

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Terminal Block**with type designation(s)
Surge Protection Device Termitrab Complete

Issued to

Phoenix Contact GmbH & Co. KG
Blomberg, Germanyis 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.**Issued at **Hamburg** on **2017-10-10**This Certificate is valid until **2022-10-09**.DNV GL local station: **Essen**for **DNV GL**Approval Engineer: **Harald Amberger**

Duy Nam Le
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

TERMITRAB complete; TTC-3..., TTC-6...
Surge protection for signal circuits of the MCR technology

NOMENCLATURE

A	B	C	D	E	F	G
TTC	-3	-1X2	-F	-12DC	-PT	-I
	-6	-2X1	-M	-24DC	-UT	
	-6P	-2	-F-M	-48DC		
		-2-HC	-EX	-60DC		
		-2XTVSD	-M-EX	-24AC		
		-3-HF	-F-M-EX	-60AC		
		-GDT-C		-110AC		
		-GDT-D		-120AC		
		-MOV-C				
		-MOV-D				
		-TVSD-C				
		-TVSD-D				

A	Series	TTC	- Standard Product TermiTrab Complete
B	Variant	-3 -6 -6P	- 3,5mm overall width - 6,2mm overall width - 6,2mm overall width, pluggable
C	Circuit Type	-1X2 -2X -2 -2-HC -2XTVSD -3-HF -GDT-C -GDT-D -MOV-C -MOV-D -TVSD-C -TVSD-D	- isolated signals - two lines with common potential - two stage (without decoupling) - two stage (without decoupling), high current - two lines with TVS-Diode - two stage high frequency - single stage common mode (GDT line – ground) - single stage differential mode (GDT line – line) - single stage common mode (MOV line – ground) - single stage differential mode (MOV line – line) - single stage common mode (TVS-Diode line – ground) - single stage differential mode (TVS-Diode line – line)
D	Additional Features	-F -M -F-M -EX	- floating (additional GDT between signal ground and ground) - maintenance disconnecter - floating (additional GDT between signal ground and ground) and maintenance disconnecter - for application in Explosive Areas
E	Nominal Voltage		- DC or AC applications
F	Terminals	-PT -UT	- Push-In terminal - universal (screw) terminal
G	Signaling	-I	- Status Indicator

Ratings for protection modules

TTC-6 - 6,2mm overall width, multistage, pluggable or non-pluggable

Model	Max. cont. operating voltage [V _{DC}]	Nominal Current [A]	Nominal discharge current In (8/20) μs [kA]		IEC test classification/ EN type
			conductor-conductor	conductor-earth	
1X2-12DC	15	0,6	5	5	C1,C2,C3,D1
1X2-(EX)-24DC	30	0,6	5	5	C1,C2,C3,D1
1X2-48DC	55,2	0,16	5	5	C1,C2,C3,D1
2-24DC	30	0,45	0,5	5	C1,C2,C3,D1
2-HC-24DC	30	6	0,5	5	C1,C2,C3,D1
2X1-12DC	15	0,6	---	5	C1,C2,C3,D1
2X1-(EX)-24DC	30	0,6	---	5	C1,C2,C3,D1
2X1-48DC	53	0,22	---	5	C1,C2,C3,D1
2XTVSD-12DC	15	6	---	0,5	C1, C3
2XTVSD-24DC	30	6	---	0,5	C1, C3
3-HF-(EX)-12DC	15	0,6	5	5	C1,C2,C3,D1
3-HF-(EX)-24DC	30	0,6	5	5	C1,C2,C3,D1

TTC 6 - 6,2mm single stage

Model	Max. cont. operating voltage	Nominal current	Nominal discharge current In (8/20) μs [kA]		IEC test classification/ EN type
			conductor-conductor	conductor-earth	
GDT-C-24AC	28 V _{DC} / 36 V _{AC}	1 A _{DC} / 2 A _{AC}	---	5	C1,C2,C3,D1
GDT-C-110AC	110 V _{AC}	2 A _{AC}	---	5	C1,C2,C3,D1
GDT-D-24AC	28 V _{DC} / 36 V _{AC}	1 A _{DC} / 2 A _{AC}	5	---	C1,C2,C3,D1
GDT-D-60AC	75 V _{ac}	2 A _{AC}	5	---	C1,C2,C3,D1
MOV-C-24DC	30 V _{DC} / 21 V _{AC}	10 A _{AC/DC}	---	2	C1,C2,C3
MOV-C-48DC	60 V _{DC} / 42 V _{AC}	10 A _{AC/DC}	---	2	C1,C2,C3
MOV-C-60DC	75 V _{DC} / 53 V _{AC}	10 A _{AC/DC}	---	2	C1,C2,C3
MOV-C-120AC	150 V _{DC} / 150 V _{AC}	10 A _{AC/DC}	---	2,5	C1,C2,C3
MOV-D-24DC	30 V _{DC} / 21 V _{AC}	10 A _{AC/DC}	2	---	C1,C2,C3
TVSD-C-12DC	15 V _{DC} / 10 V _{AC}	10 A _{AC/DC}	---	0,060	C1,C3
TVSD-C-24DC	30 V _{DC} / 21 V _{AC}	10 A _{AC/DC}	---	0,030	C3
TVSD-C-48DC	53 V _{DC} / 37 V _{AC}	10 A _{AC/DC}	---	0,018	C3
TVSD-C-60DC	75 V _{DC} / 53 V _{AC}	10 A _{AC/DC}	---	0,012	C3
TVSD-D-24DC	30 V _{DC} / 21 V _{AC}	10 A _{AC/DC}	0,030	---	C3
TVSD-D-48DC	53 V _{DC} / 37 V _{AC}	10 A _{AC/DC}	0,018	---	C3
TVSD-D-60DC	75 V _{DC} / 53 V _{AC}	10 A _{AC/DC}	0,012	---	C3

TTC 3 - 3,5mm housing

Model	Max. cont. operating voltage [V _{DC}]	Nominal Current [A]	Nominal discharge current In (8/20) μs [kA]		IEC test classification/ EN type
			conductor-conductor	conductor-earth	
1X2-24DC	30 V	0,25	5	5	C1,C2,C3,D1
2X1-24DC	30 V	0,25	---	5	C1,C2,C3,D1

Job Id: **262.1-026035-1**
Certificate No: **TAE000027G**

Accessories:

TTC-6-FMRS-...	Transceiver module for remote signaling of TTC-6...-I products
TTC-6-LCP...	End cover for TERMITRAB complete TTC-6... terminal blocks
TTC-3-LCP...	End cover for TERMITRAB complete TTC-3... terminal blocks

Application/Limitation

Location Classes:

Temperature: B, Humidity: A, Vibration: B

Operating instruction of the manufacturer to be observed

Type Approval documentation

Tests carried out

IEC 61643-21 Edition 1.2, EN 61643-21:2001 + A1:2009 + A2:2013, , cold, dry heat, vibration, flame retardancy

Marking of product

Phoenix Contact - Type designation - Main data.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and 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