

2008-12-18

Report about the type approval of the safety function “Safe standstill” within the Frequency AC Drive PowerFlex 700L

Report-No.: 968/EZ 230.01/08

Date 2008-12-18

Pages: 3

Test object: Adjustable Frequency AC Drive PowerFlex 700L
Frame 2, 400 V, 480 V

Customer: Rockwell Automation
6400 West Enterprise Drive
Mequon, WI 53092
United States of America

Manufacturer: Rockwell Automation
6400 West Enterprise Drive
Mequon, WI 53092
United States of America

Order-No./Date: Email from Mr. Daniel L. Stewart dated 2007-11-06

Test Institute: TÜV Rheinland Industrie Service GmbH
Automation, Software and Information Technology
Am Grauen Stein
51105 Köln
Germany

TÜV-Offer-No./Date: Cost information by email to Mr. Daniel L. Stewart dated 2007-10-08

TÜV-Order-No./Date: 9887020 dated 2007-11-07

Inspector: Dipl.-Ing. Thomas Steffens

Test location: See Test Institute

Test period: December 2008

The test results are exclusively related to the test samples.

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1. **Scope**

The already type approved safety function "Safe standstill" within the adjustable frequency AC Drive Powerflex 700L shall be used also for the frame 2 of this drive.

In order to add this new frame to the existing certificate a repetition of the relevant tests of the type approval was required.

2. **Standards as basis for the requirements and tests**

- [1] EN 954-1:1996
Safety of machinery - Safety-related parts of control systems
Part 1: General principles for design
- [2] EN ISO 13849-2:2003
Safety of machinery - Safety-related parts of control systems -
Part 2: Validation
- [3] EN 60204-1:2006
Safety of machinery - Electrical equipment of machines
Part 1: General requirements
- [4] EN 50178:1997
Electronic equipment for the use in power installations
- [5] EN 61800-3:2004
Adjustable speed electrical power drive systems -
Part 3: EMC product standard including specific test methods

3. **Identification of the device under test**

3.1 **Technical data**

All technical data of the devices under test can be found in the belonging instruction sheets and the documents listed below.

3.2 **Documents**

- Summary Report of TÜV Rheinland of North America (TRNA) no.: 30571246.003
dated 2008-08-18, 40 pages
- Notified Body Statement of Opinion, no. : 30860336.003-NBO, 2008-12-08

3.3 **Test sample, test set-up**

A test sample was not required. All required tests have been performed by Rockwell. The assessment has been carried out based on the provided documentation.

3.4 **Previous test reports**

Report-No. 968/EZ 230.00/06 dated 2006-06-27

4. **Test and test results**

4.1 **Assessment of the safety design**

The safety function "Safe standstill" or respectively "Safe Torque Off" which shall be used in frame 2 of the PF700L remains unaffected to the already type approved safety function which is used in the frames 3A and 3B. The safety function is described in detail in the report on the type approval no. 968/EZ 230.00/06 dated 2006-06-27.

The according test results can be taken over from this report.

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4.2 Electrical safety

The TÜV Rheinland of North America (TRNA) has performed the electrical safety certification according to the requirements of EN 50178. The results are documented in the report no.: 30571246.003.

The results are accepted by the Test Institute

4.3 Environmental tests

The environmental tests according to EN 50178 have been carried out by TÜV Rheinland of North America (TRNA). The results are documented in the report no.: 30571246.003.

The results are accepted by the Test Institute

4.4 EMC/EMI contemplation

The EMC tests were performed according to the applicable standards in order to show, that the requirements of the EMC Directive 2004/108/EC are fulfilled. The conformity to this directive has been confirmed by the notified body of TÜV Rheinland of North America.

The repetition of the tests with increased levels was not required as the safety circuit within the frame 2 remains unchanged.

The test results are accepted by the Test Institute.

5. Summary

The safety function of PF700L frame 2 remains unchanged compared to the already type approved safety function used in the frames 3A and 3B. The required tests for LVD and EMC have been repeated for the new frame 2. The test reports are present at the Test Institute and the results of the tests are accepted.

Therefore no objections exist against the introduction of the frame 2 of the PF700L.

The safety function "Safe standstill" of the frequency AC Drive Powerflex® 700L used in combination with the frames 2, 3A and 3B fulfils the requirements for safety category 3 according to EN 954-1 under the following prerequisites:

- Both safety inputs have to be used independently from each other.
- Due to the fact that a short circuit between the external wiring of the safety inputs will not be revealed by the system. The wiring has to be performed in such a way, that a fault exclusion acc. to ISO 13849-2 for the failures "short-circuits" is allowed. This is possible for example, when the cable is protected against external damage by cable ducting or armouring.
- The correct function of the safety function has to be tested in a periodic maintenance interval. The time period of this interval depends on the safety analysis of the system where the PF700S is installed.
- The possibility of a small movement of the motor resulting from simultaneous IGBT failures shall be taken into account during the hazard analysis of the application.
- Additional measures to keep the motor in the standstill position must be foreseen, if external forces may have an impact on the motor position.

The above listed conditions and the user manuals must be considered.

Cologne, 2008-12-18
TIS/ASI/Kst. 968 stf-nie

The expert



Dipl.-Ing. Thomas Steffens