
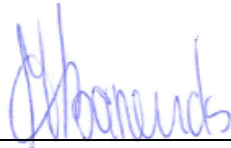




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| TEST REPORT IEC 61535 Installation Couplers intended for permanent connection in fixed installation | |
| Report Reference No. : 2167493.50-DCC Date of issue : 2013-11-26 Total number of pages : 9 | |
| CB Testing Laboratory : DEKRA Certification B.V. Address : Utrechtseweg 310, 6812 AR, Arnhem The Netherlands | |
| Applicant's name : Adels-Contact GmbH & Co. KG Address : Buchholzstrasse 4-46, D-51469 Bergisch Gladbach, Germany | |
| Test specification: Standard : IEC 61535 Edition 1.0: 2009-02 + A1: 2012 Test procedure : CB Non-standard test method : N/A | |
| Test Report Form No. : IEC61535 Test Report Form(s) Originator : KEMA Master TRF : Dated 2013-01 | |
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| Test item description : Appliance couplers Trade Mark : Adels / Wieland Manufacturer : Adels / Wieland Model/Type reference : AC166 G / GST 18 Ratings : 20 A – 250 V~ resp. 400 V~ | |

| | |
|---|--|
| Testing procedure and testing location: | |
| <input checked="" type="checkbox"/> CB Testing Laboratory: | DEKRA Certification B.V. |
| Testing location/ address | Utrechtseweg 320, 6812 AR Arnhem, The Netherlands |
| <input type="checkbox"/> Associated CB Test Laboratory: | |
| Testing location/ address | |
| Tested by (name + signature) | T. Cai  |
| Approved by (+ signature) | H.R.M. Barends  |
| <input type="checkbox"/> Testing procedure: TMP | |
| Tested by (name + signature) | |
| Approved by (+ signature) | |
| Testing location/ address | |
| <input type="checkbox"/> Testing procedure: WMT | |
| Tested by (name + signature) | |
| Witnessed by (+ signature) | |
| Approved by (+ signature) | |
| Testing location/ address | |
| <input type="checkbox"/> Testing procedure: SMT | |
| Tested by (name + signature) | |
| Approved by (+ signature) | |
| Supervised by (+ signature) | |
| Testing location/ address | |
| <input type="checkbox"/> Testing procedure: RMT | |
| Tested by (name + signature) | |
| Approved by (+ signature) | |
| Supervised by (+ signature) | |
| Testing location/ address | |

Summary of testing:**Tests performed (name of test and test clause):**

The tested connectors with breaking capacity (CBC) of the manufacturers Adels-Contact (Type AC 166 G ... / ... and Wieland (Type GESIS GST 18 ...) are meeting the requirements of compatibility, according to the enclosed program, regarding mechanical and electric functions. The following tests have been carried out :

- Clause 9 Dangerous compatibility
- Clause 12.1 Construction
- Clause 15 Construction of contacts
- Clause 16 Temperature rise
- Clause 18 Forces necessary to disengage the parts of the installation coupler

The above mentioned tests will be carried out on a regular basis by DEKRA Certification B.V.

Testing location:

DEKRA Certification B.V.
Utrechseweg 310, 6812 AR Arnhem
The Netherlands

Summary of compliance with National Differences:**Copy of marking plate:**

| | |
|---|------------|
| Test item particulars: | |
| - 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 | 2013-10-15 |
| Date (s) of performance of tests | 2013-11-25 |
| | |
| General remarks: | |
| <p>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 testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p> <p>For the above mentioned test programme the 5-pole versions have been used. The results as mentioned in this test report are also representative for the two-pole version with earthing contact</p> | |
| General product information: | |
| | |

| IEC 61535 | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------|--|---------------------|-----|
| 9 | DANGEROUS COMPATIBILITY | | |
| 9.1 | An installation coupler system shall be designed and construction so that unintended or improper connection is prevented | | P |
| | Engagement of the installation male and female connector is attempted in any unintended configuration | | P |
| | - 80 N (rated current 10 A, 16 A and 20 A) | | P |
| | - 120 N (rated current 25 A and 32 A) | | N/A |
| | Accessories with elastomeric or thermoplastic material: test carried out at (35 ± 2) °C | | P |
| 9.2 | It shall not be possible, within a given installation coupler system, to engage an installation male connector with an installation female connector | | P |
| | with a different number of live poles; exceptions may be admitted for installation female connectors which are specially constructed for the purpose of allowing engagement with installation male connectors of a lower number of poles, provided that no dangerous situation can arise | | P |
| | without earthing contact if the installation male connector is an installation male connector with earthing contact | Tested as delivered | N/A |
| | with different phase to neutral voltage ratings | Tested as delivered | N/A |
| | Compliance is checked by the test according to 9.1 | Tested as delivered | N/A |
| 9.3 | Installation couplers of different systems from the same manufacturer shall not be dangerously compatible | | N/A |
| | Compliance is checked by the test according to 9.1 | Tested as delivered | N/A |
| 9.4 | Not compatible with IEC 60309, IEC 60320, IEC 60906 | | P |

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| 12 | CONSTRUCTION | | |
| 12.1 | Installation couplers shall be so constructed that when inserting the installation male connector the earth connection, if any, is made at least 1 mm before the current-carrying contacts of the installation male connector become live | > 1 mm | P |
| | When withdrawing the installation male connector, the current-carrying male contacts shall separate before the earth connection is broken | | P |

| IEC 61535 | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| 15 | CONSTRUCTION OF CONTACTS | | |
| 15.1 | Installation female connector contact assemblies shall have sufficient resilience to ensure adequate contact pressure on installation male connector pins | | P |
| | Compliance is checked by the tests according to Clauses 16 to18 | | P |
| 15.2 | The resistance of connections including the earthing connection shall be sufficiently low | | P |
| | The contact resistance across the installation coupler is measured and it shall not exceed 1 mΩ per clamping unit | See table | P |
| | The contact resistance across the distribution block shall not exceed 10 mΩ for the combination | | N/A |
| 15.3 | Electrical connections shall be designed in such a way that contact pressure is not transmitted through insulating material | | P |

Adels male contact with Wieland female contact

| | |
|------------|---------|
| Terminal 1 | 0,60 mΩ |
| Terminal 2 | 0,56 mΩ |
| Terminal 3 | 0,53 mΩ |
| Neutral | 0,56 mΩ |
| Earthing | 0,49 mΩ |

Adels female contact with Wieland male contact

| | |
|------------|---------|
| Terminal 1 | 0,59 mΩ |
| Terminal 2 | 0,59 mΩ |
| Terminal 3 | 0,61 mΩ |
| Neutral | 0,61 mΩ |
| Earthing | 0,55 mΩ |

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| 16 | TEMPERATURE RISE | | |
| | Contacts and other current-carrying parts shall be so designed as to prevent excessive temperature rise due to current flow under normal operation | See appended table 16 | P |

| IEC 61535 | | | |
|-----------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

Adels female contact with Wieland male contact

| 16 | TABLE: Temperature rise test | | | |
|----------------------------|--|-----------------------------------|---|----------------|
| | Type and cross-sectional area of cord fitted to installation couplers..... : | 2,5 mm ² | | — |
| | Torque applied to screws of clamping units (Table 4) (Nm)..... : | 0,25 Nm: Adels 0,5 Nm: Wieland | | — |
| Specimen N° | Test circuit (Annex B) | Test current (Table 2) (A) | Measured temperature rise Δt of terminals and contacts (K): | Allowed ΔT (K) |
| 1 | 3 phases loaded | 20 | Max. 40,7 | 50 |
| 2 | 3 phases loaded | 20 | Max. 38,8 | 50 |
| 3 | 3 phases loaded | 20 | Max. 41,0 | 50 |
| 1 | Neutral - Earthing | 20 | Max. 34,4 | 50 |
| 2 | Neutral - Earthing | 20 | Max. 31,2 | 50 |
| 3 | Neutral - Earthing | 20 | Max. 31,7 | 50 |
| Supplementary information: | | | | |

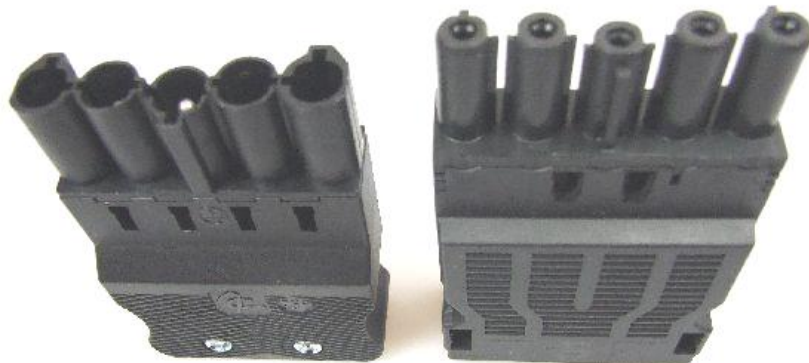
Adels male contact with Wieland female contact

| 16 | TABLE: Temperature rise test | | | |
|----------------------------|--|-----------------------------------|---|----------------|
| | Type and cross-sectional area of cord fitted to installation couplers..... : | 1,5 mm ² | | — |
| | Torque applied to screws of clamping units (Table 4) (Nm)..... : | 0,25 Nm: Adels 0,5 Nm: Wieland | | — |
| Specimen N° | Test circuit (Annex B) | Test current (Table 2) (A) | Measured temperature rise Δt of terminals and contacts (K): | Allowed ΔT (K) |
| 1 | 3 phases loaded | 20 | Max.39,2 | 50 |
| 2 | 3 phases loaded | 20 | Max.38,1 | 50 |
| 3 | 3 phases loaded | 20 | Max.38,8 | 50 |
| 1 | Neutral - Earthing | 20 | Max.31,7 | 50 |
| 2 | Neutral - Earthing | 20 | Max.30,3 | 50 |
| 3 | Neutral - Earthing | 20 | Max.31,5 | 50 |
| Supplementary information: | | | | |

| IEC 61535 | | | |
|-----------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 18 | FORCES NECESSARY TO INSERT AND TO WITHDRAW THE CONNECTOR | | |
| | Installation couplers shall be such that the installation coupler can be easily disengaged | | P |
| | The retaining means shall be rendered ineffective before the test. Installation couplers shall be engaged and disengaged 10 times | | P |
| | The pull-force measured during the 10 th disengagement shall not exceed 80 N | < 80 N | P |



Adels female connector Wieland male connector



Adels male onnector Wieland female connector