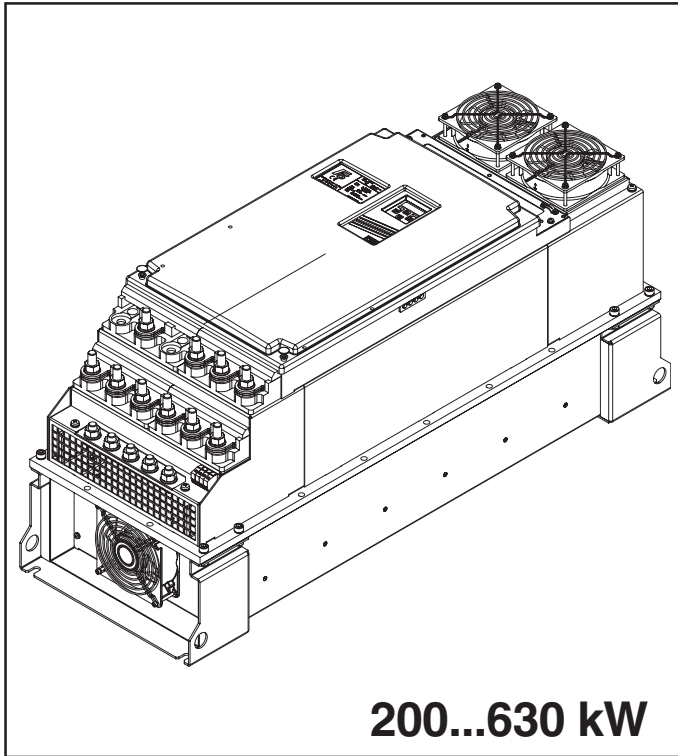


ERGÄNZUNG

S U P P L E M E N T



D Leistungsteil

GB Power Circuit

Gehäuse P

Housing P

Die KEB Antriebstechnik GmbH behält sich das Recht vor, Spezifikationen und technische Daten ohne vorherige Benachrichtigung zu ändern, bzw. anzupassen.

Die in dieser Anleitung aufgeführten Sicherheits- und Warnhinweise erheben keinen Anspruch auf Vollständigkeit. Die Betriebsanleitung und die darin enthaltenen Informationen wurden mit der gebotenen Sorgfalt zusammengestellt, KEB übernimmt jedoch keine Gewähr für Druckfehler oder andere Fehler oder daraus entstehende Schäden.

Die genannten Marken und Produktnamen sind Warenzeichen oder eingetragene Warenzeichen der jeweiligen Titelhalter.

Table of Contents

| | |
|---|-----------|
| 1. General | 3 |
| 2. Technical Data | 4 |
| 2.3 Dimensions | 5 |
| 2.3.1 Standard Version | 5 |
| 2.3.2 Through-Mount Version | 5 |
| 2.3.3 Water-Cooling | 6 |
| 2.4 Summary of the Power Circuit Connections | 6 |
| 2.5 Connection Accessories | 7 |
| 2.5.1 Component Sets | 7 |
| 2.5.2 Filter | 7 |
| 2.5.3 Chokes | 7 |
| 2.6 Connection of the Power Circuit | 7 |
| 2.7 Temperature sensing series connection | 9 |
| 3. Annex | 11 |
| 3.1 Overload Characteristics | 11 |
| 3.2 Overload Protection in the lower Speed Range | 11 |

1. General

This supplement describes the frequency inverter KEB COMBIVERT F5 in a P-housing in the power range of 200...630 kW.

Sizes 28 and 29 are used as single components. Further sizes are achieved with the combination of two or more single components. The control is made here only with one unit

This manual is only valid together with the instruction manual COMBIVERT F5 (Part 2).

Both instruction manuals must be made available to the user. Prior to performing any work on the unit the user must familiarize himself with the unit. This includes especially the knowledge and observance of the safety and warning directions of Part 1. The pictographs used in this instruction manual have following meaning:



**Danger
Warning
Caution**



**Attention,
observe at
all costs**



**Information
Help
Tip**

Technical Data

2. Technical Data

| Inverter Size | 28 | 29 | 32 | 33 | 34 | 35 | 36 | - | - |
|---|------------------------|-------|---------|-------|-------|---------|-------|---|---|
| Housing Size | P | | | | | | | | |
| Phases | 3 | 3 | 2 x 3 | 2 x 3 | 2 x 3 | 3 x 3 | 3 x 3 | - | - |
| Output nominal power [kVA] | 256 | 319 | 492 | 554 | 616 | 692 | 796 | - | - |
| Max. rated motor power [kW] | 200 | 250 | 400 | 450 | 500 | 560 | 630 | - | - |
| Output nominal current [A] | 370 | 460 | 710 | 800 | 890 | 1000 | 1150 | - | - |
| Max. short time current ¹⁾ [A] | 462 | 575 | 887 | 1000 | 1112 | 1500 | 1725 | - | - |
| OC-tripping current [A] | 554 | 690 | 1065 | 1200 | 1335 | 1800 | 2070 | - | - |
| Nominal input current [A] | 385 | 483 | 746 | 840 | 935 | 1050 | 1208 | - | - |
| Rated operating frequency [kHz] | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | - |
| Max. operating frequency [kHz] | 4 | 4 | 4 | 4 | 4 | 4 | 4 | - | - |
| Power loss at nominal operating [W] | 3500 | 4200 | 6800 | 7600 | 8500 | 9500 | 10700 | - | - |
| Max. permissible mains fuse (inert) [A] | 550 | 700 | 2x550 | 2x700 | 2x700 | - | - | - | - |
| Line cross section ²⁾ [mm ²] | 2x95 | 2x150 | - | - | - | - | - | - | - |
| Min. braking resistor ³⁾ [Ohm] | 2,4 | | 2 x 2,4 | | | 3 x 2,4 | | - | - |
| Typ. braking resistor ³⁾ [Ohm] | - | - | - | - | - | - | - | - | - |
| Max. braking current [A] | 330 | | 2 x 330 | | | 3 x 330 | | - | - |
| Tightening torque for terminals [Nm] | - | | | | | | | | |
| Mains voltage (rated voltage) ⁴⁾ [V] | 305...500 ±0 (400 V) | | | | | | | | |
| Mains frequency [Hz] | 50 / 60 +/- 2 | | | | | | | | |
| Output voltage [V] | 3 x 0...U _N | | | | | | | | |
| Output frequency [Hz] | 0...1600 | | | | | | | | |
| Shielded motor line length [m] | 100 | | | | | | | | |
| Max. heat sink temperature TOH [°C] | 90 | | | | | | | | |
| Storage temperature [°C] | -25...70 | | | | | | | | |
| Operating temperature ⁵⁾ [°C] | -10...45 | | | | | | | | |
| Model / protective system | IP20 | | | | | | | | |
| EMC tested in accordance with ... | EN 61800-3 | | | | | | | | |
| Climatic category (EN 60721-3-3) | 3K3 | | | | | | | | |
| Pollution degree (IEC 664-1) | 2 | | | | | | | | |
| Vibration/Jolt | - | | | | | | | | |
| Weight [kg] | 300 | | | | | | | | |

1) With the regulated systems F5-M as well as F5-S 5% are to be subtracted as control reserve.

2) Recommended minimum cross section of the motor wire for rated power and a cable length of upto 100m (copper)

3) This data is only valid for units with internal brake transistor GTR 7 (see "unit identification")

4) At rated voltage ≥ 460V multiply the output rated current with factor 0,86

5) The output frequency should not exceed 1/10 of the switching frequency.

6) The temperature range is only valid for the power and control circuit. The temperature range for the power circuit is dependent on the control cabinet installation and the cooling system.

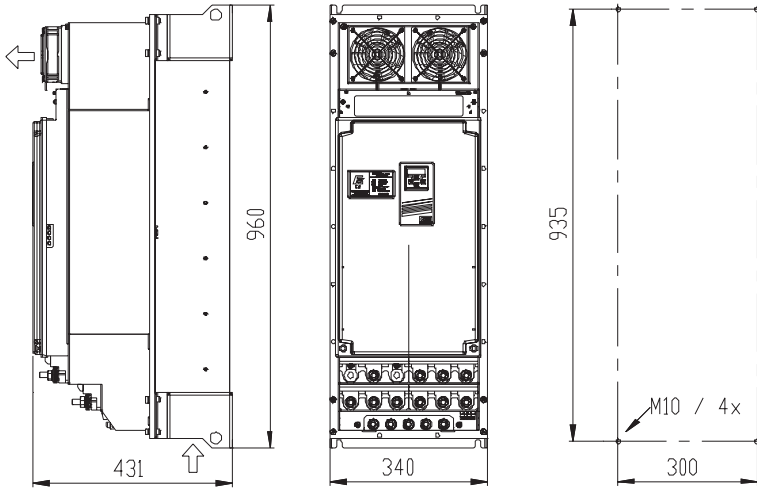


The technical data is for 2/4-pole standard motors. With other pole numbers the inverter must be dimensioned onto the motor rated current. Contact KEB for special or medium frequency motors.

Site altitude max. 2000 m. With site altitudes over 1000 m a power reduction of 1% per 100 m must be taken into consideration.

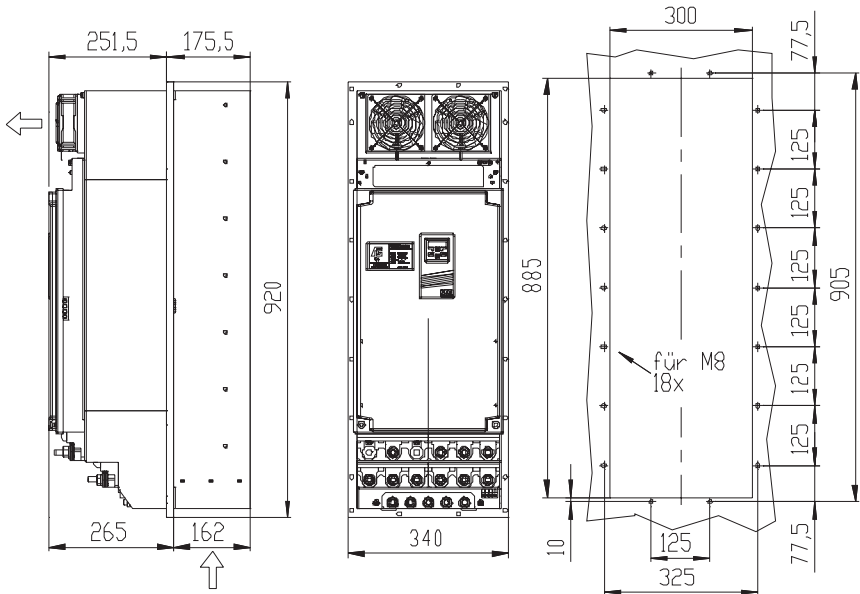
2.3 Dimensions

2.3.1 Standard Version



2.3.2 Through-Mount Version

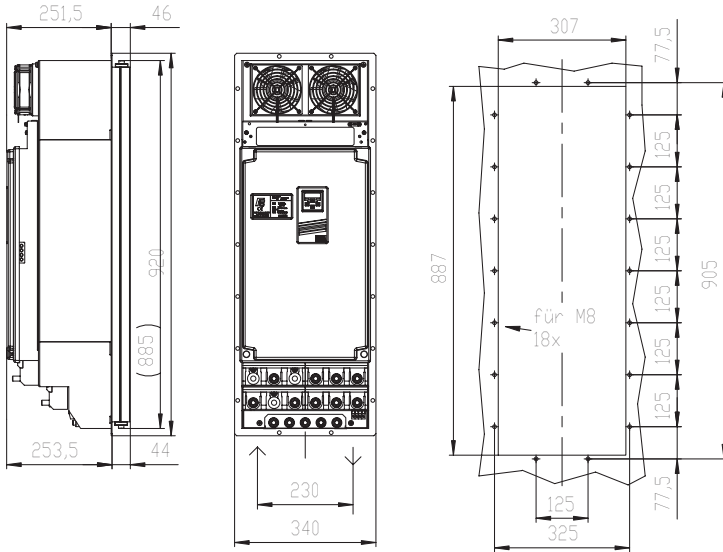
At this design the heat sink is moved through a section of the control cabinet to the outside.



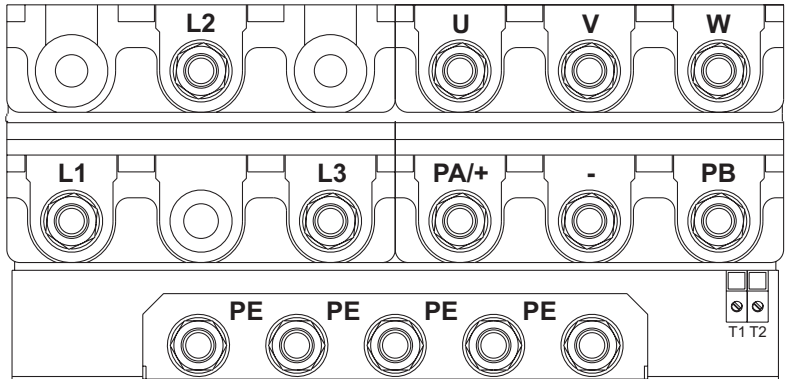
Power Circuit Terminals

2.3.3 Water-Cooling

This design is laid out to integrate COMBIVERT to an existing cooling system. At this design the instructions in the instruction manual 00.F5.01W-Kxxx for water-cooled units must be observed.



2.4 Summary of the Power Circuit Connections



- L1, L2, L3** 3-phase mains connection
- U, V, W** Motor connection
- PA+, PB** Connection for braking resistor
- PA+, -** Connection for feedback unit
(DC link voltage output)
- T1, T2** Connection for temperature sensor
- PE** Connection for shielding / earthing

2.5 Connection Accessories

2.5.1 Component Sets

| Size | Phases | Figure | Component set | Filter | Line choke |
|------|--------|--------|----------------|--------------------|--------------------|
| 28 | 3 | 1 | 28.U5.A1W-3000 | 1 x 28.E4.T60-1001 | 1 x 28.DR.B28-8031 |
| 29 | 3 | 1 | 29.U5.A1W-3000 | 1 x 30.E4.T60-1001 | 1 x 29.DR.B28-5331 |
| 32 | 3 | 2 | 32.U5.A1W-3000 | 1 x 32.E4.T60-1001 | 2 x 28.DR.B28-8031 |
| 33 | 3 | 3 | 33.U5.A1W-3000 | 2 x 28.E4.T60-1001 | 2 x 28.DR.B28-8031 |
| 34 | 3 | 3 | 34.U5.A1W-3000 | 2 x 30.E4.T60-1001 | 2 x 29.DR.B28-8031 |
| 35 | 3 | 4 | 35.U5.A1W-3000 | 3 x 28.E4.T60-1001 | 3 x 28.DR.B28-8031 |
| 36 | 3 | 4 | 36.U5.A1W-3000 | 3 x 28.E4.T60-1001 | 3 x 28.DR.B28-8031 |

2.5.2 Filter

| Filter | U_{max} | Nominal current | Leakage current | Motor line | Weight |
|----------------|-----------|-----------------|-----------------|------------|---------|
| 28.E4.T60-1001 | 3 x 500 V | 410 A | 60 mA | 30 m | 18,1 kg |
| 30.E4.T60-1001 | 3 x 500 V | 800 A | 60 mA | 30 m | 20,6 kg |
| 32.E4.T60-1001 | 3 x 500 V | 1000 A | 60 mA | 30 m | 25 kg |

2.5.3 Chokes

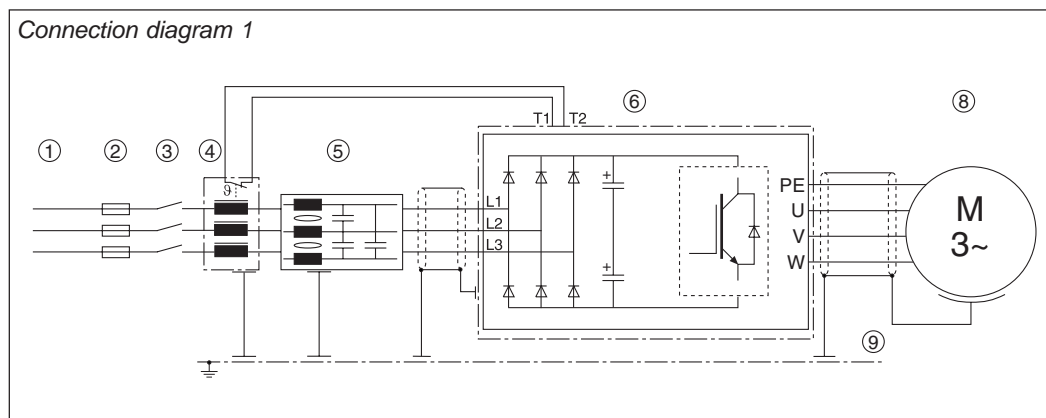
| Line choke | Input | Nominal current | U_K | Inductance | Weight |
|----------------|--------------|-----------------|-------|------------|---------|
| 28.DR.B28-8031 | 3 ph / 400 V | 400 A | 4% | 0,081 mH | 61 kg |
| 29.DR.B28-5331 | 3 ph / 400 V | 580 A | 4% | 0,051 mH | 73,5 kg |

2.6 Connection of the Power Circuit



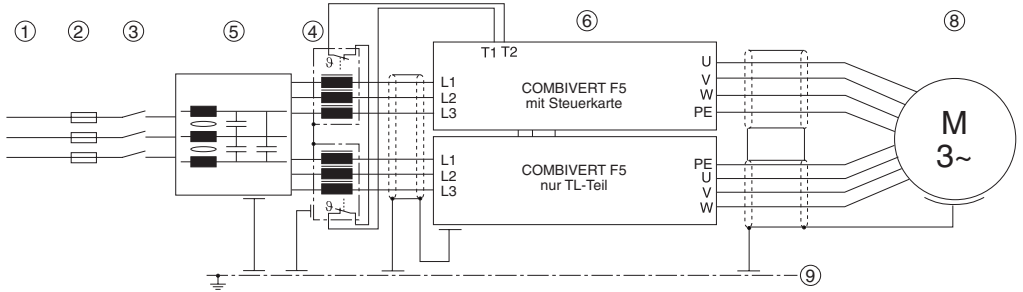
Exchanging the mains and motor connection leads to immediate destruction of the unit. Pay attention to the supply voltage and the correct direction of rotation of the motor!

Connection diagram 1

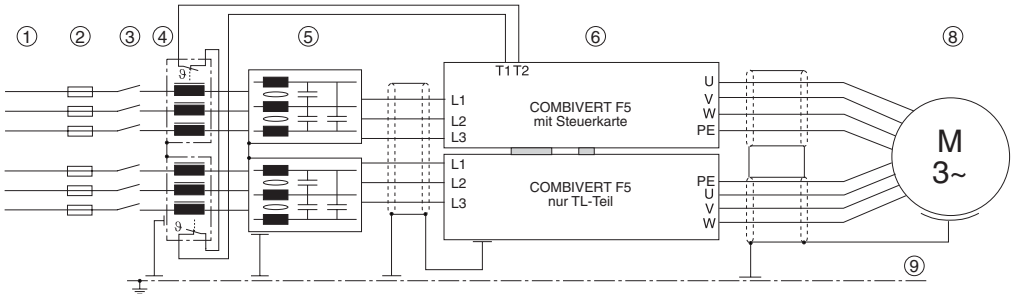


Connection of the power unit

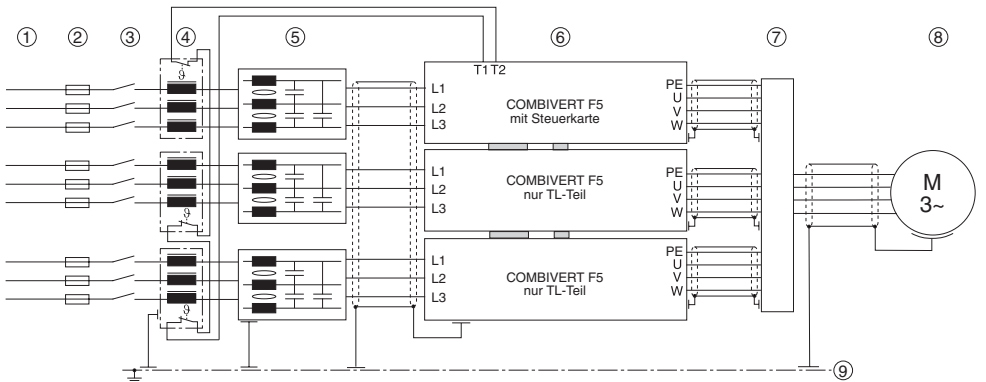
Connection diagram 2



Connection diagram 3

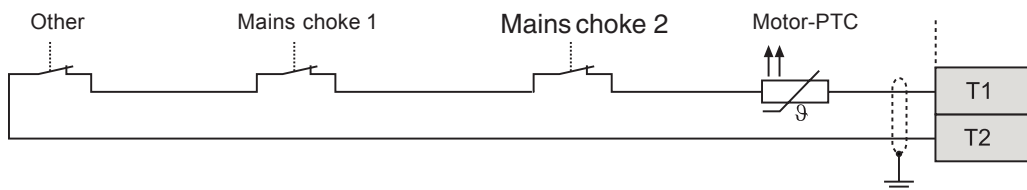



Connection diagram 4




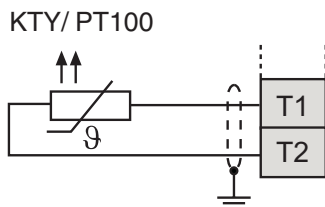
- | | | | |
|---|--|---|----------------|
| 1 | Supply line | 6 | KEB COMBIVERT |
| 2 | Main fuse | 7 | Terminal block |
| 3 | Main contactor | 8 | Motor |
| 4 | Mains choke with temperature detection | 9 | Mounting plate |
| 5 | HF-Filter | | |

2.7 Temperature sensing series connection



 During connection the temperature sensors of the input chokes are to be switched in series, since otherwise these are destroyed in the case of an error by overheating. The connection is always made at the master inverter.

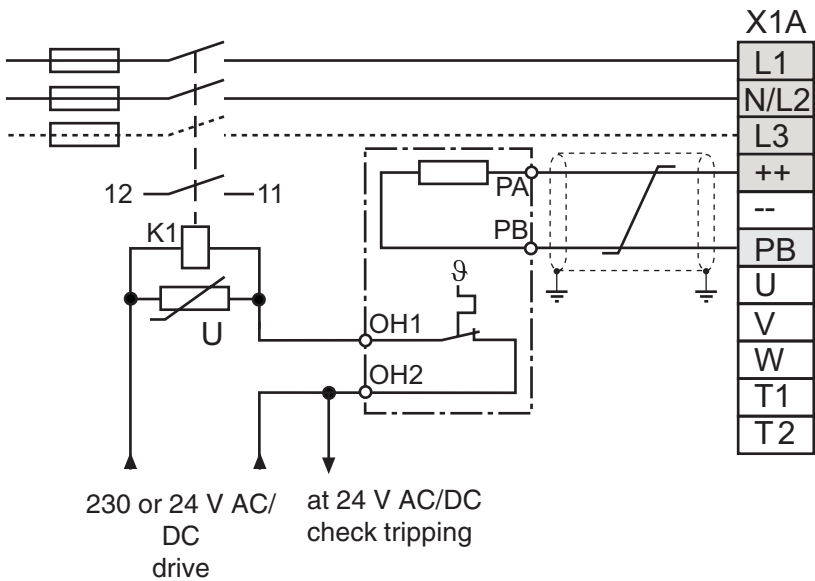
 KTY- or PT100 sensor may not be integrated in the temperature sensing series connection, otherwise the contact of the main contactor or other switching units will be simmered!



In order to detect the overheating of a braking resistor it is absolutely necessary to monitor the temperature switch of the braking resistor. The overheating can have following causes:

- ramps too short or the operation-time too long
- incorrect dimension of the braking resistor
- input voltage too high
- defect of braking transistor in the inverter or the braking module

The connection of the mains voltage offers the only protection in the case of a defective braking transistor (see diagram).



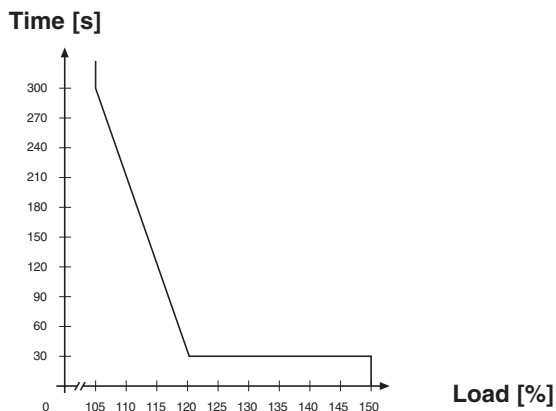
During clearing of the temperature monitoring the input voltage is switched off. For additional protection in regenerative operation connect the auxiliary contacts 11 and 12 of the line contactor K1 into the temperature series connection.

A simplified protection is achieved, if the links of the temperature sensor are integrated into the temperature detection in accordance with following drawing. This measure does not protect with a defect of the braking transistor however against the developing extreme load with acute danger of fire.

So that an evaluation occurs at F5-B/G, this must be activated with the software of the control card (CP.28 / see control circuit).

3. Annex

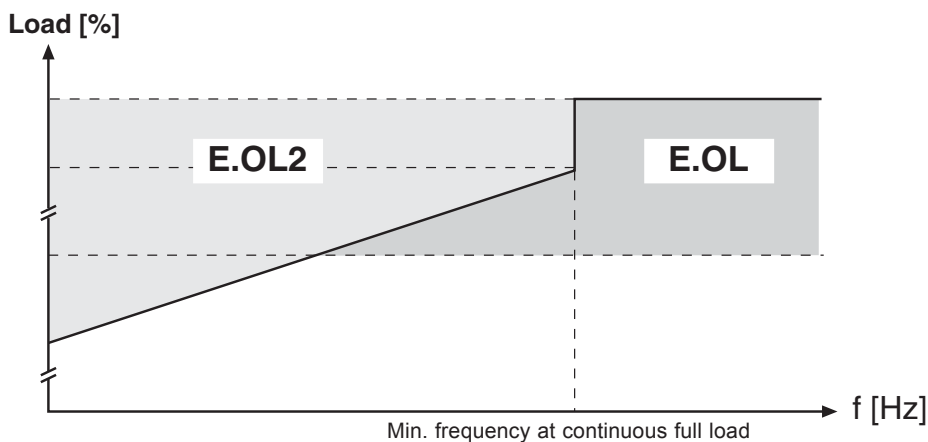
3.1 Overload Characteristics



On exceeding a load of 105% the overload integrator starts. When falling below the integrator counts backwards. If the integrator achieves the overload characteristic that corresponds to the inverter, the error E.OL is triggered.

3.2 Overload Protection in the lower Speed Range

(only valid for F5-M and F5-S, stall current see technical data)



D Vor Auslieferung durchlaufen alle Produkte mehrfach eine Qualitäts- und Funktionskontrolle, so daß Fehler auszuschließen sind. Bei Beachtung unserer Betriebsanleitung sind keine Störungen zu erwarten. Sollte sich trotzdem ein Grund zur Reklamation ergeben, so ist das Gerät mit Angabe der Rechnungsnummer, des Lieferdatums, der Fehlerursache und der Einsatzbedingungen an uns zurückzusenden. Für Fehler, die aufgrund falscher Behandlung, falscher Lagerung oder sonstigen allgemeinen Irrtümern auftreten, übernehmen wir keine Verantwortung. Prospekte, Kataloge und Angebote enthalten nur Richtwerte. Technische Änderungen jeder Art behalten wir uns vor. Alle Rechte vorbehalten. Nachdruck, Vervielfältigung und fotomechanische Wiedergabe sind ohne schriftliche Genehmigung durch KEB auch auszugsweise verboten.

GB Prior to delivery all products pass several quality and performance inspections so that malfunctions can be ruled out. When used in accordance with the operating instructions failure is most unlikely. However, if you have cause for complaint the unit should be returned stating invoice number, delivery date, cause of failure and field conditions. We do not accept the responsibility for failures due to misuse, wrong storage or similar causes. Leaflets, catalogues and quotations contain only standard values. We reserve the right to make technical changes without obligation. All rights reserved. Any piratic printing, mimeographing or photomechanical reproduction, even in extracts, is strictly prohibited.



Karl E. Brinkmann GmbH

Försterweg 36-38 • D-32683 Barntrop
fon: +49 5263 401-0 • fax: +49 5263 401-116
net: www.keb.de • mail: info@keb.de

KEB Antriebstechnik GmbH & Co. KG

Wildbacher Str. 5 • D-08289 Schneeberg
fon: +49 3772 67-0 • fax: +49 3772 67-281
mail: info@keb-combidrive.de

KEB Antriebstechnik Austria GmbH

Ritzstraße 8 • A-4614 Marchtrenk
fon: +43 7243 53586-0 • fax: +43 7243 53586-21
Kostelni 32/1226 • CZ-370 04 České Budejovice
fon: +420 38 7319223 • fax: +420 38 7330697
net: www.keb.at • mail: info@keb.at

KEB Antriebstechnik

Herenveld 2 • B-9500 Geraardsbergen
fon: +32 5443 7860 • fax: +32 5443 7898
mail: vb.belgien@keb.de

KEB CHINA Karl E. Brinkmann GmH

Shanghai Representative Office
(Xinmao Building, Caohejing Development Zone)
No. 99 Tianzhou Road (No.9 building, Room 708)
CHN-200233 Shanghai, P.R. China
fon: +86 21 54503230-3232 • fax: +86 21 54450115
net: www.keb.cn • mail: info@keb.cn

KEB CHINA Karl E. Brinkmann GmH

Beijing Representative Office
No. 36 Xiaoyun Road • Chaoyang District
CHN-10027 Beijing, P.R. China
fon: +86 10 84475815 + 819 • fax: +86 10 84475868
net: www.keb.cn • mail: hotline@keb.cn

Société Française KEB

Z.I. de la Croix St. Nicolas • 14, rue Gustave Eiffel
F-94510 LA QUEUE EN BRIE
fon: +33 1 49620101 • fax: +33 1 45767495
net: www.keb.fr • mail: info@keb.fr

KEB (UK) Ltd.

6 Chieftain Buisiness Park, Morris Close
Park Farm, Wellingborough **GB-Northants**, NN8 6 XF
fon: +44 1933 402220 • fax: +44 1933 400724
net: www.keb-uk.co.uk • mail: info@keb-uk.co.uk

KEB Italia S.r.l.

Via Newton, 2 • I-20019 Settimo Milanese (Milano)
fon: +39 02 33500782 • fax: +39 02 33500790
net: www.keb.it • mail: kebitalia@keb.it

KEB - YAMAKYU Ltd.

15-16, 2-Chome, Takanawa Minato-ku
J-Tokyo 108-0074
fon: +81 33 445-8515 • fax: +81 33 445-8215
mail: ky-sales@f4.dion.ne.jp

KEB - YAMAKYU Ltd.

711, Fukudayama, Fukuda
J-Shinjo-Shi, Yamagata 996 - 0053
fon: +81 233 29-2800 • fax: +81 233 29-2802
mail: ky-sales@f4.dion.ne.jp

KEB Nederland

Leidsevaart 126 • NL-2013 HD Haarlem
fon: +31 23 5320049 • fax: +31 23 5322260
mail: vb.nederland@keb.de

KEB Polska

ul. Budapesztańska 3/16 • PL-80-288 Gdańsk
fon: +48 58 524 0518 • fax: +48 58 524 0519
mail: vb.polska@keb.de

KEB Portugal

Avenida da Igreja – Pavilhão A n.º 261 Mouquim
P-4770 - 360 MOUQUIM V.N.F.
fon: +351 252 371318 + 19 • fax: +351 252 371320
mail: keb.portugal@netc.pt

KEB Taiwan Ltd.

No.8, Lane 89, Sec.3; Taichung Kang Rd.
R.O.C.-Taichung City / Taiwan
fon: +886 4 23506488 • fax: +886 4 23501403
mail: kebtaiwan@seed.net.tw

KEB Sverige

Box 265 (Bergavägen 19)
S-4393 Hälsö
fon: +46 31 961520 • fax: +46 31 961124
mail: thomas.crona@keb.de

KEBCO Inc.

1335 Mendota Heights Road
USA-Mendota Heights, MN 55120
fon: +1 651 4546162 • fax: +1 651 4546198
net: www.kebco.com • mail: info@kebco.com