

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Electrical Measuring and Protection Relay**with type designation(s)
PM series, PC series

Issued to

Block Transformatoren-Elektronik GmbH
Verden, 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.**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
PM series	D	B	A	A	A (IP20)
PC series	D	B	A	A	A (IP20)

Issued at **Hamburg** on **2018-04-04**This Certificate is valid until **2023-04-03**.DNV GL local station: **Bremerhaven**for **DNV GL**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: **262.1-028416-1**
Certificate No: **TAA00001S5**
Revision No: **1**

Product description

Electronic Circuit Breaker PowerMini – Series (PM) and PowerCompact – Series (PC)

The electronic circuit breaker distributes and monitors the load current over several current circuits. Overloads and short circuits on an output are reliably recognized. In case of short circuits or longer overloads on the output of a channel, the affected circuit will be shutdown.

Nominal input voltage: 12Vdc, 24Vdc or 48Vdc

Nominal output voltage: 12Vdc, 24Vdc or 48Vdc

3 signal contacts:

S1:	12V-48V	- input (On/Off/Reset)
S2 or 13:	12V-48V	- output (Status output channels or relay summation message for tripped outputs, short circuit proof)
S3 or 14:	12V-48V	- output (Summation message for tripped outputs or relay summation message for tripped outputs, short circuit proof)

S1 and S2 could be used for information exchange with a PLC by using the Manchester-Code based on IEEE 802.3.

Status display (for each output): LED (red, green, orange)

2 different connection types: Variant A = push-in connection
Variant B = Wago plug-connection

Nomenclature aa-bcdd-xxx-yzv

aa: Product family	PM:	Power Mini
	PC:	Power Compact
b: Product-Identification	0,1,3:	trip current adjustable
	1:	no current measurement via communication interface
	2:	fix trip current
	3:	trip current only adjustable via communication interface
c: Characteristic	7:	no current limitation
	8:	current limitation
dd: Input/output voltage	12:	12 Vdc (only for c = 7)
	24:	24 Vdc (c = 7 or 8)
	48:	48 Vdc (only for c = 7)
xxx: Current	Sum of total current of all channels written in 0,1A (e.g. 80A = 800)	
y: Optional	0-9 or blank	
	0, 2, 4, 6:	adjustable or fixed current ratings, Terminal Type A
	1, 3, 5, 7:	adjustable or fixed current ratings, Terminal Type B
	2, 4, 6:	optional solid state relay signal or overlapping total currents
	3, 5, 7:	optional solid state relay signal or overlapping total currents
z: Optional	0-9, a-z or blank:	Minor changes not related to electrical ratings
v: Optional	0-9, a-z or blank:	Minor changes not related to electrical ratings

Application/Limitation

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.

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Type Approval documentation

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
- device name
- order number

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