NOTIFICATION OF TEST RESULTS

Issued to:	WAGO Kontakttechnik GmbH & Co. KG Hansastrasse 27, 32423 Minden/westfalen, Germany
For the product:	terminal blocks for copper conductors
Trade name:	WAGO
Type/Model:	282 and 782
Manufactured by:	WAGO Kontakttechnik GmbH & Co. KG Hansastrasse 27, 32423 Minden/westfalen, Germany
Ratings:	282: 6 mm², 24 V - 800 V 30 A / 41 A, 782: 6 mm², 400 V - 1000 V, 41 A
Additional information:	See annex for factory locations. This NTR replaces NTR 7522 dated 14 November 2016.

A sample of the product has been tested and found to be in conformity with the current HD/EN and equivalent national standard

EN 60947-7-1:2009, EN 60947-7-2:2009

As shown in the Test Report

2258819.50 and 2258819.51

This Notification of Test Results is the result of testing a sample of the product submitted, in accordance with the provisions of the relevant specific standard.

This Notification of Test Results has been established by a body, which participates in the CENELEC Certification Agreement (CCA) of 11th September 1973 as amended on 29th March 1983. Any other body participating in the CCA will take this Notification as a basis for granting a national mark of conformity or a national approval as specified in the CCA, as long as the standard referred to above is still in force in the country of that body.

Arnhem, 25 October 2021 Number: NTR NL 7894

DEKRA Certification B.V.

H.R.M. Barends
Certification Manager

© Integral publication of this attestation and adjoining reports is allowed

CCA
CENELEC CERTIFICATION AGREEMENT
ACCORD DE CERTIFICATION DU CENELEC

Annex

CCA
CENELEC CERTIFICATION AGREEMENT
ACCORD DE CERTIFICATION DU CELENEC

Factory locations:

Wago Elwag sp.z.o.o.
ul. Piekna 58 a
50-506, Wroclaw
Poland

Wago Elwag
Innowacyjna 2
55-330 Wroblowice
Poland

Wago Pvt. Ltd.
C-27, Sector-58, Phase III
201301 Noida Uttar Pradesh
India

Wago Electronic (Tianjin) Co. Ltd.
No. 5 Quanhui Road
Wu Qing Development Area
301700 Tianjin
China

WAGO Kontakttechnik GmbH & Co. KG
Hansastraße 27, 32423 Minden/Westfalen
Germany

WAGO Kontakttechnik GmbH & Co. KG, Werk Sondershausen
Waldstrasse 1, 99706, Sondershausen
Germany

WAGO Contact S.A.
Route de l'Industrie 19, CP 168, 1564, Domdidier
Switzerland

WAGO Kontakttechnik GmbH & Co. KG
Cammer Str. 17,
32423 Minden
Germany

ETICS OD ECS 040-1 January 2019	Responsible CB: DEKRA

TEST REPORT SUMMARY

Report Number ..... :	**2258819.50**
Date of issue ..... :	**2021-10-11**
Tested by (name, function, signature):	**W.C. van Ginkel** **(Technician Industrial Safety)**
Witnessed by (name, function, signature):	
Approved by (name, function, signature):	
Supervised by (name, function, signature):	**H.L. Schendstok** **(Project Manager Industrial Safety)**

Testing Laboratory ..... :	**DEKRA Certification B.V.**
Address ..... :	**Meander 1051, 6825 MJ Arnhem, The Netherlands**
Testing procedure ..... :	☐ ENEC ☒ CCA NTR
	☐ ENEC based on IECEE CBTC with number: …….
Customer Testing Procedure..... :	☐ TMP/CTF Stage 1 ☐ WMT/CTF Stage 2 ☐ SMT/CTF Stage 3
Applicant ..... :	**WAGO Kontakttechnik GmbH & Co. KG**
Address ..... :	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Manufacturer ..... :	**WAGO Kontakttechnik GmbH & Co. KG**
Address ..... :	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Product ..... :	**Terminal blocks for copper conductors**
Model/Type reference ..... :	**282-and 782**
Trademark ..... :	WAGO
Ratings ..... :	**282: 6 mm², 24 V - 800 V, 30 A / 41 A** **782: 6 mm², 400 V - 1000 V, 41 A**
Certification Scheme ..... :	☐ ENEC ☒ CCA ☐ Other: _____
Standard(s) ..... :	**EN 60947-7-1: 2009, in conjunction with EN 60947-1: 2007 + A1:2012 + A2:2014**

☒ The text of the a.m. European Standard was approved by CENELEC is equivalent with the corresponding IEC Publication.

☐ The text of the a.m. European Standard was approved by CENELEC with agreed common modifications and is not equivalent with the corresponding IEC Publication. An EU Deviation Addendum has to be issued.

This EN test report consists of the following parts:

☒ IEC Test Report Number..... :	**2258819.50**
☐ EU Deviation Addendum..... :	

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This ECS document together with the test report is only valid if signed by an approved ENEC or CCA Testing Laboratory and accompanied by the associated ENEC Licence or CCA Notification of Test Results, issued by a Certification Body member of ECS.

Test Report issued under the responsibility of:

TEST REPORT
IEC 60947-7-1
Low-voltage switchgear and controlgear
Part 7: Ancillary equipment
Section One: Terminal blocks for copper conductors

Report Number.....:	**2258819.50**
Date of issue .....:	**2021-10-11**
Total number of pages	**54 pages**
Name of Testing Laboratory preparing the Report .....:	**DEKRA Certification B.V.**
Applicant's name .....:	**WAGO Kontakttechnik GmbH & Co. KG**
Address .....:	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Test specification:	
Standard.....:	IEC 60947-7-1:2009 (Third Edition) in conjunction with IEC 60947-1:2007 (Fifth Edition) + A1:2010 + A2:2014
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No. .....:	IEC60947_7_1B
Test Report Form(s) Originator....:	DEKRA Certification B.V.
Master TRF .....:	Dated 2015-10

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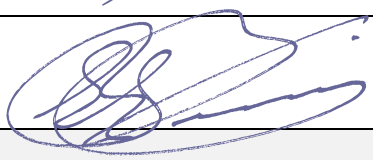
General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	**terminal block for copper conductors for mounting on a rail**
Trade Mark..... :	
Manufacturer ..... :	**WAGO Kontakttechnik GmbH & Co. KG**
Model/Type reference..... :	**282 and 782**
Ratings..... :	**type 282: 6 mm², 24 V – 800 V, 30 A / 41 A**
	type 782: 6 mm², 400 V – 1000 V, 41 A

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	**DEKRA Certification B.V.**	
Testing location/ address .....:		**Meander 1051** **6825 MJ Arnhem, The Netherlands**	
☐	**Associated CB Testing Laboratory:**		
Testing location/ address .....:			
Tested by (name, function, signature) .....:		**W.C. van Ginkel** **(Technician Industrial Safety**	
Approved by (name, function, signature) ..:		**H.L. Schendstok (Project Manager Industrial Safety)**	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address .....:			
Tested by (name, function, signature) .....:			
Approved by (name, function, signature) ..:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address .....:			
Tested by (name + signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature) ..:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address .....:			
Tested by (name, function, signature) .....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature) ..:			
Supervised by (name, function, signature) .....:			

List of Attachments (including a total number of pages in each attachment): N/A

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
<u>Project 2195540.50</u> **complete examination** **All tests are carried out on 782-601, 782-613, 282-101 and 281-601, 282-870.** **Additional tests are carried out on 282-122, 282-131, 282-865 ,282-694, 282-695, 282-8112,** **282-821, 282-138, 282-139, 282-140, 282-141, 282-841, 282-638, 282-639, 282-640, 282-641** **<u>Project 2258819.50</u>** **This test report replaces Test Report 2195540.50 issued on 1 November 2016, due to the fact that types are added.** **The following test are carried out at type 282-681:** **- Dielectric strength clause 8.4.3** **- Temperature-rise test clause 8.4.5**	**DEKRA Certification B.V.** **Meander 1051, 6825 MJ Arnhem** **The Netherlands**

Summary of compliance with National Differences (List of countries addressed):

☒ **The product fulfils the requirements of EN 60947-7-1: 2009**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

example:

282	**TopJob 782-6..**	**282**	**282**	**282**
IEC 947-7-1	**IEC 947-7-1**	**IEC 947-7-1**	**IEC 947-7-1**	**IEC 947-7-1**
800 V	**1000 V**	**500 V**	**500 V**	**800 V**
6 mm²	**6mm²**	**6 mm²**	**6mm² 30A**	**6 mm²**

282	**282**	**282**	**282**
6 mm²	**6 mm²**	**6 mm²**	**6 mm²**
24 V	**48 V**	**120 V**	**230 V**

Test item particulars ..... :	
Classification of installation and use ..... :	
Supply Connection ..... :	
Particulars: test item vs. test requirements	
- method of fixing ..... :	**top hat rail 35 mm**
- number of poles ..... :	**1-pole**
- type of clamping units ..... :	**screwless-type terminal**
- ability to receive conductors ..... :	**unprepared conductors, flexible or rigid**
- number of terminals on terminal assembly ..... :	**2 or 3**
- rated cross-section (mm²) ..... :	**6 mm²**
- rated connecting capacity (mm²) ..... :	**0,2 mm² - 6 mm² (rigid or flexible)**
- rated insulation voltage (U_i) ..... :	**type: 282: 24 V - 800 V**
	type: 782: 400 V - 1000 V
- rated impulse withstand voltage (U_{imp}) ..... :	**6 kV – 8 kV**
- Conventional free air thermal current (I_{th}) ..... :	**see product data page 47 to 50**
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	**02-2013 / 10-2015 / 07-2016 / 08-2016 /09-2021**
Date (s) of performance of tests ..... :	**02-2013 / 10-2015 / 07-2016 / 08-2016 /09-2021**
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☒ comma / ☐ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**
When differences exist; they shall be identified in the General product information section.	

Name and address of factory (ies).....:	**Wago Elwag sp.z.o.o.** **ul. Piekna 58 a** **50-506, Wroclaw, Poland** **Wago Elwag** **Innowacyjna 2** **55-330 Wroblowice, Poland** **Wago Pvt. Ltd.** **C-27, Sector-58, Phase III** **201301 Noida Uttar Pradesh, India** **Wago Electronic (Tianjin) Co. Ltd.** **No. 5 Quanhui Road** **Wu Qing Development Area** **301700 Tianjin, China** **WAGO Kontakttechnik GmbH & Co. KG** **Hansastraße 27, 32423 Minden/Westfalen** **Germany** **WAGO Kontakttechnik GmbH & Co. KG, Werk Sondershausen** **Waldstrasse 1, 99706, Sondershausen** **Germany** **WAGO Contact S.A.** **Route de l'Industrie 19, CP 168, 1564,** **Domdidier, Switzerland** **WAGO Kontakttechnik GmbH & Co. KG** **Cammer Str. 17,** **32423 Minden** **Germany**
General product information: **See page 47 to 53**	

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
5.1	**MARKING**		
	Terminal block shall be marked with:		
	- manufacturer's name or trademark	WAGO	**P**
	- type designation	**282 or 782**	**P**
5.2	The following information shall be stated by the manufacturer if applicable, e.g. in the manufacturer's data sheet, or his catalogue or on the packing unit:		
	- manufacturer's claim for compliance with IEC 60 947-7-1	**IEC 60947-7-1 in catalogue**	**P**
	- rated cross-section	**6 mm²**	**P**
	- rated connecting capacity	**in catalogue 0,2 – 6 mm²**	**P**
	- rated insulation voltage (U_i)	**400 V / 1000 V**	**P**
	- rated impulse withstand voltage (U_{imp})	**in catalogue 6 kV - 8 kV**	**P**
	- conventional free air thermal current (I_{th})		**N/A**
	- service conditions if different from those of Cl. 6.		**N/A**

7.	**CONSTRUCTION**		
7.1	Constructional requirements		**P**
7.1.1	Clamping units		
7.1.7.1	All parts of clamping units which maintain contact and carry current shall be of metal having adequate mechanical strength		**P**
	Clamping units connections shall be such that necessary contact pressure is maintained		**P**
	Clamping units shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal		**P**

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Clamping units shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operation of equipment and the insulation voltage shall not be reduced below the rated value		**P**
	Clamping units shall allow the conductor to be connected by means ensuring that a reliable mechanical linkage and electrical contact is properly maintained		**P**
	Clamping units shall be able to withstand the forces that can be applied through the connected conductors		**P**
	Contact pressure is not transmitted through insulation materials		**P**
7.1.2	Mounting		
	Terminal blocks shall be provided with means that allow them to be securely attached to a rail or a mounting surface (see 8.3.2)		**P**
7.1.3	Clearances and creepage distances		
	For clearances and creepage distances see 8.4.2		**P**
7.1.4	Terminal identification and marking:		
	- terminals intended exclusively for the neutral conductor		**N/A**
	- other terminals		**P**
	- terminal blocks shall have provision, or at least space, for identification marks or numbers for each terminal or terminal assembly to be related to the circuit of which it is to form a part		**P**
	- For the identification of the terminal block the colour combination green-yellow is not allowed		**P**
7.1.5	Resistance to abnormal heat and fire		
	Needle flame test for insulation materials of terminal blocks (see 8.5)	**5 s**	**P**

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
7.1.6	Rated cross-section and rated connecting capacity		
	Terminal blocks are so designed that conductors of the rated cross-section and/or the rated connecting capacity can be accepted	**0,2 mm² – 6 mm²** **rigid or flexible**	**P**
8	**TESTS**		
8.3	Verification of mechanical characteristics		
8.3.2	Attachment of the terminal block on its support		
	mounting rail ..... :	**top hat rail 35 mm**	—
	Tighting torque (Nm) ..... :	**-**	—
	steel pin diameter (mm) ..... :	**2,8**	—
	force (N) ..... :	**5**	—
	During the test, no terminal block shall work free from its rail or support, nor suffer any other damage		**P**
8.3.3	Mechanical properties of clamping units		
8.3.3.1	Test of mechanical strength of clamping units		
8.2.4.1	Mechanical strength of clamping units (IEC60947-1)		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 clamping units at the centre terminal block out of 5 terminal blocks	**5 times inserted and removed**	**P**
	Voltage drop before and after mechanical strength test		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 0,9** **2 – 3,0**	

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test :	**1 – 1,0** **2 – 2,85**	**P**
	minimum cross-section of a flexible conductor (mm²) ..... :	**0,2**	—
	test current (A) d.c. ..... :	**0,4**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 0,68** **2 – 1,40**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**1 – 0,65** **2 – 1,20**	**P**
8.2.4.1	Mechanical strength of clamping units (IEC60947-1) **type 282-821**		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 clamping units at the centre terminal block out of 5 terminal blocks	**5 times inserted and removed**	**P**
	Voltage drop before and after mechanical strength test		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 2,14** **2 – 2,17**	

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test :	**1 – 2,13** **2 – 2,21**	**P**
	minimum cross-section of a flexible conductor (mm²) ..... :	**0,2**	—
	test current (A) d.c. ..... :	**0,4**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 1,08** **2 – 1,13**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**1 – 1,04** **2 – 1,15**	**P**
8.2.4.1	Mechanical strength of clamping units (IEC60947-1) **type 282-866**		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 clamping units at the centre terminal block out of 5 terminal blocks	**5 times inserted and removed**	**P**
	Voltage drop before and after mechanical strength test		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 2,96** **2 – 2,75**	

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test :	**1 – 2,80** **2 – 2,89**	**P**
	minimum cross-section of a flexible conductor (mm²) ..... :	**0,2**	—
	test current (A) d.c. ..... :	**0,4**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**1 – 1,59** **2 – 1,73**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**1 – 1,89** **2 – 1,97**	**P**
8.3.3.2	Testing for damage to and accidental loosening of conductors of a terminal block (flexion test)		
	conductor of the smallest cross-section (mm²) ... :	**0,2 rigid** **0,2 flexible**	—
	number of conductors of the smallest cross-section ..... :	**1**	—
	torque (Nm) ..... :	**0,5**	—
	diameter of bushing hole (mm) ..... :	**6,5**	—
	height between the equipment and the platen (mm) ..... :	**260**	—
	mass at the conductor(s) (kg) ..... :	**0,2**	—

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	Pull-out test		
	force (N) ..... :	**10**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	conductor of the rated cross-section (mm²) ..... :	**6 rigid** **6 flexible**	—
	number of conductors of the rated cross-section :	**1**	—
	torque (Nm) ..... :	**-**	—
	diameter of bushing hole (mm) ..... :	**9,5**	—
	height between the equipment and the platen (mm) ..... :	**280**	—
	mass at the conductor(s) (kg) ..... :	**1,4**	—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	Pull-out test		
	force (N) ..... :	**80**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	conductor of the largest cross-section (mm²) ..... :		—
	number of conductors of the largest cross-section:		—
	torque (Nm) ..... :		—
	diameter of bushing hole (mm) ..... :		—
	height between the equipment and the platen (mm) ..... :		—
	mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Pull-out test		
	force (N) ..... :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**
	conductor of the largest or smallest cross-section (mm²) ..... :		—
	number of conductors of the largest or smallest cross-section ..... :		—
	torque (Nm) ..... :		—
	diameter of bushing hole (mm) ..... :		—
	height between the equipment and the platen (mm) ..... :		—
	mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**
	Pull-out test		
	force (N) ..... :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**
8.3.3.4	Verification of rated cross section and rated connecting capacity		
	One conductor of the two next smaller cross-sections can be unhindered and connected in each clamping unit of one terminal block (up to 35 mm²)	**0,2 mm² - 6 mm² rigid and flexible**	**P**
8.4.2	Verification of clearances and creepage distances **types 282-821 and 282-811**		
	Conductor type and conductor cross-section	**solid 6 mm²**	—
	Conductor end length (mm)	**12-13**	—
	Type of support	**top hat rail 35 mm**	—
8.4.2.2	Clearances	**282-821 282-811**	

IEC 60947-7-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Case A (mm) ..... : Case B (mm) ..... : Measured (mm) ..... :	**5,5** **5,5** **2** **2** **9** **8,32**	**P**
	Rated impulse withstand voltage U_{imp} (kV)	**6**	**P**
8.4.2.3	Creepage distances:		
	- pollution degree ..... :	**3**	—
	- comparative tracking index (V) ..... :	**600**	—
	- material group ..... :	**I**	—
	- rated insulation voltage U_i (V) ..... :	**500**	—
	- minimum creepage distances (mm) ..... :	**6,3**	—
	- measured creepage distances (mm) ..... :	**9,5** **8,39**	—
8.4.2.3	Creepage distances:		
	- pollution degree ..... :	**3**	—
	- comparative tracking index (V) ..... :	**600**	—
	- material group ..... :	**I**	—
	- rated insulation voltage U_i (V) ..... :	**400** **800** **1000**	—
	- minimum creepage distances (mm) ..... :	**5** **10** **12,5**	—
	- measured creepage distances (mm) ..... :	**8,6** **11,4** **12,5**	—
8.4	Verification of electrical characteristics		
8.4.3	Dielectric tests		
	Dielectric test, Impulse withstand voltage U_{imp} indicated by the manufacture:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- five terminal blocks connected with unfavourable cross-section (mm²) / type / conductor end length (mm) ..... :	**6 / solid / 10**	—
	- rated impulse withstand voltage (kV) ..... :	**6 or 8**	—
	- test Uimp main circuits (kV) ..... :	**7,4 or 9,8**	**P**
	Dielectric test, power-frequency withstand:		
	- five terminal blocks connected with unfavourable cross-section (mm²) / type / conductor end length (mm) :	**6 / solid / 10**	—
	- rated insulation voltage (V) ..... :	**400, 500, 800, or 1000**	—
	- test voltage for 60 sec (V) ..... :	**2500, 2500, 3000, or 3500 for 5 s According to IEC 60947-1 A2:2014; re-testing according to 60 s is not necessary**	**P**
8.4.3	Dielectric tests **(type 282-681)**		
	Dielectric test, Impulse withstand voltage U_{imp} indicated by the manufacture:		
	- five terminal blocks connected with unfavourable cross-section (mm²) / type / conductor end length (mm) ..... :	**6 / solid / 12-13**	—
	- rated impulse withstand voltage (kV) ..... :	**8**	—
	- test Uimp main circuits (kV) ..... :	**9,8**	**P**
	Dielectric test, power-frequency withstand:		
	- five terminal blocks connected with unfavourable cross-section (mm²) / type / conductor end length (mm) :	**6 / solid / 12-13**	—
	- rated insulation voltage (V) ..... :	**800,**	—
	- test voltage for 60 sec (V) ..... :	**2000**	**P**
8.4.5	Temperature-rise test		
	Temperature-rise conditions: **on through terminal blocks (282-694)**		
	- test current (A) ..... :	**41**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**max. 31 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-ise test not exceeding 3,2 mV ..... :	**1,48 – 1,98**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**1,63 – 2,03**	**P**
8.4.5	Temperature-rise test		
	Temperature-rise conditions: **on through terminal block**		
	- test current (A) ..... :	**41**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**max. 36 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-ise test not exceeding 3,2 mV ..... :	**0,98 – 2,95**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**0,87 – 2,75**	**P**
8.4.5	Temperature-rise test		

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Clause	Requirement – Test	Result - Remark	Verdict
	Temperature-rise conditions: **on terminal blocks 30 A (282-821)**		
	- test current (A) ..... :	**30**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**16 K – 18 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 3,2 mV ..... :	**2,16 – 2,24**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% if the value measured before temperature-rise test ..... :	**2,17 – 2,25**	**P**
8.4.5	Temperature-rise test **(type 282-841)**		
	Temperature-rise conditions:		
	- test current (A) ..... :	**41**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**28,5 – 35**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 3,2 mV ..... :	**1,84 – 2,31**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**1,72 – 2,02**	**P**
8.4.5	Temperature-rise test **(type 282-681)**		
	Temperature-rise conditions:		
	- test current (A) ..... :	**41**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**22,0 – 29,6**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 3,2 mV ..... :	**1,32 – 1,59**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**1,28 – 1,65**	**P**
8.4.6	Short-time withstand current test **on through terminal blocks (282-694)**		
	- rated cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- test current (A) ..... :	**720**	—
	- duration of the test current (s) ..... :	**1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop before and after short-time withstand current test		

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Clause	Requirement – Test	Result - Remark	Verdict
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before short-time withstand current test not exceeding 3,2 mV ..... :	**1,98 – 2,16**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after short-time withstand current test not exceeding 150% of the value measured before short-time withstand current test ..... :	**1,58 – 1,89**	**P**
8.4.6	Short-time withstand current test **on disconnect terminal blocks 30 A (282-870 with connection bridge)**		
	- rated cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :		—
	- test current (A) ..... :	**720**	—
	- duration of the test current (s) ..... :	**1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop before and after short-time withstand current test		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before short-time withstand current test not exceeding 3,2 mV ..... :	**2,81 mV from wire to connection bridge**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict
	- voltage drop (mV) after short-time withstand current test not exceeding 150% of the value measured before short-time withstand current test ..... :	**2,88 mV from wire to connection bridge**	**P**
8.4.6	Short-time withstand current test **(type 282-841)**		
	- rated cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- test current (A) ..... :	**720**	—
	- duration of the test current (s) ..... :	**1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop before and after short-time withstand current test		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before short-time withstand current test not exceeding 3,2 mV ..... :	**2,61**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after short-time withstand current test not exceeding 150% of the value measured before short-time withstand current test ..... :	**2,21**	**P**
8.4.7	Ageing test (for screwless-type terminal blocks only)		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section rigid or stranded < 10 mm² solid, > 10 mm² stranded (mm²) ..... :	**6 mm² on request of manufacturer test carried out with flexible**	—
	Test current (A) according 8.4.5 ..... :	**41**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	Heating cabinet is increased, in each cycle to (°C) ..... :	**40 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**4,1**	—
	Voltage drop after 0 cycles:		
	- requirement: ≤ 3,2 mV (mV) ..... :	**0,97 – 2,82**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement: 4,8 mV (mV) ..... :	**0,89 – 2,54**	**P**
	Voltage drop after the 48th cycle		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,89 – 2,58**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,86 – 2,50**	**P**
	Voltage drop after the 96th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,88 – 2,56**	**P**
	Voltage drop after the 120th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,87 – 2,55**	**P**
	Voltage drop after the 144th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,87 – 2,53**	**P**
	Voltage drop after the 168th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,88 – 2,50**	**P**
	Voltage drop after the 192nd cycle:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,87 – 2,35**	**P**
	Pull-out test		
	force (N) ..... :	**80 N**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
8.4.7	Ageing test (for screwless-type terminal blocks only) **on disconnect terminal blocks 41 A (282-131)**		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section rigid or stranded < 10 mm² solid, > 10 mm² stranded (mm²) ..... :	**6 mm² on request of manufacturer test carried out with flexible**	—
	Test current (A) according 8.4.5 ..... :	**41**	—
	Heating cabinet is increased, in each cycle to (°C) ..... :	**40 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**4,1**	—
	Voltage drop after 0 cycles:		
	- requirement: ≤ 3,2 mV (mV) ..... :	**1,39 – 1,62**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement: 4,8 mV (mV) ..... :	**1,42 – 1,64**	**P**
	Voltage drop after the 48th cycle		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,44 – 1,68**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,27 – 1,48**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	Voltage drop after the 96th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,32 – 1,55**	**P**
	Voltage drop after the 120th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,27 – 1,48**	**P**
	Voltage drop after the 144th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,29 – 1,51**	**P**
	Voltage drop after the 168th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,36 – 1,56**	**P**
	Voltage drop after the 192nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,34 – 1,57**	**P**
	Pull-out test		
	force (N) ..... :	**80 N**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
8.4.7	Ageing test (for screwless-type terminal blocks only) **on disconnect terminal blocks 30 A (282-870 with connection bridge)**		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section rigid or stranded < 10 mm² solid, > 10 mm² stranded (mm²) ..... :	**6**	—
	Test current (A) according 8.4.5 ..... :	**30**	—
	Heating cabinet is increased, in each cycle to (°C) ..... :	**40 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**3**	—
	Voltage drop after 0 cycles:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement: ≤ 3,2 mV (mV) ..... :	**2,0 – 2,4 measured from wire to connection bridge**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement: 4,8 mV (mV) ..... :	**2,0 – 2,4 measured from wire to connection bridge**	**P**
	Voltage drop after the 48th cycle		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,0 – 2,4 measured from wire to connection bridge**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,0 – 2,4 measured from wire to connection bridge**	**P**
	Voltage drop after the 96th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,1 – 2,5 measured from wire to connection bridge**	**P**
	Voltage drop after the 120th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,1 – 2,5 measured from wire to connection bridge**	**P**
	Voltage drop after the 144th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,1 – 2,5 measured from wire to connection bridge**	**P**
	Voltage drop after the 168th cycle:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,1 – 2,5 measured from wire to connection bridge**	**P**
	Voltage drop after the 192nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,1 – 2,5 measured from wire to connection bridge**	**P**
	Pull-out test		
	force (N) ..... :	**80 N**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
8.4.7	Ageing test (for screwless-type terminal blocks only) **on disconnect terminal blocks 30 A (282-811 with connection bridge)**		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section rigid or stranded < 10 mm² solid, > 10 mm² stranded (mm²) ..... :	**6**	—
	Test current (A) according 8.4.5 ..... :	**40**	—
	Heating cabinet is increased, in each cycle to (°C) ..... :	**40 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**4,1**	—
	Voltage drop after 0 cycles:		
	- requirement: ≤ 3,2 mV (mV) ..... :	**0,6 – 0,8**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement: 4,8 mV (mV) ..... :	**0,6 – 0,8**	**P**
	Voltage drop after the 48th cycle		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,6 – 0,8**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,6 – 0,8**	**P**
	Voltage drop after the 96th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,6 – 0,8**	**P**
	Voltage drop after the 120th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,6 – 0,8**	**P**
	Voltage drop after the 144th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,0 – 1,0**	**P**
	Voltage drop after the 168th cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,0 – 1,0**	**P**
	Voltage drop after the 192nd cycle:		
	- requirement: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**1,0 – 1,0**	**P**
	Pull-out test		
	force (N) ..... :	**80 N**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
8.5	Verification of thermal characteristics is checked by the needle flame test.		**P**
	Before the test, the terminal blocks are stored for 24 h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%		**P**
	The flame is applied for 10 s.	**5 s**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	for insulation walls <1 mm and / or an area < 100 mm², the flame is applied for 5 s.		
	The terminal blocks are considered to have passed the test if the duration of burning is < 30s in case of ignition. Moreover, the tissue paper on the pinewood board shall not ignite if burning or glowing particles fall from the terminal block.		**P**
8.6	Verification of EMC characteristics		**N/A**
	Subclause 8.4 of IEC 60947-1 applies with the following addition:		**N/A**
8.6.1	Immunity		**N/A**
	Terminal blocks within the scope of this standard are not sensitive of electromagnetic disturbances and therefore no immunity tests are necessary.		**N/A**
8.6.2	Emission		**N/A**
	Terminal blocks within the scope of this standard do not generate electromagnetic disturbances and therefore no emission tests are necessary.		**N/A**
nnex A	**vacant**		
Annex B	**informative**		
	Items subject to agreement between manufacturer and user		
Annex C	**vacant**		
Annex D	**ADDITIONAL REQUIREMENTS FOR TEST DISCONNECT TERMINALBLOCKS**		**N/A**
D5	Product information		
	- service life in number of cycles	**200 x**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
D6.	Normal service, mounting and transport conditions		
	Clause 6 applies.		**N/A**
D7	Construction and performance conditions		
	Clause 7 applies with the following additions		
D7.1	Constructional requirements		**P**
D7.1.3	Clearances and creepages are not required to be measured over the open disconnect contacts (Gap). However, the rated impulse withstand voltage (Uimp) stated by the manufacturer according to table 13 of IEC 60947-1, without using the altitude correction factor, shall be verified across the open disconnect contacts (gap) (see D.7.2.2)	**282-131 6 kV** **282-811 6 kV** **282-821 6 kV** **282-870 / 6 kV**	**P**
D7.1.7	Disconnect unit		
	For longitudinal and perpendicular disconnection, test disconnect terminal blocks may be equipped with disconnect units, for instance of the following type: - plug - knife - slide (with or without busbar)	**282-131 / slide** **282-811 / slide** **282-821 / slide** **282-870 / slide**	**P**
	the position of the disconnect unit shall be recognizable in normal use and shall not be changed unintentionally		**P**
D.7.2.2	Dielectric properties		
	Dielectric test, Uimp indicated:		
	- five terminal blocks connected with unfavourable cross-section (mm²) / type / conductor end length tested over open disconnect contacts (gap) (mm) ..... :	**6 mm² / solid / 10 mm**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- rated impulse withstand voltage (kV) ..... :	**282-131 / 6 kV** **282-811 / 6 kV** **282-821 / 6 kV** **282-870 / 6 kV**	—
	- test Uimp without altitude correction factor (kV) :	**282-131 / 6 kV** **282-811 / 6 kV** **282-821 / 6 kV** **282-870 / 6 kV**	**P**
D.8.4.5	Temperature-rise test **(type 282-131)**		
	Temperature-rise conditions:		
	- test current (A) ..... :	**41**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- torque disconnect unit (Nm) ..... :	**0,5 Nm**	—
	- temperature-rise does not exceed 45 K	**29 K – 33 K** **Disconnect part** **34 K** **Bridge** **29 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points ..... :	**4 x 1,6 mV = 6,4 mV** **1,47 mV – 2,50 mV**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**1,75 – 3,10**	**P**
D.8.4.5	Temperature-rise test **(type 282-695)**		
	Temperature-rise conditions:		
	- test current (A) ..... :	**30**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- torque disconnect unit (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**20 K – 24 K** **Disconnect part** **26 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points ..... :	**4 x 1,6 mV = 6,4 mV** **2,72 mV – 3,80 mV**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**2,80 – 3,99**	**P**
D.8.4.5	Temperature-rise test **(type 282-870)**		
	Temperature-rise conditions:		
	- test current (A) ..... :	**30**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- torque disconnect unit (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**29 K – 36 K** **Disconnect part** **42 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points ..... :	**4 x 1,6 = 6,4** **3,17 – 3,86**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**3,33 – 3,65**	**P**
D.8.4.5	Temperature-rise test		
	Temperature-rise conditions: **on terminal blocks 30 A (282-821)**		
	- test current (A) ..... :	**30**	—
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) ..... :	**-**	—
	- temperature-rise does not exceed 45 K	**16 K – 18 K**	**P**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 3,2 mV ..... :	**2,16 – 2,24**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% if the value measured before temperature-rise test ..... :	**2,17 – 2,25**	**P**
D.8.4.6	Short-time withstand current test **(type 282-131)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	**-**	—
	- torque disconnect unit (Nm) ..... :	**-**	—
	- test current (A) ..... :	**720**	—
	- duration of the test current (s) ..... :	**1 s**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop before and after short-time withstand current test		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points ..... :	**1,25**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**P**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**1,35**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
D.8.4.6	Short-time withstand current test **(type 282-821)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	**-**	—
	- torque disconnect unit (Nm) ..... :	**-**	—
	- test current (A) ..... :	**720**	—
	- duration of the test current (s) ..... :	**1 s**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop before and after short-time withstand current test		
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) before temperature-rise test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points ..... :	**2,15**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	**2,23**	**P**
D.8.4.7	Ageing test for test disconnect terminal blocks with screwless-type clamping units **See Annex 8.4.7**		
	Maximum ambient temperature (°C) ..... :	40 °C /	—
	Rated cross-section rigid or stranded < 10 mm² solid, > 10 mm² stranded (mm²) ..... :		—
	Test current (A) according D.8.4.5 ..... :		—
	Torque disconnect unit (Nm) ..... :		—

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Clause	Requirement – Test	Result - Remark	Verdict
	Heating cabinet is increased, in each cycle to (°C) ..... :		—
	Test current (A) d.c. for measurement of the voltage drop ..... :		—
	Voltage drop after 0 cycles:		
	- requirement: ≤ 1,6 mV (mV) ..... : the voltage drop is determined on each individual clamping unit separately	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 24th cycle:		
	- requirement: 2,4 mV (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 48th cycle		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 72nd cycle:		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 96th cycle:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 120th cycle:		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 144th cycle:		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 168th cycle:		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Voltage drop after the 192nd cycle:		
	- requirement: ≤ 2,4 mV or 1,5 times the value measured after the 24th cycle, whichever is the lower (mV) ..... :	1 - 2 - 3 - 4 - 5 -	**N/A**
	Pull-out test		
	force (N) ..... :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict
D.8.5.1	Service life **(type 282-131)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	-	—
	- torque disconnect unit (Nm) ..... :	**0,5 Nm**	—
	- number of operating cycles ..... :	**200 x**	—
	Entire test apparatus is stored for 168 h in dry heat at a temperature of 85 °C		**P**
	Voltage drop before and after service life		
	- test current (A) d.c. ..... :	**4,1 A**	—
	- voltage drop (mV) before service life test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points :	**4 x 1,6 mV = 6,4 mV** **1,29 – 1,36**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after service life test not exceeding 150% of the value measured before service life test ..... :	**1,37 – 1,86**	**P**
D.8.5.1	Service life **(type 282-695)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	-	—
	- torque disconnect unit (Nm) ..... :	-	—
	- number of operating cycles ..... :	**200 x**	—
	Entire test apparatus is stored for 168 h in dry heat at a temperature of 85 °C		**P**
	Voltage drop before and after service life		
	- test current (A) d.c. ..... :	**4,1 A**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- voltage drop (mV) before service life test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points :	**4 x 1,6 mV = 6,4 mV** **2,57 – 3,01**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after service life test not exceeding 150% of the value measured before service life test ..... :	**3,45 – 4,23**	**P**
D.8.5.1	Service life **(type 282-811)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	-	—
	- torque disconnect unit (Nm) ..... :	-	—
	- number of operating cycles ..... :	**200 x**	—
	Entire test apparatus is stored for 168 h in dry heat at a temperature of 85 °C		**P**
	Voltage drop before and after service life		
	- test current (A) d.c. ..... :	**4,1 A**	—
	- voltage drop (mV) before service life test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points :	**6 x 1,6 mV = 9,6 mV** **4,0 – 4,3**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict
	- voltage drop (mV) after service life test not exceeding 150% of the value measured before service life test ..... :	**5,1 – 5,6**	**P**
D.8.5.1	Service life **(type 282-821)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	-	—
	- torque disconnect unit (Nm) ..... :	-	—
	- number of operating cycles ..... :	**200 x**	—
	Entire test apparatus is stored for 168 h in dry heat at a temperature of 85 °C		**P**
	Voltage drop before and after service life		
	- test current (A) d.c. ..... :	**4,1 A**	—
	- voltage drop (mV) before service life test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points :	**4 x 1,6 mV = 6,4 mV** **2,4 – 2,53**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after service life test not exceeding 150% of the value measured before service life test ..... :	**2,47 – 3,65**	**P**
D.8.5.1	Service life **(type 282-870)**		
	- rated cross-section of the conductor (mm²) ..... :	**6 mm²**	—
	- torque (Nm) ..... :	-	—
	- torque disconnect unit (Nm) ..... :	-	—
	- number of operating cycles ..... :	**200 x**	—
	Entire test apparatus is stored for 168 h in dry heat at a temperature of 85 °C		**P**
	Voltage drop before and after service life		

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Clause	Requirement – Test	Result - Remark	Verdict
	- test current (A) d.c. ..... :	**4,1 A**	—
	- voltage drop (mV) before service life test not exceeding 1,6 mV times the total of conductor clamping unit and disconnect unit contact points :	**4 x 1,6 mV = 6,4 mV** **3,10 – 3,68**	**P**
	If the measured value exceeds this calculated value, the voltage drop is measured on each individual conductor clamping unit and disconnect unit contact point. it shall not exceed 1,6 mV on any conductor clamping unit and disconnect unit contact point		**N/A**
	- voltage drop (mV) after service life test not exceeding 150% of the value measured before service life test ..... :	**4,35 – 5,39**	**P**
D.8.4.5	Emission		
	Terminal blocks within the scope of this standard are not sensitive of electromagnetic disturbances and therefore no immunity tests are necessary.		**N/A**
8.6.2	Emission		**N/A**
	Terminal blocks within the scope of this standard do not generate electromagnetic disturbances and therefore no emission tests are necessary.		**N/A**

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Clause	Requirement – Test	Result - Remark	Verdict

8.4.2	TABLE: Clearance And Creepage Distance Measurements type282-821					
clearance cl and creepage distance dcr at/of:	**Up (V)**	**U r.m.s. (V)**	**Required cl (mm)**	**cl (mm)**	**required dcr (mm)**	**dcr (mm)**
Live parts to adjacent live parts Live parts to support	**6**	**500**	**5,5**	**9**	**6,3**	**9,5**
Supplementary information:						

8.4.2	TABLE: Clearance And Creepage Distance Measurements type282-811					
clearance cl and creepage distance dcr at/of:	**Up (V)**	**U r.m.s. (V)**	**Required cl (mm)**	**cl (mm)**	**required dcr (mm)**	**dcr (mm)**
Live parts to adjacent live parts Live parts to support	**6**	**500**	**5,5**	**8,32**	**6,3**	**8,39**
Supplementary information:						

8.4.3	TABLE: Dielectric Strength		
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
Live parts to adjacent live parts Live parts to support		**2500**	**No**
Live parts to adjacent live parts Live parts to support		**3000**	**No**
Live parts to adjacent live parts Live parts to support		**3500**	**No**
Supplementary information:			

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Clause	Requirement – Test	Result - Remark	Verdict

8.4.3	TABLE: Dielectric Strength (type 282-681)	
Test voltage applied between:	**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
Live parts to adjacent live parts **Live parts to support**	**2000**	**No**

8.4.5	**TABLE: Heating Test type (282-694)**		
	Test voltage (V):		—
	Ambient (^{o}C):		—
Thermocouple Locations	max. temperature measured, (^{o}C)	max. temperature limit, (^{o}C)	
Terminal 1 – terminal 5	**Max 31 K**	**45 K**	
Supplementary information:			

8.4.5	**TABLE: Heating Test type (282-821)**		
	Test voltage (V):		—
	Ambient (^{o}C):		—
Thermocouple Locations	max. temperature measured, (^{o}C)	max. temperature limit, (^{o}C)	
Terminal 1 – terminal 5	**Max 16 K – 18 K**	**45 K**	
Supplementary information:			

8.4.5	**TABLE: Heating Test type (282-841)**		
	Test voltage (V):		—
	Ambient (^{o}C):		—
Thermocouple Locations	max. temperature measured, (^{o}C)	max. temperature limit, (^{o}C)	
Terminal 1 – terminal 5	**Max 28,5 K – 35 K**	**45 K**	
Supplementary information:			

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Clause	Requirement – Test	Result - Remark	Verdict

8.4.5	**TABLE: Heating Test type (282-681)**		
	Test voltage (V):.....	< 5 V	—
	Ambient (°C):.....	22,0 / 23,3	—

Thermocouple Locations	max. temperature measured, (°C)	max. temperature limit, (°C)
Terminal 1 – terminal 5	**Max 22,0 K – 29,6 K**	**45 K**
Supplementary information:		

D.8.4.5	**TABLE: Heating Test**		
	Test voltage (V):.....		—
	Ambient (°C):.....		—

Thermocouple Locations	max. temperature measured, (°C)	max. temperature limit, (°C)
Supplementary information:		

Additional test for terminal blocks provided with indicator lights

Construction:
The indicator light (LED) is not removable.
The power dissipation in normal use in the series resistor does not exceed not the rated power dissipation, see table below.

type	rated voltage (V)	power dissipation (W)	
		DC	AC
		Open closed	Open closed
282-140	24 V	0,057 / 0,111	-
282-141	48 V	0,111 / 0,236	-
282-138	120 V		0,039 / 0,084
282-139	230 V		0,075 / 0,126

Dielectric test
The indicator light-circuit was subjected, for 1 second, to an ac voltage equal to twice the rated voltage
of the indicator light.
No flashover or breakdown occurred, and neither the lamp nor its resistor were damaged.

type	rated voltage (V)	Test voltage (V)
282-140	24 V	48 V
282-141	48 V	96 V
282-138	120 V	240 V
282-139	230 V	460 V

Temperature-rise test (normal)
The indicator light was connected to 1,06 times the rated voltage until steady temperature was reached. The maximum measured temperature-rise see table below.

type	rated voltage (V)	Test voltage (V)	Temperature-rise (K)
282-140	24 V	25,44 V	10,7 K
282-141	48 V	50,88 V	25,3 K
282-138	120 V	127,2 V	5,4 K
282-139	230 V	243,8 V	9,6 K

Temperature-rise test (abnormal)

The indicator light was connected to the rated voltage until steady temperature was reached. The LED was short-circuited, because the clearances and creepage distances of the indicator light are smaller then the required distances in the EN 60947-1.
The maximum measured temperature-rise see table below.

type	rated voltage (V)	Test voltage (V)	Temperature-rise (K)
282-140	24 V	24 V	10,3 K
282-141	48 V	48 V	21 K
282-138	120 V	120 V	8,9 K
282-139	230 V	230 V	12,8 K

Additional test for terminal blocks provided with indicator lights

Construction:
The indicator light (LED) is not removable.
The power dissipation in normal use in the series resistor does not exceed not the rated power dissipation, see table below.

type	rated voltage (V)	power dissipation (W)	
		DC	AC
		Open closed	Open closed
282-640	24 V	0,057 / 0,111	0,067 / 0,065
282-641	48 V	0,111 / 0,236	0,131 / 0,130
282-638	120 V	0,07 / 0,059	0,039 / 0,084
282-639	230 V	0,101 / 0,101	0,075 / 0,126

Dielectric test
The indicator light-circuit was subjected, for 1 second, to an ac voltage equal to twice the rated voltage
of the indicator light.
No flashover or breakdown occurred, and neither the lamp nor its resistor were damaged.

type	rated voltage (V)	Test voltage (V)
282-640	24 V	48 V
282-641	48 V	96 V
282-638	120 V	240 V
282-639	230 V	460 V

Temperature-rise test (normal)
The indicator light was connected to 1,06 times the rated voltage until steady temperature was reached.
The maximum measured temperature-rise see table below.

type	rated voltage (V)	Test voltage (V)	Temperature-rise (K)
282-640	24 V	25,44 V	10,7 K
282-641	48 V	50,88 V	25,3 K
282-638	120 V	127,2 V	5,4 K
282-639	230 V	243,8 V	9,6 K

Temperature-rise test (abnormal)
The indicator light was connected to the rated voltage until steady temperature was reached. The LED
was short-circuited, because the clearances and creepage distances of the indicator light are smaller
then the required distances in the EN 60947-1.
The maximum measured temperature-rise see table below.

type	rated voltage (V)	Test voltage (V)	Temperature-rise (K)
282-640	24 V	24 V	10,3 K
282-641	48 V	48 V	21 K
282-638	120 V	120 V	8,9 K
282-639	230 V	230 V	12,8 K

General product data

product	:	terminal block for copper conductors for mounting on a rail
trade name	:	WAGO
types	:	282, 782
rated connecting capacity	:	6 mm² rigid or flexible
connectable conductors	:	0,2 mm² - 6 mm² rigid or flexible
material	:	thermoplastic material grey, light grey, dark grey, blue, white, orange red, black, yellow and yellow/green
method of mounting	:	types 282-102, -103 and -105; for mounting on G-profile 32 mm other types; for mounting on top hat rail 35 mm.

Product data of rail mounted through terminal blocks type 282

types	:	282-... with suffixes -101, -102, -104, -105, -191, -601, -604, -691, -901, -902, -903, -904, -905, -906, -992
rated voltage	:	800 V
rated impulse withstand voltage	:	8 kV
description	:	two-conductor through terminal block, 1-pole.
type	:	282-133
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor through terminal block, 1-pole.
types	:	282-... with suffixes-681, -682, -683, -684, -685, -686, -993, -694, -699
rated voltage	:	800 V
rated impulse withstand voltage	:	8 kV
description	:	three-conductor through terminal block, 1-pole.
types	:	282-... with suffixes-865, -866
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	three-conductor through terminal block, 1-pole, with test plug. type 282-865 is provided with a branch for a connection bridge.
type	:	282- … with suffixes -841, -841/049-000
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	41 A
description	:	two-conductor through terminal block, with touch-proof test sockets, 1-pole. type 282-841/049-000 is without touch-proof sockets.

Product data of rail mounted earth terminal blocks type 282

types	:	282-... with suffixes-107, -607, -907, -108, -107/999-950, -607/999-950,-907/999-950
description	:	two-conductor earth terminal block, 1-pole.
types	:	282-... with suffixes-687, -687/999-950
description	:	three-conductor earth terminal block, 1-pole.
type	:	282-868
description	:	three-conductor earth terminal block, 1-pole

Product data of disconnect terminal blocks type 282

types	:	282-... with suffixes-132, -136, -131, -135, -138, -139, -140, -141
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor disconnect terminal block, 1-pole.
types	:	282-... with suffixes -695, -697
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	two-conductor disconnect terminal block, 1-pole.
types	:	282-... with suffixes -860, -870
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	three-conductor disconnect terminal block, 1-pole, with test plug. type 282-870 is provided with a branch for a connection bridge. electrical endurance; 200operating cycles at 230 V ac, 5 A and power factor 0,6.
type	:	282-811
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor transverse disconnect terminal block 1-pole with one test plug.
type	:	282-821
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor longitudinal disconnect terminal block 1-pole with two test plugs.

Product data of ground conductor disconnect terminal blocks type 282

type	:	282-138
rated voltage	:	120 Vac
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-139
rated voltage	:	230 Vac
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-140
rated voltage	:	24 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light.2-poles.
type	:	282-141
rated voltage	:	48 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-638
rated voltage	:	120 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-639
rated voltage	:	230 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-640
rated voltage	:	24 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light.2-poles.
type	:	282-641
rated voltage	:	48 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.

Product data of rail mounted through terminal blocks type 782

types	:	782-... with suffixes -601, -604, -992
rated voltage	:	1000 V
rated impulse withstand voltage	:	8 kV
rated current	:	41 A
description	:	two-conductor through terminal block, 1-pole.

Product data of a rail mounted earth terminal blocks type 782

types	:	782-...with suffixes -607, -607/999-950
description	:	two-conductor earth terminal block, 1-pole.

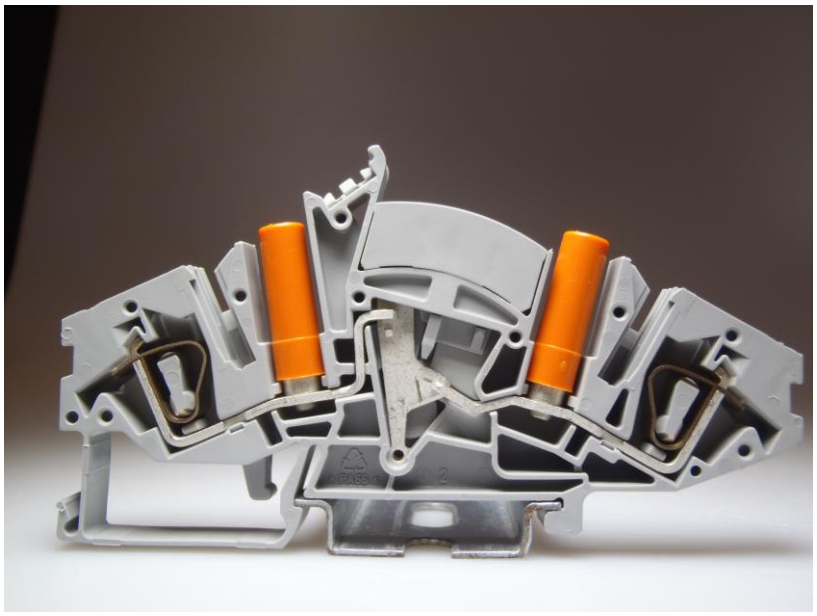
Product data of a rail mounted neutral terminal blocks type 782

types	:	782-... with suffixes -613, -623
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
rated current	:	41 A
description	:	two conductor through terminal block with neutral bus bar connection of a bus bar 3 x 10 mm, 1-pole.

The suitability of accessories like end-plates, end-stops, strain-relief plates, locking levers, marking strips, test plug adaptors, shorting bus, bridges, jumpers, stack-mounting hardware, etc shall be determined in the final combination.

These devices or their single modules may be combined to strips designated as 282-xxxx followed by an optional suffix /yyyy-zzzz where x, y, z are any customer number or digit (including characters), given for a specific end-use purpose.

Article numbers may be followed by optional suffix numbers e.g. 282-xxxx/xxxx-xxxx/xxxx-xxxx (up to 40 digits) where “x” may be any number (including characters) to represent printing variants, color variants, etc.



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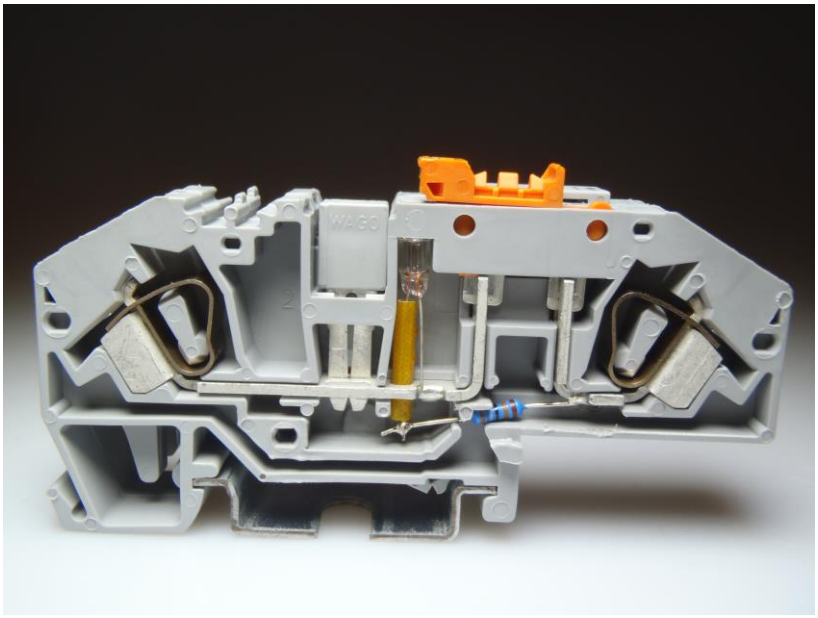

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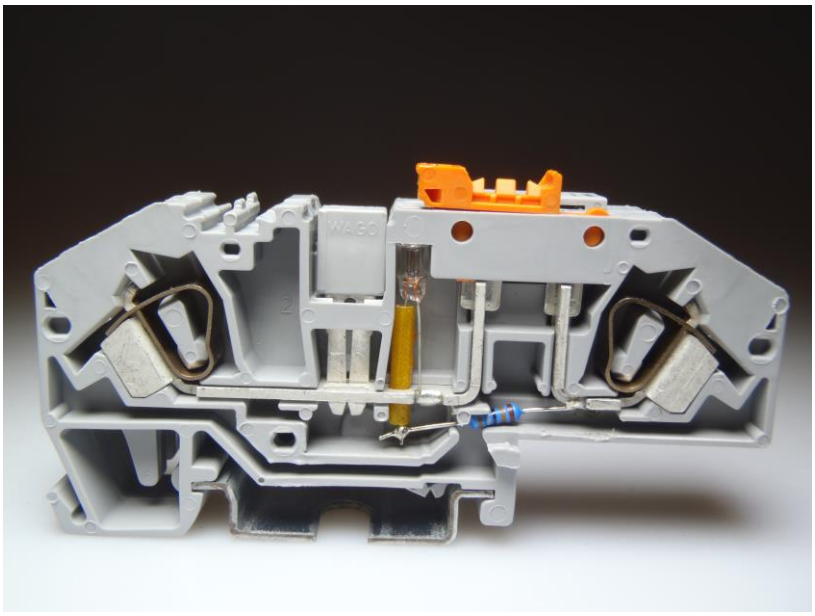
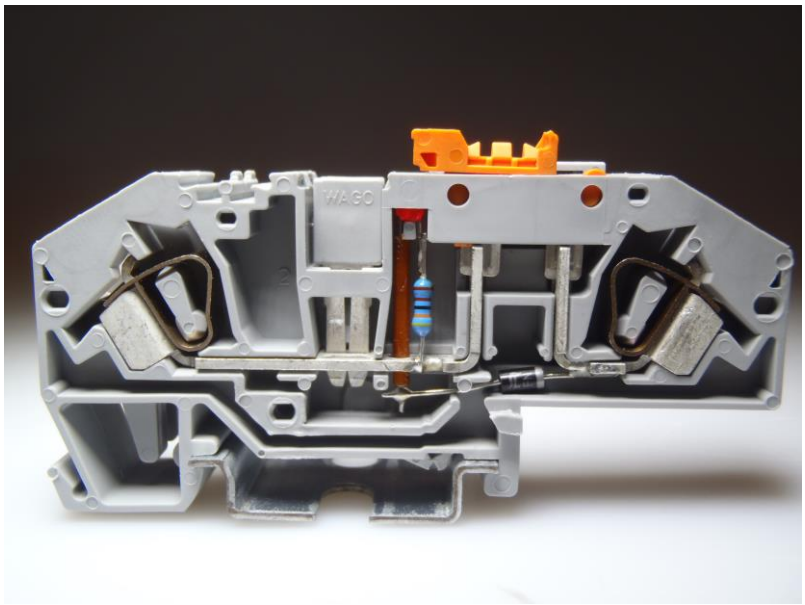
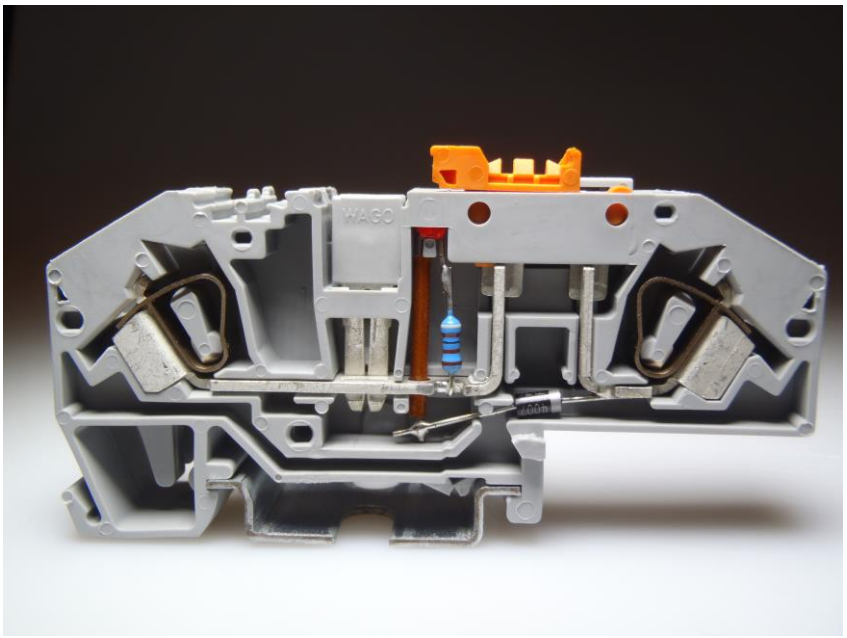


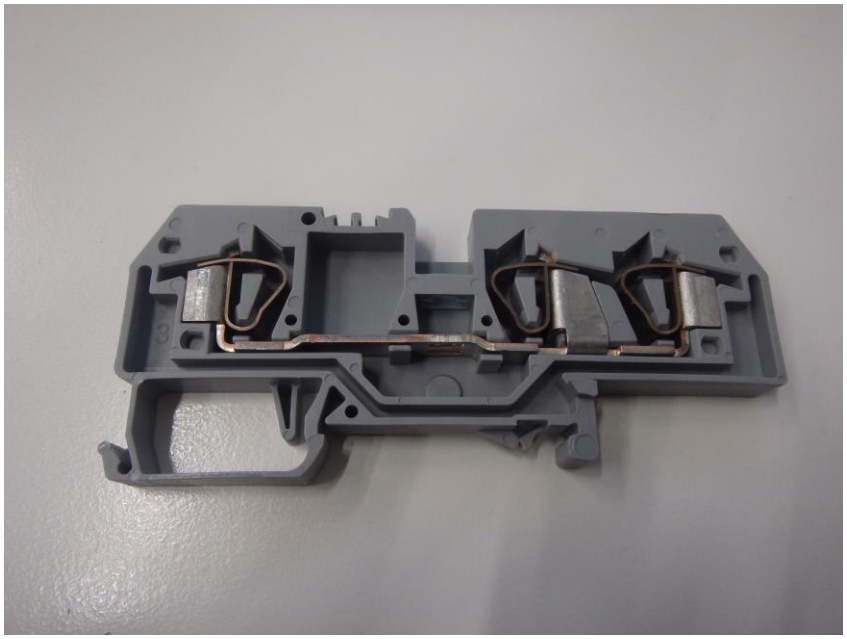
282-639



282-640



282-641



282-681

ETICS OD ECS 040-1 January 2019	Responsible CB DEKRA

TEST REPORT SUMMARY

Report Number ..... :	**2258819.51**
Date of issue ..... :	**2021-10-11**
Tested by (name, function, signature):	**W.C. van Ginkel** **(Technician Industrial Safety)**
Witnessed by (name, function, signature):	
Approved by (name, function, signature):	
Supervised by (name, function, signature):	**H.L. Schendstok** **(Project Manager Industrial Safety)**

Testing Laboratory ..... :	**DEKRA Certification B.V.**
Address ..... :	**Meander 1051, 6825 MJ Arnhem, The Netherlands**
Testing procedure ..... :	☐ ENEC ☒ CCA NTR ☐ ENEC based on IECEE CBTC with number: …….
Customer Testing Procedure..... :	☐ TMP/CTF Stage 1 ☐ WMT/CTF Stage 2 ☐ SMT/CTF Stage 3
Applicant ..... :	**WAGO Kontakttechnik GmbH & Co. KG**
Address ..... :	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Manufacturer ..... :	**WAGO Kontakttechnik GmbH & Co. KG**
Address ..... :	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Product ..... :	**Terminal blocks for copper conductors**
Model/Type reference ..... :	**282-and 782**
Trademark ..... :	WAGO
Ratings ..... :	**282: 6 mm², 782: 6 mm²**
Certification Scheme ..... :	☐ ENEC ☒ CCA ☐ Other: _____
Standard(s) ..... :	**EN 60947-7-2: 2009, in conjunction with EN 60947-1: 2007 + A1:2012 + A2:2014**

☒ The text of the a.m. European Standard was approved by CENELEC is equivalent with the corresponding IEC Publication.

☐ The text of the a.m. European Standard was approved by CENELEC with agreed common modifications and is not equivalent with the corresponding IEC Publication. An EU Deviation Addendum has to be issued.

This EN test report consists of the following parts:

☒ IEC Test Report Number..... :	**2258819.51**
☐ EU Deviation Addendum..... :	

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This ECS document together with the test report is only valid if signed by an approved ENEC or CCA Testing Laboratory and accompanied by the associated ENEC Licence or CCA Notification of Test Results, issued by a Certification Body member of ECS.

Test Report issued under the responsibility of:

DEKRA

TEST REPORT
IEC 60947-7-2
Low-voltage switchgear and controlgear
Part 7: Ancillary equipment
Section Two: Protective terminal blocks for copper conductors

Report Number. .....:	**2258819.51**
Date of issue.....:	**2021-10-11**
Total number of pages	**33 pages**
Name of Testing Laboratory preparing the Report .....:	**DEKRA Certification B.V.** **Meander 1051, 6825 MJ Arnhem, The Netherlands**
Applicant's name.....:	**WAGO Kontakttechnik GmbH & Co.KG**
Address .....:	**Hansastrasse 27, 32423 Minden/Westfalen, Germany**
Test specification:	
Standard .....:	IEC 60947-7-2:2009 (Third Edition) in conjunction with IEC 60947-1 (Fifth Edition) + A1:2012 + A2:2014
Test procedure .....:	CB Scheme
Non-standard test method .....:	N/A
Test Report Form No.....:	IEC60947_7_2B
Test Report Form(s) Originator ....:	DEKRA Certification B.V.
Master TRF .....:	Dated 2016-01

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description..... :	**Protective terminal block for copper conductors**
Trade Mark..... :	WAGO
Manufacturer..... :	**WAGO Kontakttechnik GmbH & Co.KG**
Model/Type reference..... :	**282 / 782**
Ratings..... :	**6 mm²**

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	**DEKRA Certification B.V.**	
Testing location/ address.....:		**Meander 1051, 6825 MJ Arnhem, The Netherlands**	
☐	**Associated CB Testing Laboratory:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:		**W.C. van Ginkel (Technician Industrial Safety**	
Approved by (name, function, signature)...:		**H.L. Schendstok (Project Manager Industrial Safety)**	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature) .....:			
Witnessed by (name, function, signature)..:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature)..:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment): N/A

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
<u>Project 2195540.50</u> **complete examination** **The tests are carried out on 782-607 and 282-868.** **Additional tests are carried out on 282-607.** **<u>Project 2258819.51</u>** **This test report replaces Test Report 2195540.50 issued on 1 November 2016, due to the fact that types are added, see Test report 2258819.50.**	**DEKRA Certification B.V.** **Meander 1051, 6825 MJ Arnhem,** **The Netherlands**

Summary of compliance with National Differences (List of countries addressed):

☒ **The product fulfils the requirements of EN 60947-7-2: 2009**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

WAGO	WAGO
282	**782**
IEC 60947-7-2	**IEC 60947-7-2**
6 mm²	**6 mm²**

Test item particulars .....:	
Classification of installation and use.....:	
Supply Connection .....:	
Particulars: test item vs. test requirements	
- method of fixing :	**top hat rail 35 mm**
- number of poles..... :	**1**
- type of clamping unit ..... :	**screw-less protective terminal block for copper conductors**
- ability to receive conductors..... :	**unprepared conductors: flexible or rigid**
- number of terminals on terminal assembly ..... :	**2 or 3**
- PE or PEN functions ..... :	**PE**
- rated cross-section (mm²)..... :	**6**
- rated connecting capacity (mm²)..... :	**0,2 - 6 rigid or flexible**
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing ..... :	
Date of receipt of test item..... :	**02-2013 / 10- 2015 / 07-2016 / 08-2016 / 09-2021**
Date (s) of performance of tests ..... :	**02-2013 / 10-2015 / 07-2016 / 08-2016 / 09-2021**
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☒ comma / ☐ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... :	**Wago Elwag sp.z.o.o.** **ul. Piekna 58 a** **50-506, Wroclaw, Poland** **Wago Elwag** **Innowacyjna 2** **55-330 Wroblowice, Poland** **Wago Pvt. Ltd.** **C-27, Sector-58, Phase III** **201301 Noida Uttar Pradesh, India** **Wago Electronic (Tianjin) Co. Ltd.** **No. 5 Quanhui Road** **Wu Qing Development Area** **301700 Tianjin, China** **WAGO Kontakttechnik GmbH & Co. KG** **Hansastraße 27, 32423 Minden/Westfalen** **Germany** **WAGO Kontakttechnik GmbH & Co. KG, Werk Sondershausen** **Waldstrasse 1, 99706, Sondershausen** **Germany** **WAGO Contact S.A.** **Route de l'Industrie 19, CP 168, 1564,** **Domdidier, Switzerland** **WAGO Kontakttechnik GmbH & Co. KG** **Cammer Str. 17,** **32423 Minden** **Germany**
General product information: See page 29 to 33	

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict

5	**PRODUCT INFORMATION**		
5.1	**Marking**		
	Terminal block shall be marked with:		
	- manufacturer's name or trademark	WAGO	**P**
	- type designation	**282 or 782**	**P**
5.2	**The following information shall be stated by the manufacturer if applicable, e.g. in the manufacturer's data sheet, or his catalogue or on the packing unit:**		
	- manufacturer's claim for compliance with IEC 60 947-7-2	**IEC 60947-7-2 in catalogue**	**P**
	- rated cross-section	**6 mm² in catalogue**	**P**
	- rated connecting capacity	**in catalogue 0,2 - 6 mm²**	**P**
	- service conditions if different from those of Cl. 6.		**N/A**
	The manufacturer shall declare if the protective conductor terminal block rated equal to or above 10 mm^2 (AWG 8) is intended for PE function only.		**P**

7.	**CONSTRUCTION**		
7.1	**Constructional requirements**		
7.1.1	Terminals		
	Terminals shall permit a reliable connection between the conductor clamping unit and the clamping unit to the support		**P**
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength		**P**
	Clamping units connections shall be such that necessary contact pressure is maintained		**P**
	Clamping units shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal		**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Clamping units shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operation of equipment and the insulation voltage shall not be reduced below the rated value		**P**
	Clamping units shall allow the conductor to be connected by means ensuring that a reliable mechanical linkage and electrical contact is properly maintained		**P**
	Clamping units shall be able to withstand the forces that can be applied through the connected conductors		**P**
	Contact pressure is not transmitted through insulation materials		**P**
7.1.2	Connection of support		
	Protective conductor terminal blocks are provided with means that allow them to be securely attached to the corresponding support without risk of galvanic corrosion		**P**
	The design of the protective conductor terminal blocks shall clearly show how the fixation has to be made to ensure the correct conducting connection to appropriate support		**P**
	The clamping connection to the support shall only be released by means of tools		**P**
7.1.3	Clearances and creepage distances		
	Clearances and creepage distances do not apply to protective conductor terminal blocks		**P**
7.1.4	Terminal identification and marking:		
	- terminal blocks shall have provision, or at least space, for identification marks or numbers for each terminal or terminal assembly to be related to the circuit of which it is to form a part		**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	- any partial insulated protective conductor terminal blocks shall be coloured green and yellow		**P**
7.1.5	Resistance to abnormal heat and fire		
	Needle flame test for insulation materials of terminal blocks (see 8.5)	**5 s**	**P**
7.1.6	Rated cross section and rated connecting capacity		
	Terminal blocks are so designed that conductors of the rated cross-section and/or the rated connecting capacity can be accepted	**0,2 mm² – 6 mm²** **flexible or rigid**	**P**
7.1.7	Protective conductor mounting rails		
	Mounting rails may be used as protective conductor busbars, provided the values specified in Table A.1 for thermal short-time withstand current and the thermal rated current are not exceeded	**top hat rail 35 mm**	**p**
	Other types of mounting rails may be used for this purpose if the values of Table A.1 are comparable		**N/A**
	Steel protective conductor busbars are not allowed to be used as a PEN conductor		N/A
8.	**TESTS**		
8.3	**Verification of mechanical characteristics**		
8.3.2	Attachment of the terminal block on its support		
	mounting rail ..... :	**top hat rail 35 mm**	—
	torque (Nm) clamping to support ..... :	**-**	—
	steel pin diameter (mm) ..... :	**2,8**	—
	tightening torque clamping units (Nm) ..... :	**-**	—
	force (N) ..... :	**5 N**	—

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	During the test, no terminal block shall work free from its rail or support, nor suffer any other damage		**P**
8.3.3.1	Test of mechanical strength of clamping units **(type 282-607)**		
8.2.4.2	Mechanical strength of terminals (IEC 60947-1)		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 separate clamping units		**P**
	Voltage drop before and after mechanical strength test		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**terminal 1: 0,90** **terminal 2: 3,00**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 1,00** **terminal 2: 2,85**	**P**
	minimum cross-section of a flexible conductor (mm²) ..... :	**0,2**	—
	test current (A) d.c. ..... :	**0,4**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**terminal 1: 0,68** **terminal 2: 1,40**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 0,65** **terminal 2: 1,20**	**P**
	Mechanical strength of the clamping to support		

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	- rail profile ..... :	**top hat rail 35 mm**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 separate clamping units		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 6,4 mV ..... :	**terminal 1: 2,37** **terminal 2: 2,85**	**P**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 2,45** **terminal 2: 2,97**	**P**
8.3.3.1	Test of mechanical strength of clamping units **(type 282-686)**		
8.2.4.2	Mechanical strength of terminals (IEC 60947-1)		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 separate clamping units		**P**
	Voltage drop before and after mechanical strength test		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**terminal 1: 2,21** **terminal 2: 2,18**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 2,17** **terminal 2: 2,34**	**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	minimum cross-section of a flexible conductor (mm²) ..... :	**0,2**	—
	test current (A) d.c. ..... :	**0,4**	—
	voltage drop (mV) before mechanical strength test not exceeding 3,2 mV ..... :	**terminal 1: 0,71** **terminal 2: 0,75**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 0,78** **terminal 2: 0,69**	**P**
	Mechanical strength of the clamping to support		
	- rail profile ..... :	**top hat rail 35 mm**	—
	diameter of thread (mm) ..... :	**-**	—
	torque (Nm) ..... :	**-**	—
	5 times on 2 separate clamping units		
	rated cross-section of a rigid conductor (mm²) ... :	**6**	—
	test current (A) d.c. ..... :	**4,1**	—
	voltage drop (mV) before mechanical strength test not exceeding 6,4 mV ..... :	**terminal 1: 1,89** **terminal 2: 2,18**	**P**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
	voltage drop (mV) after mechanical strength test not exceeding 150% of the value measured before mechanical strength test ..... :	**terminal 1: 2,15** **terminal 2: 2,31**	**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
8.3.4.2	Testing for damage to and accidental loosening of conductors of a terminal block (flexion test)		
	conductor of the smallest cross-section (mm²) ... :	**0,2 mm² rigid and flexible**	—
	number of conductor of the smallest cross-section ..... :	**1**	—
	torque (Nm) ..... :	**-**	—
	diameter of bushing hole (mm) ..... :	**6,4**	—
	height between the equipment and the platen (mm) ..... :	**260**	—
	mass at the conductor(s) (kg) ..... :	**0,3**	—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	Pull-out test		
	force (N) ..... :	**10**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	conductor of the rated cross-section (mm²) ..... :	**6 rigid and flexible**	—
	number of conductor of the rated cross-section .. :	**1**	—
	torque (Nm) ..... :	**-**	—
	diameter of bushing hole (mm) ..... :	**9,5**	—
	height between the equipment and the platen (mm) ..... :	**280**	—
	mass at the conductor(s) (kg) ..... :	**1,4**	—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**
	Pull-out test		
	force (N) ..... :	**80**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	conductor of the largest cross-section (mm²) ..... :		—
	number of conductor of the largest cross-section :		—
	torque (Nm) ..... :		—
	diameter of bushing hole (mm) ..... :		—
	height between the equipment and the platen (mm) ..... :		—
	mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**
	Pull-out test		
	force (N) ..... :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		
	conductor of the largest or smallest cross-section (mm²) ..... :		—
	number of conductor of the largest or smallest cross-section ..... :		—
	torque (Nm) ..... :		—
	diameter of bushing hole (mm) ..... :		—
	height between the equipment and the platen (mm) ..... :		—
	mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**
	Pull-out test		
	force (N) ..... :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**N/A**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
8.3.4.4	Verification of rated cross section and rated connecting capacity		
	One conductor of the two next smaller cross-sections can be unhindered and connected in each clamping unit of one terminal block (up to 35 mm²)	**0,2 mm² - 6 mm² rigid or flexible**	**P**
8.4.3	Dielectric tests **(type 282-607)**		
	Dielectric test, Uimp indicated:		
	- The test is made on protective terminal blocks installed with terminal blocks of the same series and size according to the manufactures instructions rated cross-section (mm²) / type / conductor end length (mm) ..... :	**6 / solid / 10**	—
	- rated impulse withstand voltage (kV) ..... :	**6**	—
	- test Uimp main circuits (kV) ..... :	**7,3**	**P**
	Dielectric test, Uimp not indicated:		
	- The test is made on protective terminal blocks installed with terminal blocks of the same series and size according to the manufactures instructions rated cross-section (mm²) / type / conductor end length (mm) :	**6 / solid / 10**	—
	- rated insulation voltage (V) ..... :	**800**	—
	- test voltage for 60 sec (V) ..... :	**3000 V for 5 s According to IEC 60947-1 A2:2014; re-testing according to 60 s is not necessary**	**P**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
8.4.3	Dielectric tests **(type 282-868)**		
	Dielectric test, Uimp indicated:		
	- The test is made on protective terminal blocks installed with terminal blocks of the same series and size according to the manufactures instructions rated cross-section (mm²) / type / conductor end length (mm) ..... :	**6 / solid / 10**	—
	- rated impulse withstand voltage (kV) ..... :	**6**	—
	- test Uimp main circuits (kV) ..... :	**7,3**	**P**
	Dielectric test, Uimp not indicated:		
	- The test is made on protective terminal blocks installed with terminal blocks of the same series and size according to the manufactures instructions rated cross-section (mm²) / type / conductor end length (mm) :	**6 / solid / 10**	—
	- rated insulation voltage (V) ..... :	**500**	—
	- test voltage for 60 sec (V) ..... :	**1890**	**P**
8.4.5	Temperature-rise test		
	Temperature rise conditions:		
	- test current (A) ..... :		—
	- cross-section of the conductor (mm²) ..... :		—
	- torque (Nm) clamping unit ..... :		—
	- torque (Nm) clamping to support ..... :		—
	Temperature-rise without support		
	- temperature-rise does not exceed 45 K	see appended table 8.4.5	**N/A**
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :		—
	- voltage drop (mV) before temperature-rise test not exceeding 3,2 mV ..... :	1 – 2 – 3 – 4 – 5 –	**N/A**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature rise test ..... :	1 – 2 – 3 – 4 – 5 –	**N/A**
	Temperature-rise with support		
	- rail profile and material ..... :		—
	- temperature-rise does not exceed 45 K ..... :	1 – 2 –	—
	Voltage drop before and after temperature-rise test:		
	- test current (A) d.c. ..... :		—
	- voltage drop (mV) before temperature-rise test not exceeding 6,4 mV ..... :	1 – 2 –	**N/A**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
	- voltage drop (mV) after temperature-rise test not exceeding 150% of the value measured before temperature-rise test ..... :	1 – 2 –	**N/A**
8.4.6	Short-time withstand current test **(type 282-607)**		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) clamping unit ..... :	**-**	—
	- rail profile and material ..... :	**top hat rail 35 mm**	—
	- torque (Nm) clamping to support ..... :	**-**	—
	Test current from clamping unit to clamping unit (1-1)		
	- test current (A) ..... :	**1 - 720** **2 - 720** **3 - 720**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- duration of the test current (s) ..... :	**1 - 1** **2 - 1** **3 - 1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop after short-time withstand current test		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) after short-time withstand current test not exceeding 3,2 mV ..... :	**1 – 1,5**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Test current from clamping unit to support (2-2)		
	- test current (A) ..... :	**1 - 720** **2 - 720** **3 - 720**	—
	- duration of the test current (s) ..... :	**1 - 1** **2 - 1** **3 - 1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop after short-time withstand current test		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) after short-time withstand current test not exceeding 6,4 mV ..... :	**1,75 – 2,00**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
8.4.6	Short-time withstand current test **(type 282-868)**		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- torque (Nm) clamping unit ..... :	**-**	—
	- rail profile and material ..... :	**top hat rail 35 mm**	—
	- torque (Nm) clamping to support ..... :	**-**	—
	Test current from clamping unit to clamping unit (1-1)		
	- test current (A) ..... :	**1 - 720** **2 - 720** **3 - 720**	—
	- duration of the test current (s) ..... :	**1 - 1** **2 - 1** **3 - 1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop after short-time withstand current test		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) after short-time withstand current test not exceeding 3,2 mV ..... :	**1 – 2,00**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	Test current from clamping unit to support (2-2)		
	- test current (A) ..... :	**1 - 720** **2 - 720** **3 - 720**	—

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Clause	Requirement – Test	Result - Remark	Verdict
	- duration of the test current (s) ..... :	**1 - 1** **2 - 1** **3 - 1**	—
	At the end of the test, continuity shall exist on the test sample assembly and the terminal blocks shall not show any cracking, breakage or other critical damage		**P**
	Voltage drop after short-time withstand current test		
	- cross-section of the conductor (mm²) ..... :	**6**	—
	- test current (A) d.c. ..... :	**4,1**	—
	- voltage drop (mV) after short-time withstand current test not exceeding 6,4 mV ..... :	**1,75 – 2,04**	**P**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
8.4.7	Ageing test (for screwless-type terminal blocks only) **type 281-530**		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section solid or stranded (mm²) ..... :	**6 mm² on request of manufacturer test carried out with flexible**	—
	Heating cabinet is increased, in each cycle to (°C) ..... :	**85 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**4,1**	—
	Rail profile and material ..... :		—
	Torque (Nm) clamping to support ..... :	**top hat rail 35 mm**	—
	Voltage drop after 0 cycles:		
	- requirement for clamping unit to clamping unit: ≤ 3,2 mV (mV) ..... :	**0,97 – 2,82**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- requirement for clamping unit to support: ≤ 6,4 mV (mV) ..... :	**2,42 – 3,2**	**P**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement for clamping unit to clamping unit: 4,8 mV (mV) ..... :	**0,97 – 2,82**	**P**
	- requirement for clamping unit to support: 9,6 mV (mV) ..... :	**2,82 – 3,2**	**P**
	Voltage drop after the 48th cycle		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,91 – 2,54**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,54 – 3,25**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,89 – 2,58**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,53 – 3,30**	**P**
	Voltage drop after the 96th cycle:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,86 – 2,50**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,54 – 3,35**	**P**
	Voltage drop after the 120th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,88 – 2,56**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,59 – 3,5**	**P**
	Voltage drop after the 144th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**0,87 – 2,55**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,54 – 3,65**	**P**
8.4.7	Ageing test (for screwless-type terminal blocks only) **type 282-868**		
	Maximum ambient temperature (°C) ..... :	**40 °C**	—
	Rated cross-section solid or stranded (mm²) ..... :	**6 mm² solid**	—
	Heating cabinet is increased, in each cycle to (°C) ..... :	**85 °C**	—
	Test current (A) d.c. for measurement of the voltage drop ..... :	**4,1**	—
	Rail profile and material ..... :	**top hat rail 35 mm**	—
	Torque (Nm) clamping to support ..... :	**-**	—
	Voltage drop after 0 cycles:		

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement for clamping unit to clamping unit: ≤ 3,2 mV (mV) ..... :	**2,16 – 2,49**	**P**
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV		**N/A**
	- requirement for clamping unit to support: ≤ 6,4 mV (mV) ..... :	**2,29 – 2,55**	**P**
	If the measured value exceeds 6,4 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 4,8 mV		**N/A**
	Voltage drop after the 24th cycle:		
	- requirement for clamping unit to clamping unit: 4,8 mV (mV) ..... :	**2,16 – 2,62**	**P**
	- requirement for clamping unit to support: 9,6 mV (mV) ..... :	**2,29 – 2,53**	**P**
	Voltage drop after the 48th cycle		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,29 – 2,52**	**P**
	Voltage drop after the 72nd cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,29 – 2,52**	**P**
	Voltage drop after the 96th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,29 – 2,52**	**P**
	Voltage drop after the 120th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,28 – 2,52**	**P**
	Voltage drop after the 144th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,29 – 2,52**	**P**

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Clause	Requirement – Test	Result - Remark	Verdict
	Voltage drop after the 168th cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,62**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,29 – 2,52**	**P**
	Voltage drop after the 192nd cycle:		
	- requirement for clamping unit to clamping unit: ≤ 4,8 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,17 – 2,61**	**P**
	- requirement for clamping unit to support: ≤ 9,6 mV or 1,5 times the value measured after the 24th cycle (mV) ..... :	**2,34 – 2,52**	**P**
	Pull-out test		
	force (N) ..... :	**80 N**	—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		**P**

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Clause	Requirement – Test	Result - Remark	Verdict
8.5	Verification of thermal characteristics are checked by the needle flame test		
	Before the test, the terminal blocks are stored for 24 h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%		**P**
	The flame is applied for 10 s. for insulation walls <1 mm and / or an area < 100 mm², the flame is applied for 5 s.	**5 s**	**P**
	The terminal blocks are considered to have passed the test if the duration of burning is < 30s in case of ignition. Moreover, the tissue paper on the pinewood board shall not ignite if burning or glowing particles fall from the terminal block.	**no flame**	**P**
8.6	Verification of EMC characteristics		
	Subclause 8.4 of IEC 60947-1 applies with the following addition		**N/A**
8.6.1	Immunity		**N/A**
	Terminal blocks within the scope of this standard are not sensitive of electromagnetic disturbances and therefore no immunity tests are necessary.		**N/A**
8.6.2	Emission		**N/A**
	Terminal blocks within the scope of this standard do not generate electromagnetic disturbances and therefore no emission tests are necessary.		**N/A**

IEC 60947-7-2			
Clause	Requirement – Test	Result - Remark	Verdict

8.4.3	**TABLE: Dielectric Strength**		
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
282-607		**3000**	**No**
282-686		**1890**	**No**
Supplementary information:			

8.4.5	**TABLE: Heating Test**		
	Test voltage (V):		—
	Ambient (^{o}C):.....		—

Thermocouple Locations	max. temperature measured, (^{o}C)	max. temperature limit, (^{o}C)
Supplementary information:		

General product data

product	:	terminal block for copper conductors for mounting on a rail
trade name	:	WAGO
types	:	282, 782
rated connecting capacity	:	6 mm² rigid or flexible
connectable conductors	:	0,2 mm² - 6 mm² rigid or flexible
material	:	thermoplastic material grey, light grey, dark grey, blue, white, orange red, black, yellow and yellow/green
method of mounting	:	types 282-102, -103 and -105; for mounting on G-profile 32 mm other types; for mounting on top hat rail 35 mm.

Product data of rail mounted through terminal blocks type 282

types	:	282-... with suffixes -101, -102, -104, -105, -191, -601, -604, -691, -901, -902, -903, -904, -905, -906, -992
rated voltage	:	800 V
rated impulse withstand voltage	:	8 kV
description	:	two-conductor through terminal block, 1-pole.
type	:	282-133
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor through terminal block, 1-pole.
types	:	282-... with suffixes-681, -682, -683, -684, -685, -686, -993, -694, -699
rated voltage	:	800 V
rated impulse withstand voltage	:	8 kV
description	:	three-conductor through terminal block, 1-pole.
types	:	282-... with suffixes-865, -866
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	three-conductor through terminal block, 1-pole, with test plug. type 282-865 is provided with a branch for a connection bridge.
type	:	282- … with suffixes -841, -841/049-000
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	41 A
description	:	two-conductor through terminal block, with touch-proof test sockets, 1-pole. type 282-841/049-000 is without touch-proof sockets.

Product data of rail mounted earth terminal blocks type 282

types	:	282-... with suffixes-107, -607, -907, -108, -107/999-950, -607/999-950,-907/999-950
description	:	two-conductor earth terminal block, 1-pole.
types	:	282-... with suffixes-687, -687/999-950
description	:	three-conductor earth terminal block, 1-pole.
type	:	282-868
description	:	three-conductor earth terminal block, 1-pole

Product data of disconnect terminal blocks type 282

types	:	282-... with suffixes-132, -136, -131, -135, -138, -139, -140, -141
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor disconnect terminal block, 1-pole.
types	:	282-... with suffixes -695, -697
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	two-conductor disconnect terminal block, 1-pole.
types	:	282-... with suffixes -860, -870
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
rated current	:	30 A
description	:	three-conductor disconnect terminal block, 1-pole, with test plug. type 282-870 is provided with a branch for a connection bridge. electrical endurance; 200operating cycles at 230 V ac, 5 A and power factor 0,6.
type	:	282-811
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor transverse disconnect terminal block 1-pole with one test plug.
type	:	282-821
rated voltage	:	500 V
rated impulse withstand voltage	:	6 kV
description	:	two-conductor longitudinal disconnect terminal block 1-pole with two test plugs.

Product data of ground conductor disconnect terminal blocks type 282

type	:	282-138
rated voltage	:	120 Vac
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-139
rated voltage	:	230 Vac
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-140
rated voltage	:	24 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light.2-poles.
type	:	282-141
rated voltage	:	48 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-638
rated voltage	:	120 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-639
rated voltage	:	230 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.
type	:	282-640
rated voltage	:	24 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light.2-poles.
type	:	282-641
rated voltage	:	48 Vac/dc
description	:	ground conductor terminal block with disconnect unit and indicator light. 2-poles.

Product data of rail mounted through terminal blocks type 782

types	:	782-... with suffixes -601, -604, -992
rated voltage	:	1000 V
rated impulse withstand voltage	:	8 kV
rated current	:	41 A
description	:	two-conductor through terminal block, 1-pole.

Product data of a rail mounted earth terminal blocks type 782

types	:	782-...with suffixes -607, -607/999-950
description	:	two-conductor earth terminal block, 1-pole.

Product data of a rail mounted neutral terminal blocks **type 782**

types	:	782-... with suffixes -613, -623
rated voltage	:	400 V
rated impulse withstand voltage	:	6 kV
rated current	:	41 A
description	:	two conductor through terminal block with neutral bus bar connection of a bus bar 3 x 10 mm, 1-pole.

The suitability of accessories like end-plates, end-stops, strain-relief plates, locking levers, marking strips, test plug adaptors, shorting bus, bridges, jumpers, stack-mounting hardware, etc shall be determined in the final combination.

These devices or their single modules may be combined to strips designated as 282-xxxx followed by an optional suffix /yyyy-zzzz where x, y, z are any customer number or digit (including characters), given for a specific end-use purpose.

Article numbers may be followed by optional suffix numbers e.g. 282-xxxx/xxxx-xxxx/xxxx-xxxx (up to 40 digits) where “x” may be any number (including characters) to represent printing variants, color variants, etc.

Photo of test samples:



282-868



782-607