DNV·GL

Certificate No:
TAA000016N

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
JUMO mTRON T

Issued to
JUMO GmbH & Co. KG
Fulda Hessen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location class:

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**A, B (Multifunction panel at front)**

Issued at **Hamburg** on **2017-05-16**

This Certificate is valid until **2020-07-01**.
DNV GL local station: **Magdeburg**

Approval Engineer: **Klaus-Peter Schröder**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Signing Date: 2017-05-18
Location: Hamburg - On behalf of

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Modular measuring, control and automation system.
An application consists of a base unit (control processing unit) and a maximum of 30 input/output modules (multichannel controller module, analog input module 4-channel, analog output module 4-channel, analog input module 8-channel, digital input/output module 12-channel, relay module), and if necessary a multifunction panel and router modules.

Supply voltage	24V DC (only required at the base, at the router module and at the multifunction panel)
Case type	Base unit with metal case Router module and input/output module with plastic case Multifunction panel with metal case
Mounting	All devices on a 35 mm DIN rail Multifunction panel into a panel cut-out

Order code Central processing unit

705001	/	x	x	-	xx	-	xx	-	xxx	/	xxx,	xxx, …
[1]		[2]	[3]		[4]		[5]		[6]		[7]	[8]

[1]	Basic type	705001 =	Central processing unit
[2]	Basic type extension	0 =	Standard
[3]	Version	8 =	With factory settings
[4]	Interface Com 1	00 =	Not used
		51 =	RS232 Modbus RTU
		54 =	RS422/485 Modbus RTU
[5]	Interface Com2	00 =	Not used
		51 =	RS232 Modbus RTU
		54 =	RS422/485 Modbus RTU
		64 =	PROFIBUS_DP (slave; as of system version 02)
[6]	Voltage supply	36 =	24V DC
[7]	GL Approval	062 =	With GL approval
[8]	Extra codes	000 =	Without extra code
		214 =	Math/logic function (activation for all connected controller modules)
		224 =	PLC acc. to IEC 61131-3 (CODESYS V3)
		225 =	Program generator 1 to 9
		228 =	Program generator 1 to 9 with process steps (as of system version 02)

Order code Multichannel controller module

705010	/	x	x	-	x	x	x	-	xx	/	xxx,	xxx, …
[1]		[2]	[3]		[4]	[5]	[6]		[7]		[8]	[9]

[1]	Basic type	705010 =	Multichannel controller module 2x universal input, 2x digital input, 2x relay output
[2]	Basic type extension	1 =	2 relays (N/O contact)
		2 =	logic outputs 0/15V
[3]	Version	8 =	With factory settings
[4]	Option slot 1	0 =	Not used
		1 =	Analog input 2
		2 =	Relay (changeover contact)
		3 =	2 relays (N/O contacts with common pole)
		4 =	Analog output
		5 =	2 digital inputs
		6 =	Solid-state relay 1A
		7 =	2 open-collector outputs

[5]	Option slot 2	0 =	Not used
		1 =	Analog input 2
		2 =	Relay (changeover contact)
		3 =	2 relays (N/O contacts with common pole)
		4 =	Analog output
		5 =	2 digital inputs
		6 =	Solid-state relay 1A
		7 =	2 open-collector outputs
[6]	Option slot 3	0 =	Not used
		2 =	Relay (changeover contact)
		3 =	2 relays (N/O contacts with common pole)
		4 =	Analog output
		5 =	2 digital inputs
		6 =	Solid-state relay 1A
		7 =	2 open-collector outputs
[7]	Voltage supply	36 =	24V DC
[8]	GL Approval	062 =	With GL approval
[9]	Extra codes	000 =	Without extra code
		879 =	AMS2750/CQI-9

Order code Relay module 4-channel

705015 / xx / xxx
[1] [2] [3]

[1]	Basic type	705015 =	Relay module 4-channel
[2]	Voltage supply	36 =	24V DC
[3]	GL approval	062 =	With GL approval

Order code Analog input module 4-channel

705020 / xx / xxx, xxx
[1] [2] [3] [4]

[1]	Basic type	705020 =	Analog input module 4-channel
[2]	Voltage supply	36=	24V DC
[3]	GL approval	062=	With GL approval
[4]	Extra codes	000 =	Without extra code
		879 =	AMS2750/CQI-9

Order code Analog input module 8-channel

705021 / xx / xxx
[1] [2] [3]

[1]	Basic type	705021 =	Analog input module 8-channel
[2]	Voltage supply	36 =	24V DC
[3]	GL approval	062 =	With GL approval

Order code Analog output module 4-channel

705025 / xx / xxx
[1] [2] [3]

[1]	Basic type	705025 =	Analog output module 4-channel

[2]	Voltage supply	36 =	24V DC
[3]	GL approval	062 =	With GL approval

Order code Digital input/output module 12-channel

705030 / xx / xxx
[1] [2] [3]

[1]	Basic type	705030 =	Digital input/output module 12-channel
[2]	Voltage supply	36 =	24V DC
[3]	GL approval	062 =	With GL approval

Order code Router module: 705040 / xx / xxx

705040 / xx / xxx
[1] [2] [3]

[1]	Basic type	705040 =	Router module
[2]	Voltage supply	36 =	24V DC
[3]	GL approval	062 =	With GL approval

Order code Multifunction panel 840

705060 / x - x - xx - xx / xxx, xxx, xxx, …
[1] [2] [3] [4] [5] [6] [7] [8]

[1]	Basic type	705060 =	Multifunction panel 840 1 x Ethernet/RJ45, 1 x system bus/RJ45, 1 x system bus In (RJ45), 1 x system bus Out (RJ45), 2 x USB host
[2]	Version	8 =	Standard, with factory settings
[3]	Interface Com 1	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 =	24V DC
[6]	Extra codes housing	000 =	No extra code
		444 =	Stainless steel front with design foil (neutral)
[7]	GL Approval	062 =	With GL approval
[8]	Extra codes	000 =	Without extra code
		213 =	Recording function

Place of manufacture

JUMO GmbH & Co. KG
Moritz-Juchheim-Strase 1
36039 Fulda, Germany

Application/Limitation

The Type Approval covers hardware listed under Product description.
When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case.
Reference is made to DNV GL RU SHIP Pt.4 Ch.9 Sec. 1.

A DNV GL-type approved Power Supply is to be used.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

Test reports JUMO according to "Document overview test protocols for GL Type approval mTron T", version 07 (19.04.2017)
Drawing summary JUMO mTron T (type 705000) GL version 06 (21.12.2016)
JUMO mTron T-Overview module and configuration level for GL Type Approval version 3.00 (22.07.2016)

Data sheet JUMO mTRON T (70500000T10Z001K000, version 3.00)
Data sheet Central processing unit (70500100T10Z001K000, version 3.00)
Data sheet Multichannel controller module (70501000T10Z001K000, version 2.00)
705015 Data sheet Relay module 4-channel (V1.00/EN/00529108)
Data sheet Analog input module 4-channel (70502000T10Z001K000, versin 1.01)
Data sheet Analog input module 8-channel (70502100T10Z001K000, version 1.01)
Data sheet Analog output module 4-channel (70502500T10Z001K000, version 4.00)
Data sheet Digital input/output module 12-channel (70503000T10Z001K000, version 1.01)
Data sheet Router module (70504000T10Z001K000, version 1.01)
Data sheet Multifunction panel 840 (70506000T10Z001K000, version 3.00)
System description (70500000T98Z001K000, version 3.00)
Operating manual Central Processing Unit (70500100T90Z001K000, version 2.00)
Operating manual Multichannel Controller Module (70501000T90Z001K000, version 1.00)
B 705015.0 Operating manual Relay Module 4-Channel (2013-06-18/00575604)
Operating manual Analog Input Module 4-Channel (70502000T90Z001K000, version 1.00)
Operating manual Analog Input Module 8-Channel (70502100T90Z001K000, version 1.00)
Operating manual Analog Output Module 4-Channel (70502500T90Z001K000, version 3.00)
Operating manual Digital Input/Output Module 12-Channel (70503000T90Z001K000, version 1.00)
Operating manual Multifunction Panel 840 (70506000T90Z001K000, version 3.00)

Drawing no. 70501500A02Z001K000_vers. 04 (30.05.2012)
Assessment change board 7050100C50Z001 (24.03.2015)
Software questionnaire requirement class 3 (10.02.2015)
Impact analysis JUMO mTron T Zentraleinheit, KE70.2551+KE70.2482 (version 1.00 / 21.07.2016)
Impact analysis JUMO mTron T HMI2, KE70.2455 (version 1.00 / 21.07.2016)
Impact analysis JUMO mTron T Module 22.5mm, KE70.2554 (version 1.00 / 19.07.2016)

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, Edition November 2015.

Marking of product

The products to be marked with:

- manufacturer name
- serial number
- type 7050xx

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software

versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.
END OF CERTIFICATE