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JUMO mTRON

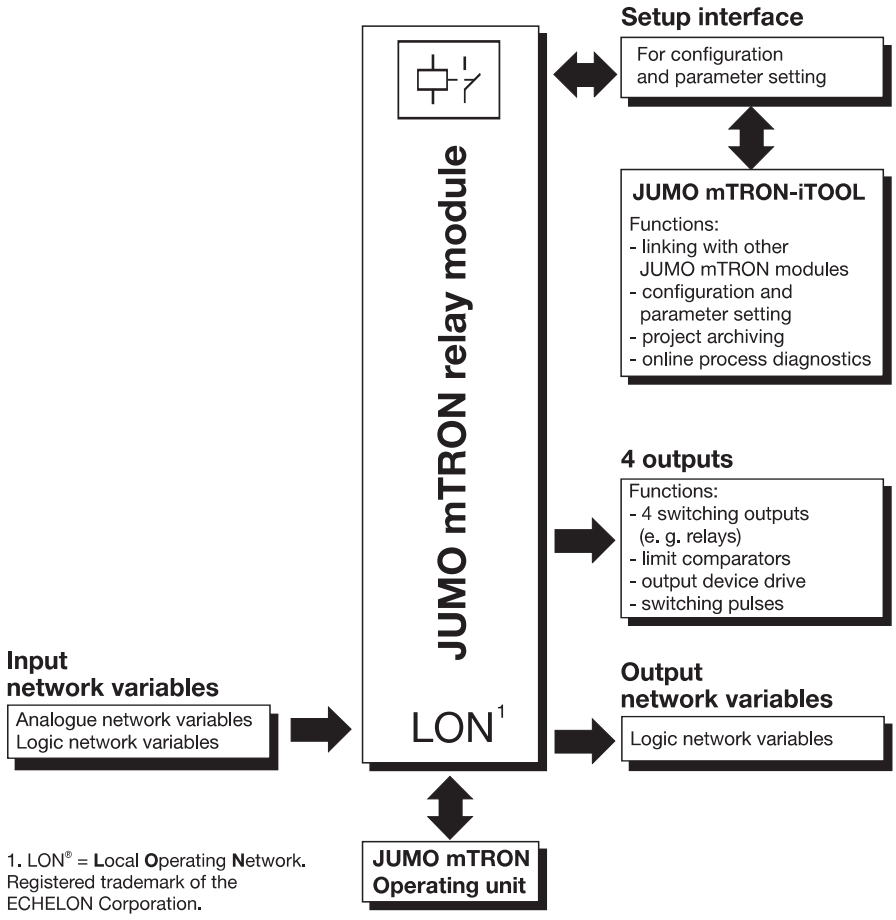
Relay module

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 LON[1] 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

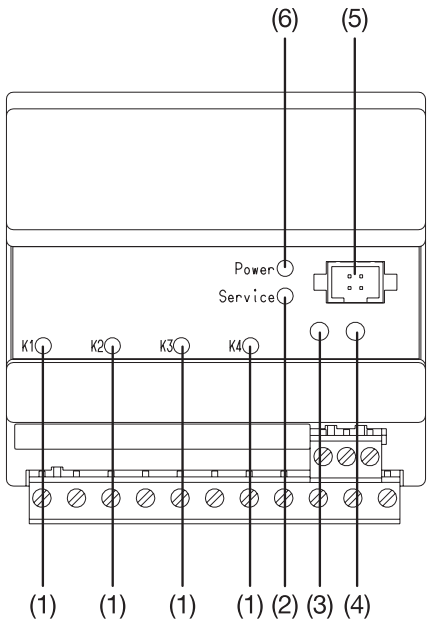


1. LON® = **L**ocal **O**perating **N**etwork. Registered trademark of the ECHELON Corporation.

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



(1)	**Status LED, yellow** for the logic outputs K1to K4; lights up when relay is energised or logic output is activated	(4)	**Installation key** the module reports to the JUMO mTRON-iTOOL project design software or operating unit
(2)	**Service LED, red** – lights up on operating fault – flashes when the mechanical connection to the module from JUMO mTRON-iTOOL or the operating unit is being checked by a test signal (“wink”) – long flashing pulses (3 sec on/1sec off) when a Plug & Play fault occurs	(5)	**Setup interface** for the PC interface line which links the module to the PC
(3)	**Switch** for the termination resistance of the LON network	(6)	**Power LED, green** lights up when the supply is switched on

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

General data

Electrical safety

as per EN 61010-1
Overvoltage category: II
Pollution degree: 2

Environmental influences

Operating and ambient temperature:
0 to 55°C
Permitted storage temperature:
–40 to +70°C
Relative humidity: rH 80 % max.
Electromagnetic compatibility
as per EN 61326-1
- interference emission:
  Class A - Only for industrial use -
- interference immunity:
  to industrial requirements

Housing

Material: plastic, self-extinguishing
Flammability Class: UL 94 VO
Protection: IP20 (as per EN 60529)
Mounting: on standard rail

Supply

110 — 240V AC +10/–15%, 48 — 63Hz,
or 20 — 53V AC/DC, 48 — 63Hz
Power consumption: 5VA max.

Network (LON interface)

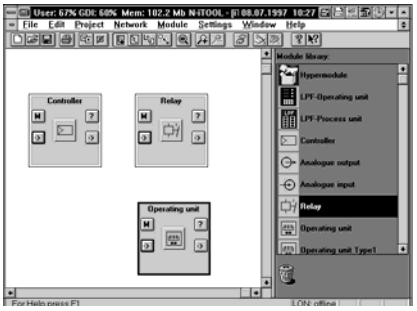
Transceiver: free topology FTT-10A
Topology: ring, star, line or mixed
structure
Baud rate: 78 kbaud
Max. lead length (depending on lead type):
line: 2700m
star: 500m
ring: 500m
mixed: 500m
Max. number of modules: 64

Operation and project design

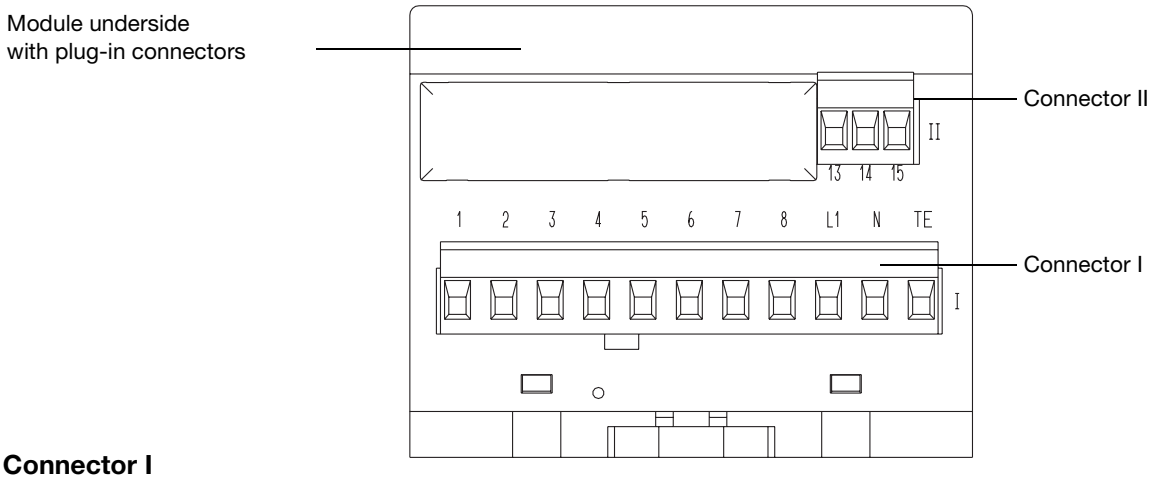
Operation, parameter setting and configuration of JUMO mTRON modules can be carried out from the JUMO mTRON operating unit.

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

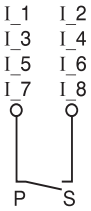
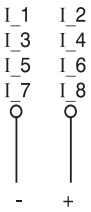
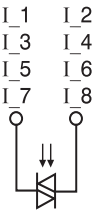
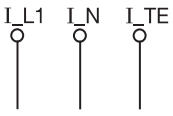
The projects can be archived and documented. Individual modules are linked via LON by assigning network variable (NV) names.



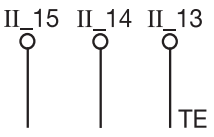
Connection diagram



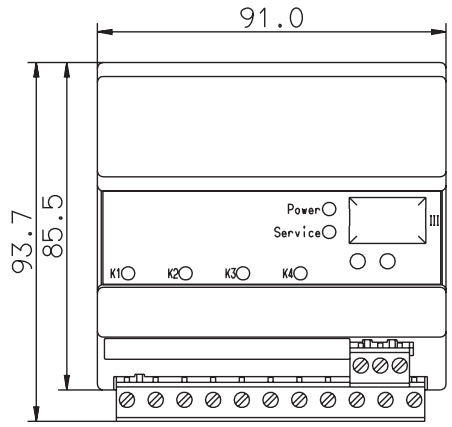
Connector I

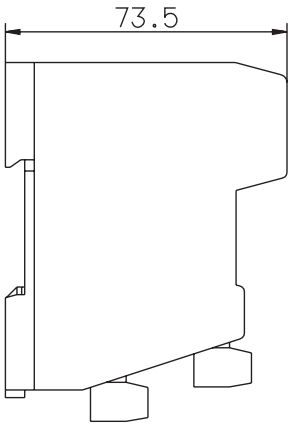
Connection for	Terminals				Notes	Diagram
Outputs	**Output 1**	**Output 2**	**Output 3**	**Output 4**		
Relay 3A, 250V AC, resistive load	I_1 I_2	I_3 I_4	I_5 I_6	I_7 I_8	P = common S = n.o. (make)	
Logic output 12V 20mA	I_1 I_2	I_3 I_4	I_5 I_6	I_7 I_8	- +	
Solid-state relay output 250V 1A	I_1 I_2	I_3 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	

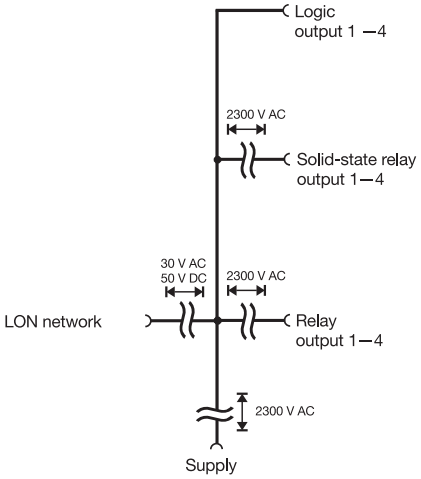
Dimensions





mm	inch
73.5	2.89
85.5	3.37
91.0	3.58
93.7	3.69

Isolation



Ordering details

	(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 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