

SUDT10

3 Phase, 10 A Auto change over device

Installation and Wiring Instructions



PLEASE READ INSTRUCTIONS IN CONJUNCTION WITH ILLUSTRATIONS.
PLEASE SAVE THESE INSTRUCTIONS.

IP54



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1 General notes

1.1 Structure of the operating instructions

Before installation and start-up, read this manual carefully to ensure correct use! We emphasize that these operating instructions apply to specific units only, and are in no way valid for the complete system!

Use these operating instructions to work safely with and on the device. They contain safety instructions that must be complied with as well as information that is required for failure-free operation of the device.

Keep these operating instructions together with the device. It must be ensured that all persons that are to work on the device can refer to the operating instructions at any time. Keep the operating instructions for continued use. They must be passed-on to all successive owners, users and final customers.

1.2 Target group

The operating instructions address persons entrusted with planning, installation, commissioning and maintenance and servicing and who have the corresponding qualifications and skills for their job.

1.3 Exclusion of liability

Concurrence between the contents of these operating instructions and the described hardware and software in the device has been examined. It is still possible that non-compliances exist; no guarantee is assumed for complete conformity. To allow for future developments, construction methods and technical data given are subject to alteration. We do not accept any liability for possible errors or omissions in the information contained in data, illustrations or drawings provided.

We accept no liability for damage caused by misuse, incorrect use, improper use or as a consequence of unauthorized repairs or modifications.

1.4 Copyright

These operating instructions contain copyright protected information. The operating instructions may be neither completely nor partially photocopied, reproduced, translated or put on data medium without previous explicit consent. Infringements are liable for damages. All rights reserved, including those that arise through patent issue or registration on a utility model.

2 Safety information

This chapter contains instructions to prevent personal injury and property damage. These instructions do not lay claim to completeness. In case of questions and problems, please consult our company technicians.

2.1 Intended use




The equipment is to be used solely for the purposes specified and confirmed in the order. Other uses which do not coincide with, or which exceed those specified will be

deemed unauthorised unless contractually agreed. Damages resulting from such unauthorised uses will not be the liability of the manufacturer. The user will assume sole liability.

Reading these operating instructions and complying with all contained instructions - especially the safety notifications contained therein - are considered part of intended use. To consider is also the manual of attached components. Not the manufacturer, rather the operator of the device is liable for any personal harm or material damage arising from non-intended use!

2.2 Explanations of symbols

Safety instructions are highlighted with warning triangles and are depicted according to the degree of hazard as follows.

	<p>Attention! Hazardous area. Death or severe injury or significant property damage can occur if the corresponding precautions are not taken!</p>
	<p>Danger owing to electric current Danger owing to electric current or voltage.</p>
	<p>Information Important information and advice for user.</p>

2.3 Product safety

The device conforms to the state of the art at the time of delivery and is fundamentally considered to be reliable. The device and its accessories must only be used in a flawless condition and installed and operated in compliance with the assembly instructions and/or operating instructions. Operating outside the device's technical specifications (CE rating plate and attachment / technical data) can lead to a defect in the device and additional damage!

In the case of a malfunction or a failure of the equipment check all functions with alarms in order to prevent injury to persons or property. Note possibility of back-up operation. If used in intensive animal environments, any malfunctions in the air supply must be detected as soon as possible to prevent the development of a life-threatening situation for the animals. The design and installation of the system must comply with local regulations and directives. In Germany these include DIN VDE 0100, the animal protection and the keeping of working animals ordinance and the pig-keeping ordinance etc. Also note the instructions of AEL, DLG, VdS.

2.4 Requirements placed on the personnel / due diligence

Persons entrusted with the planning, installation, commissioning and maintenance and servicing in connection with the frequency inverter must have the corresponding qualifications and skills for these jobs.

In addition, they must be knowledgeable about the safety regulations, EU directives, rules for the prevention of accidents and the corresponding national as well as regional and in-house regulations. Personnel to be trained or instructed and apprentices are only permitted to work on the device under the supervision of an experienced person. This also applies to personnel undergoing general training. Comply with the legal minimum age.

This device is not intended to be used by people (including children) who have restricted mental, sensory or intellectual abilities or who have a lack of experience and/or knowledge.

2.5 Start-up and during operation



Attention!

During commissioning, unexpected and hazardous conditions can arise in the entire installation due to defective adjustments, defective components or incorrect electrical connections. Remove all persons and objects from the hazardous area. During operation, the device must be closed or installed in a control cabinet. Fuses may only be replaced by new ones and must not be repaired or bypassed. The data for the maximum line fuse are to be considered absolutely (☞ Technical data). Use only fuses specified in schematic diagrams.

Any faults detected in the electric system/modules/operating equipment must be corrected immediately. If these faults are not corrected, the device/system is potentially very dangerous. The device/system must therefore not be operated when it is faulty.

2.6 Work on the device



Information

Mounting, electrical connection, and start-up operation may only be carried out by an electrical specialist in accordance with electrotechnical regulations (e.g. DIN EN 50110 or DIN EN 60204)!



Danger owing to electric current

It is forbidden to carry out work on electrically live parts. Protection class of the device when open is IP 00! It is possible to inadvertently touch components carrying hazardous voltages.

The safe isolation from the supply must be checked using a **two-pole** voltage detector.



Attention!

Automatically restart after a power failure or mains disconnection!

2.7 Modifications / interventions in the device



Attention!

For reasons of safety, no unauthorized interventions or modifications may be made on the device. All planned modifications must be authorized by the manufacturer in writing.

Only use the manufacturer's original spare parts / wearing parts / accessories. These parts are specially designed for this device. If parts from other sources are used, there is no guarantee that they are designed and produced for the proper loads and with the required level of safety.

Parts and special equipment not supplied by the manufacturer are not approved for use.

2.8 Operator's obligation of diligence

- The contractor or owner must also ensure that the electric systems and equipment are operated and maintained in accordance with electro-technical regulations.
- The owner is obliged to ensure that the device are operated in perfect working order only.
- The device may only be used as intended (☞ "Application").
- You must periodically examine the safety equipment for their properly functioning condition.
- The assembly instructions and/or operating instructions are always readily available at the location where the device is being used, are complete and are in legible condition.
- These persons are regularly instructed in all applicable questions regarding occupational safety and environmental protection and are knowledgeable regarding the assembly instructions and/or operating instructions and, especially, are familiar with the safety instructions contained therein.
- All safety and warning notices attached to the frequency inverter are never removed and remain legible.

2.9 Employment of external personnel

Maintenance and service work are frequently carried out by external employees who often do not recognize the specific situations and the thus resulting dangers. These persons must be comprehensively informed about the hazards in their area of activity. You must monitor their working methods in order to intervene in good time if necessary.

3 Product overview

3.1 Function

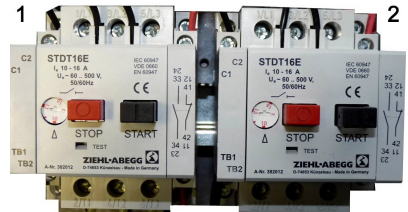
- Switching device with motor protection function for the redundant operation of two fans on one speed control unit.
- To use both fans as evenly as possible, operation switches between fan 1 and fan 2 every 12 hours.
- The internal timing relay "K3" for the automatic switching is set to 12 hours at the factory.
- The built in motor protection units type STDT16E are designed for protection of 3 ~ motors with internal thermostats (TB).
- A thermal over-current sensor and a magnetic short circuit releasing element are the parts of the integral line protection. To prevent it from being incorrectly activated, the thermal over-current release must be adjusted for use as a line

protection to 10 % higher than the maximum permissible current of the outgoing line.

- The appropriate device switches when a thermostat switch (motor overtemperature) short circuit and overcurrent in the connected cable responds. If there is a malfunction in one the fans, the second intact fan is switched on automatically.
- The motor can be switched on again by pressing button **I** and is possible provided the winding of the motor has cooled down sufficiently.
- The motor protection devices remain switched on if the mains supply is interrupted

Integrated motor protection units type STDT16E

Switch the motor back on after a motor fault by pressing the **I** = START button.



Internal time relay “K3”

The runtime of fan 1 and fan 2 is set respectively to 12 hours (symmetrical operation) at the factory. It can be set separately for each fan if necessary.

Simultaneous operation of both fans is not possible!

Setting “T1” for fan at STDT16E No. “1”

Setting “T2” for fan at STDT16E No. “2”

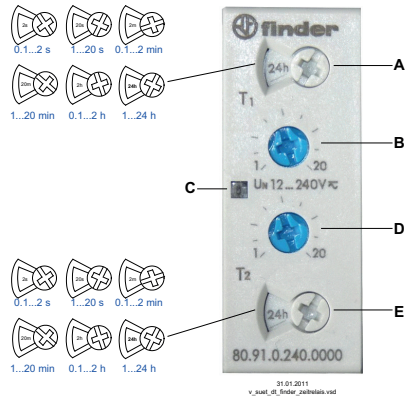
A = Time scales rotary selector “T1”

B = Time setting “T1”

C = LED

D = Time setting “T2”

E = Time scales rotary selector “T2”



Danger owing to electric current

- When one fan is switched off manually with the **0** = OFF button of the motor protection device, the second fan is switched on automatically. This is the same behaviour as in the event of a motor fault!
- It is strictly forbidden for work to be carried out on any components while they are connected to live voltage. The open equipment is protected to IP 00. It is possible to come into direct contact with dangerous voltages!

3.2 Storage

- The device must be stored in its original packaging in a dry and weather-proof room.
- Avoid exposure to extreme heat and cold.
- Avoid over-long storage periods (we recommend a maximum of one year).

3.3 Waste disposal / recycling

Disposal must be carried out professionally and environmentally friendly in accordance with the legal stipulations.

4 Mounting

4.1 General notes



Attention!

The following points must be complied with during the mechanical installation to avoid causing a defect in the device due to assembly errors or environmental influences:

- Before installation remove the device from the packaging and check for any possible shipping damage!
- Assemble the device on a clean and stable base. Do not distort during assembly! Use the appropriate mounting devices for proper installation of the unit!
- Do not mount equipment on vibrating base!
- When mounted onto lightweight walls, there must be no impermissibly high vibrations or shock loads. Any banging shut of doors that are integrated into these lightweight walls, can result in extremely high shock loads. Therefore, we advise you to decouple the devices from the wall.
- Do not allow drilling chips, screws and other foreign bodies to reach the device interior!
- The plastic washers must be installed between the screw heads and the housing for models with mounting holes on the inside of the housing!
- The device should be installed in a location where it will not be disturbed, but at the same time can be easily accessed!
- Depending on the housing model use supplied stoppers for cable inlets, cut off necessary cable inlets respectively to the cable diameter. Or alternative use cable inlet for cable glands. Any cable ducts openings not used must be sealed!
- Care must be taken to avoid direct radiation from the sun!
- The device is designed for vertical installation (cable inlet down). A horizontal or reclined installation is only permissible after technical release of the manufacturer!
- Be sure to observe proper heat dissipation (☞ Technical data, heat dissipation).

4.2 Installation location for agriculture

In order to avoid damage caused by ammoniac vapours, the controller shall not be installed in the stable, but rather in an outhouse wherever possible.

4.3 Temperature influences during commissioning

Avoid condensation in the controller and functional faults attributable to condensation by storing the controller at room temperature!

5 Electrical installation

5.1 Safety precautions



Danger owing to electric current

- Work on electric components may only be carried out by trained electricians or by persons instructed in electricity under the supervision of an electrician in accordance with electrical engineering regulations.
- It is forbidden to carry out work on electrically live parts.
- A second person must always be present when working on energized parts or lines who disconnects in case of emergency.
- Inspect electrical equipment periodically: retighten loose connections – immediately replace damaged lines and cables.
- Operating the device with the housing cover removed is prohibited because energized, exposed parts are present inside the device. Disregarding this regulation can lead to severe personal injury.
- Never clean electrical equipment with water or similar liquids.



Information

The respective connections are represented in the enclosure of this manual (☞ Connection diagram)!

5.2 Mains connection

Power from the mains is connected to terminals: PE, L1, L2, L3 and N. Here, it must be strictly observed that the mains voltage lies within the allowable tolerance specifications (☞ Technical data and nameplate affixed to the side).

The controller can be supplied with mains voltage separately, i.e. not via the switching device. In this case the line connection at “L2” and “L3” can be void.



Danger owing to electric current

The mains voltage must comply with the DIN EN 50160 quality characteristics and the defined standard voltages in IEC 60038!

5.3 Controller connection

Line voltage for Controller

A 3 ~ controller can be supplied with mains voltage by the SUDT by connecting it to the redundant terminals “L1”, “L2” and “L3”. There are several connection possibilities for the “PE” on the aluminium base plate.

The controller can be supplied with mains voltage separately, i.e. not via the switching device.

Input for Controller

The output of the controller for controlling the fan speed is connected to the terminals “U”, “V”, “W”. The output of the controller is switched to a motor connection by the internal contactors and the motor protection devices.

Function of the motor protection units type STDT16E from 60 V when voltage control is in use. Operation at frequency inverter only possible when sine filter in the output of the inverter.

5.4 Motor connection, motor protection units type STDT16E

The fans with built-in thermostat switches (TB) are connected directly to the built-in motor protection units type STDT16E.

Several fans can be connected to one STDT16E. It is essential to ensure that thermostats “TB” are always connected in series.

The maximum total current of all motors should not exceed the rated current of the equipment!




Danger owing to electric current

The voltage on the “TB”-terminals approx. line voltage on! An outside voltage may never be connected to these terminals!


The following notes for the motor protection units are to be considered absolutely (e.g. for replacement):

- Input and output should not be exchanged!
- The connection of the supply must be made at the **top side** (terminals 1, 3 and 5).
- The connection of the motor must be made at the **underside** (terminals 2, 4 and 6).
- It is very important that the three lower wires from the shunt trip are connected to the motor terminals 2/4/6 and the two upper wires are connected to the terminals C1/C2 of the shunt trip. Without connection no motor protection!

5.5 Fault indication

A group fault is signalled to the terminals “1” and “2” (max. contact load  connection diagram) by the two series-connected signal contacts of the motor protection units.

The signal contacts are closed in operation, i.e. connection between terminals “1” and “2”.

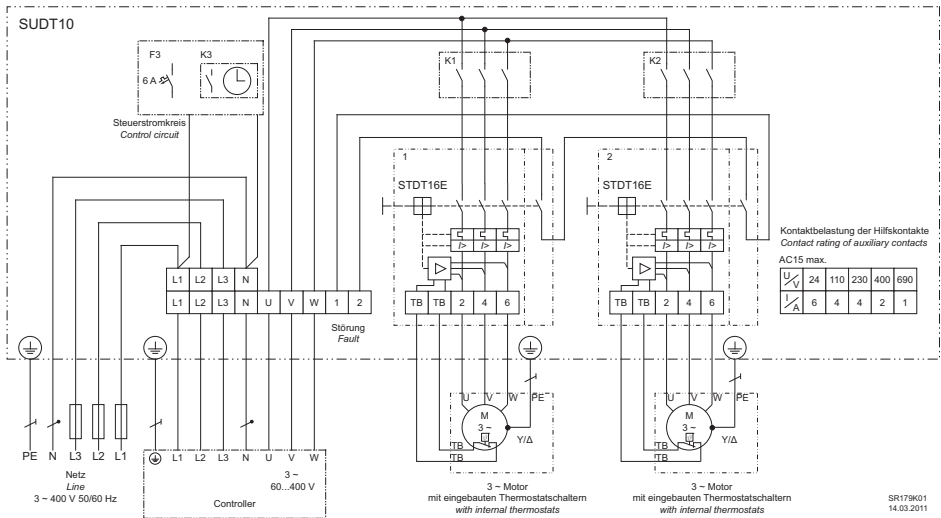
In case of a motor fault or switching off of a motor protection device by the  button, the signal contact is opened, i.e. no connection between terminals “1” and “2”.

6 Enclosure

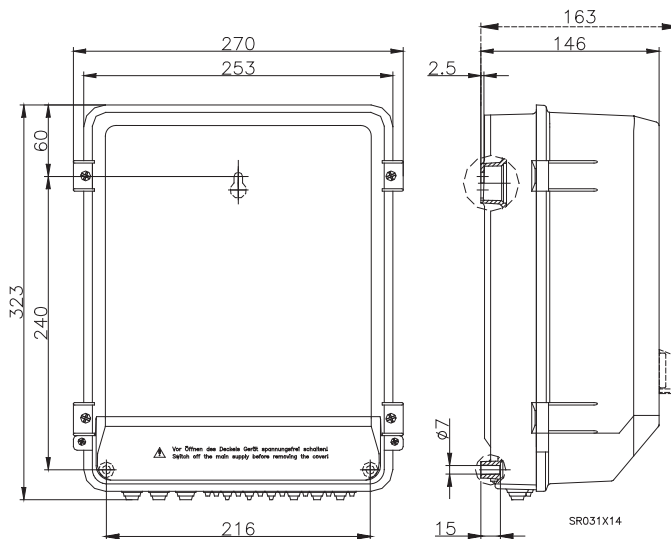
6.1 Technical data

Type	SUDT10
Part.-No.	444179 (301043-30)
Line voltage	3 ~ 400 V (-10 % / +10 %), 50/60 Hz
Internal control fuse F3	Circuit breaker B 6 A
Max. line fuse	25 A
Rated current (each STDT16E)	16.0 A
Max. heat dissipation approx.	10 W
Maximal cross section of terminals	Line, Controller, Fault indication: flexible 4 mm ² / rigid 6 mm ² Motor connection: 6 mm ²
Permissible ambient temperature	-10...+40 °C
Permissible rel. humidity	85 % no condensation
Housing protection	IP 54
Weight	3.8 kg

6.2 Connection diagram



6.3 Dimensions [mm]



The **Vent-Axia** Guarantee

Applicable only to products installed and used in the United Kingdom. For details of guarantee outside the United Kingdom contact your local supplier.

Vent-Axia guarantees its products for two years from date of purchase against faulty material or workmanship. In the event of any part being found to be defective, the product will be repaired, or at the Company's option replaced, without charge, provided that the product:-

- Has been installed and used in accordance with the instructions given with each unit.
- Has not been connected to an unsuitable electricity supply. (The correct electricity supply voltage is shown on the product rating label attached to the unit).
- Has not been subjected to misuse, neglect or damage.
- Has not been modified or repaired by any person not authorised by the company.

IF CLAIMING UNDER TERMS OF GUARANTEE

Please return the complete product, carriage paid to your original supplier or nearest Vent-Axia Centre, by post or personal visit. Please ensure that it is adequately packed and accompanied by a letter clearly marked "Guarantee Claim" stating the nature of the fault and providing evidence of date and source of purchase.

The guarantee is offered to you as an extra benefit, and does not effect your legal rights

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