the "Start" and "End" parameters.
Ext. control signal	External control signal for completion and restart of the counter/integrator (for the "External" type). The counter/integrator functions when the signal is active.	
	Inactive	No signal selected.
	Digital selector	The signal (high active) can be selected from the list of digital signals.

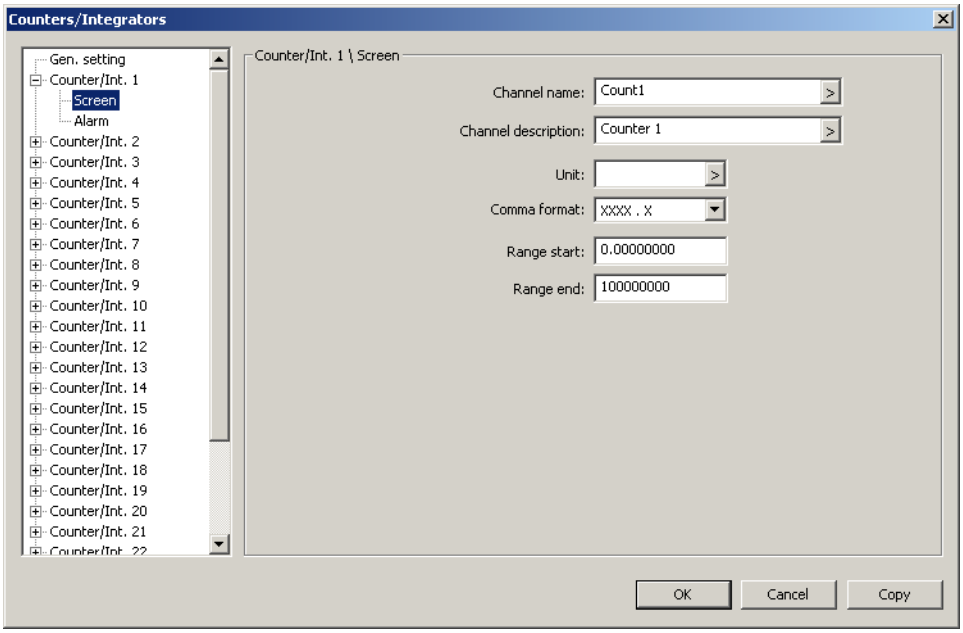
Parameter	Selection/settings	Description
Additional storage 🕮	This parameter decides whether additional storage of the current statuses is to take place (in addition to the save operation resulting from the "Type" parameter). The current statuses are saved but not reset. Depending on the specific setting (Yes - No), the parameters from Chapter 13.17.1 "General settings", page 187 must also be taken into consideration.	
	Inactive	No additional storage
	Periodically	Completion and restart will be determined by the "Period" and "Synch. time" parameters.
	Daily	The counter/integrator is counted/integrated for a day (24 hours). Completion and restart will be determined by the "Synch. time" parameter.
	Weekly	The counter/integrator is counted/integrated for a week. Completion and restart will be determined by the "Weekday" and "Synch time" parameters.
	Monthly	The counter/integrator is counted/integrated for a month. Completion and restart are performed on the first day of the month at 00:00.
	Yearly	The counter/integrator is counted/integrated for a year. Completion and restart are performed on the first day of the year at 00:00.
	Total	The counter/integrator is counted/integrated for the entire duration of the current configuration.
	Daily (Start ... End)	The counter/integrator is counted/integrated for a period within one day. Restart and completion will be determined by the "Start" and "End" parameters.
Specific setting	The settings from Chapter 13.17.1 "General settings", page 187 are deactivated for the counter/integrator in question (except reset signal). Specific settings can be configured instead ("..." button).	
	No (☐)	The general settings apply for the counter/integrator.
	Yes (☑)	The specific settings apply for the counter/integrator.
Input signal	Input signal that is to be counted (digital signal) or integrated (analog signal, integer signal).	
	Inactive	No signal selected.
	Analog selector (incl. integer signals) or digital selector	The signal can be selected from the list of signals.

Parameter	Selection/settings	Description
Evaluation	"Counter" function: The counter status is increased by the "Evaluation" value with each digital signal pulse. A negative value can be used to form a backwards counter. "Integrator" function: The current measured value of the analog or integer signals is multiplied by the "Evaluation" factor and added to the result.	
	-3.37E+38 to **1** to +9.0E+36	Value or factor
Time base	"Integrator" function: The current measured value is integrated corresponding to the selected time base, taking into consideration the evaluation:	
	Second	The measured value is divided by 1 and added up every second.
	Minute	The measured value is divided by 60 and added up every second.
	Hour	The measured value is divided by 3600 and added up every second.
	Day	The measured value is divided by 86400 and added up every second.
	"Operating time" function: The time base specifies the unit in which the operation time is displayed:	
	Second	Display in seconds
	Minute	Display in minutes
	Hour	Display in hours
	Day	Display in days
Threshold	"Integrator" function: An integration only takes place if the current measured value is greater than the threshold value. Time base and evaluation are not included in the threshold comparison.	
	0.00000000 to 999999999	Threshold
Reset signal	The reset signal is used to set the counter and integrator statuses to 0 (independent of other parameters). The current status is not saved in the process. This reset signal is available in addition to the reset signal described in Chapter 13.17.1 "General settings", page 187.	
	Inactive	No signal selected.
	Digital selector	The signal (high active) can be selected from the list of digital signals.

Type; Additional storage

"Yearly" or "Total" selection: The status of the counter/integrator is cached at the end of a month, but not reset to 0. This means that the current status is always available at such a point in time for evaluation using the PCA3000 evaluation software.

Setup dialog – Counter/Int. 1 to 27 – Screen

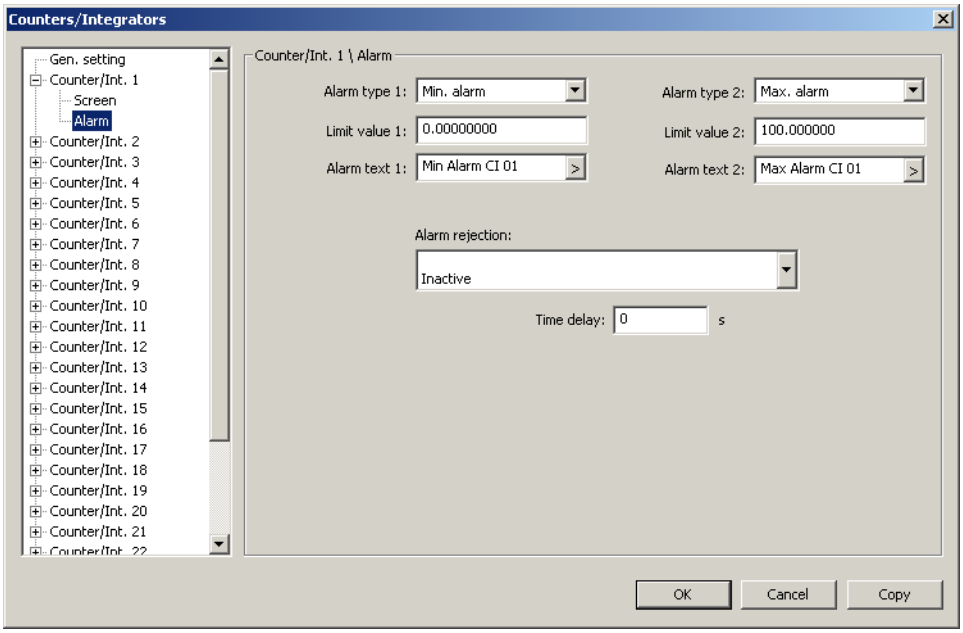


Parameter

Parameter	Selection/settings	Description
Channel name	7 characters (**Count1**)	Brief designation of the counter/integrator, with a max. length of 7 characters. The channel name is displayed together with the channel designation in the individual visualizations.
Channel description	21 characters (**Counter 1**)	Description of the counter/integrator, with a max. length of 21 characters. The channel description is displayed in the individual visualizations together with the channel name.
Unit	5 characters ()	Unit in which the counter or integrator status is displayed. The unit is displayed wherever the status is displayed in numerical form.
Comma format	**XXXX.X**	The comma format determines the number of pre-decimal and post-decimal places for the numerical display of the counter or integrator status. If required, the multifunction panel automatically switches to a different format in order to display all pre-decimal places. First and foremost, all pre-decimal places must be displayed.
Range start	-999999999 to **0.00000000** to 999999999	Lower limit of the Bar graph display

Parameter	Selection/settings	Description
Range end	-999999999 to **100000000** to 999999999	Upper limit of the Bar graph display The counter or integrator status is displayed using a maximum of 9 digits. If this is exceeded, the status restarts from 0.

Setup dialog – Counter/Int. 1 to 27 – Alarm



Parameter

Parameter	Selection/settings	Description
Alarm type 1, 2	**Inactive** Min. alarm Max. alarm	Monitoring is not active. Alarm is issued if the limit value is not met. Alarm is issued if the limit value is exceeded.
Limit value 1	-999999999 to **0.00000000** to 999999999	Limit value at which an alarm is issued.
Limit value 2	-999999999 to **100.000000** to 999999999	Limit value at which an alarm is issued.
Alarm text 1, 2	Use default text or enter other text.	Text that is displayed or entered in the status and title line and in the alarm list and event list in the case of an alarm.
Alarm rejection 🕮	**Inactive** Digital selector	Signal (high active) for activating the alarm rejection
Time delay	**0 s** to 32767 s	Delay time for alarm triggering If the alarm is no longer on after the delay time has elapsed, it is not triggered.

Alarm rejection

If alarm rejection is active:

- Incoming alarms are rejected (existing alarms become inactive) and
- No entries are made in the alarm list and event list.

13 Configuration

13.18 NV connecting lists

In the NV connecting lists (analog and digital), the 54 analog inputs and the 54 digital inputs of the multifunction panel are connected via the system bus using the signals of other modules. In addition, the digital signals for controlling batch reporting (start/stop) are selected here.

The following chapters provide detailed lists of module signals:

⇨ Chapter 13.18.3 "Analog signals (overview)", page 200

⇨ Chapter 13.18.4 "Digital signals (overview)", page 202

Further information about the signals can be found in the operating manual for the relevant module.

NOTE!
If the configuration is performed using the multifunction panel rather than the setup program, the following must be observed:
The configuration menu of the multifunction panel does not contain any NV connecting lists. Instead, a central NV connecting list is available in the configuration menu of the base unit (CPU). The menu items "HMI analog inputs" or "HMI digital inputs" (incl. controlling batch reporting) are to be selected here.

Status after change of configuration

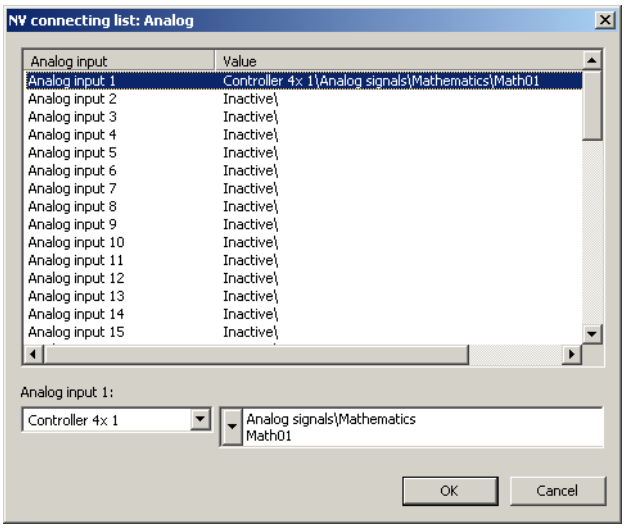
The connections are available immediately.

Behavior after power on

The connections are available immediately after system initialization.

13.18.1 NV connecting list: Analog

Setup dialog

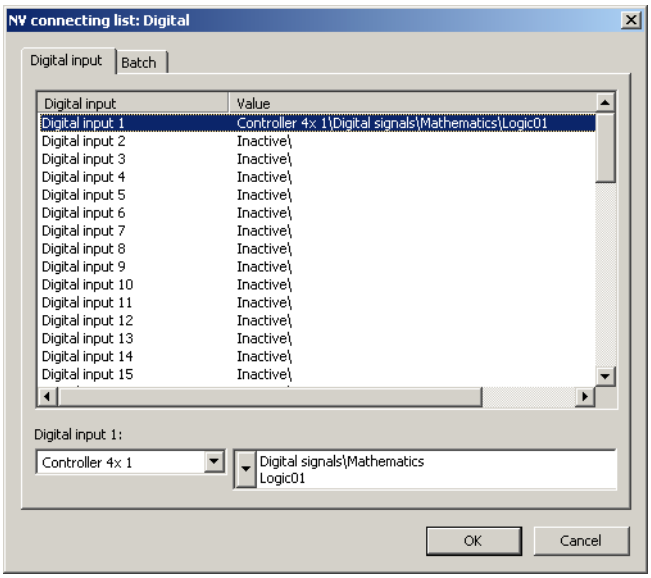


Parameter

Parameter	Selection/settings	Description
Analog input/ Value	Select input to be connected.	List of analog inputs of the multifunction panel If a connection has already been configured, the module and its signal are displayed in the "Value" column.
Analog input 1 (Example)	This is the previously selected analog input.	
	Select the module and – in the selector to the right – the signal that is to be connected to the analog input.	List of modules in the system and the relevant signals

13.18.2 NV connecting lists: Digital

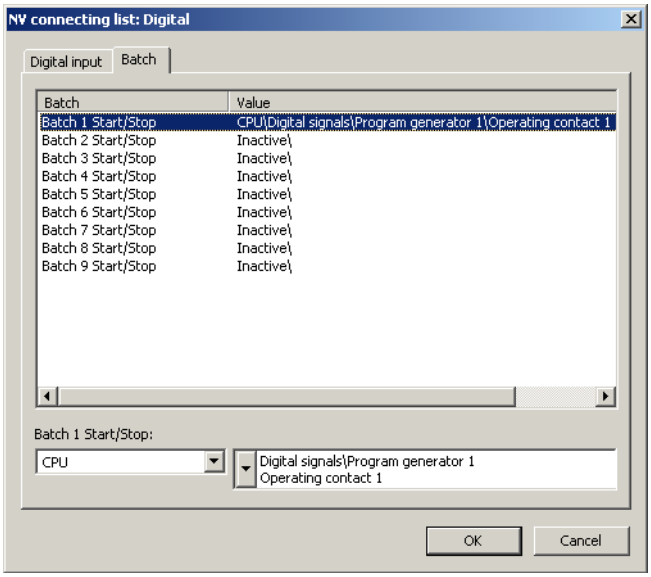
Setup dialog – Digital input



Parameter

Parameter	Selection/settings	Description
Digital input/ Value	Select input to be connected.	List of the digital inputs of the multifunction panel If a connection has already been configured, the module and its signal are displayed in the "Value" column.
Digital input 1 (Example)	This is the previously configured digital input.	
	Select the module and – in the selector to the right – the signal that is to be connected to the digital input.	List of modules in the system and the relevant signals

Setup dialog – Batch



Parameter

Parameter	Selection/settings	Description
Batch/Value	Select the batch that is to be controlled using a digital signal (starting and stopping batch reporting).	List of all batches of the multifunction panel If a connection has already been configured, the module and its signal are displayed in the "Value" column.
Batch 1 Start/ Stop (Example)	This is the previously selected batch.	
	Select the module and – in the selector to the right – the signal that is to be used to control the batch.	List of modules in the system and the relevant signals

13.18.3 Analog signals (overview)

The following table contains all analog signals that are available for connecting to the analog inputs of the multifunction panel.

Category	Signal	Description
Inactive		No signal selected
Central processing unit		
Analog variables	Analog variable 1 to 64	Analog variable 1 to 64 (via interface)
Program generator 1 to Program generator 9	Channel 1 SP1 to Channel 3 SP1	Setpoint value 1 of program channel 1 to 3
	Channel 1 SP2 to Channel 3 SP2	Setpoint value 2 of program channel 1 to 3
	Channel 1 SP2 to Channel 3 SP2	Setpoint value 3 of program channel 1 to 3
	Channel 1 SP4 to Channel 3 SP4	Setpoint value 4 of program channel 1 to 3
	PLC Analog output 13 to 16	Signal of PLC analog output 13 to 16
Analog PLC output block 10 to block 18	PLC Analog output 1 to 16	Signal of PLC analog output 1 to 16
Multichannel controller module		
Controller	C01ActualValue to C04ActualValue	Actual value of controller channel 1 to 4
	C01Setpoint to C04Setpoint	Setpoint value of controller channel 1 to 4
	C01OutpLevelMon to C04OutpLevelMon	Output level (display value) of controller module 1 to 4
Analog inputs	AI01 to AI04	Measured value of analog input 1 to 4
Mathematics	Math01 to Math04	Result of math function 1 to 4
HW counter	HWCounter	Counter reading of hardware counter

Category	Signal	Description
Setpoint value	SP01RampValue to SP04RampValue	Ramp end value of ramp function 1 to 4 (if ramp function switched on) or Active setpoint value (external setpoint value + setpoint value) of setpoint function 1 to 4 (if ramp function switched off)
Analog input module 4-channel		
Analog inputs	AI01 to AI04	Measured value of analog input 1 to 4
Analog input module 8-channel		
Analog inputs	AI01 to AI08	Measured value of analog input 1 to 4
Multifunction panel 840		
System bus analog inputs	Counter/Int 1 to Counter/Int 27	Current value of counter or integrator
	Counter/Int clo 1 to Counter/Int clo 27	Value of counter or integrator in most recent closed measuring period
Process image	Current process image	Number of current process image on the display of the multifunction panel 0 = process image 1, 1 = process image 2 etc. (-1 = no active process image)
Thyristor power controller, type 70906x		
Measured values master	Individual analog signals of the power controller: See operating manual 70500153T90... (or following table)	Measured values of the power controller in single-phase operation or of the master in case of three-phase economy circuit or three-phase circuit
Measured values slave/slave1		Measured values of the slave in case of three-phase economy circuit or of slave 1 in case of three-phase circuit
Measured values slave2		Measured values of slave 2 in case of three-phase circuit

13.18.4 Digital signals (overview)

The following table contains all digital signals that are available for connecting to the digital inputs of the multifunction panel and for controlling batch reporting.

Category	Signal	Description
Inactive		No signal selected
Central processing unit		
Digital variables	Digital variable 1 to 64	Digital variable 1 to 64 (via interface)
Program generator 1 to Program generator 9	Operating contact 1 to 16	Operating contact 1 to 16 of program channels (in the three program channels, operating contacts with the same name are linked with OR)
	Mode: Basic status	Status: Program is not running (basic status)
	Mode: Automatic	Status: Program is running (automatic mode, no delay time or program end time)
	Mode: Automatic 1	Status: Program is running (automatic mode, incl. delay time and program end time)
	Mode: Standstill	Status: Program stopped during automatic mode (time base stopped)
	Mode: Delay	Status: Program start delayed (delay time runs)
	Mode: Program end	Status: Program ends (program end time runs, corresponds to length of end signal)
	Mode: Manual	Status: Manual mode
	Tolerance band channel 1 to 3	Tolerance band signal of program channel 1 to 3
	Batch control	Signal to control the batch recording (OR-linked signals "Automatic", "Standstill", and "Program end").
	PLC Binary output 28 to 32	Signal of PLC digital output 28 to 32
Limit monitoring	Limit monitoring 1 to 64	Output signal of limit value monitoring 1 to 64
Binary linking	Binary linking 1 to 8	Result of binary linking 1 to 8
	PLC Binary output 9 to 32	Signal of PLC digital output 9 to 32
Binary PLC output block 13 to block 18	PLC Binary output 1 to 32	Signal of PLC digital output 1 to 32

Category	Signal	Description
Alarm analog variables	Alarm1 ExAI1 to Alarm1 ExAI64	Alarm signal 1 of analog variable 1 to 64
	Alarm2 ExAI1 to Alarm2ExAI64	Alarm signal 2 of analog variable 1 to 64
Alarm integer variables	Alarm1 ExInt1 to Alarm1 ExInt64	Alarm signal 1 of integer variable 1 to 64
	Alarm2 ExInt1 to Alarm2ExInt64	Alarm signal 2 of integer variable 1 to 64

Category	Signal	Description
Alarms/ Faults	CAlarm/Fault	System collective alarm or system fault (central processing unit and modules)
	CAlarm/Fault ackn.	System collective alarm or system fault with acknowledgement Signal remains active until acknowledgement.
	CAlarm device	System collective alarm (central processing unit and modules)
	CAlarm ackn.	System collective alarm with acknowledgement Signal remains active until acknowledgement.
	Fault	System fault (central processing unit and modules)
	Fault ackn.	System fault with acknowledgement Signal remains active until acknowledgement.
	CAlarm Basis	Central processing unit collective alarm
	System Run	System state (Run = 1, Stop = 0)
	Reserve 1	(Reserved for future use.)
	Fieldbus error	Error at fieldbus interface
	System error mandatory	Error in a mandatory module
	System error optional	Error in an optional module
	No PLC	No PLC program available
	PLC stop	„Stop“ system state
	Battery empty	Battery alarm (central processing unit buffer battery is dead and must be replaced) Notify service department! Attention: RAM memory content is deleted!
	Battery low	Battery pre-warning (central processing unit buffer battery can be replaced within 4 weeks without data loss) Notify service department!

Category	Signal	Description
Multichannel controller module		
Controller	C01ManualMode to C04ManualMode	Manual mode active for controller channel 1 to 4
	C01TuneActive to C04TuneActive	Self-optimization active for controller module 1 to 4
	C01Output1 to C04Output1	Switch position of first controller output of controller channel 1 to 4
	C01Output2 to C04Output2	Switch position of second controller output of controller channel 1 to 4
	C01CollAlarm to C04CollAlarm	Collective alarm of controller channel 1 to 4 (can be configured with signals from the digital selector)
Setpoint	SP01RampTolBand to SP04RampTolBand	Alarm signal of tolerance band monitoring of ramp function 1 to 4
	SP01Changeover1 to SP04Changeover1	Bit 0 of setpoint changeover of setpoint value function 1 to 4
	SP01Changeover2 to SP04Changeover2	Bit 1 of setpoint changeover of setpoint value function 1 to 4
Analog inputs	AI01Alarm1 to AI04Alarm1	Alarm signal 1 of analog input 1 to 4
	AI01Alarm2 to AI04Alarm2	Alarm signal 2 of analog input 1 to 4
Digital inputs	DI01, DI02, DI05 to DI10	Signal of digital input 1, 2, 5 to 10 If the HW counter is activated, the signal of digital input 1 is inactive.
Limit monitoring	LI01 to LI04	Output signal of limit value monitoring 1 to 4
Mathematics	Logic01 to Logic04	Result of logic function 1 to 4
Miscellaneous	CollectiveAlarm	Controller module collective alarm
	HWCounterSignal	Signal of hardware counter in "fill" operating mode (as shut-down signal when threshold value reached)

Category	Signal	Description
Analog input module 4-channel		
Analog inputs	AI01Alarm1 to AI04Alarm1	Alarm signal 1 of analog input 1 to 4
	AI01Alarm2 to AI04Alarm2	Alarm signal 2 of analog input 1 to 4
Digital inputs	DI01	Signal of digital input
Alarm	CollectiveAlarm	Module collective alarm
Analog input module 8-channel		
Analog inputs	AI01Alarm1 to AI08Alarm1	Alarm signal 1 of analog input 1 to 8
	AI01Alarm2 to AI08Alarm2	Alarm signal 2 of analog input 1 to 8
Digital inputs	DI01	Signal of digital input
Alarm	CollectiveAlarm	Module collective alarm
Digital input/output module 12-channel		
Digital inputs	DI01 to DI12	Signal of digital input 1 to 12
Alarm	CollectiveAlarm	Module collective alarm
Multifunction panel 840		
System bus digital inputs	Alarm batch 1 to Alarm batch 9	Collective alarm of batch 1 to 9 (process values)
	CollectiveAlarm	Collective alarm of multifunction panel (process values)
	Fault	Fault in multifunction panel (independent of process values)
	Batch 1 active to Batch 9 active	Signal for active batch 1 to 9
	Push button 1 to Push button 18 (as of system version 02: 32)	Status of push button 1 to 18 (as of system version 02: 1 to 32) in process screen

Category	Signal	Description
Thyristor power controller, type 70906x		
Device status	Individual digital signals of the power controller: See operating manual 70500153T90... (or following table)	Device status signals
Faults master		Faults of the power controller in single-phase operation or of the master in case of three-phase economy circuit or three-phase circuit
Faults slave/ slave1		Faults of the slave in case of three-phase economy circuit or of slave 1 in case of three-phase circuit
Faults slave2		Faults of slave 2 in case of three-phase circuit
Faults master slave		Faults of master slave connection and communication
Hardware input/ output		Binary values of hardware inputs and outputs

13.19 Undocumented parameters

CAUTION!
Incorrect configuration of the "undocumented parameters".
The system does not react as it should.
Undocumented parameters must only be changed if the user is requested to do so by a service technician from the manufacturer.

13 Configuration

NOTE!
The parameters described in this chapter can only be configured with the setup program.

14.1 User area

In this menu, up to 25 parameters can be selected for each of the three user areas of the multifunction panel. A parameter relates either to a process value (analog, digital, integer, or text variable) or a configuration parameter of the system.

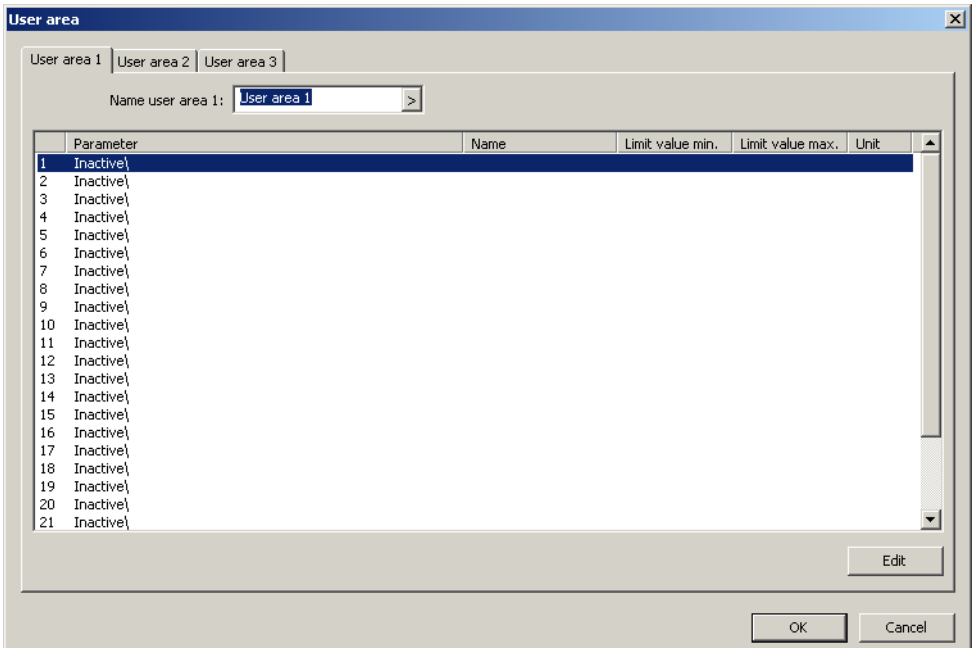
User areas are called up in the device manager.

⇨ Chapter 11 "Device manager", page 101

In order for a user area to be available in the device manager, it must be configured in advance (at least one parameter must be active).

NOTE!
Plausibility or mutual dependencies of the parameters selected by the user are not checked by the setup program. The user is responsible for this.

Setup dialog



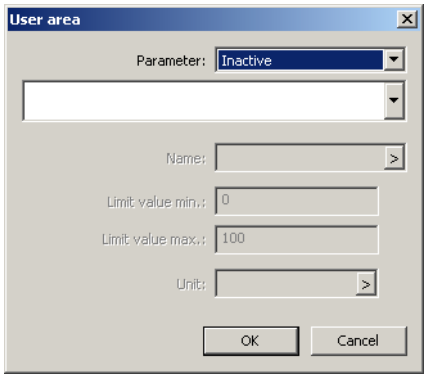
Selecting user areas and parameters

Step	Activity
1	Select user area 1 to 3
2	Select parameter 1 to 25
3	Touch the "Edit" button

➥ The parameter can be configured. The settings are significant for the input mask in the user area.

14.1.1 Configuring parameters

Setup dialog



Parameter

Parameter	Selection/settings	Description
Parameter	Select the module and – in the selector below – the process value or configuration parameter.	List of all process values and configuration parameters of the entire system The process values are to be selected from the central processing unit or the multifunction panel; the configuration parameter is to be selected from the module in question. The selected process value or configuration parameter is available in the user area.
Name	Use the preset name or touch the ">" button to enter a different name.	Name of the parameter in the user area The preset name corresponds to the designation of the process value or configuration parameter in the list.
Limit value min.	Adopt the preset value or enter a different value.	Minimum admissible value for entry in the user area The preset value corresponds to the smallest configurable limit and depends on the data type of the process value or configuration parameter.
Limit value max.	Adopt the preset value or enter a different value.	Maximum admissible value for entry in the user area The preset value corresponds to the largest configurable limit and depends on the data type of the process value or configuration parameter.

Parameter	Selection/settings	Description
Unit	Enter designation for the unit if required.	Unit of the parameter in the user area Unit in which the process value (or the value of the configuration parameter) is to be displayed (max. five characters in length). The unit is displayed wherever the value is displayed in numerical form.

14 Configuration – in setup program only

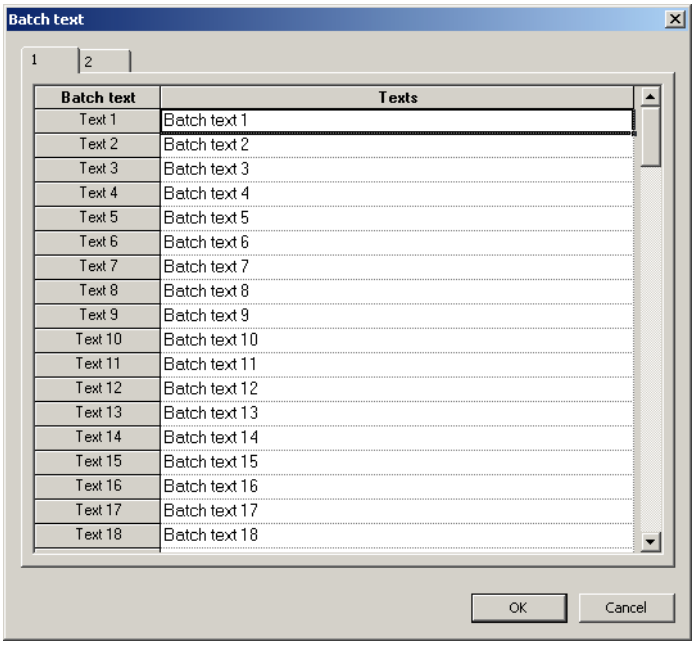
14.2 Batch text

A batch text is used when configuring the batch info, either via direct selection from the text list or as the result of binary linking.

⇨ Chapter 13.13.2 "Batch info", page 175

128 texts are available in each of the two device languages; these can be edited individually in this menu.

Setup dialog



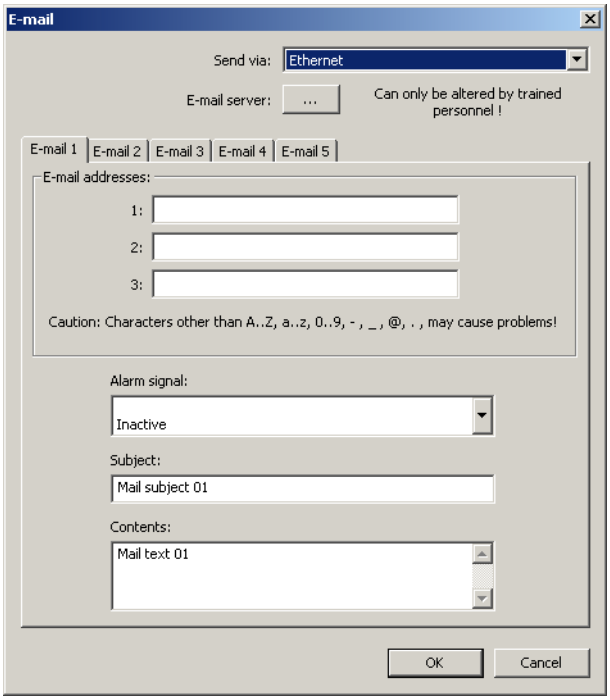
Parameter

Parameter	Selection/settings	Description
Batch text	Select the relevant device language (tab 1 or 2) and edit the text to be changed in the "Texts" column (max. 21 characters).	Text that is available in the text list for the configuration of the batch info.

14.3 E-mail

An e-mail alarm can be sent to up to three address simultaneously via a mail server. Up to 5 alarm texts can be configured; sending is controlled using a digital signal.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Send via	**Ethernet**	E-mail is sent via Ethernet (LAN). The mail server is in a company network and should be able to forward e-mails via the Internet.
	Modem	E-mail is sent via a modem (after connecting to the Internet). The mail server is on the Internet. ⇨ Chapter 13.15.1 "Modem", page 182
E-mail 1 to E-mail 5 (e-mail settings for the 5 alarm texts)		
E-mail addresses	The e-mail is sent to up to 3 e-mail addresses (each with max. 64 characters) at the same time.	
	1	Enter first e-mail address
	2	Enter second e-mail address
	3	Enter third e-mail address

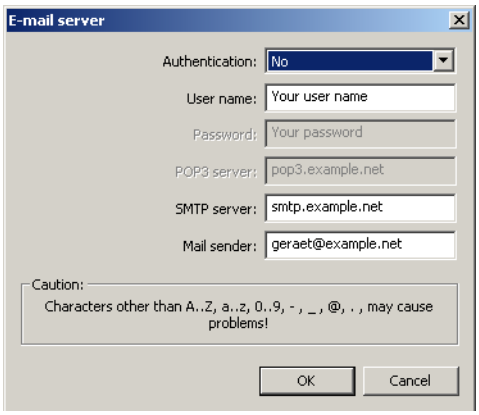
Parameter	Selection/settings	Description
Alarm signal	Signal that triggers sending of an e-mail	
	Inactive Digital signal	No alarm message Alarm message is triggered by a signal (high active), which must be selected from the list of digital signals (digital selector).
Subject	Text (max. 120 characters) for the subject line of the e-mail	
	Mail subject 01 (For e-mail 1)	Use or edit text from list
Contents	Text (max. 120 characters) for the text field of the e-mail	
	Mail text 01 (For e-mail 1)	Use or edit text from list

NOTE!
E-mail sending should be tested in the course of startup. If there is an error, this leads to an entry with an error code in the event list of the multifunction panel.
The interface description B 705060.2.0 contains a list of all error codes ("Error codes as integer return values").

14.3.1 E-mail server

NOTE!
The following settings may only be performed by specialists.

Setup dialog



Parameter

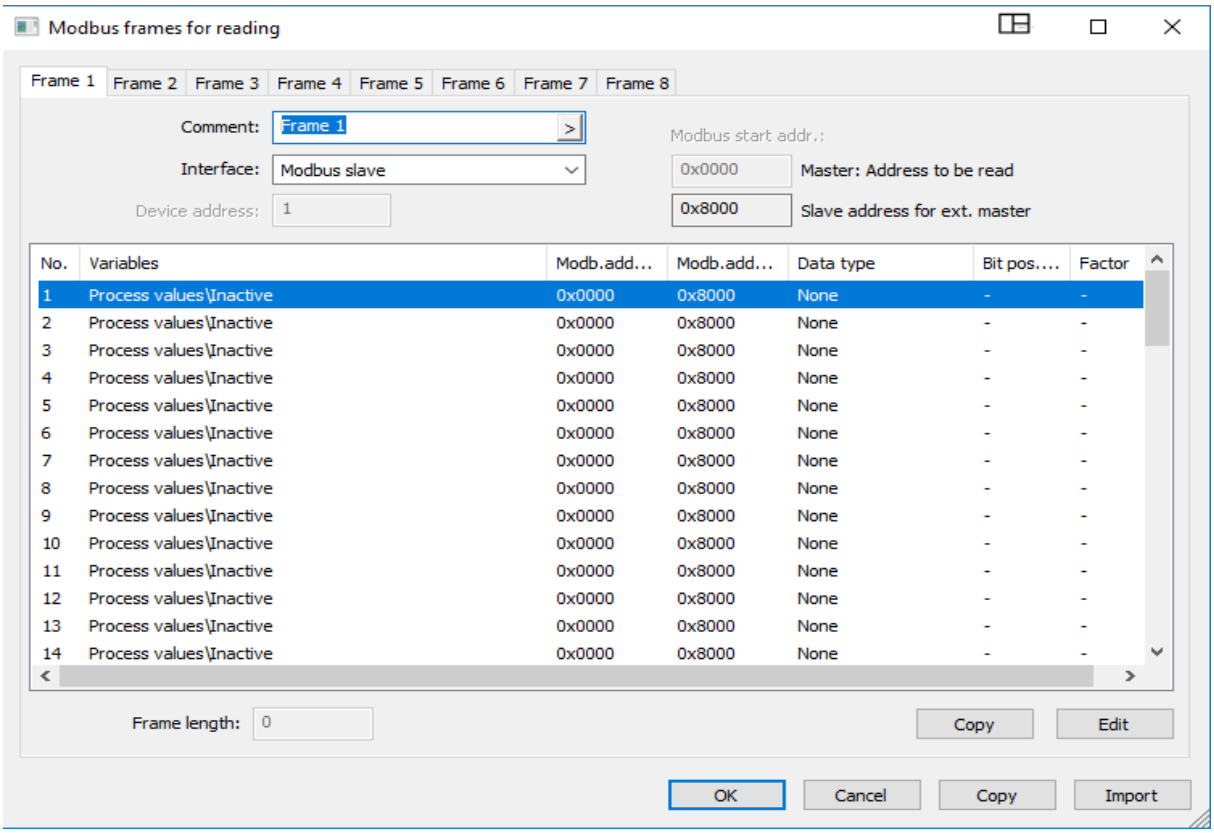
Parameter	Selection/settings	Description
Authentication	Authentication at logon to e-mail server	
	No	No authentication
	SMTP-After-POP	Authentication with user name and password on POP3 server
	SMTP-Auth	Authentication with user name and password on SMTP server
User name	User name (max. 64 characters) for logon to the e-mail server	
	Your user name (Example)	Enter name (also applies if Authentication = no)
Password	Password (max. 64 characters) for logon to the e-mail server	
	Your password (Example)	Enter password (only for SMTP-After-POP or SMTP-Auth)
POP3 server	Address (URL, max. 64 characters) of the e-mail server for POP3	
	pop3.example.net (Example)	Enter server address (only for SMTP-After-POP)
SMTP server	Address (URL, max. 64 characters) of the e-mail server for SMTP	
	smtp.example.net (Example)	Enter server address
Mail sender	E-mail address (max. 64 characters) as sender address	
	device@example.net (Example)	Enter address
SMTP port number (as of system version 05)	0 to **25** to 65535	Port number of the email server for SMTP

14 Configuration – in setup program only

14.4 Modbus frames for reading

This function is used to compile up to eight Modbus frames for reading process values of external devices (via interface) individually for each opposite side. The process values (analog, integer, and digital values, and text) are written to the selected variables from the received Modbus telegram and are available for use in the system. Each frame can be used to configure up to 64 entries (variables); the process values are then grouped and transferred in a Modbus telegram.

Setup dialog



CAUTION!
A variable can be used in multiple frames.
This means that different process values are written to the same variable.
You must ensure that no variables are overwritten unintentionally.

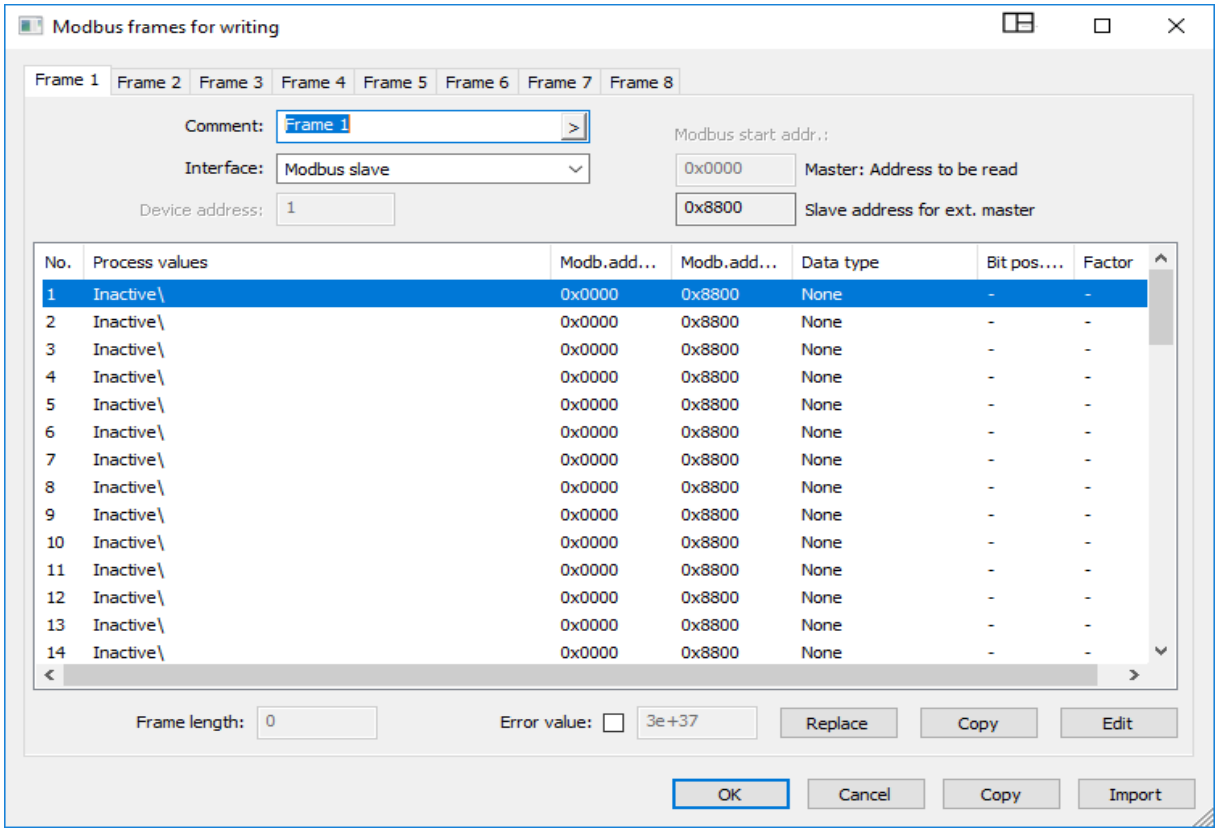
Configuration and use of the Modbus frames for reading is described in the Modbus interface description B 705060.2.0.

14.5 Modbus frames for writing

This function is used to compile up to eight Modbus frames for writing process values to external devices (via interface) individually for each opposite side. The process values (analog, integer, and digital signals, and text) are written to the frames by the system and are available to external devices.

Each frame can be used to configure up to 64 entries (process values), which are then grouped and transferred in a Modbus telegram.

Setup dialog



Configuration and use of the Modbus frames for writing is described in the Modbus interface description B 705060.2.0.

14 Configuration – in setup program only

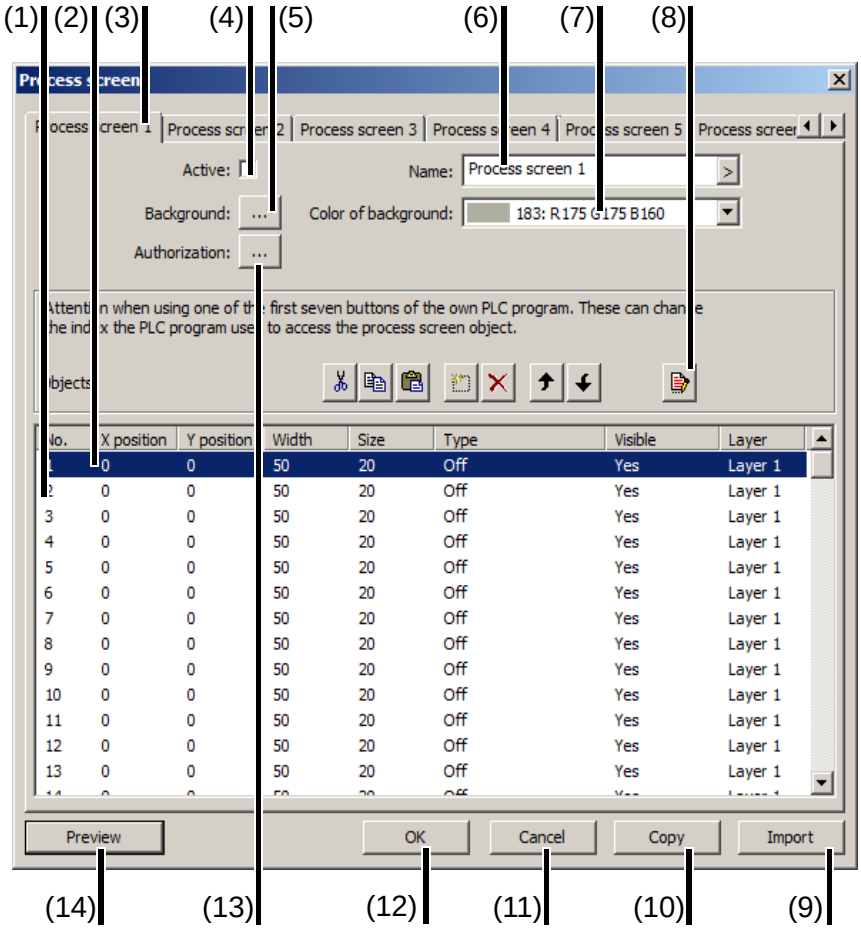
14.6 Process screens

Process screens are used for visualizing process data. The user can use the setup program to create up to 18 individual process screens that are transferred to the multifunction panel and are available there in the "Visualization" menu.

The size of a process screen (background) is 636 pixels (width) by 404 pixels (height) (as of system version 02, without toolbar: height = 453 pixels).

14.6.1 Process screen editor

Setup dialog



(1) Object list
(2) Object used
(3) Selected process screen
(4) Activate process screen
(5) Select background image
(6) Name of the process screen
(7) Select background color
(8) Navigation and processing functions
(9) Import process screens from an existing setup file
(10) Copy the selected process screen to one or more process screens
(11) Exit process screen editor; settings are not adopted
(12) Exit process screen editor; settings are adopted
(13) Define authorization of the user groups (as of system version 02)
(14) Preview of the process screen (prewiew window is opened in the setup program)

Navigation and processing functions

Button	Function
	Cut object from the object list
	Copy object to another object (only within the same process screen)
	Paste cut object into the object list
	Add new object to the object list (the selected object and the subsequent objects are shifted down)
	Remove object from the object list
	Move object up in object list
	Move object down in object list
	Edit object
	Undo the last action (also multiple actions in succession)
	Redo the undo action (also multiple actions in succession)

14.6.2 Create process screen

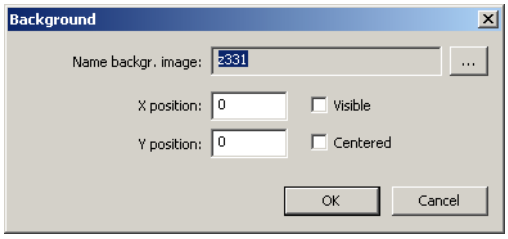
A process screen is created in the following way:

Step	Activity
1	Select the process screen to be created (Process screen 1 to Process screen 18) by left-clicking on it.
2	Select object (Objects 1 to 150) in the object list by left-clicking on it.
3	Start editing the object features by using the left mouse button to double-click on the selected object or by clicking the () symbol.
4	Edit features and close the dialog with OK.
5	Inspect the object in the simulation. Change the features of the object if required.
6	Select and edit additional objects.
7	Change the default name of the process screen (if required).
8	Configure the background image ("Background") and the background color, if required (the background color can only be seen if the background image does not cover the entire process screen area or if the "Transparent" option was selected when importing the image).
9	As of system version 02: Define the authorization (visible, edit) concerning the process screen and the layers, if necessary.
10	Activate the process screen (only activated process screens are transferred to the multifunction panel).
11	OK transfers the process screen to the setup file.
12	Transfer the setup file to the multifunction panel.
13	On the multifunction panel, select the "Process screen" visualization.

14.6.3 Background

In addition to the background color, a background image can also be used for the background of the process screen. The background image is selected from the list of available screens in the setup program. If the background color is to be visible, the background image must not cover the entire area of the process screen or it must be transparent (option when replacing a screen).

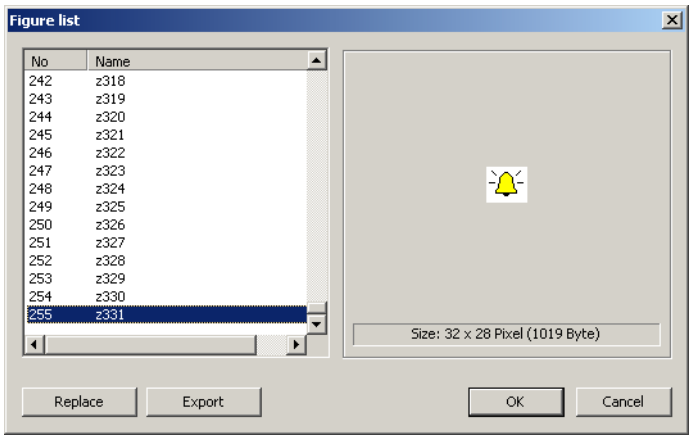
Setup dialog



Parameter

Parameter	Selection/settings	Description
Name backgr. image	Selection from list of images	Background image for the process screen
X position	**0** to 635	X coordinate of the upper left corner of the background image in the process screen
Y position	**0** to 403 (as of system version 02: 452)	Y coordinate of the upper left corner of the background image in the process screen
Visible	Yes (☑), **No** (☐)	"Yes" releases the display of the background image in the process screen.
Centered	Yes (☑), **No** (☐)	"Yes" horizontally and vertically centers the background image in the process screen (X and Y position are then unimportant).

The "..." button is used to open the list of the available images in the setup program:



"Replace" button: The selected image is replaced by a different image, which must be selected from a file directory as a graphic in BMP format (max. 636 × 404 pixels (as of system version 02:

max. 636 × 453 pixels); 256 colors). During this process, the name that is used for the image in the list can be changed so that it is different to the file name. If the "Transparent" option is active (checkbox selected), white areas in the image become transparent in the process screen.

"Export" button: The selected icon is saved in a file directory as a graphic in BMP format.

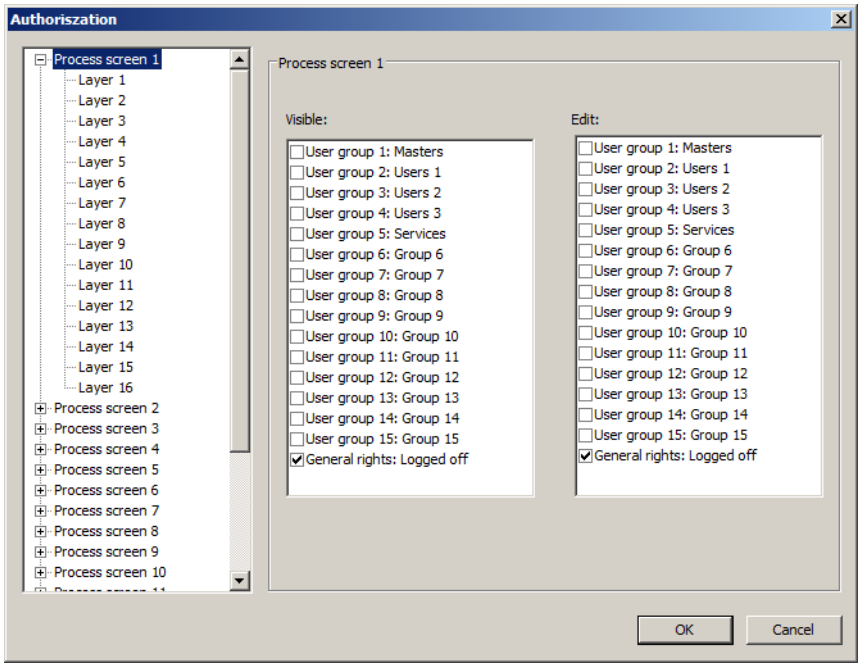
14.6.4 Authorization (as of system version 02)

In the following two dialogs, the authorization concerning the process screens and the layers within a process screen is defined. The attributes "Visible and "Edit" determine whether the process sreen or the layer is displayed and whether entries are allowed.

The attributes can be individually assigned to each user group. A logged on user thus receives the authorization of his user group. If a user belongs to more than one user group, he receives the authorizations of all of these user groups. By selection of "General rights", the authorization also applies to a user who has not logged on.

NOTE!
The following conditions must be met (AND-linked) in order that a layer within a process screen is visible or that entries are possible:
Authorization for the process screen exists + attribute of the layer is active + authorization for the layer exists
In addition, the process screen must be active and the respective object must be visible and possibly editable.

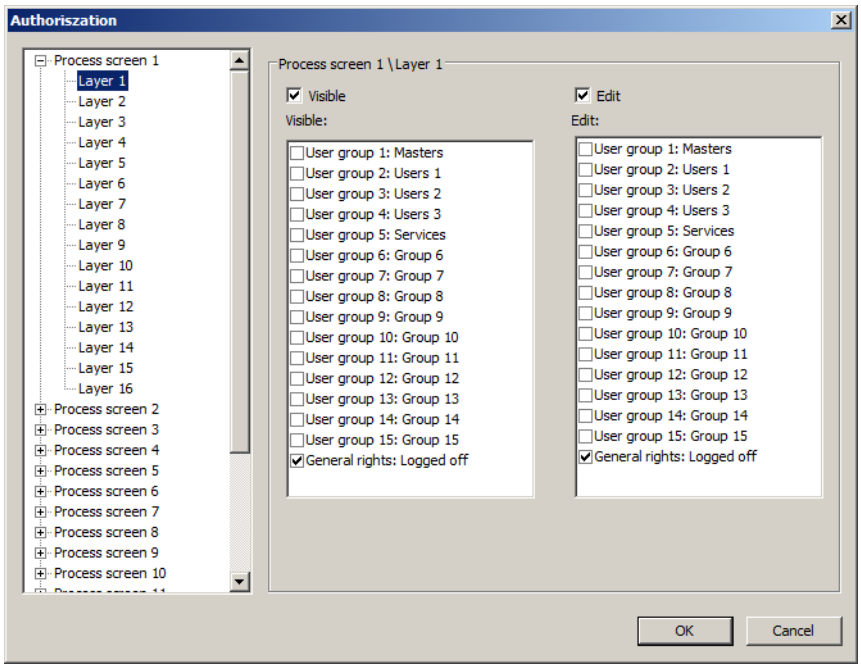
Setup dialog – Process screen



Parameter

Parameter	Selection/settings	Description
Process screen 1 to 18	Select process screen	The authorizations defined here apply to the respective whole process screen. They are preconditions for the authorizations with respect to the single layers (AND-linked).
Visible	**Yes** (☑), No (☐)	"Yes" releases the display of the process screen for the selected user group.
Edit	**Yes** (☑), No (☐)	"Yes" releases the option for entry in the process screen (only for input objects).

Setup dialog – Layer



Parameter

Parameter	Selection/settings	Description
Layer 1 to 16	Select layer	The authorizations defined here apply to the respective layer within the concerned process screen. An authorization for a level is only effective if the same authorization exists for the concerned process screen (AND-linked).
Visible 🕮	**Yes** (☑), No (☐)	"Yes" releases the display of the layer.
Edit 🕮	**Yes** (☑), No (☐)	"Yes" releases the option for entry in the layer (only for input objects).

Visible, Edit

Before an authorization will be assigned to a user group, the respective attribute must be activated for the whole layer (checkbox above the user groups). Otherwise the assignment is not effective (AND-linked).

14.6.5 Object types for process screens (overview)

The following object types are available when editing object features:

Type	Description
Icon	The status of a digital signal is graphically depicted using two pictograms (icons or images).
Analog signal	The value of an analog signal is displayed in numerical form (e.g. 123.45).
Integer signal	The value of an integer signal is displayed in numerical form (e.g. 123)
Digital signal	The status of a digital signal is displayed within a frame via a text (e.g. Low, High).
Text	Text that is displayed in the process screen. This relates either to a specific text entered when editing the object or a text from the system (selection from a selector).
Frame	Frame for grouping or highlighting objects The area within the frame is transparent and is automatically placed in the background. An object (e.g. text or image) located within this frame is made visible as a result.
Rectangle	Rectangle for grouping or highlighting objects Unlike the frame, the rectangle is not transparent (separate color can be set). As a result, objects can be arranged against a background with a color that differs from that of the general background color.
Time frame	The value of an integer signal is interpreted as a time frame in seconds and displayed in the format hh:mm:ss. This object type can be used to display the runtime of a program in the process screen, for example.
Bar graph	The value of an analog signal is displayed as a bar graph (vertical or horizontal).
Input float	Field for entering a float value The value is allocated to an analog signal of the system (selection of a signal from a selector).
Input integer	Field for entering an integer value The value is allocated to an integer signal of the system (selection from a selector).
Input text	Field for entering a text The text is allocated to a system text (text variable, name) (selection from a selector).
Drop-down menu	Field for selecting a text The number of the text to be selected is allocated to an integer signal of the system (selection from a selector).

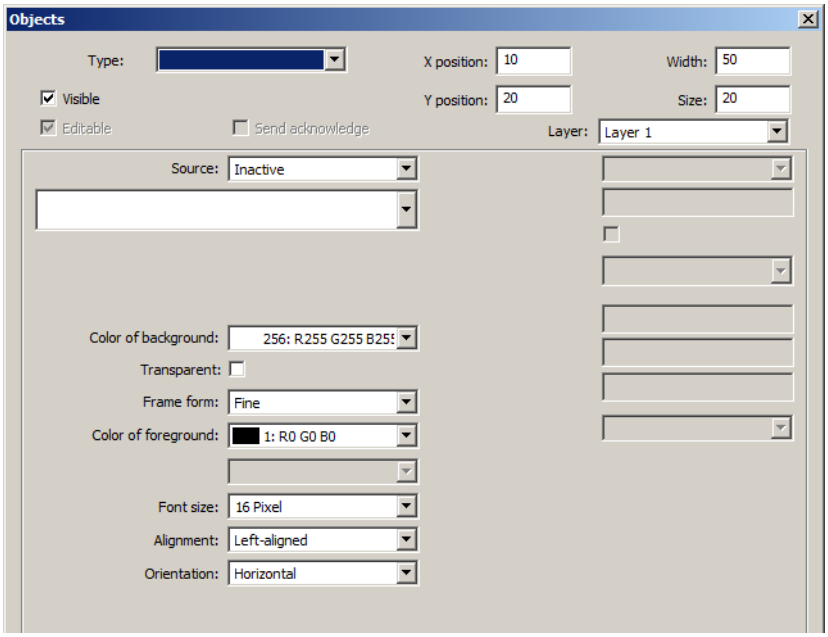
Type	Description
Input time frame	Field for entering a time frame in the format hh:mm:ss The value (time frame in seconds) is allocated to an integer signal of the system (selection from a selector).
Input time	Field for entering the date and time in the format dd.mm.yy hh:mm:ss The value (time frame in seconds as from 01.01.1984, 00:00:00) is allocated to an integer signal of the system (selection from a selector).
Input digital	Field for selecting a binary value (Low, High) The value is allocated to a digital signal of the system (selection from a selector).
Change process screen	Button for changing to a different process screen
Push button	Interface with button function The status is allocated to the "Push button n" (system version 01: n = 1 to 18; as of system version 02: n = 1 to 32) of the system (selection from a selector). Additional functions as of system version 02: Object for user logon/logoff or for displaying the "Login" menu.
Toggle button	Button with changeover function The status changes between position 1 and position 2. Each position can be allocated a float value, an integer value, or a binary value. The destination is selected from a selector and must correspond to the configured data type.
Status icon (as of system version 02)	Displays an icon. The icon is selected from the figure list. The number of the figure is determined by the value of an integer signal.
Batch info (as of system version 02)	Displays a batch text. The text of the right column of a batch screen is displayed.
Program choice (as of system version 02)	List for selection of a program Depending on the intended use, the list either contains all programs or only those programs which are assigned to a certain program generator. The number of the program to be selected is written to an integer signal of the system (selection from a selector).
Process step choice (as of system version 02)	List for selection of a process step The list contains all process steps which have been assigned to a certain program generator. The number of the process step to be selected is written to an integer signal of the system (selection from a selector).

14.6.6 General object features

The description of the general object features applies for all object type for which the parameters in question are available.

The specific object features are described in the following chapters under the corresponding object type.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Type	Selection from list of object types	Object type for the process screen
X position	0 to **10** to 635	X coordinate of the upper left corner of the object in the process screen
Y position	0 to **20** to 403	Y coordinate of the upper left corner of the object in the process screen
Width	1 to **50** to 636 (as of system version 02: 452)	Width of the object
Size	1 to **20** to 404 (as of system version 02: 453)	Size of the object
Visible	**Yes** (☑), No (☐)	"Yes" releases the display of the object in the process screen.
Editable	**Yes** (☑), No (☐)	"Yes" releases the option for entry in the process screen (only for input objects).
Send acknowledge	Yes (☑), **No** (☐)	"Yes" means that an acknowledgement is sent to the internal PLC following an entry in the process screen (only for input objects with a destination variable).

Parameter	Selection/settings	Description
Color of background	Select color (drop-down menu) or enter the color code (integer value).	Background color of the object
Layer (as of system version 02)	Select layer (drop-down menu)	Layer of the object in the process screen
Transparent	Yes (☑), **No** (☐)	If "Yes", the background color of the object is not active. Instead, the font will be displayed in front of the background color of the process screen.
Frame form	Select form (drop-down menu).	The object can be provided with a frame.
Color of foreground 🕮	Select color (drop-down menu).	Font color within the object
Font size	Select font size (drop-down menu).	Font size within the object
Alignment	Select alignment (drop-down menu).	Alignment of the font within the object (left-aligned, right-aligned, centered)
Orientation	Select orientation (drop-down menu).	Orientation of the object in the process screen (horizontal, vertical; not for input objects).

Color of foreground

In order for the font to be visible, the foreground and background color must be different from each another. If the "Transparent" setting is selected (), this applies with regard to the background color of the process screen.☑

Preview

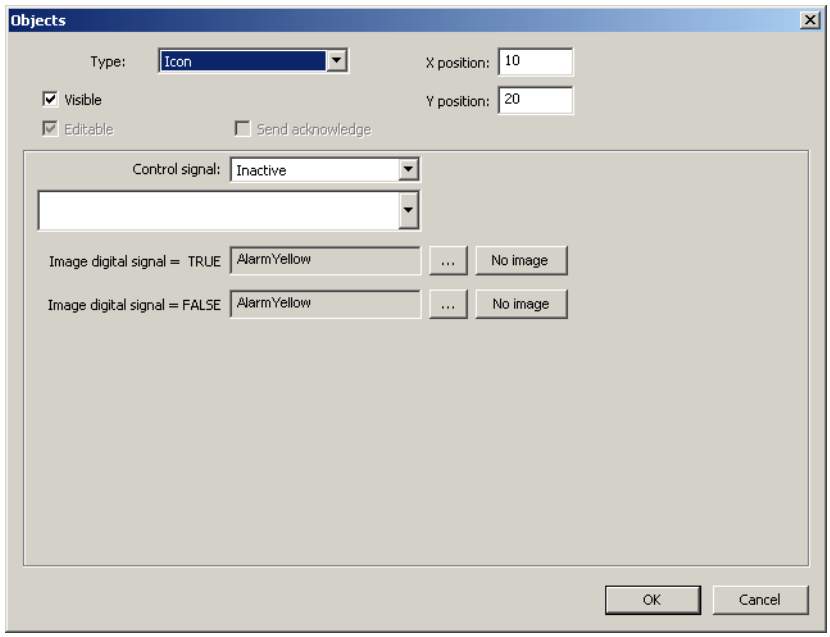
If the dialog is exited using the "OK" button, the simulation opens in the setup program.

⇨ Chapter 14.6.9 "Preview", page 252

14.6.7 Display objects

Icon

Setup dialog



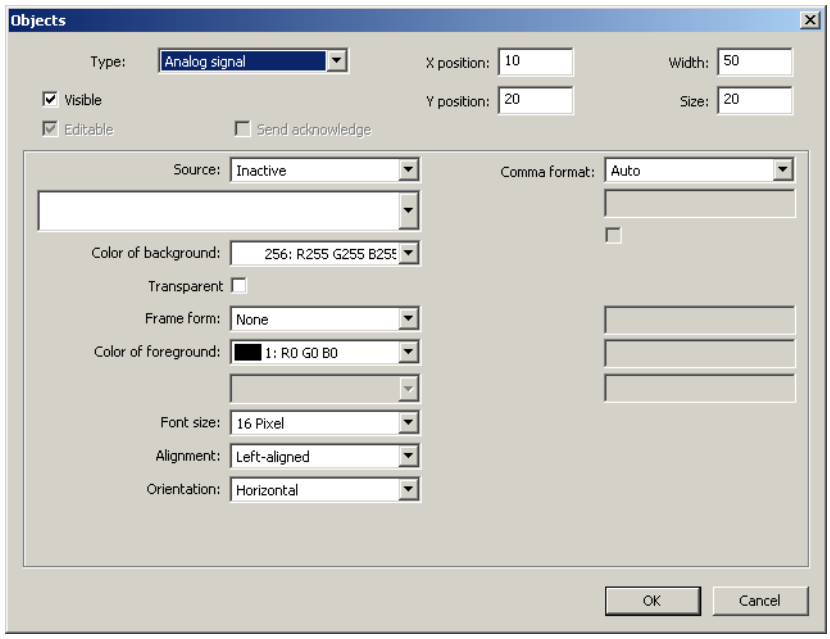
Parameter

Parameter	Selection/settings	Description
Control signal	Digital signal whose status is displayed via the corresponding icon.	
	Inactive Select module and corresponding signal.	No signal selected. (Icon for FALSE (0) will be displayed.) The signal must be of the "Binary" data type.
Image digital signal = TRUE	Touch the "..." button and select the image from the list (or select "No image").	Icon for displaying the status TRUE (1).
Image digital signal = FALSE	Touch the "..." button and select the image from the list (or select "No image").	Icon for displaying the status FALSE (0).

14 Configuration – in setup program only

Analog signal

Setup dialog

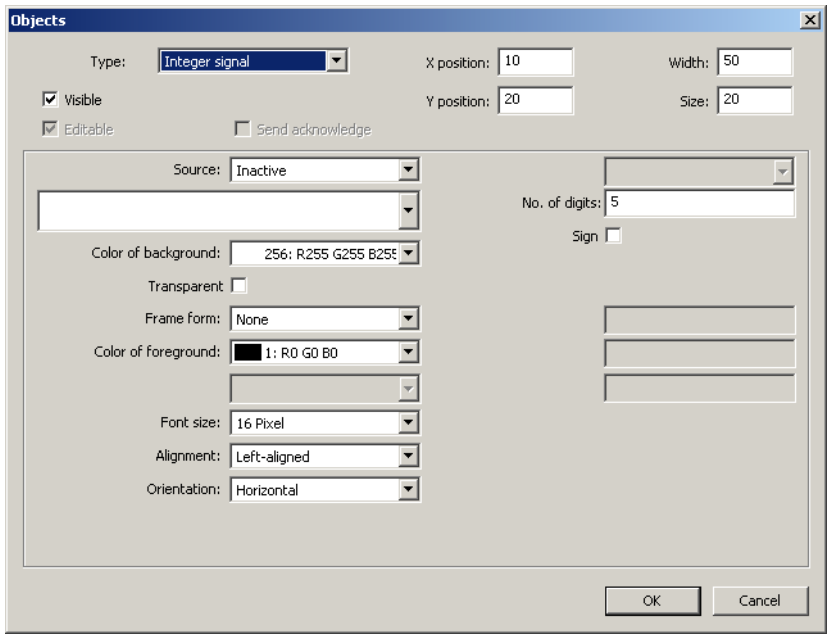


Parameter

Parameter	Selection/settings	Description
Source	Analog signal whose value within the object is displayed numerically.	
	Inactive Select module and corresponding signal.	No signal selected. (Display: -----) The signal must be of the "Float" data type.
Comma format	Select comma format (drop-down menu).	Number of post-decimal places of the displayed value

Integer signal

Setup dialog



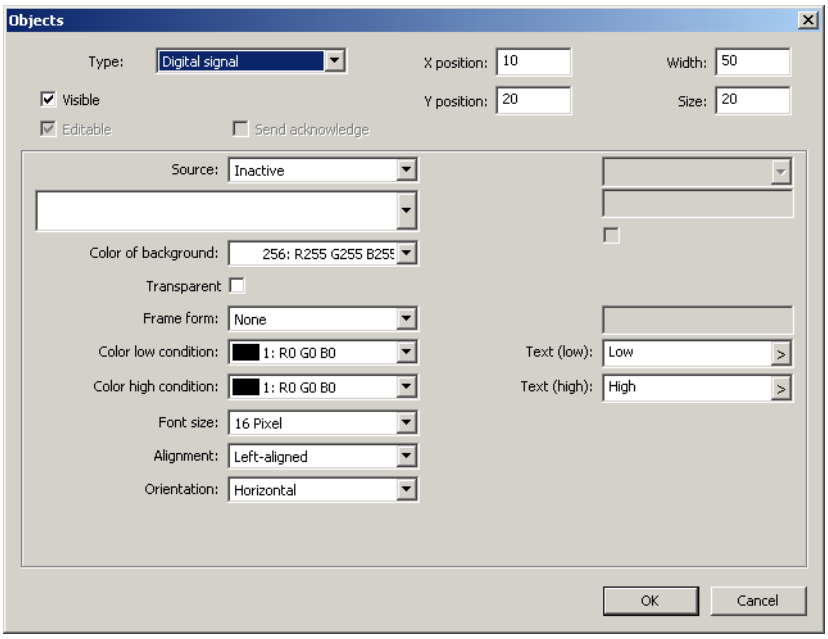
Parameter

Parameter	Selection/settings	Description
Source	Integer signal whose value within the object is displayed numerically.	
	Inactive Select module and corresponding signal.	No signal selected. (Display: -----) The signal must be of the "Integer" data type.
No. of digits	Select number of digits (0 to 10).	Maximum number of digits displayed (without sign)
Sign	Yes (☑), **No** (☐)	If "Yes", a positive value will also be displayed with a sign.

14 Configuration – in setup program only

Digital signal

Setup dialog



Parameter

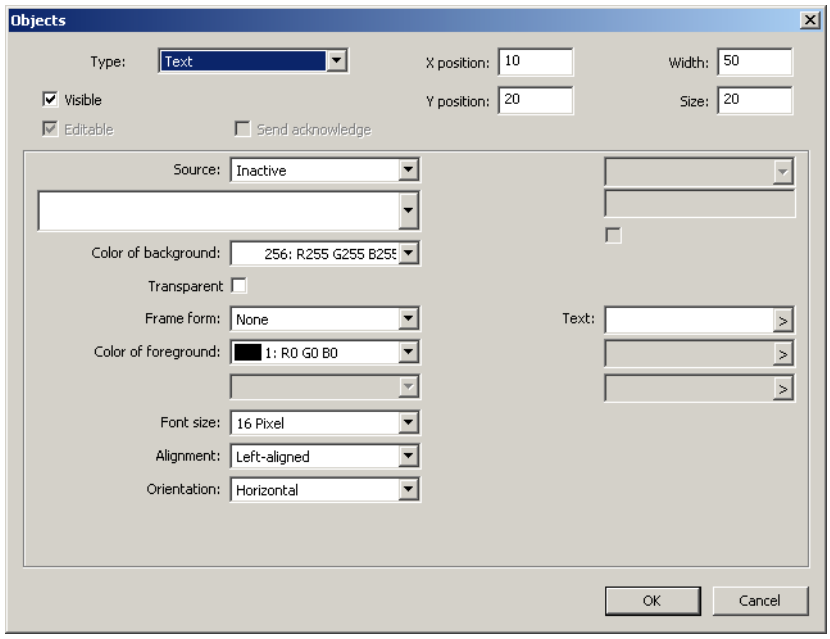
Parameter	Selection/settings	Description
Source	Digital signal whose status within the object is displayed via a text.	
	Inactive Select module and corresponding signal.	No signal selected. (Text for low condition will be displayed.) The signal must be of the "Binary" data type.
Color low condition 🕮	Select color (drop-down menu).	Font color (Text (low)) within the object
Color high condition 🕮	Select color (drop-down menu).	Font color (Text (high)) within the object
Text (low)	Enter text (or use default text).	Text for low condition
Text (high)	Enter text (or use default text).	Text for high condition

Colors for low condition and high condition (background color)

In order for the font to be visible, the foreground and background color must be different from each another. If the "Transparent" setting is selected (), this applies with regard to the background color of the process screen.☑

Text

Setup dialog



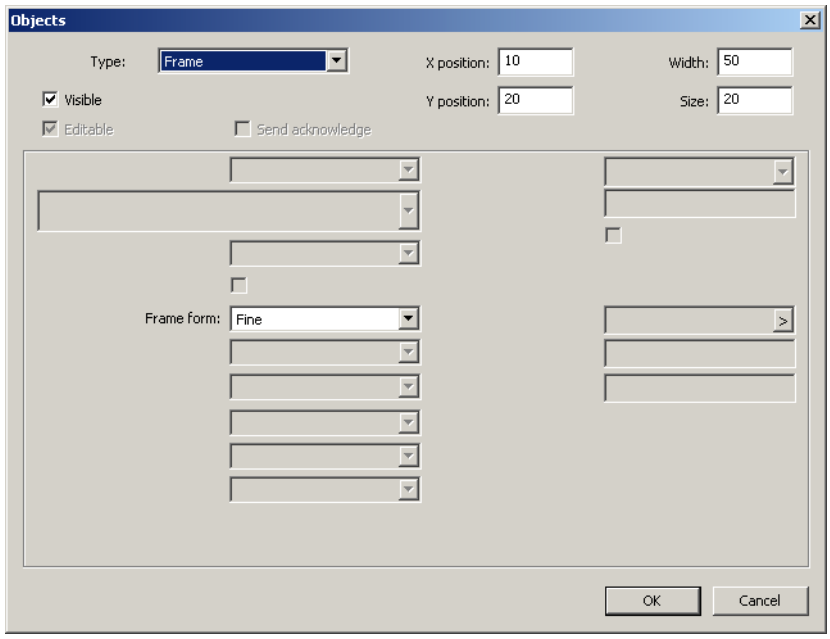
Parameter

Parameter	Selection/settings	Description
Source	Text source whose text is displayed within the object.	
	Inactive	No text selected. The user can enter a text in the "Text" field.
	Select module and corresponding text.	The selection must be of the "Text" data type.
Text	Enter text	Text that is displayed within the object. The entry field is active if no text source has been selected.

14 Configuration – in setup program only

Frame

Setup dialog

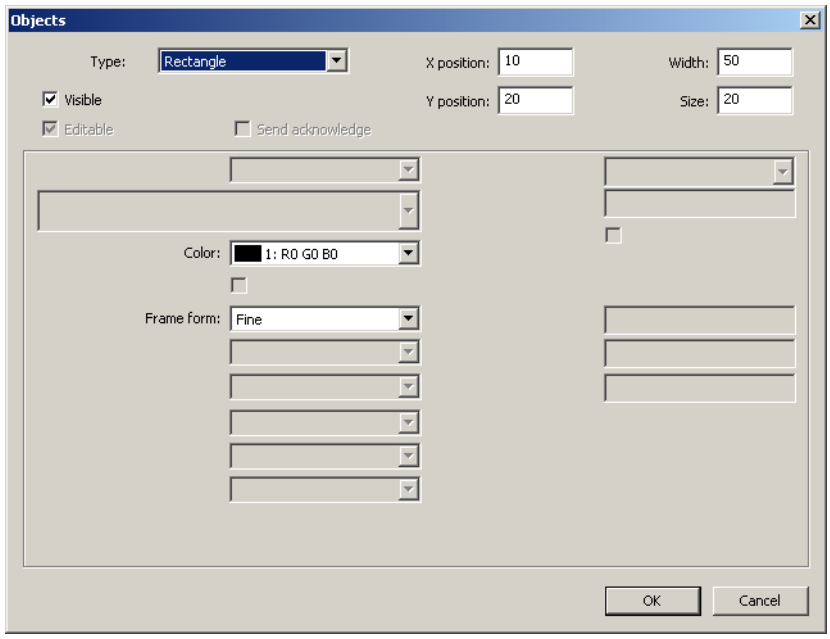


Parameter

Parameter	Selection/settings	Description
Frame form	Select form (drop-down menu).	Frame (black) for grouping or highlighting objects The area within the frame is transparent and is automatically placed in the background. An object (e.g. text or image) located within this frame is made visible as a result.

Rectangle

Setup dialog



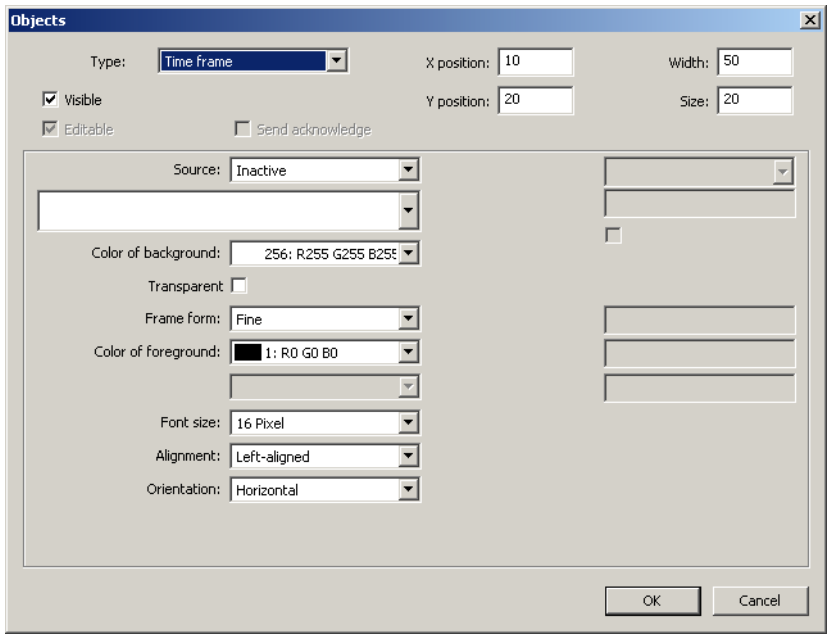
Parameter

Parameter	Selection/settings	Description
Color	Select color (drop-down menu).	Color of the rectangle surface Unlike the frame, the rectangle is not transparent, although it is automatically in the background. As a result, objects can be arranged against a background with a color that differs from that of the general background color.
Frame form	Select form (drop-down menu).	The rectangle can also be provided with a (black) frame.

14 Configuration – in setup program only

Time frame

Setup dialog

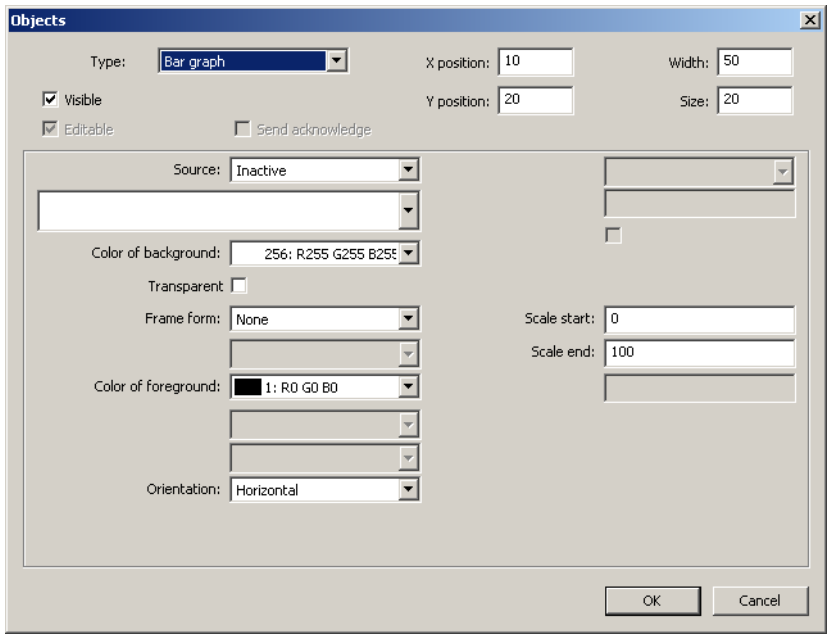


Parameter

Parameter	Selection/settings	Description
Source	Signal whose value (time frame in seconds) within the object is displayed in the format hh:mm:ss.	
	Inactive	No signal selected. (Display: --:--:--)
	Select module and corresponding signal.	The signal must be of the "Integer" data type.

Bar graph

Setup dialog



Parameter

Parameter	Selection/settings	Description
Source	Analog signal whose value is displayed as a bar graph.	
	Inactive Select module and corresponding signal.	No signal selected. (Display: Bar at "0") The signal must be of the "Float" data type.
Signal color 📖	Select color (drop-down menu).	Color of the bar within the object
Scale start	Enter value (integer)	Lower value for bar graph display scaling
Scale end	Enter value (integer)	Upper value for bar graph display scaling

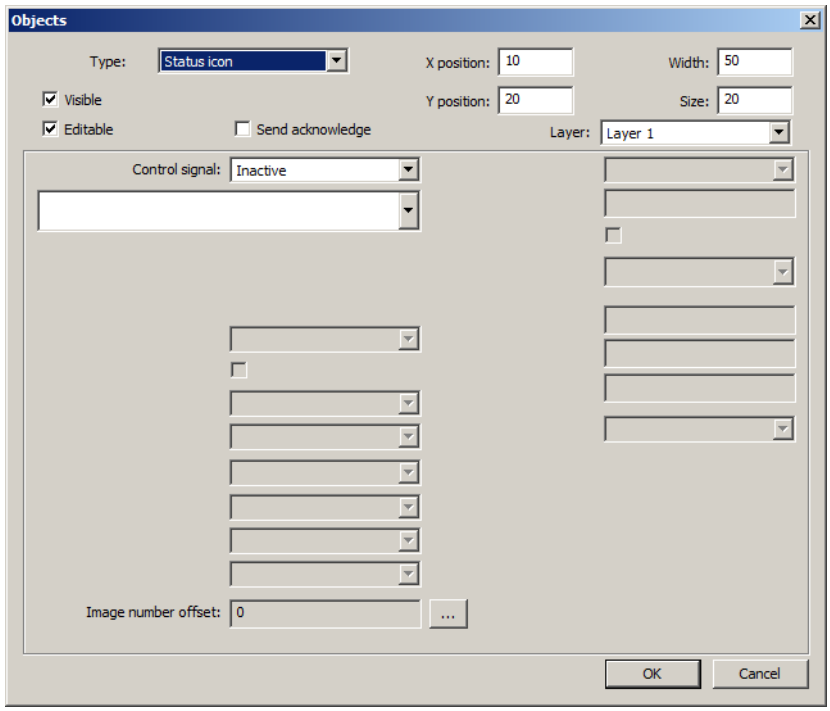
Signal color

In order for the bar to be visible, the signal and background color must differ from one another. If the "Transparent" setting is selected (), this applies with regard to the background color of the process screen.☑

14 Configuration – in setup program only

Status icon (as of system version 02)

Setup dialog

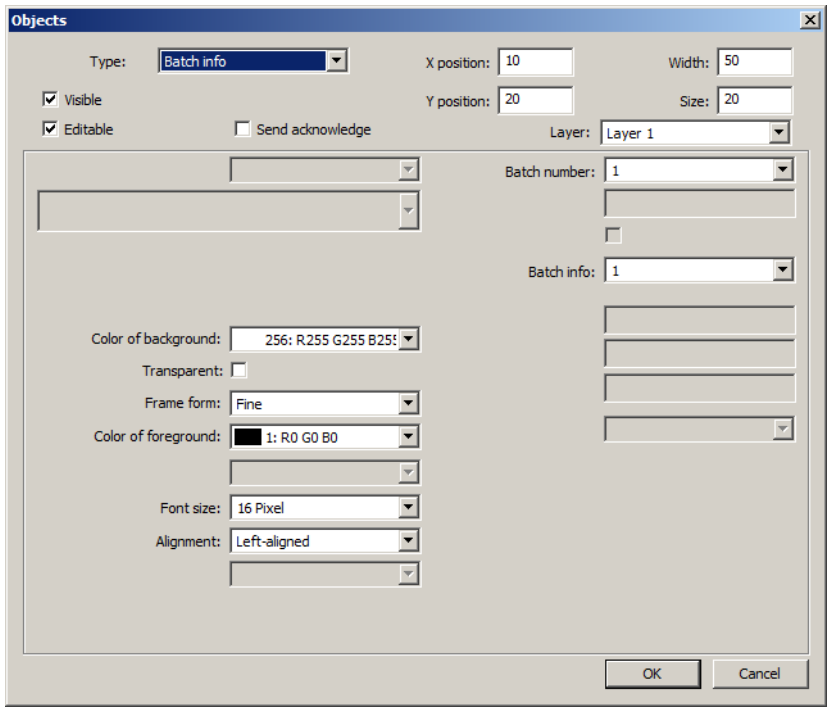


Parameter

Parameter	Selection/settings	Description
Controller signal	Analog signal whose integer value selects an icon from the figure list. Examples: Value = 0, picture = 1; value = 9, picture = 10 (offset is 0 in each case).	
	Inactive Select module and corresponding signal.	No signal selected. (Object frame "Status Icon" is displayed.) The signal must be of the "Integer" data type.
Image number offset	**0** to 499 To set the first selectable figure, click the "..." button.	Offset for figure selection: Value + 1 + offset = number of the picture With the offset a certain range may be used from the figure list. If offset = 0, figures starting with figure 1 are selected; if offset = 99, the selection starts with figure 100.

Batch info (as of system version 02)

Setup dialog



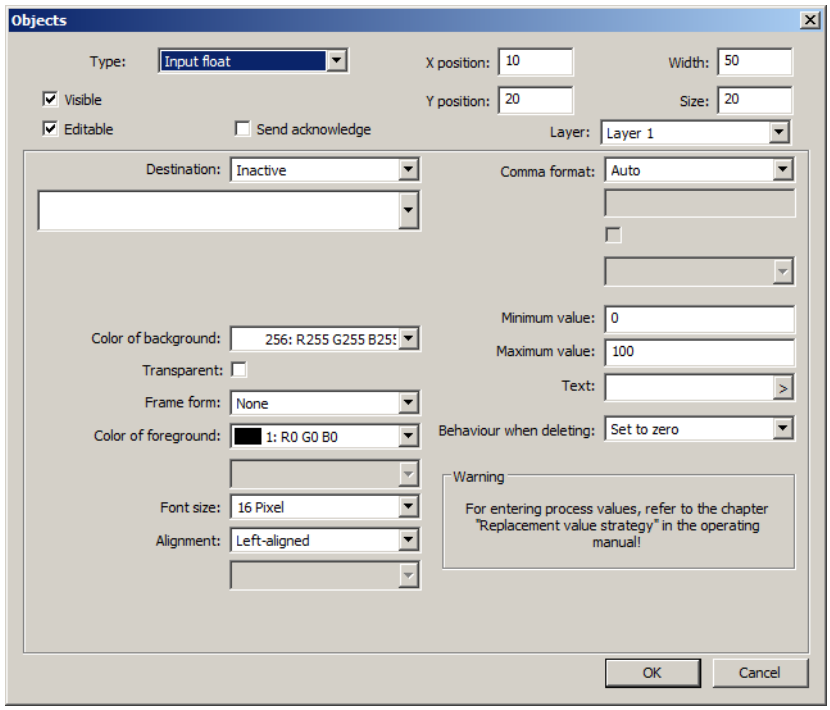
Parameter

Parameter	Selection/settings	Description
Batch number	**0** to 10 (drop-down menu)	Number of the batch whose batch info (row) is displayed in the process screen.
Batch info	**0** to 11 (drop-down menu)	Number of the line which is displayed in the process screen. The text of the right column of the batch screen is displayed. Instead of the text of the left column, with the "Text" object an individual text can be used in the process screen.

14.6.8 Input objects

Input float

Setup dialog

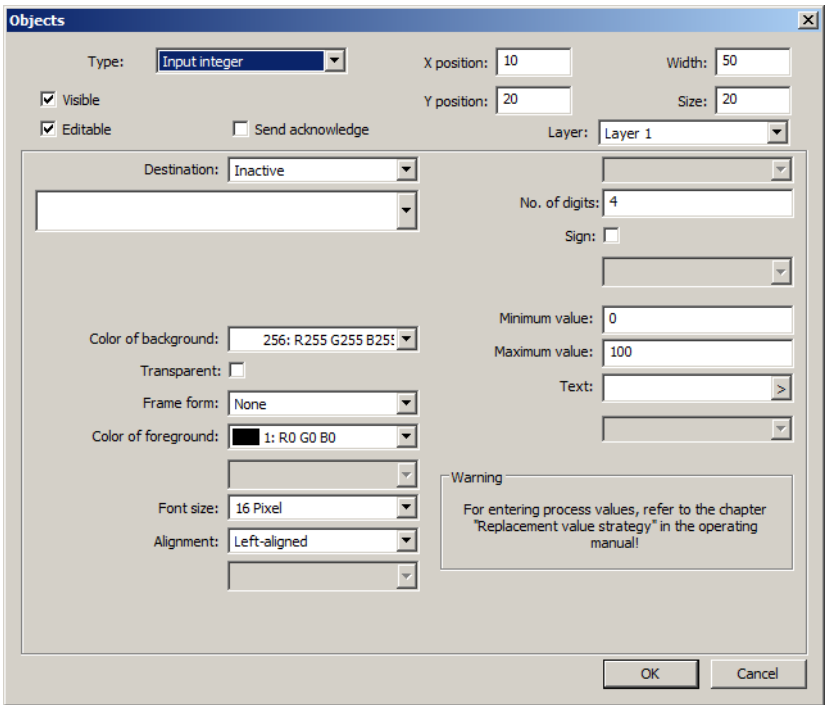


Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the entered value is written.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Float" data type.
Comma format	Select comma format (drop-down menu).	Number of post-decimal places of the displayed value
Minimum value	Enter value (-99999 to +99999).	Lower limit of the admissible input range
Maximum value	Enter value (-99999 to +99999).	Upper limit of the admissible input range
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.
Behaviour when deleting (as of system version 02)	Value when pressing the "Delete" button.	
	Set to zero Set to no input "-----"	The value is set to 0. The value is set to "no input".

Input integer

Setup dialog



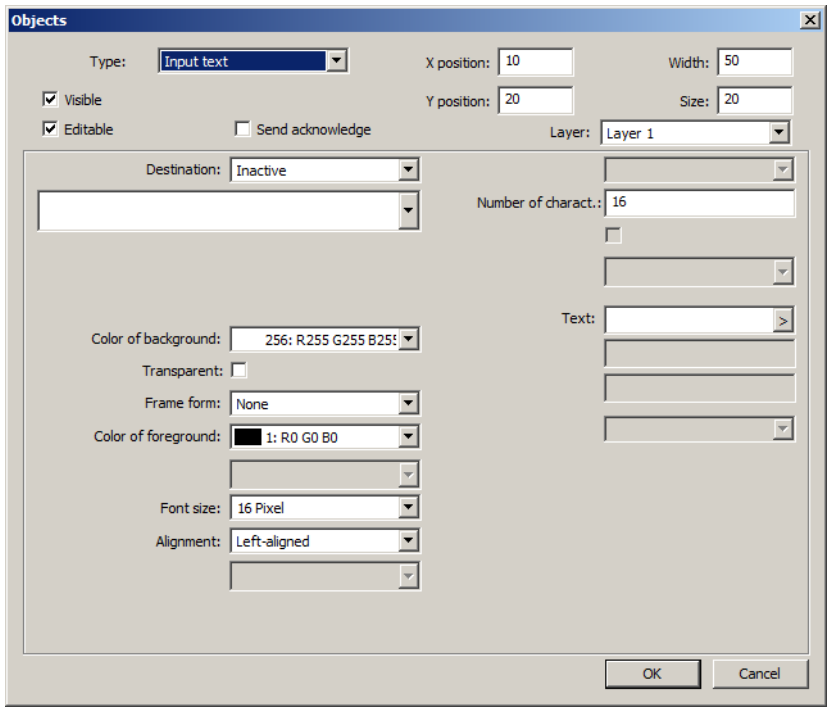
Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the entered value is written.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
No. of digits	Enter number of digits (0 to 10).	Maximum number of digits in the entry (without sign)
Sign	Yes (☑), **No** (☐)	If "Yes", a positive value will also be displayed with a sign.
Minimum value	Enter value (-99999 to +99999).	Lower limit of the admissible input range
Maximum value	Enter value (-99999 to +99999).	Upper limit of the admissible input range
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.

14 Configuration – in setup program only

Input text

Setup dialog

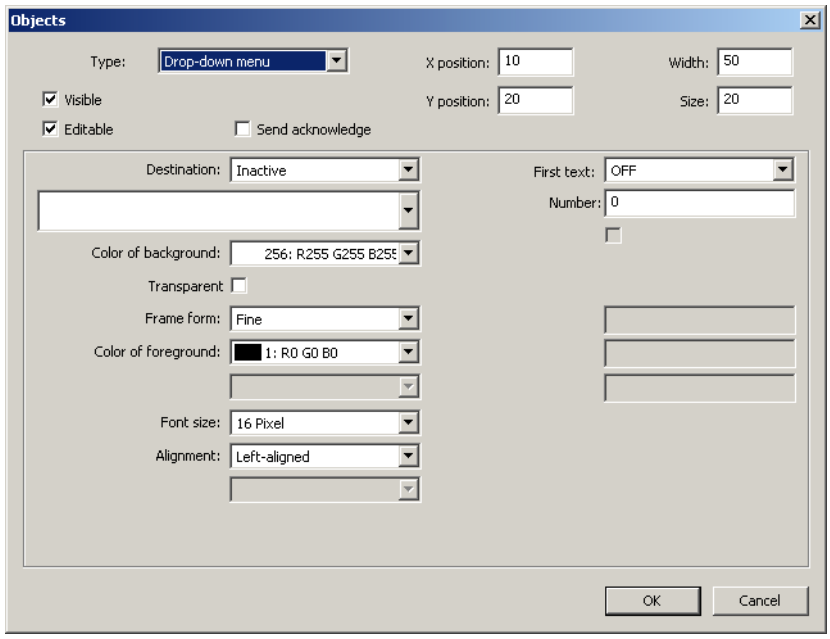


Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the entered text is written.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Text" data type.
Number of charact.	Enter number of characters (0 to 100).	Maximum number of characters that can be entered.
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.

Drop-down menu

Setup dialog



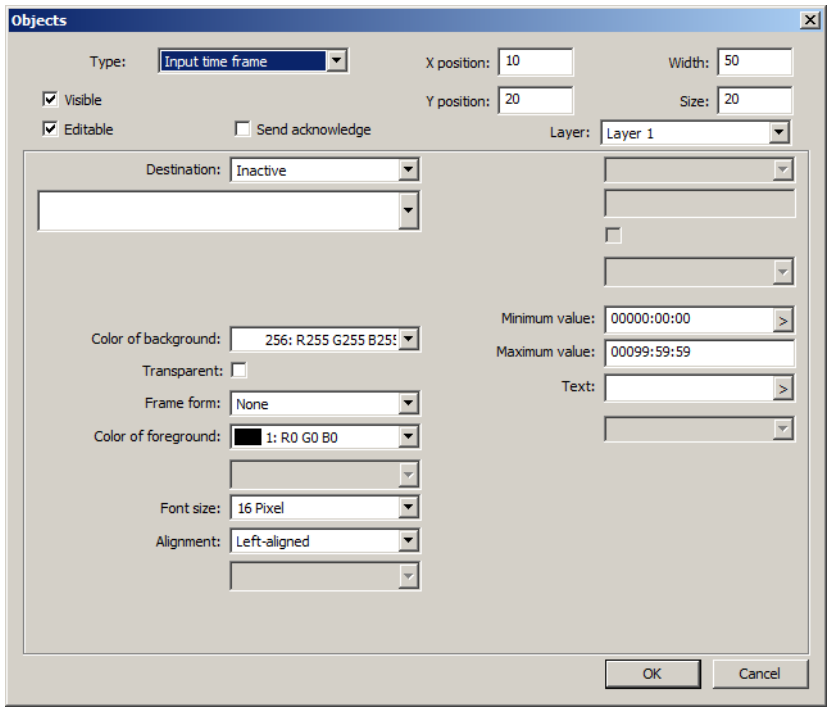
Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the value is written. The value is determined by the selection of a text from the drop-down menu and corresponds to the number of the text in the list of system texts.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
First text	Select text from the list of the max. 250 system texts (drop-down menu).	System text that is displayed as the first text in the drop-down menu.
Number	Enter number (0 to 249; as of system version 02: 0 to 499).	The number determines which additional system texts – beginning after the "first text" – will be displayed in the drop-down menu.

14 Configuration – in setup program only

Input time frame

Setup dialog

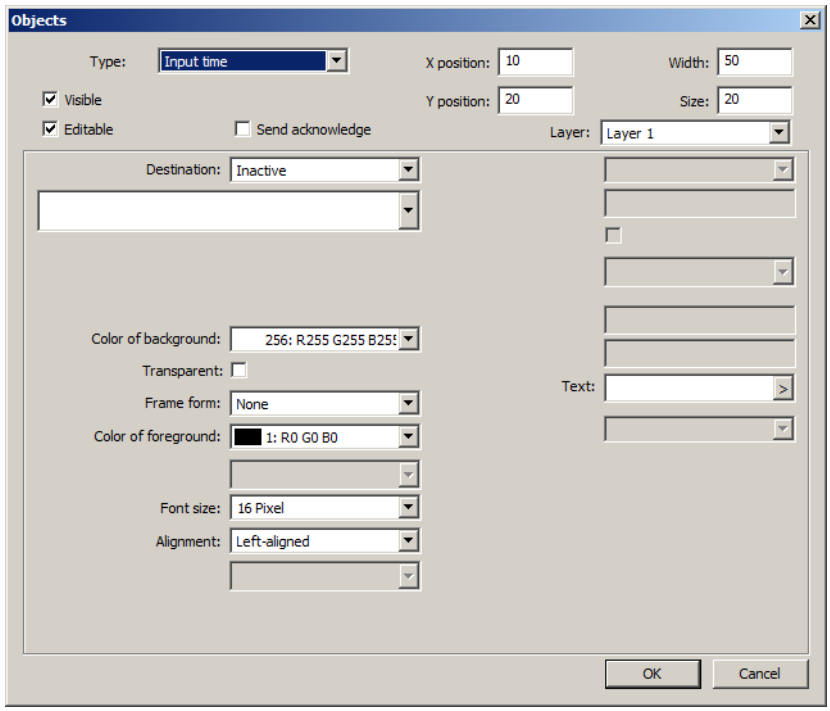


Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the entered value is written. The value is seconds is determined from the time frame entered in the format hh:mm:ss.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
Minimum value	Enter value (00000:00:00 to 65535:59:58).	Lower limit of the admissible input range in the format hh:mm:ss
Maximum value	Enter value (00000:00:01 to 65535:59:59).	Upper limit of the admissible input range in the format hh:mm:ss
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.

Input time

Setup dialog



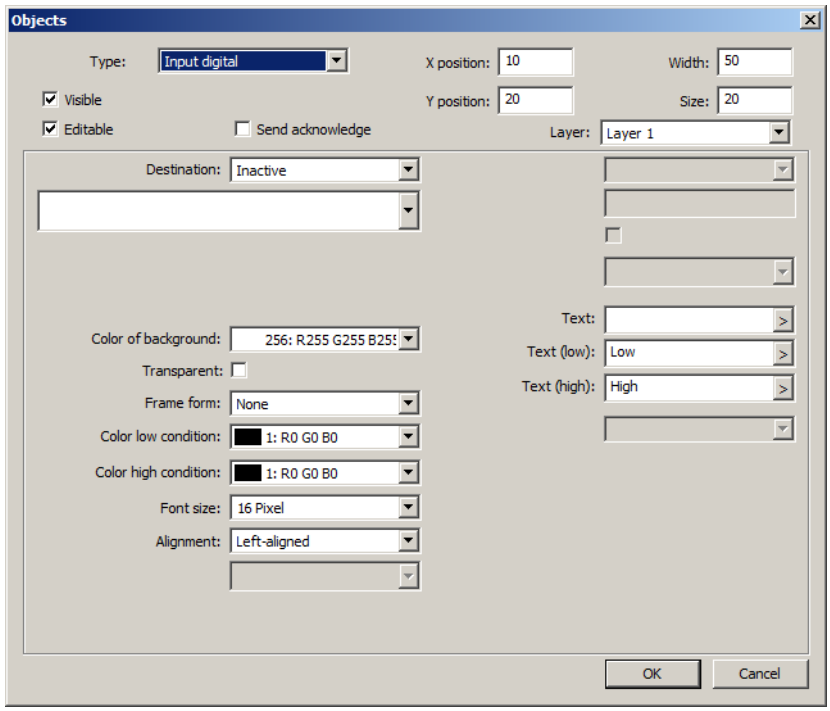
Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the entered value is written. The value in seconds – calculated from 01.01.1984, 00:00:00 – is determined from the point in time entered (date and time in the format dd.mm.yy hh:mm:ss).	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.

14 Configuration – in setup program only

Input digital

Setup dialog



Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the value is written. The value (Low, High) is determined by the selection of the corresponding text (Text (low), Text (high)) in the process screen.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Binary" data type.
Color low condition 📖	Select color (drop-down menu).	Font color (Text (low)) within the object
Color high condition 📖	Select color (drop-down menu).	Font color (Text (high)) within the object
Text (as of system version 03)	Enter text.	The text appears in the title bar of the input mask when the input object is opened.
Text (low)	Enter text (or use default text).	Text for low condition
Text (high)	Enter text (or use default text).	Text for high condition

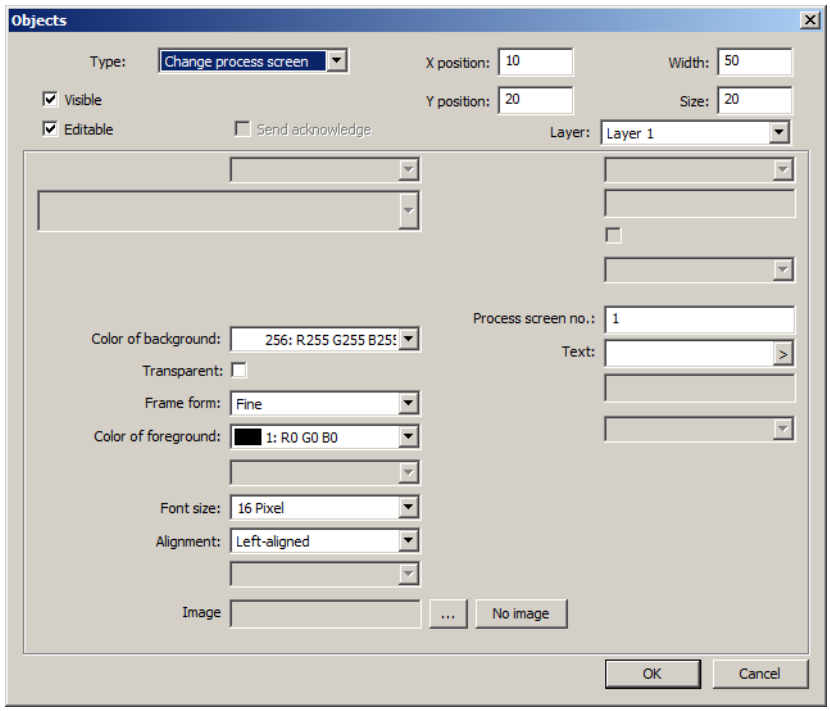
Colors for low condition and high condition (background color)

In order for the font to be visible, the foreground and background color must be different from each another. If the "Transparent" setting is selected (), this applies with regard to the background color of the process screen.☑

14 Configuration – in setup program only

Change process screen

Setup dialog

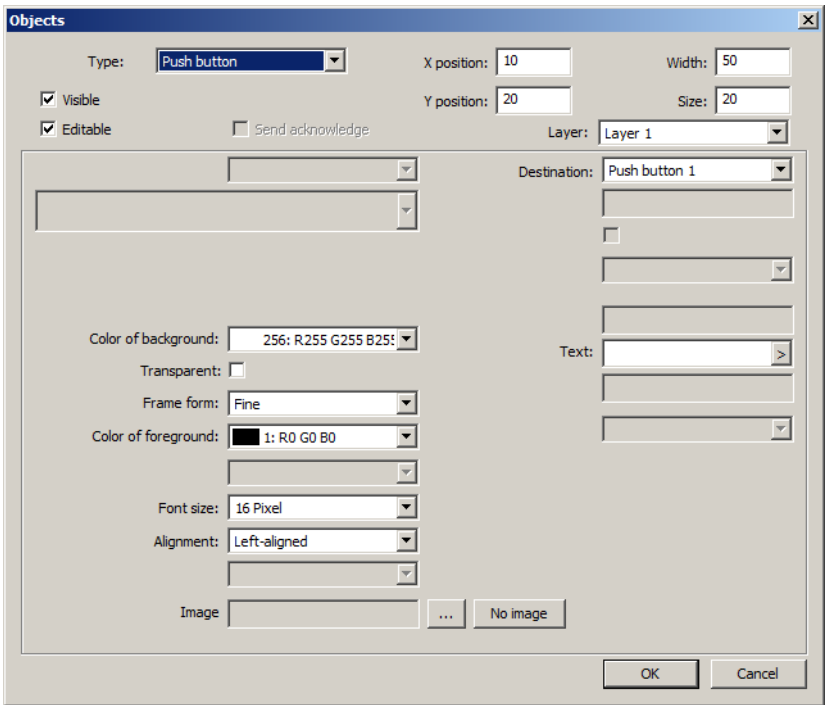


Parameter

Parameter	Selection/settings	Description
Process screen no.	Enter number (1 to 18).	Number of the next process screen If the button is touched in the current process screen, the change takes place in the following process screen.
Text	Enter text.	Designation of the next process screen (process screen to which the user switches). The text is displayed if no image is present (see below).
Image (as of system version 02)	Click the "..." button and select the image from the list (or select "No image").	Icon to display the button in the process screen. If no image is selected, the entered text is displayed.

Push button

Setup dialog

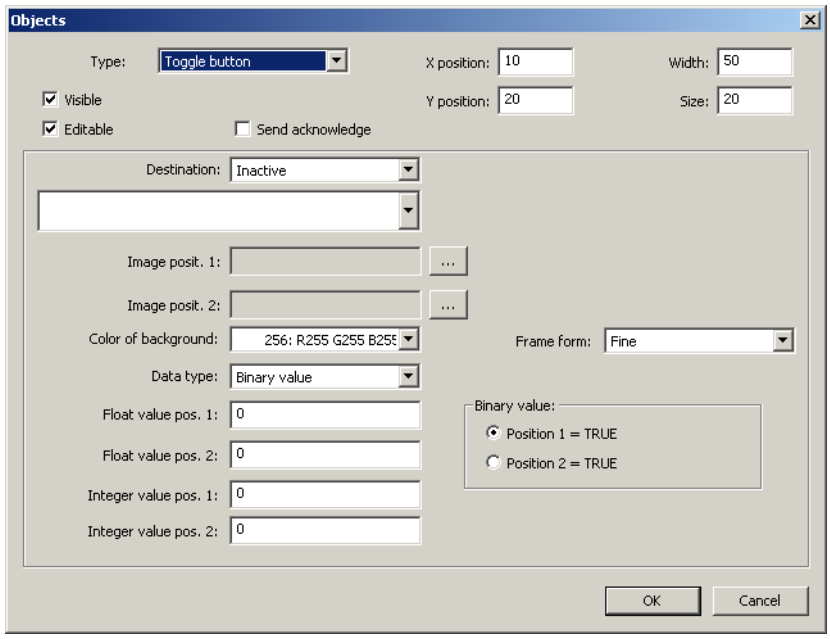


Parameter

Parameter	Selection/settings	Description
Destination	Select destination (Push button 1 to Push button 18). As of system version 02: Push button 1 to Push button 32 Log-In = „ID input“ window (user selection) is opened Log-Out = Logged on user is logged off directly (without confirmation) Security menu = "Login" window is opened	Digital signal that is controlled using the push button. The signal adopts the condition "High" when the push button is touched in the process screen. The Push button 1 to Push button 18 signals are available in the system (digital selector). As of system version 02: In addition, to be used as an object for user logon/log-off and for user administration.
Text	Enter text.	Designation of the push button in the process screen The text is displayed if no image is present (see below).
Image (as of system version 02)	Click the "..." button and select the image from the list (or select "No image").	Icon to display the push button in the process screen. If no image is selected, the entered text is displayed.

Toggle button

Setup dialog

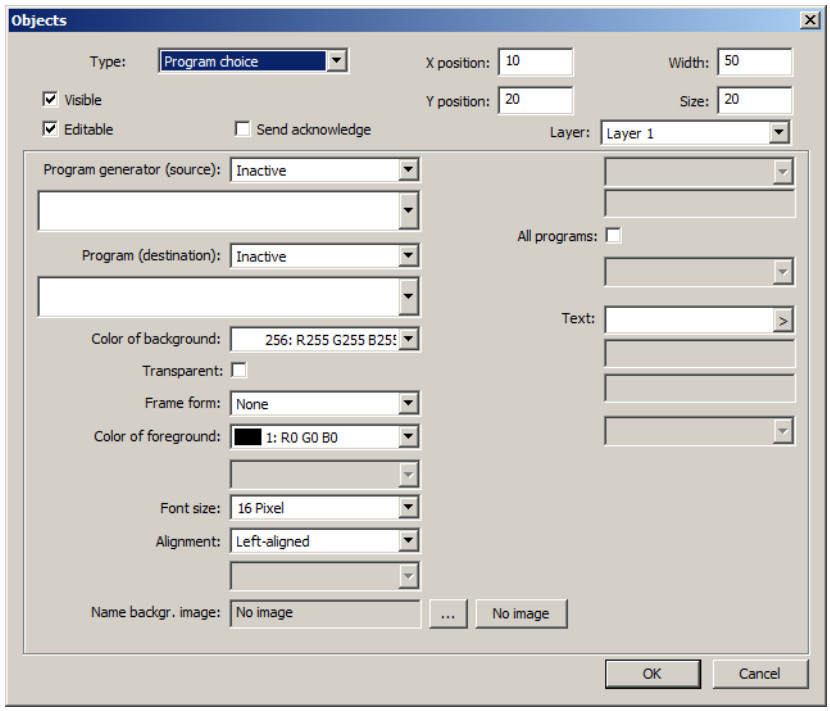


Parameter

Parameter	Selection/settings	Description
Destination	Variable to which the value is written. The value changes between position 1 and position 2 each time the object is touched; the setting is displayed via the corresponding image. Each position can be allocated to a float value, an integer value, or a binary value; the user should observe the selected data type.	
	Inactive Select module and corresponding variable.	No variable selected. The data type of the variable must correspond with the selection of the "Data type" parameter (for "Analog value", the variable type must be "Float").
Image posit. 1, 2	Touch the "..." button and select the image from the list.	Images (icons) for displaying position 1 and position 2.
Color of background	Select color (drop-down menu).	Background color of the object
Data type	Select data type (drop-down menu).	The data type determines which values (float, integer, or binary values) are used in the product.
Float value pos. 1, 2	Enter value	Values for position 1 and position 2 (for "Analog value" data type)
Integer value pos. 1, 2	Enter value	Values for position 1 and position 2 (for "Integer value" data type)
Binary value	Select which setting corresponds to the condition "High" (TRUE).	Conditions for position 1 and position 2 (for "Binary value" data type)

Program choice (as of system version 02)

Setup dialog



Parameter

Parameter	Selection/settings	Description
Program generator (source) 🕮	Number of the program generator. All programs that are assigned to this program generator, are displayed in a selection box.	
	Inactive Select module and corresponding signal.	No signal selected. The signal must be of the "Integer" data type. Programs which are labeled as favorite (see program editor), are displayed at the top of the selection box.
Program (destination)	Variable to which the number of the selected program is written.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
All programs	Yes (☑), **No** (☐)	If "Yes", the selection box contains all programs (also those which are not assigned to a program generator). Select "Yes" if the object is used in a program editor process screen. The selection of a program generator is not necessary in this case and will be ignored.
Text	Enter text.	Text for the designation of the object in the process screen

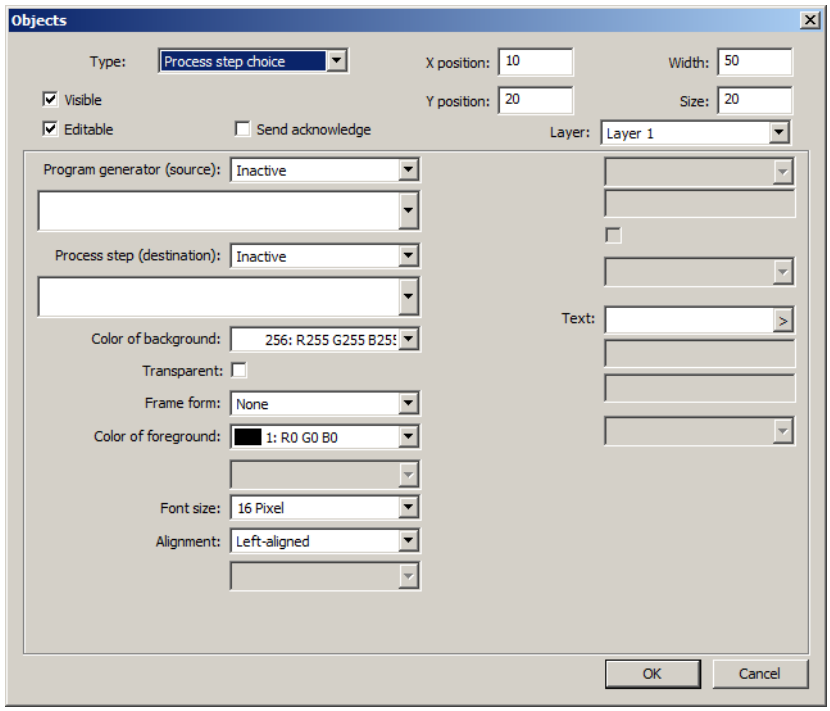
Parameter	Selection/settings	Description
Image	Touch the "..." button and select the image from the list (or select "No image").	Icon to display the object in the process screen. If no image is selected, the entered text is displayed.

Program generator (source)

If the program generator number has to be directly selectable in the process screen, an object of type "Input integer" may be used for this purpose. The entered value (program generator number) is written to an integer variable. This variable is then selected as signal (source) in the "program choice" object.

Process step choice (as of system version 02)

Setup dialog



Parameter

Parameter	Selection/settings	Description
Program generator (source) 🕮	Number of the program generator. All process steps that are assigned to this program generator, are displayed in a selection box.	
	Inactive Select module and corresponding signal.	No signal selected. The signal must be of the "Integer" data type.
Process step (destination)	Variable to which the number of the selected process step is written.	
	Inactive Select module and corresponding variable.	No variable selected. The variable must be of the "Integer" data type.
Text	Enter text.	Text for the designation of the object in the process screen

Program generator (source)

If the program generator number has to be directly selectable in the process screen, an object of type "Input integer" may be used for this purpose. The entered value (program generator number) is written to an integer variable. This variable is then selected as signal (source) in the "process step choice" object.

14.6.9 Preview

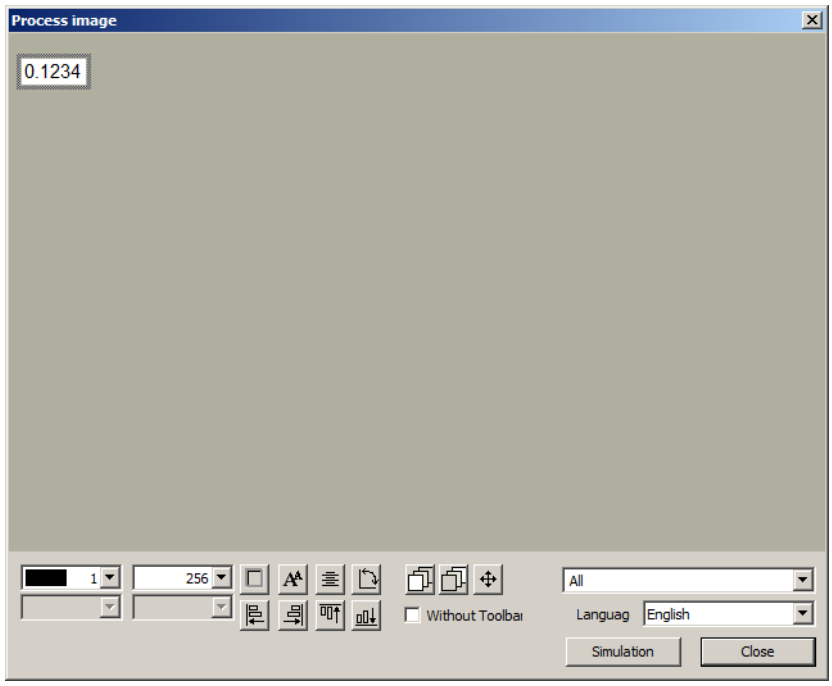
A process screen that has been created can be inspected and changed in the preview window using the setup program prior to being sent to the multifunction panel.

The preview window is opened by touching the "Preview" button:

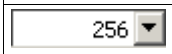
⇨ Chapter 14.6.1 "Process screen editor", page 218

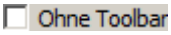
The preview window also opens if the dialog for creating an object is exited using the "OK" button.

Simulation



Processing functions

Button	Function
	Select background color (e.g. font color) within the object (drop-down menu).
	Select background color of the object (drop-down menu).
	Changing the frame form of the object (none, thin, thick, raised, sunken).
	Change font size (12, 16, 24, 31, 48, 64 pixels).
	Change alignment of the font within the object (left-aligned, centered, right-aligned).
	Change orientation of the object in the process screen (horizontal, vertical).
	Move object in process screen further forward with each click (as of system version 02: within a layer). The object is simultaneously moved down in the object list (larger number).
	Move object in process screen further back with each click (as of system version 02: within a layer). The object is simultaneously moved up in the object list (smaller number).

Button	Function
	Move object in process screen horizontally or vertically. Clicking on this button opens an additional window. This contains different arrows (buttons) for moving the object in preset steps.
	Align object in the process screen (left, right, top, bottom). Select the first object by clicking, keep the Shift key pressed, and click on another object (or more) with the left mouse button. When you click on the appropriate button, the other objects are aligned on the first object.
 Without tool-bar	Without toolbar (as of system version 02) By selecting this option (), the preview window is enlarged and corresponds to the size of the process screen in the multifunction panel with deactivated toolbar.
 All	Select layer and/or user group (drop-down menu) (as of system version 02). Only the objects of the selected layers and user groups are displayed in the preview window.
 Language	Select language (drop-down menu). The object text is displayed in the selected language, provided it has already been entered in this language when creating the object.

Processing object features

Changes can be made directly to the object features in question using the processing functions described above. It is also possible to open the object by double-clicking (in the process screen or in the object list) in order to process the object features.

Moving objects

The user has the following options to move an object horizontally or vertically in the preview screen:

- Double-clicking the object to open it and changing the X/Y position.
- Left-clicking and holding the object and moving it directly in the process screen.
- Moving the object using the arrows.

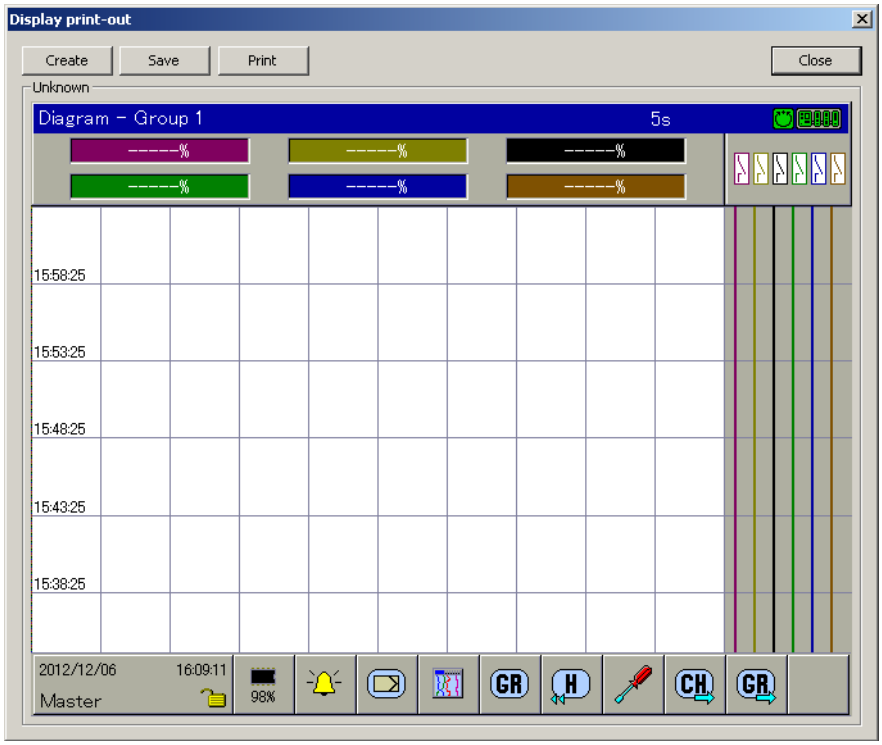
14 Configuration – in setup program only

NOTE!
An active connection between the setup program and the multifunction panel is required to configure the parameters described in this chapter.

15.1 Display print-out

The user can use this function to create a copy (screenshot) of the content of the multifunction panel screen.

Setup dialog



Buttons

Button	Function
Create	Creates a copy of the current screen content.
Save	Opens the "Save as" dialog in order to save the screenshot as a graphic file.
Print	Opens the "Print" dialog in order to print the screenshot.
Close	Closes the dialog.

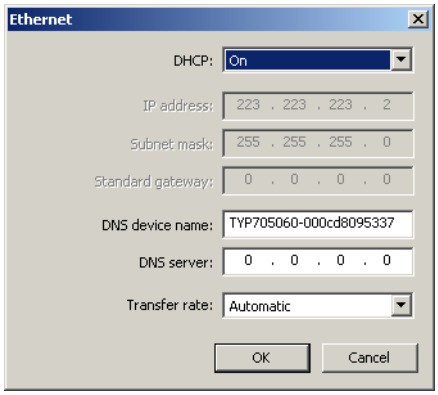
15 Online parameters

15.2 Ethernet

These settings are required for the communication with the multifunction panel via LAN (e.g. setup program, PCA communication software PCC) and for the Web server function of the multifunction panel.

The multifunction panel supports up to five simultaneous connections.

Setup dialog



Parameter

Parameter	Selection/settings	Description
DHCP 🕮	**On** Off	The multifunction panel takes its IP address from the DHCP server. The IP address of the multifunction panel must be assigned manually.
IP address 🕮	0.0.0.0 to **223.223.223.2** to 255255255255	Manual allocation of the IP address for the multifunction panel (active if DHCP = Off) The IP address may need to be requested by the responsible administrator.
Subnet mask 🕮	0.0.0.0 to **255.255.255.0** to 255255255255	Manual setting of the subnet mask (active if DHCP = Off) The structure of the subnet mask may need to be requested by the responsible administrator.
Standard gateway 🕮	**0.0.0.0** to 255255255255	Manual setting of the IP address of the standard gateway (router) (active if DHCP = Off) The IP address may need to be requested by the responsible administrator.

Parameter	Selection/settings	Description
DNS device name 🕮	TYP705060-000cd8095337 Admissible characters: a to z, A to z, -, 0 to 9 (max. 63 characters); name must begin with a letter and must not end with "-" (hyphen).	Example of unique DNS device name for multifunction panel (assigned by default) If necessary, the name can also be assigned individually, but it must be unique.
DNS server 🕮	**0.0.0.0** to 255255255255	IP address of DNS server The IP address may need to be requested by the responsible administrator.
Transfer rate	**Automatic** 10 Mbit/s half duplex 10 Mbit/s full duplex 100 Mbit/s half duplex 100 Mbit/s full duplex	Data transfer rate of Ethernet connection

NOTE!
Changes to the configuration do not take effect until after a system restart.

DHCP

NOTE!
If applicable, deactivate the DHCP to ensure that the multifunction panel uses a fixed IP address.

IP address

NOTE!
The IP addresses for the Ethernet and the system bus must not be in the same subnet.

Subnet mask

The subnet mask determines which part of the IP address indicates the network and which part is available for addressing a device within a network. The length of the mask is 32 bits (IPv4), which is the same length as an IP address.

Example: In a network with a mask of 255.255.255.0, the first 24 bits (from left) are used for the network address; these are set to "1" in the mask. The remaining 8 bits are set to "0" in the mask and can be used for device addresses. There are therefore 254 device addresses available (256 - 2 because the network has assigned itself the address "0" and the address 256 is used for broadcast).

Standard gateway

All network requests to addresses that do not belong to the relevant network are routed through the standard gateway.

DNS device name

The DNS device name is a representative name that can be used for addressing instead of an IP address.

If a DNS device name is entered, it is communicated to the DHCP server so that the multifunction panel can be addressed with the name entered if the function is supported in the relevant LAN. If no DNS device name is entered, the multifunction panel can only be addressed using the assigned IP address.

NOTE!
If DHCP is active, a DNS device name should always be used so that the multifunction panel can also be addressed if the IP address is changed.

DNS server

The DNS server responds to requests from the network seeking to convert a DNS device name into an IP address.

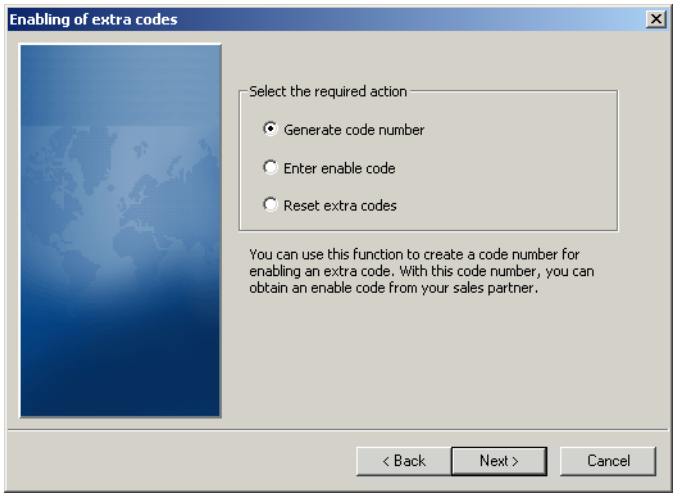
This IP address must be known if the multifunction panel uses a representative name to address a device or server (for example when sending an e-mail).

A valid IP address that is entered here is always used, even if the DHCP server provides a different DNS server address. If this is not the case, the DNS server address received from the DHCP server is used (DHCP must be active).

15.3 Enabling of extra codes

In this dialog, additional functions of the multifunction panel are released or blocked (e.g. registration function).

Setup dialog



Parameter

Parameter	Selection/settings	Description
Generate code number	To generate a code number, click the function to select it and then click the "Next" button. Further instructions are then given.	This function is used to generate a code number to enable extra code. The code number is required to obtain an enable code from a sales partner.
Enter enable code	To enter an enable code, click the function to select it and then click the "Next" button. Further instructions are then given.	This function is used to enable extra code. The enable code received from the sales partner is required for this purpose.
Reset extra codes	To reset extra codes click the function to select it and then click the "Next" button. Further instructions are then given.	This function can be used to lock extra codes that have been enabled. Locked extra codes can only be activated by re-enabling. This procedure is subject to charge!

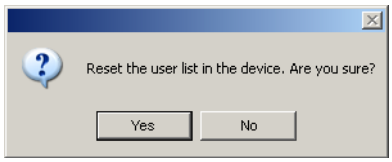
15.4 Resetting the user list

This function is used to reset the user list in the multifunction panel to the default settings (user: Master, password: 9200; user: User, password: 0).

The function is only available if the user that has logged in on the setup program has the rights to use the function (e.g. specialist has logged in).

NOTE!
If the project includes a multifunction panel, the user list must be reset on the multifunction panel (not in the central processing unit).

Setup dialog



15.5 Date and time

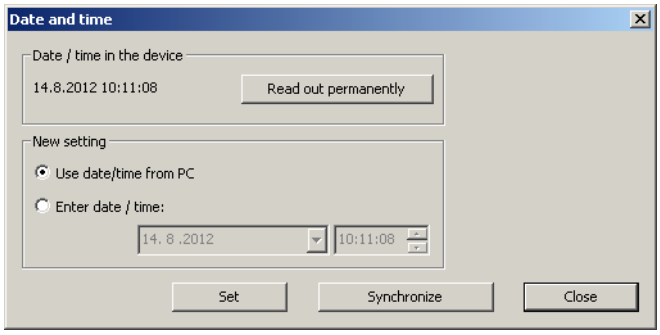
This dialog window is used to set the date and time of the system. These can be entered directly or can be synchronized with the PC on which the setup program is running.

By contrast, the settings for the time zone and daylight saving time are set in the general settings for the project (project configuration).

⇨ Operating manual B 705000.6 (setup program)

NOTE!
If the project includes a multifunction panel, the date and time must be set on the multifunction panel (not in the central processing unit). They are transferred when the system state is "Stop" or when the system is switched on from the central processing unit.

Setup dialog



Parameter

Parameter	Selection/settings	Description
Date / time in the device	Select "Read out permanently" button	The current date and time are read out from the system in cycles. To set the date and time, the cyclical read-out must first be completed ("Stop" button).
New setting	**Use date/time from PC** Enter date / time	The PC's date and time settings are used for applying settings in the system. The entered date and time are used for applying settings in the system.
Set	Select the "Set" button	The date and time are set according to the selection under "New setting".
Synchronize	Select the "Synchronize" button	The time is synchronized according to the selection under "New setting". If the difference between the current time in the system and the new time is greater than 30 seconds, the function is not executed.

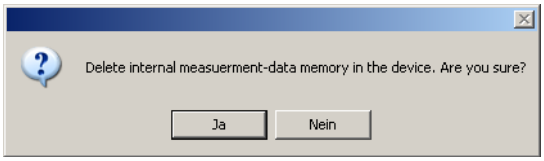
15.6 Deleting internal measurement-data memory

This function is used to delete all data recorded up to the present time by the registration function in the multifunction panel.

The function is only available if the user that has logged in on the setup program has the rights to use the function (e.g. specialist has logged in).

NOTE!
This function should only be used after startup of the multifunction panel or after a new plant has been set up.

Setup dialog

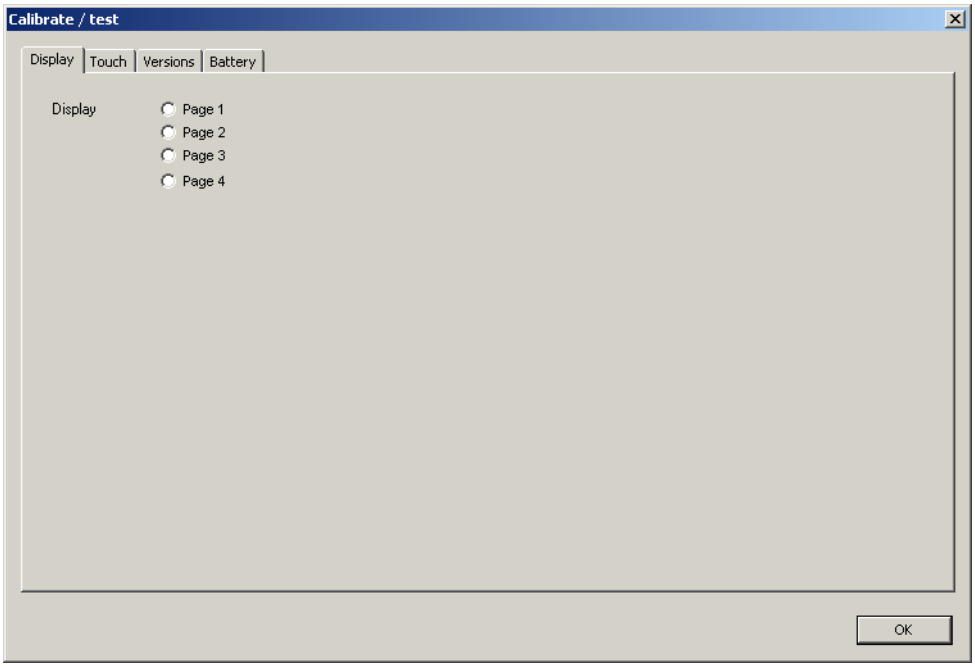


15.7 Calibrate / test

15.7.1 Display

The color display of the screen is tested in this dialog.

Setup dialog



Parameter

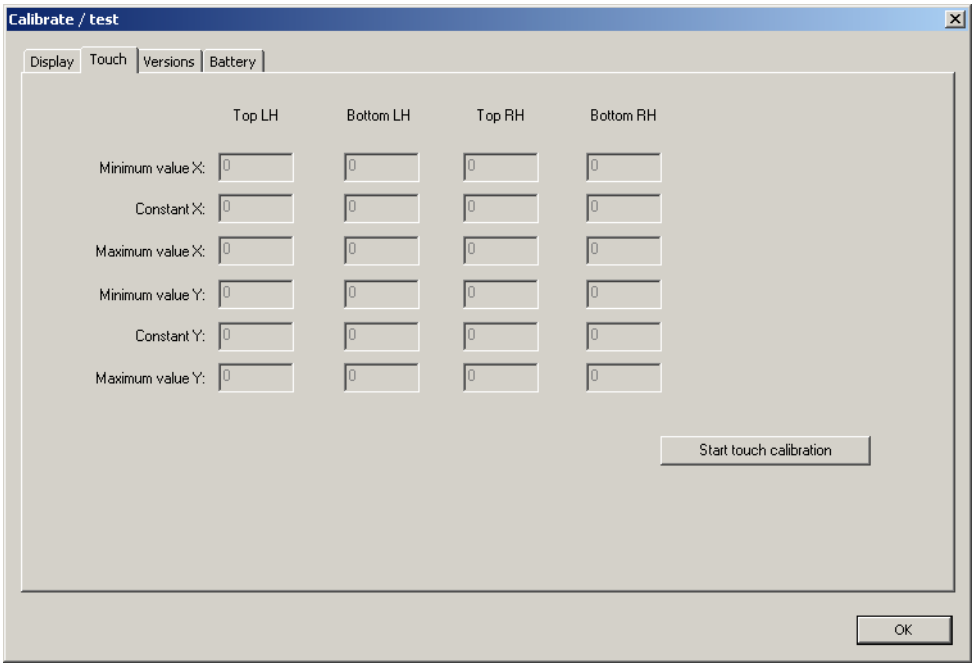
Parameter	Selection/settings	Description
Display	Click pages 1 to 4 one after the other to select for testing.	The screen displays the respective color sample immediately after clicking (red, green, blue, black).

NOTE!
The screen remains in this test mode until the "Calibrate / test" dialog is exited by touching the "OK" button (or until the touch calibration is started).

15.7.2 Touch

The touch function of the screen is calibrated in this dialog.

Setup dialog



Parameter

The current values of the parameters are read out from the multifunction panel when opening the dialog. They are for information purposes only and cannot be changed by the user.

Parameter	Description
Minimum value X	Left limit of the respective centering field (top left, bottom left, top right, bottom right)
Constant X	X coordinate of the centre point of the respective centering field
Maximum value X	Right limit of the respective centering field
Minimum value Y	Lower limit of the respective centering field
Constant Y	Y coordinate of the centre point of the respective centering field
Maximum value Y	Upper limit of the respective centering field

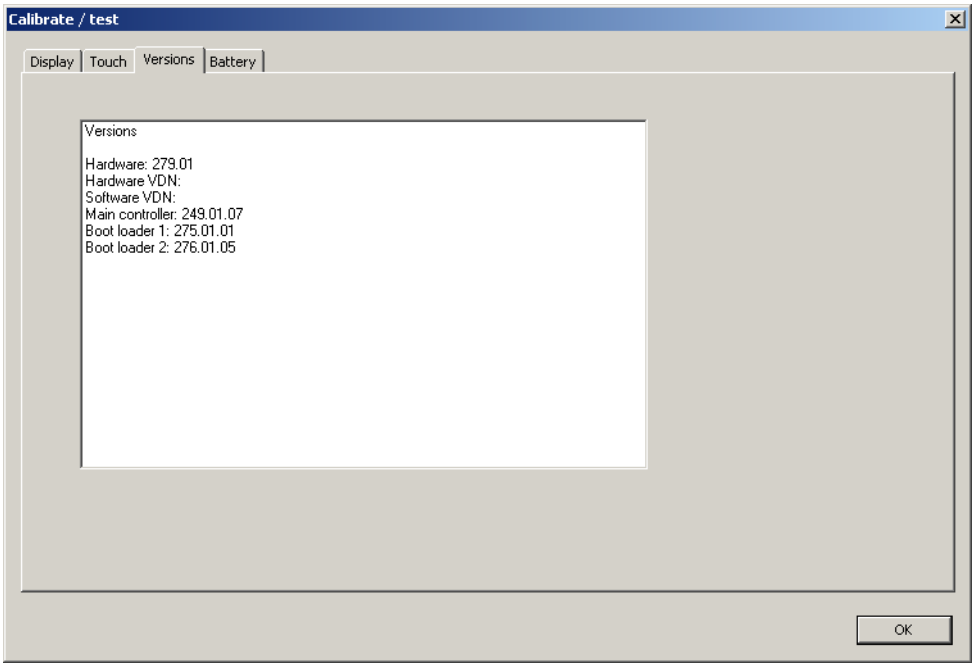
Start touch calibration

The calibration is started and the user must tap the centering fields that are consecutively displayed on the multifunction panel screen (touch the center point of the box). The screen color briefly changes if the centering field is not touched. Following successful calibration, a corresponding message is displayed in the setup program.

15.7.3 Versions

This window displays the module versions.

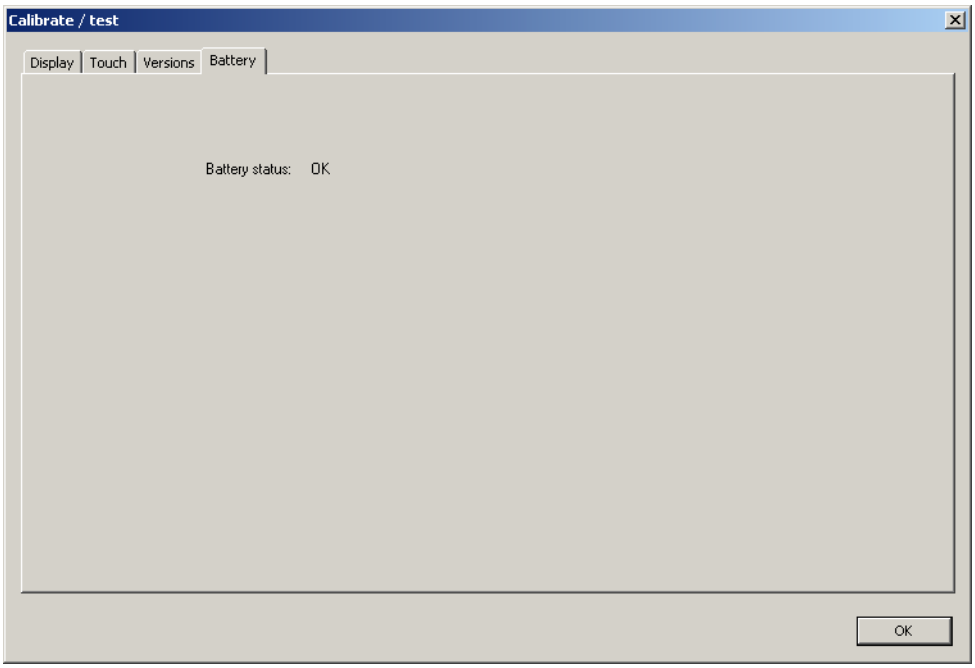
Setup dialog



15.7.4 Battery

This window displays the status of the buffer battery (OK, low, empty).

Setup dialog



15.8 Writing interface texts

This function can be used to:

- Read and write current batch texts,
- Read and write an additional batch text (e.g. recipe),
- Write event texts

"Transmit" button: The text is written to the multifunction panel.

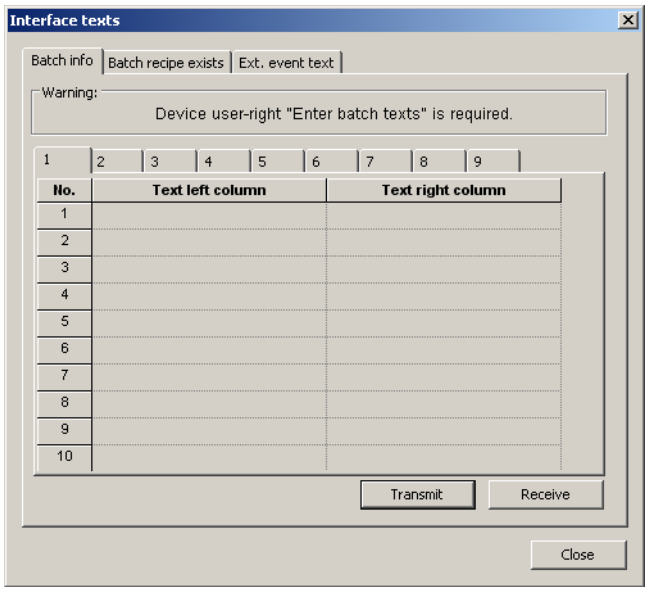
"Receive" button: The text is read out from the multifunction panel.

The function is independent of the current setting in the dialog window (setup file). The data can be sent to a multifunction panel without reconfiguration taking place.

15.8.1 Batch info

For each batch (Batch 1 to 9), all editable colors can be changed and sent to the connected multifunction panel. If a batch report is completed on the device side, the data from the configuration is used again on the multifunction panel.

Setup dialog

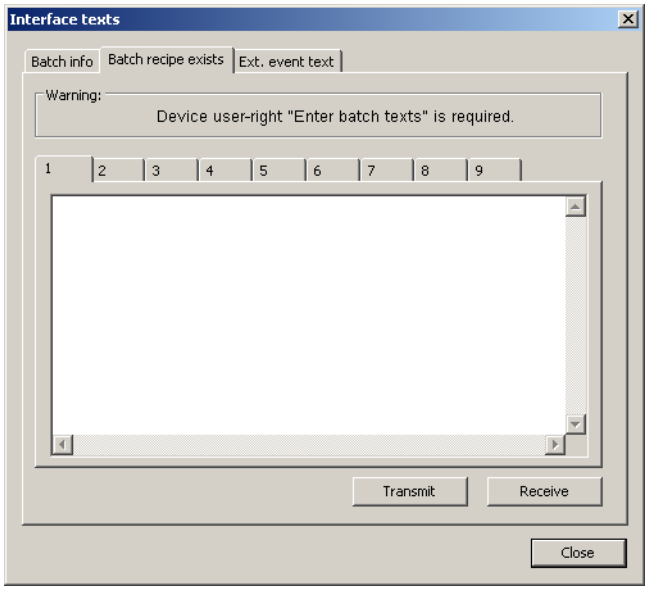


15.8.2 Batch recipe exists

For each batch (Batch 1 to 9), a 400-character text (e.g. recipe) can be sent to the connected multifunction panel and saved during batch reporting as a result. The text can be called up on the multifunction panel in the visualization of a completed batch report.

If a batch report is completed on the device side, the comment on the multifunction panel is deleted again. Since the data in the dialog window of the setup program is retained until new data is received, it is possible to send edited data to the multifunction panel multiple times.

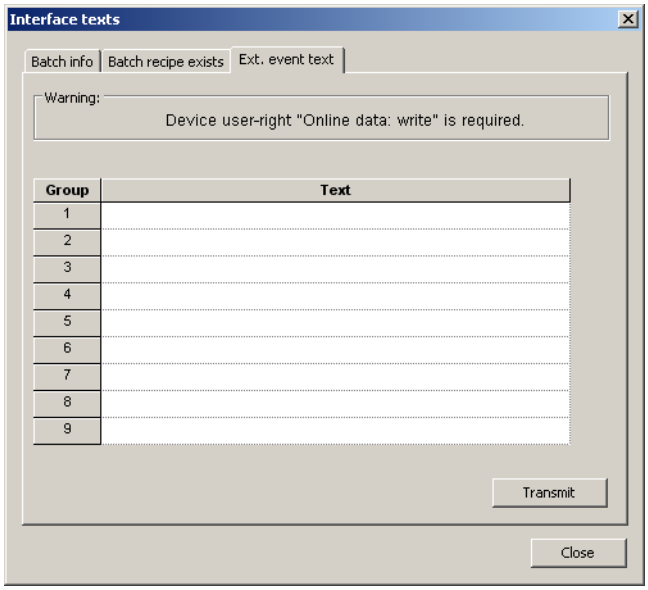
Setup dialog



15.8.3 Ext. event text

Using this function, an event text can be written to the event list of the multifunction panel in a group-related manner. In the process, ensure that groups are assigned to the batches in turn.

Setup dialog



16.1 Technical data

16.1.1 Interfaces

USB device interface	
Connector designation	Setup
Connector type	Mini-B
Number	1
Application	To operate the setup program
Max. current	100 mA
USB host interface	
Connector designation	USB1 and USB2
Connector type	A
Number	2
Application	For reading out data via memory stick
Max. current	100 mA
System bus In	
Connector designation	Bus In
Connector type	RJ45
Number	1
Application	For connection of a base unit or router module
Connection cable	Network cable (patch cable or crossover cable), at least CAT5 (S/FTP)
Cable length	Up to 100 m
System bus Out	
Connector designation	Bus Out
Connector type	RJ45
Number	1
Application	For connection of a router module
Connection cable	Network cable (patch cable or crossover cable), at least CAT5 (S/FTP)
Cable length	Up to 100 m
Ethernet	
Connector designation	LAN
Connector type	RJ45
Number	1
Application	Communication with PC (setup program, data archiving, web server), e-mail server, and Modbus master/slave
Protocols	TCP/IP, HTTP, DHCP, SMTP+POP3, Modbus/TCP
Baud rate	10 Mbit/s, 100 Mbit/s

RS232 or RS422/485 (serial interface)	Depending on the ordered device version
Connector designation	COM1 and COM2
Connector type	D-Sub
Number	2
Application	Communication with Modbus master/slave, connection of a barcode scanner or modem including alarm transmission/message via text message or e-mail
Protocol	Modbus RTU as master/slave, bar code scanner
Baud rate	9600, 19200, 38400
External inputs (external variables)	Via Modbus master/slave functions, 54 analog and 54 digital inputs

16.1.2 Screen

Type	Touchscreen TFT color monitor
Size	21.3 cm (8.4”)
Resolution	640 × 480 pixels
Number of colors	256 colors
Frame rate	> 150 Hz
Brightness setting	Adjustable on the device
Screen saver (shutdown)	Via waiting time or control signal

16.1.3 Electrical data

Voltage supply	
Connection	At the case bottom (removable terminal strip, 2-pin with Push-In technology)
Voltage	DC 24 V +25/-20 % SELV
Residual ripple	5 %
Current consumption	Max. 750 mA (at DC 19.2 V)
Power consumption	Max. 15 W
Conductor cross section (voltage supply)	
Wire or strand without ferrule	Min. 0.5 mm^2, max. 2.5 mm^2
Strand with ferrule	Min. 0.5 mm^2, max. 2.5 mm^2
2 x strand with twin ferrule with plastic collar	Min. 0.5 mm^2, max. 1.5 mm^2 (both strands with the same cross section)
Stripping length	10 mm
Electrical safety	Acc. to DIN EN 61010-1 Overvoltage category III, pollution degree 2
Electromagnetic compatibility	Acc. to DIN EN 61326-1
Interference emission	Class A – only for industrial use –
Interference immunity	Industrial requirements

16.1.4 Case and ambient conditions

Case type	Metal case for mounting into a panel cut-out (indoor use); front with decor foil
Dimensions (W × H × D)	235 mm x 195 mm x 58 mm (without connection elements)
Weight (fully equipped)	Approx. 1.8 kg
Protection type	Front IP67, rear IP20, acc. to DIN EN 60529
Ambient temperature range	-20 to +55 °C
Storage temperature range	-30 to +70 °C
Resistance to climatic conditions	Relative humidity ≤ 90 % annual average without condensation (climatic class 3K3 acc. to DIN EN 60721-3-3 with extended temperature and humidity range)
Site altitude	Up to 2000 m above sea level
Mechanical ambient conditions[1]	Vibration test acc. to DIN EN 50178 Shock test acc. to DIN EN 60068-2-27 Drop test acc. to DIN EN 60068-2-32

[1] Test conditions are listed in the System Descripton B 705000.8.

16.1.5 Approval/approval marks

Approval mark	**Testing agency**	**Certificate/certification number**	**Inspection basis**	**Valid for**
c UL us	Underwriters Laboratories	E201387	UL 61010-1 (3. Ed.), CAN/CSA-22.2 No. 61010-1 (3. Ed.)	all types
DNV GL	DNV GL	TAA000016N	Class Guideline DNVGL-CG-0339	all types; a power supply unit with DNV GL or GL type approval is required (e.g. type 705090)

16 Appendix

16.2 Memory requirements for measurement data

A memory space of 99 MB is available for measurement data recording. The space required depends on the data records which shall be stored. The following information can be used as a basis for a rough estimate:

- Group of 6 analog inputs and 6 digital inputs, per storage: max. 48 byte
- Group of 6 analog inputs and 6 digital inputs, memory rate 125 ms, per second: 225 byte
- Report, regardsless of the type of report (daily, monthly, ...): 151 byte
- Counter/integrator (at closing): 25 byte
- Batch (at closing): 2 kB
- Alarm/event entry: 6 byte
- Audit-Trail message: 100 byte

Examples for a group of 6 analog inputs and 6 digital inputs:
Memory rate 1 s: 4.1 MB/day; 124 MB/month
Memory rate 30 s: 0.13 MB/day; 4,1 MB/month
(plus memory required for all other data records)

16.3 Barcode

Barcode scanners must be initialized once by the user prior to use. Using the example of a barcode scanner with a serial interface, the following steps are sufficient:

Step	Activity
1	Scanning the "Factory Default Settings" barcode
2	Scanning the "Select RS-232 Standard" barcode

16.3.1 Batch control

Batch 1


BATCH1

Batch 2


BATCH2

Batch 3


BATCH3

Batch 4


BATCH4

Batch 5


BATCH5

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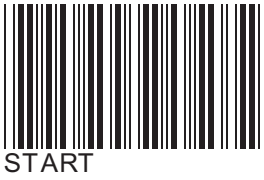
Batch 6

Batch 7

Batch 8

Batch 9

Start



Stop

Reset entry

16.3.2 Batch texts (examples)

Product name

Product numbers

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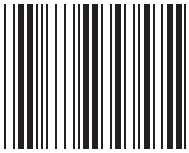
Order numbers

Personnel numbers

16.3.3 Program generator control

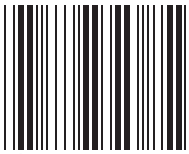
Program 1


%P 1

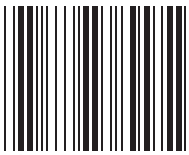
Program 2


%P 2

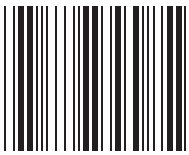
Program 3


%P 3

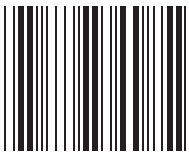
Program 4


%P 4

Program 5


%P 5

Program 6


%P 6

Program 7

Program 8

Program 9

Program 10

Program 99

Start program generator (start program)

Stop program generator (stop program)

						
产品组别 Product group: 705060	产品中有害物质的名称及含量 China EEP Hazardous Substances Information					
部件名称 Component Name						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳 Housing (Gehäuse)	X	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	○	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	○	○	○	○	○	○

本表格依据SJ/T 11364的规定编制。
This table is prepared in accordance with the provisions SJ/T 11364.
○：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
Indicate the hazardous substances in all homogeneous materials' for the part is below the limit of the GB/T 26572.

×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。
Indicate the hazardous substances in at least one homogeneous materials' of the part is exceeded the limit of the GB/T 26572.

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