



SAFETY COMPONENTS

Certificate of conformity

Related to EN/ IEC 61508, EN 954-1, ISO 13849-1 and NF EN 62061 standards

N° 117930/2010

The National Institute for Industrial Environment & Risks (INERIS – Institut National de l'Environnement Industriel et des Risques), a public industrial and commercial organisation, established by decree No. 90-1089 of 7 December 1990, under ecology and durable development ministries supervision,

issues a certificate of conformity related to EN/ IEC 61508 standard for the following product :

Trade mark: ACOPOSinverter

Manufacturer : **BERNECKER & RAINER INDUSTRIE (B&R)**
ELEKTRONIK GMBH
B&R STRASSE 1
5142 EGGELSBERG AUSTRIA

Type : P84

Certificate : **BERNECKER & RAINER INDUSTRIE (B&R)**
requested by

Description : The **ACOPOSinverter** products are variable speed drive dedicated to performing command and control functions for asynchronous motors. They include the **Power Removal** safety function which requires power supply to the motor to be interrupted when a dedicated button is switched off. It shall not be possible for the motor to generate a torque that can result in a hazardous movement.

This safety function, after examination is declared compliant with essential requirements for safety of the EN/ IEC 61508 standard.

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1. Functional Safety

The **Power Removal** safety function complies with functional safety levels and is declared classified as follows:

EN 954-1 (1996) – Safety of machinery – Safety-related parts of control systems.

Category 3 Part 1 – General principles for design.

EN ISO 13849-1 (June 2008) – Safety of machinery – Safety-related parts of control systems.

Category 3 PLd Part 1 – General principles for design.

NF EN 62061 (July 2008) – Safety of machinery - Functional safety of safety-related electrical electronic and programmable electronic control systems.

SILCL 2.

EN/ IEC 61508 – Functional safety of electrical / electronic / programmable electronic safety-related systems - 2010

SFF (safe failure fraction)	> 92%
Common mode considered	1%
PFH (Probability of failure per hour)	10^{-8}
SIL (Safety Integrity Level)	2

The **Power Removal** safety function is warranted to perform a stop **category 0 and category 1** related to the **EN 60204-1** standard. This mode corresponds to the removal of power from the motor, which is therefore allowed to freewheel.

These classification is described in INERIS documents reference DRA-10-117930-13768A.

2. Versions of configuration

- ✓ ACOPOSinverter range of products from 0,37 KW to 630 KW, corresponds to technologic sizes 2 to 15;
- ✓ The control-command software for the Power Removal safety function for the complete range are listed in the document DRA-10-117930-13768A.
- ✓ The hardware Versions comply with those listed in the document DRA-10-117930-13768A.

3. Evaluation

The **Power Removal** safety function integrated in **ACOPOSinverter** products has been assessed in compliance with the requirements of standards. A certification report has been produced by INERIS with the following reference DRA-10-117930-13768A.

4. Requirements for use

- ✓ The functional safety dedicated cable is to be carried out with cables in compliance with the EN 60204-1 standard. This cable shall respect the requirement for use given by B&R,
- ✓ The control-command means used for the PWR input activation shall comply with safety levels in accordance with the required safety levels for the intended application,
- ✓ A periodic maintenance test shall be performed at least once a year in order to verify the Power Removal safety function when the PWR input is activated.

Verneuil-en-Halatte, 2010 12 21



Director of the Certifying Body,
By delegation,
Deputy Manager of Certification

D. CHARPENTIER