LIFTINSTITUUT

DECLARATION OF COMPLIANCE

Issued by Liftinstituut B.V.

Declaration nr.	: NL14-400-1002-193-01	Revision nr.: 2
Description of the product	: Application of COMBIVERT F5 inverters without Motor Power Contactors	
Trademark, type	: KEB COMBIVERT F5 inverters with STO function	
Name and address of the manufacturers	: Karl E. Brinkmann GmbH Foersterweg 36 - 38 32683 Barntrup, Germany	KEB America, Inc. 5100 Valley Industrial Blvd. South USA-Shakopee, MN 55379
	KEB Power Transmission Technology (Shanghai) Co., Ltd. No.435, QianPu Road, Chedun Town Songjiang District CN-201611 Shanghai, P. R. China	
Name and address of the Applicant	: KEB America, Inc. 5100 Valley Industrial Blvd. South USA-Shakopee, MN 55379	
Declaration issued on the following requirements	: ASME A17.1-2010 clause 2.26.9.5 and 2.26.9.6, EN 81-1:1998 + A3:2009 clause 12.7	
Test laboratory	: None	
Date and number of the laboratory report	: None	
Date of examination	: February – July 2014	
Annex with this declaration	: Report belonging to the declaration of compliance nr.: NL14-400-1002-193-01 rev.2	
Additional remarks	: Annex H and F.6 examination and testing were not included in the examination.	
Conclusion	: Based on a review of the technical file the KEB COMBIVERT F5 inverters with STO function are considered to be in conformity with the relevant elevator standards. See annexed report.	

Amsterdam
Date of issue : 16-09-2014

ing. A.J. van Ommen
Manager Business Unit
Certification

Decision by

CERT05P

Report Declaration of Compliance

Reference number	:	NL14-400-1002-193-01
Date of issue of original report	:	July 17, 2014
Concerns	:	Lift component
No. and date of revision	:	2; September 16, 2014
Review / examination is based on the following requirements	:	ASME A17.1-2010 clause 2.26.9.5 and 2.26.9.6, EN 81-1:1998 + A3:2009 clause 12.7
Project no.	:	P130338-01

1. General specifications

Name and address manufacturer	:	Karl E. Brinkmann GmbH Foersterweg 36 - 38 32683 Barntrup, Germany KEB Power Transmission Technology (Shanghai) Co., Ltd. No.435, QianPu Road, Chedun Town Songjiang District CN-201611 Shanghai, P. R. China KEB America, Inc. 5100 Valley Industrial Blvd. South USA-Shakopee, MN 55379
Description of component	:	Application of COMBIVERT F5 inverters without Motor Power Contactors
Type	:	KEB COMBIVERT F5 inverters with STO function
Laboratory	:	-
Data of examination	:	February – July 2014; Rev.2; September 2014
Examination performed by	:	P.J. Schaareman

2. Description application

To provide state of the art stopping accuracy for elevators inverters are more and more used. Today drive manufacturers provide inverters with safe torque off functionality. This means basically that the safety circuit of the elevator is directly controlling the information to the drive if torque to the motor is allowed. Motor power contactors are not necessary any more.

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To be able to do this the drive manufacturer have to follow a process to prove that the safety and the reliability of this function is in accordance with the current state of the art. For the application in an elevator this is normally expressed as a SIL level. A separate approval (e.g. EC type examination certificate) issued by a certification body will show that a drive system fulfills the relevant safety requirement for application in elevators.

KEB adopted this approach in their drive system COMBIVERT F5. An EC type examination certificate is issued by TÜV Rheinland confirming the safe torque off functionality at the highest level for the relevant standards.

Technical details	:	COMBIVERT F5 inverters with STO control board
EC type-examination certificate Date	:	TÜV Rheinland, no. 01/205/5141/11 2011-07-22
Type designation	:	Control board: 1K.F5.030-0009, 2K.F5.030-0008 Used in inverters: xxF5Kxx-xxxx, xxF5Lxx-xxxx and xxF5Pxx-xxxx
Certificate based on standards	:	EN 61800-3, EN 61800-5-1, EN 61800-5-2, EN 62061, EN 13849-1, EN 60204 and IEC 61508 parts 1-7
Possible application	:	The safety function "Safe Torque off" (STO) complies with the relevant standards and can be used for applications up to cat.4 / PLe acc. to EN13849 and SIL3 acc. to EN62061 / IEC61508.

3. Review and examination

The review and examination is meant to provide a confirmation if the approach in applying the COMBIVERT F5 inverters is implemented correct.

For the review it was necessary to check the implementation of the COMBIVERT F5 inverters, the conformity considerations document, the TÜV Rheinland EC type examination certificate, the installation manual, the electrical diagrams and the board layout drawings.

The examination covered a check of the technical file whether compliance with the rules set out are met based on the product standards ASME A17.1-2010 and EN 81-1:1998 + A3:2009.

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4. Results

The application of the KEB COMBIVERT F5 inverters with STO functionality is considered to be in accordance with the requirements and conditions set out by ASME A17.1 and EN 81-1 + A3.

The approach allows the KEB COMBIVERT F5 with STO functionality to be applied in elevator control systems according ASME A17.1 and EN 81-1 + A3.

5. Conditions

On the declaration of compliance the following conditions apply:

- Installation, setting and commissioning of the KEB COMBIVERT F5 inverter shall be done accordingly the KEB installation manual.
- The conditions for applications stated in the TÜV EC type approval report shall be taken into account. For example: the inverter shall be installed in an IP54 cabinet.
- No safety chain of the elevator shall be connected directly to the inputs of the COMBIVERT F5 control card.
- The energy supply to the brake and/or valve(s) still need to be switched off according the relevant elevator standard.

6. Conclusions

Goal of the review and examination was to check and analyze if the approach to apply inverters with safe torque off functionality in the control of an elevator.
The COMBIVERT F5 with STO functionality inverters proved to be in accordance with the requirements and conditions set.
The review and examination confirm that the application of the COMBIVERT F5 with STO in the elevator control system fulfill the current state of the art. The inverters can be applied for the elevator control systems.

Based upon the results of this review and examination Liftinstituut B.V. issues this declaration of compliance.

Prepared by:

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Decision by:

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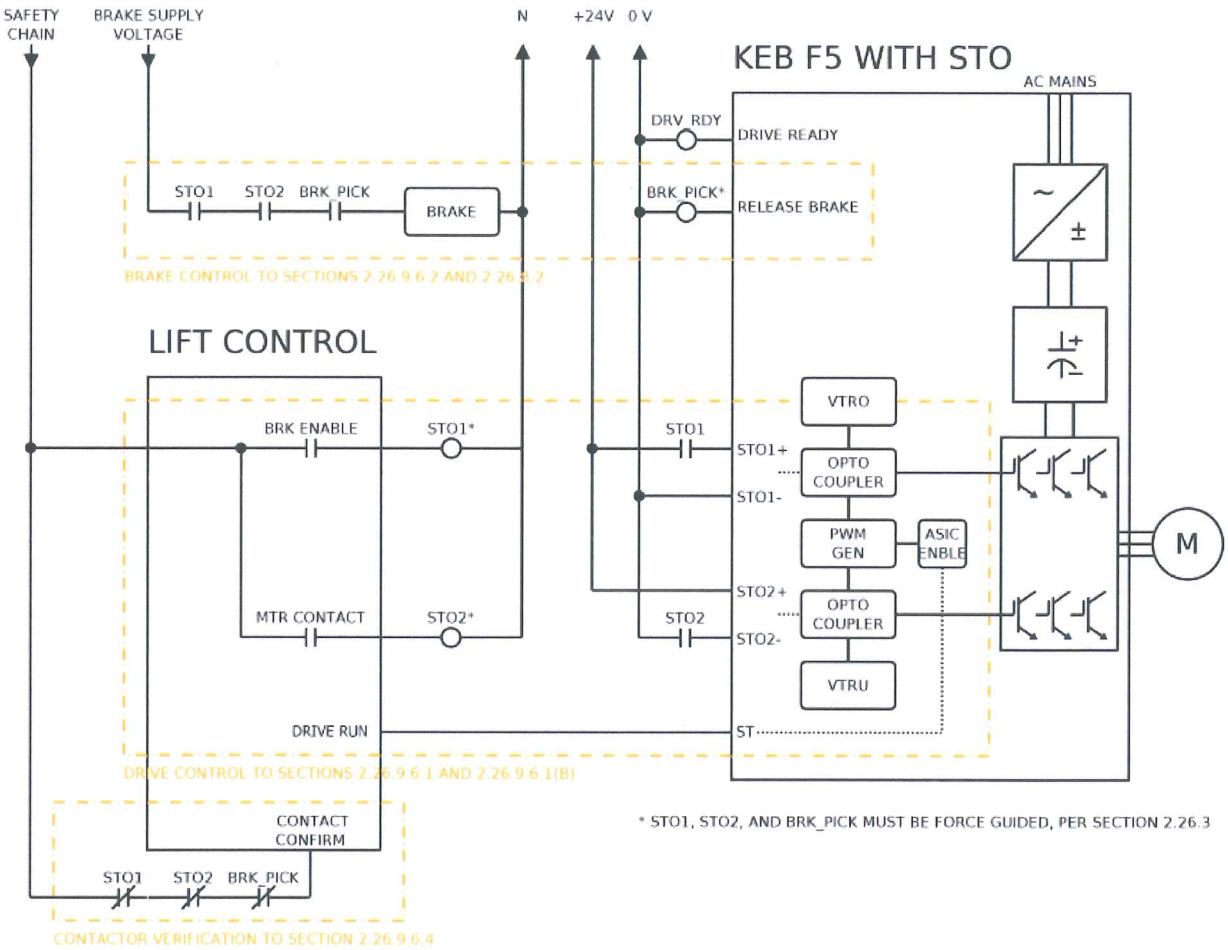
Annexes

Annex 1a : Approach for COMBIVERT F5 inverter application in elevator control system (example ASME A17.1:2010)



Example Control Scheme to Meet ASME A17.1-2010

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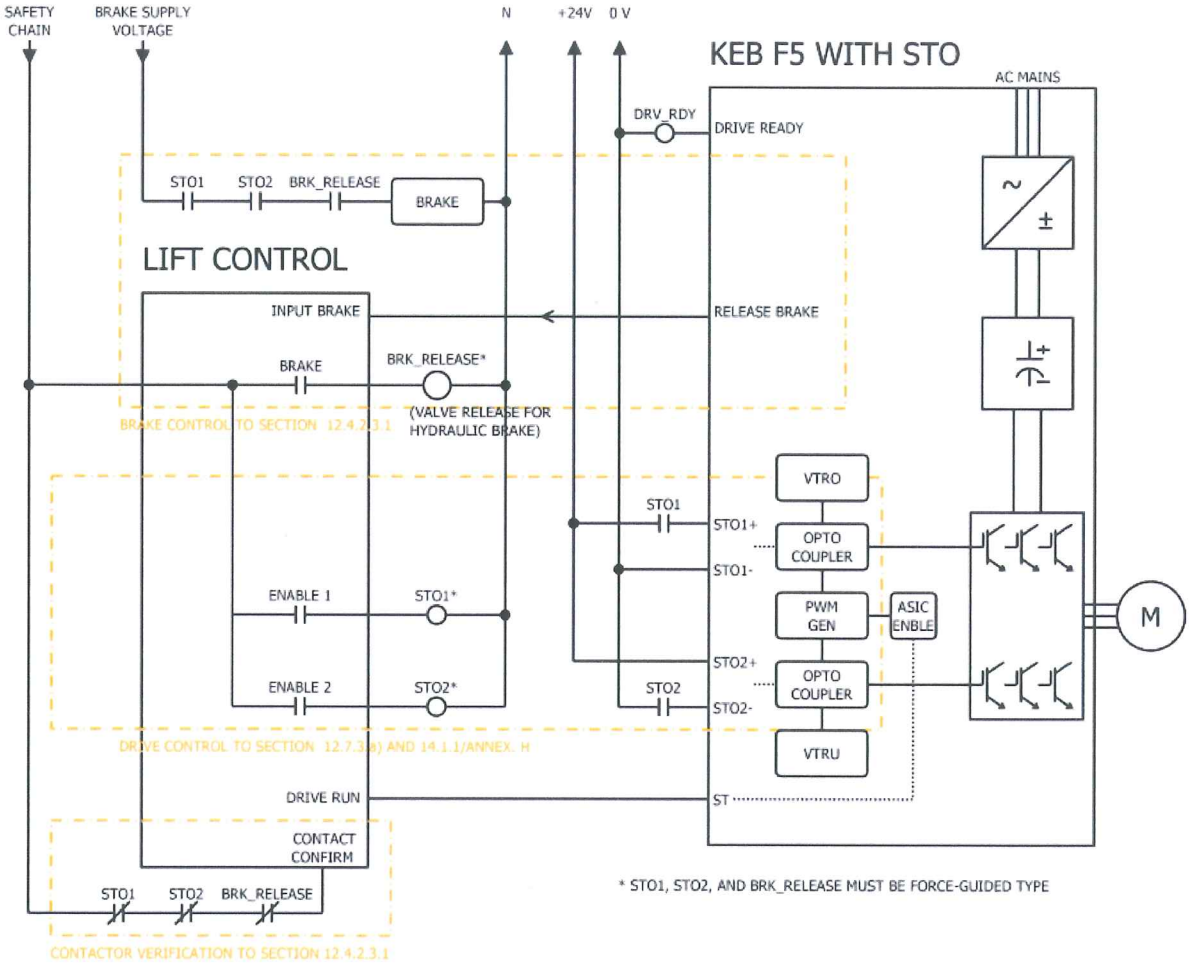
Annex 1b : Approach for COMBIVERT F5 inverter application in elevator control system (EN 81-1/2:1998+A3:2009)



Example Control Scheme to Meet EN81-1:1998+A3:2009

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Annex 2 : Documents of the Technical File which were subject of the examination

Title	document number	date
Conformity document to elevator standards with the F5	elevator_sto_draft.pdf	19-09-2013
COMBIVERT F5 installation manual	F5Safety_GB_00F5NESK000_Rev1J_2013_M08.pdf	30-09-2013
EC Declaration of Conformity	CE-Konformitaet_F5_H.pdf	30-09-2013
TÜV certificate for KEB COMBIVERT F5 STO without contactors.	Certificate TÜV 01/205/5141/11	30-09-2013
TÜV Testreport	F5_STO_TestReport_M314_00_11_de.pdf	30-09-2013
TÜV Safety data report	F5_STO_SafetyData_M314_00_11_de.pdf	30-09-2013
24V Isolation Info	24V Isolation Info.zip	10-06-2014
Control & main board information	2KF5030000E_markedup.pdf	10-06-2014
Main board tracks	18F504G003E_pcb_traces.pdf	30-06-2014
Control board tracks	2KF5030000E_dimensions_traces	15-07-2014
Conformity document to elevator standards with the F5	elevator_sto_draft_revA.pdf	17-07-2014
Conformity document to elevator standards with the F5	elevator_sto_draft_revB.pdf	17-07-2014
Conformity document to elevator standards with the F5	elevator_sto_asme-a17_en81.pdf	23-07-2014

Annex 3 : Overview of revisions of declaration and report

Rev.:	Date	Summary of revision
-	17-07-2014	Original
1	25-08-2014	Updated list of manufacturers
2	16-09-2014	Editorial changes and update of EN 81-1 Control Scheme example

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