JUMO

JUMO mTRON

Operating unit

70.4035
System Manual Part 8

Contents

Contents

1 Introduction

1.1 Preface

This System Manual is addressed to equipment manufacturers and users with the appropriate technical know-how. It describes the range of functions of the JUMO mTRON automation system with its modules, and provides all the information required for project design and start-up.

This Part 8 of the System Manual "JUMO mTRON operating unit" contains all the module-specific information.

Part 1 of the System Manual "General section" summarises the information which applies to all modules.

Part 2 of the System Manual "JUMO mTRON-iTOOL project design software" describes project design for the JUMO mTRON automation system via a PC.

Before starting work with the operating unit:
In addition to the JUMO mTRON-iTOOL project design software, the operating unit is available for the mTRON automation system as the external man-machine interface.
All mTRON modules and their settings can be reached via the operating unit, in dialog with the user.

With the operating unit it is possible to
1. set the parameters for all the modules in the system,
2. display and alter process variables during operation,
3. warn the user in the event of failure or system error, and
4. display system conditions by individual texts.

1.2 Type designation

The type designation only indicates the supply (1). The supply must correspond to the voltage shown on the label. The label is affixed to the housing.

(1)

704035 /0- $\boxed{. \; .}$

(1) Supply.. . .
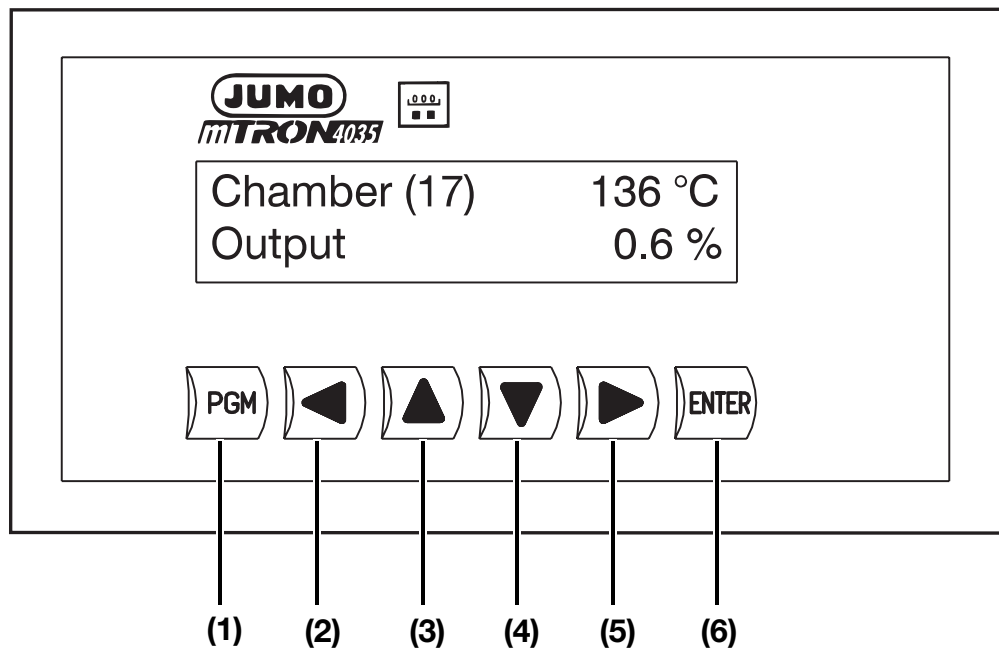
Type	Code
110—240V AC +10/-15% 48—63 Hz	23
20—53V AC/DC 48—63 Hz	22

Neuron-ID Each module has a 12-digit number, by which it can be also clearly identified in the JUMO mTRON-iTOOL project design software.
It can be found next to the label.

1 Introduction

Keys

Keys

six keys on the front to operate the module

Setting the key inhibit

⇨ Section 5.7 "Inhibits"

PGM (1)
key to change between operating level and program levels

Backwards (2)
moves one step backwards without storing

Selection key (3)
selects forwards between different items in the ring list / incrementing

Selection key (4)
selects backwards between different items in the ring list / decrementing

Forwards (5)
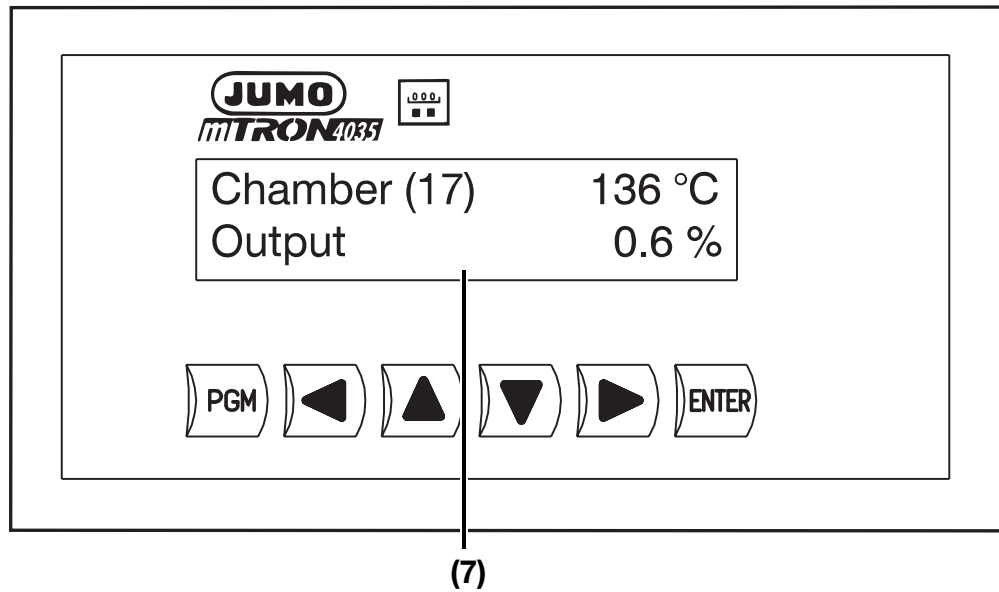moves one step forwards without storing

ENTER (6)
acknowledges edited values and alarms

2 Displays and controls

Display

(7)

LC display (7)

2x 20 places for displaying texts and data
Character height: 5.5 mm

Adjusting contrast, language, switch-off time and display dimming

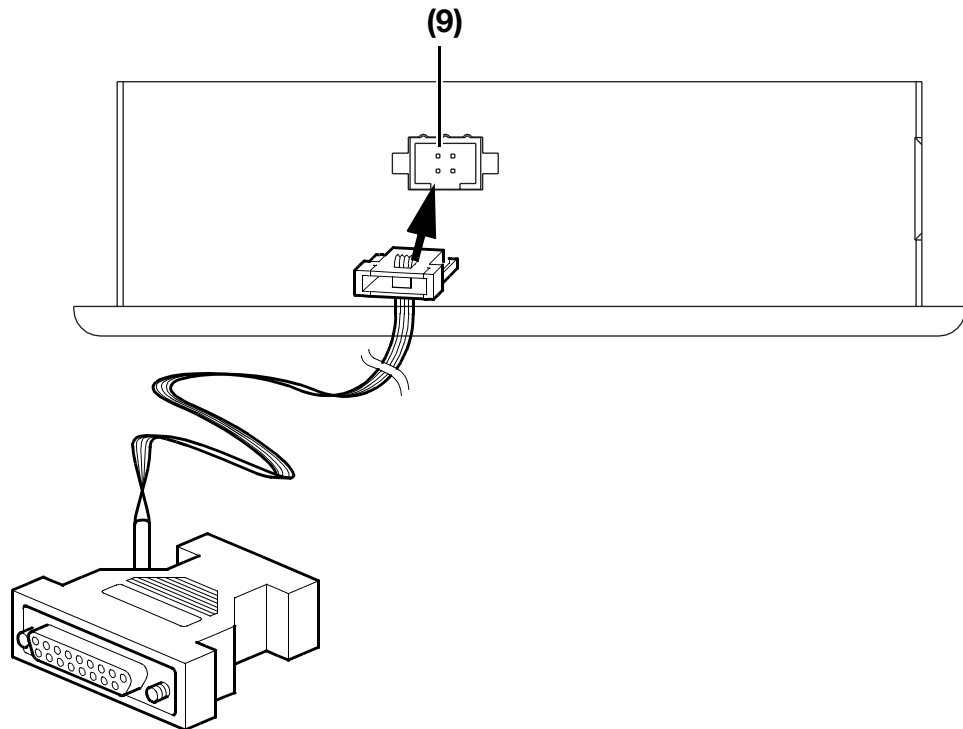⇨ Section 5.4 "Display"

Switches

(8)
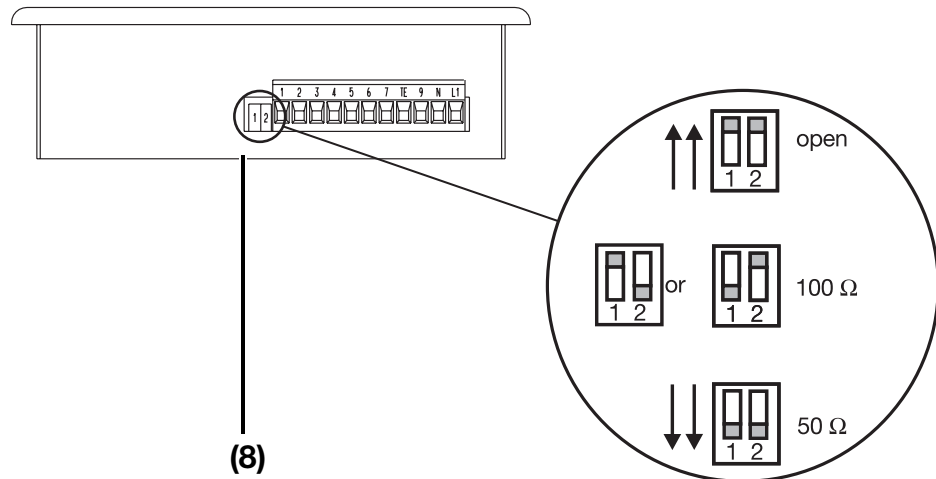
Termination resistance (8)

The switches for the termination resistance of the LON network are located on the underside of the operating unit, left of the plug-in connectors.

⇨ System Manual Part 1 "General section", Section 4.2 "Network connection"

Interface

Setup interface (9)
on the top of the operating unit for the PC interface line which connects the operating unit to the PC. The parameters can be set via this connector not only for the operating unit, but also for **all the modules connected to the LON bus.**

The following text appears on the operating unit, as long as the connector is inserted:
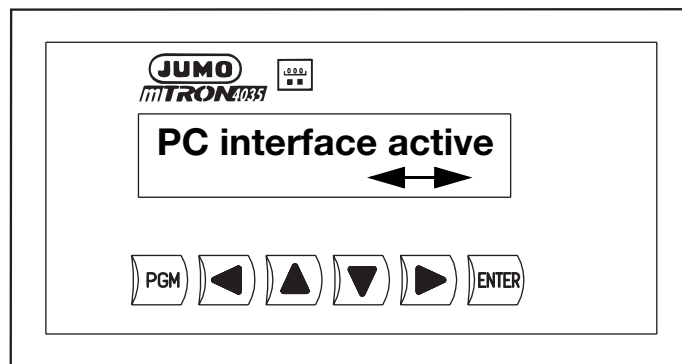
☞ The operating unit has the sole function of a PC-LON interface. All other module functions are switched off!

2 Displays and controls

3 Overview of functions

Block structure

The block diagram shows the module function (framed), with the hardware inputs indicated on the left, the hardware outputs on the right, and the network variables above the arrows.
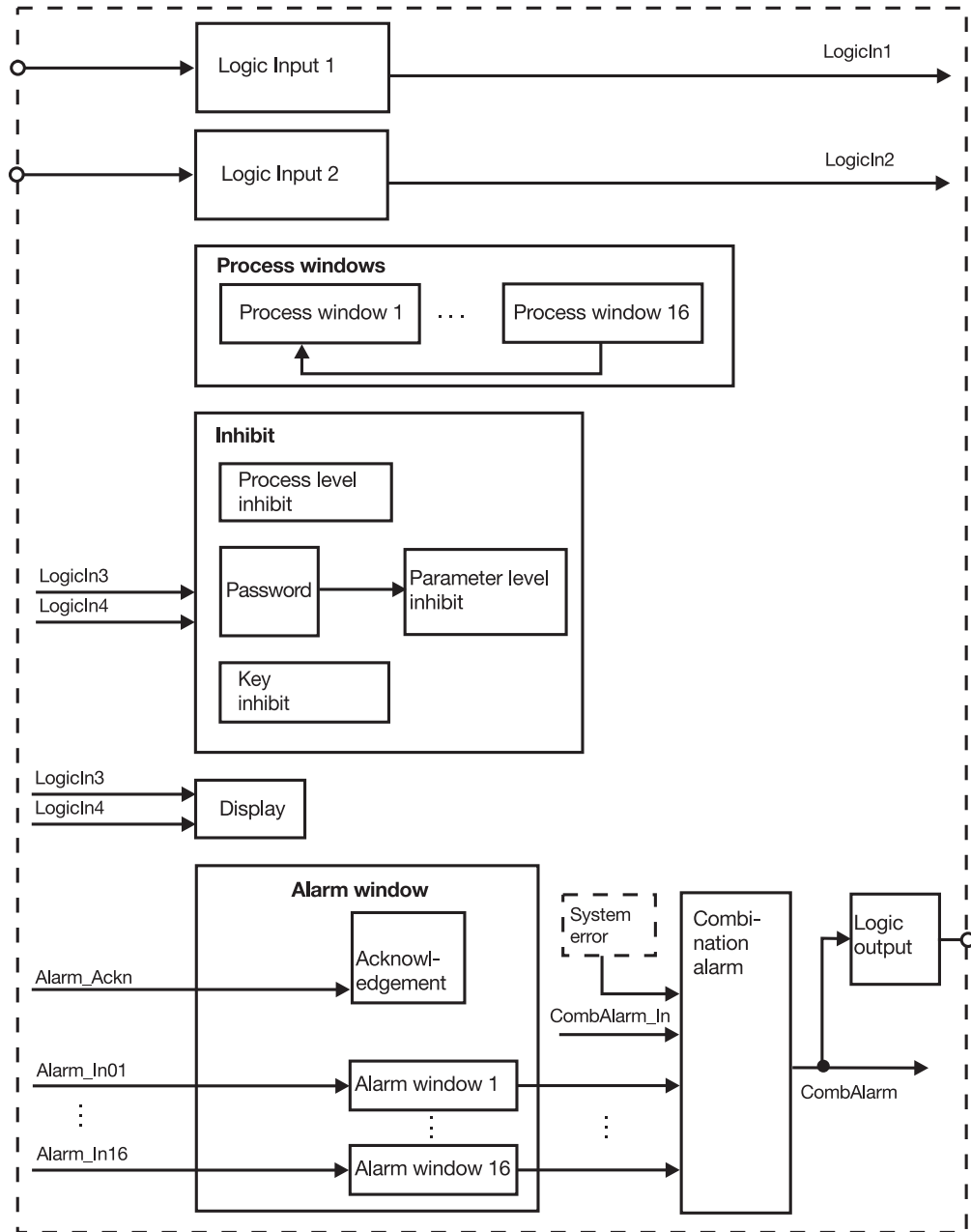
Explanation of symbols

Symbol	Meaning
Logic_In3 ⟶	Network variable ⇨ Chapter 4 "Network variables"
⊶—	Hardware input
—⊸	Hardware output

3 Overview of functions

4.1 Input network-variables

Input and output network-variables (NV) are used to link mTRON modules via LON. They can be linked to the JUMO mTRON-iTOOL project design software.

Setup dialog

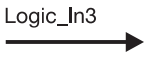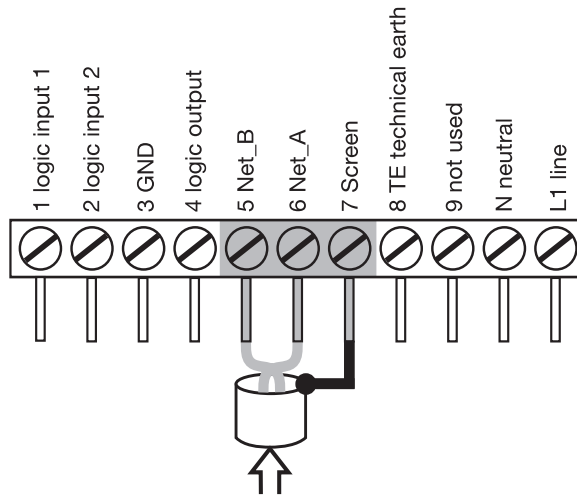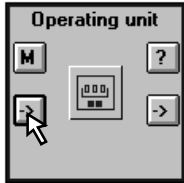| Name	Type	Explanation	Further information
Alarm_In01	logic	alarm window 1	Section 5.3 "Alarm windows"
Alarm_In02	logic	alarm window 2	
Alarm_In03	logic	alarm window 3	
Alarm_In04	logic	alarm window 4	
Alarm_In05	logic	alarm window 5	
Alarm_In06	logic	alarm window 6	
Alarm_In07	logic	alarm window 7	
Alarm_In08	logic	alarm window 8	
Alarm_In09	logic	alarm window 9	
Alarm_In10	logic	alarm window 10	
Alarm_In11	logic	alarm window 11	
Alarm_In12	logic	alarm window 12	
Alarm_In13	logic	alarm window 13	
Alarm_In14	logic	alarm window 14	
Alarm_In15	logic	alarm window 15	
Alarm_In16	logic	alarm window 16	
Alarm_Ackn	logic	acknowledgment via network	
LogicIn3	logic	function according to assignment	Section 5.7 "Inhibits" Section 5.3 "Alarm windows" Section 5.4 "Display"
LogicIn4	logic	function according to assignment	
CombAlarm_In	logic	produces combination alarm via the network	Section 5.8 "Combination alarm"

The replacement value which is defined for all network-variable inputs is "0"; it is used in the event of faulty communication or with unlinked signals.

⇨ Section 7.2 "Action on errors of communication"

4 Network variables

4.2 Output network-variables

Setup dialog

Output network-variables transmit the internal module information to other mTRON modules, whereby only identical variable types can be linked to each other via the JUMO mTRON iTOOL project design software.
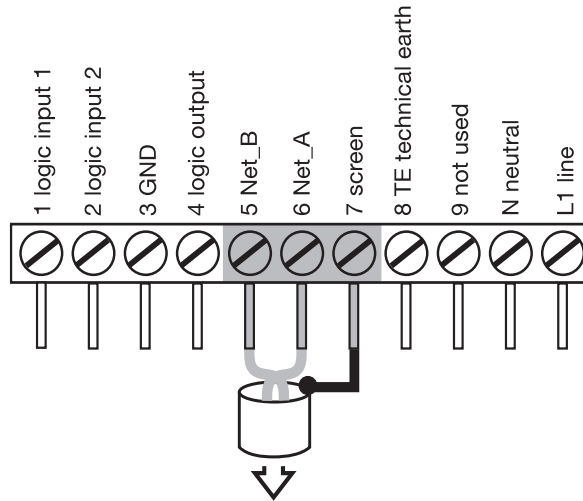
Name	Type	Explanation	Further information
LogicIn1	logic	logic level of logic input 1	Section 5.5 "Logic input"
LogicIn2	logic	logic level of logic input 2	
CombAlarm	logic	logic level of combination alarm	Section 5.8 "Combination alarm"

Basic menu

Operating unit

Module name
Name of the module

Setup dialog
The functions of the
module are assigned
to setup dialogs

OK
for entering and storing
all inputs

Cancel
for aborting inputs.
The data are not stored.

Edit
for editing parameters
in the setup dialog which is marked

⇨ Sections 5.1 - 5.8

mTRON module

Module name: Operating unit

| OK |
| Cancel |
| Edit |
| Additional parameters |
| Display |

Module settings
Process window
Alarm window
Display
Logic input
Logic output
Inhibit
Combination alarm

| Help |

Input the module name.
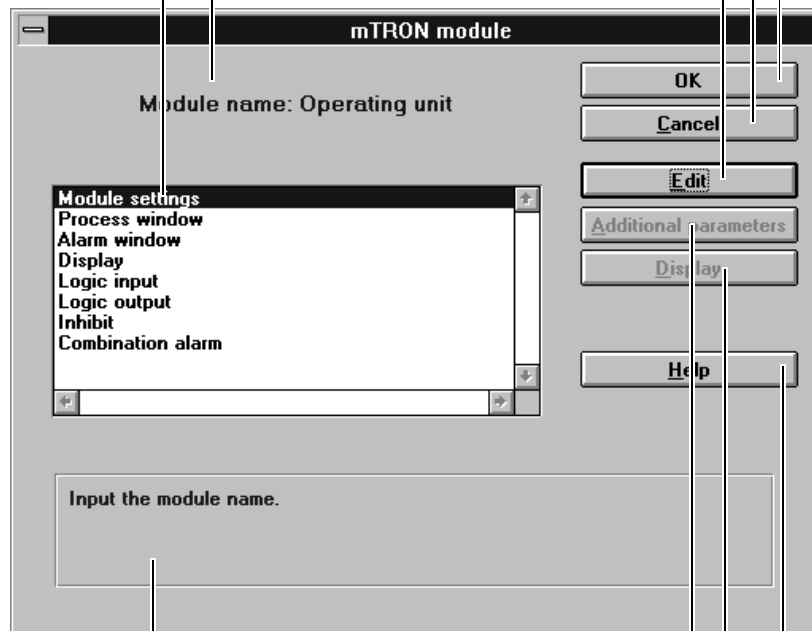
Additional parameters
Further settings can be made here when
there are differences between the versions of
module software and setup program

Display
Using this function, individual parameters can
be removed from the operating unit
(parameter level)

Info text
provides information
on the setup dialog
which is marked

Help
calls up help text for the basic menu

5 Parameter setting

5.1 Module settings

Setup dialog

[Edit]

A characteristic designation for the task of the module in the process simplifies work on the project.

Parameters

Parameter	Selection/settings	Explanation
Module name	Operating unit	Name of the module (16 characters)

■ = factory-setting   [ ] = short name in the operating unit

5.2 Process windows

Setup dialog

[Edit]

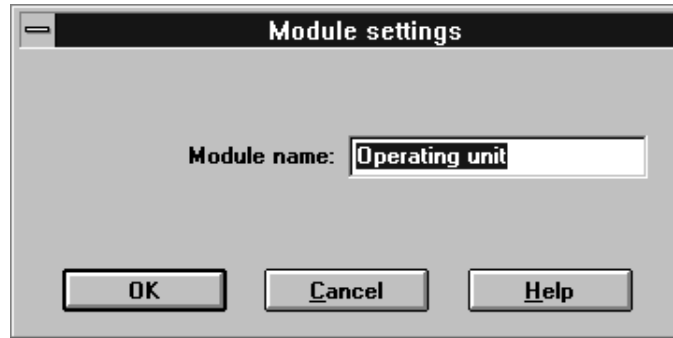Process windows display process states of the system.
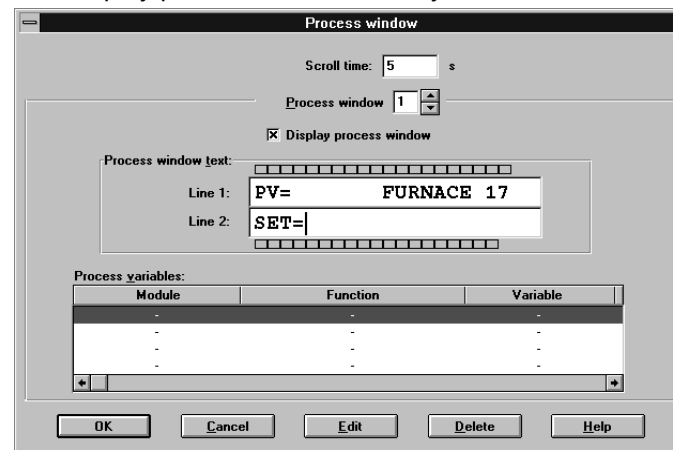
Process window

Parameter	Selection/settings	Explanation
Scroll time [ScrollTim]	0—255s	The process windows appear cyclically in sequence for the preset scroll time
	5s	
	0s	Scroll function switched off
Process window No.	1—16	Up to 16 process windows can be programmed
Display process window	yes/no	Only selected windows are displayed at the process level
Process window text: Line 1 Line 2	20 characters 19 characters	Any text of 20 characters for the first line, and 19 characters for the second line
Process variables		Up to 4 process variables per process window can be made visible. Each process variable is selected in accordance with the module to which it belongs, its function and a variable name. It can appear anywhere in the process window.

■ = factory-setting   [ ] = short name in the operating unit

Process window

Edit
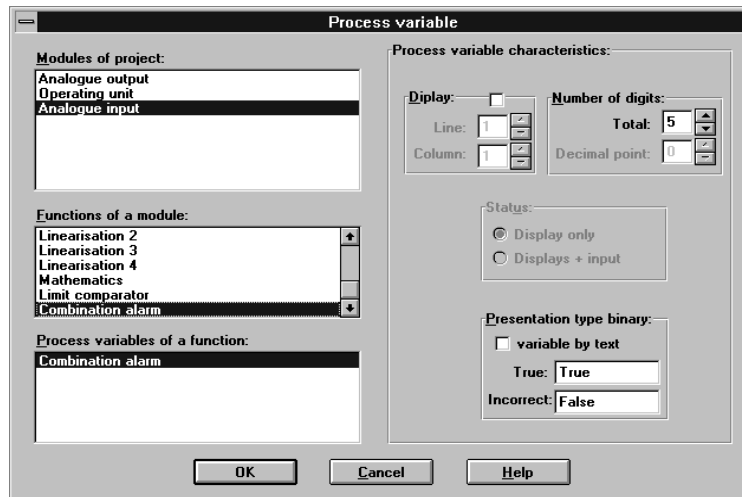
Process variable

Parameter	Selection/settings	Explanation
Modules	**Additional modules:** ⇨ System Manual 70.4000	Variables can be inserted into the process window for each of the mTRON modules.
Functions		Function block of a module
Process variable		Indicates the signal name
Displays		
Line/Column		The line indicates whether the variable appears in the first or second line. The colums indicates from which column on the variable appears.
Number of digits		
Total/decimal place	5/0	"Total" is the total digit number of the variables. "Decimal place" states the number of decimal places of the "float value" type.
Status	Display only	In this position, it is selected whether a variable is only to be displayed in the process window, or changed by keys.
	Display and input	
Presentation type logic		
replace by text	yes	Defines whether a variable of the logic type is to be displayed as text or as a number (0/1). The text can be entered separately in the window "True" or the window "False". Appears only with variable type "Logic".
	no	
Presentation type date/time		
Format	Time hh:mm	There is a choice of 6 formats. Appears only with variable type "Date/time".
	Time hh:mm:ss	
	Date mm.yy	
	Date dd.mm	
	Date dd.mm.yy	
	Date dd.mm.yyyy	

▨ = factory-setting   [ ] = short name in the operating unit

Functions

The process level is used to display and select system-specific process windows. Each process window can display together up to 4 process variables from different modules with the explanatory text . 16 process windows are possible.

Display and operation
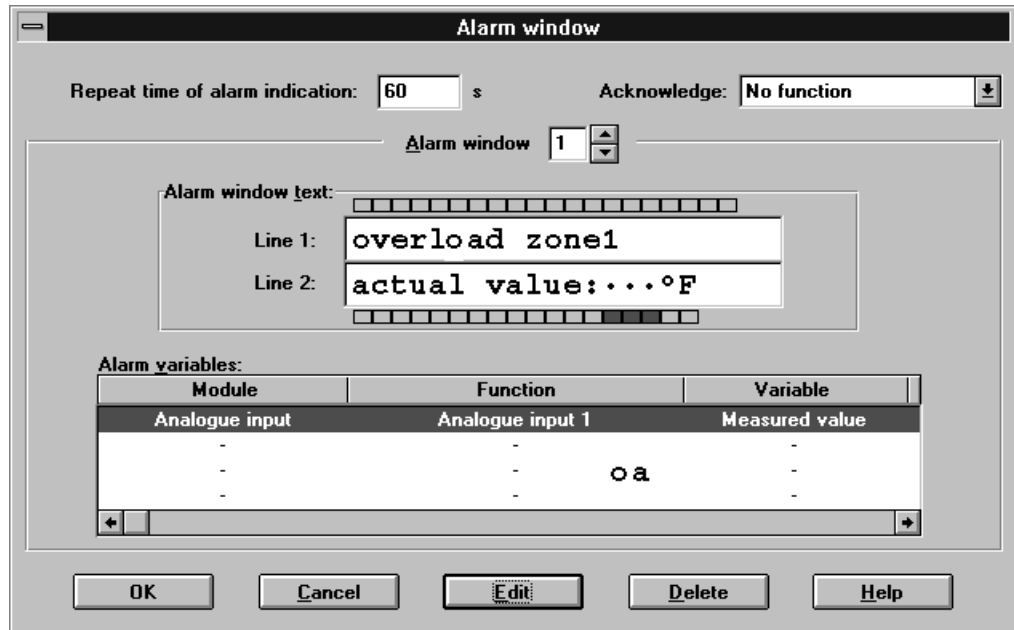
⇨ Section 6.2 "Process level"

5 Parameter setting

5.3 Alarm windows

Setup dialog

Edit

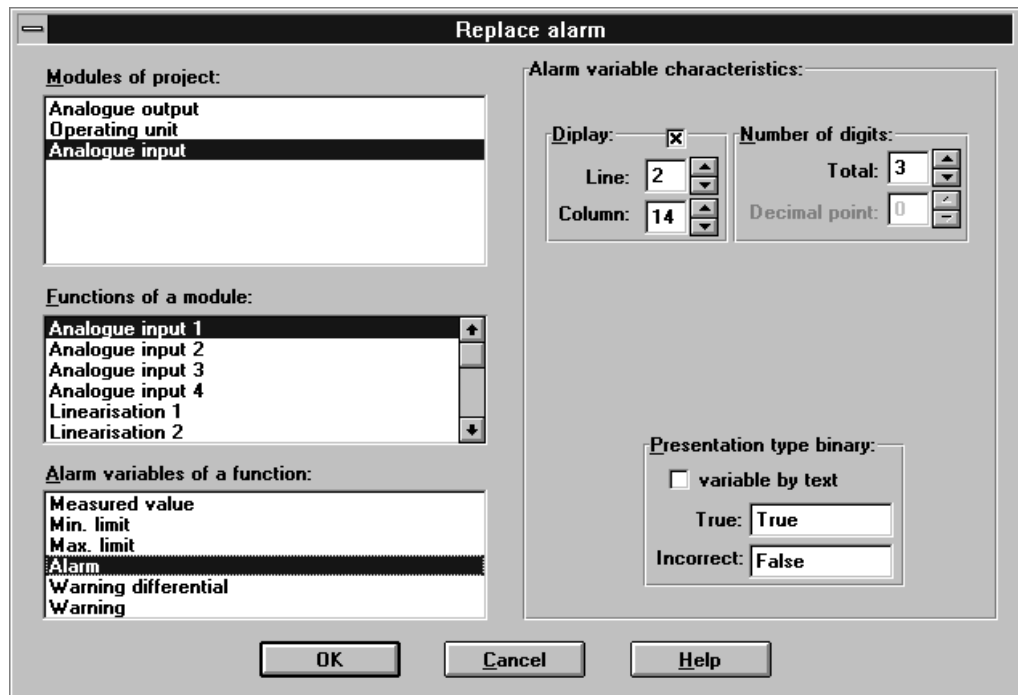Alarm windows signal process states not intended by the user, which have to be eliminated (e. g. overrange).

Alarm windows

Parameter	Selection/setting	Explanation
Repeat time of alarm indication [ReIndAlarm]	0— 65535s	After acknowledging an alarm window, the preset time elapses until the alarm message is indicated again, as long as the alarm condition still exists, no other keys are operated and no acknowledgment occured.
	60s	
	0s	Repeat indication is switched off.
Acknowledge [SelAckn]	no function [0]	Alarms are acknowledged only by key.
	LogicIn1 [1]	Alarms are acknowledged by key, or via the preset HW input.
	LogicIn2 [2]	
	Alarm_Ackn[3]	Alarms are acknowledged by key, or via the preset network input.
Alarm window No.	1—16	Up to 16 alarm windows can be defined.
Alarm window text: line 1 line 2	20 characters 18 characters	Any text of 20 characters for the first line, and 18 characters for the second line. Characters 19 and 20 indicate the number of alarms.
Alarm variables		Up to 4 alarm variables per alarm window can be made visible. Each alarm variable is selected in accordance with the module to which it belongs, its function and a variable name. It can appear anywhere in the alarm window.

■ = factory setting   [ ] = short name in the operating unit

Alarm window

Edit

Alarm variable

Parameter	Selection/setting	Explanation
Modules	**Additional modules:** ⇨ System Manual 70.4000	Variables can be inserted in the process window for each of the mTRON modules
Functions		Function block of a module
Alarm variable		Indicates the signal name
Displays		
Line/column		The line indicates whether the variable appears in the first or second line. The colums indicates from which column on the variable appears.
Number of digits		
Total/decimal place	5/0	"Total" is the total digit number of the variables. "Decimal place" states the number of decimal places of the "float value" type.
Presentation type logic		
replace by text	yes	Defines whether a variable of the logic type is to be displayed as text or as a number (0/1). The text can be entered separately in the window "True" or " False". Appears only with variable type "Logic"
	no	
Presentation type date/ time		
Format	Time hh:mm	There is a choice of 6 formats. Appears only with variable type "Date/ time"
	Time hh:mm:ss	
	Date mm.yy	
	Date dd.mm	
	Date dd.mm.yy	
	Date dd.mm.yyyy	

▨ = factory-setting   [ ] = short name in the operating unit
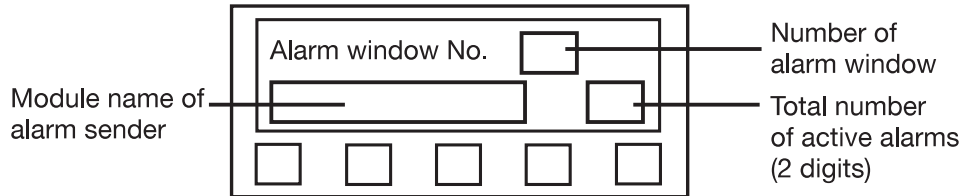
Display and acknowlegement of alarms

⇨ Section 6.3.4 "Current alarms"

5 Parameter setting

Arrangement of the alarm window

Alarm windows, like process windows, have a customer-specific setup and are defined in JUMO mTRON-iTOOL.
They are called up on the operating unit by the logic network inputs Alarm_01—16.

For each alarm window, the factory-setting can be adapted to suit the specific system.

Example
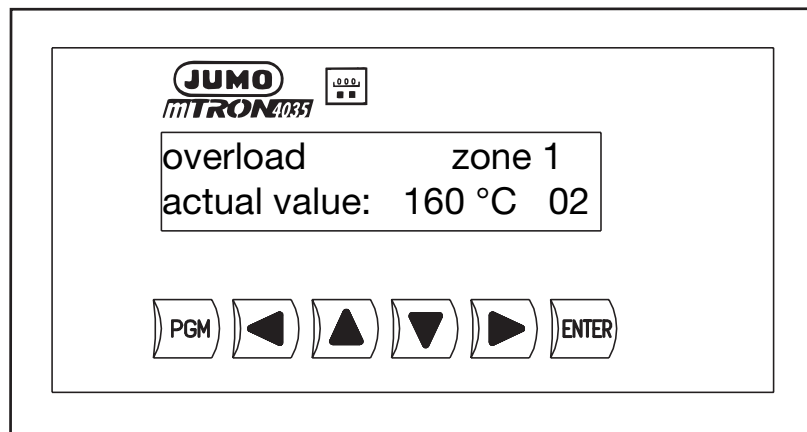
Multiple operation of alarm windows (Alarm_InXX)

To each of the 16 network inputs for alarms several alarm signals can also be linked. The input then behaves like a logic "OR": an active alarm signal (logic "1") is dominant.
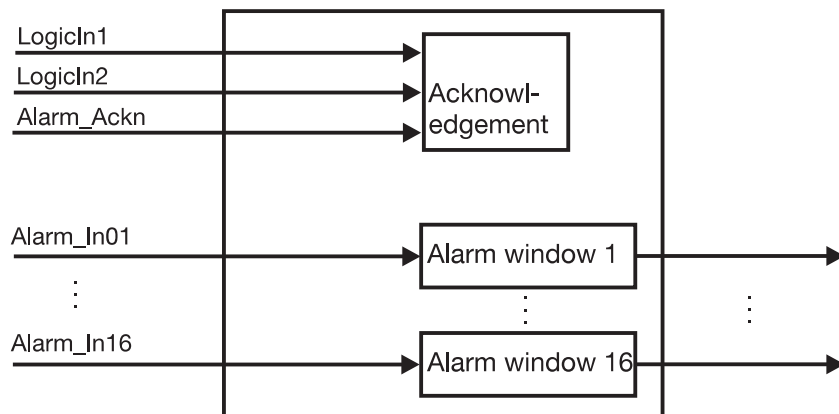
☞ The different signals of an alarm input have to be sent by different modules.

The module name of the sender of an active alarm can be indicated in the alarm window.

⇨ Section 4.1 "Input network-variables"

⇨ Section 5.8 "Combination alarm"

Functions	- Producing the alarm with indication of process variables
	- Activating the combination alarm
	⇨ Section 5.8 "Combination alarm"

5.4   Display

Setup dialog

[Edit]

The language changes the dialog with the user, but not the system-specific designations, such as e.g. module names.

Parameters

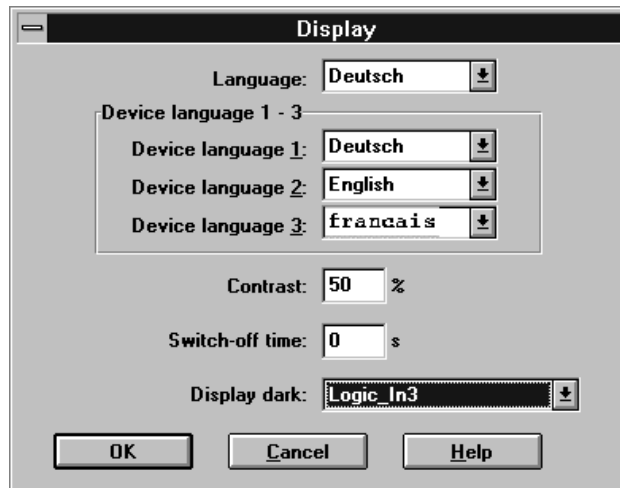| Parameter	Selection/settings	Explanation
Language [Language]	Deutsch [Deutsch]	One language is selected from the 3 device languages.
	English [English]	
	Francais [Francais]	
Device language	Deutsch /English/ Francais	3 different languages can be selected from those made available by JUMO.
Contrast [Contrast]	0 — 100%	LCD contrast against the background
	50%	
Switch-off time [OffTime]	1 — 999 s	After the last key stroke, the back-lighting remains switched on for the preset time, after that it goes out. If a key is pressed again, it lights up afresh.
	60 s	
	0 s	No time switch-off
Display dark [SelDispDrk]	no function [0]	The back-lighting can not be switched off.
	LogicIn1 [1]	The back-lighting can be switched off via the HW input which is selected.
	LogicIn2 [2]	
	LogicIn3 [3]	The back-lighting can be switched off via the NV input which is selected.
	LogicIn4 [4]	

▨ = factory-setting   [ ] = short name in the operating unit

5 Parameter setting

5.5   Logic input

Setup dialog

Edit

2 logic inputs enable external access for inhibits in the operating unit itself, or for other modules via network variables.
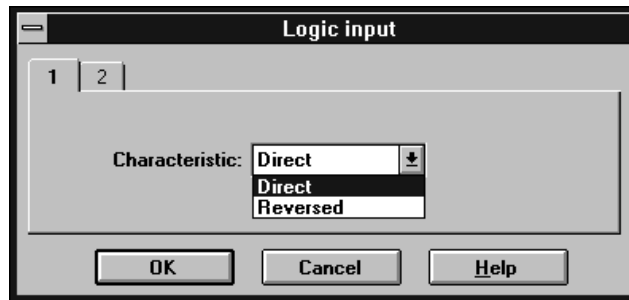
Parameters

Parameter	Selection/settings	Explanation
Characteristic	Direct	With the switch closed, the logic level is "1"
[Charistic]	Reversed	With the switch closed, the logic level is "0"

■ = factory-setting   [ ] = short name in the operating unit

2 logic inputs can be connected via floating contacts. They can be used to operate functions in the operating unit itself, or as network variables in other modules.
⇨ Data Sheet 70.4035 (appendix)
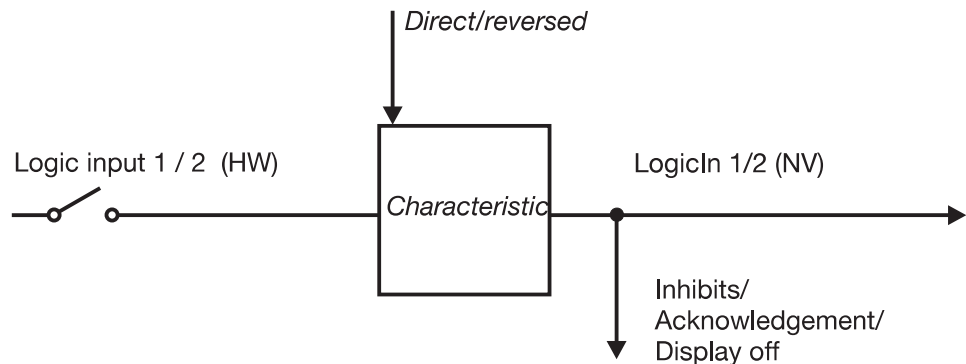
Functions

- Key inhibit via e.g. the key switch

- Level inhibit against unauthorised access

⇨ Section 5.7 "Inhibits"

- LCD back-lighting on/off

⇨ Section 5.4 "Display"
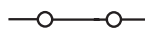
- Acknowledgement of alarms

⇨ Section 5.3 "Alarm windows"

- Capture of states and transfer to the network via network variables

Logic level   The logic level of the logic inputs are output direct or reversed to logic network out-
puts.

Logic input X	Charac-teristic	LogicInX
—o⁄-o—	direct	0
	reversed	1
—o——o—	direct	1
	reversed	0

X=1—2

5 Parameter setting

5.6 Logic output

Setup dialog

The logic output can produce an external signal (e.g. to operate a hooter) from the internal signal "Combination alarm".
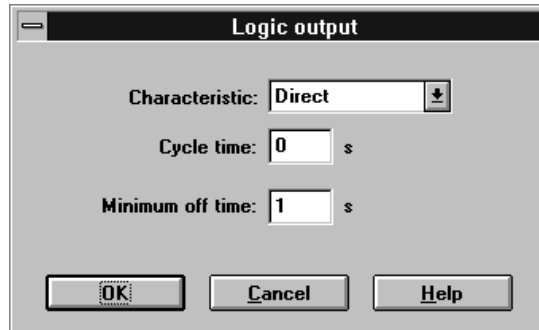
Parameters

Parameter	Selection/settings	Explanation
Characteristic	Direct	The logic level remains unchanged.
[Charistic]	Reversed	The logic level is reversed.
Cycle time [CycleTim]	0 — 100s	The cycle period (cycle time) consists of the switch-on time and the switch-off time.
	0	No pulse response
Minimum off time [TOff]	0 — 100s	Switch-off time of the logic output
	1s	

▨ = factory-setting   [ ] = short name in the operating unit

The combination alarm is available as logic output (5V 40mA) at the connectors 3 and 4. It can be used to produce a hooter alarm or a warning signal.

⇨ Data Sheet 70.4035 (appendix)
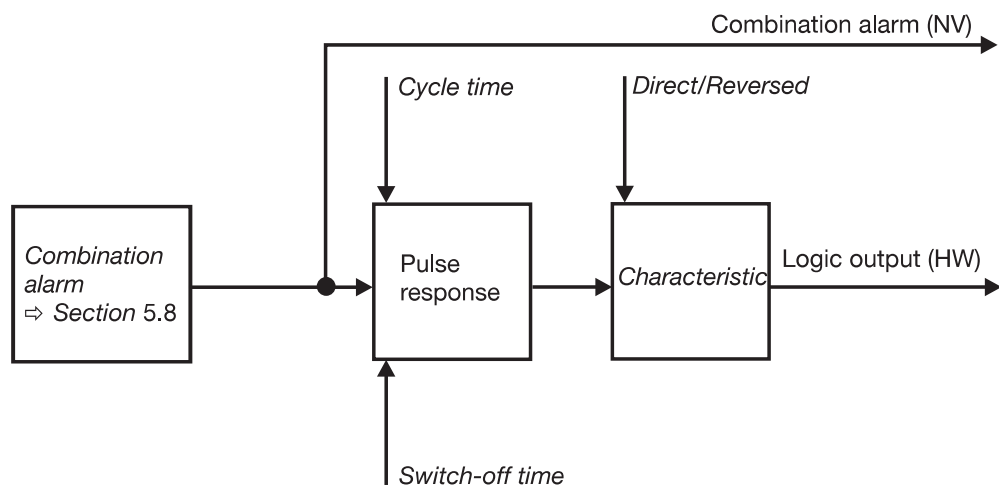
Pulse response   Using the two parameters "Cycle time" and "Switch-off time", a pulse response can be set at the logic output in order to operate a hooter, for example.

5 Parameter setting

5.7   Inhibits

Setup dialog

[Edit]

Inhibits are used as protection against unauthorised inputs via the operating unit.
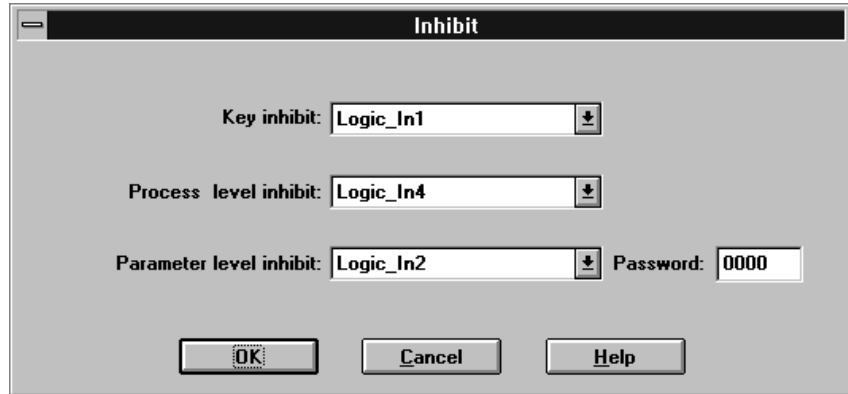
Settings

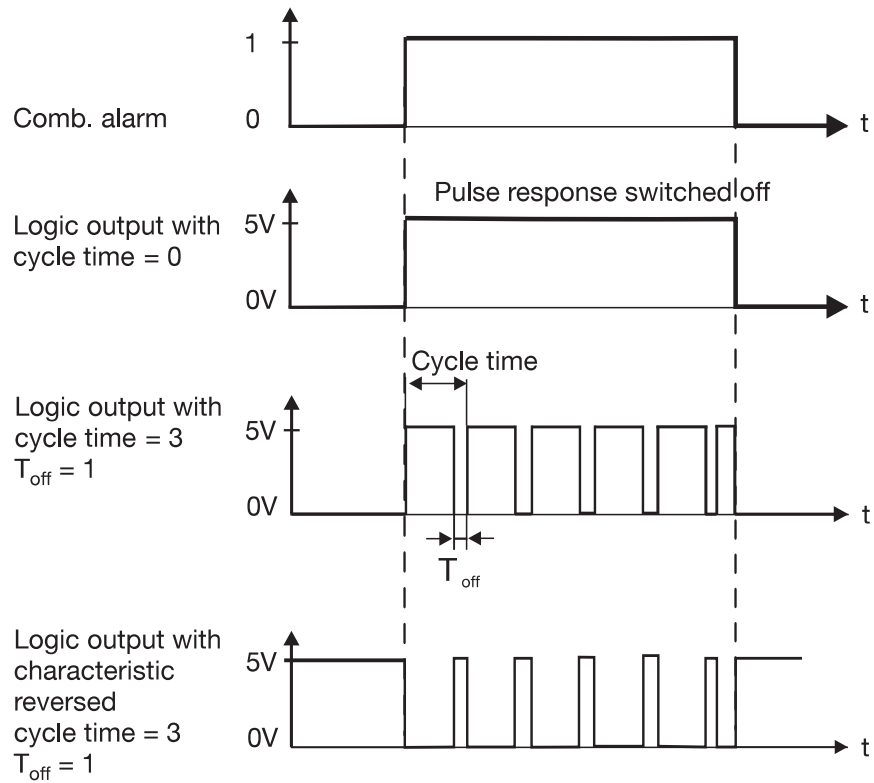| Parameter	Selection/settings	Explanation
Key inhibit [SelKeyInh]	no function [0]	Keys can not be inhibited.
	Logic_In1 [1]	Keys can be inhibited via the selected HW input.
	Logic_In2 [2]	
	Logic_In3 [3]	Keys can be inhibited via the selected network variable input.
	Logic_In4 [4]	
Process level inhibit [SelOpLvInh]	no function [0]	The alteration of the process values can not be inhibited.
	Logic_In1 [1]	The alteration of the process values can be inhibited via the selected HW input.
	Logic_In2 [2]	
	Logic_In3 [3]	The alteration of the process values can be inhibited via the selected network-variable input.
	Logic_In4 [4]	
Parameter level inhibit [SelParLInh]	no function [0]	The parameter level can not be inhibited.
	Logic_In1 [1]	The parameter level can be inhibited via the selected HW input.
	Logic_In2 [2]	
	Logic_In3 [3]	The parameter level can be inhibited via the selected network-variable input.
	Logic_In4 [4]	
	Password [5]	The parameter level is inhibited via a password.
Password [Password1] [Password2] [Password3] [Password4]	0000	4-character password
	0001—9999	

■ = factory-setting   [ ] = short name in the operating unit

Functions

Protection against incorrect operation and unauthorised access.

⇨ Chapter 3 "Overview of functions"

5.8   Combination alarm

Setup dialog

[Edit]

The combination alarm is a bundling of different alarm sources (modules) or alarm events (alarm windows).

Combination alarm
☐ Alarm window 1   ☐ Alarm window 9
☐ Alarm window 2   ☐ Alarm window 10
☐ Alarm window 3   ☐ Alarm window 11
☐ Alarm window 4   ☐ Alarm window 12
☐ Alarm window 5   ☐ Alarm window 13
☐ Alarm window 6   ☐ Alarm window 14
☐ Alarm window 7   ☐ Alarm window 15
☐ Alarm window 8   ☐ Alarm window 16
☒ System error
[OK]   [Cancel]   [Help]
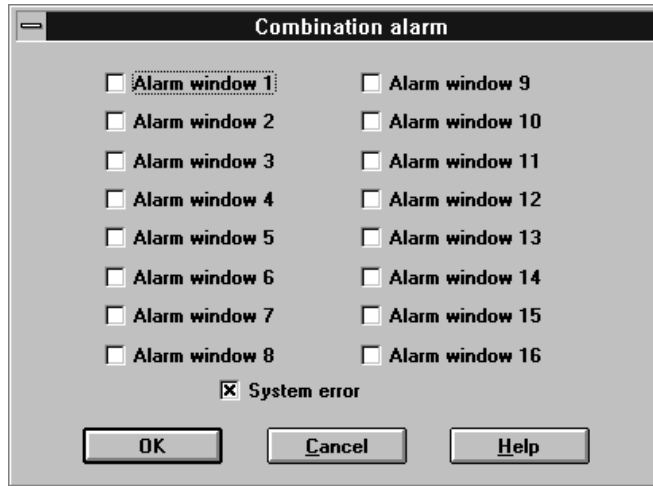
Parameters

Parameter	Selection/settings	Explanation
System error	yes	Defines whether a combination alarm is produced in the event of a system error [1] and missing data for network variables.
	no	
Alarm window 1—16	yes	Defines whether a combination alarm is produced when an alarm window has not been acknowledged.
	no	

☐ = factory-setting   [ ] = short name in the operating unit

1. At present, no system errors are defined.

5 Parameter setting

Function

A combination alarm can be produced by a system error, by each of the 16 alarm windows or directly via the network (CombAlarm_In). The combination alarm is output via the network variable "Combination alarm" and the logic output which can operate a hooter, for example. System errors or alarm windows can be separated individually from the combination alarm function through internal switches.
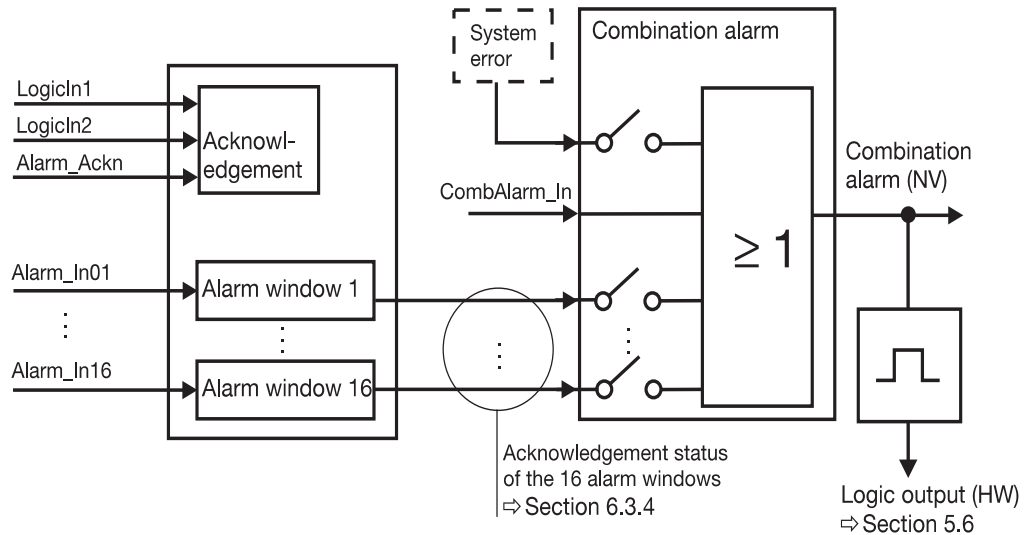
Multiple operation of the combination alarm (CombAlarm_In)

It is possible to link several alarm signals to the network input "CombAlarm_In". In this case, the input behaves like a logic "Or": an active alarm signal (logic "1") is dominant.

⇨ Section 4.1 "Input network-variables"

☞ The different signals must be sent by different modules.

6.1   Overview of levels

The operating unit can be on different levels. After the supply has been switched on, the operating unit assesses its network surrounding, i.e. which modules are connected and their names (reset window).

☞ A module with the setup connector inserted will not be found during the reset procedure.

The operating unit changes automatically to the process level, where it displays process windows, if such have been defined. If this is not the case, a changeover to "Current module data" occurs at the program level. Errors and alarms are indicated instantly.

Supply on	During switch-on operation, the operating unit temporarily shows the following windows ⇨ Section 6.3.3 "Key combination (reset)"
Memory test ...	Storage check
ScanNet:4	Number of modules found
Version: 01.01.00	Software version No. of operating unit

Alarms? — yes — ①
no

Process windows available? — no — ②
yes

Process level ⇨ Section 6.2

Process window 1
⋮
Process window n

PGM

PGM > 2 s

Program levels ⇨ Section 6.3

Parameter level
② Current module data
Key combinations
① Current alarms

🕐 After the last key stroke and when the repeat time has elapsed, on to "Current alarms"
⇨ Section 6.3.4

⚡ With fresh alarm instantly on to "Current alarms"
⇨ Section 6.3.4

6 Operation

6.2 Process level

"Process level" means the cyclic sequence of process windows and, if appropriate, also their operation.

Displaying process windows

At the operating unit, the process windows are run through in a defined sequence.

Diamond blinks on cyclic display of the process window
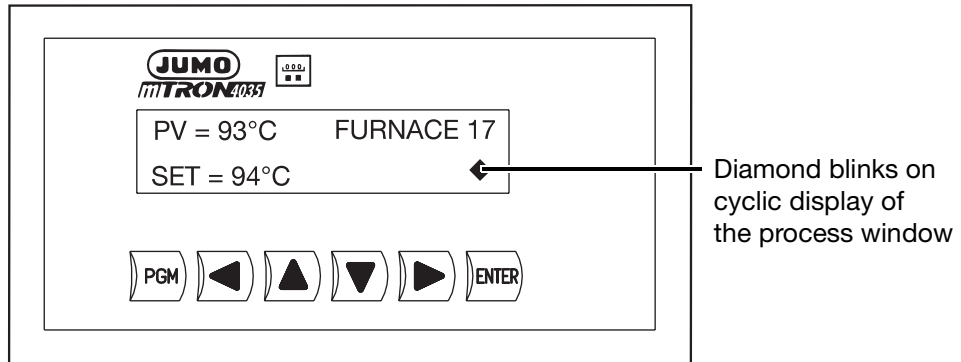
The [ENTER] key is used to hold a process window. The diamond stops blinking.

The keys [▲] and [▼] are used to switch the process windows over.

The cyclic sequence of the process windows is continued by pressing the [ENTER] key (diamond blinks).

The user can freely edit the process windows (string with 20 characters); they consist of a text, which can be freely edited, and a maximum of 4 process variables.

⇨ Section 5.2 "Process windows"

Altering process values

☞ The alteration of the process values can be inhibited.
⇨ Section 5.7 "Inhibits"

✶ Hold [PGM] pressed down for less than 2 sec.

The cyclic sequence is stopped. The first editable value blinks.

The diamond is no longer visible.

blinks

✶ Alter the value which is blinking by using the keys [▲] and [▼]

✶ Use [ENTER] to store and continue to the next editable value.

✶ Using the keys [◀] and [▶] continue to the next editable value without storing
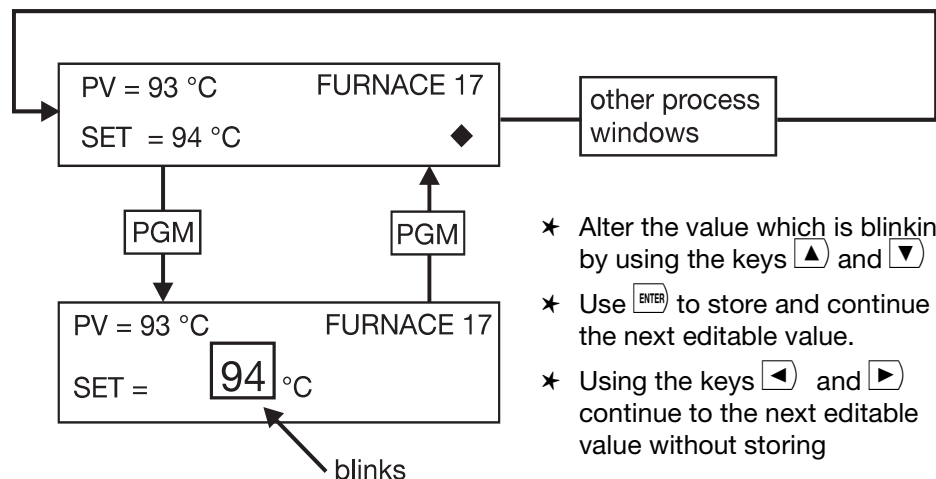
6.3   Program levels

In addition to displaying process windows, the operating unit can set the parameters for all the mTRON modules and display module data, system errors[2] and alarm messages. The functions are divided into several levels.

```
┌─────────────────────┐
│   Process  level    │
└─────────────────────┘
            │
            ▼
      ┌─────────┐  press for
      │  PGM    │  more than 2 sec
      └─────────┘
            │
   ▲        ▼                              ┌──────────────────┐
   │  ┌─────────────────────┐             │ Parameter level  │
  [▲] │  Parameter level    │ ◄────────►  │ inhibit          │ ──► ⇨ Section 6.3.1
   │  │                     │             │ ⇨ Section 5.7    │
   │  ├─────────────────────┤             └──────────────────┘
   │  │  Current module data[1] ◄──────────────────────────────► ⇨ Section 6.3.2
   │  ├─────────────────────┤
  [▼] │  Key combinations   │ ◄──────────────────────────────► ⇨ Section 6.3.3
   │  ├─────────────────────┤
   ▼  │  Current alarm      │ ◄──────────────────────────────► ⇨ Section 6.3.4
      └─────────────────────┘

                 ┤ ENTER ├►

                ◄─┤ ◄ ├
```

---
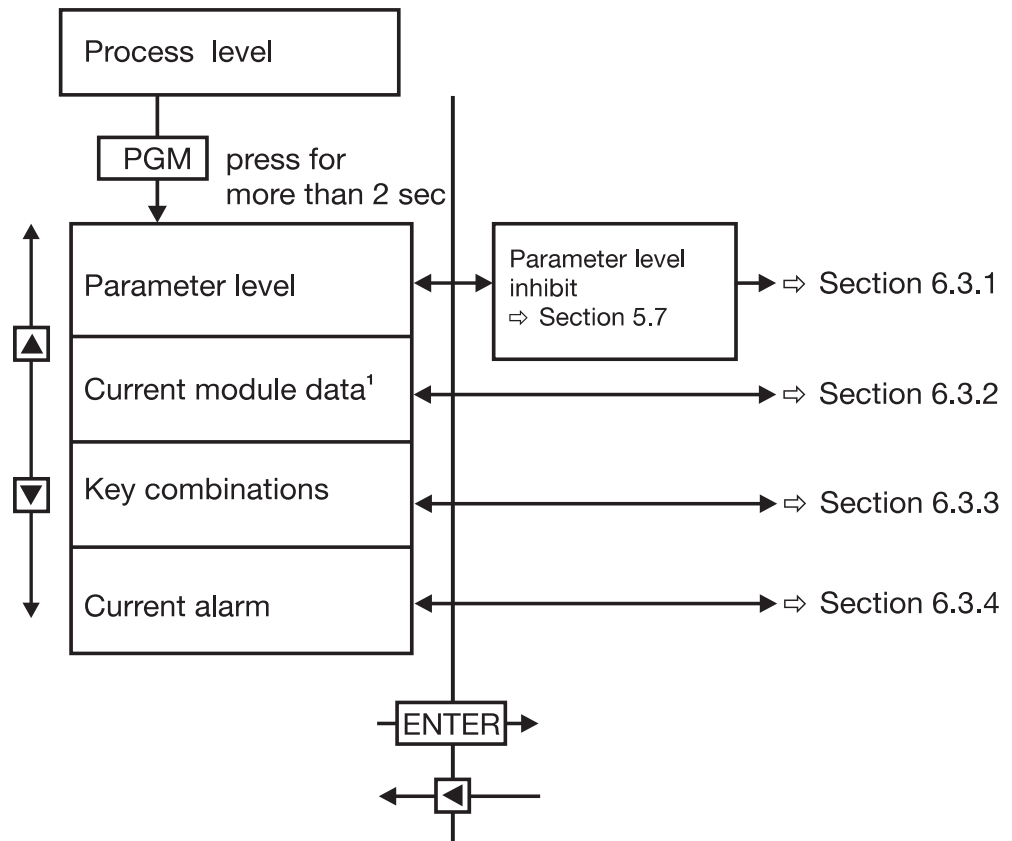
1. If no process displays are available, they are replaced by the level "Current module data". The level "Current module data" is then no longer listed here.
2. At present, no system errors are defined.

6 Operation

6.3.1 Parameter level

At the parameter level, the parameters of all modules can be indicated and edited using an uniform method if they have been enabled for it (can be set individually for each parameter in the JUMO mTRON-iTOOL project design software).

Selecting parameters

The parameters of all modules can be accessed via a 4-step hierarchy:
1. Select mTRON module
2. Select function
3. Select parameter
4. Edit parameter
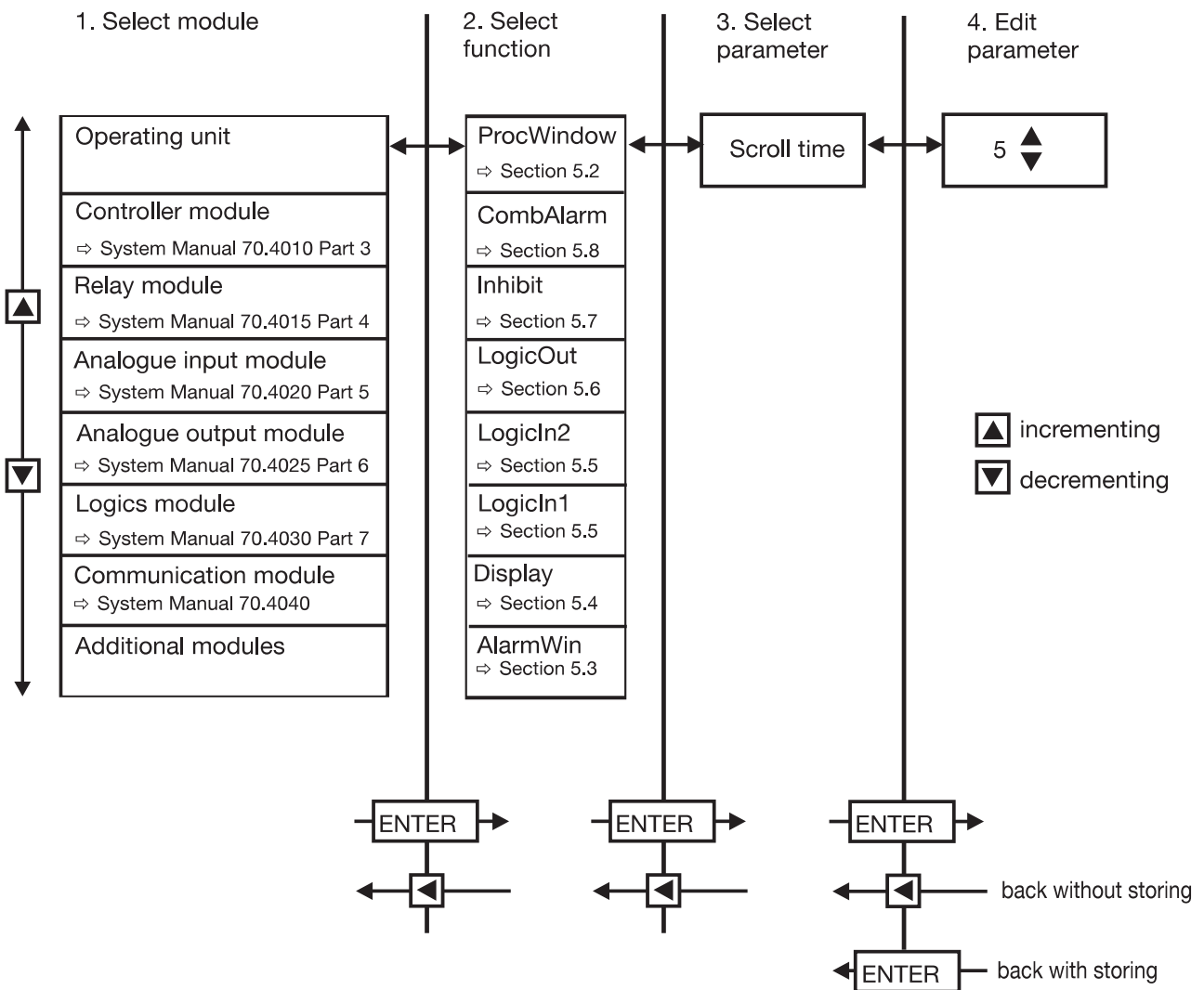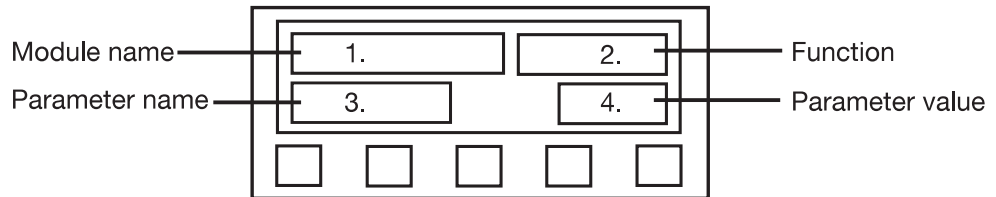
6.3.2 Current module data

At this level, version number, measurement value and function outputs of all modules of a system can be displayed, without the need to define a process window in the JUMO mTRON-iTOOL project design software. Selection and presentation of the parameters are factory-set for each module type.
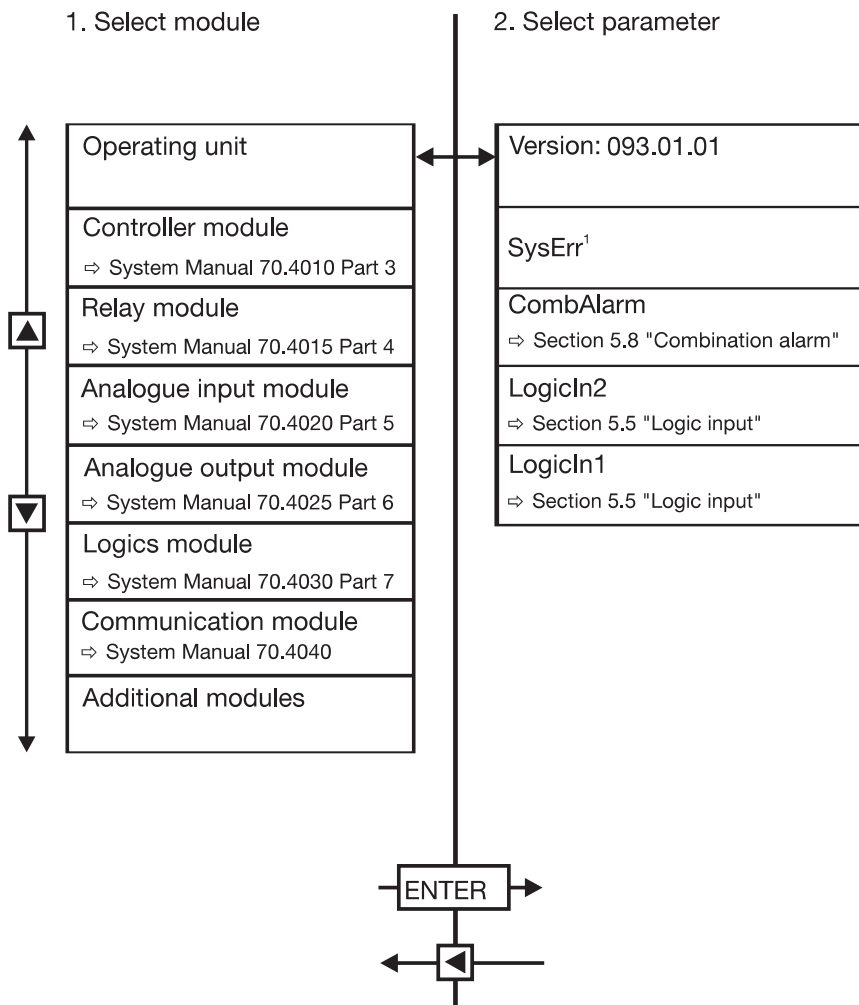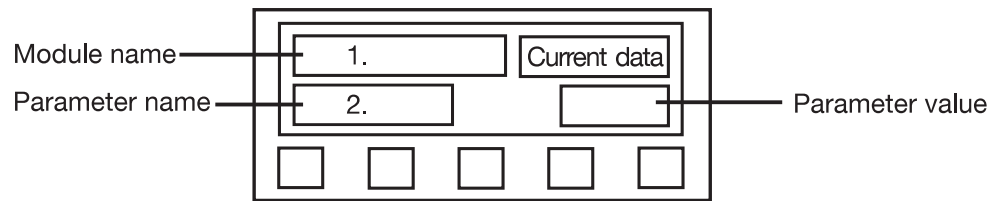
☞ This level only indicates values!
Alterations can be carried out at the parameter level or in process windows.

Selecting parameters

The parameters of all modules can be accessed uniformly via a 2-step hierarchy:

1. Select mTRON module
2. Select parameter

1. At present, no system error is defined ("0" is displayed).

6 Operation

6.3.3 Key combinations

At this level, the key combinations for "Installation", "Reset" and "Wink" are displayed. The key combinations for "Reset" and "Installation" are needed for the installation with the JUMO mTRON-iTOOL project design software. "Wink" is used to identify other modules.

Reset

A reset of the operating unit is always required after configuration of the system or system parts by the JUMO mTRON-iTOOL project design software and subsequent transfer to the system (downloading).

✦ Press (PGM) + (ENTER) simultaneously

Installation key

If the (PGM) + (▲) keys are pressed simultaneously, it sends an identification message to the JUMO mTRON-iTOOL project design software.

Sending a "Wink" message

A "Wink" message can be sent from the operating unit to each of the other modules of the system. The "Wink" message is used to identify modules.

✦ Select the required module

⇨ Section 6.3.1 "Parameter level"

⇨ Section 6.3.2 "Current module data"

✦ Press (PGM) + (◀) simultaneously

The text "Wink..." appears on the display together with the selected module name:


```
JUMO
mTRON 4035

Analogue output
Wink ...

PGM  ◀  ▲  ▼  ▶  ENTER
```
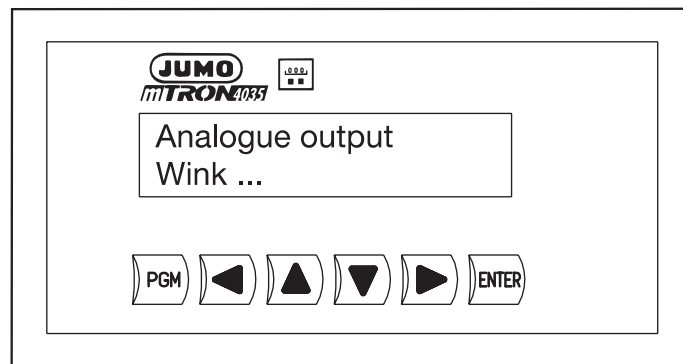
Receiving a "Wink" message

If a "Wink" message is sent from the JUMO mTRON-iTOOL project design software to the operating unit, then it responds with the following display:


```
JUMO
mTRON 4035

Wink received

PGM  ◀  ▲  ▼  ▶  ENTER
```
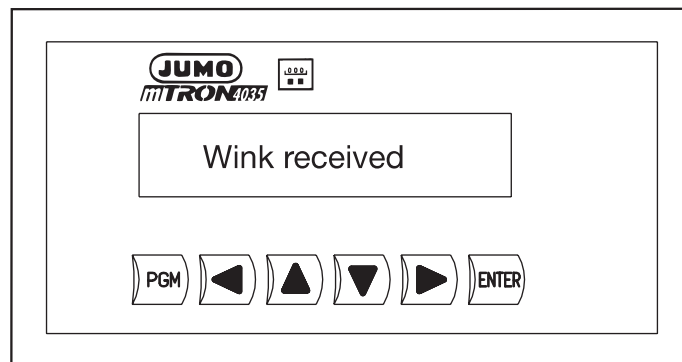
✦ Acknowledge the "Wink message" with any key.

6.3.4 Current alarms

At the alarm level, alarms are monitored, indicated and acknowleged.

The alarm level can be accessed

1. instantly after a new alarm has occured (Alarm_In XX changes from 0 to 1),

2. after the repeat time for alarm indication has elapsed,

3. manually via the menu selection "Current alarms",

⇨ Section 6.1 "Overview of levels".

In the first case, the latest alarm is indicated first, all other alarms in ascending order (arranged according to the number of the alarm window).

Acknowledge-ment

The indicated alarms are acknowledged in sequence with any key, afterwards they are no longer indicated until the time for repeat display has elapsed. If the conditions for the alarm still exist (Alarm_In XX remains at 1), then the alarm window reappears automatically. After all alarm windows have been acknowledged, the process windows are displayed again.

As well as by key, the alarm windows can be acknowledged via the logic inputs and the network. In this case, all alarms are acknowledged simultaneously.

⇨ Section 5.3 "Alarm windows"

6 Operation

7 Specific module conditions

7.1 Action after a power failure

⇨ Section 6.1 "Overview of levels"

7.2 Action on errors of communication

If a module to which there is no longer any connection, or which has failed is addressed, then the operating unit shows the following response:

- Next to the module name the message "No connection" appears.

- The process variables of the module which can not been accessed are shown with the replacement display: "---------" (value has not yet been transferred).

⇨ Section 7.4 "Display of symbols"

- The network-variable inputs of the operating unit are set to the replacement value 0 (alarm windows are not triggered).

- In the case of "Reset", the number of the modules found is reduced.

⇨ Section 6.1 "Overview of levels"

7.3 Action on faulty installation

If, after switching on the supply or after "Reset", the operating unit finds several modules with the same network address, then "Address error: XX" is displayed, XX being the network address which is present several times.

☞ Check installation or re-install it with the JUMO mTRON-iTOOL system.

7.4 Display of symbols

Replacement display of numbers

Symbols	Meaning
+++++	Value invalid (Out of Range)
-------	Value not yet transferred
********	Value does not fit into the preset format (not enough places)
?????	Variable can not be shown

7 Specific module conditions

A

B

C

D

E

I

K

L

M

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JUMO

JUMO mTRON

for stock items see price list

Operating unit

Brief description

The operating unit is a module of the JUMO mTRON control and automation system. The housing measures 151.6 mm x 80.3 mm x 43.2 mm (W x H x D) and is suitable for flush panel mounting.

As man-machine interface the operating unit provides optimum and orderly insight into the process states and the system parameters of the JUMO mTRON automation system. It has a back-lit LC display of 2 x 20 places. Only six keys are required for operating the modules and setting their parameters. The process information to be shown on the LC display is configured graphically on a PC as process window, using the setup editor of the JUMO mTRON-iTOOL project design software. Up to 16 process windows and 16 alarm windows can be created. The arrangement of the process window and the combination of the process variables in a process window can be freely determined by the user.
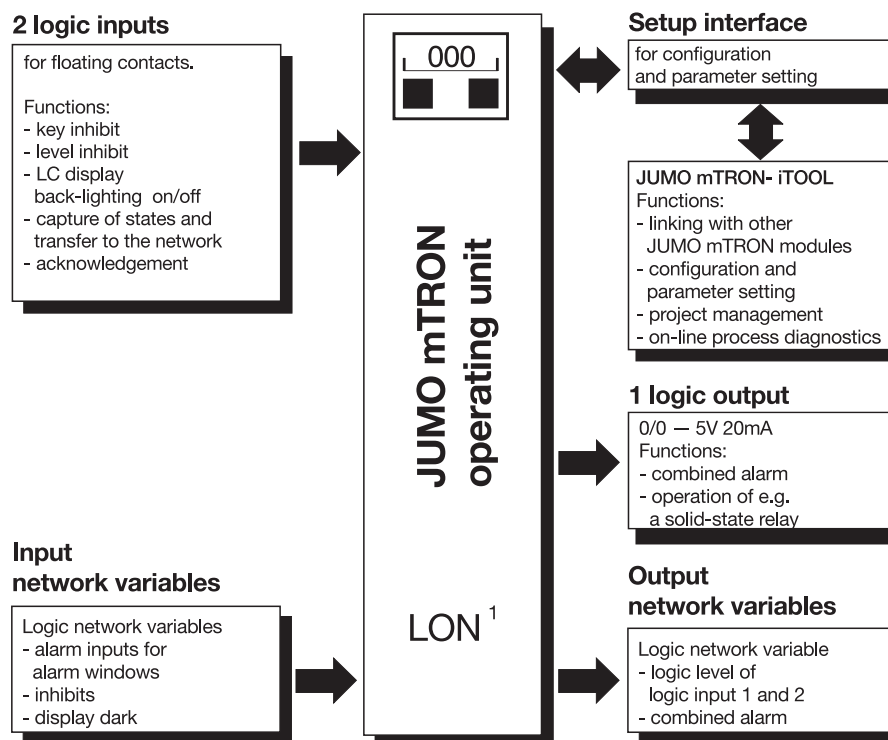
After downloading the process windows from the PC to the operating unit they appear on the LC display after pressing the key. This method of freely configuring the LC display offers process-oriented insight into the system states.

When configuring or setting parameters of a JUMO mTRON module, the appropriate instrument is selected through the operating unit. A pre-defined menu structure on the operating unit provides clear access to the functions of the module for configuration or parameter setting.


Type 704035/0-..

Block structure

2 logic inputs

for floating contacts.

Functions:
- key inhibit
- level inhibit
- LC display
  back-lighting on/off
- capture of states and
  transfer to the network
- acknowledgement

**Input
network variables**

Logic network variables
- alarm inputs for
  alarm windows
- inhibits
- display dark

**JUMO mTRON
operating unit**

000

LON[1]

Setup interface

for configuration
and parameter setting

JUMO mTRON- iTOOL
Functions:
- linking with other
  JUMO mTRON modules
- configuration and
  parameter setting
- project management
- on-line process diagnostics

1 logic output

0/0 — 5V 20mA
Functions:
- combined alarm
- operation of e.g.
  a solid-state relay

**Output
network variables**

Logic network variable
- logic level of
  logic input 1 and 2
- combined alarm

Features

■ **Operation and display**
of the entire JUMO mTRON automation system through process windows

■ **Configuration and parameter setting**
on all modules of a JUMO mTRON automation system

■ **Display**
of up to 16 process-operated alarms

■ **Setup interface**
For configuration and parameter setting the module is linked to a PC via a PC interface

■ **Plug & Play function**
Problem-free replacement of modules without re-configuration

Displays and controls
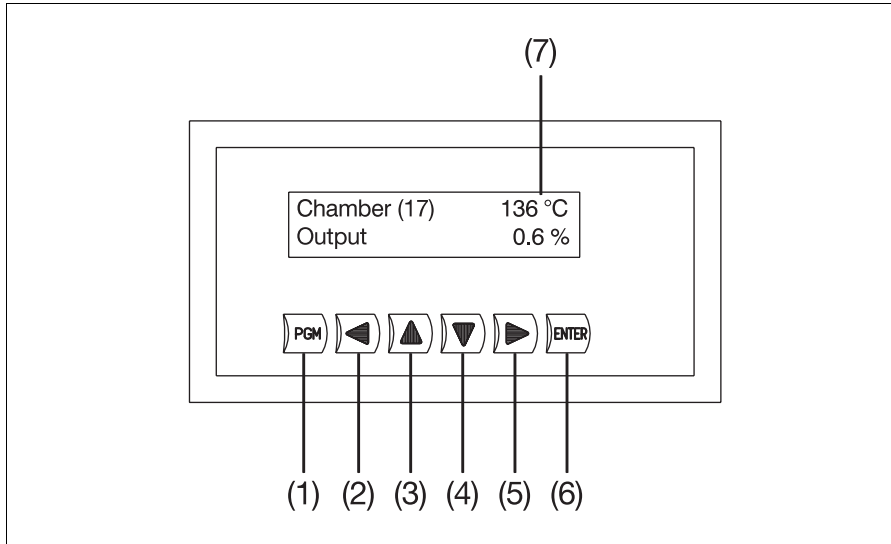
(1)	**PGM** - key for changing from operating level to parameter level	(4)	**Selection key** selects backwards between different items in the ring list (decrementing)
(2)	**Backwards** - moves one step backwards without storing	(5)	**Forwards** moves one step forwards without storing
(3)	**Selection key** selects forwards between different items in the ring list (incrementing)	(6)	**ENTER** acknowleges edited values and alarms
		(7)	**LC display** 2 x 20 places

Technical data

Hardware inputs

Logic inputs

activation: floating contacts
sampling time: 500 msec for all inputs
Functions:
- key inhibit
- level inhibit
- LCD back lighting on/off
- capturing states and transferring them to the network

Hardware outputs

Logic output

logic signal: 5 V 40 mA, short-circuit proof

Function:
- operating e.g. an external solid-state relay when conditions set in software are fulfilled (e.g. alarm states)

Input network variables

Logic network variables

Functions:
- inhibiting operating levels (2)
- acknowledging alarms (1)
- setting the logic output (1) (combined alarm function, linked as logical OR)
- activating the alarm windows (16)

Output network variables

Logic network variables

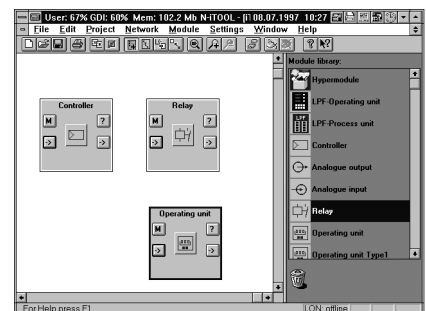Output cycle: event-controlled, but at least every 6 sec

Functions:
- status of the two logic inputs
- status of the combined alarm

General data

Environmental conditions to EN 61 010

Operating and ambient temperature: 0 — 55°C
Permitted storage temperature: –40 to +70°C
Relative humidity: rH 80 % max.
Pollution degree 2
Overvoltage category 2

Housing

Front: aluminium, with front membrane
Flammability Class: UL 94 VO
Protection: IP65 (front), IP20 (rear)
Installation: flush panel mounting using two brackets inserted at the sides

Supply

110 — 263V AC +10/–15%, 48 — 63 Hz, or 20 — 53V AC/DC, 48 — 63 Hz
Power consumption: 10 VA max.

Network (LON interface)

Transceiver: free topology FTT-10A (ring, star, line or mixed structure)
Baud rate: 78 kbaud
Max. lead length (depending on lead type):
line: 2700 m
star: 500 m
ring: 500 m
mixed: 500 m
Max. number of modules: 64
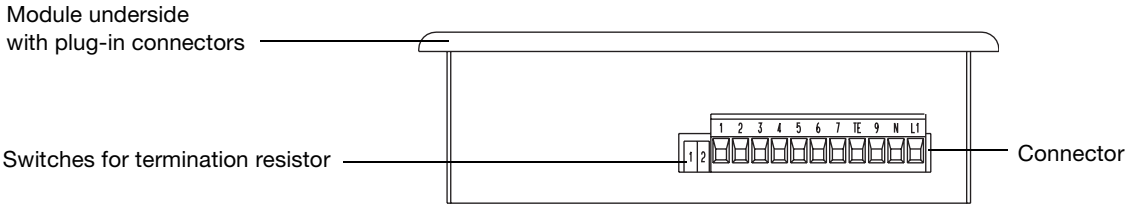
Operation and project design

The JUMO mTRON operating unit can be used for operating, parameter setting and configuring of JUMO mTRON modules.

The JUMO mTRON-iTOOL project design software permits convenient design and start-up of a JUMO mTRON system.

The projects can be archived and documented. Individual modules are linked via LON by assigning network variable (NV) names.
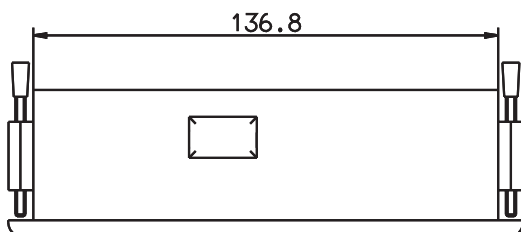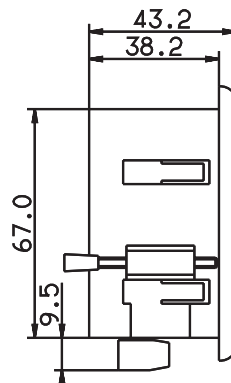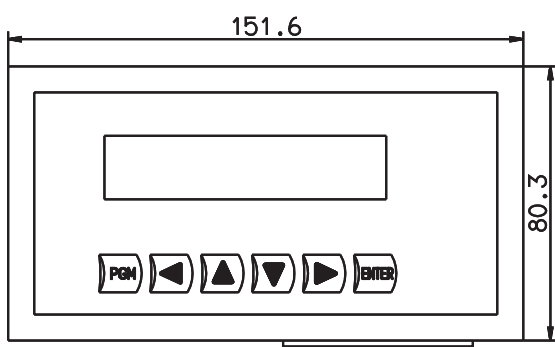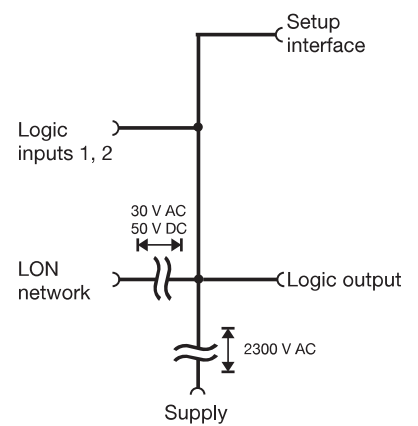
Connection diagram

Module underside
with plug-in connectors

Switches for termination resistor

Connector

Connection for	Terminals		Notes	Diagram
Logic inputs	Input 1	Input 2		
Floating contacts	1 3	2 3		
Logic output 5V 40mA	4 + 3 −			
LON interface	7 = TE		screen	
	6 = Net_A 5 = Net_B		any polarity	
	9 = not used			
Supply as label	**AC**	**DC**		
	L1 line N neutral TE technical earth	L1 any N } polarity TE technical earth		

Dimensions

151.6

80.3

43.2
38.2

67.0

9.5

136.8

Isolation

Setup interface

Logic inputs 1, 2

30 V AC
50 V DC

LON network

Logic output

2300 V AC

Supply

Panel cut-out to DIN 43 700
$138^{+1.0}$mm x $68^{+0,7}$mm

Ordering details

(1)

704035/0-□ ..

(1) Supply . ....

Type	Code
110 — 240V AC, +10/–15%, 48 — 63 Hz	**23**
20 — 53V AC/DC, 48 — 63 Hz	**22**

Standard accessories

2 mounting brackets
1 Installation Instructions M 70.4035.4

Accessories

PC interface
with TTL/RS232C converter
for connecting the module to a PC;
length 2m.
Sales No. 70/00301315

Project design software
JUMO mTRON-iTOOL
Using the JUMO mTRON-iTOOL project
design software, the modules can be desi-
gned graphically on the PC. The user is
able to link modules of the JUMO mTRON
family and to configure the application-
specific parameters.

System Manual JUMO mTRON
Documentation of configuration, parame-
ter setting and installation of the modules.
Sales No. 70/00334336

JUMO mTRON modules

Controller module
Data Sheet 70.4010

Relay module
Data Sheet 70.4015

Analogue input module
Data Sheet 70.4020

Analogue output module
Data Sheet 70.4025

Logic module
Data Sheet 70.4030

Operating unit
Data Sheet 70.4035

Communication module
Data Sheet 70.4040

Project design software
JUMO mTRON-iTOOL
Data Sheet 70.4090

mm	inch
9.5	0.37
38.2	1.19
43.2	1.70
67.0	2.64
$68^{+0.7}$	$2.68^{+0.03}$
80.3	3.16
136.8	5.39
$138^{+1.0}$	$5.43^{+0.04}$
151.6	5.97