



Hauptschützloser Betrieb FB20, FB22

Erklärungen / *Statements*

STO (Safe Torque Off)

Version 4.6 2022

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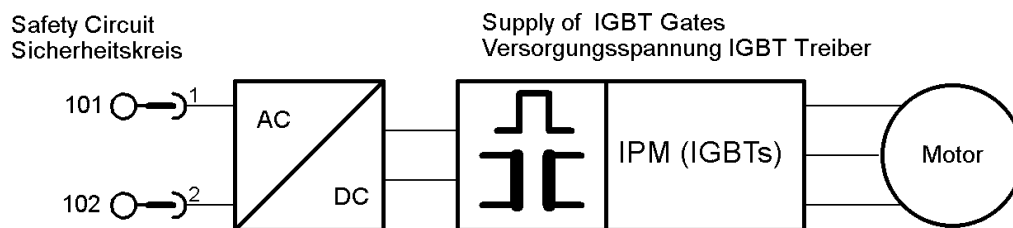
1 Funktionsbeschreibung / function description STO (Safe Torque Off)

Der Umrichter kann ohne Hauptschütze zur Trennung der Energiezufuhr zum Motor betrieben werden. Eine Sicherheitsschaltung im Umrichter die am Ende des Sicherheitskreis eingebunden wird ermöglicht dies.

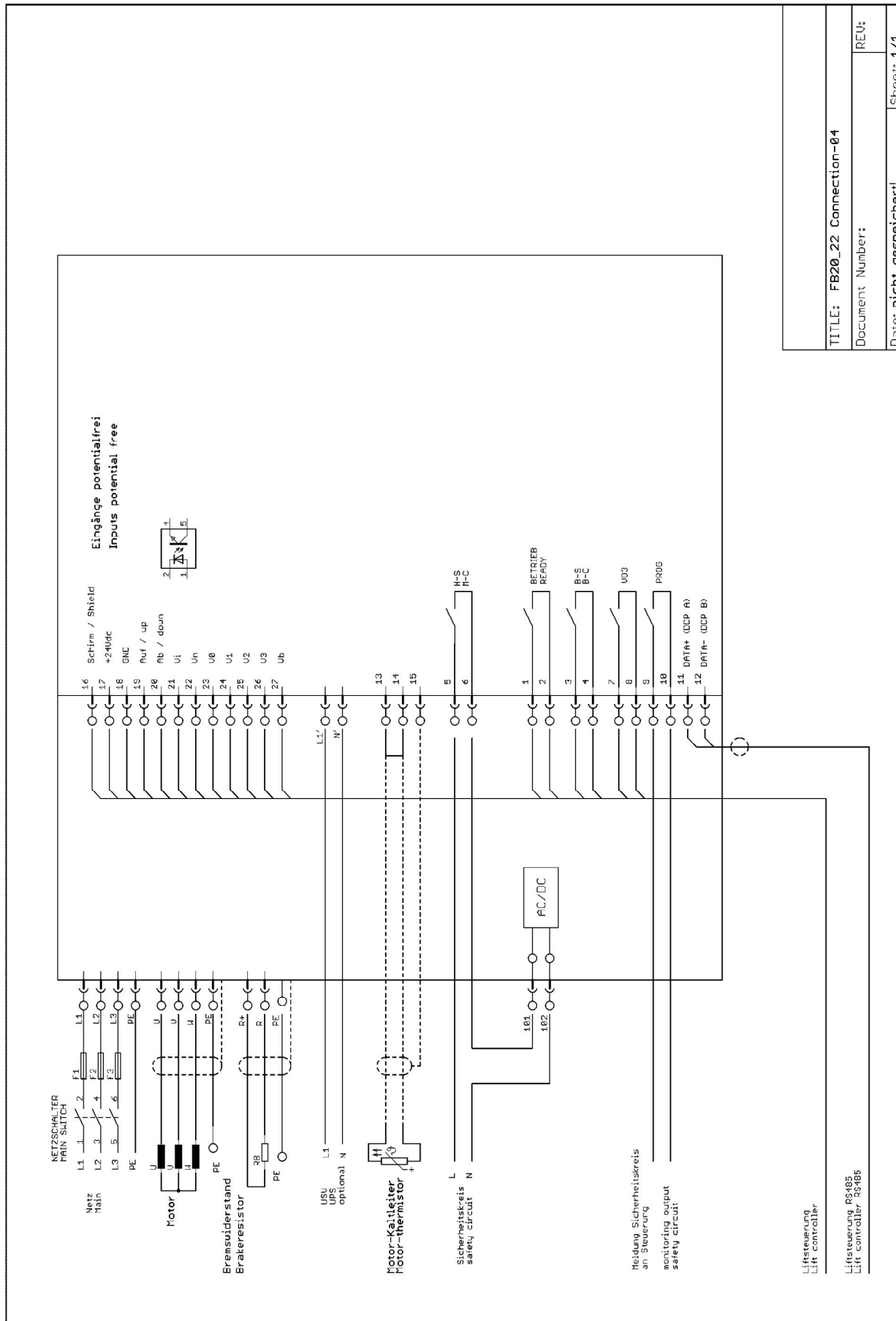
Die Sicherheitsschaltung besteht aus einem Schaltnetzteilmodul (AC/DC Wandler) das aus der Spannung des Sicherheitskreises direkt die Spannung zur Versorgung des Leistungshalbleiters erzeugt. Ohne Sicherheitskreis kann somit kein Drehmoment erzeugender Strom am Motor an kommen (STO).

The STO device block or unblock motor current. The end of the safety circuit is connected to a switched mode power supply module (AC/DC module), which generate from the safety circuit voltage direct the voltage for power supply for the power module. Without safety circuit no current can flow to produce torque to the motor (STO).

2 Prinzipschaltbild Sicherheitsschaltung / STO schema



3 Anschluss-Schaltbild / schematic diagram FB20/FB22



TITLE: FB20_22 Connection-04

Document Number: REU;

Date: nicht gespeichert! Sheet: 1/1

4 Verdrahtungsvorschrift / *wiring regulation*



Arbeiten Sie niemals unter Netzspannung!
Lebensgefahr!

*disconnect the device from power before performing any repair work
danger to life!*

5 Funktionsprüfung / *functional test*

1. Leitungen an Klemmen 101, 102 entfernen (bzw. Stecker an Klemme 101, 102) Achtung offene Leitungsenden gegen Berührung schützen.
Fahrkommando geben : Umrichter zeigt Fehler 49 (SiKr Fehler)
 2. Sicherheitskreis brücken: Spannung an Klemmen 101 anlegen.
Umrichter zeigt Fehler 54 (SiKr stillstd.)
-
1. *Connector with terminal 101, 102 disconnect.
Give travel command to lift controller: Driver shows error 49 no safety circuit.*
 2. *Bridge safety circuit: Connect safety circuit voltage to terminal 101.
Driver shows error 54 (SC monitoring)*

6 EMV / *emc*

Nur durch sachgerechte Montage von Schirmung, Erdung und Filtern ist die Einhaltung der EMV-Grenzwerte gewährleistet. Die Umrichter werden Serienmäßig mit einem Funkentstörfilter ausgeliefert gemäß EN12015. Die Umrichter mit Nennstrom 82A bzw. 112A werden mit einem externen Filter geliefert.

Only proper installation of shielding, earth connection and filters comply with the EMC guidelines. All drives are delivered with a filter according to EN12015. For the drivers size 82A and 112A the filter is external.

7 Technische Daten / technical specifications

	FB20 / FB22				FB20						
	-13A	-16A	-22A	-32A	-42A	-52A	-62A	-82A	-112A		
Netzanschluss-Spannung <i>Electrical Data</i>	3x 180V..440V, 50/60Hz										
Typ. Motorleistung <i>Typ. motor output (400V)</i>	[kW]	5,5	7,5	11	14	20	25	30	40	55	
Nennstrom <i>Nominal current</i>	[A]	13	16	22	32	42	52	62	82	112	
Max. Ausgangsstrom (max. 3s) <i>Max. output current (max. 3s)</i>	[A]	22	26	36	52	67	83	100	140	190	
Verlustleistung <i>Power loss</i>	[W]	200	350	500	700	900	1000	1200	1800	2200	
Taktfrequenz <i>Switching frequency</i>	[kHz]	4 - 16									
Motorfrequenz <i>Motor frequency</i>	[Hz]	max. 100									
Leitungsquerschnitt Motor <i>Motor line diameter</i>	[mm ²]	2,5	2,5	4	6	10	10	16	25	35	
Leitungsquerschnitt Bremswiderstand <i>Brake-Resistor line diameter</i>	[mm ²]	1,5	1,5	2,5	2,5	2,5	4	4	6	6	
Bremswiderstand <i>Brake-Resistor</i>	[Ω]	80	47	47	30	22,5	18	15	9,4	9,4	
Bremswiderstand <i>Brake-Resistor</i>	[kW]	0,5	1	2	3	4	5	6	10	10	
Sicherheitskreis <i>Safety circuit</i>	[Vac]	110 -230									
Schutzart <i>Protection class</i>		IP20									
Umgebungstemperatur <i>Ambient conditions operation</i>	[°C]	0..55									
Montagehöhe max. <i>Installation height max.</i>	[m]	2000									
Gewicht <i>Weight FB20</i>	[kg]	13	13	14	14	14	14	18	20	23	
Gewicht <i>Weight FB22</i>	[kg]	7	7	7	7	-	-	-	-	-	
Abmessung <i>Dimensions FB22</i>	[mm]	164x370x180									
Abmessung <i>Dimensions FB20</i>	[mm]	256x390x210						306x445x210			

8 EU Konformitätserklärung / EU Declaration of Conformity

EU-Konformitätserklärung EU Declaration of Conformity

Anwendungsbereich <i>Application scope</i>	Aufzugsrichtlinie 2014/33/EU EMV Richtlinie 2014/30/EU <i>Lift Directive 2014/33/EU EMC Directive 2014/30/EU</i>
Bezeichnung <i>Type</i>	FB20 / FB22
Produktart <i>Product category</i>	Frequenz Umrichter mit Sicherheitsfunktion STO Verwendung als Aufzugsantrieb ohne Fahrschütze <i>Frequency converter with safety function STO Use for lift drive with out main conductors</i>
Baujahr / Produktionsnummer <i>year of manufacturing / product number</i>	2022, P.no.: 2022.1-2000
EN 81-20	Aufzüge für den Personen- und Gütertransport <i>Passenger and goods passenger lifts</i>
EN 81-50	Konstruktionsregeln, Berechnungen, Prüfungen und Tests von Aufzugskomponenten <i>Design rules, calculations, examinations and tests of lift components</i>
EN 12015 EN 12015:2014	Elektromagnetische Verträglichkeit - Produktfamilienorm für Aufzüge - Störaussendung <i>Electromagnetic compatibility - Product family standard for lifts - Emission</i>
EN 12016 EN 12016:2013	Elektromagnetische Verträglichkeit - Produktfamilienorm für Aufzüge - Störfestigkeit <i>Electromagnetic compatibility - Product family standards for lifts - Immunity</i>
Benannte Stelle der Baumusterprüfung (Anhang V.A) und Stichprobenartiger Prüfung (Anhang XI) <i>Notified body for the EC type examination (Annex V.A) and random checks (Annex XI)</i>	Liftinstituut B.V. Buikslotermeerplein 381 1025 XE Amsterdam Netherlands NB no.: 0400
Bescheinigungs-Nr. <i>Certificate no.</i>	FB20 13A-32A: NL15-400-1002-191-01 rev. 6 FB20 42A-62A: NL17-400-1002-191-03 rev. 3 FB20 82A-112A: NL19-400-1002-191-05 FB22: NL15-400-1002-191-02 rev. 5
Hersteller <i>Manufacturer</i>	Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Germany

Hiermit erklären wir, dass das oben genannte Sicherheitsbauteil für Aufzüge die einschlägigen Harmonisierungsrechtsvorschriften der Union erfüllt. Die Sicherheitshinweise sind vor Einsatz in der beiliegenden Bedienungsanleitung zu lesen. Änderungen bedürfen der Abstimmung mit uns, ansonsten erlischt diese Erklärung.



We hereby declare that the above-mentioned safety component for lifts is in conformity with the relevant Union harmonisation legislation. Before use read the safety instructions from the enclosed manual. Any changes must be authorised by the manufacturer, otherwise the declaration of conformity will be invalidated.



Dipl. Ing. (FH) Stephan Fecher

Aschaffenburg, 01.02.2022







9 EMV / EMC Report FB20 13A-32A

Test Report Emission Frequency Converter FB20		 hochschule aschaffenburg university of applied sciences	
<i>Place and date of the EMC test:</i> Aschaffenburg, 02. April 2015 <i>Manufacturer:</i> Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg <i>Standards:</i> DIN EN 12015, see page 4 <i>DUT:</i> Frequency Converter FB20			
Test	Test level	Result	Modification
<i>Conducted emissions mains according to EN 61000-6-3</i>	0,15 – 0,5 MHz 79 dB μ V <i>Quasi-Peak</i> 66 dB μ V <i>Average</i> 0,5 - 5 MHz 73 dB μ <i>Quasi-Peak</i> 60 dB μ V <i>Average</i> 5 - 30 MHz 73 dB μ V <i>Quasi-Peak</i> 60 dB μ V <i>Average</i>	pass <i>see measuring plots</i>	--
<i>Radiated emissions according to EN 61000-6-3</i>	30–230 MHz 50 dB μ V 230-1000 MHz 57 dB μ V/m distance 3 m	pass <i>see measuring plots</i>	--
General Result: <i>The conformity to the EMC-requirements for emission of the named standard is met.</i>			
<i>Test laboratory:</i> Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg Germany		<i>Tel.:</i> +49 (60 21) 4206 816 <i>Fax.:</i> +49 (60 21) 4206 881 <i>E-Mail:</i> ulrich.bochtler@h-ab.de	
Aschaffenburg, 13. April 2015  Prof. Dr.-Ing. U. Bochtler			



Test Report Immunity Frequency Converter FB20		 hochschule aschaffenburg <small>university of applied sciences</small>	
Place and date of the EMC test: Aschaffenburg, 02. April 2015 Manufacturer: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Standards: DIN EN 12016, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 DUT: Frequency Converter FB20			
Test	Test level	Result	Modification
Radio frequency electromagnetic fields according to EN 61000-4-3	80 - 1960 MHz 10 V/m, 80 % AM (1 kHz) all circuits 166 - 1784 MHz 30 V/m, 80 % AM (1 kHz) additive safety circuits	pass	--
Radio frequency common mode - input and output AC ports < 100 A according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Radio frequency immunity – ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Fast transient common mode (burst) - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-4	± 0,5 kV, 5 kHz all circuits ± 2 kV, 5 kHz safety circuits	pass	--
Surge - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Fast transient common mode (burst) – input and output AC ports < 100 A according to EN 61000-4-4	± 1 kV, 5 kHz all circuits ± 4 kV, 5 kHz safety circuits	pass	--
Surge - input and output AC ports < 100 A according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Electrostatic discharge according to EN 61000-4-2	± 4 kV contact ± 8 kV air-discharge all circuits ± 6 kV contact ± 15 kV air-discharge safety circuits	pass	--
General Result: The conformity to the EMC-requirements for immunity of the named standards is met.			
Test laboratory: Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 Email: ulrich.bochtler@h-ab.de	
Aschaffenburg, 13. April 2015  Prof. Dr.-Ing. U. Bochtler			



10 EMV / EMC Report FB20 42A-52A

Test Report Emission Frequency Converter FB20-52A		 hochschule aschaffenburg university of applied sciences	
<i>Place and date of</i> the EMC test: Aschaffenburg, 24. November 2016 Manufacturer: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Standards: DIN EN 12015, see page 4 DUT: Frequency Converter FB20-52A			
Test	Test level	Result	Modification
Conducted emissions mains according to EN 61000-6-3	0,15 – 0,5 MHz 79 dB μ V Quasi-Peak 66 dB μ V Average 0,5 - 5 MHz 73 dB μ Quasi-Peak 60 dB μ V Average 5 - 30 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average	pass see measuring plots	--
Radiated emissions according to EN 61000-6-3	30–230 MHz 50 dB μ V 230-1000 MHz 57 dB μ V/m distance 3 m	pass see measuring plots	--
General Result: <i>The conformity to the EMC-requirements for emission of the named standard is met.</i>			
Test laboratory: Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg Germany		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 25. November 2016  Prof. Dr.-Ing. U. Bochtler			



Test Report Immunity Frequency Converter FB20-52A		 hochschule aschaffenburg university of applied sciences	
<p><i>Place and date of</i> the EMC test: Aschaffenburg, 24. November 2016 Manufacturer: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Standards: DIN EN 12016, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 DUT: Frequency Converter FB20-52A</p>			
Test	Test level	Result	Modification
Radio frequency electromagnetic fields according to EN 61000-4-3	80 - 1960 MHz 10 V/m, 80 % AM (1 kHz) all circuits 166 - 1784 MHz 30 V/m, 80 % AM (1 kHz) additive safety circuits	pass	--
Radio frequency common mode - input and output AC ports < 100 A according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Radio frequency immunity – ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Fast transient common mode (burst) - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-4	$\pm 0,5$ kV, 5 kHz all circuits ± 2 kV, 5 kHz safety circuits	pass	--
Surge - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Fast transient common mode (burst) – input and output AC ports < 100 A according to EN 61000-4-4	± 1 kV, 5 kHz all circuits ± 4 kV, 5 kHz safety circuits	pass	--
Surge - input and output AC ports < 100 A according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Electrostatic discharge according to EN 61000-4-2	± 4 kV contact ± 8 kV air-discharge all circuits ± 6 kV contact ± 15 kV air-discharge safety circuits	pass	--
General Result: The conformity to the EMC-requirements for immunity of the named standards is met.			
Test laboratory:	Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg	Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 25. November 2016			
 Prof. Dr.-Ing. U. Bochtler			



11 EMV / EMC Report FB20 62A

Test Report Emission Frequency Converter FB20-62A		 hochschule aschaffenburg <small>University of Applied Sciences</small>	
<i>Place and date of the EMC test:</i> Aschaffenburg, 13. June 2016 <i>Manufacturer:</i> Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg <i>Standards:</i> DIN EN 12015, see page 4 <i>DUT:</i> Frequency Converter FB20-62A			
Test	Test level	Result	Modification
Conducted emissions mains according to EN 61000-6-3	0,15 – 0,5 MHz 79 dB μ V Quasi-Peak 66 dB μ V Average	pass see measuring plots	--
	0,5 - 5 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average		
	5 - 30 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average		
Radiated emissions according to EN 61000-6-3	30–230 MHz 50 dB μ V 230-1000 MHz 57 dB μ V/m distance 3 m	pass see measuring plots	--
General Result: <i>The conformity to the EMC-requirements for emission of the named standard is met.</i>			
<i>Test laboratory:</i> Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg Germany		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 15. June 2016  Prof. Dr.-Ing. U. Bochtler			



Test Report Immunity Frequency Converter FB20-62A		 hochschule aschaffenburg <small>university of applied sciences</small>	
Place and date of the EMC test: Aschaffenburg, 13. June 2016 Manufacturer: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Standards: DIN EN 12016, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 DUT: Frequency Converter FB20-62A			
Test	Test level	Result	Modification
Radio frequency electromagnetic fields according to EN 61000-4-3	80 - 1960 MHz 10 V/m, 80 % AM (1 kHz) all circuits 166 - 1784 MHz 30 V/m, 80 % AM (1 kHz) additive safety circuits	pass	--
Radio frequency common mode - input and output AC ports < 100 A according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Radio frequency immunity – ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Fast transient common mode (burst) - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-4	± 0,5 kV, 5 kHz all circuits ± 2 kV, 5 kHz safety circuits	pass	--
Surge - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Fast transient common mode (burst) – input and output AC ports < 100 A according to EN 61000-4-4	± 1 kV, 5 kHz all circuits ± 4 kV, 5 kHz safety circuits	pass	--
Surge - input and output AC ports < 100 A according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Electrostatic discharge according to EN 61000-4-2	+ 4 kV contact ± 8 kV air-discharge all circuits ± 6 kV contact ± 15 kV air-discharge safety circuits	pass	--
General Result: <i>The conformity to the EMC-requirements for immunity of the named standards is met.</i>			
Test laboratory: Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 15. June 2016  Prof. Dr.-Ing. U. Bochtler			



12 EMV / EMC Report FB20 82A-112A

Test Report Emission Frequency Converter FB20-112A		 hochschule aschaffenburg university of applied sciences	
<i>Place and date of</i>			
<i>the EMC test:</i> Aschaffenburg, 29. January 2019			
<i>Manufacturer:</i> Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg			
<i>Standards:</i> DIN EN 12015, see page 4			
<i>DUT:</i> Frequency Converter FB20-112A			
Test	Test level	Result	Modification
<i>Conducted emissions mains</i> <i>according to EN 12015 and EN 55011</i>	0,15 – 0,5 MHz 79 dB μ V Quasi-Peak 66 dB μ V Average 0,5 - 5 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average 5 - 30 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average	pass see measuring plots	--
<i>Radiated emissions</i> <i>according to EN 12015 and EN 55011</i>	30 – 230 MHz 50 dB μ V 230 - 1000 MHz 57 dB μ V/m distance 3 m	pass see measuring plots	--
General Result: <i>The conformity to the EMC-requirements for emission of the named standard is met.</i>			
<i>Test laboratory:</i> Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg Germany		<i>Tel.:</i> +49 (60 21) 4206 816 <i>Fax.:</i> +49 (60 21) 4206 881 <i>E-Mail:</i> ulrich.bochtler@h-ab.de	
<i>Aschaffenburg, 31. January 2019</i>			
			
<i>Prof. Dr.-Ing. U. Bochtler</i>			

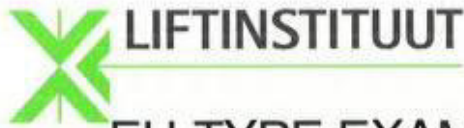
Test Report Immunity Frequency Converter FB20-112A		 hochschule aschaffenburg <small>university of applied sciences</small>	
<i>Place and date of the EMC test:</i> Aschaffenburg, 29. January 2019 <i>Manufacturer:</i> Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg <i>Standards:</i> DIN EN 12016, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 <i>DUT:</i> Frequency Converter FB20-112A			
Test	Test level	Result	Modification
Radio frequency electromagnetic fields according to EN 61000-4-3	80 - 1960 MHz 10 V/m, 80 % AM (1 kHz) all circuits 166 - 1784 MHz 30 V/m, 80 % AM (1 kHz) additive safety circuits	pass	--
Radio frequency common mode - input and output AC ports < 100 A according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Radio frequency immunity – ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Fast transient common mode (burst) - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-4	± 0,5 kV, 5 kHz all circuits ± 2 kV, 5 kHz safety circuits	pass	--
Surge - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Fast transient common mode (burst) – input and output AC ports < 100 A according to EN 61000-4-4	± 1 kV, 5 kHz all circuits ± 4 kV, 5 kHz safety circuits	pass	--
Surge - input and output AC ports < 100 A according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Electrostatic discharge according to EN 61000-4-2	± 4 kV contact ± 8 kV air-discharge all circuits ± 6 kV contact ± 15 kV air-discharge safety circuits	pass	--
General Result: <i>The conformity to the EMC-requirements for immunity of the named standards is met.</i>			
<i>Test laboratory:</i> Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 31. January 2019			
 Prof. Dr.-Ing. U. Bochtler			

13 EMV / EMC Report FB22

Test Report Emission Frequency Converter FB22		 hochschule aschaffenburg university of applied sciences	
<i>Place and date of</i> the EMC test: Aschaffenburg, 26. March 2015 Manufacturer: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Standards: DIN EN 12015, see page 4 DUT: Frequency Converter FB22			
Test	Test level	Result	Modification
Conducted emissions mains according to EN 61000-6-3	0,15 – 0,5 MHz 79 dB μ V Quasi-Peak 66 dB μ V Average 0,5 - 5 MHz 73 dB μ Quasi-Peak 60 dB μ V Average 5 - 30 MHz 73 dB μ V Quasi-Peak 60 dB μ V Average	pass see measuring plots	--
Radiated emissions according to EN 61000-6-3	30–230 MHz 50 dB μ V 230-1000 MHz 57 dB μ V/m distance 3 m	pass see measuring plots	--
General Result: The conformity to the EMC-requirements for emission of the named standard is met.			
Test laboratory: Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg Germany		Tel.: +49 (60 21) 4206 816 Fax.: +49 (60 21) 4206 881 E-Mail: ulrich.bochtler@h-ab.de	
Aschaffenburg, 06. April 2015  Prof. Dr.-Ing. U. Bochtler			

Test Report Immunity Frequency Converter FB22		 hochschule aschaffenburg university of applied sciences	
<p><i>Place and date of</i> <i>the EMC test:</i> Aschaffenburg, 26. March 2015 <i>Manufacturer:</i> Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg <i>Standards:</i> DIN EN 12016, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 <i>DUT:</i> Frequency Converter FB22</p>			
Test	Test level	Result	Modification
Radio frequency electromagnetic fields according to EN 61000-4-3	80 - 1960 MHz 10 V/m, 80 % AM (1 kHz) all circuits 166 - 1784 MHz 30 V/m, 80 % AM (1 kHz) additive safety circuits	pass	--
Radio frequency common mode - input and output AC ports < 100 A according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Radio frequency immunity – ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-6	0,15 - 80 MHz, 80 % AM (1 kHz) 3 V/m all circuits 10 V/m safety circuits	pass	--
Fast transient common mode (burst) - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-4	$\pm 0,5$ kV, 5 kHz all circuits ± 2 kV, 5 kHz safety circuits	pass	--
Surge - ports for signal and control lines – ports for monitoring and alarm systems according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Fast transient common mode (burst) – input and output AC ports < 100 A according to EN 61000-4-4	± 1 kV, 5 kHz all circuits ± 4 kV, 5 kHz safety circuits	pass	--
Surge - input and output AC ports < 100 A according to EN 61000-4-5	± 1 kV, 5 kHz line to line ± 2 kV, 5 kHz line to ground all / safety circuits	pass	--
Electrostatic discharge according to EN 61000-4-2	± 4 kV contact ± 8 kV air-discharge all circuits ± 6 kV contact ± 15 kV air-discharge safety circuits	pass	--
General Result: <i>The conformity to the EMC-requirements for immunity of the named standards is met.</i>			
<i>Test laboratory:</i> Labor für Elektromagnetische Verträglichkeit Hochschule Aschaffenburg Würzburger Str. 45 63743 Aschaffenburg		<i>Tel.:</i> +49 (60 21) 4206 816 <i>Fax.:</i> +49 (60 21) 4206 881 <i>Email:</i> ulrich.bochtler@h-ab.de	
Aschaffenburg, 06. April 2015  Prof. Dr.-Ing. U. Bochtler			

14 FB20 13A-32A Baumusterprüfung / type-examination



EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
 identification number Notified Body 0400,
 commissioned by Decree no. 2018-0000125182

Certificate no.	: NL15-400-1002-191-01	Revision no.:	6
Description of the product	: Frequency inverters for elevator drives without contactors		
Trademark	: Brunner & Fecher		
Type no.	: FB20		
Name and address of the manufacturer	: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 D-63743 Aschaffenburg, Germany		
Name and address of the certificate holder	: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 D-63743 Aschaffenburg, Germany		
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU, Annex III.6 and Annex IV.A		
Certificate based on the following standard	: EN 81-20:2014, clause 5.9.2.5.4 c), 5.11.2.3 and EN 81-50:2014, clause 5.6 and 5.15 (EN 81-1:1998+A3:2009 clause 12.7, 14.1.2.3, annex H and F.6) (EN 81-2:1998+A3:2010, clause 12.4.1, 14.1.2.3, annex H and F.6)		
Test laboratory	: DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem, NL		
Date and number of the laboratory report	: June 10, 2015; 2181187.50 (tests performed on March 20, 23 and 24, 2015)		
Date of EU-type examination	: February 2014 – June 2015; Rev.1, 24-09-2015; Rev.2, 10-11-2015; Rev.3, November 2016 – January 2017 Rev.4, November 2017; Rev.5, June 2019; Rev.6, July 22, 2020		
Additional document with this certificate	: Report belonging to the EU type-examination certificate no.:NL15-400-1002-191-01 rev.6		
Additional remarks	: EN 81-50, clause 5.6 and 5.15 (as well as EN 81-1/2+A3 Annex H and F.6) examination and testing were included in the examination		
Conclusion	: The safety component meets the requirements of the Lifts Directive 2014/33/EU considering any additional remarks mentioned above.		

Amsterdam

Date : 23-07-2020
 Valid until : 23-07-2025

ing. P.J. Peeters
 Manager Certification

Certification decision by

Liftinstituut B.V. · Bukslotermeerplein 381 · P.O. Box 36027 · 1020 MA Amsterdam Netherlands · www.liftinstituut.com ·
 Registered at the KvK under number 34157363

F23-02-16-v18.0

15 FB20 42A-62A Baumusterprufung / type-examination



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SINCE 1933



EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
identification number Notified Body 0400,
commissioned by Decree no. 2018-0000125182

Certificate no.	: NL17-400-1002-191-03	Revision no.:	3
Description of the product	: Frequency inverters for elevator drives without contactors		
Trademark	: Brunner & Fecher		
Type no.	: FB20 42-62A		
Name and address of the manufacturer	: Brunner & Fecher Regelungstechnik GmbH An den Roderackern 5 D-63743 Aschaffenburg, Germany		
Name and address of the certificate holder	: Brunner & Fecher Regelungstechnik GmbH An den Roderackern 5 D-63743 Aschaffenburg, Germany		
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU, Annex III.6 and Annex IV.A		
Certificate based on the following standard	: EN 81-20:2020, clause 5.9.2.5.4 c), 5.11.2.3 and EN 81-50:2020, clause 5.6 and 5.15 (EN 81-1:1998+A3:2009 clause 12.7, 14.1.2.3, annex H and F.6) (EN 81-2:1998+A3:2010, clause 12.4.1, 14.1.2.3, annex H and F.6)		
Test laboratory	: DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem, NL		
Date and number of the laboratory report	: June 10, 2015; 2181187.50 (tests performed on March 20, 23 and 24, 2015)		
Date of EU-type examination	: March 2016 – February 2017 Rev.1, November 2017 Rev.2, December 2017 Rev.3, January 2022		
Additional document with this certificate	: Report belonging to the EU type-examination certificate no.:NL17-400-1002-191-03 rev.3		
Additional remarks	: EN 81-50, clause 5.6 and 5.15 (as well as EN 81-1/2+A3 Annex H and F.6) examination and testing were included in the examination		
Conclusion	: The safety component meets the requirements of the Lifts Directive 2014/33/EU taking into account any additional remarks mentioned above.		

Amsterdam

Date : 01-02-2022
Valid until : 01-02-2027


ing A.J. van Ommen
International Business
Manager

Certification decision by

16 FB20 82A-112A Baumusterprüfung / type-examination



EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
 identification number Notified Body 0400,
 commissioned by Decree no. 2018-0000125182

Certificate no. : NL19-400-1002-191-05 Revision no.: -

Description of the product : Frequency inverters for elevator drives without contactors

Trademark, type : Brunner & Fecher, FB20 82-112A

Name and address of the manufacturer : Brunner & Fecher Regelungstechnik GmbH
 An den Röderäckern 5
 D-63743 Aschaffenburg
 Germany

Name and address of the certificate holder : Brunner & Fecher Regelungstechnik GmbH
 An den Röderäckern 5
 D-63743 Aschaffenburg
 Germany

Certificate issued on the following requirements : Lifts Directive 2014/33/EU, Annex III.6 and Annex IV.A

Certificate based on the following standard : EN 81-20:2014, clause 5.9.2.5.4 c), 5.11.2.3 and EN 81-50:2014, clause 5.6 and 5.15

Test laboratory : None

Date and number of the laboratory report : None

Date of EU-type examination : October 2018 – February 2019

Additional document with this certificate : Report belonging to the EU-type examination certificate no.: NL19-400-1002-191-05

Additional remarks : The laboratory tests according to clause 5.6 of EN 81-50 done for the FB20 family before are used for this examination and accepted in analogy for FB20 82-112A

Conclusion : The safety component meets the requirements of the Lifts Directive 2014/33/EU taking into account any additional remarks mentioned above.

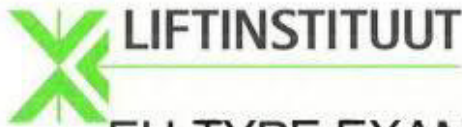
Amsterdam

Date : 21-02-2019
 Valid until : 21-02-2024

ing. P.J. Peeters
 Manager

Certification decision by

17 FB22 Baumusterprüfung / type-examination



EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
 identification number Notified Body 0400,
 commissioned by Decree no. 2018-0000125182

Certificate no.	: NL15-400-1002-191-02	Revision no.:	: 5
Description of the product	: Frequency inverters for elevator drives without contactors		
Trademark	: Brunner & Fecher		
Type no.	: FB22		
Name and address of the manufacturer	: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 D-63743 Aschaffenburg, Germany		
Name and address of the certificate holder	: Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 D-63743 Aschaffenburg, Germany		
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU, Annex III.6 and Annex IV.A		
Certificate based on the following standard	: EN 81-20:2014, clause 5.9.2.5.4 c), 5.11.2.3 and EN 81-50:2014, clause 5.6 and 5.15 (EN 81-1:1998+A3:2009 clause 12.7, 14.1.2.3, annex H and F.6) (EN 81-2:1998+A3:2010, clause 12.4.1, 14.1.2.3, annex H and F.6)		
Test laboratory	: DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem, NL		
Date and number of the laboratory report	: June 10, 2015; 2181187.50 (tests performed on March 20, 23 and 24, 2015)		
Date of EU-type examination	: February 2014 – June 2015; Rev.1, 24-09-2015; Rev.2, 10-11-2015; Rev.3, November 2016 – January 2017 Rev.4, November 2017; Rev.6, July 22, 2020		
Additional document with this certificate	: Report belonging to the EU type-examination certificate no.:NL15-400-1002-191-02 rev.5		
Additional remarks	: EN 81-50, clause 5.6 and 5.15 (as well as EN 81-1/2+A3 Annex H and F.6) examination and testing were included in the examination		
Conclusion	: The safety component meets the requirements of the Lifts Directive 2014/33/EU considering any additional remarks mentioned above.		

Amsterdam

Date : 23-07-2020
 Valid until : 23-07-2025

ing. P.J. Peeters
 Manager Certification

Certification decision by

Liftinstituut B.V. - Bukslotemeerplein 381 - P.O. Box 36027 - 1020 MA Amsterdam Netherlands - www.liftinstituut.com
 Registered at the KvK under number 34157353

F23-02-16-v16.0

18 Schutzmaßnahme bei Frequenzumrichtereinspeisung

Hersteller Konformitätserklärung Manufacturer's Declaration of Conformity

Anwendungsbereich <i>Application scope</i>	DIN VDE 0100-410
Bezeichnung <i>Type</i>	FB20 / FB22
Produktart <i>Product category</i>	Frequenz Umrichter mit Sicherheitsfunktion STO Verwendung als Aufzugsantrieb ohne Fahrschütze <i>Frequency converter with safety function STO Use for lift drive with out main conductors</i>
Baujahr / Produktionsnummer <i>year of manufacturing / product number</i>	2022, P.no.: 2022.1-2000
Hersteller <i>Manufacturer</i>	Brunner & Fecher Regelungstechnik GmbH An den Röderäckern 5 63743 Aschaffenburg Germany

Erklärt wird zu folgenden Möglichkeiten:

1. Erdschluss im Filter

Die dem Frequenzumrichter vorgeschaltete Sicherung schaltet auf Grund des Kurzschluss-Stroms ab.

2. Erdschluss im Zwischenkreis

Die dem Frequenzumrichter vorgeschaltete Sicherung schaltet auf Grund des Kurzschluss-Stroms ab. Sollte auf Grund des Innenwiderstandes des Brückengleichrichters die Sicherung nicht oder verzögert abschalten, wird auf Grund der hohen Verluste der Brückengleichrichter zerstört was zur Unterbrechung des Stromfluss führt.

3. Erdschluss in der Motorleitung (oder Motor)

Das Eingesetzte Leistungsmodul (IPM intelligent power module) hat eine elektronische Kurzschluss Überwachung. Im Fehlerfall schaltet das Modul innerhalb 250us ab. Sollte dies nicht geschehen schaltet die vorgeschaltete Sicherung auf Grund des Kurzschluss-Stroms ab. Sollte auf Grund des Innenwiderstandes des IPM die Sicherung nicht oder verzögert abschalten, wird auf Grund der hohen Verluste das IPM zerstört was zur Unterbrechung des Stromfluss führt.

4. Erdschluss in der Motorleitung (oder Motor) bei geöffnetem Zwischenkreisrelais

Auf Grund der hohen Impedanz der Ladeschaltung fällt die Spannung innerhalb 10ms auf unter 50V AC DC.

Wird aus anderen Gründen z.B. Feuergefährdete Betriebsstätte ein FI-Schutzschalter gefordert ist einer vom Typ B oder B+ einzusetzen.

Dipl. Ing. (FH) Stephan Fecher

Aschaffenburg, den 01.02.2022



