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| Prüfbericht - Nr.: 21176080_002 <i>Test Report No.:</i> | | | Seite 1 von 4 <i>Page 1 of 4</i> | | |
| Auftraggeber: <i>Client:</i> | | | Q3 Energieelektronik GmbH & Co.KG | | |
| Gegenstand der Prüfung: <i>Test item:</i> | | | DC-Freischaltbox 1000 V, 10 A | | |
| Bezeichnung: <i>Identification:</i> | | DC-Freischaltbox 1000 V, 10 A | Serien-Nr.: <i>Serial No.:</i> | | 1143007 |
| Wareneingangs-Nr.: <i>Receipt No.:</i> | | Testgerät vom Kunden | Eingangsdatum: <i>Date of receipt:</i> | | 09.11.2011 |
| Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i> | | | funktionsfähig <i>functional</i> | | |
| Prüfort: <i>Testing location:</i> | | | TÜV Rheinland LGA Products GmbH Am Grauen Stein 29; 51105 Köln | | |
| Prüfgrundlage: <i>Test specification:</i> | | | DIN EN 60947-3:2010-02 | | |
| Prüfergebnis: <i>Test Result:</i> | | | Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i> | | |
| Prüflaboratorium: <i>Testing Laboratory:</i> | | | TÜV Rheinland LGA Products GmbH Am Grauen Stein 29; 51105 Köln | | |
| geprüft/ tested by: | | | kontrolliert/ reviewed by: | | |
| 03.01.2012 | Daniel Winter (SV) |  | 12.01.2012 | Andreas Berghaus (SV) |  |
| <i>Datum</i> <i>Date</i> | <i>Name/Stellung</i> <i>Name/Position</i> | <i>Unterschrift</i> <i>Signature</i> | <i>Datum</i> <i>Date</i> | <i>Name/Stellung</i> <i>Name/Position</i> | <i>Unterschrift</i> <i>Signature</i> |
| Sonstiges/ Other Aspects: Auf Kundenwunsch wurde das Schaltvermögen und das Betriebsverhalten gemäß Abschnitt 7.2.4 geprüft. | | | | | |
| Abkürzungen: | | <i>P(ass) = entspricht Prüfgrundlage</i> <i>F(ail) = entspricht nicht Prüfgrundlage</i> <i>N/A = nicht anwendbar</i> <i>N/T = nicht getestet</i> | Abbreviations: | | <i>P(ass) = passed</i> <i>F(ail) = failed</i> <i>N/A = not applicable</i> <i>N/T = not tested</i> |
| Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i> | | | | | |

Prüfbericht – Nr.: 21176080_002

Test Report No.:

Seite: 2 von 4

Page: 2 of 4

Verwendete Messgeräte/Prüfmittel/Equipmentlist

| Prüfmittel/Equipment | Gerätenummer/ Ident.-Nummer Barcode-Nummer Equipment number | nächste Kalibrierung/ Überwachung next calibration/ surveillance |
|-----------------------------|--|---|
| High voltage tester | 02308 | 2012-08 |
| Timer | 02294 | 2012-03 |
| PV-Simulator (DC-Quelle) | --- | --- |
| Temperaturschreiber | 00051 | 2012-07 |
| Fluke Multimeter | 01301 | 2012-10 |

Prüfbericht – Nr.: 21176080_002

Test Report No.:

Seite: 3 von 4

Page: 3 of 4

Prüfgrundlage:

Standard:

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| 8.3.3 | TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS | | P |
| 8.3.3.3 | Making and breaking capacity | | P |
| | - utilization category | DC-21B | — |
| | - rated operational voltage U_e (V) | 1000 Vdc | — |
| | - rated operational current I_e (A) or power (kW) | 10 A | — |
| | Conditions for make/break operations, other than AC-23A/B: | | — |
| | - test voltage, $U = 1,05 \cdot U_e$(V): | L1: 1000 Vdc (max. voltage) | — |
| | - test current, $I = 1,5 \cdot I_e$ | L1: 15,0 A | — |
| | - power factor/ time constant | --- | — |
| | Number of make/break or make and break operations | 5 | — |
| | - recovery voltage duration (≥ 50 ms) | $\geq 0,05$ s | — |
| | - current duration (ms) | 15000 ms | — |
| | - time interval between operations | 15 s | — |
| 8.3.3.3.5 | Behaviour of the equipment during making and breaking capacity tests | no faults and no abrasion during testing | P |
| 8.3.3.3.6 | Condition of the equipment after making and breaking capacity tests | no faults and no abrasion after the test | P |
| 8.3.3.4 | Dielectric verification | | P |
| | test voltage: $2 \cdot U_e$ with a minimum of 1000V~.....: | 2000 Vdc | — |
| | No flashover or breakdown | See 8.3.4.2 | P |
| 8.3.3.5 | Leakage current | | |
| | test voltage ($1,1 U_e$) (V) | | — |
| | Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole | See 8.3.4.3 | N/A |
| | Leakage current (other utilization categories): ≤ 2 mA/pole) | See 8.3.4.3 | N/A |
| 8.3.3.6 | Temperature-rise verification | | P |
| | - conductor cross-section (mm ²) | See 8.3.4.4 | — |
| | - test current I_e (A) | See 8.3.4.4 | — |
| | Temperature-rise of main circuit terminals (≤ 80 K) | See 8.3.4.4 | P |

Prüfbericht – Nr.: 21176080_002

Test Report No.:

Seite: 4 von 4

Page: 4 of 4

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| 8.3.3.7 | Strength of actuator mechanism | | N/A |
| 8.3.4 | TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY | | P |
| 8.3.4.1 | Operational performance test | | P |
| | - utilization category | DC-21B | — |
| | - rated operational voltage (V) | 1000 Vdc | — |
| | - rated operational current (A) | 10 A | — |
| | Test conditions for electrical operation cycles: | | — |
| | - test voltage (V) | L1: 1000 Vdc | — |
| | - test current (A) | L1: 10 A | — |
| | - power factor/time constant | --- | — |
| | Number of cycles with current | 1500 | — |
| | Number of cycles without current | 8500 | — |
| | First test sequence (with/without current) | without current | — |
| | Second test sequence (with/without current) | with current | — |
| | - time interval between first and second test sequence | 15 s | — |
| 8.3.4.1.5 | Behaviour of the equipment during the operational performance test | no faults and no abrasion during testing | P |
| 8.3.4.1.6 | Condition of the equipment after the operational performance test | no faults and no abrasion after the test | P |
| 8.3.4.2 | Dielectric verification | | P |
| | test voltage: $2 \cdot U_e$ with a minimum of 1000V~..... | 2000 Vdc | — |
| | No breakdown or flashover | | P |
| 8.3.4.3 | Leakage current | | P |
| | test voltage (1,1 U_e) (V) | 1000 Vdc | — |
| | Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole | | N/A |
| | Leakage current (other utilization categories) ≤ 2 mA/pole | | N/A |
| 8.3.4.4 | Temperature-rise verification | | P |
| | - conductor cross-section (mm ²) | 4 mm ² | — |
| | - test current I_e (A) | 10,0 A | — |
| | Temperature rise of main circuit terminals ≤ 80 K ..: | 30,7 K | P |