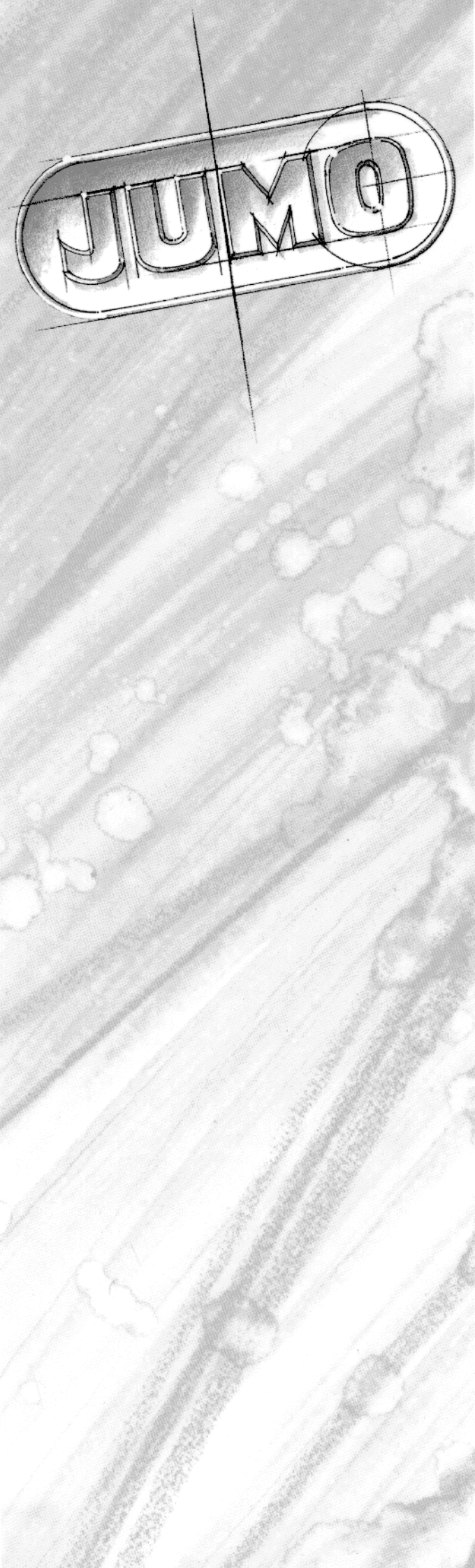




JUMO
mTRON

Relay module

70.4015
System Manual Part 4

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1.1 Preface



This JUMO mTRON System Manual is addressed to equipment manufacturers and users with 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 4 of the System Manual “JUMO mTRON relay module” 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.

1.2 Type designation

The type designation contains all factory-configured settings of the outputs (1) and the supply (2). The connected supply must correspond to the voltage specified on the label. The label is affixed to the housing.

(1) (2)
704015/0- ... - ..

(1) Outputs

Standard version

Outputs	Code
4 relays (n.o. make)	154
4 logic outputs 12V 20mA	165
4 solid-state relay outputs 250V 1 A	170

Special version **999**

Factory-configured to customer specification.

(2) Supply.....

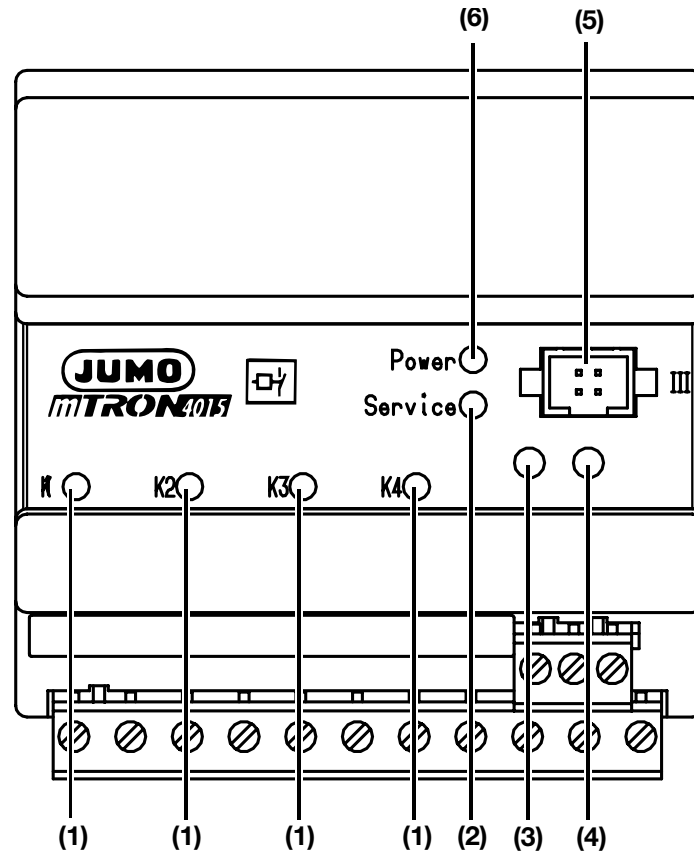
Type	Code
110 — 240V AC +10/-15% 48 — 63Hz	23
20 — 53V AC/DC 48 — 63Hz	22

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

2 Displays and controls



LEDs

(1)	Status LED, yellow for the switching outputs K1 to K4; lights up when relay is energised or logic / solid-state relay output is activated
(2)	Service LED, red - lights up/blinks continuously at one second intervals on operating fault. * replace module - blinks at one second intervals for 10sec when the network connection from the JUMOmTRON-iTOOL project design software or the operating unit to the module is being tested by a test signal ("wink"). - long blink pulses (3sec on, 1 sec off) when a Plug & Play error occurs
(6)	Power LED, green lights up when the supply is switched on

Keys/Switches

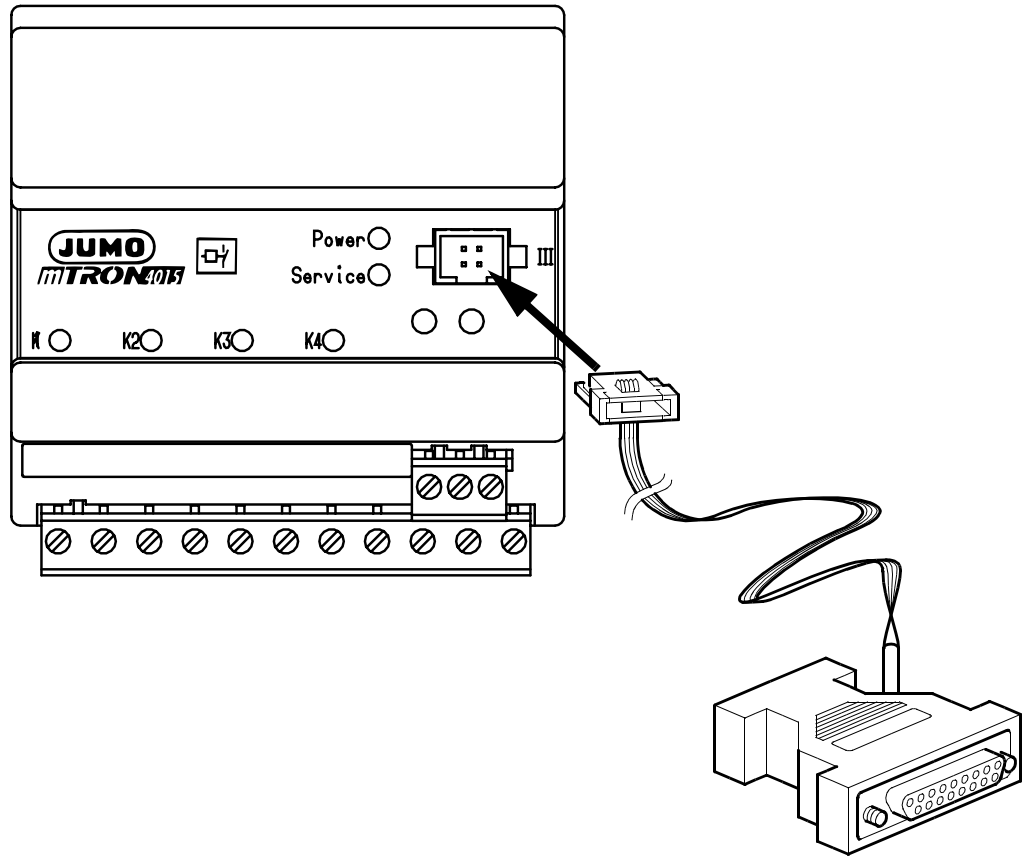
(3)	Switches (termination resistance) ⇒ System Manual Part 1 "General section", Section 4.2 "Network connection"
(4)	Installation key the module reports to the JUMO mTRON-iTOOL project design software

2 Displays and controls

Interface

(5) **Setup interface**

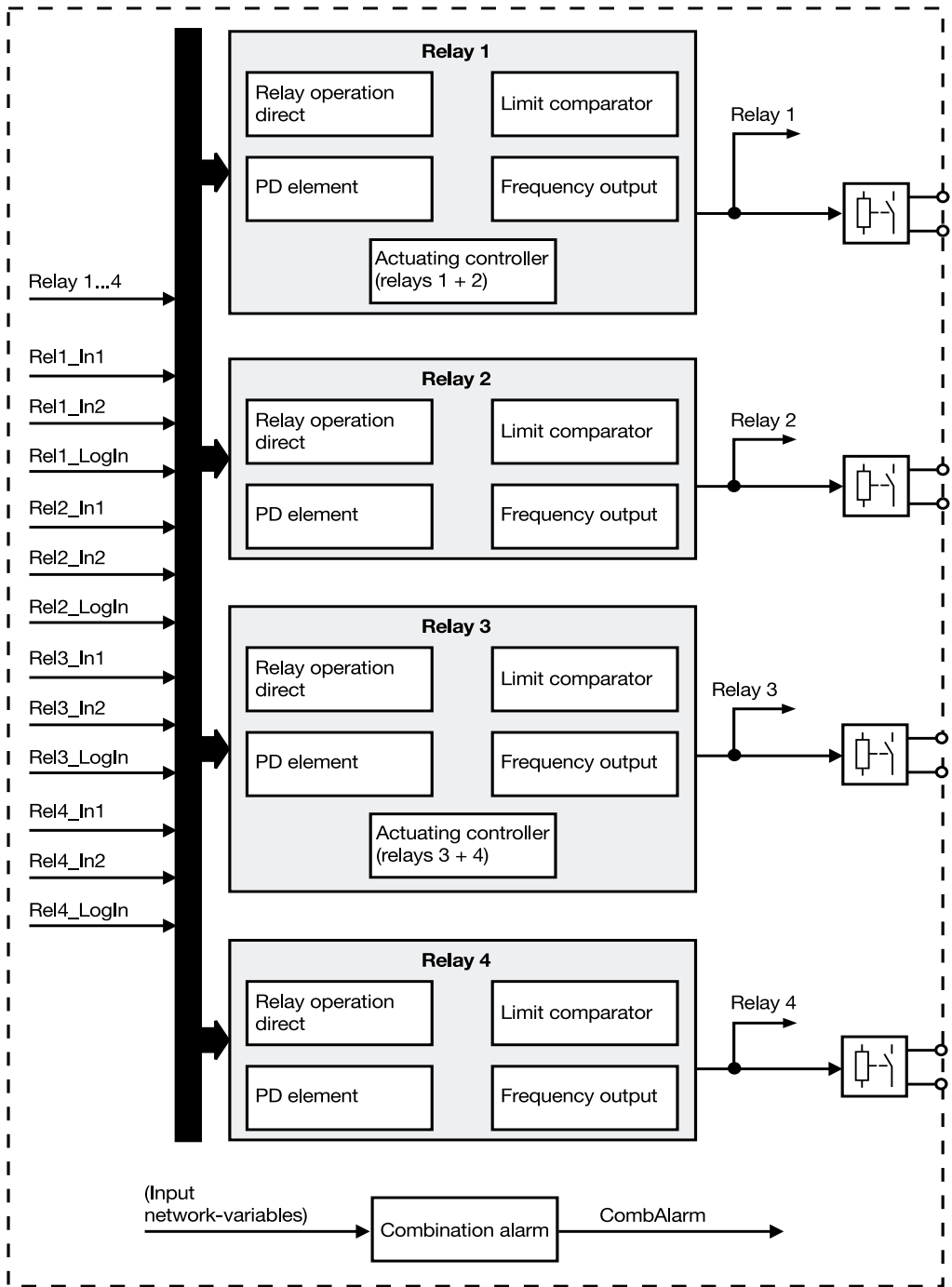
for the setup interface line which links the module to the PC. The parameters can be set via this connector not only for the relay module, but also for **all the modules connected to the LON bus**.



When the setup interface line is connected, the module has the sole function of a PC-LON interface converter. All other module functions are switched off.

3 Overview of functions

This overview of functions shows the relationship between the individual functions and the assignment of the network variables.



Explanation of symbols

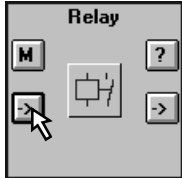
Symbol	Meaning
Extern_In3 →	Network variable ⇒ Chapter 4 “Network variables”
⏏	Hardware input
⏏	Hardware output

3 Overview of functions

4.1 Input network-variables

Input network-variables can be used to transfer values and operating signals from other modules to the relay module via the network.

List of input network-variables



Name	Type	Default	Explanation
Rel1_LogIn	logic	0/0	Logic operating input
Rel1_In1	float value	OoR/0	Input value 1
Rel1_In2	float value	OoR/0	Input value 2
Rel2_LogIn	logic	0/0	Logic operating input
Rel2_In1	float value	OoR/0	Input value 1
Rel2_In2	float value	OoR/0	Input value 2
Rel3_LogIn	logic	0/0	Logic operating input
Rel3_In1	float value	OoR/0	Input value 1
Rel3_In2	float value	OoR/0	Input value 2
Rel4_LogIn	logic	0/0	Logic operating input
Rel4_In1	float value	OoR/0	Input value 1
Rel4_In2	float value	OoR/0	Input value 2
Relay 1... 4	long	0/0	Direct operation of outputs 1 — 4

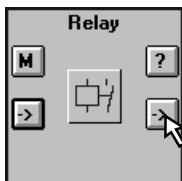
Default setting: Values of the input network-variables in linked /unlinked condition on errors of communication (default: linked/unlinked)

OoR = **O**ut of **R**ange (invalid value)

4.2 Output network-variables

Using the output network-variable, values and operating signals can be transferred from the relay module to other modules via the network.

List of output network-variables

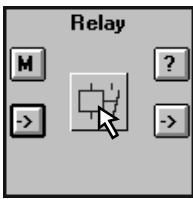


Name	Type	Explanation
Relay1	logic	Outputs the switching mode of output 1
Relay2	logic	Outputs the switching mode of output 2
Relay3	logic	Outputs the switching mode of output 3
Relay4	logic	Outputs the switching mode of output 4
CombAlarm	logic	Outputs a combination alarm after 18sec, if there are errors of communication in a linked input network-variable.

4 Network variables

5 Parameter setting

Basic menu



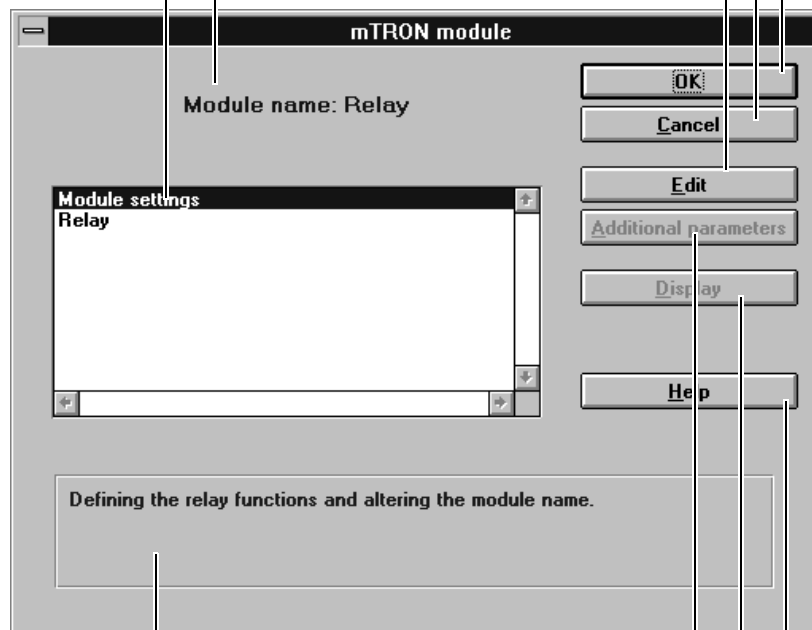
Module name
Name of the module

Setup dialog
The functions of the module are assigned to so-called 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



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

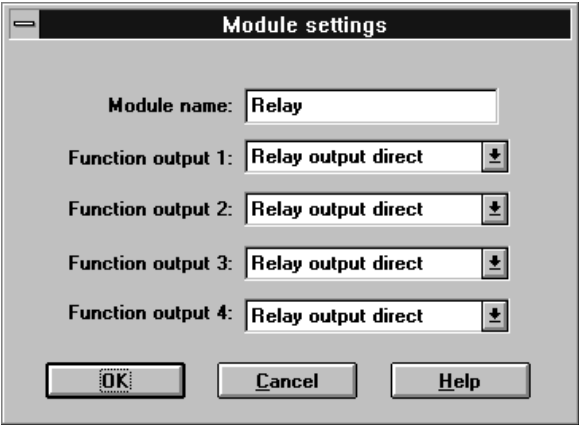
Help
calls up help text for the basic menu

5 Parameter setting

5.1 Module settings

The name of the module and the functions of the outputs are defined in the module settings. According to the function selected, the corresponding input mask is shown in the setup dialog “Relay”.

Setup dialog



Parameters

Parameter	Selection/setting	Explanation
Module name [ModName]	(Text)	Name of the module (16 characters)
Function output 1 [Relay1]	Relay output direct Limit comparator PD element Frequency output Actuating controller	Function of output 1 — 4
Function output 2 [Relay2]	Relay output direct Limit comparator PD element Frequency output	
Function output 3 [Relay3]	Relay output direct Limit comparator PD element Frequency output Actuating controller	
Function output 4 [Relay4]	Relay output direct Limit comparator PD element Frequency output	

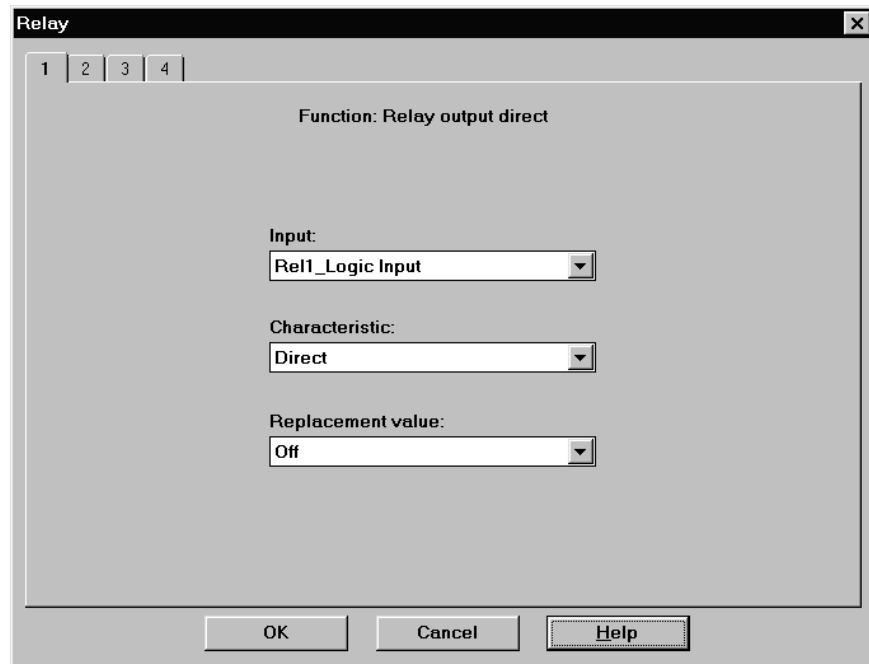
■ = factory-setting [] = short name in operating unit

5.2 Relay

5.2.1 Relay output direct

This function operates a relay directly via a logic signal.

Setup dialog



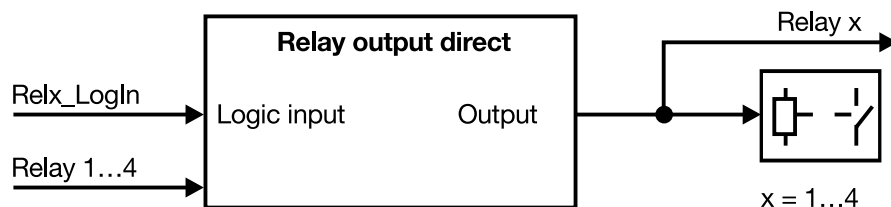
Parameters

Parameter	Selection/settings	Explanation
Input [SelInput] (Sel=selector)	Rel1_LogIn [0] Rel2_LogIn [1] Rel3_LogIn [2] Rel4_LogIn [3]	Input value factory-set: Relx_LogIn (x=relay number)
Characteristic [Charistic]	Direct [Direct] Reversed [Reversd]	Direct: Operating signal is looped through Reversed: Operating signal is reversed
Replacement value [RepVal]	Off [Off] On [On]	Defines the switching mode of the output in the event of faulty communication.

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

Function

The diagram shows the input and output signals of the function.

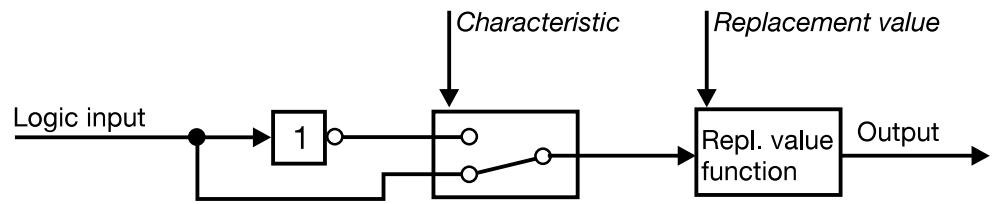


The direct relay operation via the network variable “Relay 1...4” takes priority over the operation via the network variable “Relx_LogIn”.

5 Parameter setting

Block structure

The block structure shows the internal processing of the signals and the influence of the parameters.



The replacement value is output when the logic input is no longer updated.

5.2.2 Limit comparator

Using a limit comparator, an input value or the difference between two input values can be monitored for exceeding / falling below a limit or range.

Setup dialog



The image shows a 'Relay' setup dialog box with a tabbed interface (tabs 1, 2, 3, 4). The 'Function: Limit comparator' is selected. The dialog contains the following fields and controls:

- Input 1:** Rel1_Input1 (dropdown)
- Input 2:** Rel1_Input2 (dropdown)
- Function:** Comparator (dropdown)
- Min. limit:** 0.000 (text field)
- Max. limit:** 0.000 (text field)
- Hysteresis (differential):** 1.000 (text field)
- Adjustment Rel1_Input1:**
 - Offset:** 0.000 (text field)
 - Gradient:** 1.000 (text field)
- Time delay:**
 - Switch-on delay:** 0.0 s (text field)
 - Switch-off delay:** 0.0 s (text field)
- Operation Rel1_Logic Input:**
 - Operating input:** Rel1_Logic Input (dropdown)
 - Function of operating input:** No function (dropdown)
 - Characteristic for operating input:** Direct (dropdown)
 - Replacement value:** Off (dropdown)

Buttons at the bottom: OK, Cancel, Help.

Parameters

Parameter	Selection/settings	Explanation
Input 1 [SelInput1]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 1 factory-set: Relx_In1 (x=relay number)
Input 2 [SelInput2]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 2 factory-set: Relx_In2 (x=relay number)
Function [Function]	Comparator [Comp] Window discriminator [WDis] Comparator reversed [ComRev] Window discriminator reversed [WDisRev]	Defines the function of the limit comparator
Min. limit [MinLimit]	-1999 to +9999 0.000	Lower limit of window discriminator
Max. limit [MaxLimit]	-1999 to +9999 0.000	Upper limit of window discriminator or limit of comparator

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

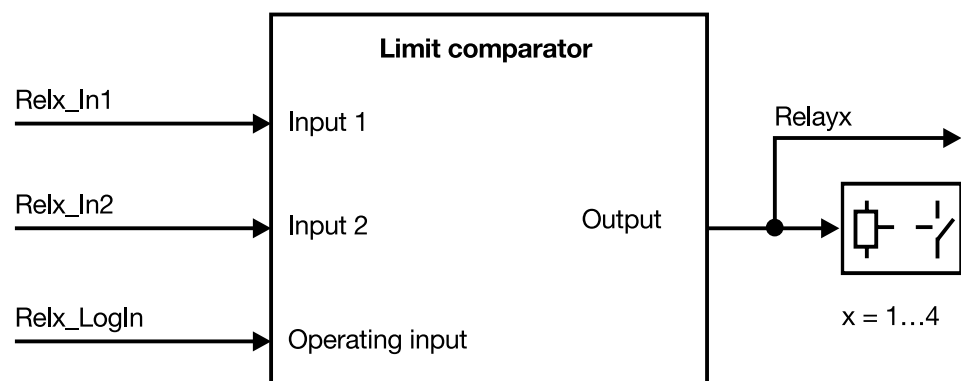
5 Parameter setting

Parameter	Selection/settings	Explanation
Hysteresis [Hysteresis]	0 — 9999	Switching differential
	1.000	
Offset [Offset]	-1999 to +9999	Influences the value of input 1: $E1^* = \text{gradient} \cdot (E1 - \text{offset})$
	0.000	
Gradient [Gradient]	-1999 to +9999	
	1.000	
Switch-on delay [OnDelay]	0 — 999.9s	Delays the switch-on process of the relay
	0.0 s	
Switch-off delay [OffDelay]	0 — 999.9s	Delays the switch-off process of the relay
	0.0 s	
Operating input [SelOPInp]	Rel1_LogIn [0]	Operating input factory-set: Relx_LogIn (x=relay number)
	Rel2_LogIn [1]	
	Rel3_LogIn [2]	
	Rel4_LogIn [3]	
Function of operating input [FuncOper]	no function [NoFunc]	No influence on signal
	Reset latch [ReLatch]	One positive switching edge of the LC output ("1") is held until it is reset via the operating input
	Reset autodeletion [ReAuDel]	One negative switching edge of the LC output ("0") is held until it is reset via the operating input
	Set Off [SetOff]	Sets the LC output to "0"
	Set On [SetOn]	Sets the LC output to "1"
Characteristic for operating input [CharOper]	Direct [Direct]	No influence on signal
	Reversed [Reversd]	Signal is reversed
Replacement value [ReplVal]	Off [Off]	Switching mode of the limit comparator with specific module states. This replacement value becomes active when an input indicates an invalid value.
	On [On]	

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

Function

The diagram shows the input and output signals of the function.

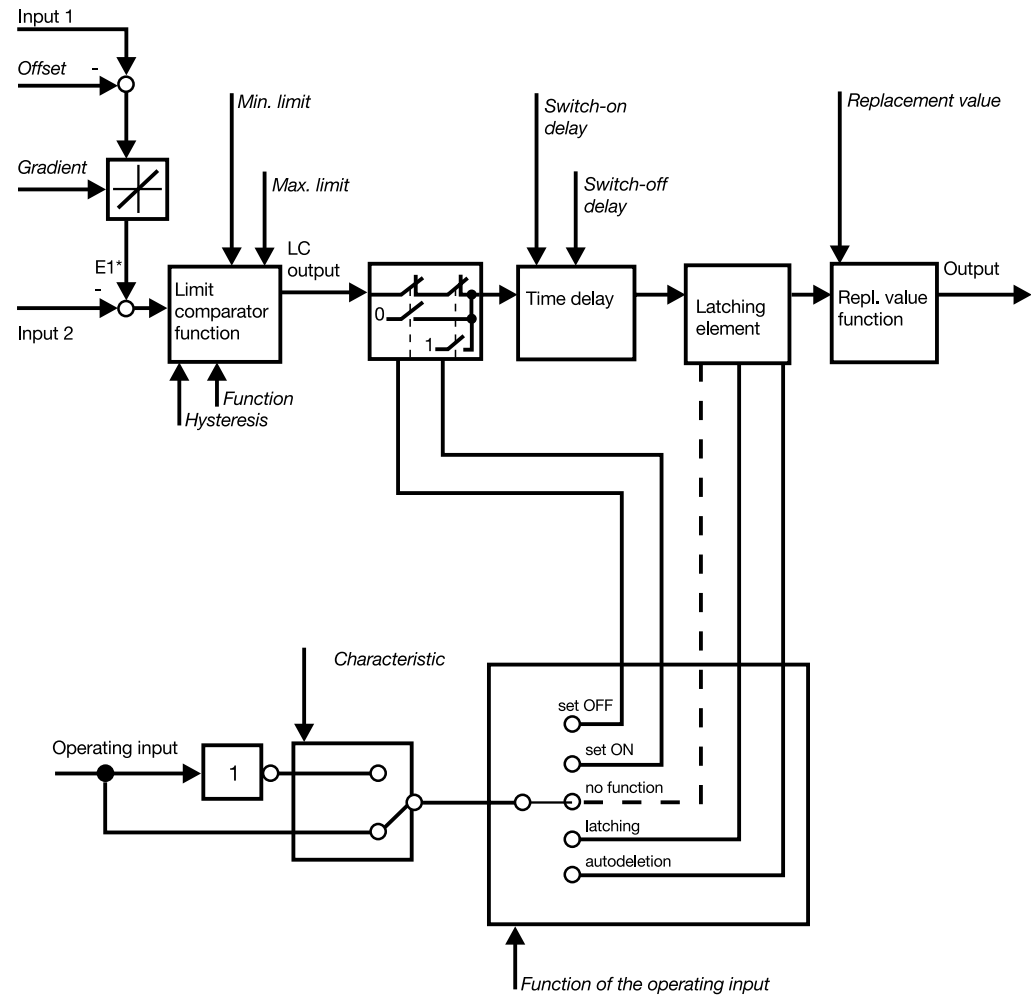


The network variable Relx_In2 is not linked for monitoring an absolute value via input 1.

5 Parameter setting

Block structure

The block structure shows the internal processing of the signals and the influence of the parameters.

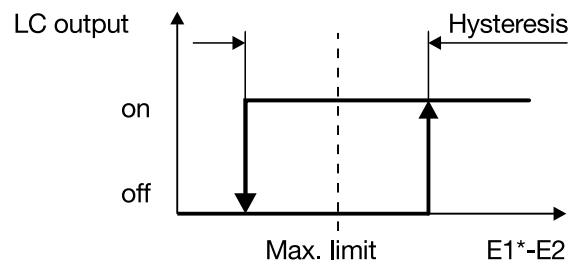


The replacement value is output when input 1, input 2 or the operating input are no longer updated.

Functions of the limit comparator

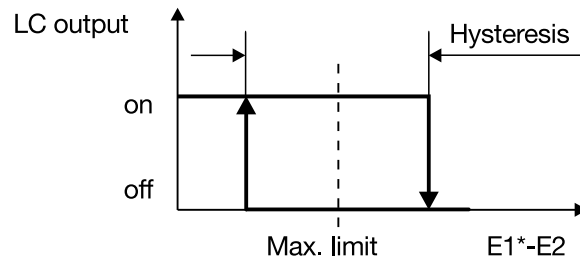
There is a choice of four different limit comparator functions.

Comparator

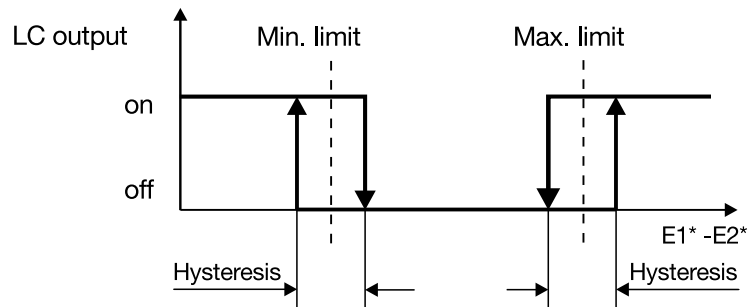


5 Parameter setting

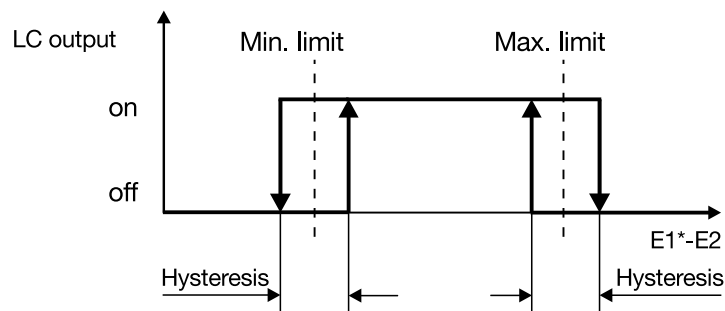
Comparator, reversed



Window discriminator



Window discriminator, reversed



Functions of the operating input

The operating input of the limit comparator can take on the following functions:

Set ON

Sets the output signal of the limit comparator function to “ON” (1).

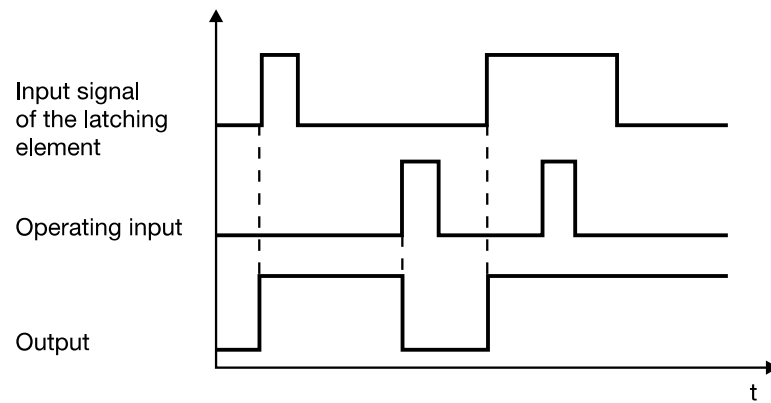
Set OFF

Sets the output signal of the limit comparator function to “OFF” (0).

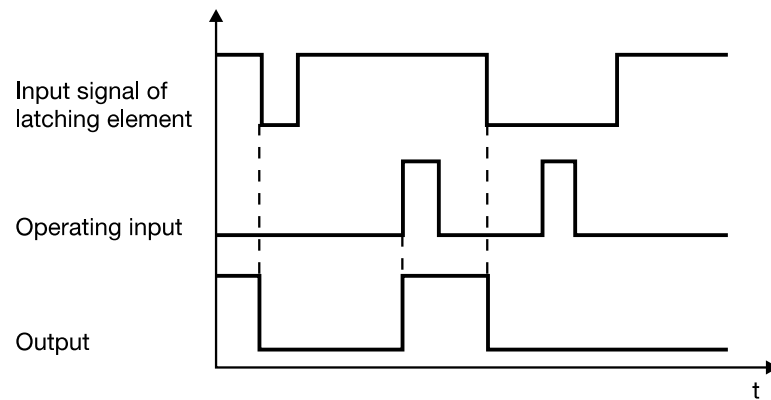
No function

Disables the latching element, i.e. the output signal of the time delay is looped through.

Latching

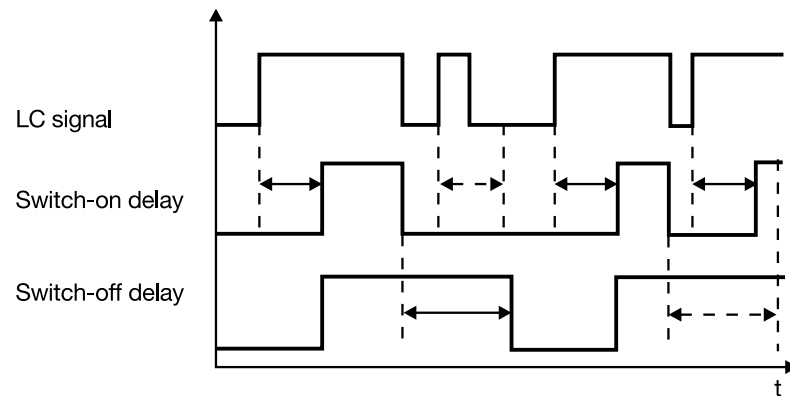


Autodeletion



Switch-on/ switch-off delay

The switch-on/switch-off delay influences the reaction to switching edges of the output signal of the limit comparator functions.



5 Parameter setting

5.2.3 PD element

The PD element converts analogue operating signals into switching pulses (pulse width modulation) for operating e.g. electromagnetic remote control switches (contactors). It thus functions as a simple PD controller.

Setup dialog



The 'Relay' dialog box is titled 'Relay' and has a close button (X) in the top right corner. It contains a tabbed interface with tabs labeled 1, 2, 3, and 4. The 'Function' is set to 'PD element'. Below this, there are two input fields: 'Input 1' set to 'Rel1_Input1' and 'Input 2' set to 'Rel1_Input2'. The 'Cycle time' is set to '20.0' s. The 'Minimum on/off time' is set to '0.21' s. The 'Switch-off delay' is set to '0.0' s. The 'Replacement value' is set to '0.0' %. There is an 'Adjustment Rel1_Input1' section with 'Offset' set to '0.000' and 'Gradient' set to '1.000'. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Parameters

Parameter	Selection/settings	Explanation
Input 1 [SelInput1]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 1 factory-set: Relx_In1 (x=relay number)
Input 2 [SelInput2]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 2 factory-set: Relx_In2 (x=relay number)
Cycle time [CycleTim]	0 – 999.9s 20.0s	Influences the switching frequency
Minimum on/off time [TOn/Off]	0.21 – 99.99s 0.21 s	Minimum period of time in which the relay remains energised/ de-energised
Switch-off delay [OffDelay]	0 – 999.9s 0.0s	Delays the switch-off edge by a definable period of time
Replacement value [RepVal]	0 – 100 % 0.0 %	Defines the controller output in the event of faulty communication or "Out of Range" of the input network-variables

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

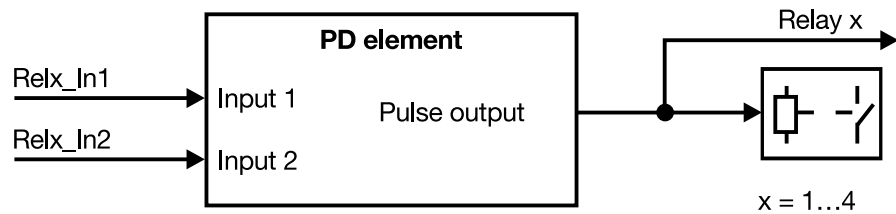
5 Parameter setting

Parameter	Selection/settings	Explanation
Offset [Offset]	-1999 to +9999 0.000	Influences the value of input 1: $E1^* = \text{gradient} \cdot (E1 - \text{offset})$
Gradient [Gradient]	-1999 to +9999 1.000	

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

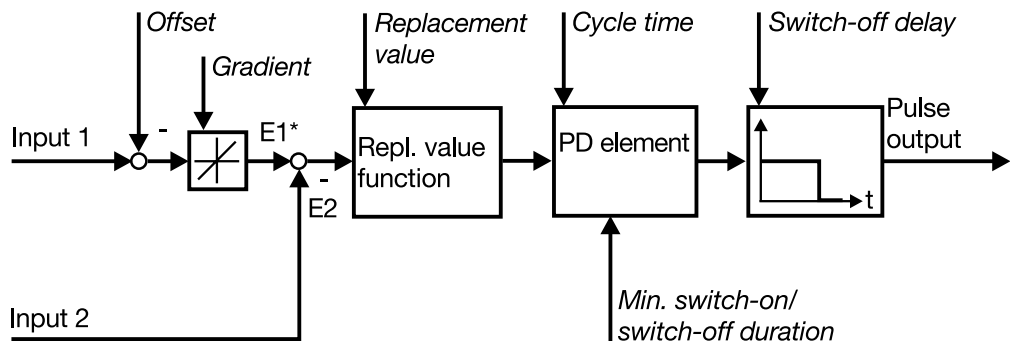
Function

The diagram shows the input and output signals of the function.



Block structure

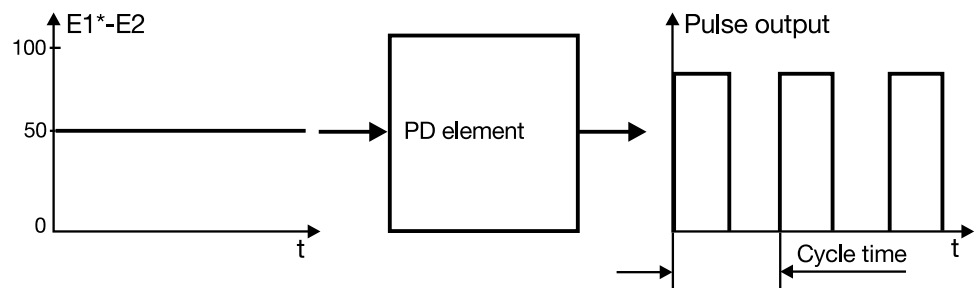
The block structure shows the internal processing of the signals and the influence of the parameters.



The replacement value becomes active when input 1 or input 2 is no longer updated.

Pulse width modulation

In this example, an operating signal of 50 % is converted into a switching pulse train.

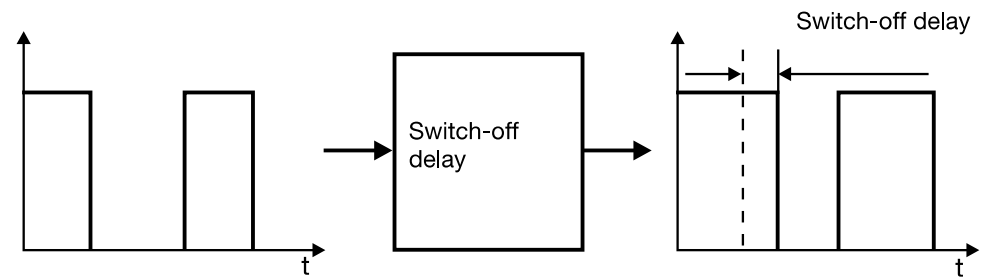


The PD element processes input values in the range of 0 – 100.

5 Parameter setting

Switch-off delay

The switch-off delay prolongs the switching pulses by a definable period of time.



5.2.4 Frequency output

The frequency output converts analogue operating signals into switching pulses (frequency modulation) for operating dosing pumps, for example.

Setup dialog



1 2 3 4

Function: Frequency output

Input 1: Rel1_Input1

Input 2: Rel1_Input2

Max. frequency: 90.0 1/min

Pulse time: 0.42 s

Replacement value: 0.0 %

Adjustment Rel1_Input1

Offset: 0.000

Gradient: 1.000

OK

Cancel

Help

Parameters

Parameter	Selection/ settings	Explanation
Input 1 [SelInput1]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 1 factory-set: Relx_In1 (x=relay number)
Input 2 [SelInput2]	Rel1_In1 [0] Rel1_In2 [1] Rel2_In1 [2] Rel2_In2 [3] Rel3_In1 [4] Rel3_In2 [5] Rel4_In1 [6] Rel4_In2 [7]	Input value 2 factory-set: Relx_In2 (x=relay number)
Max. frequency [FreqMax]	0 — 140 1/min 90.0 1/min	Switching frequency at a control output of 100 %
Pulse time [PulseTime]	0.21 — 99.99 s 0.42 s	Duration of the switch-on pulses Requirement: pulse time less than 1/fmax
Replacement value [RepVal]	0 — 100 % 0 %	Defines the control output in the event of faulty communication or "Out of Range" of the input network-variables

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

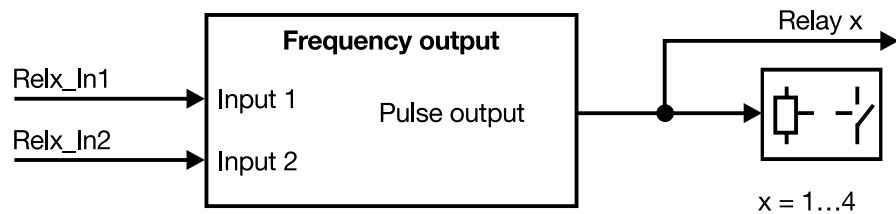
5 Parameter setting

Parameter	Selection/ settings	Explanation
Offset [Offset]	-1999 to +9999 0.000	Influences the value of input 1: $E1^* = \text{gradient} \cdot (E1 - \text{offset})$
Gradient [Gradient]	-1999 to +9999 1.000	

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

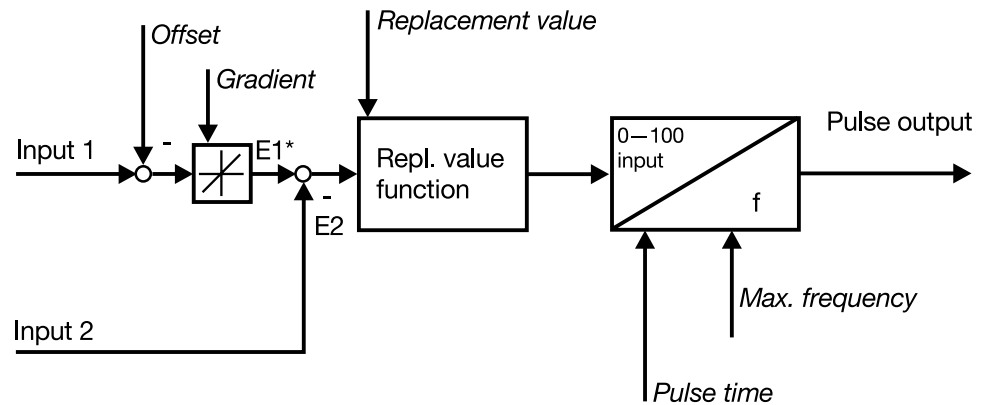
Function

The diagram shows the input and output signals of the function.



Block structure

The block structure shows the internal processing of the signals and the influence of the parameters.

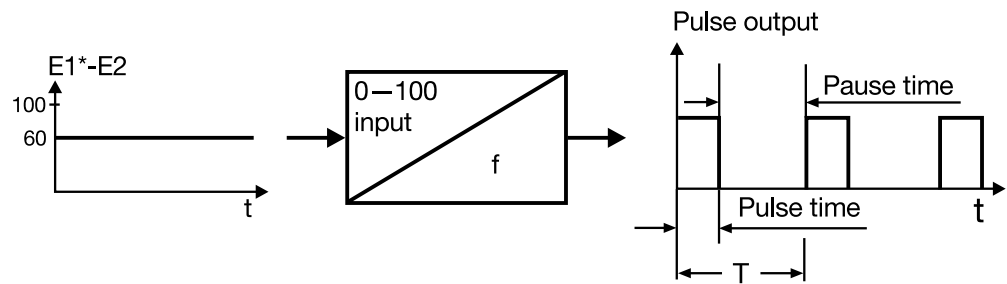


The replacement value becomes active when input 1 or input 2 is no longer updated.

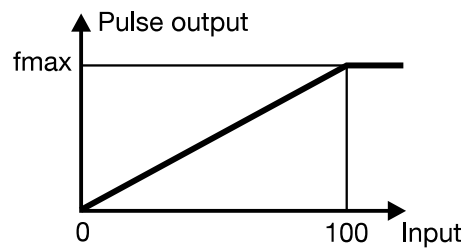
5 Parameter setting

Frequency modulation

In this example, a signal of 60 is converted into a switching frequency.



$$T = \text{pulse time} + \text{pause time} = \frac{1}{f}$$



$$f = \frac{f_{\max}}{100} \cdot (E1^* - E2)$$

5 Parameter setting

5.2.5 Actuating controller

The actuating controller is used to operate (motor) output devices.

Setup dialog

Edit

1 3 4

Function: Actuating controller

Input 1: Rel1_Input1

Input 2: Rel1_Input2

Actuator time: 60 s

Input 3: Rel1_Logic Input

Minimum on/off time: 0.21 s

Replacement value 1: Off

Switch-off delay 1: 0.0 s

Replacement value 2: Off

Switch-off delay 2: 0.0 s

Adjustment Rel1_Input1

Contact spacing: 0.000 %

Offset: 0.000

Rel1_Logic Input
 Characteristic: Direct

Gradient: 1.000

OK Cancel Help

Parameters

Parameter	Selection/settings	Explanation
Input 1 [SelInput1]	Rel1_In1 [1] Rel1_In2 [2] Rel2_In1 [3] Rel2_In2 [4] Rel3_In1 [5] Rel3_In2 [6] Rel4_In1 [7] Rel4_In2 [8]	Input value 1 factory-set: Relx_In1 (x=relay number)
Input 2 [SelInput2]	Rel1_In1 [1] Rel1_In2 [2] Rel2_In1 [3] Rel2_In2 [4] Rel3_In1 [5] Rel3_In2 [6] Rel4_In1 [7] Rel4_In2 [8]	Input value 2 factory-set: Relx_In2 (x=relay number)
Input 3 [SelInput 3]	Rel1_LogIn [0] Rel2_LogIn [1] Rel3_LogIn [2] Rel4_LogIn [3]	Logic input factory-set: Relx_LogIn (x=relay number)
Actuator time [ActTim]	30 — 9999s 60 s	Operating time of the output device across the full operating range
Minimum on/off time [TOn/Off]	0.21 — 10.00s 0.21 s	Minimum period of time in which the relays remain energised / de-energised

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

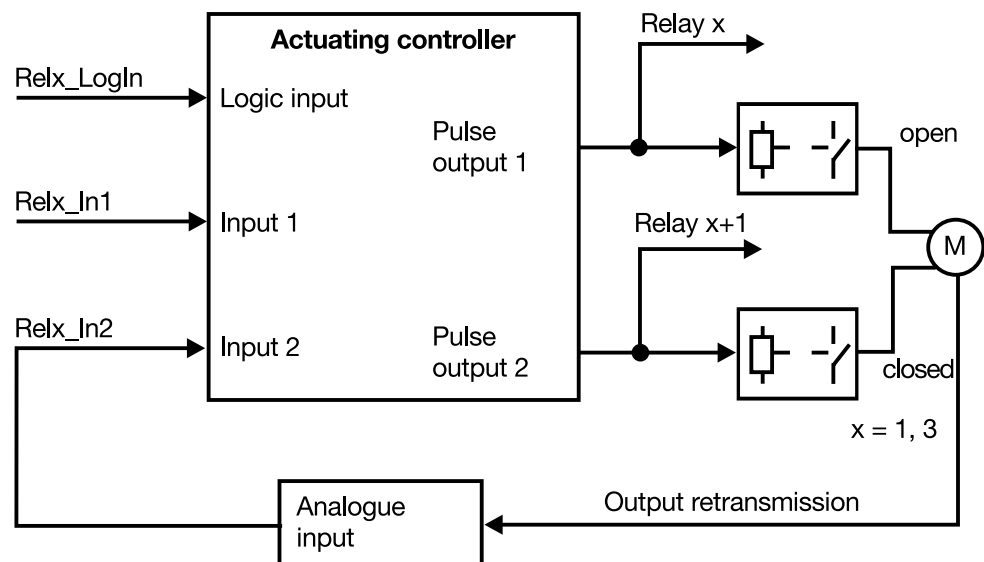
5 Parameter setting

Parameter	Selection/settings	Explanation
Switch-off delay 1 [OffDelay1]	0 – 999.9s 0.0s	Delays the switching pulses of relay 1 (relay 3) by a definable period of time
Switch-off delay 2 [OffDelay2]	0 – 999.9s 0.0s	Delays the switching pulses of relay 2 (relay 4) by a definable period of time
Contact spacing [XSh]	0 – 9999 % 0.000 %	Range about the position setpoint in which no operating action occurs
Characteristic [Charistic]	Direct [Direct] Reversed [Reversd]	Influences the operating signal via the logic input Direct: Input signal is looped through Reversed: Input signal is reversed
Replacement value 1 [ReplVal1]	Off [Off] On [On]	Switching status of relay 1 (relay 3) in the event of faulty communication Replacement value 1 = Replacement value 2 = On is not permitted!
Replacement value 2 [ReplVal2]	Off [Off] On [On]	Switching status of relay 2 (relay 4) in the event of faulty communication Replacement value 1 = Replacement value 2 = On is not permitted!
Offset [Offset]	-1999 to +9999 0.000	Influences the value of input 1: $E1^* = \text{gradient} \cdot (E1 - \text{offset})$
Gradient [Gradient]	-1999 to +9999 1	

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

Function

The diagram shows the input and output signals of the function.

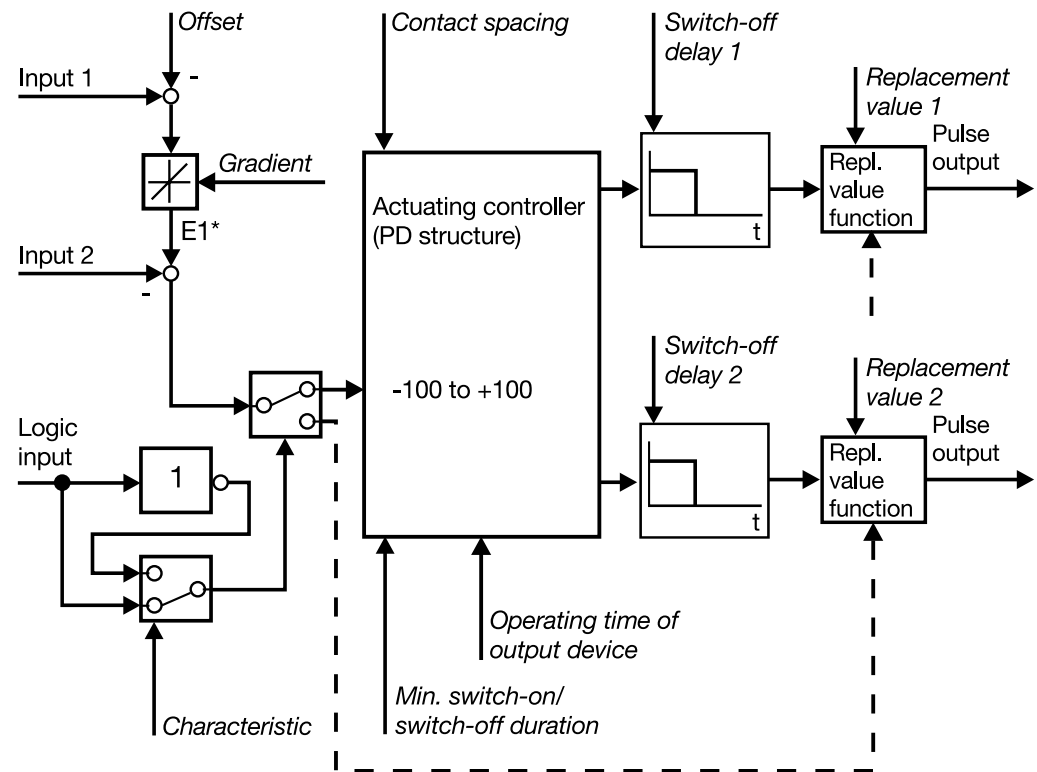


Output retransmission is via the analogue input of another module and the linking of the corresponding network variables. The setpoint of the actuating controller is transferred via the network variable Relx_In1.

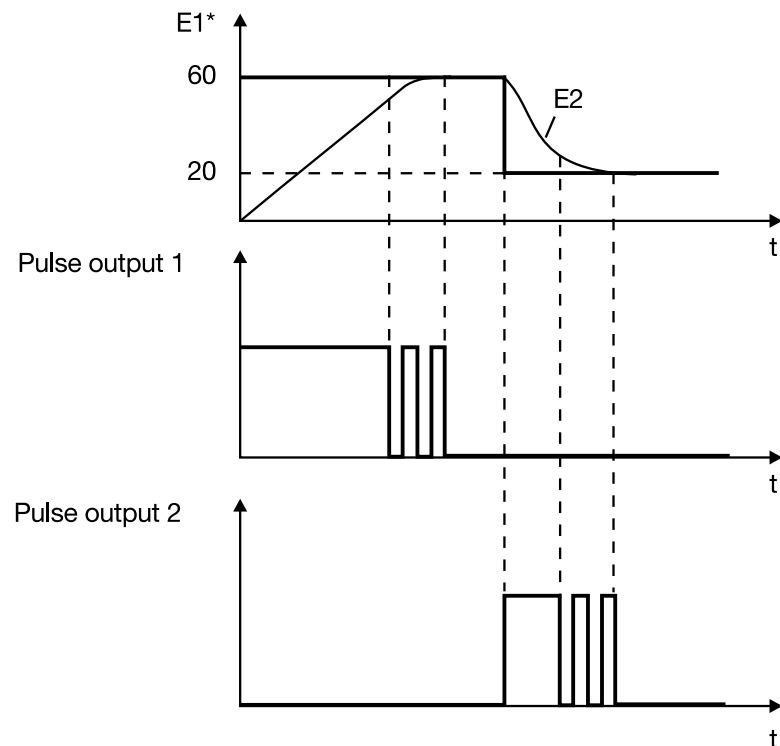
5 Parameter setting

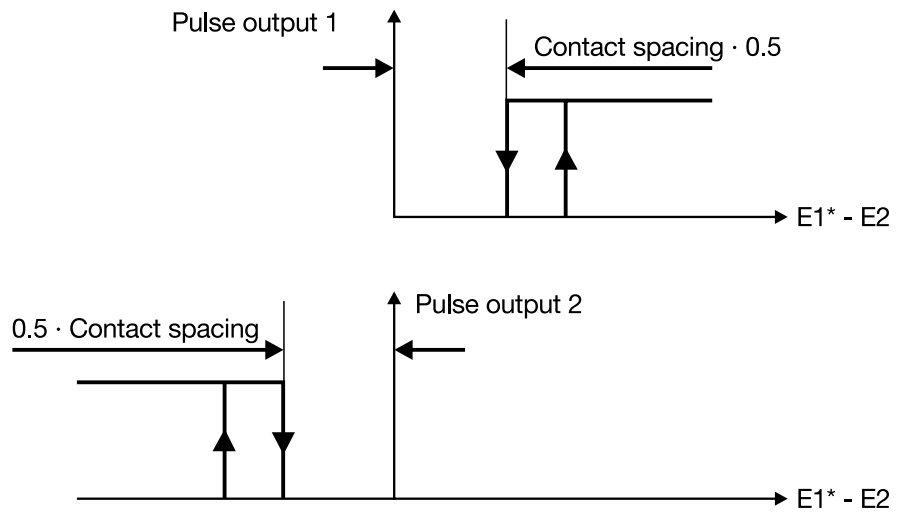
Block structure

The block structure shows the internal processing of the signals and the influence of the parameters.



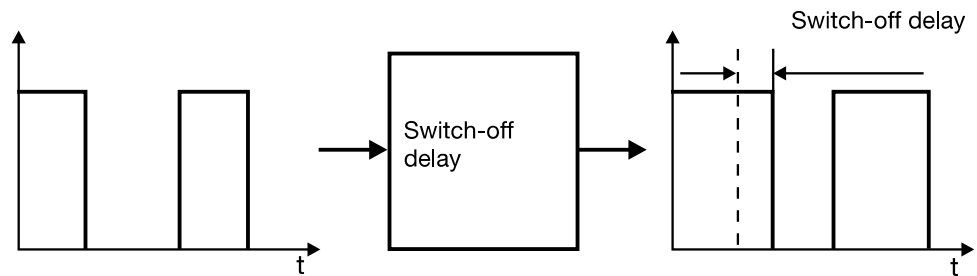
The operating signal via the logic input activates/inactivates the actuating controller. If the actuating controller is inactivated, the replacement values are output.





Switch-off delay

The switch-off delay prolongs the switching pulses by a definable time period.



5 Parameter setting

6 Specific module conditions

6.1 Action after a power failure

- All relays remain de-energised for 6 sec max. After this period of time, the module is fully functional.
- All input network-variables are set to their default values until the linked network variables have been refreshed.

6.2 Action on errors of communication

If the linked input network-variables are no longer updated at regular intervals, then these variables are set to their default values and a combination alarm is produced.

The assigned functions use the replacement value for their calculations or output it.

6 Specific module conditions

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JUMO **mTRON** Relay module



Brief description

The unit is a module of the JUMO mTRON control and automation system. The plastic housing measures 91 mm x 85.5 mm x 73.5 mm (W x H x D) and is mounted on a standard rail.

In addition to direct operation through logic network variables there is a facility for limit comparator functions with delays and latching. The module can also convert analogue operating signals into quasi-analogue pulse trains for operating output devices. Functions such as pulse width modulation, pulse frequency modulation and actuator driver are provided.

The module has a total of 4 switching outputs (relay, logic or solid-state relay output) which can be operated via the LON¹ bus.

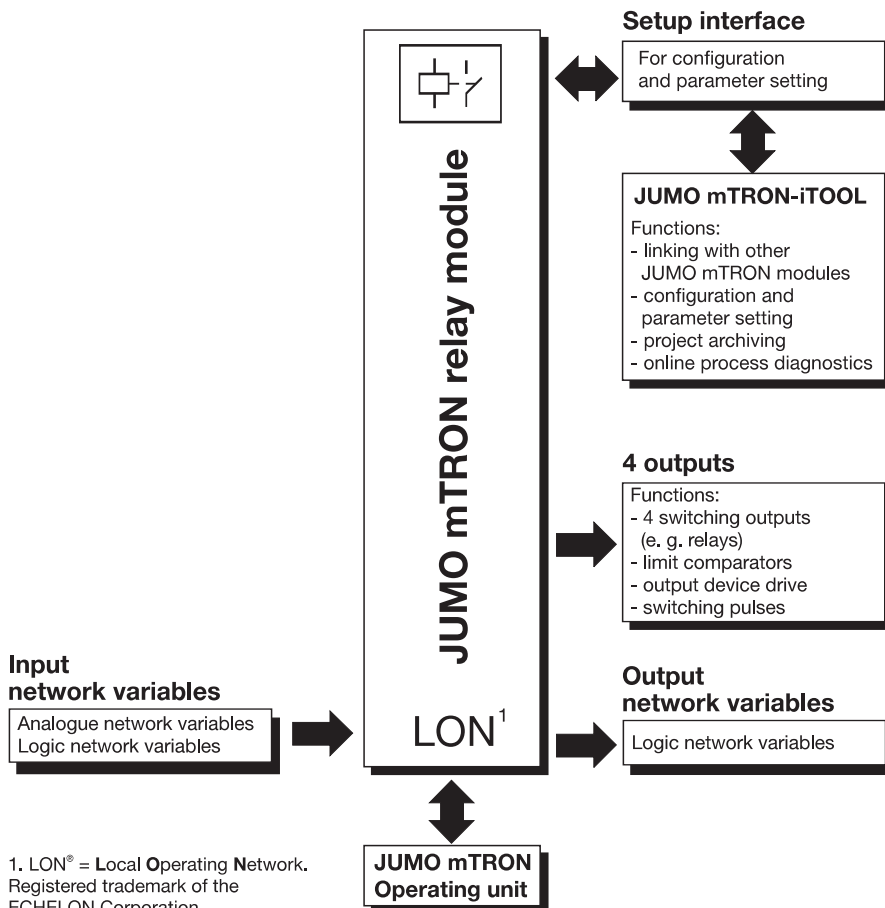
The module incorporates a network connection for communication and data interchange between the modules. A screened twisted pair is used as transmission line.

There is a setup interface for module parameter setting and configuration from a PC under the JUMO mTRON-iTOOL project design software. The electrical connections are made through plug-in connectors with screw terminals.



Type 704015/0-...

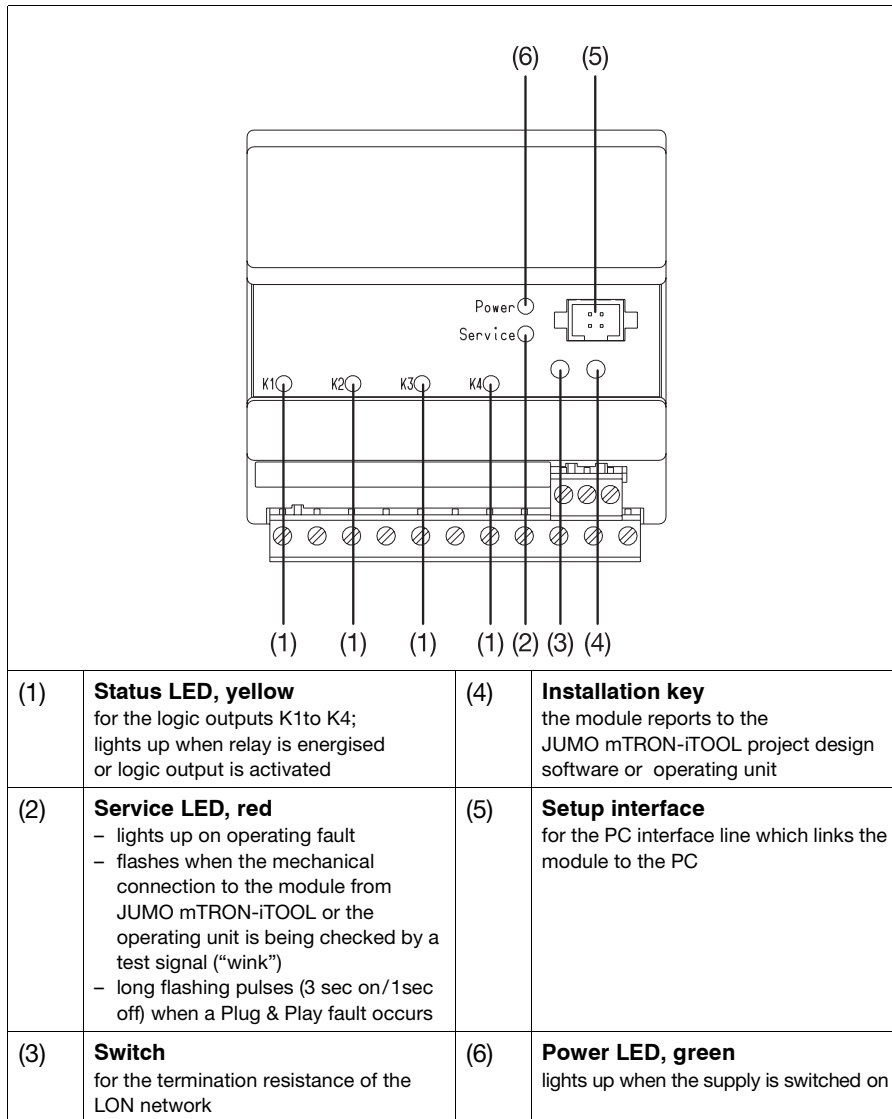
Block structure



Features

- **Limit comparators**
Comparator and window functions, direct or reversed, with switch-on and switch-off delay, also latching and gate circuit
- **Pulse width modulation**
PD controller converting the analogue control signals into switching pulses for operating contactors and solenoid valves
- **Pulse frequency modulation**
This function converts analogue control signals into switching pulses for operating dosing pumps, for example
- **Actuator driver**
Controller for operating actuating motors with position retransmission
- **Setup interface**
For configuration and setting of parameters 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



Functions:

- monitoring function for the network inputs (combined alarm)
- output of the relay states

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

Material: plastic, self-extinguishing

Flammability Class: UL 94 VO

Protection: IP20 (to EN 60 529)

Mounting: on standard rail

Supply

110 — 240 V AC +10/–15%, 48 — 63 Hz,

or 20 — 53 V AC/DC, 48 — 63 Hz

Power consumption: 5 VA max.

Network (LON interface)

Transceiver: free topology FTT-10A

Topology: 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

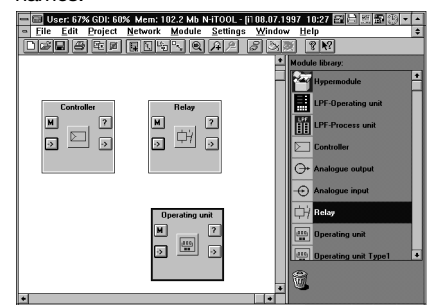
Max. number of modules: 64

Operation and project design

Operation, parameter setting and configuration of JUMO mTRON modules can be carried out from the JUMO mTRON operating unit.

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.



Technical data

Hardware outputs

Functions:

- direct relay outputs
- limit comparator output
- actuator driver outputs
- pulse width outputs
- pulse frequency outputs

Relay outputs

Type: n.o. (make) contact

Nominal voltage: 250V

Nominal current: 3A

Rating: 3A, 250V AC, resistive load

Life: $5 \cdot 10^5$ operations
on resistive load

Contact material: AgCdO
(hard gold plated)

Minimum load: 10mA 5V DC

Solid-state relay output

Type: 1A 250V AC

Logic output

Type: 0/12V

Internal resistance: 600Ω

Input network variables

Analogue network variables

Functions:

- input variables for the limit comparators, pulse width modulation, pulse frequency modulation and actuator driver

Sampling time

210msec

Logic network variables

Functions:

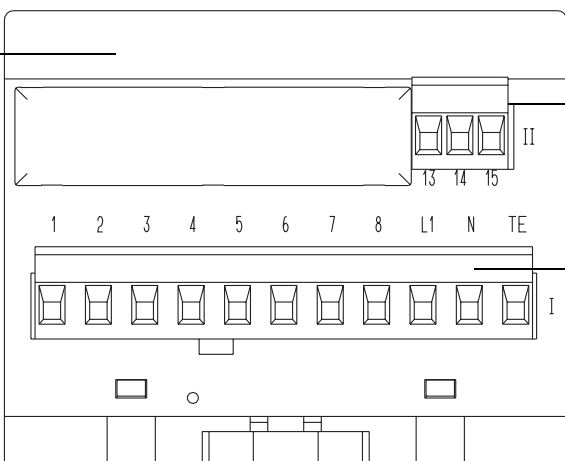
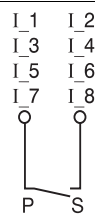
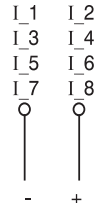
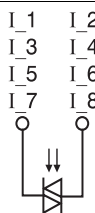
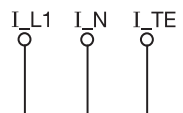
- direct relay operation
- gate circuit for the limit comparators
- latch reset
- actuator driver switch-off

Output network variables

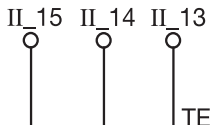
Logic network variables

Output cycle: controlled by event, but at least every 6.3sec

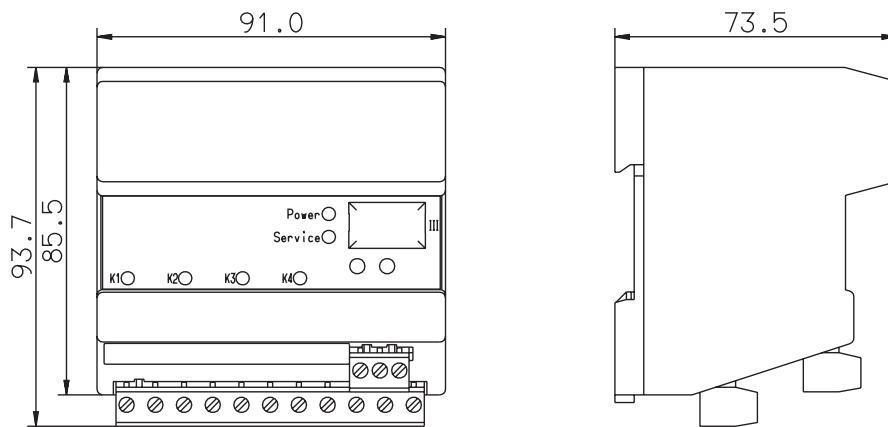
Connection diagram

Module underside with plug-in connectors						Connector II
						Connector I
Connector I						
Connection for	Terminals				Notes	Diagram
Outputs	Output 1	Output 2	Output 3	Output 4		
Relay 3A, 250V AC, resistive load	I_1 I_2	I_3 I_4	I_5 I_6	I_7 I_8	P = common S = n.o. (make)	
Logic output 12V 20mA	I_1 I_2	I_3 I_4	I_5 I_6	I_7 I_8	- +	
Solid-state relay output 250V 1A	I_1 I_2	I_3 I_4	I_5 I_6	I_7 I_8		
Supply as label	AC		DC			
	I_L1 line I_N neutral		I_L1 } any I_N } polarity			
	I_TE technical earth		I_TE technical earth			

Connector II

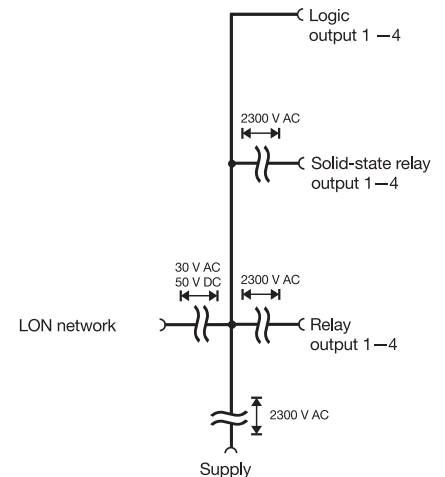
Connection for	Terminals	Notes	Diagram
LON interface	II_13 = TE	screen	
	II_14 = Net_A II_15 = Net_B	any polarity	

Dimensions



mm	inch
73.5	2.89
85.5	3.37
91.0	3.58
93.7	3.69

Isolation



Ordering details

704015/0- (1) ... - (2) ..

(1) Outputs

Standard version

Outputs	Code
4 relays (n.o.make)	154
4 logic outputs 12V 20mA	165
4 solid-state relay outputs 250V 1A	170

Special version 999

Factory-configured to customer specification. Please specify type of outputs in plain language.

(2) Supply

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

Standard accessory

1 Installation Instructions M 70.4015

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 designed 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, parameter 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