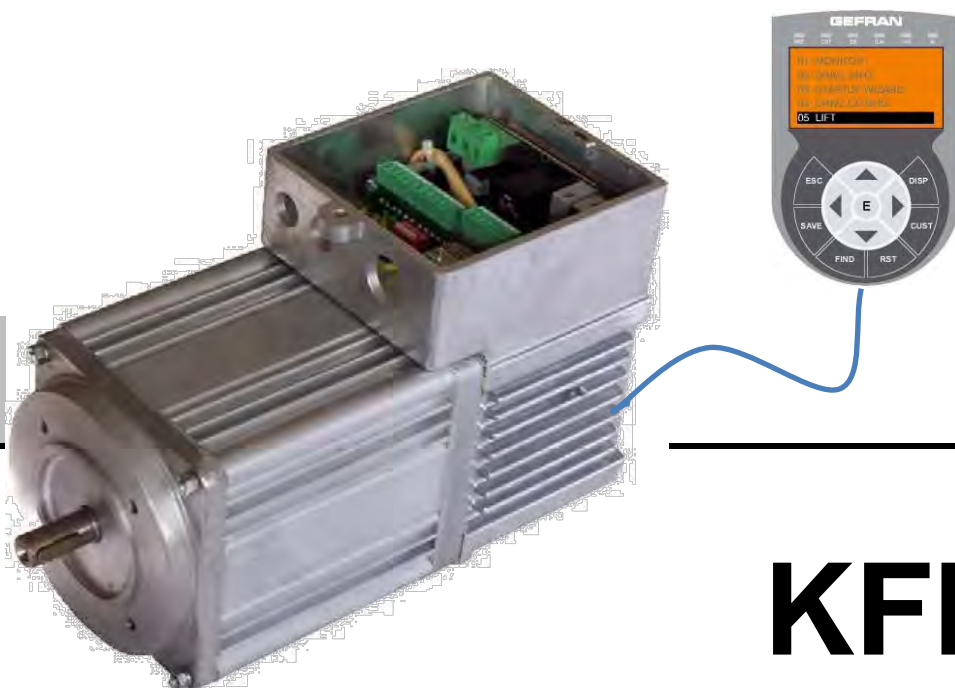


Asynchronous Positioning Motor

with integrated frequency inverter
and optional keypad
Software V 42.xx

Sinusmotor Drive



KFM05a

■ ■ ■ □ Instruction Manual

SIEI-AREG GmbH

GEFRAN

Technical subjects to change without notice

Art.-Nr.: 918 111e Rev: 09 / 14



Management Service

CERTIFICATE

The Certification Body
 of TÜV SÜD Management Service GmbH
 certifies that

GEFRAN

SIEI-AREG GmbH
 Gottlieb-Daimler-Str. 17/3
 74385 Pleidelsheim
 Germany

has established and applies
 a Quality Management System for

**Development, Production and Marketing of
 Electronically Controlled Drive Systems.**

An audit was performed, Report No. **70013772**
 Proof has been furnished that the requirements
 according to

ISO 9001:2008

are fulfilled. The certificate is valid from **2013-08-28** until **2016-08-27**.

Certificate Registration No. **12 100 20483 TMS**

M. Wegner

Product Compliance Management
 Munich, 2013-08-08



Deutsche
 Akkreditierungsstelle
 D-ZM-14143-01-03

About this Manual

Attention!

Before installation, connection, commissioning and using of the KFM05a read and observe carefully this manual.

Especially the chapter about safety should be read with attention and the advices in it should be considered.

Please keep this manual in a safe place in which it is at disposal for the technical staff during the entire lifecycle of this product.

SIEI-AREG GmbH is not responsible for eventual damages caused by mistakes in this manual. The information held in this manual may be modified without notice and SIEI-AREG GmbH will not be responsible for changes that may occur in the future. Without written consent of SIEI-AREG GmbH it is not allowed to reproduce any part of this manual in any form or by any means (including recording and photocopying).

Software for the KFM05a:

This manual is updated according to KFM05a-Software-Version V42.xx (KFMa42.xx). Variations of the number replacing "x" have no influence on this manual.

Functionality of the KFM05a:

Up-to-date information about the software are on the CD-ROM in the files LIESMICH.TXT respectively REDME.TXT.

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The information provided herein is only provided for product description and cannot be taken as an insured property in the legal sense.

Thank you for purchasing this GEFTRAN-product.

We are always pleased to receive your suggestions to improve the KFM05a and this manual at info@sieiareg.de.

More information can be found at www.sieiareg.de.

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General Safety notes

Read and observe this technical description before commencing assembly and commissioning work.

General

Depending on their type of protection power drive-converters can have live, bare, possibly moving or rotating parts and a hot surface during operation.

There is a risk of death, serious injury or material damage if the required cover is removed inadmissibly, if the equipment is not used for its intended purpose or if the equipment is installed or operated incorrectly.

All installation, maintenance and repair work must only be carried out by qualified specialist personnel (observe IEC 60364 resp. CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 and national accident prevention regulations e.g. BGV A2).

Qualified specialist personnel in the sense of these general notes on safety are persons who are familiar with installation, assembly, commissioning and operation of this product and possess qualifications appropriate for their work.

Use as specified

Power drive-converters are designed for installation into electrical systems or machines.

Commissioning (that means the beginning of use as specified) of a built-in drive-converter in a machine is prohibited until it has been established that the machine or system complies with the requirements of the EC-directive 2006/42/EG (machine-directive); observe EN 60204.

Commissioning (that means the beginning of use as specified) is permitted only if the latter complies with the directives on EMC (2004/108/EG).

The drive-converters meet the standards of the low-voltage guideline 2006/95/EG. The harmonized standards of the series EN 50178 combined with EN 60493-1 and EN 60146 / DIN VDE 0558 are used for the drive-converters.

The technical data and information on connection conditions are provided on the rating plate and in this technical description and must be observed under all circumstances.

Transport, Storage

The instructions for transport, storage and proper handling must be observed.

Damage established after delivery must be notified to the transport company immediately. If necessary, the supplier must also be notified before the damaged inverter is put into operation. Climatic conditions must be in accordance with EN 50178.

Installation

Installation and cooling must take place in accordance with the instructions in this technical description.

Protect the power drive-converter against inadmissible conditions. Especially during transport and handling do not bend components and/or do not change insulation distances. Avoid touching electronic components and contacts.

The power drive-converter contains components that are sensitive to electrostatic burst and can be damaged easily in case of inappropriate handling. Do not damage or destroy mechanically electrical components by dismantling them into their individual components (risk for health and the environment).

General Safety notes

Electrical Connection

When working on a live drive-converter observe the valid national accident prevention regulations (e.g. BGV A2).

Electrical installation is to be made according to the relevant regulations (e.g. line cross sections, fuses, PE-connection). Additional notes are in this technical description.

Compliance with the limit values demanded by the EMC legislation is up to of the manufacturer of the system or machine. Additional information about shielding, grounding, configuration of filters and cables is also provided in this technical description.

Operation

Systems or machines with built-in power drive-converters need if necessary additional monitoring and protective devices in accordance with the valid safety regulations, e.g. law of technical material, accident prevention regulations etc. Alteration of the drive-converters via user software is allowed. This technical description is to be considered.

Do not touch live parts of the drive-converter immediately after disconnecting from the mains owing to charged capacitors. Remove the main unit cover only after disconnecting the drive-converter from the mains and a waiting period of at least 5 minutes (discharging period of the capacitors). In the event of malfunctions, the discharging period of 5 minutes may be exceeded substantially. In addition observe the instruction plates on the drive-converter. During operation hold close all coverings and doors.

Among other things, guarantee presupposes the considering of this technical description.

Maintenance

Observe the documentation of SIEI-AREG especially concerning maintenance. Further information is in this technical description.

Keep this safety notes and this documentation in a safe place!

SIEI-AREG GmbH cannot make any guarantees relating to the translation.

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1. General

The drive-system KFM05a includes frequency inverter and motor in one unit. In contrast to other drive systems, where the frequency inverter is installed separate, the KFM05a integrates the frequency inverter within the motor. In addition there is a sensor for rotor position. This combination makes the KFM05a a positioning drive in the lower power range.

1.1 Applications

- Linear axis
- Angle positioning
- Handling machines
- Robotics
- Packaging machines
- Assembly lines
- Special-Purpose machines
- Conveyers
- Doors
- Knead machines, dough-working

1.2 Technics of the KFM05a

The 3-phase asynchronous motor, electronics and position sensor form one integrated unit. Customer orientated control- and positioning possibilities are realized via several field bus interfaces.

The internal position-encoder resolution is 2048 pulses / revolution. The "stiff characteristic" of the position control depends on the parameter-setting and can be several pulses.

The program is stored in the FLASH-ROM, so standard software resp. customer specific software can be loaded resp. changed in a simple way without handling the KFM05a, also by the customer (it is possible to save the program), because a basic software (boot sector) remains in the KFM05a.

The program-tool E@syDrive for KFM05a contains modules for parameter-configuration and loading / saving, loading firmware and a software-oscilloscope for motor optimizing and diagnosis. An RS 232 interface for parameterizing and diagnosis is standard.

Different fieldbus connections are provided in option (CANopen is already available). This is another component set, not an additional board. With this all functions can be controlled via fieldbus.

For Hardware-control 5 digital control inputs, 3 digital control outputs (24 V via opto-coupler, potential free) and 1 relay contact are available. Furthermore, 2 analog inputs are implemented. In addition, operating and diagnostic states can be displayed via 6 LEDs. A safety relay can be included as an option for the function "Safe Stop".

The KFM05a requires a single-phase, 230 VAC, 50 Hz power supply. The necessary filters according to the EMC-guideline are standard equipment.

Optionally, a DC/DC-transformer with additional 24 V supply for fieldbus and electronics is available. In this case, the internal auxiliary supply is not available.

Another option is the KFM05a with integrated holding brake or emergency stop brake (controlled by 24 VDC or 230 VAC), the brake relay 30VDC/1A is already on the controller board.

The KFM05A can be delivered in different housings with different connection configurations.

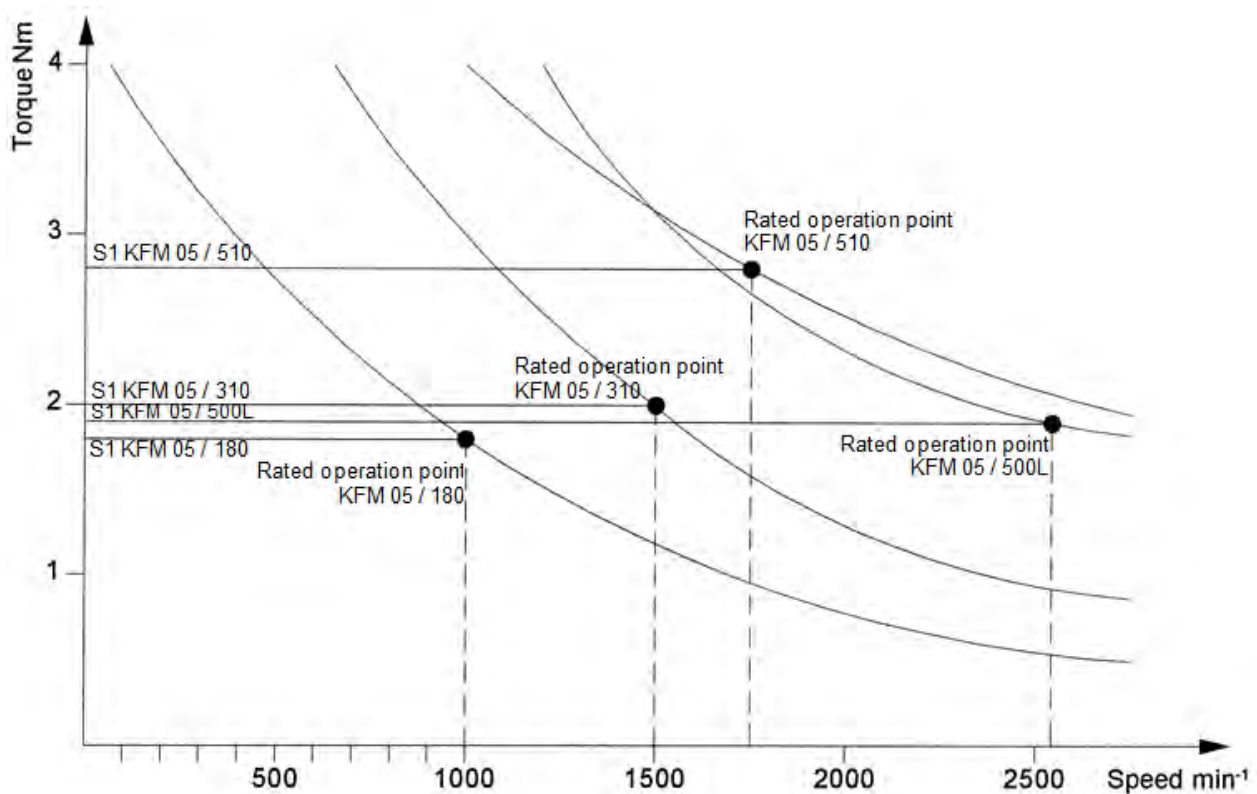
2. Technical Data

2.1 Datasheet

Type	KFM05a / 180	KFM05a / 310	KFM05a / 510	KFM05a / 500L
Power supply U_{Netz}	230 Vac $\pm 10\%$ / 50 Hz $\pm 10\%$			
Nominal current I_{Netz}	1,3 A	2,0 A	3,1 A	3,5 A
Rated Power P_N	188 W	314 W	512 W	507 W
Motor torque M_N	1,8 Nm	2,0 Nm	2,8 Nm	1,9 Nm
Rated speed n_N	1000 min ⁻¹	1500 min ⁻¹	1750 min ⁻¹	2550 min ⁻¹
Number of poles p	6 poles	4 poles	4 poles	4 poles
Motor frequency @ P_N f	60 Hz	55 Hz	65 Hz	98 Hz
Winding resistance R	23 Ω	9 Ω	5 Ω	6 Ω
Rotor inertia torque J	11,7 kgcm ²	7,2 kgcm ²	15,6 kgcm ²	7,2 kgcm ²
Overload	2 x M_N for 60s (200% M_N respectively P_N)			
Range of output frequency	0 - 120 Hz			
Position encoder resolution	2048 pulses per revolution ± 40 pulses linearity error			
Analogue setting	AIN1 and AIN2 0 -10V, 0 - 20mA, 2 -10V, 4 - 20mA, digital 24V			
Acceleration/deceleration	1000 to 0,02 Hz/s (0,05 - 2500 s)			
Control signals	5 digital IN 24 Vdc $\pm 20\%$; 3 digital OUT 24 Vdc 50 mA short-circuit proof; optically isolated, relay contact 30 V/1 A, optional safety relay			
Functions	Position control, positioning, frequency control, etc programmable			
Positions	16 positions programmable via fieldbus, 32-Bit resolution			
Interface	RS232, RS422, optional RS485, CANopen			
Handling	Optional control panel connected for the setting of the parameters			
Software	in Flash-ROM (can be downloaded), parameters and fault memory in EEPROM			
Programming	Software for control and optimization of the parameters, control of the functions and saving of the parameters included			
Buffer function	Optionally via external 24 Vdc, $\pm 10\%$, 250 mA			
Holding brake	internally 24 Vdc, optionally 230 Vac also emergency brake possible			
Protection functions	under- and overvoltage, overcurrent, overtemperature			
Mains fuse	externally with max 16 A, internally 5,0 A mT fuse			
Safety category	Optionally class 3 Safety Stop DIN EN ISO 13849 (formerly EN954-1)			
Motor isolation	class F 155°C			
Connection	cable bushing (metric), cable inlet or plug-in version			
Ambient operating temperature T_B	- 10°C - +40°C above with derating of performance			
Design	BG 71 according to IEC with standard-flange B14			
Type of protection	IP54	IP54	IP54	IP44 (fan)
Weight	8,3 kg	8,1 kg	11,7 kg	9,4 kg
Standards	EN50178, EN60034-1, EN61000-6-1 - EN61000-6-4			
Certification	CE optionally: UL, CSA			

2.2 Speed- / Torque Characteristics

The asynchronous motor is driven via frequency inverter. Therefore all operation points below the S1-characteristics can be set.



Torque-speed-characteristics

2.3 Mechanical Load of the Motor Shaft

Rating life of the ball bearings 20.000 hours

- Action of the radial force F_R at the middle of the shaft at 3000 min⁻¹ motor speed
- No simultaneous load with maximum F_R and F_A
- $F_R = 500 \text{ N}$
- $F_A = 140 \text{ N}$

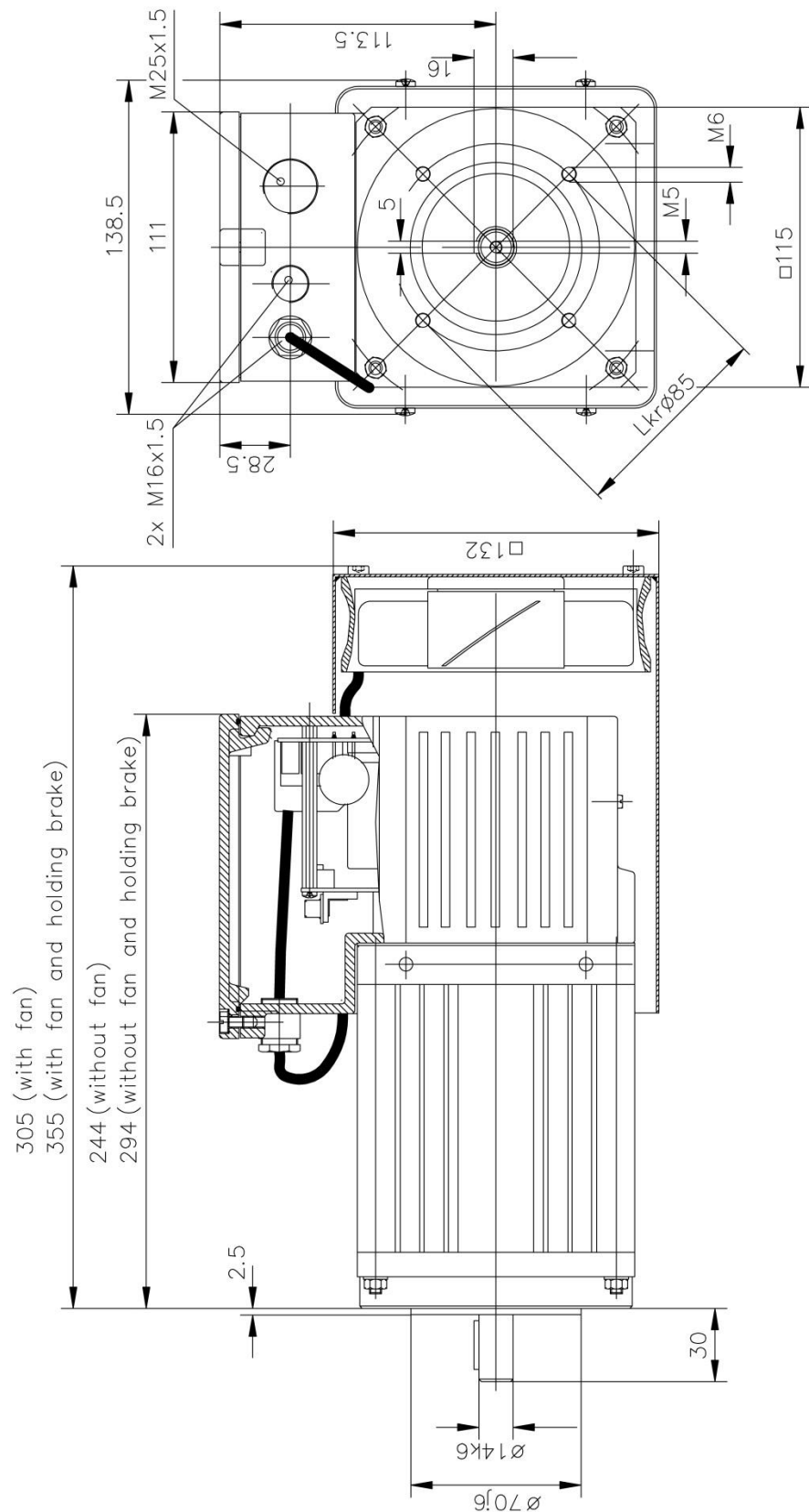
These forces should not to be exceeded!

Warning!

If the KFM05A is coupled via belts (flat-, V- or tooth-belt), the belt-tension must be adjusted in that way, that the radial forces are not exceeded.

2.4 Motor Dimension

KFM 05–180 und 310 without fan
 KFM 05–500 L with fan



2.5 Order number for KFM05a

2.5.1 Code definition

882 100 - 0443

KFM05a

Power

- 0 special design
- 1 180 W asynchronous motor
- 2 310 W asynchronous motor
- 3 500 W asynchronous motor (with fan)
- 4 510 W asynchronous motor

Fieldbus

- 0 without (standard)
- 1 Profibus DP (on request)
- 2 CANopen
- 3 EtherCat (on request)

Brake

- 0 Without
- 1 Holding brake 24V dc
- 2 Holding brake 230V ac via grid
- 3 Emergency brake 230V ac via grid
- 4 Emergency brake 230V ac externally controlled
- 5 Holding brake 24V dc externally controlled
- 6 Holding brake 230V ac externally controlled

Power supply electronics

- 0 internal (standard)
- 1 DC /DC 24V dc
- 2 Safety relay (safe stop)
- 3 DC /DC 24V dc and safety relay (safe stop)

Functions

- 00 No I/O connection (control via fieldbus)
- 11 Only enabling 24V / Relay ready
- 44 Analog input 1 / 2 switchable with S3 0 – 10V / 0 – 20mA
- 48 Analog input 1 / 2 switchable with S3 0 – 10V / 0 – 20mA,
Keypad via M12 bushing 8 pins
- 88 Analog input 1 / 2 switchable S3 0 – 10V / 0 – 20mA Analog output 1 0 – 5V,
Keypad via M12 bushing 8 pins

Housing

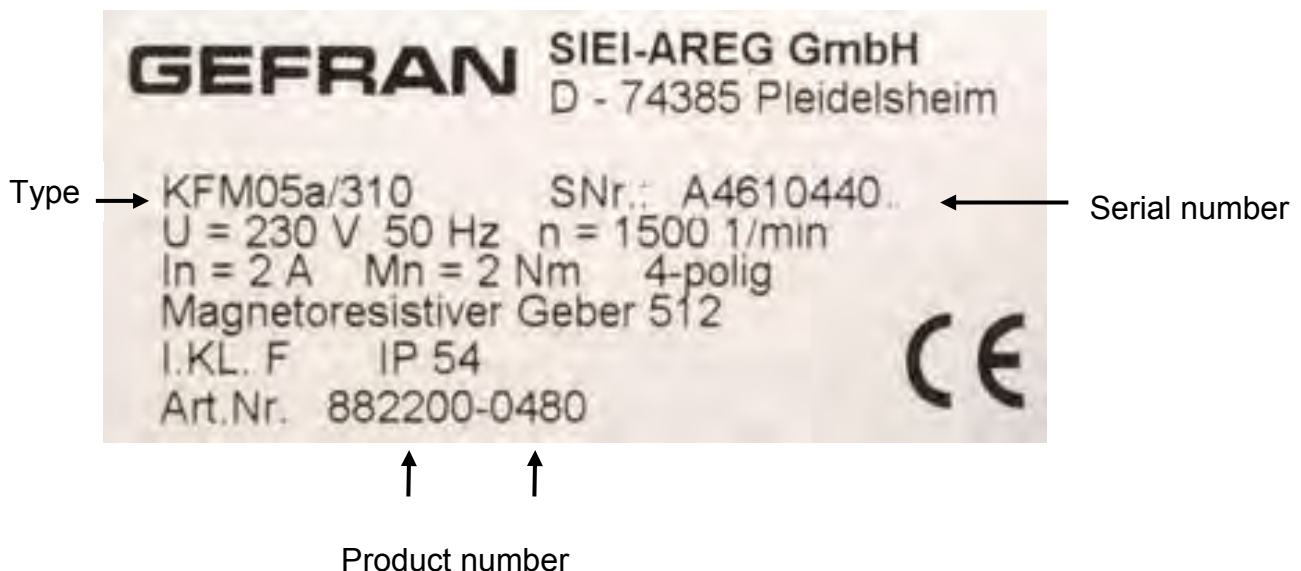
- 0 standard IP54 protection (metric cable bushing)
- 1 connector version IP54 protection (plastic , light version)
- 2 metric screwing IP65 protection (without shaft sealing)
- 3 connector version IP54 protection (metallic, heavy version)
- 4 Sub-D-connector on the right IP20 / IP54 protection
- 5 cable inlet IP20 protection
- 6 metric screwing, fieldbus over M12 connector/bushing
- 7 housing closed without drills, connection from customer e.g. cover plate
- 8 housing extended for options
- 9 customer-specific housing (from drawing)

2.5.2 Additional ordering information:

Gear	detailed description
Varnishing	<ul style="list-style-type: none">- Standard not varnished (aluminum cast)- Standard varnishing KFM05A L 500 black- Special varnishing on request
Software	<ul style="list-style-type: none">- Standard software on CD-ROM (manual as PDF-file)- Customer specific software (detailed description) on request- Special software on request- Parameter set
Operating manual	<ul style="list-style-type: none">- standard manual in German- manual as PDF-file on request- Numbers of manuals for several motors- Other languages on request
Special requests	Customized designs are our specialty. If you have special requests, questions, and suggestions or if you need a particular design, feel free to contact us.

2.5.3 Name plate

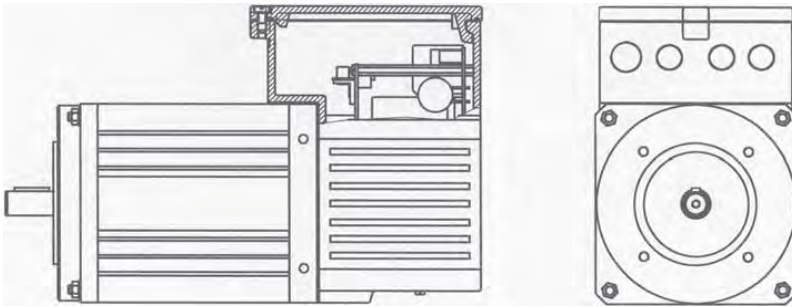
For a better identification, the name plate shows the product number and serial number in addition to the performance data.



2.6 Housing

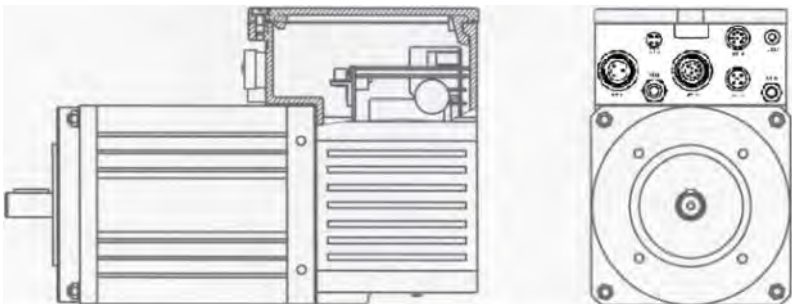
2.6.0 Standard housing with IP54 metric screwing

The standard housing of the KFM05a has four metric holes for cable inlet: 1 x M20 and 3 x M16 thread are in the housing.



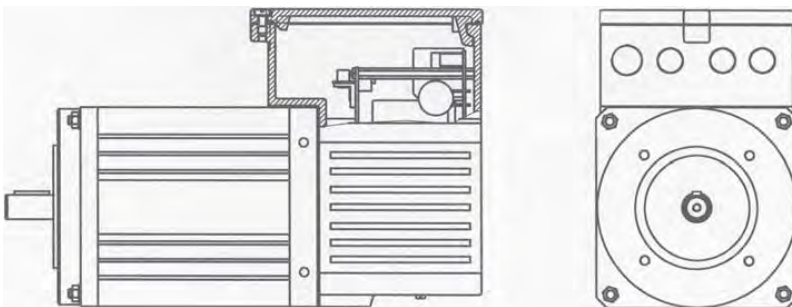
2.6.1 Standard connector housing with IP54 light plastic bushing

To facilitate rapid connection of the KFM05a, all ports are provided with plastic bushing in this version. Light version



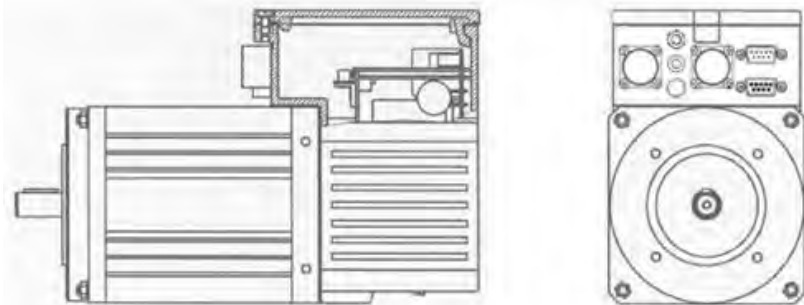
2.6.2 IP65 metric screwing without shaft sealing

This version of the KFM05a is additionally sealed to IP65. Since no shaft seal is provided, IP65 protection can only be achieved with built-on gear box.



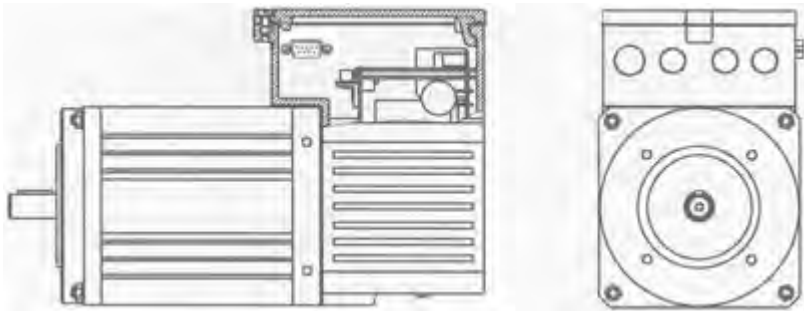
2.6.3 Housing with IP54 heavy metal bushing connectors

To facilitate rapid connection of the KFM05a, all ports are provided with metal bushing in this version. Heavy Version



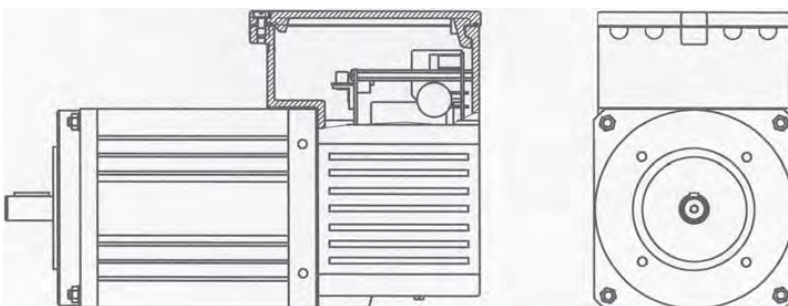
2.6.4 Housing with D-Sub 9 connector on the right side IP20

In this version, there is a D-Sub 9 connector on the right side of the housing for communication via a fieldbus or RS232.



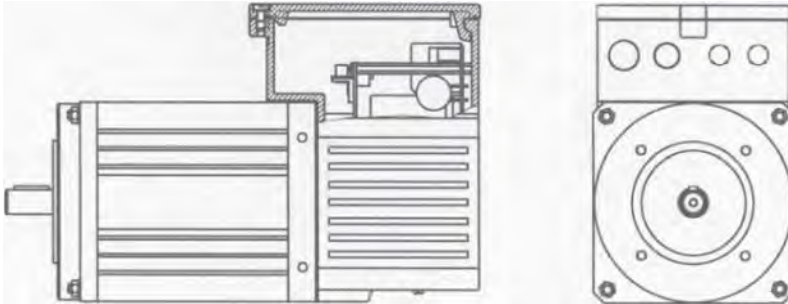
2.6.5 Housing with cable inlets IP20

To remove the cables easily and rapidly, the cable inlets are provided in the housing.



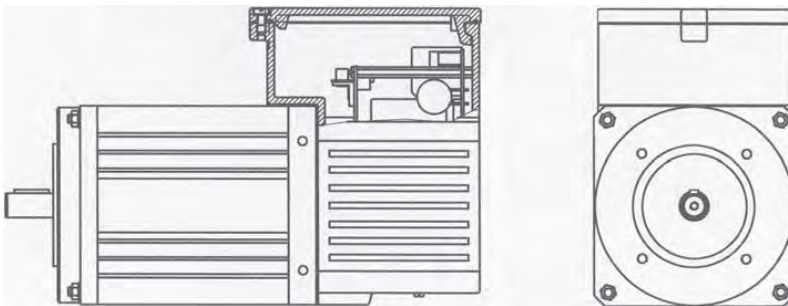
2.6.6 IP54 metric screwing with fieldbus via M12

This housing of the KFM05a has four metric holes for cable inlet respectively connectors:
1 x M20, 1 x M16 and 2x M12 for fieldbus connection.



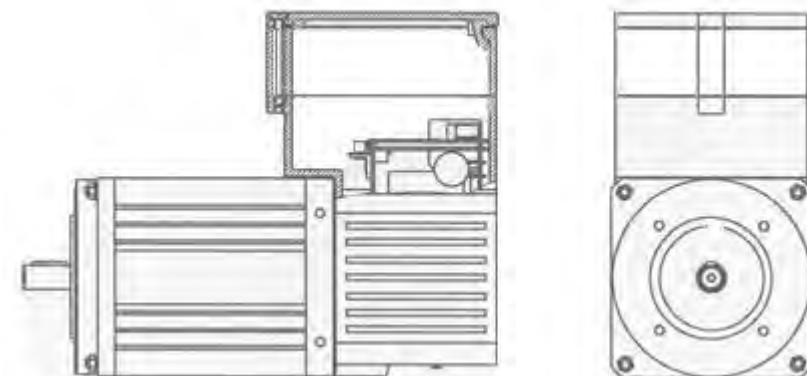
2.6.7 Housing closed, connection made by client

This option, gives the client the possibility to make his own connection layout.



2.6.8 Housing extension for options

In planning



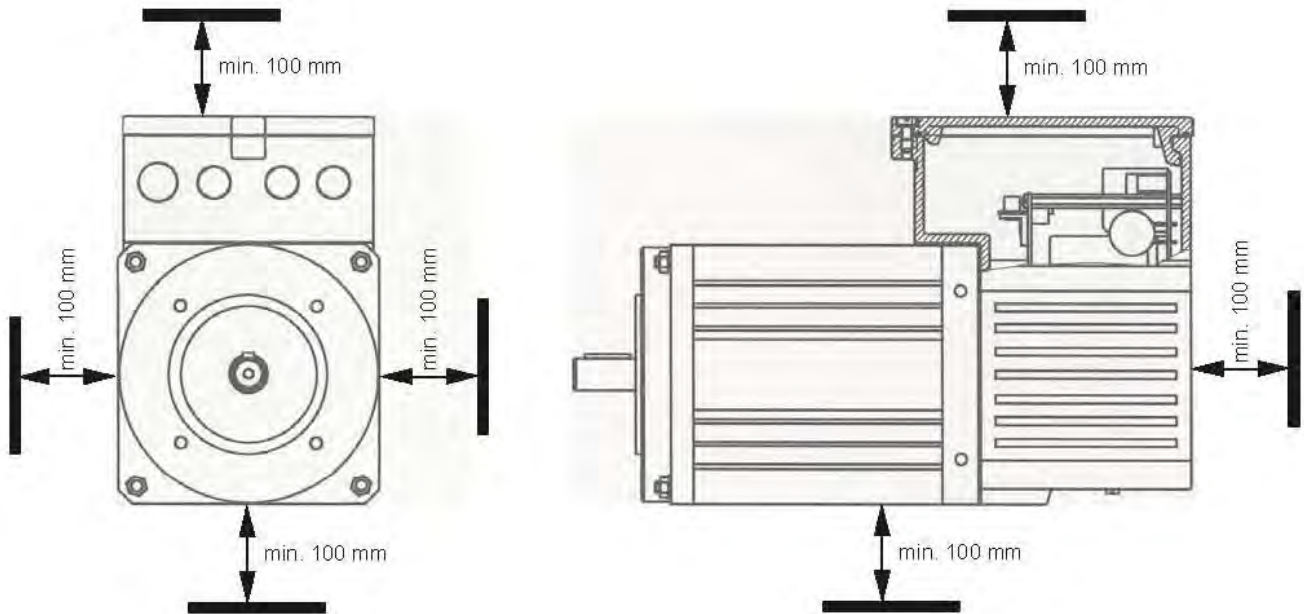
2.6.9 Housing customized according to drawing

If you wish a customized housing, please contact us.

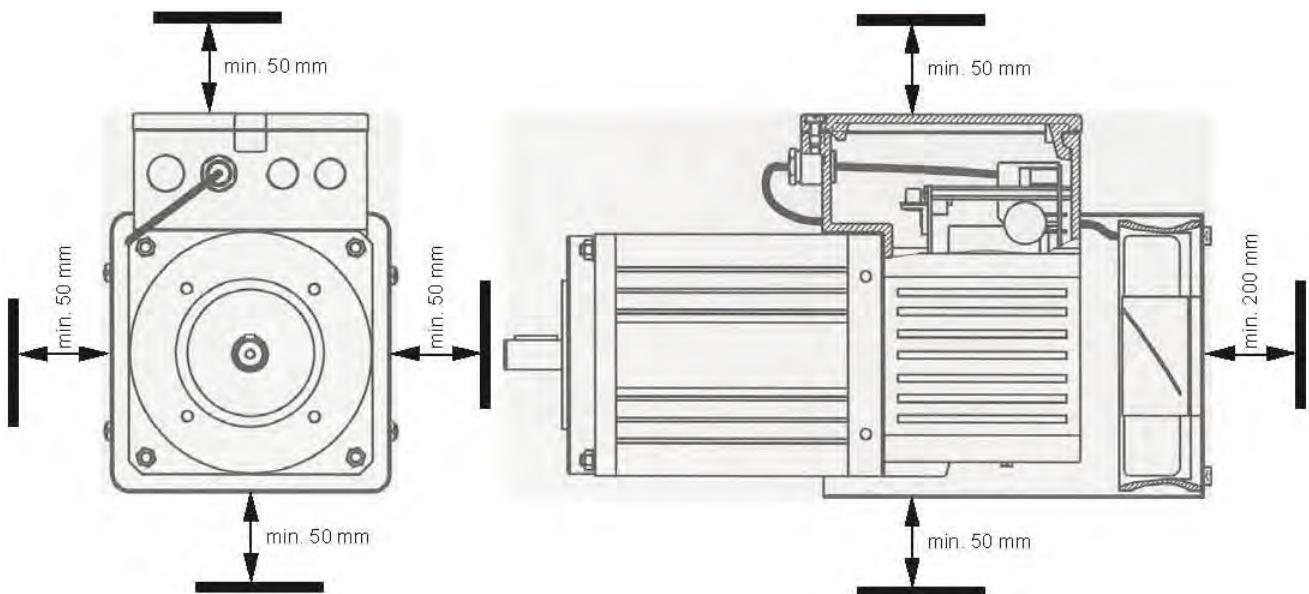
2.7 Mounting Hints

There must be a minimum distance to neighboring units, motors, walls, etc. to ensure a sufficient cooling of the KFM05a.

KFM05a /180 / 310 / 510



KFM05a /500L



2.8 Options

2.8.1 Option Brake

The KFM05A has a positioning-function and therefore in some applications it needs a brake in case of power failure to hold the position and prevent uncontrolled movements.

Holding brake (24 V or 230 V)

This brake holds the KFM05a in standstill position until a positioning operation is again possible. A braking out of the motion is not recommended, because this, depending on the rotating mass, would lead to higher wear and shorter life.

Emergency-stop brake (230 V)

This brake stops the KFM05A and the rotating mass out of the motion to standstill. This type of brake is designed for higher load and is used for fast braking in handling-systems.

The KFM05a doesn't need an additional relay board for the brake, because the relay is already built in the KFM05a with brake. This relay switches safely the brake-power of the 24V brake. The power 24V/0,5A must be provided by an **external supply**. The 24V-brake is directly connected to the board; the 24V-supply is connected via X7:1 and X7:2.

There is also the possibility to directly connect the 230V-brake with the grid from within the KFM05a. In this case, the brake is active whenever there is a power failure.

In addition, all brake variants can also be switched on and off externally, the brakes are connected on a terminal block.

A KFM05a with brake always has a longer housing; therefore it is not possible to install a brake additionally.

2.8.2 Option Safety relay

As an option, a safety relay can be installed at the factory. This is necessary if the KFM05a should be used in applications in which security features are required. The safety relay can be activated with the enable input X7:7 and then turns on the IGBT output. The normally open contact is connected to the terminal X6:27 and X6:28 (30Vdc, 1A) which is connected to the other contacts.

2.8.3 Option additional 24V power supply

The additional 24V power supply is made via a DC/DC-transformer for isolation. This supply is recommended for following applications:

- Fieldbus-option: The fieldbus will not be interrupted if the 230V mains-supply is cut off.
- Safety functions: Applications with safety shutdowns of the 230 V mains supply (operator action or remedying faults).
- Preservation of the information: The 24 V supply feeds the controller, so that the information about position, positioning, residual path, etc. are kept available, until the 230 V supply is back. Then the KFM05a continues in normal operation.

This option can only be installed at the factory, it cannot be added later.

Notice:

This option only makes a reset of the undervoltage-fault (E5) and then you can start further operation of the KFM05a without a reference after mains-on, if the parameter MOTOR TYP in the version page "KFM05a / xxx! External 24V supply" is set.

2.8.5 Option analog output

In some applications it is required to pass the information about the status of the KFM05a to other devices. For this, the KFM05a can optionally provide two 0-5V analog outputs. The source if the signal can be chosen in the menu.

2.8.6 Option fieldbus

The fieldbus options are currently under development.

For now, CAN open can be implemented in the hard- and software of the KFM05a.

3. Connections Display- and Controller-Elements

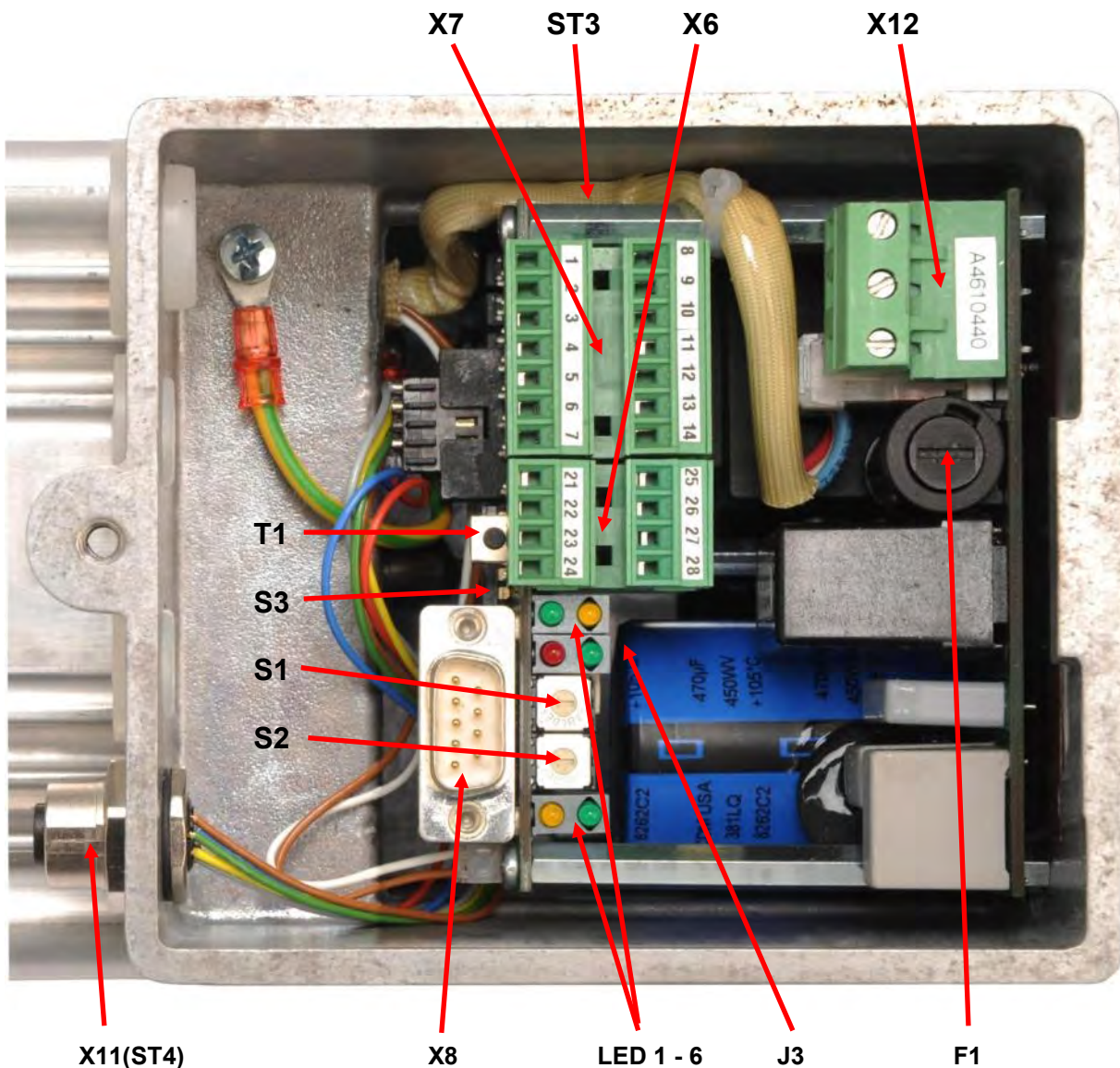
Der KFM05a ist in verschiedenen Ausführungen lieferbar, entweder mit Verschraubungen / Buchten / ohne Öffnungen zum direkten Anschluss an die Klemmen im Innenraum (Kapitel 2.6) oder Steckern / Buchsen zum schnellen und einfachen wechseln am Gehäuse.

The KFM05a is available in different versions, either with screwing / inlets / without openings for direct connection to the terminals in the interior (Section 2.6) or male / female connectors for quick and easy change on the housing.

3.1 Overview of the Terminals (controller version 3)

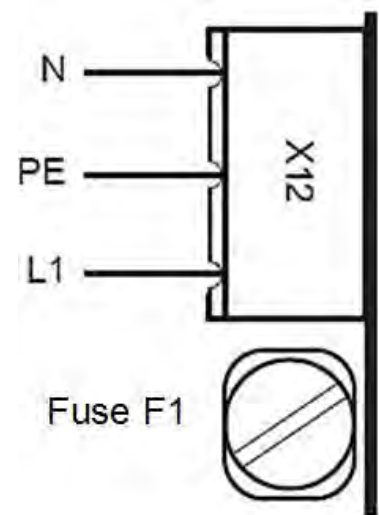
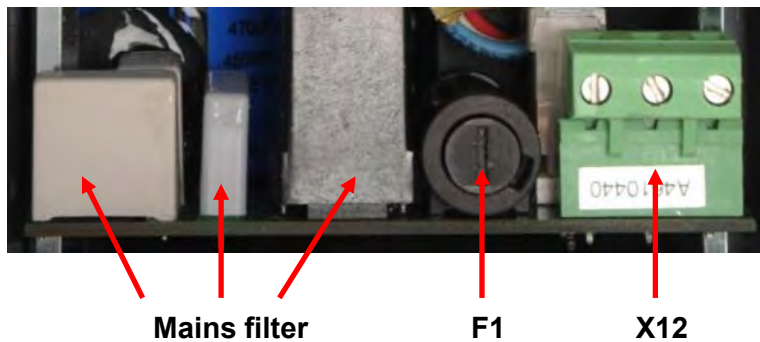
The arrangement of the customer relevant connections in the motor terminal box (terminals, D-Sub 9 and fuse) and display- and control-elements (Jumper, DIP-switch and LED) can be seen in the picture below. The lines are led outside via PG-unions or normal inlets (IP 20).

View on the electronics with open housing



3.1.1 Mains Connection X12

Mains connection (230 VAC \pm 10 %) at terminal X12 with standard-cable
 $A > 0,75 \text{ mm}^2$, e.g.: H05VV-F 0,75.
 The connection of the cable must be protected external.

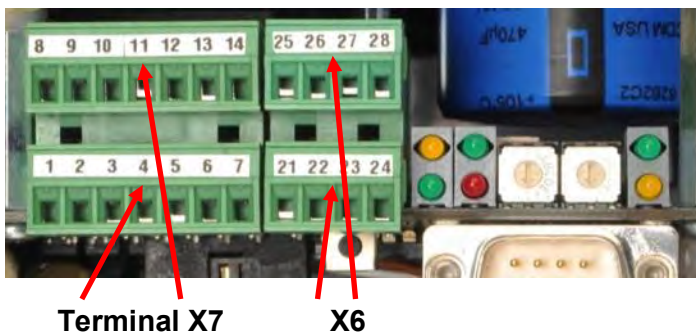


3.1.2 Fuse F1

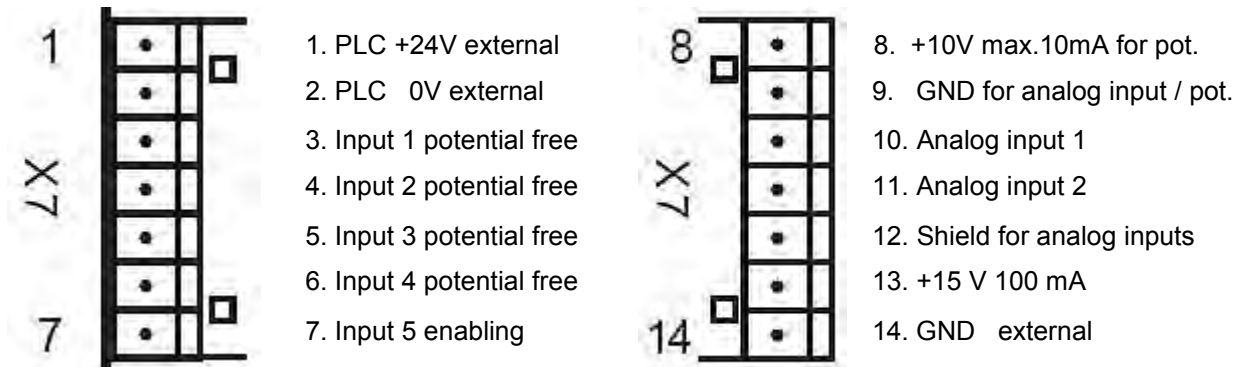
The drive is protected with 5 A medium (fuse 5 x 20).

3.1.3 Terminal X7

View on the terminal X7



3.1.3 Terminal X7



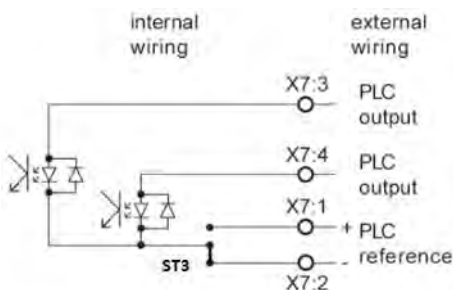
Warning:

Input 5 (X7:7) acts directly on the power amplifier, therefore it has always to be active, if the KFM05a gets active. The reference potential is set via jumper ST3. State of delivery ST3 in the back, reference X7:2, 0 V. No reference to GND or PE. The function of the inputs 1 – 4 are defined by software.

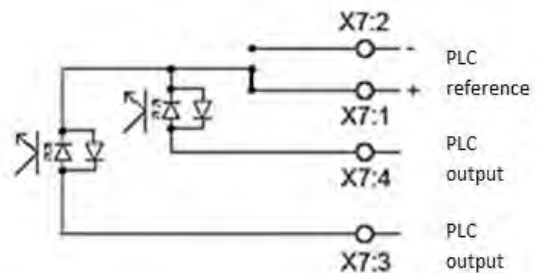
Functions of the inputs

Connection of the digital inputs

Positive logic ST3 in the back (standard)

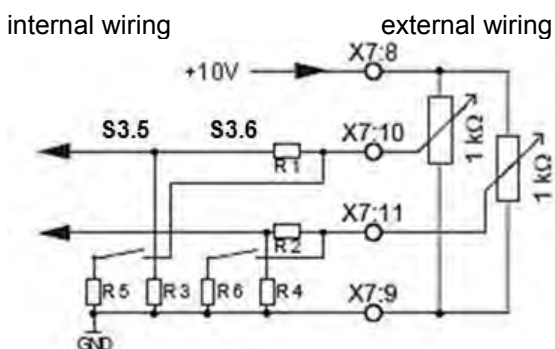


Negative logic ST3 in the front

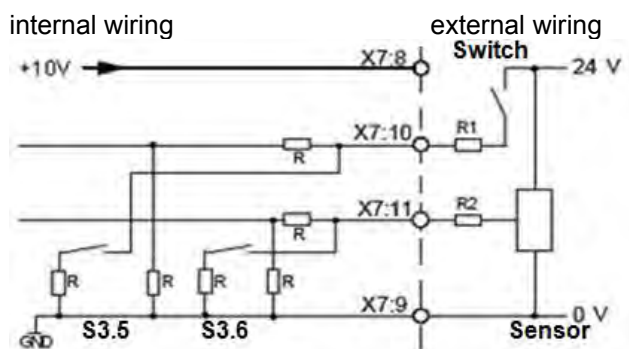


Connection of the analog inputs

Potentiometer connection or 0-10V signal



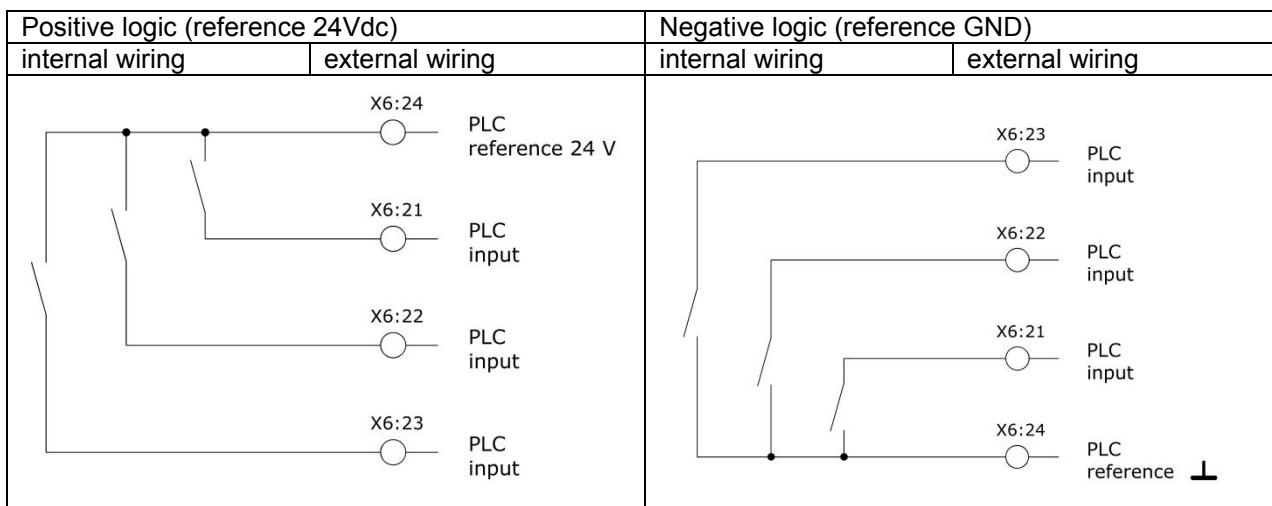
Sensor or switch connection with 24V level



3.1.4 Terminal X6



The outputs X6: 21 - X6: 24 are designed for 24 Vdc max. 50 mA load. To protect against destruction, the outputs are secured by 50 mA PTC fuses (self-resetting) and thus short-circuit proof. The logic of the outputs is only determined by the potential at X6:24 (+24V positive logic; GND negative logic). The outputs are not connected to the inputs, GND or PE, the outputs are galvanic isolated by opto-couplers. The function of the output is defined by software.



The potential free contact of the relay is connected to X6:25 and X6:26 (contact 30VDC/1A). The relay has the same function as the output Out 1

The terminals are for optional extensions.

Option safety relay

If the option safety relay is built-in, then the make contact is on X6:27 contact and X6:28 make contact (max. 30V /1A).

Option analog output

If the option analog output is built-in, these outputs are on the terminals X6:27 Analog 1 X6:28 Analog 2 (0-5V max. 1mA). The reference is GND on terminal X7:9.

If both options are built-in, the analog outputs are on terminals X5:31 Analog Out1 X5:32 Analog Out2 and X5:33 Analog references.

3.1.5 Jumper ST3

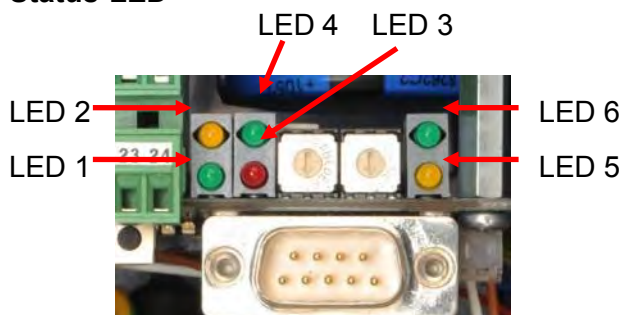
With this jumper, the logic of the inputs is defined.

FRONT = 24V reference X7:1
 BACK = GND reference X7:2, standard

Therewith, the inputs can be adjusted to any controller as described below. The default configuration (BACK) corresponds to the connection examples.

3.1.6 LED

Status-LED



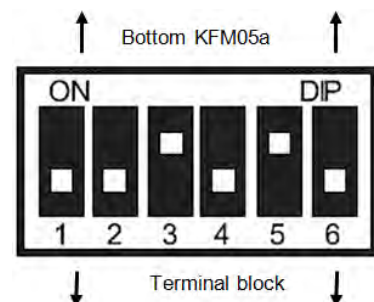
LED 1 GREEN		option
LED 2 YELLOW		option
LED 3 RED	flashes	error
LED 4 GREEN		option
LED 5 YELLOW	on	enable is set
	off	power amplifier disabled
LED 6 GREEN	on	ready
	off	reset is set

3.1.7 DIP-Switch

Assignment of the DIP-Switch

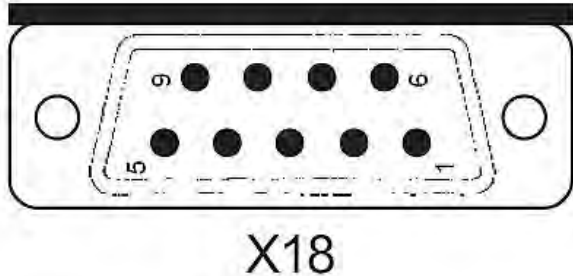
S3.1	Modbus-Protocol	
S3.2	Special function	
S3.3	Fieldbus-controller active	
S3.4	Option	
S3.5	Configuration Analog Input 1	0 – 10 V / 0 – 20 mA
S3.6	Configuration Analog Input 2	0 – 10 V / 0 – 20 mA

Switch ON → Function active switch to the bottom
 Standard all OFF switch to the edge of the board
 Switch S3.5 und S3.6 OFF → 0 – 10 V voltage input
 ON → 0- 20 mA current input



3.1.8 D-Sub 9 connector X18 (ST3)

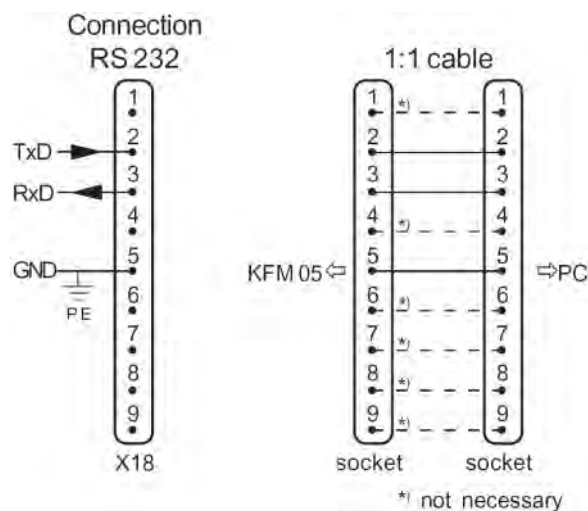
For programming and diagnosis via RS 232 (1:1 cable).



ATTENTION!

Before connecting a PC to the KFM05a switch-off both devices to avoid damaging the interface by potential differences, ground loops or electrostatics.

Pin assignment X18



For a better security for PC and KFM05A use commercial contact separators. They can be ordered from SIEI-AREG GmbH (order-No. 751 000 -013).

Remark:

GND is connected internally with PE = ground.

ATTENTION !

Put the D-Sub socket into the KFM05A in a way that the plug will not be damaged (bending, breaking off) and no parts can fall into the electronics.

3.1.9 Option holding brake terminal X4



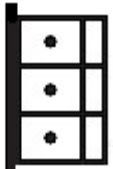
If the brake is controlled via the KFM05a, the brake is directly connected to the connector X3 on the board. To open the brake, it is supplied with 0.5 A via the terminal X7:1 +24 Vdc and X7:2 GND. This power must be provided externally.

The variant "230V holding brake via grid" is configured in such a way that the holding brake and a rectifier are connected internally to the power connector X12.

If an external brake control is selected, then only the connections of the holding brake are connected to a luster terminal, the customer then should carry out the connection. We use only non-polarized holding brakes, so no connection sequence has to be followed.

3.1.10 Option analog output terminal X5

If the option safety relay and the option analog output are desired, the analog output signals are applied to terminal block X5.

31		31. Analog Output 2 0 – 5 V 1 mA
X5		32. Analog Output 2 0 – 5 V 1 mA
33		33. GND for analog output = X7: 9

The outputs are protected by an internal resistor.

3.1.11 Option Keypad terminal X11 (connector ST4)

The Keypad interface is connected on ST4 (type M12 connector 8-pin). The assignment is listed below. RS422 interface

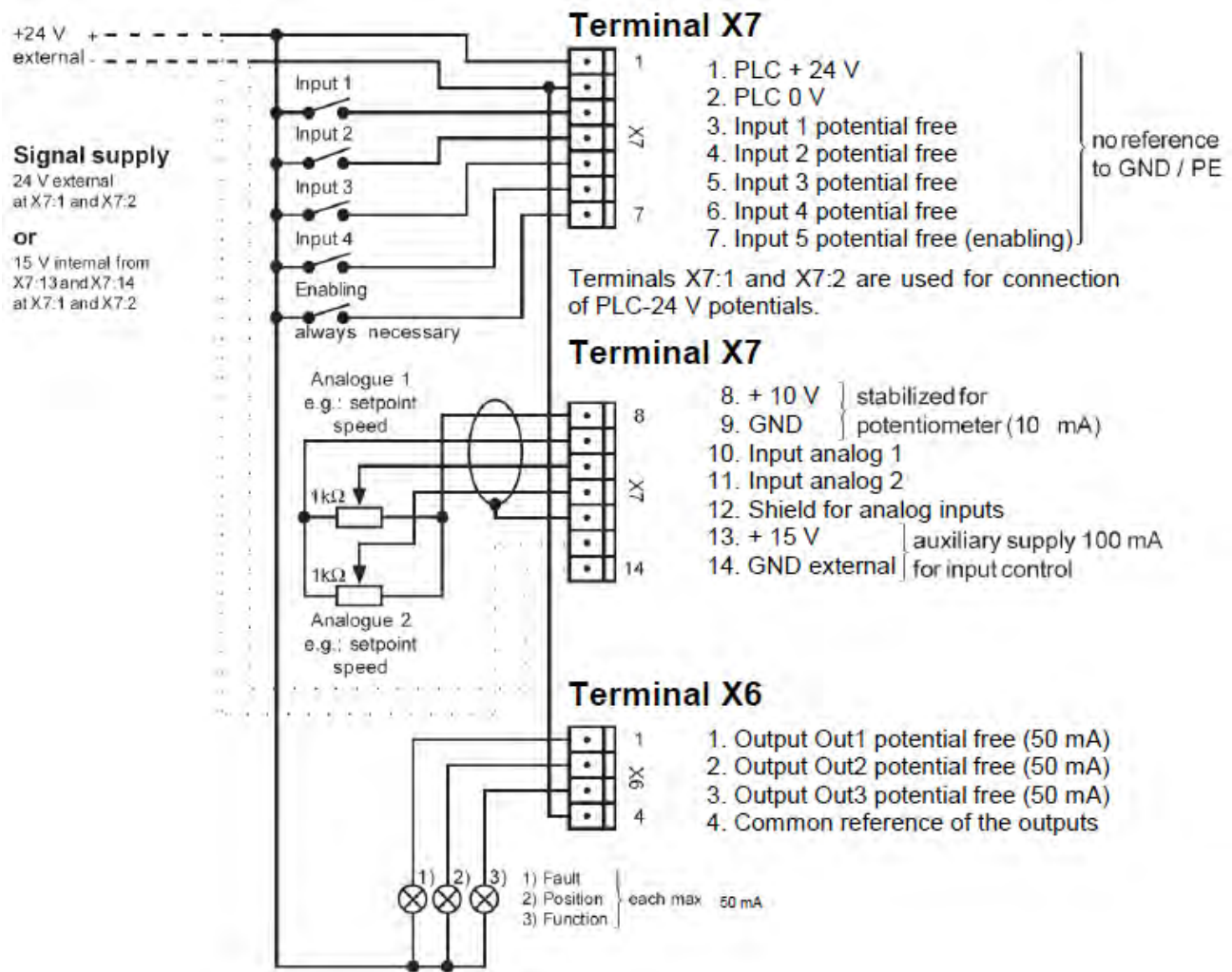
Pin assignment:

- Pin 1 : nc.
- Pin 2 : +8V supply for Keypad
- Pin 3 : Tx_/Z Data Out (invers)
- Pin 4 : Rx_A Data In
- Pin 5 : GND
- Pin 6 : nc.
- Pin 7 : Tx_Y Data Out
- Pin 8 : Rx-/B Data In (invers)

3.1.12 Option fieldbus terminal X

Currently under development

3.1.13 Recommended connection terminal

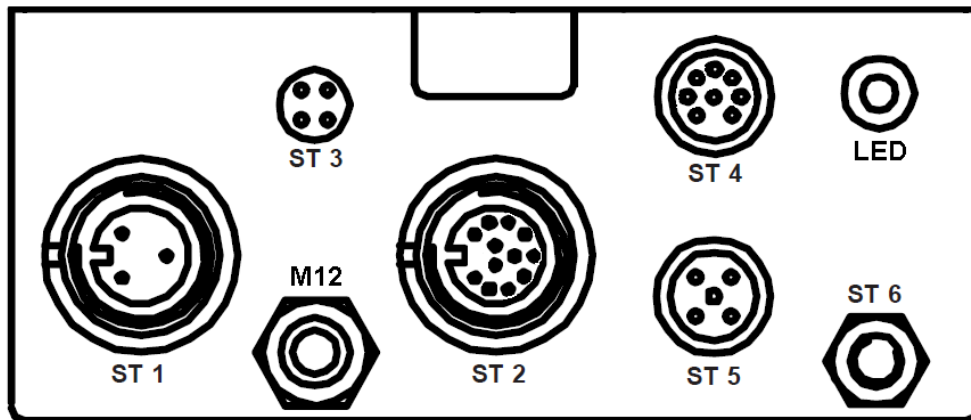


For simple applications +15 V not stabilized of X7:13 and X7:14 can be used. Do not forget the connection of X7:14 and X7:2, the maximum current may not more than 100 mA.

Normally the supply is made with external 24 V. The load at each output may not more than 50 mA. The outputs are short-circuit protected with internal polyfuse PTC.

With the option DC/DC-transformer the auxiliary voltage is no longer available!

3. 2 Overview of the plugs (Light version)



3.2.1 Mains connection ST 1

Mains connection at ST 1 with connector of type PX0470 Bulgin and standard cable with A = 1,5 mm², e.g. H05VV-F1,5.

ST 1 Pin assignment:

L 1	Pin L	Phase conductor
N	Pin N	Neutral conductor
PE	Pin PE	earth conductor

Choose a fuse according to the used cable, e.g. 16A for 1,5 mm² cable. Additionally the KFM05a has to be grounded at the earth bolt with minimum 10 mm² cable.

3.2.2 Control connection ST2 digital signals

Control connection via ST 2 type P X0412 Bulgin.

Pin assignment:

Pin 1 :	Input 1 (24V 10mA)
Pin 2 :	Input 2 (24V 10mA)
Pin 3 :	Input 3 (24V 10mA)
Pin 4 :	Input 4 (24V 10mA)
Pin 5 :	Input 5 (24V 10mA) (Enable)
Pin 6 :	Common In
Pin 7 :	Output 1 (50mA)
Pin 8 :	Output 2 (50mA)
Pin 9 :	Output 3 (50mA)
Pin 10 :	Common Out
Pin 11 :	+24V external supply / PLC +UB based on reference on pin 6
Pin 12 :	+15V internal additional supply (100mA) based on reference on pin 6

3.2.3 RS 232 connection ST 3

The RS 232-interface is led to plug ST 3 (type M8 bushing 4 pins), the assignment is described below.

ATTENTION!

Before connecting PC and KFM05A ensure that there are no potential differences by ground loops or electrostatics. Use a commercial RS 232 data isolator for more safety for PC and KFM05A.

Pin assignment:

Pin 1 : shield
Pin 2 : TxD
Pin 3 : RxD
Pin 4 : GND

3.2.4 Optional Keypad connection ST4

The Keypad-interface is led to plug ST 4 (type M12 bushing 8 pins), the assignment is described below. Interface RS422

Pin assignment:

Pin 1 : nc.
Pin 2 : +8V Keypad power supply
Pin 3 : Tx_/Z Data Out (invers)
Pin 4 : Rx_A Data In
Pin 5 : GND
Pin 6 : nc.
Pin 7 : Tx_Y Data Out
Pin 8 : Rx-/B Data In (invers)

3.2.5 Control connection ST5 analog signals

The analog signals control connection is led to plug ST 4 (type M12 bushing 5 pins), the assignment is described below.

Pin assignment:

Pin 1 : 10 V 10mA	power supply potentiometer
Pin 2 : GND	reference ground
Pin 3 : Analog 1	Input Analog 1 0 – 10V / 0 – 20mA switchable via S3:5
Pin 4 : Analog 2	Input Analog 2 0 – 10V / 0 – 20mA switchable via S3:6
Pin 5 : Shield	Connection of the power shield

3.2.6 Status LED

Green	On	Normal Power OK
Red	Flashing	Error
Red/Green	Off	Power supply failed

3.2.7 Brass bolt M6 ST6

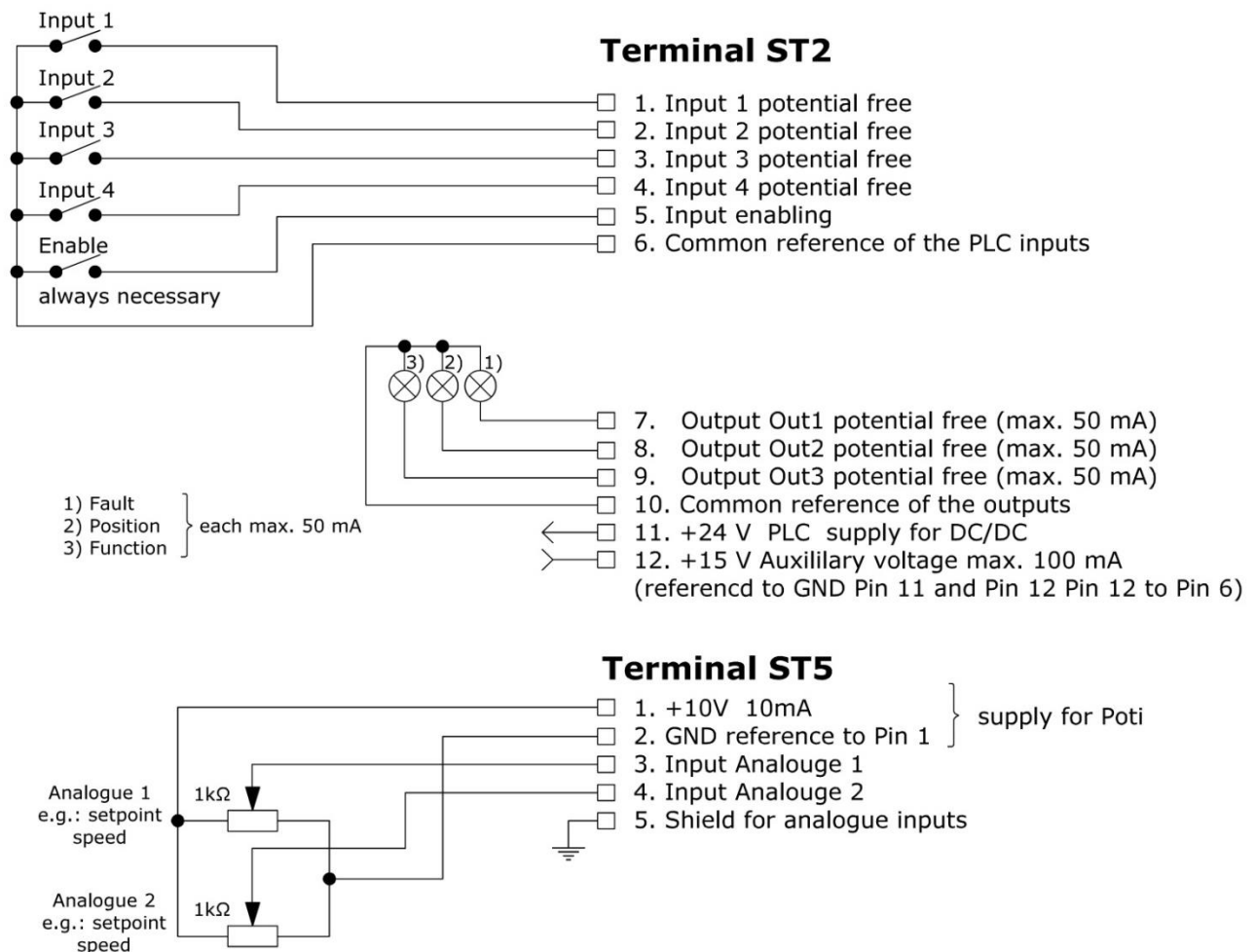
The brass bolt is needed for the grounding of the KFM05a.

To improve the EMC and to avoid scattered and uncontrolled earth currents, the KFM05a should be connected via this bolt to the protective earth (PE) or earth potential.

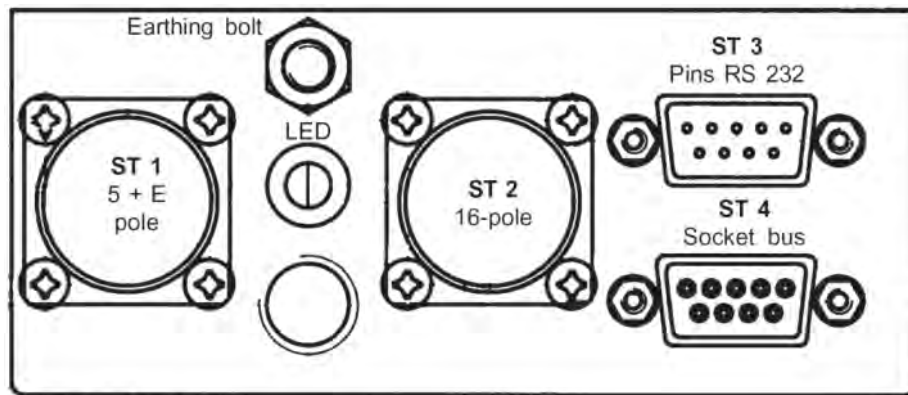
3.2.8 Cable Clance M12

The cable clance is used to connect the power supply of the fan for the KFM05a/500L.

3.2.9 Connection advice light version

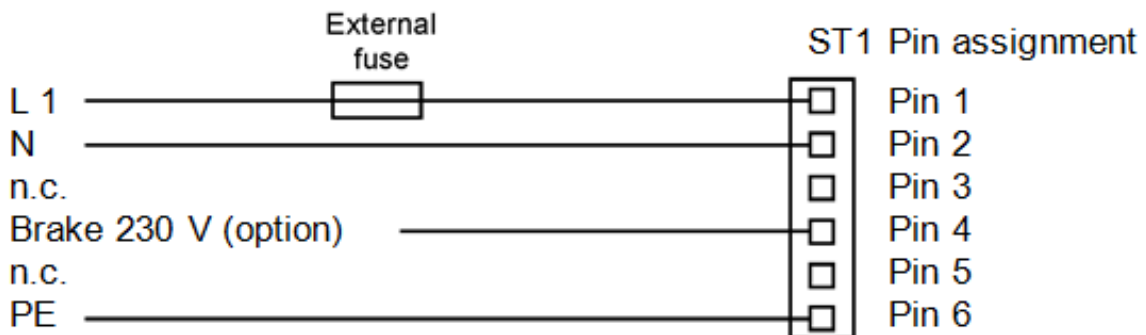


3.3 General overview on the connectors in the heavy version



3.3.1 Mains connection ST 1

Mains connection at ST 1 with plug type SC 6-pole (5 + PE) CONINVERS and standard-cable with $A > 1,5 \text{ mm}^2$, e.g. H05VV-F1,5.



Choose a fuse according to the used cable. Additionally the KFM05A has to be grounded at the earth bolt. A coupling can be ordered with SIEI-AREG-order-No. 166194.

3.3.2 Control connection ST2

Control connection via ST 2 type RC 16-polig (CONINVERS).

Pin assignment:

Pin 1 : PLC +24 V	Pin 9 : Output 2
Pin 2 : PLC 0 V	Pin 10 : Output 3
Pin 3 : Input 1	Pin 11 : Common OUT
Pin 4 : Input 2	Pin 12 : Brake (24 V)
Pin 5 : Input 3	Pin 13 : + 10 Vdc, 10 mA
Pin 6 : Input 4	Pin 14 : Input analog 1
Pin 7 : Input 5 (Enabling)	Pin 15 : Input analog 2
Pin 8 : Output 1	Pin 16 : GND

Connection example see chapter 3.2.6. A coupling can be ordered with SIEI-AREG-order-No. 166163.

3.3.3 RS 232 connection ST 3

The RS 232-interface is led from the internal connector X18 to plug ST 3 (type M8 bushing 4 pins), the assignment is the same as in chapter 3.1.8.

ATTENTION!

Before connecting PC and KFM05A ensure that there are no potential differences by ground loops or electrostatics. Use a commercial RS 232 data isolator for more safety for PC and KFM05A.

3.3.4 Optional Keypad connection ST4

The Keypad-interface is led to the bushing ST4 (type Sub-D 9), the assignment is listed below.
Interface 422

Pin assignment:

Pin 1 : nc.
Pin 2 : +8V power supply Keypad
Pin 3 : Tx_/Z Data Out (invers)
Pin 4 : Rx_A Data In
Pin 5 : GND
Pin 6 : nc.
Pin 7 : Tx_Y Data Out
Pin 8 : Rx-/B Data In (invers)
Pin 9: nc.

3.3.5 Status-LED

Green	On	Normal Power OK
Red	Flashing	Error
Red/Green	Off	Power supply failed

3.3.6 Brass bolt M6 ST6

The brass bolt is needed for the grounding of the KFM05a.
To improve the EMC and to avoid scattered and uncontrolled earth currents, the KFM05a should be connected via this bolt to the protective earth (PE) or earth potential. Cable minimal 10 mm²

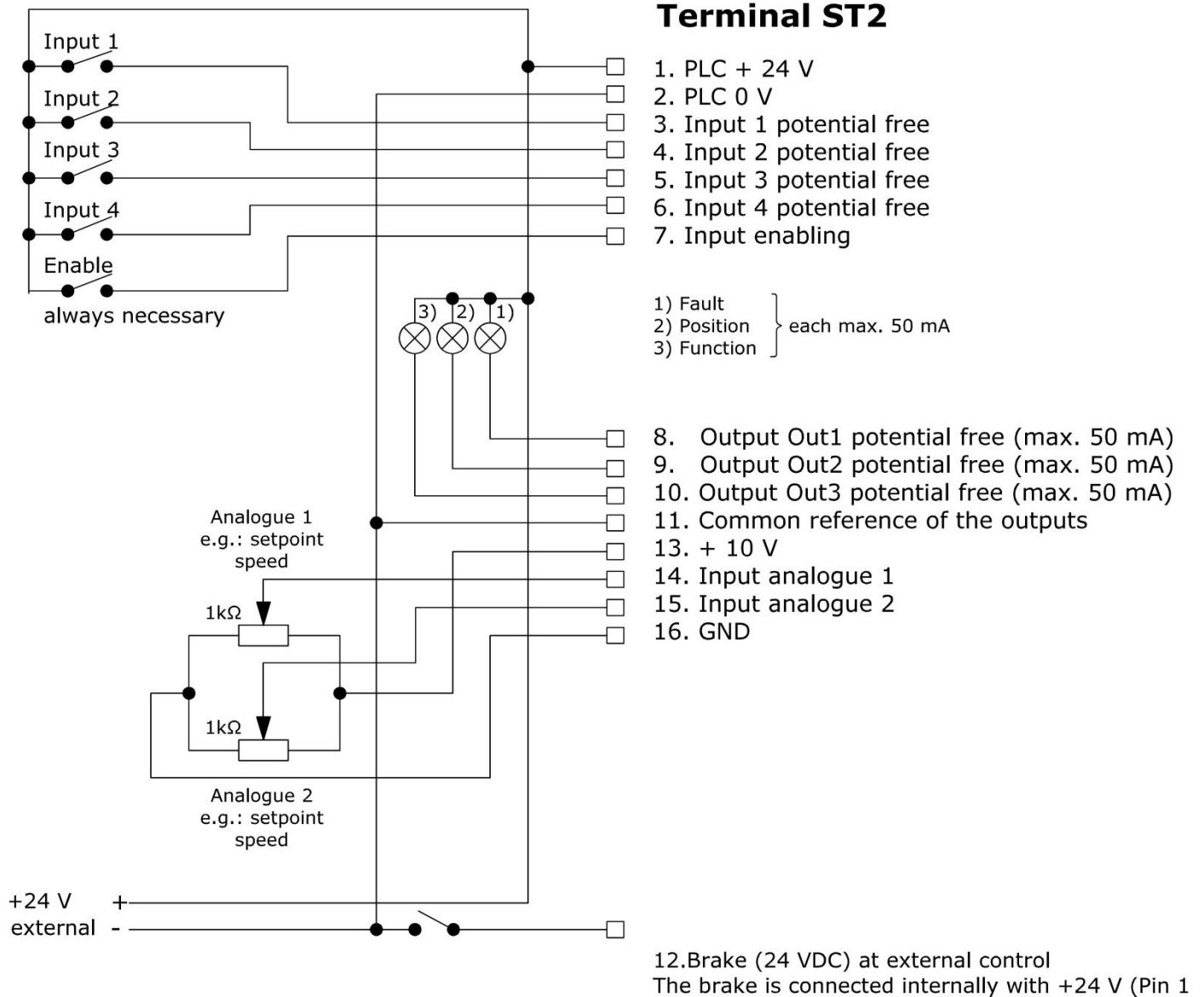
3.3.7 Cable Clance M12

The cable clance is used to connect the power supply of the fan for the KFM05a/500L.

3.3.8 Option fieldbus connector ST 4

The fieldbus (for example CANopen) is led to this connector (type Sub-D 9). The pin assignment should be checked in the fieldbus documentation.

3.3.9 Connection advice heavy version



4. Description of functions

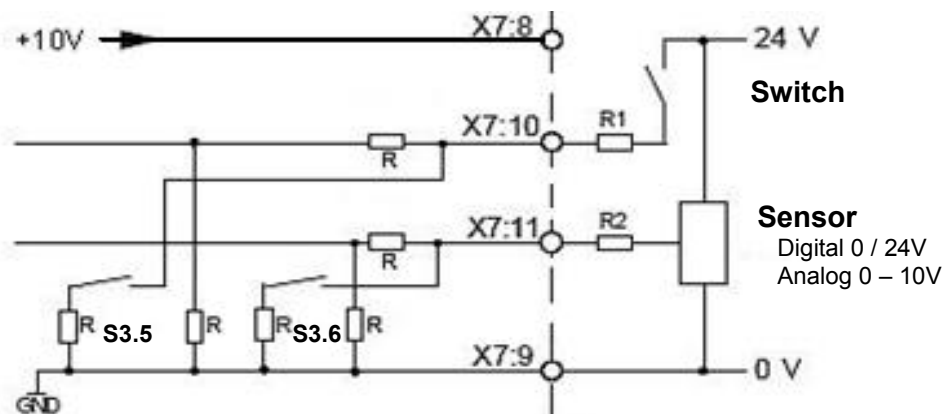
There are five potential-free (no reference to GND / PE) digital inputs (input 1, input 2, input 3, input 4, input enabling, terminals X7:3 - X7:7). These inputs become active by an applied voltage from 10 to 28 V. Each of these inputs can be configured from <<1-active>> (24 V at the input) to <<0-active>> (0 V at the input) or depending on the software-function permanently switched on via software.

The switching logic is set with jumper ST3.

Two analog inputs 1 and 2 (terminals X7:10 and X7:11) can be used for analog data inputs (e.g. speed set point). Independently from each other, they can be set with the DIP-switches 3 to 6 (see chapter 3.1.7) for 0 - 10 V or 0 - 20 mA.

If this input is used as a switch-input for 24 V, so a 220 kΩ resistor (R1, R2) must be used. If no resistor is used, the switching-threshold is at 5 V which can lead to problems and disturbances.

Example:



Remark:

The inputs analog 1 (X7:10) and analog 2 (X7:11) are internally protected and can be controlled with max. 30 V against GND (X4:5). The voltage is limited internally to 5 V.

In standard three potential-free digital outputs (terminals X6:21 to X6:23) are programmed for the messages "fault", "position reached" and "function" (by request they can get other functions). Their logic function can be reprogrammed each. The switching logic is defined with the potential at X6:24.

The switching logic of the inputs and outputs can be set independent by each other with jumper ST3 and output X6:24 to positive or negative logic.

Via RS 232-interface the drive can be programmed and diagnosed from a PC or LAPTOP in a simple way with the added software-program E@syDrive, see chapter 5. (the description of PROFIBUS is another documentation).

An internal voltage source at X7:13 and X7:14 (max. load 100 mA) enables the direct connection of push buttons or switches resp. relays at the in- and outputs without using an external voltage source.

Remark:

So in many applications a PLC is not necessary on account of the extensive possibilities for parameterizing the drive. The input enabling always has to be active, if the KFM05a is in operation, because this input enables directly the power amplifier. If this input is inactive the power amplifier is blocked and the drive becomes torque less (resp. coast to stop).

5. Working with E@syDrive

5.1 Software and installation

In the main directory of the CD-ROM there is the file LIESMICH.TXT resp. README.TXT. In this file there are actual information and remarks about the software and the version-history.

The necessary programs will be installed automatically after inserting the CD-ROM into the CD-ROM-drive. If not, the installation can be started with the SETUP-command. The program, E@syDrives, KFM-LOAD and KFMxx.xx then will be installed automatically. More advice is given in the setup-Program. Before every write-access this program also demands a confirmation and can be aborted at every time.

Remarks for Installation:

The recommended directories should be taken, in other case problems can occur: E@syDrives can't find subdirectories or files and the de-installation can't be performed exactly.

The actual programs for the KFM05A also can be found in the internet under „www.sieiareg.de /service“. Under “www.sieiareg.de” there is the actual information about the KFM05A and other products of SIEI-AREG.

5.2 Connection and interface


For the connection between KFM05A and PC a cable with at least 3 lines (RxD, TxD and GND) must be used (see chapter 3.1.8).

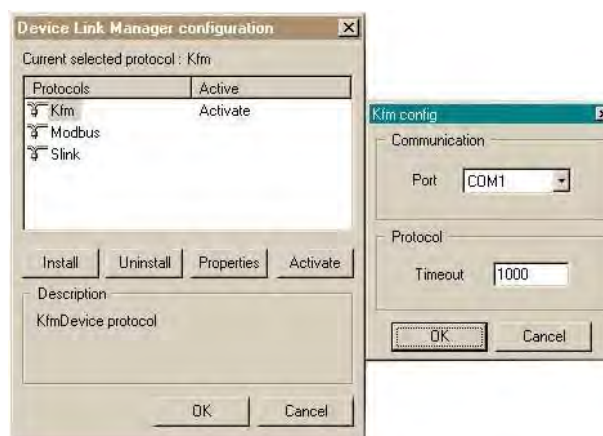
ATTENTION !

Before connecting PC - KFM05A switch off both devices to avoid damaging the interface by potential differences, ground loops or electrostatics. For a better security for PC and KFM05A use commercial contact separators. SIEI-AREG GmbH order No.: 751 000-013.

If there are problems with the communication between Drive and PC, the setting of the “Device Link Manager” should be checked (see picture below). This menu can be reached with button „Target“, then „Communication settings“, then click “Properties” in the window of the “Device Link Manager”.

With the button  the connection can be enabled or disabled.

The „Communication setup“ has to be checked if the connection can't be enabled with button  in spite of a correct connection line.

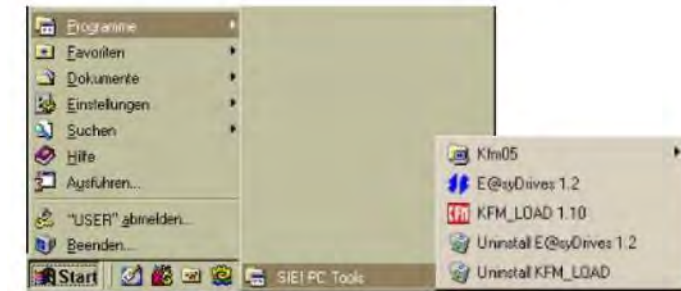


Remark:

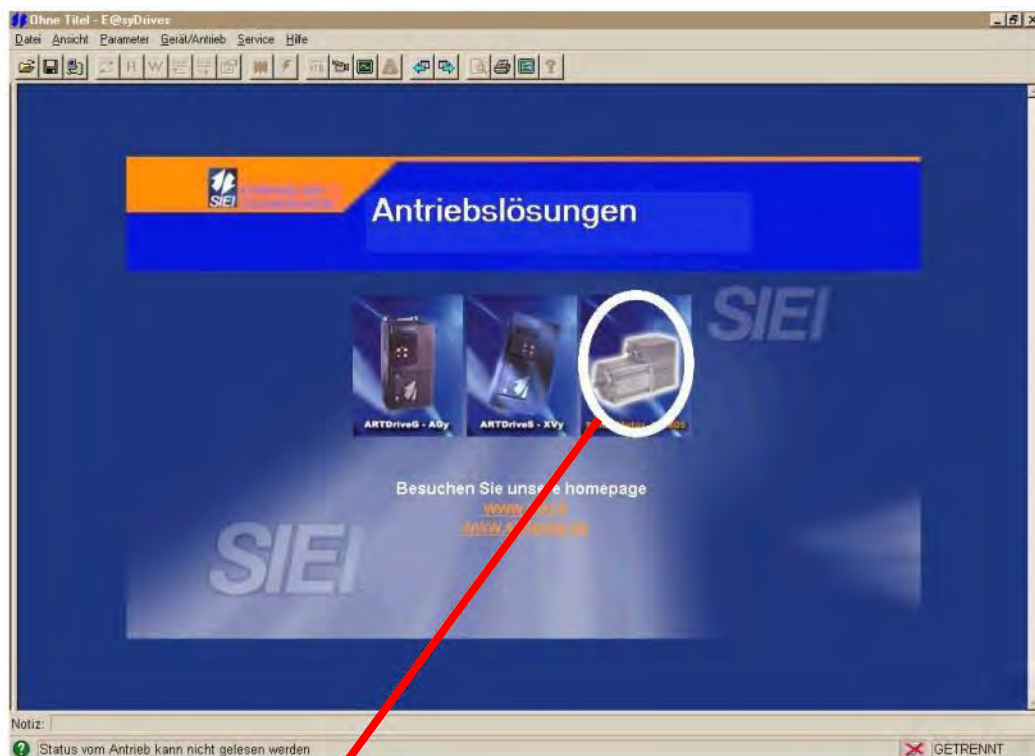
Before commissioning read the file “README.TXT“. There are actual remarks, that couldn't be considered in this documentation.

5.3 How to start E@syDrives

With the installation the icon „E@syDrives“ is put on the desktop. You can also click on the icon “E@syDrives” via “START“, “PROGRAMS” and “SIEI PC Tools“. The icon can be moved at any place on the desktop or into other directories.



After the start following menu appears:



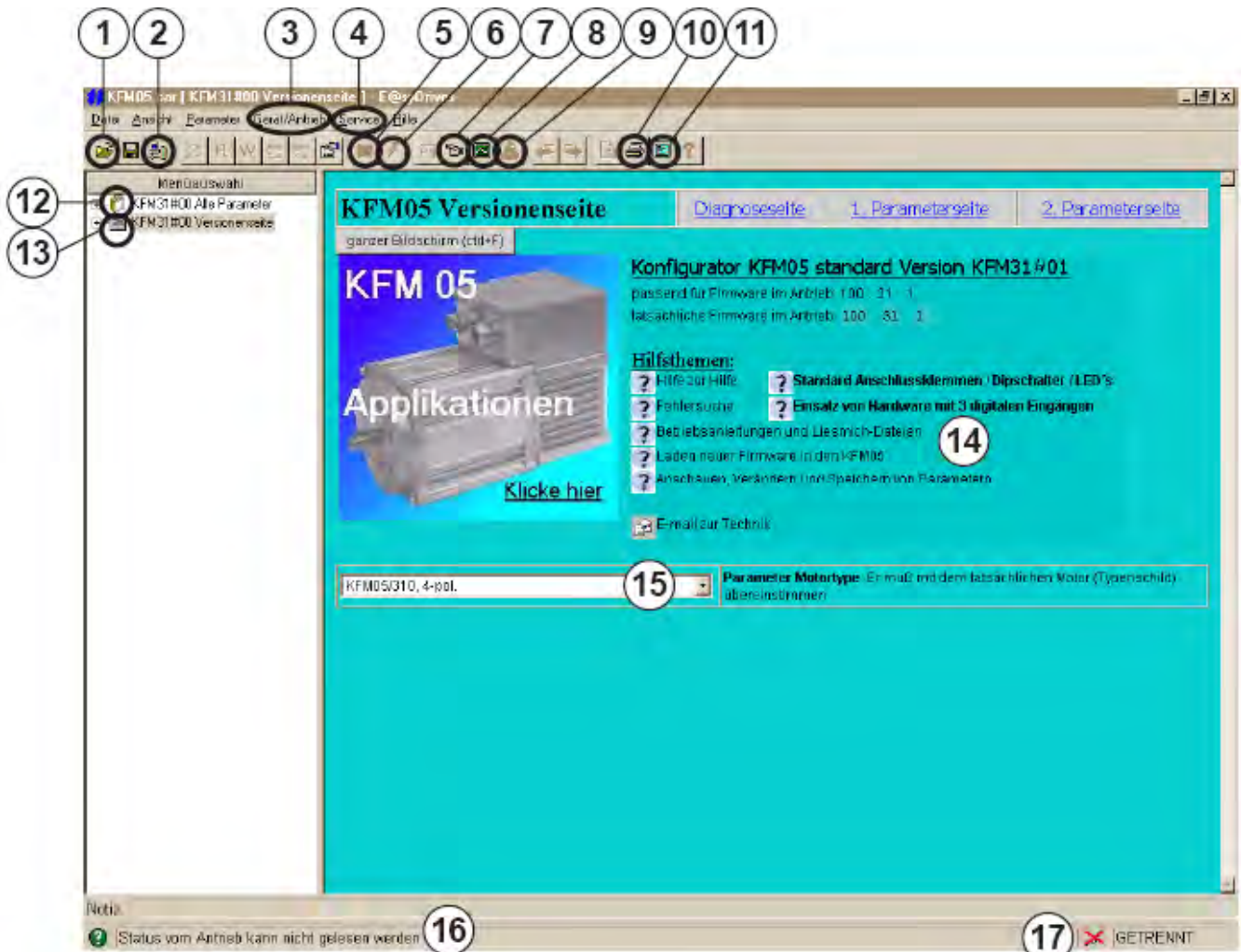
By clicking the picture of the KFM05a you will reach a page, where the desired KFM05a-versions for loading the appropriate parameter-file KFM05a.PAR can be clicked.

Via „File / open“ ① or ② a WINDOWS®-browser-window can be opened to load a set of parameters. A set of parameters can have any name, but it must have the extension .PAR.



Self-created parameter-files must be saved in the same directory (e.g.: C:\Programme\SIEI PC Tools\KFM05a\ KFM42#03\E@syDrives) as the delivered basic-parameter-file KFM05a.PAR. Please be careful about the correct version-affiliation (e.g. KFM42#03) and the language-version (E@sy Drive_German = German, E@sy Drive = English) !

5.4 Configurator E@syDrives



- ① To load a parameter file, ② to enable or disable connection to KFM05A, ③ e.g. to set and control the interface, ④ e.g. to activate the program „KFM LOAD“ (it is used to load another software-version (firmware) into the KFM05a, see chapter 8.), ⑤ to save a changed parameter into the EEPROM of the KFM05A, ⑥ RESET KFM05a, ⑦ view-function, ⑧ oscilloscope-function, ⑨ fault memory, ⑩ to print a screenshot, ⑪ to enlarge the window (also CTRL+F), ⑫ to show the complete parameter-list, ⑬ HTML-pages, ⑭ information about common problems, ⑮ type KFM05a (e.g. type with external 24 V supply), ⑯ display of actual warnings and faults, ⑰ connected or disconnected with KFM05a.

This was a short explanation. The information of Help Topics ⑭ also can be used to explain the program. Every parameter has its own help-text. For this click the parameter and then press F1 or click the active text if present (see an example of a help-text next page).

ATTENTION ! The parameters are changed in the RAM of the drive. That means after mains off the change is gone. For a permanent saving of all parameters see ⑤.

5.4.1 Help-Text

To activate the help-text click a parameter and then press F1 or click the active text, if exist.

Example:

2nd parameter page ① parameter f1 (max) ②.



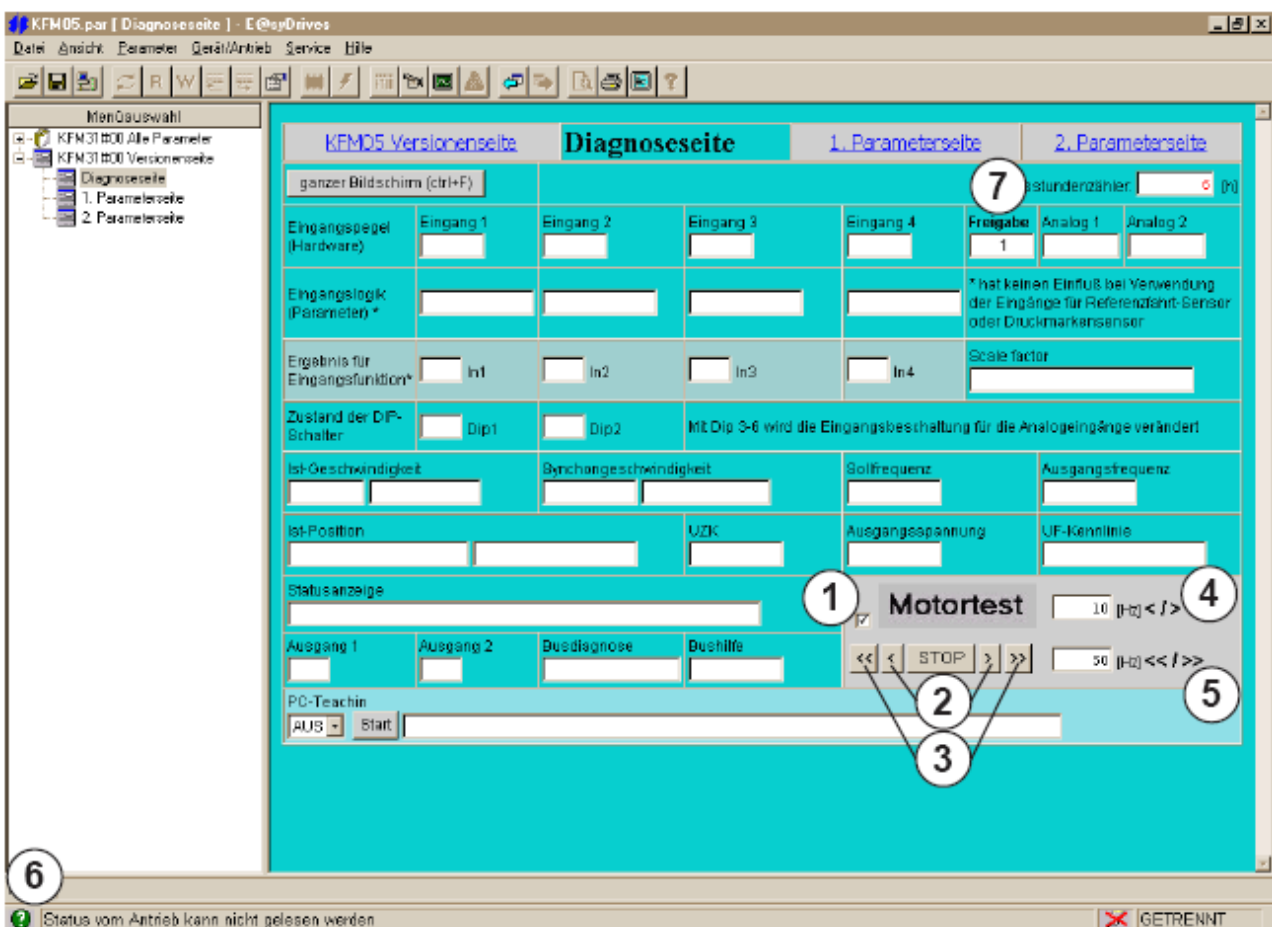
5.4.2 Motor test on the Diagnosis Page

The window „Motor test“ can be used to start and test the KFM05A via PC without extensive wiring.

A connection between X7:14 and X7:2 and between X7:13 X7:7 enables the power amplifier, jumper J has to be BEHIND.

The input Enable ⑦ in the Diagnosis Page shows “1” and there is no fault message ⑥.

The motor test-window has to be activated with a tick ① (click the field). The set frequency ④ can be activated with the buttons ②, the other set frequency ⑤ can be activated with the other buttons ③.



5.5 Input functions

01 : 8 positions per In1 / In2 / In4, if In3

If In3 = 1, In1, In2 and In4 select the positions Pos.1 to Pos.8.

If In3 = 0, In1, In2 and In4 select the frequencies f1 to f3 (no positioning)

02 : 8 positions permanent via In1 / In2 / In4

In1 / In2 / In4 select the positions Pos.1 to Pos.8, In3 can be used e.g. for the reference motion (homing).

03 : 8 positions via link, if In3

If In3 = 1, up to 8 positions in link can be activated with In1 and In2.

If In3 = 0, In1 and In2 select the frequencies f1 to f3 (no positioning).

04 : 8 positions via link permanent

Function same as 03, but positioning is always active and In3 can be used e.g. for reference motion (homing)

05 : 8 relative distances via link, if In3

Function same as 03, but relative, not absolute, positioning. This function can be used for conveyor belts.

06 : 8 relative distances via link permanent

Function same as 04, but relative, not absolute, positioning.

07 : 2 positions with safety function (version 1)

In3 = 1 With In1 and In2 positions Pos. 1 to Pos. 4 can be reached. If In1 and In2 are active simultaneously, fault will be displayed

In3 = 0 Power IGBT disabled, motor current-free, fault reset.

(08 : 2 positions via In1 / In2 + teach-in via In3 (not yet implemented))

In3 = 0 In1 and In2 select the positions.

In3 = 1 Teach-in-mode. In1/In2 selects the frequency and if the position is reached, an edge of In3 to 0 saves the position.

09 : 16 positions via In1 / In2 / In3 / In4 permanent

Positioning of 16 positions; without enabling or stop.

10 : 16 relative distances via In1 / In2 / In3 / In4 and analog 1

Selection of 16 distances, and start with input analog 1.

11 : 16 positions via In1 / In2 / In3 / In4, if analog 1

Analog1 = 1 positioning Pos.1 to Pos.16

Analog1 = 0 0- function

12 : 8 relative distances via In1 / In2 / In3 / In4

13 : 8 positions via In1 / In2 / In3, if In4

14 : 2 positions with safety function (version 2)

15 : Door-function with torque limitation while closing and partially open position

Door-control via input OPEN, CLOSE, STOP. With In 4 a second Open Position can chose (Partially Open). The door-width can be learned via special teach-in-function.

16 : Door-function with torque limitation while closing

Door-control via input OPEN, CLOSE, STOP. The door-width can be learned via special teach-in-function.

(17 : Door-function with time-controlled closing-function (not yet implemented))

The door only has an OPEN-control, after an adjustable time the door closes. The door-width can be learned via special teach-in-function.

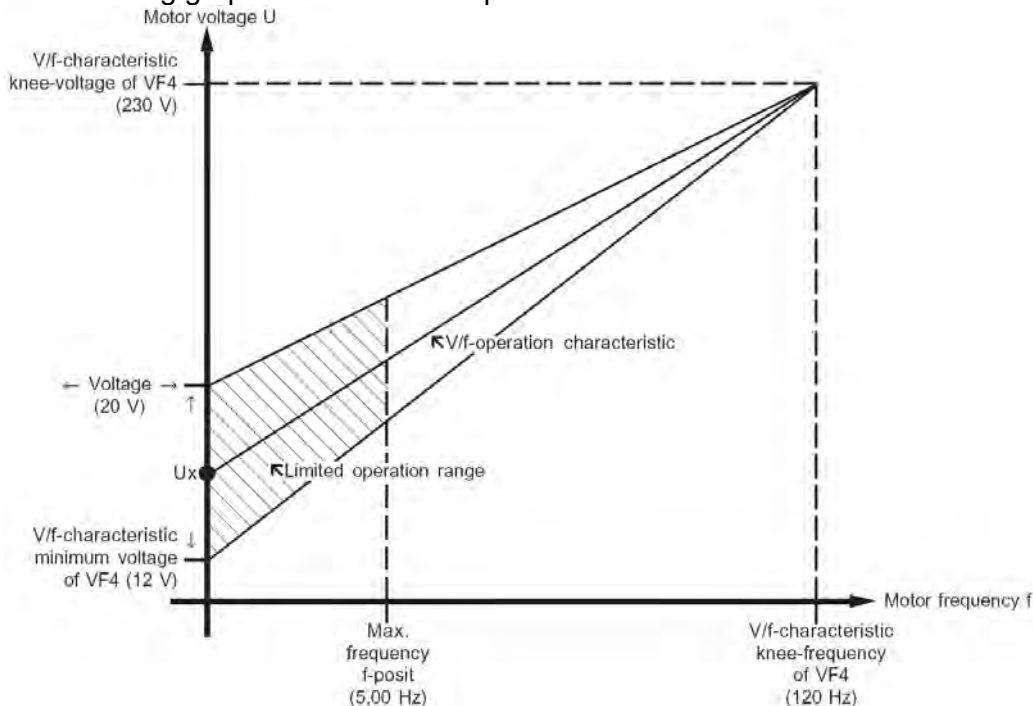
(18 : Door-function with inputs OPEN / CLOSE, only OPEN and STOP (not yet implemented))

The started door-actions are continuing, even if the input goes inactive, until the next input command appears. With DIP-switch DIP 4 of the KFM05a this door-function can be switched to the time-controlled closing-function (automatic operation as 17) without changing the input wiring. The door-width can be learned via special teach-in-function.

A detailed description of the respective functions can be initiated in the configurator by clicking the number or parameter and pressing F1. New functions are also shown and described there.

5.6 Position control

The following graphic illustrates how position control functions:



Motor frequency f depends on sign and magnitude of the position deviation:

$$f = \text{position deviation} \times \text{P-freq.}$$

VF-operation characteristic depends on the magnitude of position deviation:

$$U_x = \text{magnitude of position deviation} \times \text{P-volt.}$$

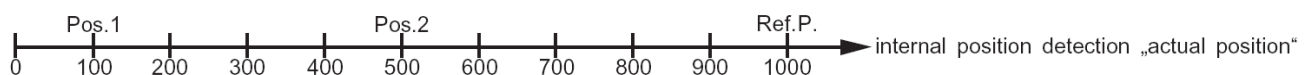
The values in brackets are equivalent to "default file values" (standard values).

5.7 Additional explanations

Absolute-positioning means, the positioning-values relate to 0. In the reference point (mains on resp. sensor or blockade) the internal position-detection is set to the value „Pos.0“.

Example:

Pos.0 = 1000 = reference point, Pos.1 = 100, Pos.2 = 500



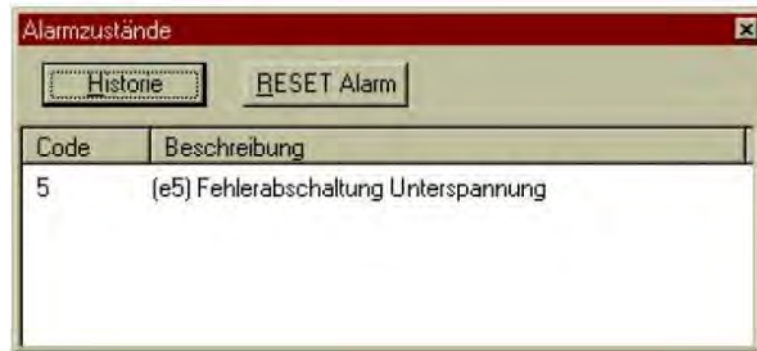
At relative-positioning the internal position detection („actual position“) is set to 0 before every start. Exception: after a finished reference motion (homing) resp. mains on it will be started with value Pos.0.

!ATTENTION!

Do not use relative positioning for linear axis, because there is only a mechanically limited way of motion! Absolute-positioning has a fixed reference point, at relative-positioning the reference point is the respective start point.

6. Fault Messages and Fault Treatment

Open the alarm-menu with -button to display a possibly existing fault:



Here it is possible to display the last 64 fault messages (button "History"). The function „Reset alarm" is not yet activated, it shows the message: „IPA undefined “.

Fault menu:

Idx	Alarmbeschreibung	Alarmnr	Minuten nach Netz-Ein (max. 255)
0	(e5) Fehlerabschaltung Unterspannung	5	0
1	(e5) Fehlerabschaltung Unterspannung	5	0
2	(e5) Fehlerabschaltung Unterspannung	5	0
3	(e5) Fehlerabschaltung Unterspannung	5	0
4	(e5) Fehlerabschaltung Unterspannung	5	0
5	(e5) Fehlerabschaltung Unterspannung	5	101
6	(e5) Fehlerabschaltung Unterspannung	5	0
7	(e5) Fehlerabschaltung Unterspannung	5	0
8	(e5) Fehlerabschaltung Unterspannung	5	182
9	(e5) Fehlerabschaltung Unterspannung	5	133
10	(e5) Fehlerabschaltung Unterspannung	5	0
11	(e5) Fehlerabschaltung Unterspannung	5	0
12	(e5) Fehlerabschaltung Unterspannung	5	0
13	(e5) Fehlerabschaltung Unterspannung	5	0
14	(e5) Fehlerabschaltung Unterspannung	5	0
15	(e5) Fehlerabschaltung Unterspannung	5	0

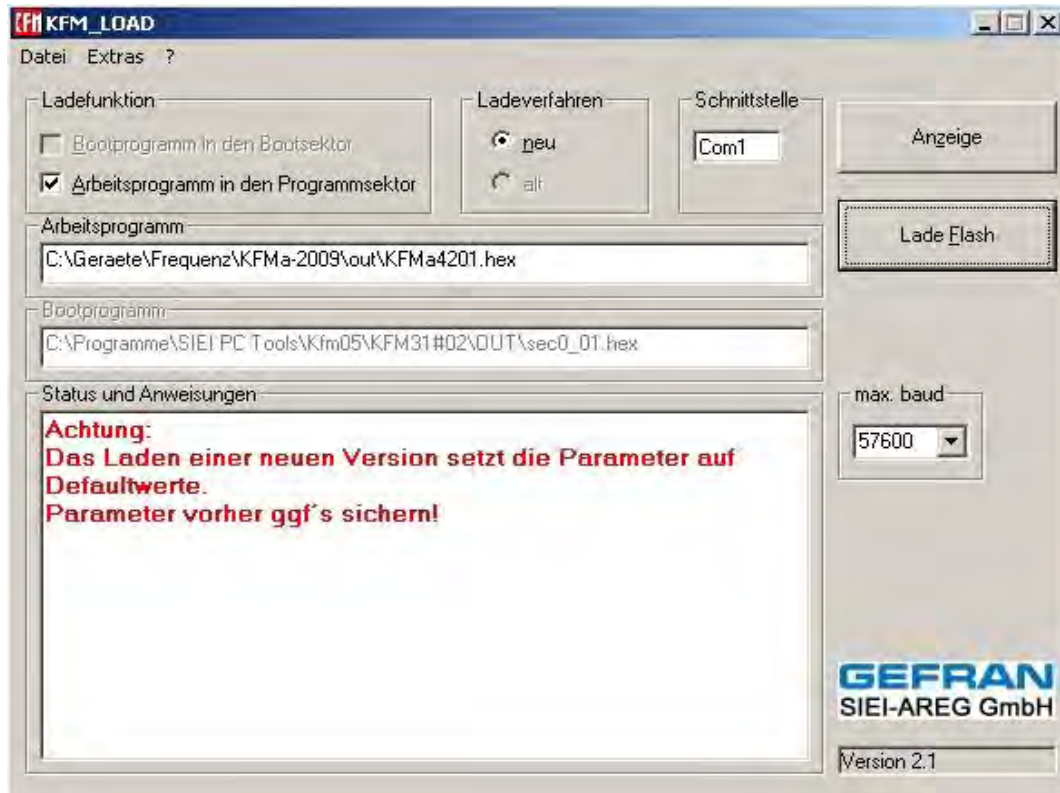
Following displays are possible:

Alarm No. Alarm description

- | | |
|----|--|
| 1 | (e1) fault cutoff overcurrent |
| 2 | (e2) fault cutoff overvoltage |
| 3 | (e3) fault cutoff temperature heatsink |
| 4 | (e4) fault cutoff temperature motor |
| 5 | (e5) fault cutoff under voltage |
| 6 | (e6) fault cutoff |
| 7 | (ec) warning temperature motor |
| 8 | (ed) warning under voltage |
| 9 | (ee) warning temperature heat sink |
| 10 | (ef) warning: amplifier is off |

7. Program KFM_LOAD

With KFM_LOAD the firmware can be uploaded to the KFM05a. For help use button „?“.



The program KFM_LOAD is self-explaining. After the load an information-page appears. This page also can be opened later with button „?“.

Open KFM_LOAD:

- With an icon in the same manner as program E@syDrive (see chapter 5.3 page 21)
- Out of the program E@syDrive:



- Interrupt the connection to the KFM05A ①, the last row of E@syDrive will show „OFF LINE“
- Menu-command „Service“ ② function „Tools“, KFM_LOAD

8. Option Keypad

8.1 Keypad overview

The Keypad arises from the GEFRAN motion program and doesn't have an own intelligence. The functions of the keys, LED and the display are described in the following chapters. The storage area is not yet activated. On the back of the keypad there are magnets, which allow a simple mounting on every metallic point of the machine.



Keypad as delivered

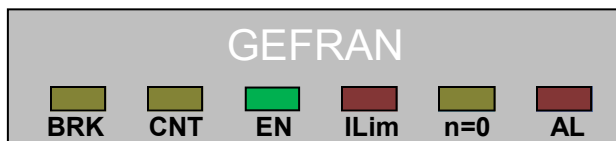


Keypad in real size

8.2 Controls and display functions

8.2.1 Status LED of the Keypad

The status of the KFM05a is displayed via LED on the Keypad.



Significance of the LED

BRK:	(not active)	yellow
CNT:	(not active)	yellow
EN:	Enabling (Enable) KFM05a	green
ILim:	Current limit reached (not active)	red
n=0:	Standstill	yellow
AL:	Alarm	red

In this version not all Led are used and therefore they aren't displayed.

8.2.2 Display of the keypad

The display can show the menu, parameters, values and status of the KM05a on 4 lines.
Also to change the values of the parameters or to make an online positioning, the display can be used.

GEFRAN
SIEI-AREG GmbH
KFM05a – Version
42.03.00

8.2.3 Keys of the keypad

The navigation through the menus and parameters is done with the keys. The functions of the KFM05a are not yet triggered with it. Some keys have no function in this version.



ESC	- Escape	DISP	- Display
SAVE	- Save data	CUST	- Customer menu
FIND	- not active	RST	- not active
▲	- Arrow to the top	▶	- Arrow to the right
◀	- Arrow to the left	▼	- Arrow to the bottom
E	- Enter		

8.2.3.1 Functions of the keys

On the menu level, the menu point can be chosen with the arrow keys ▲ and ▼.

- ▲ - On the parameter level and active input, increase value.
- ▼ - On the parameter level and active input, decrease value.
The increase/decrease is accelerated if key pressed for longer time lapse.
- - On the menu level, on marked menu switch to parameter level.
On the parameter level, choose a parameter (at the end of the list jump to first parameter)
- ◄ - On the parameter level, choose a parameter (at the beginning of the list, no change)
- E - On menu level, on marked item switch to parameter level
On parameter level, the current parameter can be open for change. An „E” on the status line is displayed.

With the arrow keys ▲ and ▼ the value can be changed.

The change is done within the volatile memory and is immediately effective. Select the menu item data backup memory - for permanent storage in non-volatile EEPROM.

- ESC - On the parameter level and with open parameter, the entry is aborted.
On the parameter level and closed parameter, switch to menu level.

DISP – quick access key for display

CUST- quick access key for customer menu

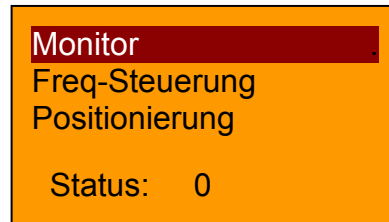
SAVE - quick access key for data backup

The quick access keys DISP, SAVE and CUST can be activated also from the parameter level and with open parameter.

8.3 Operator menu and function

Monitor - menu

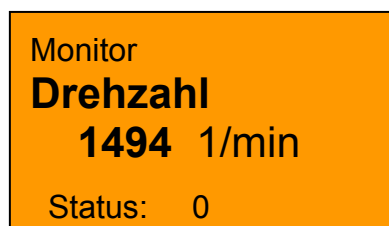
The status row displays the current status
"0" means no error



Display of the parameter in the Monitor menu

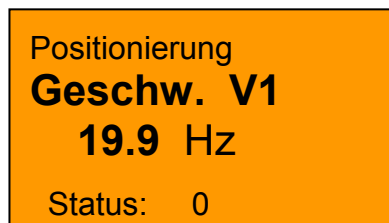
Monitor menu only displayed value

[Parameter can be changed from here!](#)



Parameter menu in the positioning menu

Values of the parameter can be changed
if „E“ appears on the status line



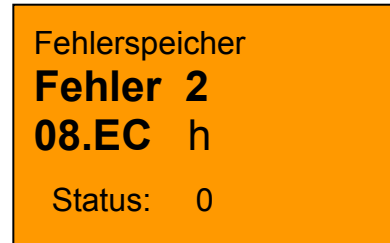
Save data in non-volatile memory:

Change the value **savepara** from **0** to **7** in the menu data saving. The saving in the EEPROM will automatically be activated. After the finish of the saving the value **savepara** should be changed back to 0.

Error memory:

In the menu item error memory, the last 10 errors can be displayed. To read the errors, they must be readout the EEPROM. When "neu auslesen" is changed from 0 to 1, the readout is activated and the last error will be displayed under "Feher 0".

Menu	Fehlerspeicher
Error Nr.	Fehler 2
Time. error	08.EC h
Current state	Status: 0



The value before the point shows the time (in minutes) between the last reset to the occurrence of the error (as an Hex-value). The value after the point is the error code. e.g. 08.EC h

Occurence of error	08 Minutes
Error code	EC Warning motor temperature

8.4 Structure of the menu

8.4.1 Monitor (Displayed value)

Ausgangs-Spg.	(output voltage, Volt)
Ausgangs-Frq.	(output frequency, Hz)
Drehzahl	(rotation frequency, 1/min)
Ist-Position	(current position, Ink)
Positions Nr.	(position number)
Uzk-Spg.	(DC voltage, Volt)
Treiberspg.	(driver voltage, Volt)
C-Board Temp.	(controllerboard temperature, °C [if probe available])
Motortemp.	(motor temperature, °C [if motor has an KTY-probe])
Status	(state drive [if 0 everything is ok])
Digital Input	(state of the digital inputs portpins at the µC)
Analog1	(analog input 1, %)
Analog2	(analog input 2, %)
hex1hex2	(state Hex-switch, hex)
Dip-Schalter	(state DIP-switch, binär)
A-/E-Funktion	(output and input functions, hex)
Betriebszeit	(operating hours, h)

8.4.2 Freq-Steuerung (Setpoint)

f1min	(frequency setting f1min, Hz)
f1(max)	
f2min	
f2(max)	
f3min	
f3(max)	
Beschlg. pos.	(acceleration pos., Hz/s [accp])
Verzoeg. pos	(delay pos., Hz/s [decp])
Beschg. neg.	(acceleration neg., Hz/s [accn])
Verzoeg. neg.	(delay neg., Hz/s [decn])
Stop-Verzoeg.	(delay for stop, Hz/s [decstp])
P-volt	(P-ratio position controller voltage)
P-freq.	(P-ratio position controller frequency)
DC-Spg.	(brake voltage)
Bremszeit	(brake time DC-brake, s)

8.4.3 Kundenmenü (e.g. most important values for the door functions)

Ist-Position	(current position, Ink)
Position 1	(position 1, Ink)
Position 2	(position 2, Ink)
Position 3	(position 3, Ink)
Position 4	(position 4, Ink)
Geschw. V1	(positioning speed 1, Hz)
Geschw. V2	(positioning speed 2, Hz)
Geschw. V3	(positioning speed 3, Hz)
Geschw. V4	(positioning speed 4, Hz)
Geschw. V_ref	(speed homing, Hz)
Beschlg. pos.	(acceleration pos., Hz/s [accp])
Verzoeg. pos	(delay pos., Hz/s [decp])
Beschg. neg.	(acceleration neg., Hz/s [accn])
Verzoeg. neg.	(delay neg., Hz/s [decn])
Stop-Verzoeg.	(delay for stop, Hz/s [decstp])

8.4.4 Positionierung (positioning)

Geschw. V1	(positioning speed 1, Hz)
Geschw. V2	(positioning speed 2, Hz)
Geschw. V3	(positioning speed 3, Hz)
Geschw. V4	(positioning speed 4, Hz)
Geschw. V_ref	(speed homing, Hz)
Wartezeit T1	(dead time T1, s)
Wartezeit T2	(dead time T2, s)
Referenzpos.	(reference position, Ink)
Position 1	(Position 1, Ink)
Position 2	(Position 2, Ink)
Position 3	(Position 3, Ink)
Position 4	(Position 4, Ink)
Position 5	(Position 5, Ink)
Position 6	(Position 6, Ink)
Position 7	(Position 7, Ink)
Position 8	(Position 8, Ink)
Position 11	(Position 11, Ink)
Position 12	(Position 12, Ink)
Position 13	(Position 13, Ink)
Position 14	(Position 14, Ink)
Position 15	(Position 15, Ink)
Position 16	(Position 16, Ink)
Position 17	(Position 17, Ink)
Position 18	(Position 18, Ink)

8.4.5 Fehlerspeicher (error memory)

Firmware Vers.	(firmware version z.B. 42)
Modifikation	(modification subgroup z.B. 0)
neu auslesen?	(error readout EEPROM, J/N)
Fehler 0	(last error Fehler, time since reset, error code in hex)
Fehler 1	(prior error direction)
Fehler 2	(prior error direction)
Fehler 3	(prior error direction)
Fehler 4	(prior error direction)
Fehler 5	(prior error direction)
Fehler 6	(prior error direction)
Fehler 7	(prior error direction)
Fehler 8	(prior error direction)
Fehler 9	(prior error direction)

8.4.6 Datensicherung (data saving)

Savepara	(save parameter, J/N [to active set value to 7])
----------	---

EG – Konformitätserklärung

EC Declaration of Conformity

Hersteller / Manufacturer :

SIEI-AREG GmbH

Monat / Jahr: 11 / 2010

Month / Year: 11 / 2010

Anschrift / Address :

Gottlieb-Daimler-Straße 17/3
D-74385 Pleidelsheim / Neckar
Germany
Phone: +49 7144 89736-0

Dokument-Nr. / Document-No. : 918 400

Produktbezeichnung:

Asynchron-Positionier-Motor mit integriertem Frequenzumrichter

Product description:

Asynchrony -Positioning motor with Inverter

Typbezeichnung / Type :

KFM05a /180 KFM05a /310 KFM05a /500L KFM05a /510

Artikelnummer / Part-No. :

8821xx-xxxx 8822xx-xxxx 8823xx-xxxx 88214x-xxxx

Seriennummer / S/N :

A 49 10 001 A 49 10 002 A 49 10 003 A 49 10 004

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften der folgenden genannten Europäischen Richtlinien überein:

The products described above in the form as delivered are in conformity with the provisions of the specified European Directives as follows:

EMV Richtlinie 2004/108/EG

Richtlinie des Europäischen Parlamentes und Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG

EMC-Directive 2004/108/EC

Directive of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC

NSR-Richtlinie 2006/95/EG

Richtlinie des Europäischen Parlaments und des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen

LVD-Directive 2006/95/EC

Directive of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits

Weitere Angaben über die Einhaltung dieser Richtlinien enthält der Anhang

Anbringung der CE Kennzeichnung : 2010**SIEI-AREG GmbH****SIEI-AREG GmbH**


Gottlieb-Daimler-Straße 17/3

74385 Pleidelsheim

Telefon 07144 / 89736-0

Telefax 07144 / 89736-0

Pleidelsheim, den 16. November 2010



Niederlassungsleiter / Branch Manager



Technischer Leiter / Technical Manager

Die Anhänge sind Bestandteil dieser Erklärung. Annexes are part of this declaration

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zustimmung von Eigenschaften.
This declaration certifies conformance with the above mentioned Directives. Affirmation of attributes in a legal sense is not included.

Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

The documents accompanying the product shall be considered in detail.

Anhang zur EG – Konformitätserklärung

Annex of declaration of conformity

Hersteller / Manufacturer : **SIEI-AREG GmbH**
:

Monat / Jahr: 11 / 2010
Month / Year: 11 / 2010

Anschrift / Address : Gottlieb-Daimler-Straße 17/3
D-74385 Pleidelsheim / Neckar
Germany
Phone: +49 7144 / 89736-0

Dokument-Nr. / Document-No. : 918 400

Produktbezeichnung: Asynchron-Positionier-Motor mit integriertem Frequenzumrichter
Product description: Asynchrony -Positioning motor with Inverter

Typbezeichnung / Type : KFM05a /180 KFM05a /310 KFM05a /500L KFM05a /510

Die Übereinstimmung des bezeichneten Produkts mit den Vorschriften der Richtlinien EMV 2004/108/EG, NSR 2006/95/EG wird nachgewiesen durch die vollständige Einhaltung folgender Normen:
Conformance of the product with the Directive EMC 2004/108/EC, LVD 2006/95/EC is given to the following standards:

Harmonisierte, europäische Normen EMV-Richtlinien

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 61000-6-1	10/2007	EN 55011	11/2007
EN 61000-6-2	03/2006	EN 61000-4-1	10/2007
EN 61000-6-3	09/2007	EN 61000-4-2	12/2009
EN 61000-6-4	09/2007	EN 61000-4-3	06/2008
EN 61000-3-2	03/2010	EN 61000-4-4	11/2010
EN 61000-3-3	06/2009	EN 61000-4-5	06/2007

Harmonisierte, europäische Normen NSR-Richtlinie

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 50178	04/1998	EN 60034-1	09/2007
EN 61800-1	08/1999	EN 60034-2-1	08/2008
EN 61800-2	08/1999	EN 60034-5	09/2007
EN 61800-3	07/2005	EN 60034-6	08/1996

Harmonisierte, europäische Normen MR-Maschinenrichtlinie

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 60204-1	06/2007	DIN EN ISO 13849-1	07/2001
		DIN EN ISO 13849-2	09/2008

Nationale Normen / IEC-Standards

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
IEC			

EG – Einbauerklärung

EC Declaration of Incorporation

im Sinne der EG-Richtlinie 2006/42/EG über Maschinen (Anhang II B)
according to EC directive 2006/42/EC on machinery (Annex II B)

Hersteller / Manufacturer:

SIEI-AREG GmbH

Monat / Jahr: 10 / 2011

Month / Year: 10 / 2011

Anschrift / Address:

Gottlieb-Daimler-Straße 17/3
D-74385 Pleidelsheim / Neckar
Germany
Phone: +49 7144 89736-0

Hiermit erklären wir, dass die nachstehend beschriebene unvollständige Maschine
Herewith we declare, that the partly completed machinery described below

Dokument-Nr. / Document-No.: 918 401

Produktbezeichnung: Asynchron-Positionier-Motor mit integriertem Frequenzumrichter
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Seriennummer / S/N: A 49 10 001 A 49 10 002 A 49 10 003 A 49 10 004

alle grundlegenden Anforderungen der Maschinenrichtlinie 2006/42/EG erfüllt, soweit es im Rahmen des Lieferumfangs möglich ist (Anhang zur EG – Einbauerklärung). Ferner erklären wir, dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B dieser Richtlinie erstellt wurden.

Die unvollständige Maschine entspricht zusätzlich den Bestimmungen der Richtlinie 2004/108/EG über elektromagnetische Verträglichkeit. Die Schutzziele der Richtlinie 2006/95/EG über elektrische Betriebsmittel werden eingehalten.

is complying with all essential requirements of the Machinery Directive 2006/42/EC, as far as the scope of delivery allows (Annex of declaration of Incorporation). Additional we declare that the relevant technical documentation is compiled in accordance with part B of Annex VII.

In addition the partly completed machinery is in conformity with the EC Directive 2004/108/EC relating to electromagnetic compatibility. The safety objectives of the Directive 2006/95/EC relating to electrical equipment are observed.

Wir verpflichten uns, den Marktaufsichtsbehörden auf begründetes Verlangen die speziellen Unterlagen zu der unvollständigen Maschine über unsere Dokumentationsabteilung zu übermitteln.

We commit to transmit, in response to a reasoned request by the market surveillance authorities, relevant documents on the partly completed machinery by our documentation department.

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn ggf. festgestellt wurde, dass die Maschine oder Anlage, in welche die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EG über Maschinen entspricht und die EG-Konformitätserklärung gemäß Anhang II A ausgestellt ist.

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Directive 2006/42/EC on Machinery, where appropriate, and until the EC Declaration of Conformity according to Annex II A is issued.

Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen Bernhard Löwe

The person authorised to compile the relevant technical documentation Bernhard Löwe

SIEI-AREG GmbH

Gottlieb-Daimler-Straße 17 / 3

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Telefon 07144 / 89736-0

Telefax 07144 / 8973697

Technischer Leiter / Technical Director

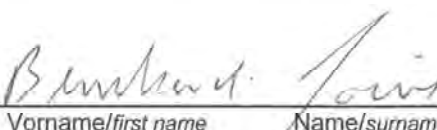
Pleidelsheim, 16.10.2011

Ort/Place

Datum/Date

Vorname/first name

Name/surname



Anhang zur EG – Einbauerklärung

Annex of declaration of Incorporation

Hersteller / Manufacturer :
:

SIEI-AREG GmbH

Monat / Jahr: 10 / 2011
Month / Year: 10 / 2011

Anschrift / Address :

Gottlieb-Daimler-Straße 17/3
D-74385 Pleidelsheim / Neckar
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Produktbezeichnung:
Product description:

Asynchron-Positionier-Motor mit integriertem Frequenzumrichter
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Typbezeichnung / Type :

KFM05a /180 KFM05a /310 KFM05a /500L KFM05a /510

Die Übereinstimmung des bezeichneten Produkts mit den Vorschriften der Maschinenrichtlinie 2006/42/EG, wird nachgewiesen durch die vollständige Einhaltung folgender Normen:

Conformance of the product with the Machinery Directive 2006/42/EC is given to the following standards:

Harmonisierte, europäische Normen EMV-Richtlinien

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 61000-6-1	10/2007	EN 55011	04/2011
EN 61000-6-2	03/2006	EN 61000-4-1	10/2007
EN 61000-6-3	09/2007	EN 61000-4-2	12/2009
EN 61000-6-4	09/2007	EN 61000-4-3	04/2011
EN 61000-3-2	03/2010	EN 61000-4-4	11/2010
EN 61000-3-3	06/2009	EN 61000-4-5	06/2007
		EN 61800-3	07/2005

Harmonisierte, europäische Normen NSR-Richtlinie

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 50178	04/1998	EN 60034-1	09/2007
EN 60204-1	06/2007	EN 60034-2-1	08/2008
EN 61800-2	08/1999	EN 60034-5	09/2007
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EN 61800-5-1	04/2010	EN 60034-7	12/2001
EN 61800-5-2	04/2008	EN 60034-9	01/2008
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Harmonisierte, europäische Normen MR-Maschinenrichtlinie

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 60204-1	06/2007	DIN EN ISO 13849-1	07/2001
EN 61800-5-2	04/2008	DIN EN ISO 13849-2	09/2008
EN ISO 12100	03/2011		

Harmonisierte, europäische Normen AR-Aufzugsrichtlinie

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
EN 81-1	06/2010	EN 12015	03/2005
EN 81-2	08/2010	EN 12016	02/2009

Nationale Normen / IEC-Standards

Referenznummer	Ausgabedatum	Referenznummer	Ausgabedatum
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