

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Peripheral Equipment**

with type designation(s)

**Compact controller with program function dTRON 304, Compact controller diraTRON 104/116, Digital Indicator diraVIEW 104/116**

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 classes:**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Compact controller with program function dTRON 304	B	B	A	B	A (rear), B (front, IP65 tested)
Compact controller diraTRON 104/116	B	B	A	A	A (rear), B (front, IP65 tested)
Digital Indicator diraVIEW 104/116	B	B	A	A	A (rear), B (front, IP65 tested)

Issued at **Hamburg** on **2019-08-22**for **DNV GL**This Certificate is valid until **2022-07-24**.DNV GL local station: **Hamburg**Approval Engineer: **Holger Jansen****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.



Job Id: **262.1-025658-2**  
 Certificate No: **TAA00001B3**  
 Revision No: **1**

## Product description

### Type: Compact controller with program function dTRON 304

Instrument version: 703044/191-320-23/214, 062, 056

703044	Basic type incl. 1 analog and 2 binary inputs, 2 relays and 2 logic outputs
191	Basic type extensions 1 = Basic type 1 9 = Programming to customer specification, logic outputs (2 are available as standard) 1 = 0 / 12V
320	Option slot 3 = 2 relays, make (SPST-NO) 2 = relay, changeover (SPDT) 0 = not used
23	Supply voltage = 110-240V AC
214	Extra codes = math and logic module
062	DNVGL Approval
056	DIN approval

### Type: Compact controller diraTRON 104 (702114) Compact controller diraTRON 116 (702111)

Instrument version: 702114 / x - x x x x - xx / xxx,...  
 702111/ x - x x x x - xx / xxx,...  
 (1) (2) (3) (4) (5) (6) (7) / (8)

(1)	702114 702111 Basic type incl. 1 analog and 2 digital inputs, 2 relays and 1 logic outputs
(2)	8 = Standard 9 = Programming to customer specification
(3)	0 = not used 1 = 1 relay (n/o) (only for type 702111) 2 = 1 logic output 0/14V 4 = 1 RS485 interface (Modbus RTU)
(4)	0 = not used 1 = 1 relay (n/o) 2 = 1 logic output 0/14 V 3 = 1 analog output
(5)	0 = not used 1 = 1 relay (n/o) (only for type 702114) 2 = 1 logic output 0/14 V (only for type 702114) 5 = 1 PhotoMOS relay (only for type 702114)
(6)	0 = not used 1 = 1 relay (n/o) (only for type 702114) 2 = 1 logic output 0/14 V (only for type 702114) 5 = 1 PhotoMOS® relay (only for type 702114) 6 = 1 relay (n/o) with longer contact life (only for type 702114)
(7)	23 = Supply voltage: AC 110-240V (only for type 702114) 25 = Supply voltage: AC/DC 20 -30V (only for type 702111)
(8)	000 = Without extra code 214 = Extra codes = math and logic module 221 = Structured text

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**Type: Compact controller diraVIEW 104 (701514)**  
**Compact controller diraVIEW 116 (701511)**

Instrument version: 701514/ x - x x x x - xx / xxx,...  
 701511/ x - x x x x - xx / xxx,...  
 (1) (2) (3) (4) (5) (6) (7) / (8)

(1)	701514 701511 Basic type incl. 1 analog and 2 digital inputs, 2 relays and 1 logic outputs
(2)	8 = Standard 9 = Programming to customer specification
(3)	0 = not used 1 = 1 relay (n/o) (only for type 701511) 2 = 1 logic output 0/14V 4 = 1 RS485 interface (Modbus RTU)
(4)	0 = not used 1 = 1 relay (n/o) 2 = 1 logic output 0/14 V 3 = 1 analog output
(5)	0 = not used 1 = 1 relay (n/o) (only for type 701514) 2 = 1 logic output 0/14 V (only for type 701514) 5 = 1 PhotoMOS relay (only for type 701514)
(6)	0 = not used 1 = 1 relay (n/o) (only for type 701514) 2 = 1 logic output 0/14 V (only for type 701514) 5 = 1 PhotoMOS® relay (only for type 701514) 6 = 1 relay (n/o) with longer contact life (only for type 701514)
(7)	23 = Supply voltage: AC 110-240V (only for type 701514) 25 = Supply voltage: AC/DC 20 -30V (only for type 701511)
(8)	000 = Without extra code 214 = Extra codes = math and logic module 221 = Structured text

**Place of manufacture**

JUMO GmbH & Co. KG  
 Moritz-Juchheim-Strasse 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.

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.

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## Type Approval documentation

Test reports: JUMO no. K/E 70.0803 (2007-07-05)  
JUMO no. EMC CE 413 (2006-12-11)  
JUMO no. Vibration FN 370 (2007-02-08)  
JUMO no. K/E 70.0860 (2008-06-08)  
JUMO no. K/E 70.1814 (2012-05-22)  
JUMO no. K/E 70.1568 (2010-11-24)  
JUMO no. K/E 70.1568 (2010-07-02)  
I<sup>2</sup>PS, no.2019-0076201 (2019-06-26)  
I<sup>2</sup>PS, no. 2019-0083603 (2019-07-09)  
I<sup>2</sup>PS, no. 2019-0084203 (2019-07-09)  
I<sup>2</sup>PS, no. 2019-0084603 (2019-07-09)  
I<sup>2</sup>PS, no. 2019-0064704 (2019-07-09)  
Phoenix Testlab, no. U190692E2, (2019-06-14)  
Phoenix Testlab, no. U190692E1, (2019-06-14)  
Phoenix Testlab, no. S190692E1, (2019-05-07)  
VDE, TestReort EMC diraTRON 104 (2019-05-21)  
VDE, TestReort EMC diraTRON 116 (2019-05-21)  
Test protocol JUMO no. K/E 70.2785 (2017-05-08)

Data sheets: Typenblatt 703041(2012-01-30)  
701510, JUMO diraVIEW 104/108/116/132 no. 70151000T10Z001K000, V3.00  
702110, JUMO diraTRON 104/108/116/132 no. 70211000T10Z001K000, V3.00

Drawings: Operating Instructions B 70.3044.5.1 (04.07)  
Operating manual no. 70211000T90Z001K000, V4.00  
Operating manual no. 70151000T90Z001K000, V4.00  
Drawings according to document GL dTron 304 (2017-02-28)  
Overview diagrams and drawings diraTRON104/116 and diraVIEW104/166,(2019-06-13)

Type Approval Assessment Report (2017-05-15)

## Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, Edition November 2016.

## Marking of product

The products to be marked with:

- Manufacturer name
- Serial number
- Type designation

## 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE