TR 190 / TR 390

Installation, Operation and Maintenance Instructions

– Read and Save These Instructions –

This manual is provided to acquaint you with the dehumidifier so that installation, operation and maintenance can proceed successfully. Ultimate satisfaction depends on the quality of installation and a thorough understanding of this equipment. The dehumidifier is built around tested engineering principles and has passed a thorough inspection for quality of workmanship and function.

Therma-Stor LLC
Driven by performance. Powered by design.™
4201 Lien Rd
Madison, WI 53704
www.QuestClimate.com
Toll-Free 1-877-420-1330
info@QuestClimate.com

QUEST

Improper use

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!

- Do not place unit in standing water.
- If supplying the system with contaminated air, the "harmful influences on rotors" must be observed!
- Do not expose the device to the weather without suitable protection.
- Any unauthorised modifications, alterations or structural changes to the device are forbidden.
- Any operation other than as described in this manual is prohibited. Non-observance renders all claims for liability and guarantee null and void.

Personnel qualifications

People who use this device must:

- be aware of the dangers that occur when working with electric devices in damp areas.
- have read and understood the instructions, especially the Safety chapter.

The following applies to the staff categories stated below:

Qualified Electrician

A qualified electrician must be able to read and understand electric circuit diagrams, to put electrical systems into service and to maintain them, to wire control cabinets, to ensure the functionality of electrical components and to identify possible hazards from electrical and electronic systems.

Personnel training

- Only trained and instructed personnel may work at or with the dehumidifier – observe the personnel qualifications.
- The responsibilities of the personnel for the following tasks must be clearly defined:
  - set-up and assembly
  - installation
  - start-up and operation
  - maintenance and repair
- The control unit may only be operated by instructed personnel.

Personal protective equipment

Warning of electrical voltage
Wear hearing protection when standing near the running device.

Wear protective gloves
For start-up, maintenance and troubleshooting always wear suitable protective gloves.

Wear foot protection
For transportation, start-up, maintenance and troubleshooting always wear suitable foot protection.

Personal protective equipment

Warning of electrical voltage
Work on the electrical components must only be carried out by a qualified electrician!

Warning of electrical voltage
Make sure to de-energize the device before starting work on electrical components.
Set the main switch to the 0 position or pull the mains plug (if any) from the mains socket.

Warning
Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way!
Observe the personnel qualifications!

Warning
The device is not a toy and does not belong in the hands of children.

Warning
Risk of suffocation!
Do not leave the packaging lying around. Children may use it as a dangerous toy.

Caution
Only use residual current devices sensitive to all types of current (type B or B+). The integrated EMC filters can lead to instantaneously tripped RCDs.
Use residual current devices with a minimum triggering level of > 300 mA and delayed tripping (type K).

Note
Do not operate the device without an inserted air filter! Without the air filter, the inside of the device will be heavily contaminated. This could reduce the performance and result in damage to the device.

Note
Dirt accumulating inside the rotor can substantially reduce the dehumidification performance or damage the rotor beyond repair.
Supplying the system with contaminated air might damage the rotor. Observe the information regarding “Harmful influences on rotors”.

Note
After a power failure the device will restart automatically provided that it was not switched off in the meantime. This behaviour is desired and necessary to ensure operation with little supervision.

Behaviour in the event of an emergency

1. Switch off the device.
2. In an emergency, disconnect the device from the mains feed-in:
   Hold onto the mains plug while pulling the power cable out of the mains socket.
3. Do not reconnect a defective device to the mains.

Information about the device

General description

Dehumidifiers operating on the desiccant principle are used to tackle drying tasks in the field of process engineering, air-conditioning, on construction sites, and for the dehumidification of production and storage facilities, where a particularly low humidity level is required over a broad temperature range. The desiccation technique enables the safe and economic operation even at low operating temperatures.

Design

The basic device consists of the following components:

- fans for air transport
- air filters behind every air inlet
- separate sectors for process air (to be dehumidified) and
- regeneration air (humid exhaust air)
- purging sector for heat recovery
- rotor desiccant wheel for the dehumidification with silica gel
- drive unit with gear motor, toothed belt pulley and toothed belt
- heater battery for heating regeneration air
- Depending on the selected options further components are possible (see Technical annex).

During dehumidification the desiccant wheel turns continuously at a low speed (depending on the configuration 2 to 40 rotations per hour).

The desiccant wheel is simultaneously interacting with the process and regeneration air so it can constantly absorb and release moisture.

Process air

The air to be dehumidified is brought in by means of a fan. The process air (4) flows through the desiccant wheel’s dehumidification sector (1).

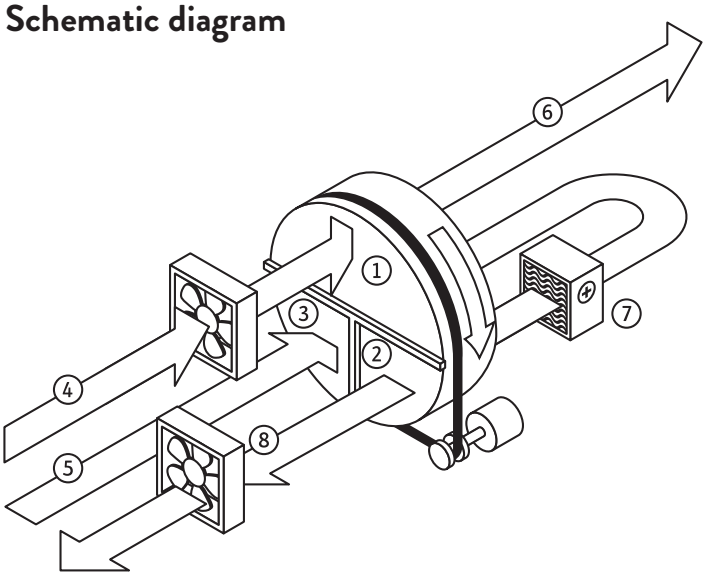
In doing so, the contained moisture is withdrawn by the sorbent (silica gel) and retained (desiccation). Due to physical processes the temperature of the dry air (6) increases. Later the dried air flows towards the dry air outlet.

Regeneration air

The regeneration air (5) is also brought in with its own fan and guided through the purging sector (3). During dehumidification the desiccant wheel warms up as a result of the released desiccation heat and the regeneration heat. The purging sector (3) serves the purpose of heat recovery and for cooling the desiccant wheel, leading to a reduced energy input and improvement of the dehumidification performance – especially at lower dew points. Air flowing through the heater (7) is heated to approx. 212° F to 280° F (depending on the intake temperature) and at the same time the relative humidity is extremely reduced.

In passing through the regeneration sector (2), the air reabsorbs the moisture retained by the silica gel (desorption). Then the extremely humid regeneration air (8) is discharged to the outside via the humid air outlet.

Schematic diagram



No.	Designation
1	Dehumidification sector
2	Regeneration sector
3	Purging sector
4	Process air inlet
5	Regeneration air inlet
6	Dry Air outlet
7	Heater battery
8	Humid air outlet (regeneration air)

Design configuration and components

Rotor

The desiccant dehumidifier works with a desiccant wheel (rotor A) which is composed of layers of smooth and corrugated non-woven fabric with chemically bonded silica gel. Thus created is a honeycomb structure with a large number of axial air ducts with a large surface and direct connection to the inner pore structure of the silica gel.

On account of the desiccant wheel's good mechanical and physical properties no silica gel is discharged. It may be supplied with saturated air with a relative humidity of up to 100 % but not with water drops. The rotor is incombustible.

Rotor drive

The rotor is driven by an electric gear motor.

The power is transmitted by means of synchronized pulley and timing belt.

Rotor rotation control

The device is equipped with a rotation sensor to warn of seized rotor condition.

Rotor bearing

The rotor is mounted on a stainless steel axle with maintenance-free bushings.

Rotor sealing

An automatically clearance-compensating gasket system seals the rotor and the individual air sectors against one another.

Filter

Air filters are located in each individual air inlet – depending on the field of application designed either as coarse or fine filter for removing the dust in the air currents.

Fans

Used are radial fans or mixed-flow fans with energy-saving EC motors. For an easy adjustment of the volumetric flow rates a potentiometer is located behind the front cover. The fan speed for process air and regeneration air can be adjusted according to the specifications.

Regeneration air heater

Heating the regeneration air is performed by electric heaters consisting of individual resistance heating elements. Depending on the dehumidifier model and size of the heater these can be designed as single- or multistage versions. The regeneration temperature is regulated by a thermostatic two-step control.

Safety temperature monitors (STW) measure both the regeneration exhaust air temperature (RAL) and the regeneration air temperature heating (RHZ). Primarily the unit is regulated to a constant RHZ. With a decreasing moisture load however RAL might increase, so the heaters are reduced before reaching the RHZ.

Safety components

In order to protect the basic device from inadmissible temperatures, it comes equipped with the following safety components:

- a differential pressure switch (ΔP switch) to monitor the air flow direction and the flow rate of the regeneration air
- a safety temperature limiter (STB RHZ) to monitor the max. permissible temperature after heating (thermostat maximum)
- a safety temperature limiter (STB RAL) as rotation control for the
- rotor; it is situated in the exhaust air flow and tripped by an excessive temperature rise resulting from rotor standstill
- Depending on the selected options, additional features are possible (see Technical annex).

Note

If a safety component is tripped, the device will be switched off (STOP), but the overrun will remain active.

Wait until the entire rundown period has lapsed before accessing internal parts of the device.

Electrical system

The entire switching and control technology is located in the integrated electrical control box on the dryer housing. The electrical control box is designed for a high safety standard with protection type IP53 (see Technical annex).

Depending on the model, the terminals for remote monitoring and control can either be accessed via the front cover or the cover of the control box. This is also the place to access the reset buttons of the safety temperature limiters and the potentiometers for fan regulation. The cable gland for the mains feed-in is located at the side of the device. The power supply is connected directly to the terminals of the emergency stop main switch.

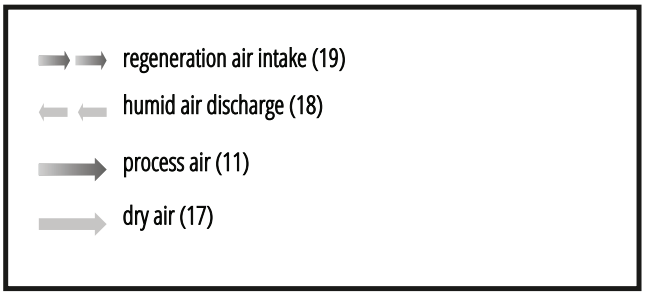
Housing

Depending on the model the housing of the dehumidifier is made of galvanized sheet steel or stainless steel sheet.

Options

There are additional options available for the desiccant dehumidifiers of the “TR...” series (see “Options” section).

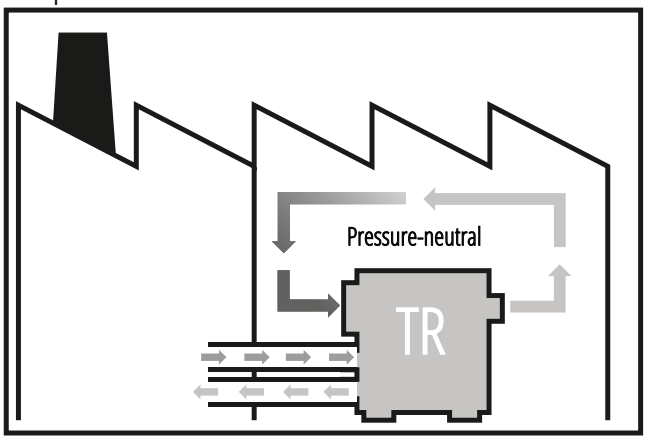
Types of installation



Installation within conditioned space
The device is positioned in the room to be dehumidified.

- The device operates in recirculation mode.
- The regeneration air inlet (19) is to be ducted from outside.
- The regeneration outlet is ducted outside.

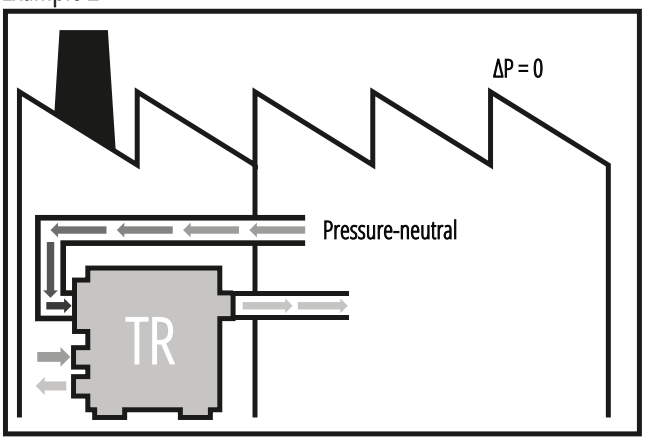
Example 1



Installation outside conditioned space (neutral pressure)
The device is positioned in the room to be dehumidified.

- The process air inlet (17) is ducted from the room to be dried.
- The dry process air outlet (11) is ducted into the room.

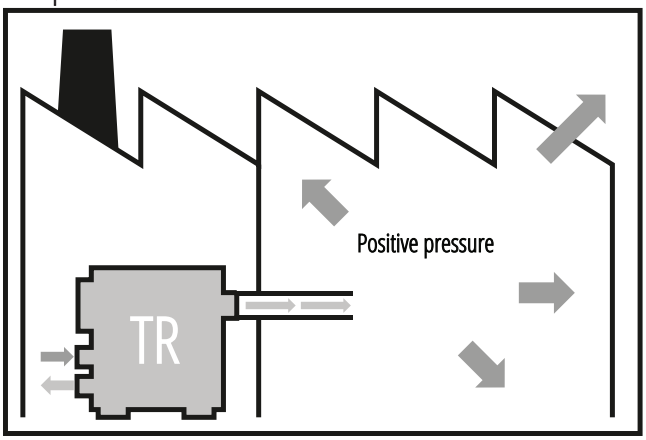
Example 2



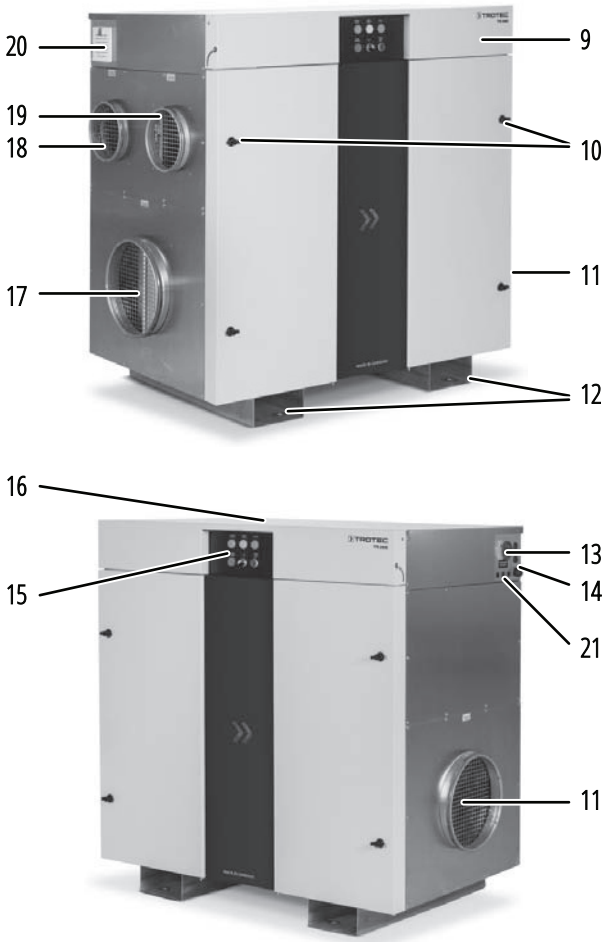
Installation outside conditioned space (positive pressure)

- The dry process air outlet (11) is ducted into the room to be dehumidified.

Example 3: Ventilation mode for outdoor installation



Device depiction



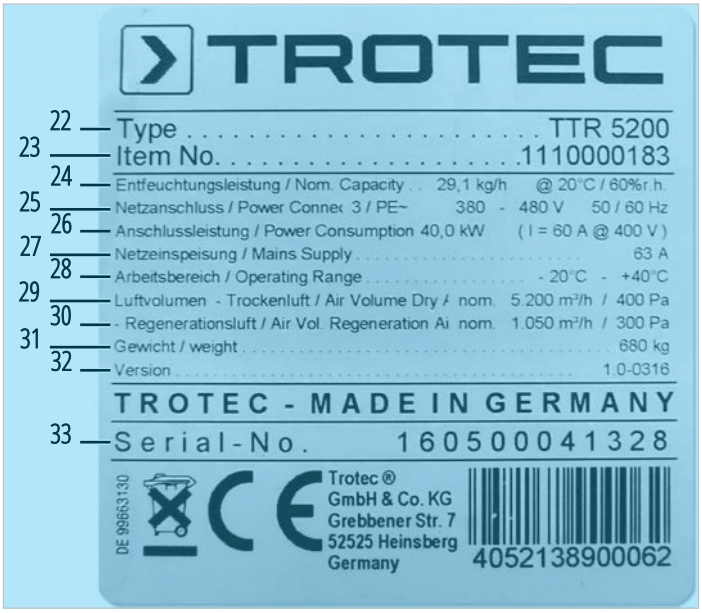
No.	Designation
9	Front cover (hinged)
10	Air filter access and maintenance doors
11	Process air outlet with duct connection
12	Forklift pockets
13	Main switch with emergency stop function
14	Cable gland for mains cable
15	Control panel
16	Electrical control box cover
17	Process air inlet with duct connection
18	Humid air outlet (regeneration air) with duct connection
19	Regeneration air inlet with duct connection
20	Control box ventilation system incl. air filter(s)
21	Cable inlet for control lines

Product labelling

For an unmistakable identification, the desiccant dehumidifier is provided with a nameplate.

The nameplate is located inside the control box and in the area of the cable inlet.

The nameplate bears a UL mark. (Units mfg. after 2020)



No.	Designation	Unit
22	Type or device name	–
23	Quest item no.	–
24	Dehumidification capacity	[kg/h] @ 20 °C / 60 % RH
25	Power connection	–
26	Power consumption	P = [kW] I = [A] @ 400 V
27	Mains supply	[A]
28	Operating range	[°C]
29	Dry air volume	[m³/h] / [Pa]
30	Regeneration air volume	[m³/h] / [Pa]
31	Weight	[kg]
32	Version	–
33	Serial number	–

Transport and installation

Warning
Risk of severe injuries due to falling device.
The device may only be lifted by use of the forklift pockets or lifting straps. Pipe sockets or other attachment parts must not be used as lifting points!The carrying capacity of the lifting gear must be suitable for the weight of the device (see Technical annex).

The following should be observed before transporting the device using lifting gear:

Warning
Risk of death due to suspended loads.
Make sure that nobody is situated in the immediate proximity!

- Only instructed persons are allowed to perform the transport by use of lifting gear.
- Consider the centre of gravity when transporting the load.

Installing the device

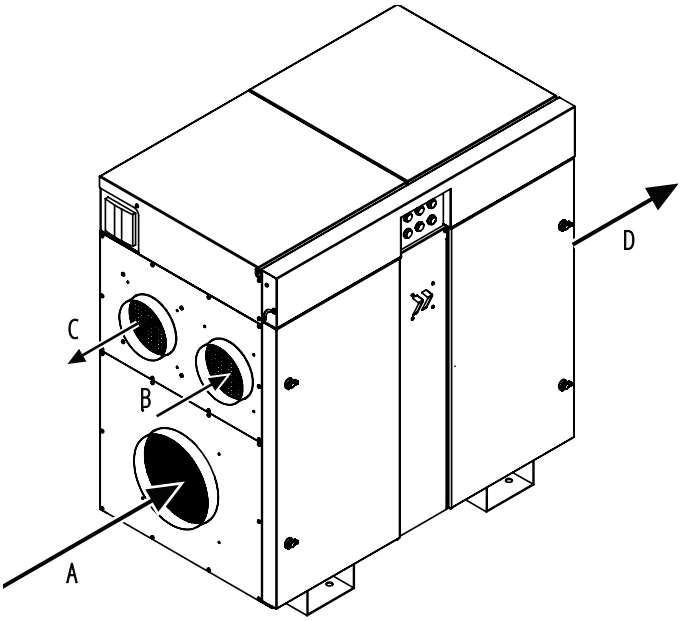
- Position the device on firm, dry and level ground.
  - Avoid slippery and unstable ground.
  - Position the device allowing a sufficient distance for air inlet and outlet and for connecting the ducting
  - Make sure there is enough space to operate and maintain the device (see Technical annex).
- Only install the device indoors. Make sure that no water can reach the device interior via the air inlet and outlet ducts. Optionally the device is delivered with weather protection equipment. Do not expose the device to the weather without this weather protection equipment.
- Ensure a sufficient distance between humid air outlet and air inlet.
- In case of direct-intake devices the distance between humid air outlet and the suction nozzles should amount to at least 2 m to prevent the humid exhaust air from being recirculated.
- The air ducts must be designed for the available static compression of the fans (see Technical annex).
- The regeneration exhaust air line (C) must be laid with a slight decline (min. 1.5 %) so that any accumulating condensate cannot flow back into the device or obstruct the air flow. If an incline cannot be avoided, it is necessary to deliberately create a drain trap.

Inserting the air filter

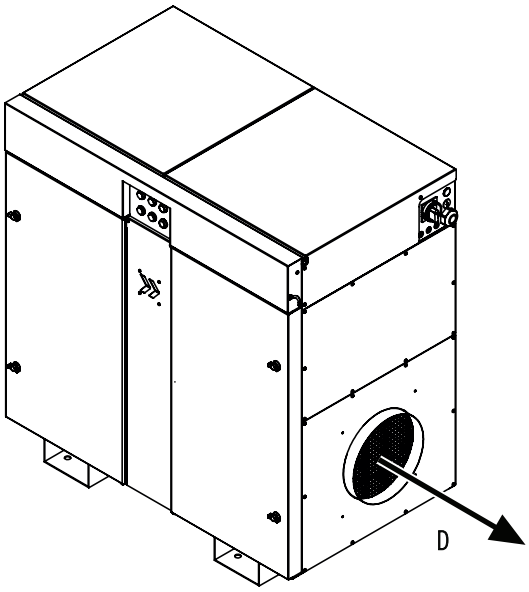
Note
To avoid damages to the device, do not operate the device without inserted air filters!
Prior to installation and switching the device on, check whether all air filters are inserted.

Information regarding the air filter installation and filter change can be found in the Maintenance chapter.

Schematic diagram



Optionally, a mirror-inverted assembly is also possible.



No.	Designation
A	Process air inlet
B	Regeneration air inlet
C	Humid air outlet (regeneration air)
D	Dry air outlet

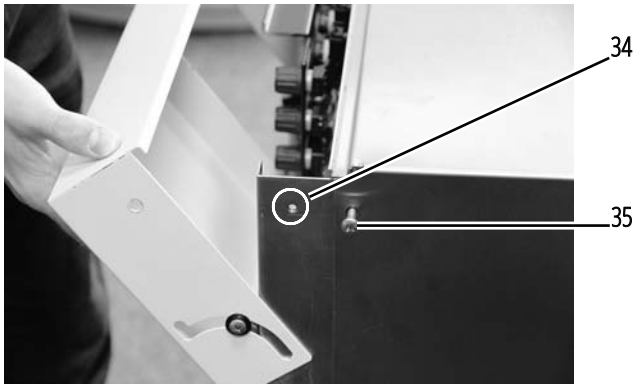
Assembly and installation

Power connection

Warning of electrical voltage
Work on the electrical components must only be carried out by a qualified electrician!

The illustrations below feature the series from the TR 190 through to the TR 1100 and can be used for all versions of the TR series. The mains supply terminals are situated directly at the main switch behind the main switch cover.

1. Loosen the two screws (34) of the front cover.



2. Slightly lift the front cover and open it.
3. Loosen the screws (35) of the electrical control box cover.
4. Remove the electrical control box cover either by pulling it forwards or by lifting it.

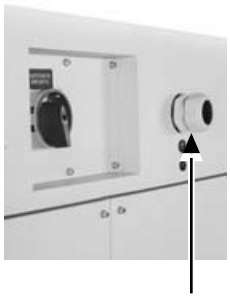
1. Guide your mains cable through the cable gland at the device and connect it to the power supply terminals. To connect the device please observe the wiring diagram in the technical annex. The phase sequence can be chosen freely.

2. Attach the cable, screw down the cable gland and check the strain relief.

In the device version shown below, the mains supply terminals are also situated directly at the main switch behind the main switch cover. The illustrations below feature the series from the TR 1500 through to the TR 3900:

1. Set the main switch to 0.
2. Loosen the screws and open the cover.
   ⇨ The cover can only be opened if the main switch is set to the 0 position!

3. Guide the mains cable through the cable gland at the device and connect it to the power supply terminals. To connect the device please observe the wiring diagram in the technical annex. The phase sequence can be chosen freely.



4. Fix the cable, screw down the cable gland and check the strain relief.

Connecting the control lines

Remote ON/OFF

If you want to operate the device optionally via remote mode, e.g. from a remote control or BMS system, connect the external switching contact (N/O contact) to the respective terminals. The control voltage amounts to 24 V DC (for detailed information please refer to the wiring diagrams in the technical annex).

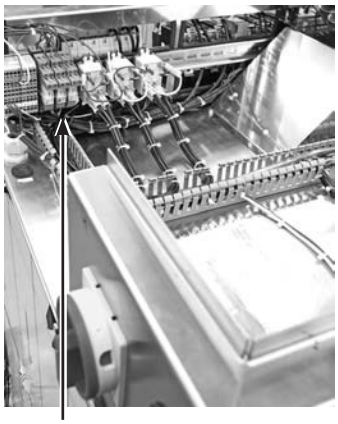
Control via external hygrostat (% RH)

You can control the device via an external hygrostat (option). The control voltage amounts to 24 V DC.

The external hygrostat is to be connected to the terminal strip in accordance with the wiring diagram (see Technical annex).

If the relative humidity level falls below the set target value, the contact closes and terminates the dehumidification process.

The illustrations below show the terminals for remote switch-on and relays with potential-free contacts:



Ventilation mode process air

Select the operating mode “Ventilation mode process air” if constant air movement is required at times without the need for drying. Reposition the respective jumper (blue) to the corresponding terminals (for detailed

information please refer to the wiring diagrams in the technical annex).

The process air fan keeps running even if the hygrostat switches off and the external contact of the hygrostat is opened.

Hygrostat and fan operation are only switches off when switching of the device (STOP), the fan will be switched off at the end of the rundown period.

You can always change back to the normal dehumidification mode by reversing the jumper.

Remote signalling contacts

Remote signalling is effected by means of potential-free changeover contacts that can be tapped directly at the corresponding relays.

1. BETRIEB / OPERATION
2. STÖRUNG / FAULT
3. FILTER / WARNING

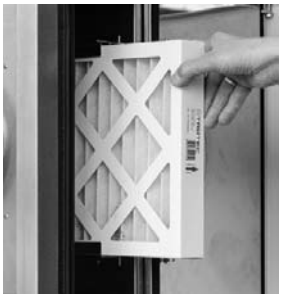
These remote signalling contacts correlate with the lamps on the control panel (see description in the Operation chapter).

For the correct assignment observe the wiring diagrams in the technical annex.

Inserting the air filter

Check whether all air filters are inserted before switching the device on for the first time. The illustrations below are schematic representations:

1. Open the left door of the control cabinet.
2. Check whether the correct filters have been inserted in both the process air inlet and the regeneration air inlet (see Technical annex).



3. Check whether the filter for the control box ventilation system has been inserted:

Start-up

Requirements

- Check all air filters have been installed properly.
- Check all doors, flaps and covers are closed or screwed in place.
- Check that ducts have been connected and screwed down properly and secured by means of tension belts.
- Check all ducts are clear and free from foreign objects or obstacles.
- Check the permissible operating conditions according to the technical data.

Warning of electrical voltage
Work on the electrical components must only be carried outby a qualified electrician!
Make sure that the electric installation complies with the technical documentation.
Ensure the continuity of the protective conductor system.

Initial start-up

If the “Flowmatic S” option is installed, continue with step 4.
For ideal operation, the regeneration air flow must be adjusted according to the technical data.

The potentiometers can be accessed via the front cover:

– target value fan speed process air (Proz.) and
– target value fan speed regeneration air (Reg.) for adjusting the air volume via the fan speed.

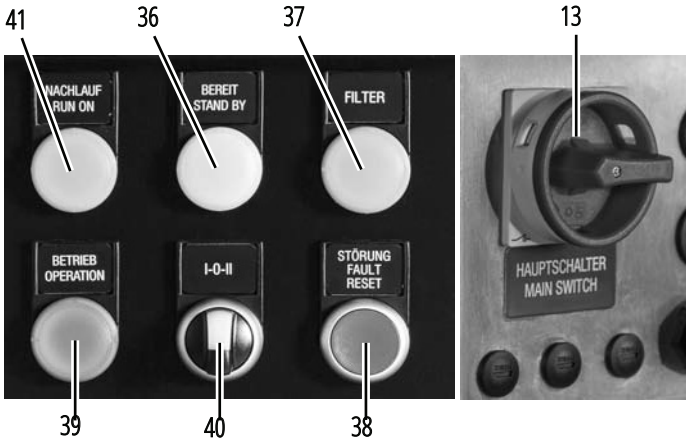
For adjustment work, measurements or the like, which have to be carried out during operation, one must switch over to manual operation (ON-SITE)!

Machine must be in manual mode for any adjustments to be made while machine is running.

1. Turn the selection switch to position I.
2. Open the front cover (9).
   ⇨ The two potentiometers are located behind the front cover on the right-hand side:
   – target value fan speed process air (Proz.) and
   – target value fan speed regeneration air (Reg.) for adjusting the air volume according to the information provided in the technical annex.

3. Adjust the regeneration air volume in manual mode.
4. Proceed with normal start-up.

Operation



No.	Designation
13	**Main switch with emergency stop function** 0: The device is switched off. I: The device is switched on.
36	**BEREIT / STAND BY lamp** Indicates operational readiness for REMOTE operation: –mains voltage present –selection switch in position II – REMOTE OPERATION –REMOTE-ON not yet activated
37	**FILTER lamp** Indicates the insufficient air flow rate of one or more air filters. The differential pressure controllers monitor the air flow rate of the filters to report a dirty filter. Replace a dirty filter to prevent impaired performance.
38	**STÖRUNG / FAULT lamp and RESET button** Fault message and device switched off (STOP) tripped by –a safety temperature limiter (STB RHZ) to monitor the max. permissible temperature after heating (thermostat maximum) –a safety temperature limiter (STB RAL) as rotation control for the rotor; it is situated in the exhaust air flow and tripped by an inadmissible temperature rise resulting from rotor standstill –a differential pressure switch (ΔP switch) to monitor the air flow direction and the flow rate of the regeneration air –phase error, check the feed-in and fusing –motor fault of the fans regeneration air or process air –possibly collective fault messages of additional options (see Technical annex)
39	**BETRIEB / OPERATION lamp** Indicates the device is operational
40	**Selection switch MANUAL/REMOTE OPERATION I - 0 - II** I: MANUAL OPERATION II: REMOTE OPERATION 0: Control OFF (STOP)
41	**NAUCHLAUF / COOL DOWN Lamp** Indicates the cool down operation of the device at operating temperature after switching off the control voltage.

Note:

The main switch serves for switch-on and may only be used as emergency stop switch for disconnection from the mains in case of an emergency.

Warning

In order to prevent a damage to the heaters due to heat accumulation or an unnecessary tripping of the safety temperature limiter STB when switching off the unit, the regeneration air blower is provided with a temperature-controlled cool down period of approx. 5 minutes.

Wait until the entire cool down period has lapsed before accessing internal parts of the device.

For normal switch-off (STOP) please use the selection switch ON-SITE/REMOTE OPERATION I – 0 – II (40), which initiates the cool down function (NACHLAUF / RUN ON lamp (41) illuminated). Only disconnect the device from the mains for transport or storage via the main switch **at the end of the cool down period.**

Switching the device on

✓ The device is connected to the properly fused feed-in.

1. Turn the main switch (13) to position I.
2. Select the desired operating mode via the selection switch I – 0 – II (40):

   ⇨ A) manual operation I

   Turn the selection switch to position I: the BETRIEB / OPERATION lamp (39) is illuminated – the device starts up.

   ⇨ B) remote operation II

   Turn the selection switch to position II: the BEREIT / STAND BY lamp (36) is illuminated until the REMOTE-ON contact is activated – as soon as the REMOTE-ON contact has been activated, the BETRIEB / OPERATION lamp (39) will be illuminated – the device starts up.

Note

In order to achieve the full dehumidification performance and to prevent damages due to an insufficient regeneration air flow, the air volumes specified in the technical annex must be observed.

Dirty air filters reduce the volumetric flow rate and must be replaced.

Switching the device on

1. Turn the selection switch (40) to position 0 or open the REMOTE-ON contact.
   - ⇨ The BETRIEB / OPERATION lamp (39) goes out.
   - ⇨ The NACHLAUF / RUN ON lamp (41) is illuminated.
   - ⇨ The device switches over to cool down operation.

Cool down operation

In order to release the trapped heat from the heater, the regeneration air blower will continue to operate for approx.

5 min (temperature-controlled). The control unit remains active. During cool down the device may be restarted at any time.

The fans start up smoothly, delayed by approx. 20 s the device switches into normal operation.

After the cool down period, the regeneration air blower stops, and the indicator lights go out.

Shutdown

For a complete switch-off, e.g. for transport or maintenance activities, switch the emergency stop main switch (13) to the 0 position at the end of the rundown period.

Storage

- Store the cleaned device in a dry location and protect it against dust.
- Before restarting the device, check the condition of the power cable.
- If in doubt, have the cable repaired or call the customer service.
- Have the device checked once a year by an electrician.

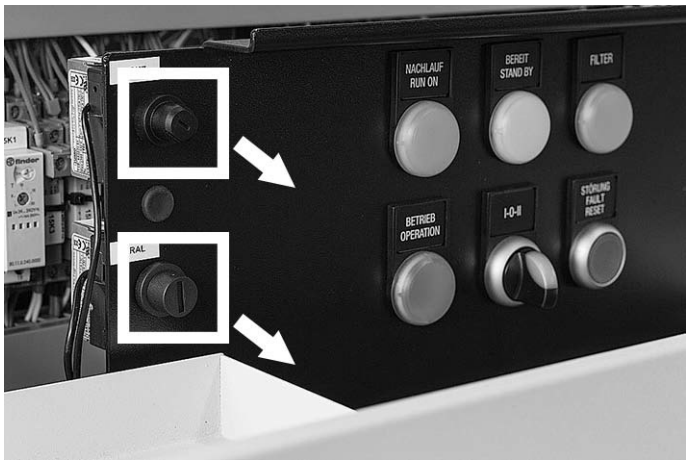
Errors and faults

If the fault indicator switches the device off (STOP), only the rundown operation remains active.

After having eliminated the cause of the fault, the fault message can be reset via the corresponding reset button.

1. STB RHZ
2. STB RAL

1. Open the front cover and remove the respective cover of the reset buttons.



2. Press the corresponding reset button and reattach the cover.

3. Then press the STÖRUNG / FAULT – RESET button (38) to acknowledge the STB faults or the ΔP fault message.

Troubleshooting

Fault	Cause of error	Resolution
"Fault" indicator light illuminated	• rotation control (STB RAL) error • rotor at a standstill • process air flow interrupted • regeneration air temperature too high	• Check thermostat setting. • Check rotor drive and toothed belt for proper functioning, repair if necessary. • Check process air fan for proper function. • Press reset button.
	• thermostat (STB RHZ) error • regeneration air flow interrupted • regeneration air temperature too high	• Check thermostat setting. • Check regeneration air fan for proper function. • Check filters. • Press reset button.
	• differential pressure switch for regeneration air does not switch	• Check hose connection. • Check setting, correct if necessary. • Check pressure switch for proper functioning.
	• fan does not rotate/fans do not rotate	• See below.
Insufficient dehumidification performance	• air flow imbalance	• Calibrate air volumes. • Check filters. • Check housing (panels/doors) for air leaks. • Check radial and circumferential seal at the rotor. • Check rotational direction of fans.
	• regeneration heating failed	• Check heater for proper function, measure temperatures, have it replaced if necessary. • Check fuses, replace them if necessary. • Check relays, contactors, have them replaced if necessary. • Check control thermostat setting.
	• filter dirty	• Change filter.
	• process air flow interrupted	• Check process air fan for proper function, have it replaced if necessary. • Check air passages, flaps.
	• rotor is not turning	• Check belt/chain tension. • Check drive motor for proper functioning, have it replaced if necessary. • Check toothed belt pulley for tight fit, tighten if necessary.
	• incorrect rotor rotation direction	• Correct rotational direction.

Fault	Cause of error	Measure
Insufficient dehumidification performance	• seals are not seated properly or are defective	• Correct seal position (particularly radial seals) or replace them.
	• air leaks at nozzles and fans	• Eliminate air leaks.
	• regeneration air flow interrupted	• Check regeneration air fan for proper functioning. • Check air passages, flaps.
	• rotor defective	• Have rotor replaced.
Fans do not rotate	• electrical supply interrupted	• Check and restore connection.
	• phase missing	• Check phases.
	• impeller not fastened	• Fasten impeller.
	• motor defective	• Have motor replaced.
Metallic sounds, rattling	• fan impeller not fastened	• Check process air and regeneration air fan, have them replaced if necessary. • Fasten impeller.
	• toothed belt or chain of rotor drive slips	• Check toothed belt/chain tension. • Check toothed washer/pinion and carrier (along rotor circumference) for damage. • Check rotor for smooth running, replace bearing if necessary.

Warning
This device can be dangerous if it is repaired by unqualified persons in an improper way. Any faults the elimination of which requires mechanical or electrical intervention may only by carried out by qualified specialists or service staff. If the fault cannot be rectified despite following the checklist above, please contact Quest at (877) 420-1330.

Maintenance

Activities required before starting maintenance

Warning of electrical voltage

Before starting any internal work on the device, switch the main switch to position 0. For disassembly a cool-down period of at least 30 minutes should be observed. Before starting any internal work, check that all motors and fans are at a standstill and that the device has cooled down.

Activities required before starting maintenance

- For any work carried out during operation, always switch over to manual operation (ON-SITE).
- If the dehumidifier was previously operated, wait for the end of the cool down period before switching the device off and for the end of the cool-down period of at least 30 minutes before disassembly.
- Secure all equipment up- and downstream from the dehumidifier against inadvertent start-up.
- For all maintenance, inspection and repair work, turn off the dehumidifier and secure the main switch against inadvertent restart.
- Attach a warning sign and secure the device against restart.

Notes on maintenance and repair activities

- Inform personnel before starting any maintenance and repair work.
- Upon completion of the maintenance work check all screwed connections for tight fit.
- Upon completion of the maintenance work check all safety devices for proper function.

Air filter change

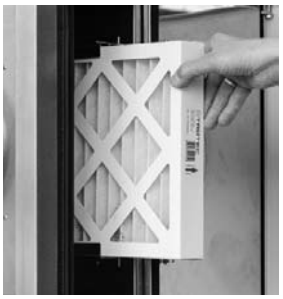
The filter change intervals depend on the degree of air pollution and the filter quality. Dirty filters impair the performance of the dehumidifier.

A filter change is required at the latest when the filter change indicator FILTER on the control panel lights up.

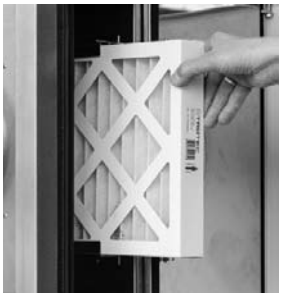
Air filters for air inlet, dry air and regeneration air

1. Open the door for accessing the air filter behind the air inlets. In case of a standard version this means the left door of the cabinet; if mirror-inverted, use the right door.

2. Pull the filters for the individual air inlet openings out towards the front.



3. Change the filters as needed.



4. Then close the cabinet door again.

Air filters of the electrical control box

Check the air filter of the electrical control box once a month and replace the filter mat as needed.

1. To do so, open the filter flap at the electrical control box.

2. If it is dirty, replace the filter. Then close the flap again until it snaps into place.

General maintenance

Safe operation of the device requires the components listed below to be checked and cleaned **after 12 months at the latest or after every 4000 operating hours** as well as all damaged components to be replaced. Furthermore, an electrical safety test must be conducted.

If the device is used in an environment with increased dust exposure, we recommend performing a visual inspection during every air filter change.

Component	Activity	Comments	Replacement / interval
Differential pressure switch	Function test	Switching point	As required if defective
Gear motor	Function test		4,000 h
Solid-state relay SSR	Function test	Disconnection	As required
Power relay	Function test	Disconnection	As required
Emergency stop main switch	Function test	Disconnection of all phases	As required
Regeneration heating	Function test	Measure currents, clean surface if necessary	As required
Safety temperature limiter	Function test	Switching point, clean capillary tube	As required
Temperature probe	Function test	Check signals, clean probe	As required
Temperature monitor	Function test	Switching point, clean capillary tube	As required
Thermal switch NO 60 °C	Function test	Switching point	As required
Time relay	Function test	Time setting	As required
Air filter	Visual inspection	Check condition, replace if necessary	Filter indication
Filter fan	Visual inspection	Filter change, clean impeller	As required
Radial seals, desiccant wheel	Visual inspection	Check condition, replace if necessary	As required
Control cabinet	Visual inspection	Clean, blow out dust if necessary	As required
Desiccant wheel	Visual inspection	Obstructions, check surfaces for damage, replace if necessary	As required
Door seals	Visual inspection	Check condition, replace if necessary	As required
Circumferential seals, desiccant wheel	Visual inspection	Check condition, replace if necessary	As required
Regeneration air fan	Visual inspection	Clean impeller, check speed adjustment, measure currents	4,000 h
Dry air fan	Visual inspection	Clean impeller, check speed adjustment, measure currents	4,000 h
Toothed belt	Visual inspection	Check tension and condition, replace if necessary	As required
Screw terminal connections	Fit	Retighten if necessary	As required
Toothed belt pulley	Fit	Check connection to gear shaft	As required

Care

Do not use a cleaning agents containing solvents to avoid damage to the surfaces and operating elements of the devices.

Clean the surfaces and operating elements of the devices with a damp cloth and solvent-free cleaning agents only.

Harmful materials on rotors

Some of the substances and compounds listed below are typical examples for substances dissolving the honeycombed silica gel rotors or else negatively affecting the dehumidification performance.

The sorption rotor should not be charged with air which is contaminated with the following or similar substances. Even minor concentrations in the air can have lasting harmful effects on the rotor material and the sorption capacity.

The listed substances remain in the rotor material or the rotor elements and can bring about the following effects:

- Reduced performance owing to the clogging of the silica gel's pores
- Reduced performance owing to the chemical reaction with the silica gel

A) Inorganic substances (examples)

No.	Substances	Chemical formula	Effects
1	lithium chloride	LiCl	reduced productivity of the silica gel[1]
2	sodium hydroxide	NaOH	destruction of the silica gel structure
3	potassium hydroxide	KOH	destruction of the silica gel structure
4	sodium chloride	NaCl	reduced productivity of the silica gel[1]
5	potassium chloride	KCl	reduced productivity of the silica gel[1]
6	calcium chloride	$CaCl_2$	reduced productivity of the silica gel[1]
7	magnesium chloride	$MgCl_2$	reduced productivity of the silica gel[1]
8	ammonia	NH_3	destruction of the silica gel structure
9	hydrofluoric acid	HF	destruction of the mechanical strength of the rotor material
10	aluminium chloride	$AlCl_3$	reduced productivity of the silica gel[1]
11	sea water		reduced productivity of the silica gel[1]
12	steam with a high temperature		destruction of the silica gel structure
13	softener		clogs the silica gel pores
14	strong acids	pH ≤ 2...3	destruction of the mechanical strength of the rotor material
15	bases	pH ≥ 7...8	destruction of the sorption capacity of the silica gel
16	amines	$R\text{-}NH_2$	reduced productivity of the silica gel[1]

B) Organic substances (examples)

The solvents or volatiles listed below have a high boiling point and a low vapour pressure. Provided these substances are adsorbed by silica gel, they remain in the material on a permanent basis.

No.	Substances	Chemical formula	Effects
1	oil mist		clogs the silica gel pores
2	cyclohexanone	$C_6H_{10}O$	reduced productivity of the silica gel[1]
3	isopropyl alcohol	CH_3H_8O	reduced productivity of the silica gel[1]
4	o-xylene	C_8H_{10}	reduced productivity of the silica gel[1]
5	m-xylene	C_8H_{10}	reduced productivity of the silica gel[1]
6	p-xylene	C_8H_{10}	reduced productivity of the silica gel[1]
7	phenol	C_6H_5OH	reduced productivity of the silica gel[1]
8	o-dichlorobenzenes	$C_6H_4Cl_2$	reduced productivity of the silica gel[1]
9	methyl bromide	CH_3Br	reduced productivity of the silica gel[1]
10	glycerin	$C_3H_8O_3$	reduced productivity of the silica gel[1]

[1] Reduces the internal pore surface of the silica gel leading to a loss of performance.

Warning
Potential environmental hazard due to incorrect disposal.

Failure to follow the rules on disposal or an improper disposal of contaminated air filters can lead to environmental hazards.
In order to carry out the disposal professionally, you have to be a qualified specialist.
Recycle empty batteries.
Observe the currently applicable regional and, as the case may be, national disposal regulations.

Supplies

1. Shut down the desiccant dehumidifier.
2. Disconnect the desiccant dehumidifier from any supplies (current, water etc.).
3. Remove any materials such as air filters, oils, coolant, batteries etc.
4. Dispose of these materials separately according to the applicable regulations.

Components of the desiccant dehumidifier

The desiccant dehumidifier is composed of the following disposable materials:

- Steel, sheet steel, hardened steel, e.g. screws, motor shafts, component parts
- Different types of plastic, e.g. installation material, insulation material, window
- Rubber parts, e.g. seals and feet
- Plastic hoses
- Power cables, electric lines, electrical devices such as motors, controls, electronic components, electrical control elements, installation material, sensors

Final disassembly

For disassembly of the desiccant dehumidifier please proceed as follows:

1. Carefully disassemble the assemblies and parts that you want to continue to use in order to avoid damage to these parts.
2. Take notes so that you can re-assemble the used parts correctly.
3. Provide appropriate temporary storage facilities to be able to store the amounts of different materials separately.
4. Use any specified tools for disassembly: Remove fasteners to separate the parts from one another.
5. If possible, do not use any angle grinders or welding equipment as this would cause unnecessary additional effort.
6. After disassembly has been completed, have the parts collected by a qualified disposal company.
7. Store parts to be used again.

Options

Control module Millenium option

With four-line plain text display for status, warning and fault messages. The machine can be equipped with a freely programmable logic module offering the following functions:

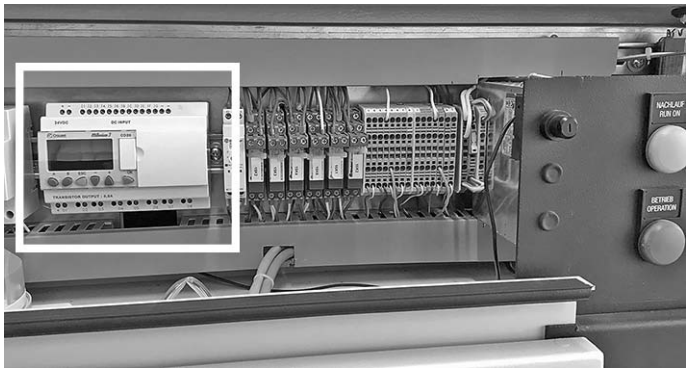
Basic functions

- Function monitoring of fans, heating system and rotor drive
- All warnings or faults are displayed in plain text (for full particulars see chapter Errors and faults)
- Information regarding important basic settings and operating conditions (target and actual values) is displayed in plain text
- The energy management is optimized by a constant monitoring and continuous control of the regeneration temperatures RHZ and RAL

Factory options

- • continuous control of the outlet humidity level in partial-load operation (only in combination with a moisture measuring device and humidity control kit)
- continuous control of the outlet temperature of the dry air (only in combination with a temperature probe, temperature control kit, additional electrical heating or air/water heat exchanger with control valve)
- 2-stage air volume switching for reducing the outlet humidity level through a lower volumetric flow (only in combination with Flowmatic S)

The Millenium control module is located behind the left section of the front cover inside the electrical control box. To be able to read the control module's display, first open the front cover of the device (see instructions):



Operation

The PLC will be activated as soon as the main switch is switched on. The start screen (return) can be opened at any time by pressing the [ESC] button.

Returning to the start screen is also possible via the [B] button:

You can browse the screens using the buttons A and B. The following screens will be displayed:

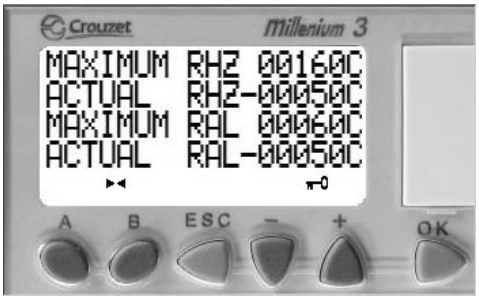
- Welcome and version number.
- Indication of target and actual values for RHZ and
- RAL temperatures (humid air outlet).
- Indication of target and actual values for differential pressure, humidity level, dew point. The display may vary depending on the option installed.
- Indication of basic settings (distributed over several screen pages).
- Display of basic settings
- Target value inputs for optional additional heating and additional cooling.
- Target value input for optional switch-over to a lower dry air volume.

Operation screens of the control module Millenium

1. Start screen

In addition to the contact data this screen also shows the version number of the installed program of your Millenium.

Please quote this when contacting service.



2. Temperature screen

Display of maximum and actual values for the regeneration and exhaust air temperatures

MAXIMUM RHZ	Target value regeneration air temperature
ACTUAL RHZ	Actual value regeneration air temperature
MAXIMUM RAL	Target value regeneration exhaust air temperature
ACTUAL RAL	Actual value regeneration exhaust air temperature

3. Temperature and rotor screen

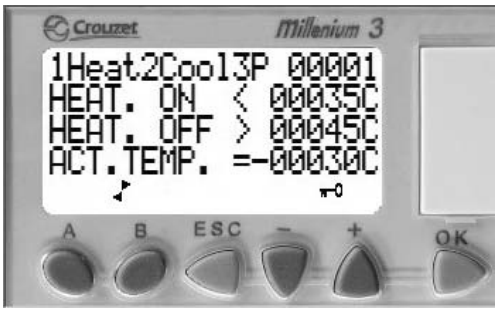
T-RHZ MIN	Minimum temperature of the regeneration air after completion of waiting period
DELAY-TIME	Waiting period in seconds
CHECKSUM	Counter for automatic switch-off when hot
ROTORSPEED	Current control value of the rotor speed [1/10 h]

4. Relative humidity screen (optional)

1Ext/2Int/3P	Selection target value external = 1, internal = 2, control value external = 3
ACT.Moist	Actual value humidity in [% RH]
SetP.Int.	Target value humidity in [% RH], can be modified
SetP.Ext.	Target value external humidity in [% RH], display only

5. Dew point screen (optional)

1Ext/2Int/3P	Selection target value external = 1, internal = 2, control value external = 3
ACT.Moist	Actual value humidity in [°Cdp]
SetP.Int.	Target value humidity in [°Cdp], can be modified
SetP.Ext.	Target value external humidity in [°Cdp], display only



6. Process air regulation – additional heating screen (optional)

1Heat2Cool3P	Heating = 1, cooling = 2, transmission external signal = 3
HEAT. ON	Switch-on point for additional heating
HEAT. OFF	Switch-off point for additional heating
ACT.TEMP.	Actual value of the temperature sensor

7. Process air regulation screen (optional)

1Heat2Cool3P	Heating = 1, cooling = 2, transmission external signal = 3
ACT.TEMP.	Actual value of the temperature sensor
SetP.Int.	Internal target value
>-20SetExt.	External target value Value above -20 °C = PLC switches over from internal to external target value. Value below -20 °C = The internal target value applies.

8. Process air regulation screen (optional)

1Heat2Cool3P	Heating = 1, cooling = 2, transmission external signal = 3
ACT.TEMP.	Actual value of the temperature sensor
Stw In Ext.	External control value
OutValveDry	Output O6 PWM signal Control value for control valve

9. Dry air fan screen (optional)

Speed regulation of the process air fan if activated in the service menu

SWITCHPOINT	Switching point input
SPEEDSTEP	Display of high/low speed level
HIGH=0 / LOW=1	HIGH=0: high speed LOW=1: low speed

10. Control valve regeneration heating screen (optional)

1Ext2Int3Pas	Selection target value external = 1, internal = 2, control value external = 3
Set.RegValve	External signal
Out RegValve	Output O6 PWM signal Control value for control valve regeneration heating

Info
All optional displays only appear if the respective function was activated at the factory.

Basic settings

The basic settings are made in the factory. Signal conversions and the corresponding scales must be coordinated with Quest prior to delivery or can be adjusted (optionally) during start-up by Quest service personnel.

For applications with moisture control it is recommended to request the Quest service personnel for possibly required fine adjustments of the control parameters.

Changing values

✓ Values that can be modified are highlighted by flashing bars (black bar in the example below).

1. You can move up and down using the buttons + and -.
2. To edit the value, press the **OK** button.
   ⇨ The flashing bar disappears and the value is displayed.
3. Press + or - to increase or reduce the value.
4. Confirm your selection by pressing the **OK** button. Abort unwanted changes using **ESC**.
5. Press + or - to go to the next changeable value.
6. Repeat the steps 2 to 4 until all values are set.

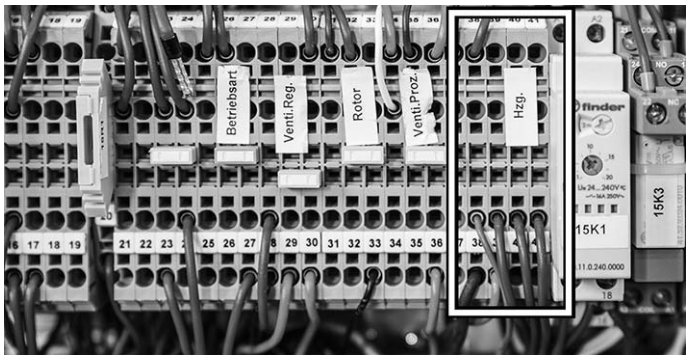
Emergency operation

If the Millenium logic module fails, the following changes have to be made:

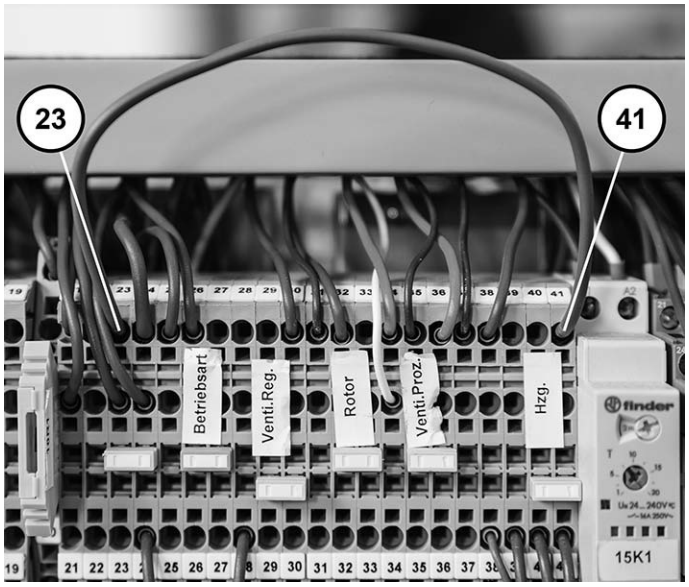
- Setting the regeneration air heating to emergency operation

Warning of electrical voltage
Work on the electrical components must only be carried out by a qualified electrician!

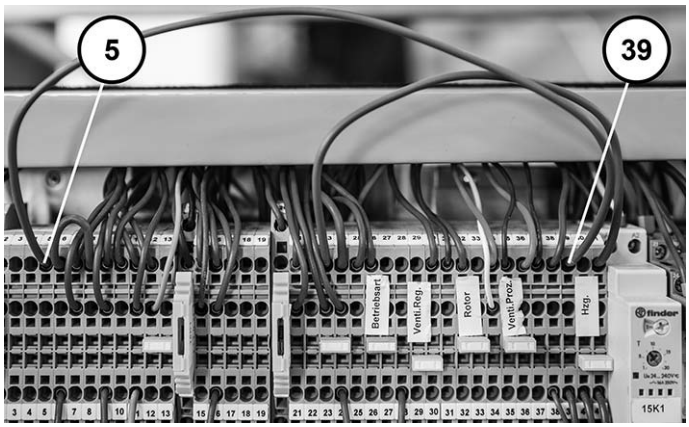
Please proceed as follows to set the regeneration air heating to emergency operation:



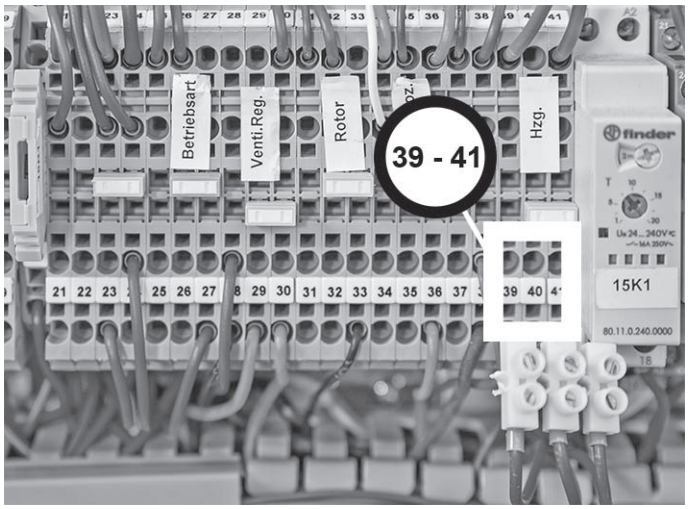
1. Locate terminals 5, 23 and 39 to 41 on the terminal strip X6.
2. Set the first jumper from X6.23 to X6.41 as shown below.



1. Set the second jumper from X6.5 to X6.39 as shown below.



2. In the second line from the bottom, disconnect the three wires of the contacts X6.39, X6.40, X6.41 as shown below.
3. Isolate each of the three disconnected wires using a luster terminal or similar.



4. Set a jumper from X6.40 to X6.41. The modifications are completed.

Warnings and faults

Note

Rectify any faults immediately to ensure economical operation of the device.

- During operation the electrical components relevant for the respective operating mode are monitored for proper functioning.
- In case of failure or malfunctions plain text messages are indicated on the display of the logic module so as to enable quick troubleshooting.
- Depending on the level of impairment of the device's operational safety the messages are divided into warnings and faults.
- A warning does not entail the shutdown of the device and is displayed by periodically recurring plain text messages on the display. The "warning" indicator light lights up.
- In case of faults the device is shut down (STOP) and the indicator light "fault" lights up.
- For safety reasons the device can only be restarted after the faults have been rectified and the RESET button has been actuated (=> deletes the error memory).

Error and fault messages can be reset by pressing the reset button.

Warnings

Plain text message	Cause of error	Measure
FILTER WECHSELN (change filter) The differential pressure switches switch via the air filters when the max. permissible pressure drop is exceeded.	• filter dirty	• Replace all air filters.
HEIZUNG ZU KALT (heating too cold) After 30 min under full load the RHZ temperature must reach a value of at least 60 °C, in controlled operation the value is not prompted.	• regeneration air not reaching the minimum temperature • regeneration air volume too high • intake temperature too low • control signals interrupted	• Check heater current, if required, repair heater. • Check regeneration air volume. • Check switching devices and contacts.
WENIG REGEN.-LUFT (low airflow) Differential pressure switch monitors the pressure loss via regeneration heating and regeneration sector at the rotor and releases the heating when a minimum value is reached.	• regeneration air volume too low • regeneration air filter dirty • pressure loss in ducting • regeneration air fan defective or phases faulty • incorrect flow direction • negative pressure at regeneration air inlet to high	• Adjust the regeneration air volume. • Replace air filter. • Check ducting. • Check rotation. • Replace fan.

Faults

Plain text message	Cause of error	Measure
VENTI. PROZ.LUFT (fan process air) Fault message from EC motor	• fan reports a fault • fan defective • differential pressure transmitter defective • phase error/mains supply AC/DC	• Check fan, have it replaced if necessary. • Check wiring and contacts. • Check mains supply. • Adjust air volume.
VENTI. REGEN.LUFT (fan regeneration air) Fault message from EC motor	• fan reports a fault • phase error/mains supply AC/DC • fan defective	• Check fan, have it replaced if necessary. • Check wiring and contacts. • Check mains supply.
ROTOR-ANTRIEB (rotor drive) Rotor rotation control/inductive proximity switch is evaluated	• toothed belt slipping • toothed washer loosened • gear motor defective • fuse tripped	• Check belt tension and carrier. • Tighten toothed washer or have it replaced. • Check gear motor, have it replaced if necessary. • Check voltage supply and signal line of gear motor.
THERMOSTATE (thermostats) Safety temperature limiters (STB) are prompted. If an additional heating is used, the STB is prompted, too.	• At least one STB tripped.	• Check STBs for proper functioning, clean sensors if necessary. • Selected max. RHZ is too high. • Check setting at STB, adjust. • Check regeneration air volume.

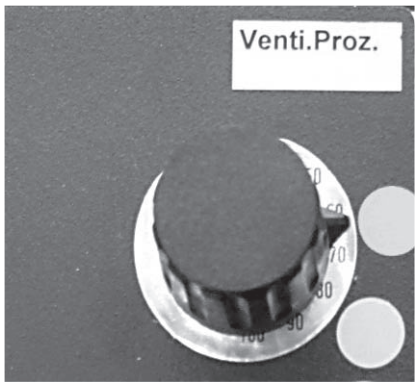
If the fault cannot be rectified, please contact Quest at (877) 420-1330

Flowmatic S option

The configuration of Flowmatic S depends on your application.

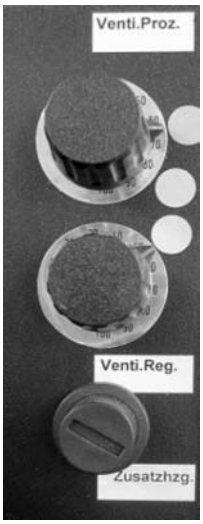
The regeneration air control is configured at the factory and does not require any further adjustment.

Target value setpoint: The process air is set via the "Venti. Proz." potentiometer or an external target value.



Actual value setpoint (Flowmatic S): Enter the desired target value at the Flowmatic S (▲ / ▼). For this purpose, keep changing the value until the desired value is shown on the display. The Flowmatic S will now adjust the value until the fan has reached its maximum speed.

Setting the target value:



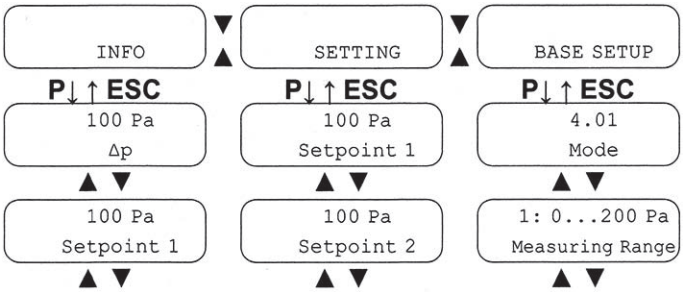
The upper "Venti.Proz." potentiometer serves to define the target value for the process/dry air volume in m3/h.

The topmost point roughly marks the regulated nominal air volume and the point in the middle marks the nominal air volume in emergency operation. The points indicate the rough settings for emergency operation (failure of Flowmatic S).

Setting the actual value:

The default values are additionally indicated on a label attached to the Flowmatic S.

The settings for the actual value can be made in the Flowmatic S menu:



Note

If "Base Setup" is displayed, you have browsed too far through the menu. Press the "ESC" button in this case.

1. Press both buttons ▲ / ▼ simultaneously. The "INFO" menu will be displayed.
2. Press the ▼ button until the "SETTING" menu is displayed.
3. Press the "P" button.
4. Press the ▼ button until the "SETPOINT 1" menu is displayed.
5. Press the "P" button. The indication flashes.
6. Use the buttons ▲ / ▼ to reduce or increase the set value as desired.
7. Finally press the "P" button to save the settings for the new target value.

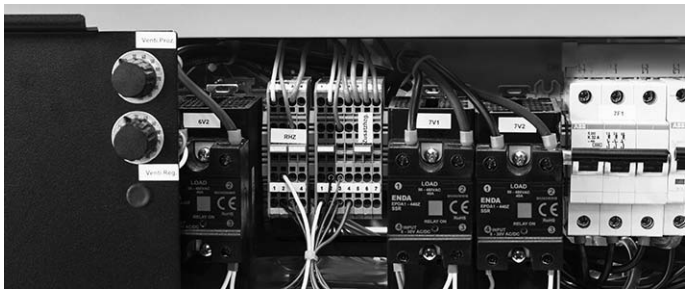
Operation without electric heating

Warning of electrical voltage

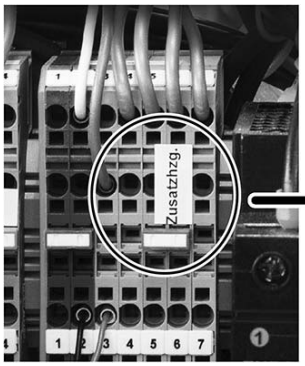
Work on the electrical components must only be carried out by a qualified electrician!

Should it be necessary to operate the desiccant dehumidifier without the electric reheater, simply reposition the jumper.

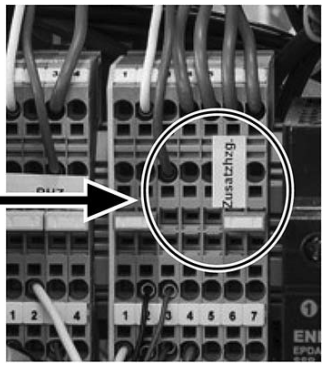
The jumper for manual changeover is located behind the front cover on the right-hand side.



Operation with electric heating



Operation without electric heating



Weather protection equipment option

The weather protection equipment prevents the harmful penetration of rain water or similar and comprises:

- weather protection grids at air inlets
- additional seals
- exhaust pipe arc for humid air
- control panel protection

Note

Suitable on-site roofing or similar shall be provided in order to protect the device from a high solar irradiation (overheating) and snow loads (penetration of snowmelt).

Equipment variant / variante de l'équipement: TA9720-Standard-02

ID for deviations or additional equipment from the standard device
ID pour les écarts ou les équipements supplémentaires par rapport à l'appareil de base

ELECTRICS / électricité

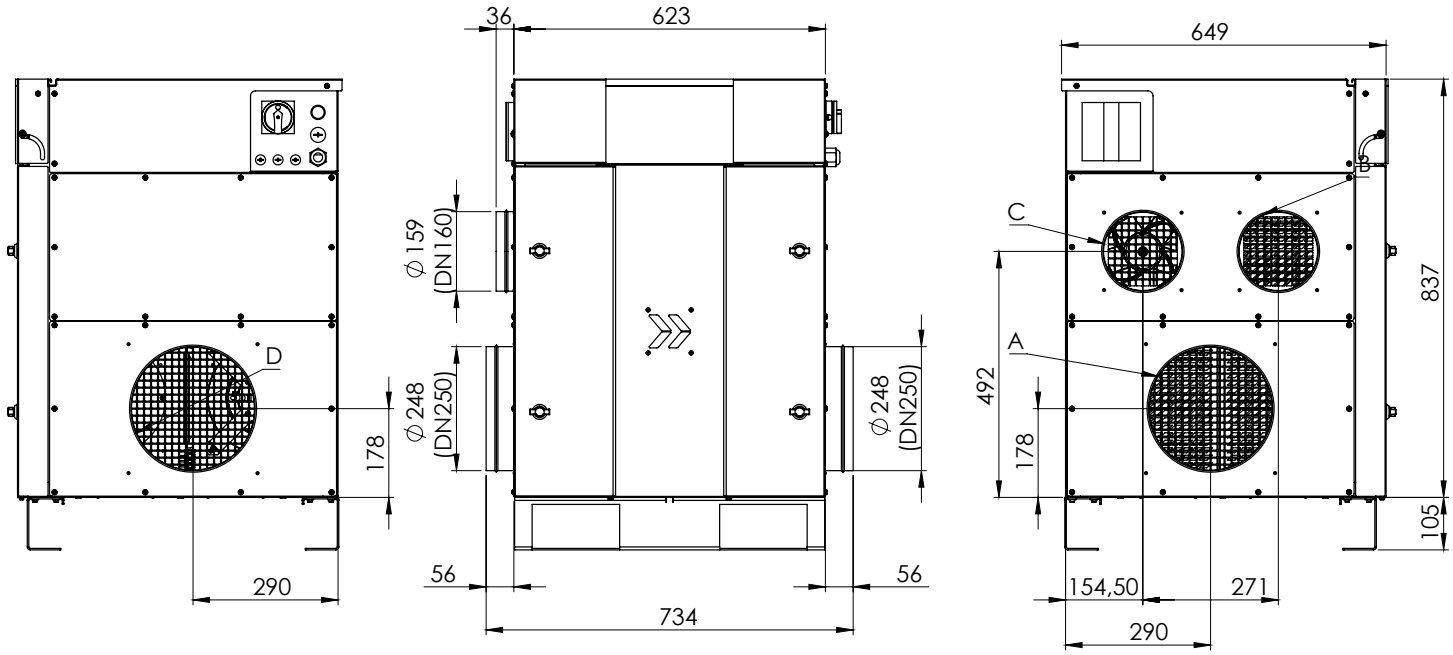
A	cover page	page de couverture
C	electrical feed	alimentation électrique
D	control voltage	tension de commande
E	switch cabinet cooling	refroidissement de l'armoire de commande
F	regeneration heater	chauffage de régénération
G	additional fan	ventilateur supplémentaire
H	regeneration air Fan	air de régénération Ventilateur
I	process air Fan	air de process Ventilateur
L	PLC controller	contrôleur PLC
M	control sensors	capteurs de contrôle
N	regeneration air fan control	commande du ventilateur d'air de régénération
O	process airflow display	affichage du débit d'air de process
P	processair fan control	commande du ventilateur processair
Q	moisture control	contrôle de l'humidité
R	process air external	air de process externe
S	temperature control	régulation thermique
T	hygrostat socket 4pol	prise hygrostat 4 pôles
U	hygrostat socket 7pol	prise hygrostat 7 pôles
V	electrical reheater	réchauffeur électrique
W	steam valve	vanne vapeur
X	water valve	vanne d'eau
Y	switch cabinet heater	radiateur d'armoire de commande

MECHANICS / mécanique

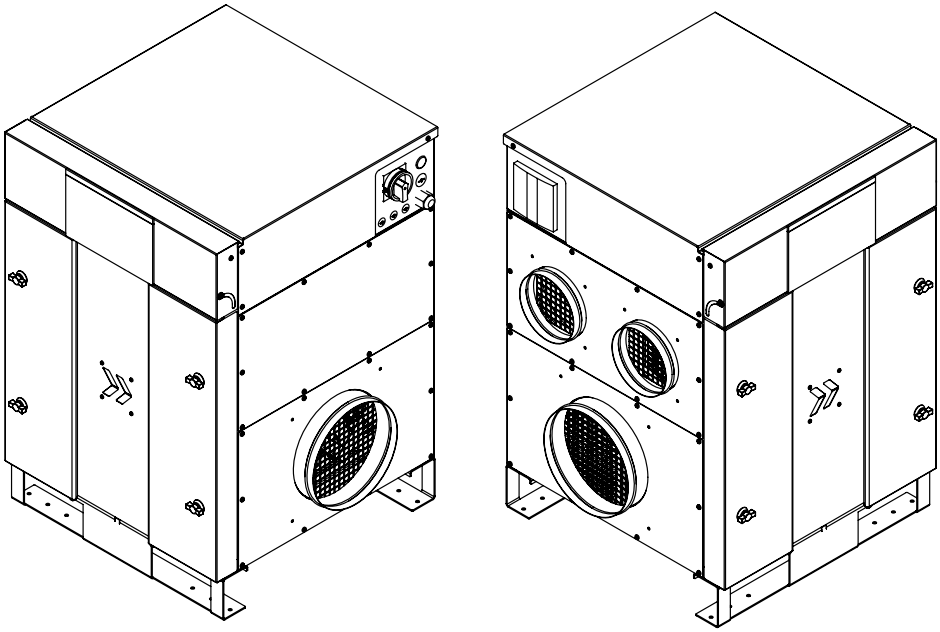
WTW	heat exchanger air/water	échangeur de chaleur air/eau
WTD	heat exchanger air/steam	échangeur de chaleur air/vapeur
GAS	gas burners	brûleurs au gaz
WSA	weatherproof equipment	équipement étanche
RO	swivel castors	roulettes pivotantes
ST	transport frame	châssis de transport
TRO	transport frame with swivel castors	châssis de transport avec roulettes pivotantes

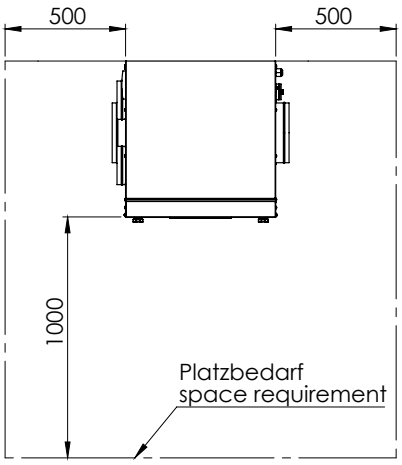
Technical data		TR190	TR390
dehum. Capacity	lbs/day*	190	390
dry air max.	CFM	560	1030
dry air nom.	CFM	440	850
pressure	IWG	1.2	1.2
regeration air nom.	CFM	76	158
pressure	IWG	1.2	1.2
operation range airflows	---	-4°F to 104°F 0-100%rh	-4°F to 104°F 0-100%rh
operation range electrics	---	-4°F to 104°F 0-95%rh	-4°F to 104°F 0-95%rh
heater regeneration air (electr.)	kW	4.1	9.0
motors	kW	0.4	0.8
connect. Power	kW	4.9	9.8
voltage	V/Hz	3PH/pe 380-480V 50-60Hz	3PH/pe 380-480V 50-60Hz
current	A @400V	7.5	15
current connection	A	16	16
sound pressure level (without ducting)	Lp (dB)**	< 82**	< 82**
weight	lbs	188	225

* @68°F/60%rh
** distance 3ft. (@ max. fan speed), without piping

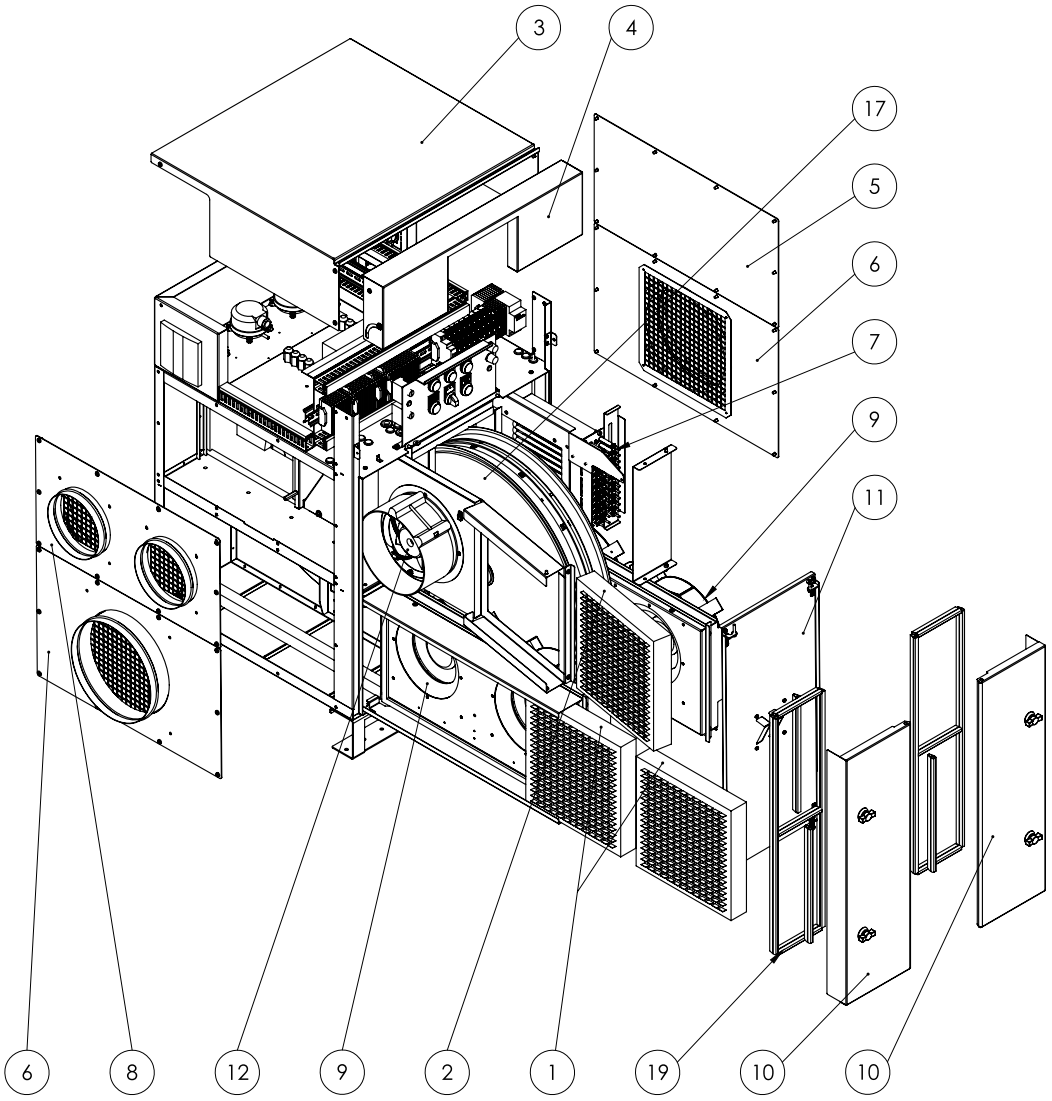


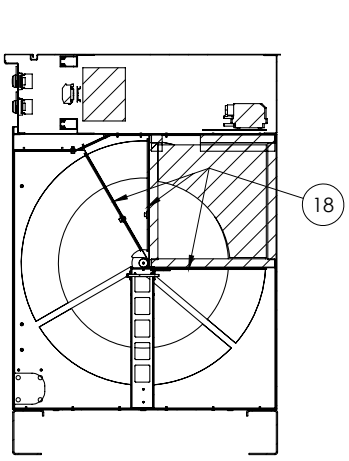
A) Process air inlet
B) Regen. air inlet
C) Wet air outlet
D) Dry air outlet



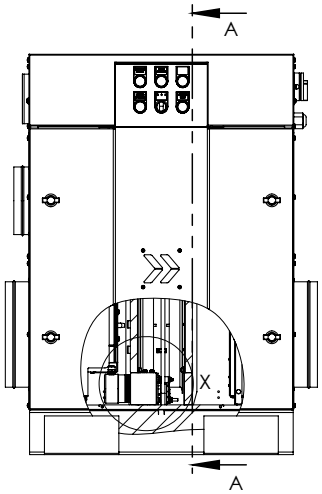


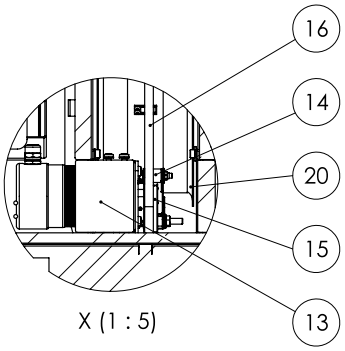
Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.





A-A





X (1 : 5)

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.

Spare Parts		TR190	TR390
Description	Item	Trotec no.	Trotec no.
Filter G4 (Prozessluft/dry air)	1	7160000404	7160000404
Filter F7 (Pozessluft)	1	7160000409	7160000409
Filter G4 (Regenerationsluft/regen.-air)	2	7160000404	7160000404
Filter F7 (Regenerationsluft)	2	7160000409	7160000409
cover 1 (cabinet)	3	P10003368P	10003368
hinged cover (cabinet)	4	P10003375P	10003375
dummy cover (outside)	5	P10003360P	10003360
cover (process-air)	6	B1275	B1275
heating element 450W	7	P10003838P	10003838
heating element 650W	7	P10003839P	10003839
cover (regeneration-air)	8	B1274	B1274
fan (process-air)	9	P10001911P	10001911
door	10	P10003386P	10003386
frontpanel	11	P10003374P	10003374
fan (regeneration-air)	12	P10003346P	10003346
geared motor	13	P10003432	P10003432
belt tensioner	14	B1221B	1221
synchronizing pulley	15	P10000279	P10000279
synchronizing belt	16	P10003903P	10003904
dessiccant wheel	17	P10003434P	10003406
sealing tape (segment gasket)	18	P10003550P	10003550
gasket (doors)	19	P10000002	P10000002
sealing tape (rotor sealing)	20	P10003636P	10003636

Spare Parts		TR190	TR390
Description	Item	Trotec no.	Trotec no.
Filter G4 (dry air)	1	7160000404	7160000404
Filter F7	1	7160000409	7160000409
Filter G4 (regen.-air)	2	7160000404	7160000404
Filter F7	2	7160000409	7160000409
cover 1 (cabinet)	3	P10003368P	10003368
hinged cover (cabinet)	5	P10003375P	10003375
dummy cover (outside)	6	P10003360P	10003360
cover (process-air)	7	B1275B	1275
heating element 450W	8	P10003838P	10003838
heating element 650W	8	P10003839P	10003839
cover (regeneration-air)	9	B1274B	1274
fan (process-air)	10	P10001911P	10001911
door	11	P10003386P	10003386
front panel	12	P10003374P	10003374
fan (regeneration-air)	13	P10003346P	10003346
geared motor	14	P10003432P	10003432
belt tensioner	17	B1221B	1221
synchronizing pulley	18	P10000279P	10000279
synchronizing belt	19	P10003903P	10003904
dessiccant wheel	20	P10003434P	10003406
sealing tape (segment gasket)	21	P10003550P	10003550
gasket (doors)	22	P10000002P	10000002
sealing tape (rotor sealing)	24	P10003636P	10003636
emergency-mainswitch	3Q1	P10001553P	10001553
SSR-relay	6Vx	P10001431P	10001431
heat sink with fan	6Mx	P10001433P	10001433
load relay	6Qx	P10001238P	10001238

Projektdaten:

Baureihe: GEH 5810

Schaltplankennung: 5810_standard_01

Modell: TR 190 / 390

Bearbeiter: U. Samplatzki

geprüft: S. Schüll

Datum: 30.05.2018

Vorschrift:	VDE
Einspeisung:	3 x 380-480V 50/60Hz + PE
Steuerspannung:	24V DC
TR 390 Nennleistung:	9,8 kW
TR 390 Stromaufnahme:	I_{NENN} 15,0A (@ 400V)
TR 190 Nennleistung:	4,9 kW
TR 190 Stromaufnahme:	I_{NENN} 7,5A (@ 400V)

QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	a_Deckblatt_TTR	TR 190_390	Zeichn. Nr.: EEA-100-0099-02 Ausführung:	a_Deckblatt_TTR Blatt 1

relayP10001433P100014336Mxheat sink with fanP10001431P100014316VxSSR-relayP10001553P100015533Q1emergency-mainswitchP10003636P1000363624sealing tape (rotor sealing)P10000002P1000000222gasket (doors)P10003550P1000355021sealing tape (segment gasket)P10003434P100340620dessiccant wheelP10003903P100390419synchronizing beltP10000279P100002791 8synchronizing pulleyB1221B122117belt tensionerP10003432P100034321 4geared motorP10003346P10003346 13fan (regeneration-air)P10003374P10003374 12front panelP10003386P10003386 11doorP100019 11P100019111 0fan (process-air)B12274B12749cover (regeneration-air)P10003839P100038398heating element 650WP10003838P100038388heating element 450WB1275B12757cover (process-air)P10003360P100033606dummy cover (outside)P10003375P100033755hinged cover (cabinet)P10003368P100033683cover 1 (cabinet)7160000409716000040 92Filter F7 7160000404716000040 42Filter G4 (regen.-air)7160000409716000040 91Filter F7 7160000404716000040 41Filter

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.

operating voltage :	400V AC / PE / 50Hz	control voltage :	24V DC
power :	device-specific	lamp voltage :	24V DC
fuse :	power-specific	PLC-voltage :	24V DC

cabinet details	protection class :	wire color codes main power	
implementation :	cabinet integrated	wire type :	flexible
single field - size :	H , W , D mm	L1 phase :	black
cabinet socket :	type-specific	L2 phase :	black
full field - size :		L3 phase :	black
color outside / inside :	-	neutral conductor N :	blue
mounting plate color :	-	protective conductor PE :	green/yellow
cable entries :	from right !	output DC <= 24V	red/white

Legend

cross-reference naming

At the right side of contact images for contactors, relays or time-relays, a numerical reference is shown. This reference specifies the page number and path where the corresponding contact is located. For the naming of potentials, the same reference type is used to indicate the next location of the same potential. The schematic representation for cross-reference is printes as: "/" "page number" "." "path"
.

device naming : example 21 K 1 .1

- possible naming addon for device function
- sequence number on page
- naming for contactors, relays etc.
- page

naming for contactors "K" etc. : It distinguishes between contactors, relays "K", main switch, motor protection switch and power relays "Q", lights "P", pressure switch, thermostats and sensors "B", fuses "F", transducers "U", motors "M", actuator "Y" and regulators "N", DDC devices "A" etc.

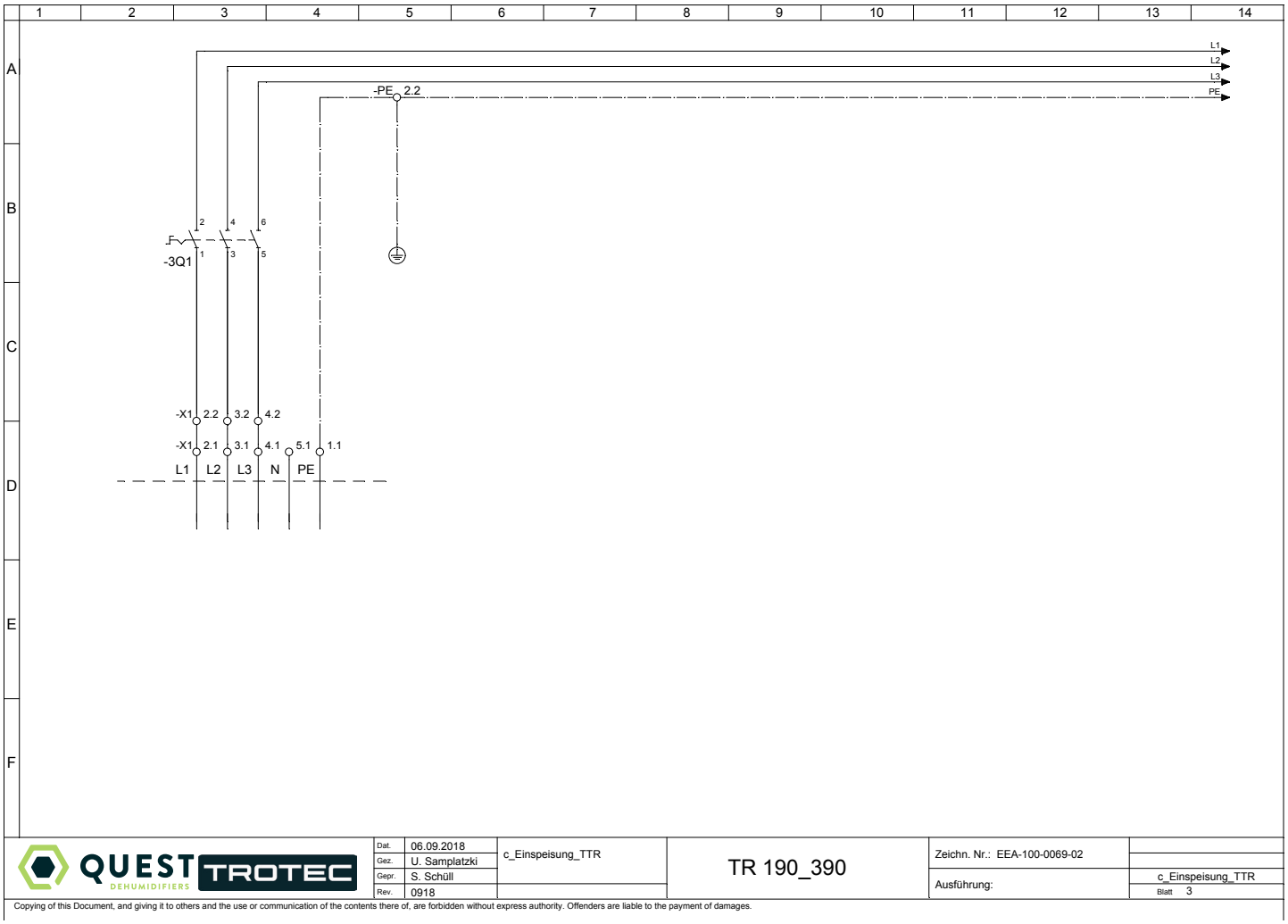
additional device naming for function ".1" etc.: to differentiate between the device functions, a sequence number will be appendend separated by a dot.

Attention!!

before connect power and operating the machine, tightening all (terminal, contactors, auxiliary contactors etc.) especially all power connections must be tightened.

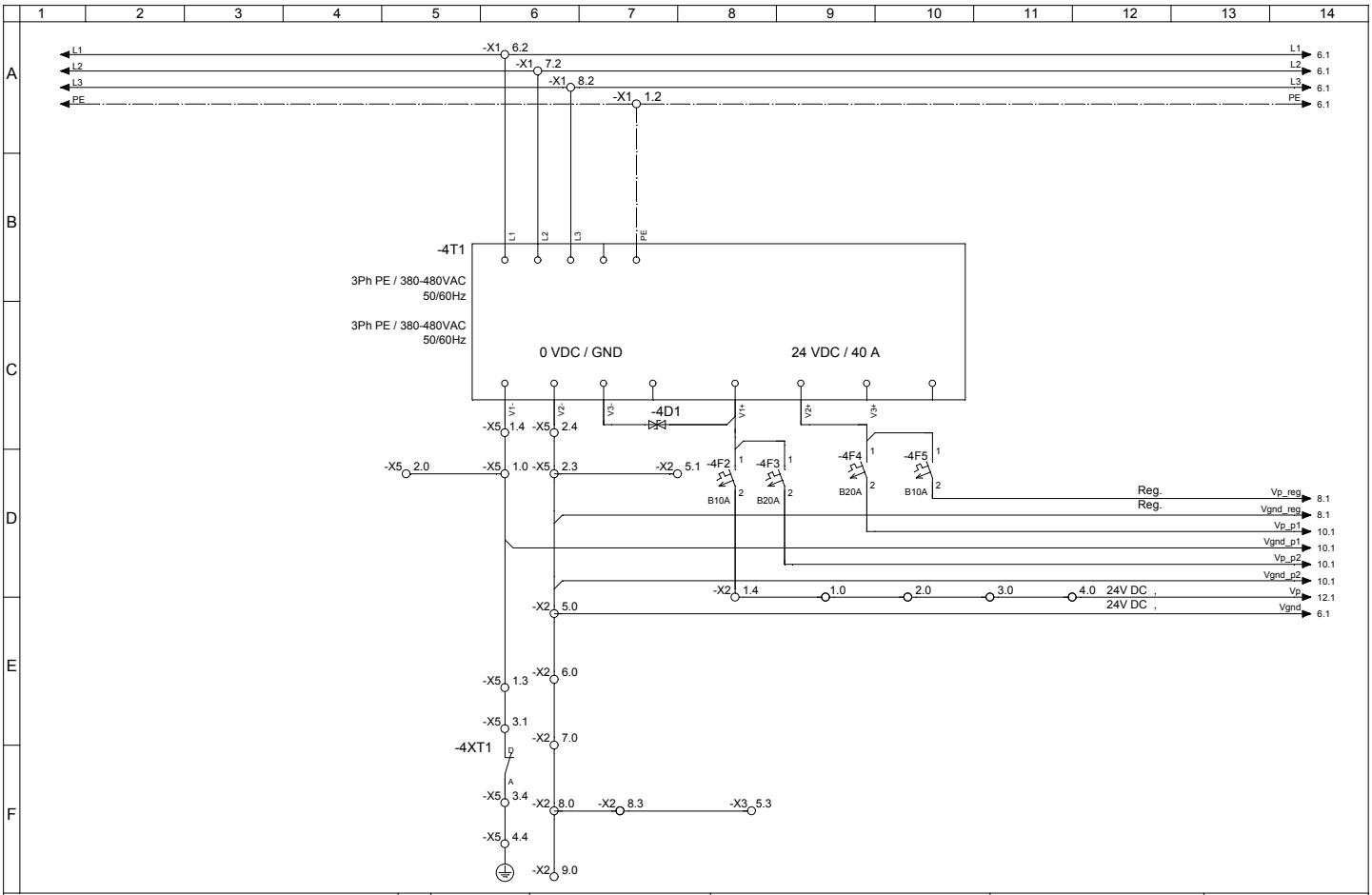
QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	b_Legende_TTR	TR 190_390	Zeichn. Nr.: EEA-100-0213-01 Ausführung:	b_Legende_TTR Blatt 2

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



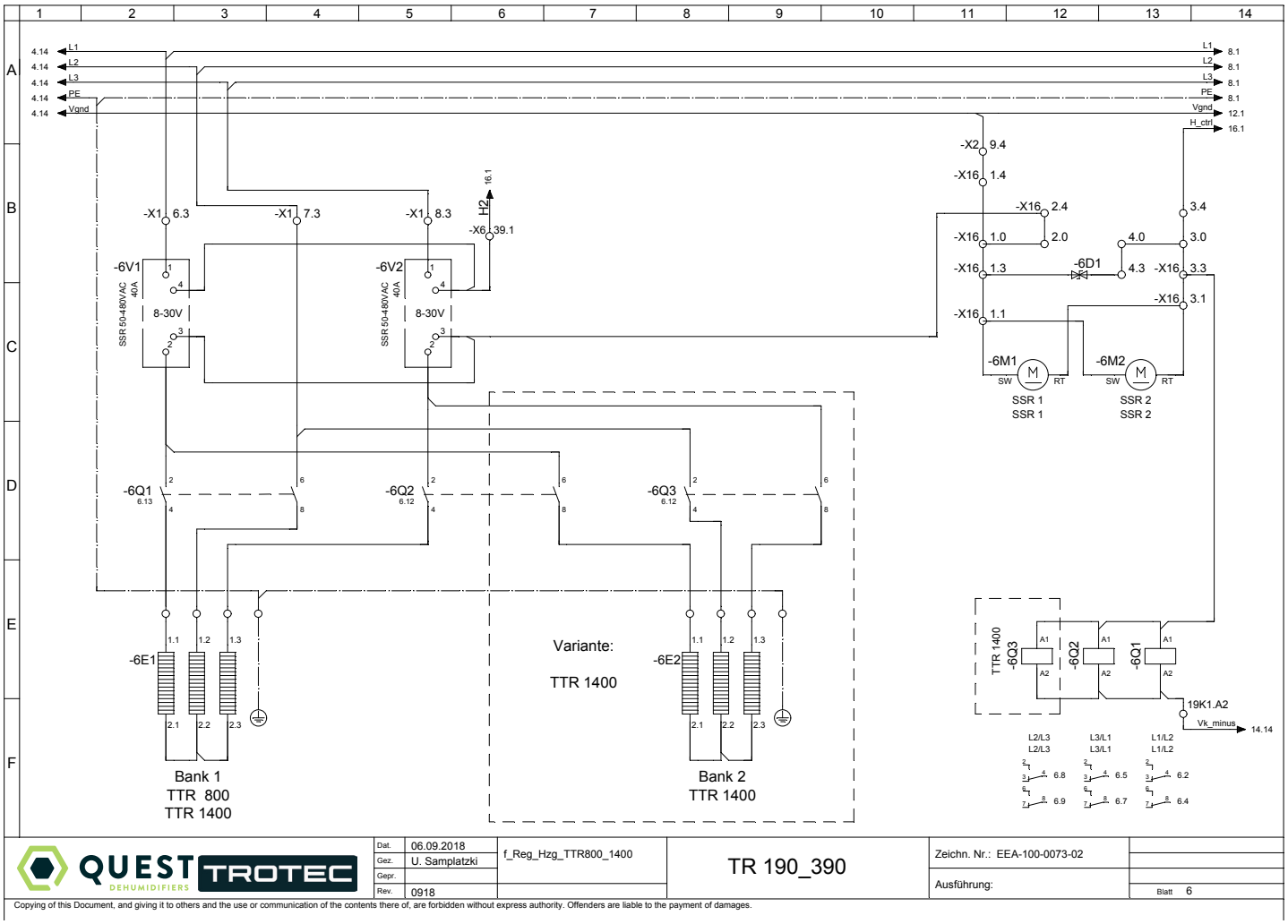
QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	c_Einspeisung_TTR	TR 190_390	Zeichn. Nr.: EEA-100-0069-02 Ausführung:	c_Einspeisung_TTR Blatt 3

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



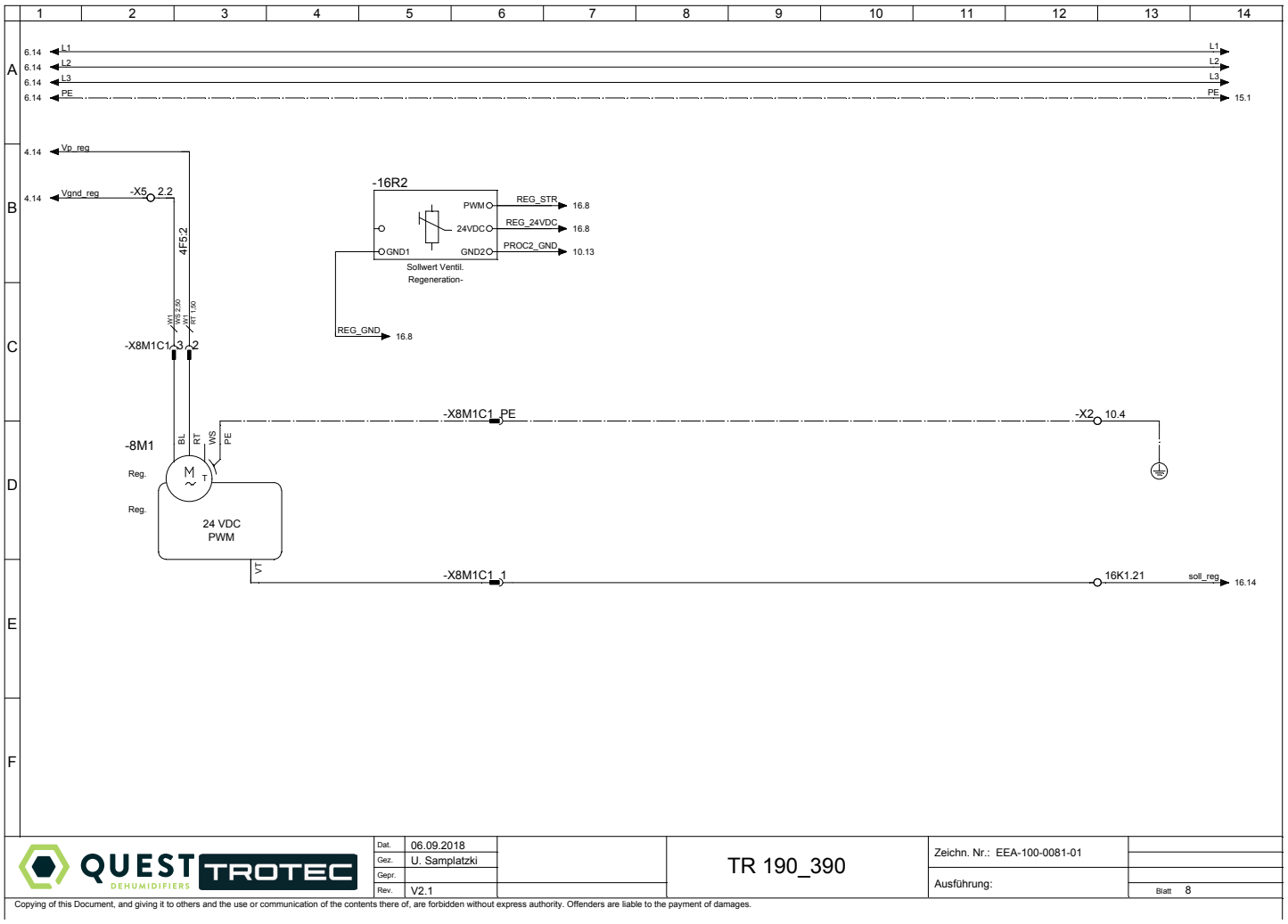
QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	d_Steuerspannung_TTR	TR 190_390	Zeichn. Nr.: EEA-100-0217-01 Ausführung:	d_Steuerspannung_TTR Blatt 4

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.

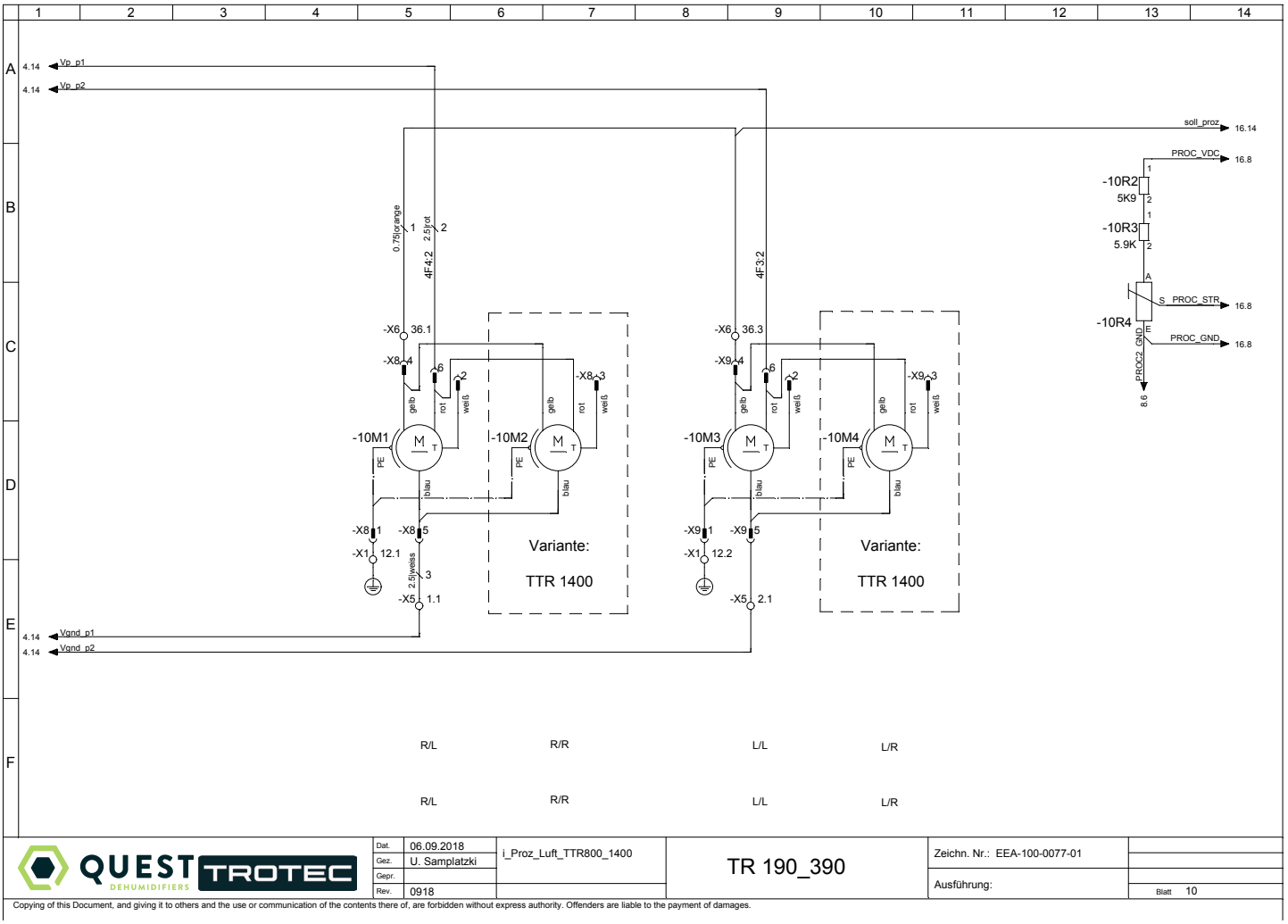


QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. Rev. 0918	f_Reg_Hzg_TTR800_1400	TR 190_390	Zeichn. Nr.: EEA-100-0073-02 Ausführung:	Blatt 6

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.

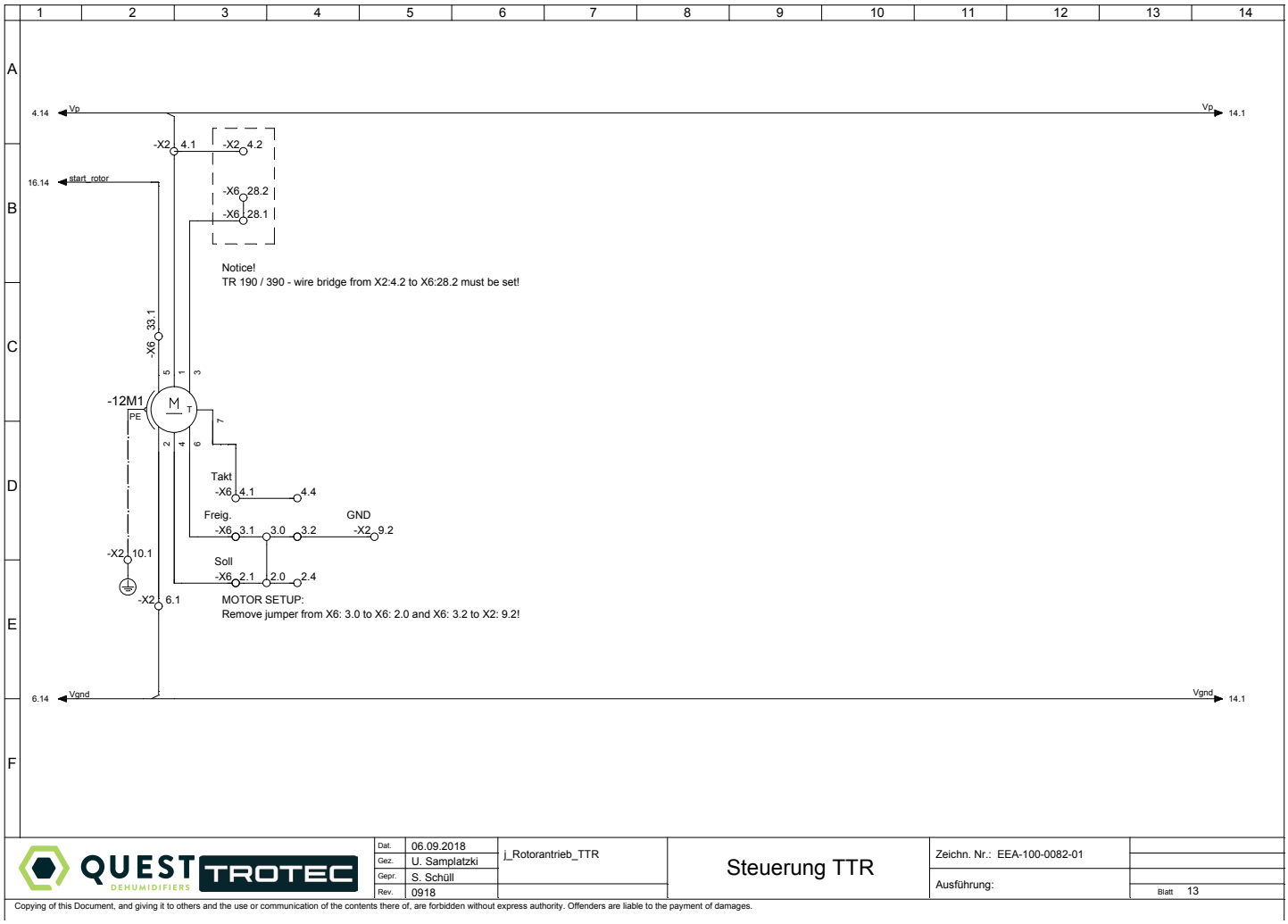


Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



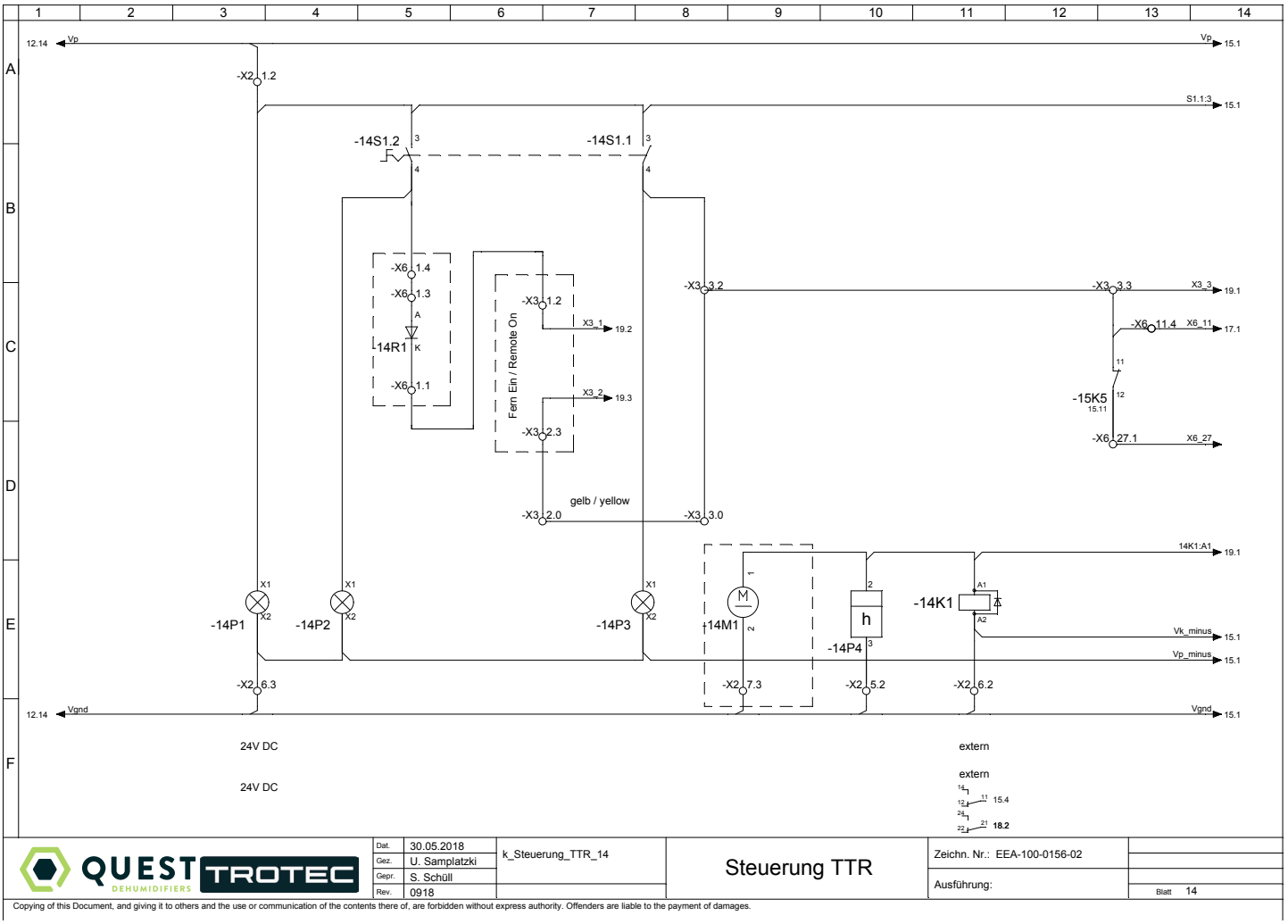
QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. Rev. 0918	i_Proz_Luft_TTR800_1400	TR 190_390	Zeichn. Nr.: EEA-100-0077-01 Ausführung:	Blatt 10

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



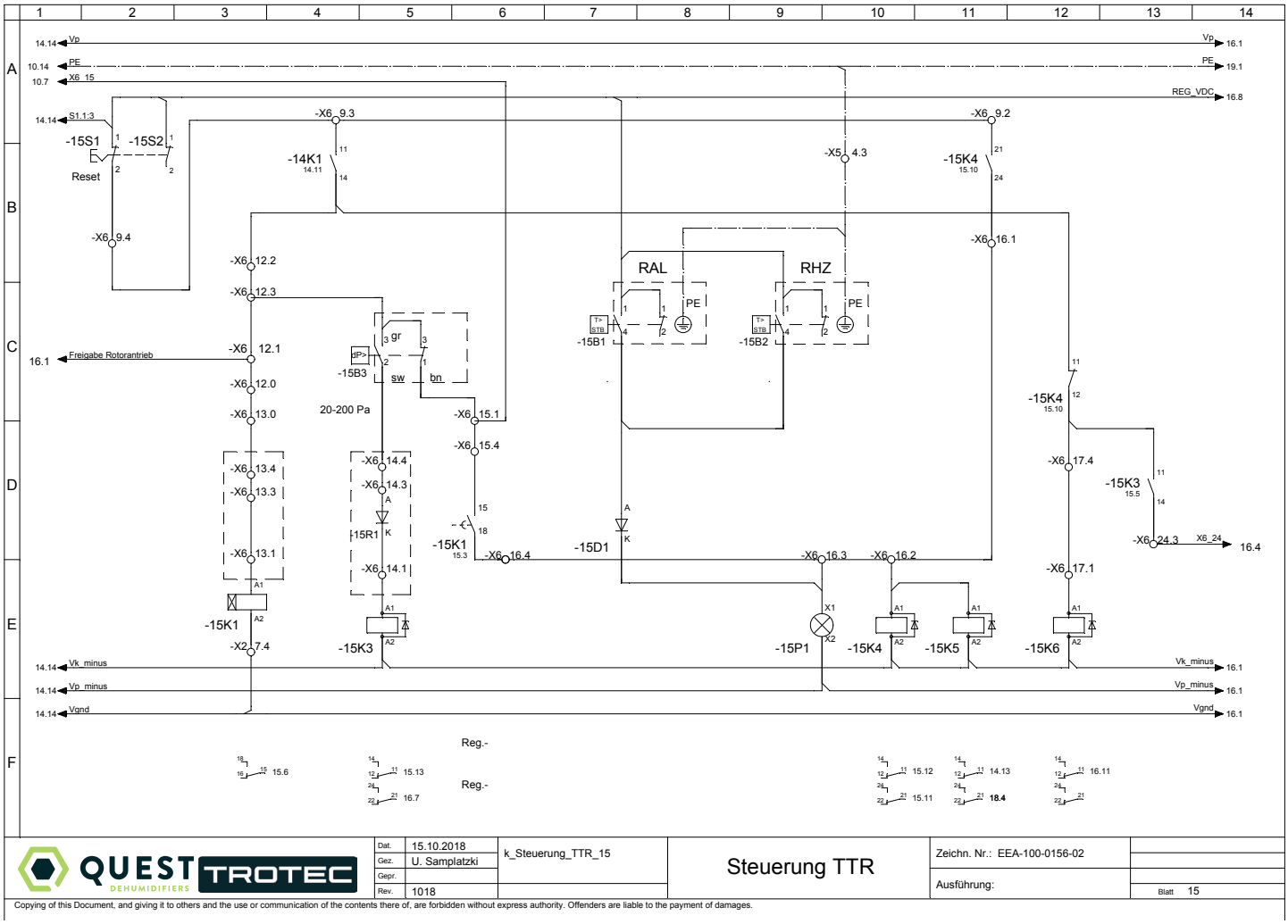
QUEST TROTEC DEHUMIDIFIERS	Dat. 06.09.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	j_Rotorantrieb_TTR	Steuerung TTR	Zeichn. Nr.: EEA-100-0082-01 Ausführung:	Blatt 13

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



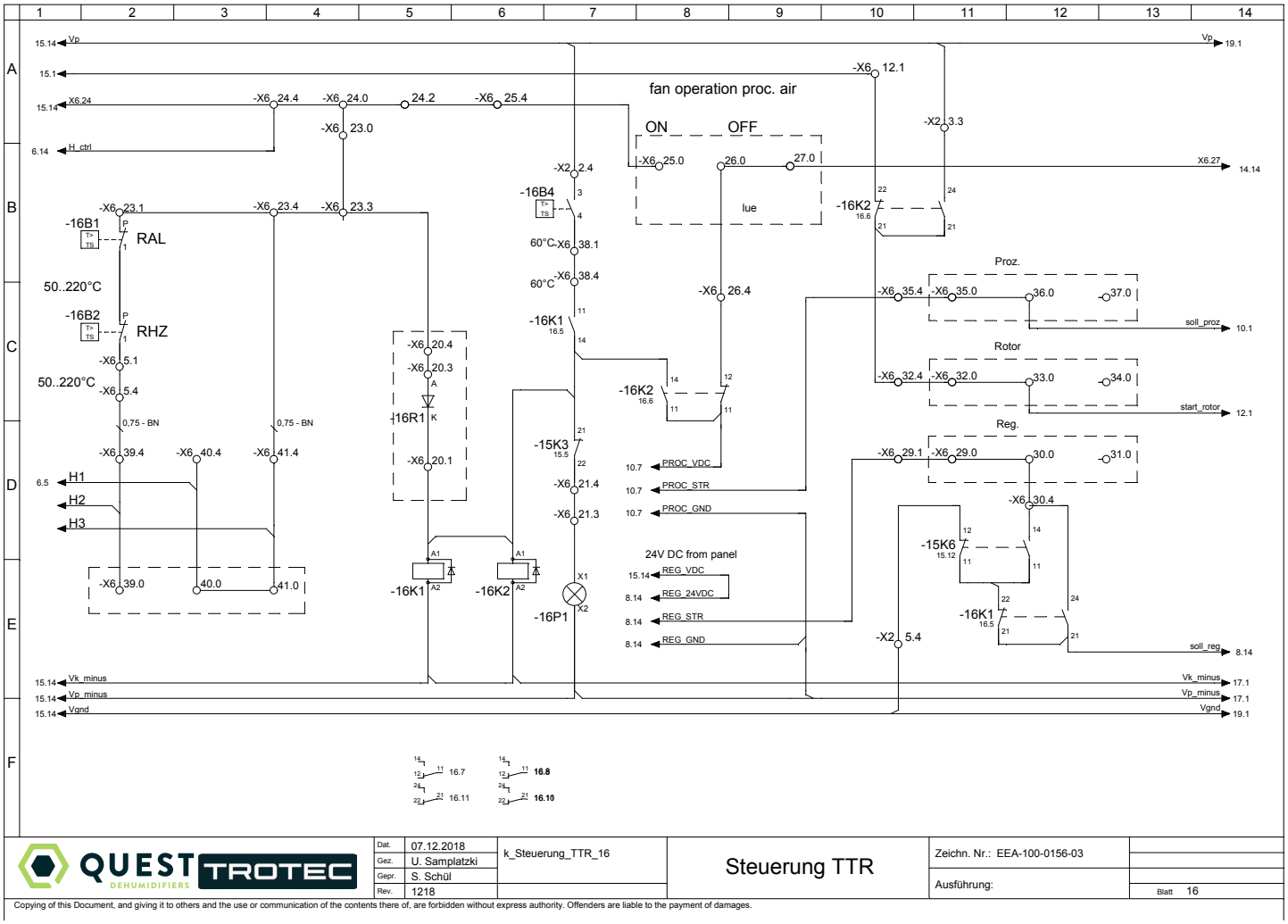
QUEST TROTEC DEHUMIDIFIERS	Dat. 30.05.2018	k_Steuerung_TTR_14	Steuerung TTR
	Gez. U. Samplatzki		Zeichn. Nr.: EEA-100-0156-02
	Gepr. S. Schüll		Ausführung:
	Rev. 0918		Blatt 14

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



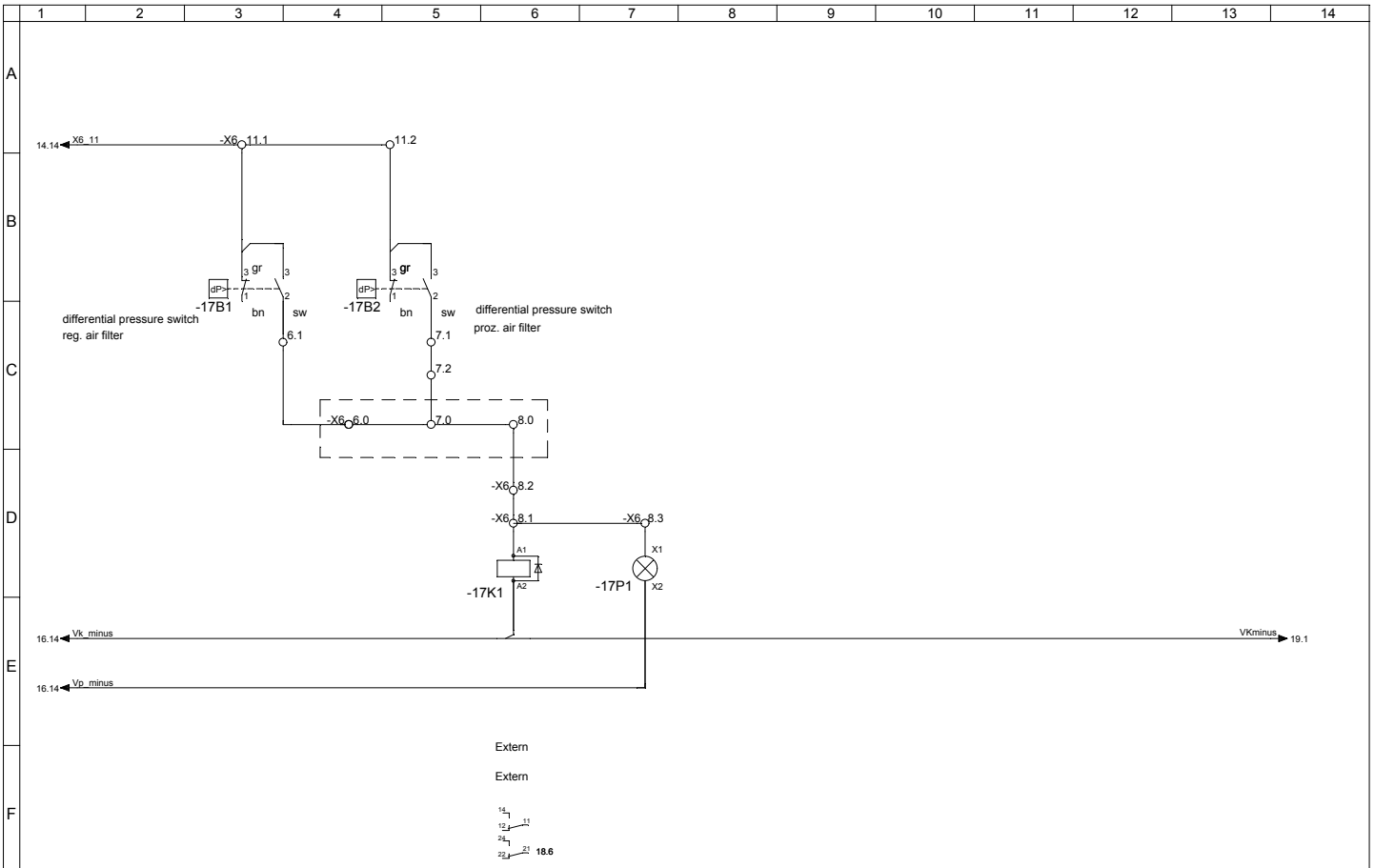
QUEST TROTEC DEHUMIDIFIERS	Dat. 15.10.2018 Gez. U. Samplatzki Gepr. Rev. 1018	k_Steuerung_TTR_15	Steuerung TTR	Zeichn. Nr.: EEA-100-0156-02 Ausführung:	Blatt 15

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



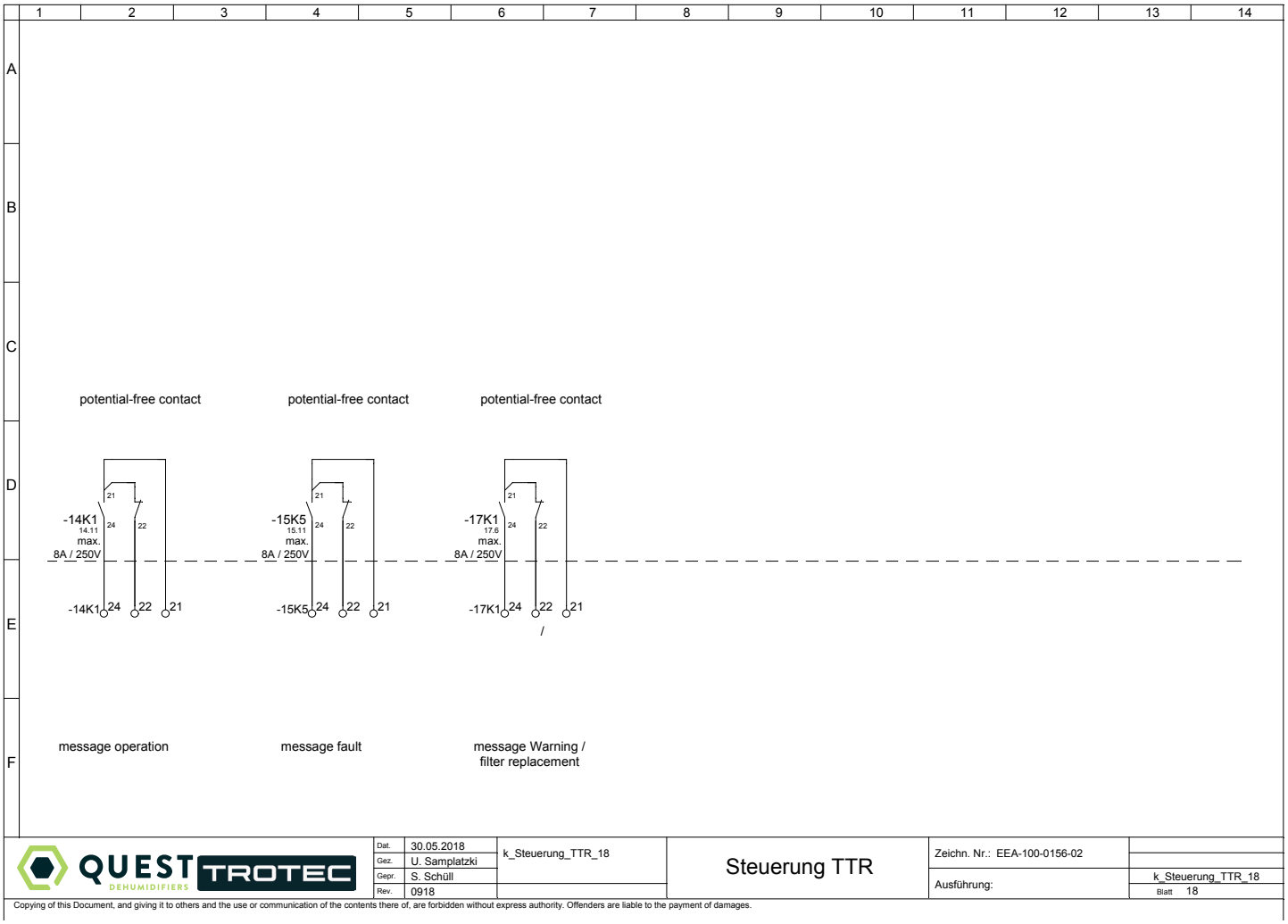
QUEST TROTEC DEHUMIDIFIERS	Dat. 07.12.2018 Gez. U. Samplatzki Gepr. S. Schül Rev. 1218	k_Steuerung_TTR_16	Steuerung TTR	Zeichn. Nr.: EEA-100-0156-03 Ausführung:	Blatt 16

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



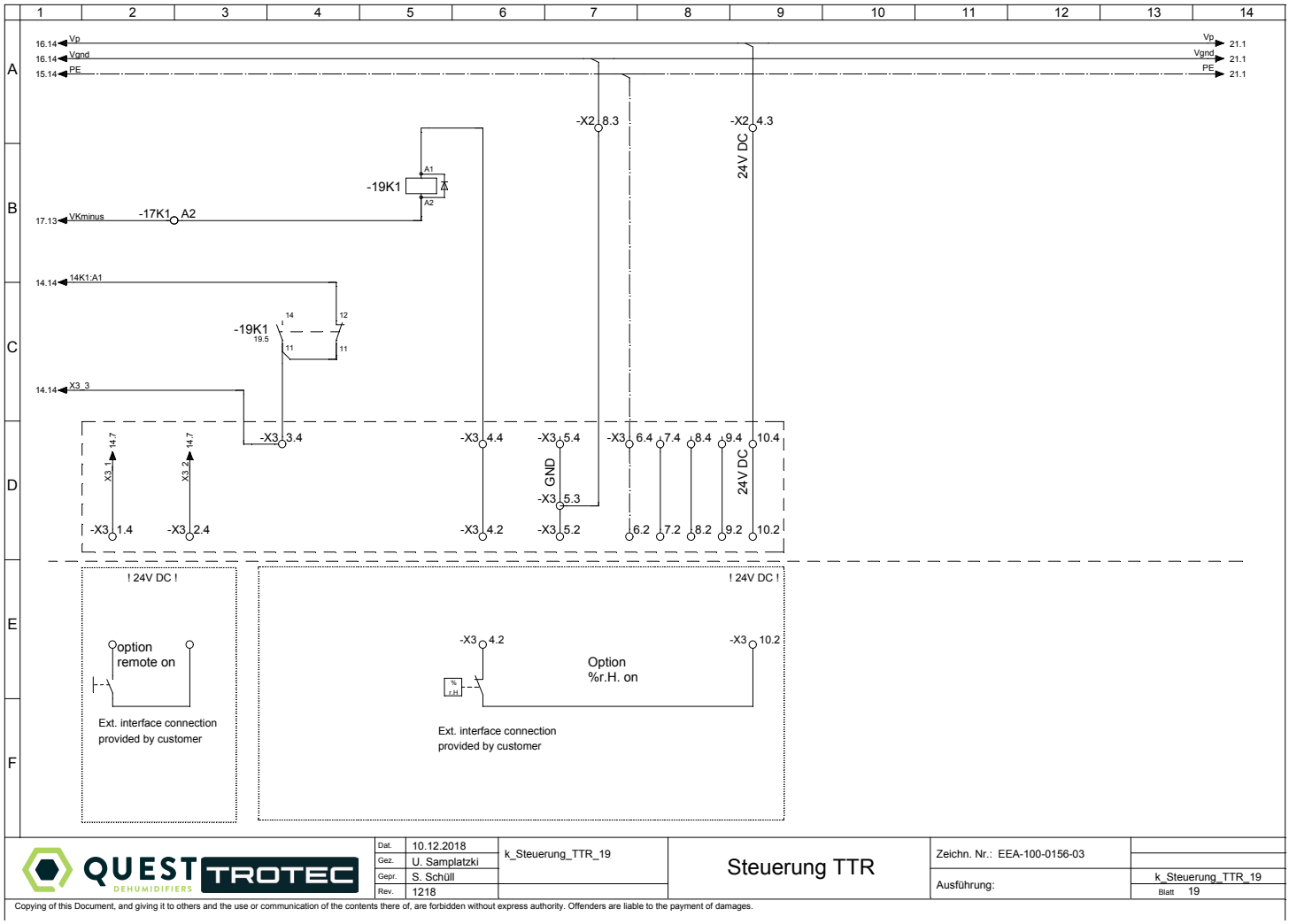
QUEST TROTEC DEHUMIDIFIERS	Dat. 23.05.2017	k_Steuerung_TTR_17	Steuerung TTR	Zeichn. Nr.: EEA-100-0156-02	
	Gez. U. Samplatzki				
	Gepr. S. Schüll			Ausführung:	Blatt 17
	Rev. 0918				

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



QUEST TROTEC DEHUMIDIFIERS	Dat. 30.05.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 0918	k_Steuerung_TTR_18	Steuerung TTR	Zeichn. Nr.: EEA-100-0156-02 Ausführung:	k_Steuerung_TTR_18 Blatt 18

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.



QUEST TROTEC DEHUMIDIFIERS	Dat. 10.12.2018 Gez. U. Samplatzki Gepr. S. Schüll Rev. 1218	k_Steuerung_TTR_19	Steuerung TTR	Zeichn. Nr.: EEA-100-0156-03 Ausführung:	k_Steuerung_TTR_19 Blatt 19

Copying of this Document, and giving it to others and the use or communication of the contents there of, are forbidden without express authority. Offenders are liable to the payment of damages.

EN	FR
dimensions (mm)	Dimensions (mm)
activation	déclenchement
ports	Branchement
connected load	Puissance a prévoir
on-delayed	Retardement
work area	Plage de travail
interpretation	Conception
damp air outlet	Sortie d'air humide
dry air outlet	Sortie d'air sec
model series	Numéro de série
limiter	Limiteur
With 0-10V control signal a reconfiguration of the MU input is necessary.	Avec un signal de commande 0-10V, une reconfiguration de l'entrée MU est nécessaire.
For hygrostat use blue bridge ... remove	Avec l'hygrostat, enlever le shunt bleu…
ready	Prêt
operation	Marche
operation on	Fonctionnement Marche
Electrical operating range	Plage de fonctionnement électrique
operating range airflows	Plage de fonctionnement Débits d'air
operating voltage	Tension de fonctionnement
operating hours counter	Compteur d'heures de fonctionnement
blue	Bleu
brown	Brun
bridge	Shunt
plug bridge	Connecter le shunt
reconnect bridge	Déconnecter le shunt
remove bridge from ... to ... and ... to ...	Shunt de .. À .. Et de .. À .. A déconnecter
socket	Raccordement
steam valve	Soupape de vapeur
differential pressure	Différence de pression
differential pressure switch	Pressostat
diode terminal	Bornier a diodes
remove wire	Retirer le fil
wire bridge	Fil de shunt

EN	FR
wire bridge from ... set to ... set	Fil de shunt de .. A .. À insérer
rotation control	Controleur de rotation
rotary potentiometers	potentiomètres rotatifs
rotary potentiometers	potentiomètres rotatifs
direction of rotation	sens de rotation
speed sensor	capteur de vitesse
pressure control	contrôle de pression
pressure sensor	détecteur de pression
on	On
slide-in module	module enfichable
feed	Alimentation
Process air inlet	Entrée d'air de process
Regeneration air inlet	Entrée d'air de régénération
recommended protection	protection recommandée
dehumidification performance	performance de déshumidification
spare parts	pièces de rechange
spare parts list	liste des pièces détachées
Ext. connection	Raccordement ext.
External	Externe
Far On	Commande externe
remote control	Commande à distance
humidity control	contrôle de l'humidité
filters	filtres
Filter Fan	Filtres à air
filter monitoring	surveillance de filtre
filter change	changement de filtre
blowing free	Soufflage libre
release	déblocage
probe	Capteur
yellow	Jaune
weight	Poids
green	Vert
manual on	Hand On
Main/Emergency-Off Switch	Interrupteur arrêt d'urgence
heater	Chauffage

EN	FR
rear	Derrière
reference	Nota
hygrostat	Hygrostat
hygrostat on	Hygrostat On
at *3 ft* distance, arithmetic mean, max. fan speed	A une distance de 1m, vitesse max du ventilateur, avec une moyenne arithmétrique
induction switch	Interrupteur a inudction
actual value	valeur réelle
jumpers	Cavalier
condensate drip tray	bac de récupération des condensats
contact field	champ de contact
cooling unit	unité de réfrigération
cooling	Refroidissement
Customer side	Côté client
lamp	lampe
power	Capacité
power relay	relais de puissance
circuit breaker	disjoncteur
purple	violet
links	Gauche
air	air
air-steam	Vapeur d'air
fan	ventilateur
air filter replacement	remplacement du filtre à air
air duct	conduit d'aération
air duct connection	Raccordement a la conduite d'air
air-water	air-eau
dimension sketch	Schéma dimensionnel
pilot light	voyant de signalisation
signal	Signalisation
transducer	Émetteur
motor	Moteur
after	Après
reheater	Chauffage additionnel
run-on	Temporisation d'arrêt

EN	FR
post-temperature	post-chauffage
proximity switches	capteurs de proximité
nominal power	puissance nominale
rated current	courant nominal
mains connection	raccordement au secteur
power supply	source d'alimentation
non-condensing	sans condensation
N-disconnect terminal	Borne de déconnexion N
only for use with 3-phase power supply unit	uniquement pour utilisation avec bloc d'alimentation triphasé
option	Option
orange	Orange
position	Position
potential-free contact	Contact libre de potentionnel
pressing	Pression d'air
process air	Proz.
process air	Air de process
process external air	Air de process extérieur
PT100 sensor	Capteur PT100
PT100 transmitter	Émetteur PT100
right	Droite
control thermostat	Thermostat de régulation
regulation	Commande
control valve	vanne de régulation
regeneration Air	Air de régénération
relay	Relais
reset	Reset
red	rouge
rotor	rotor
rotor rotation control	Contrôle de la rotation du rotor
rotor plate	Plaque du rotor
rotor drive	Entrainement du rotor
sound pressure level	niveau de pression acoustique
switching contact	Contact de commande
switch cabinet	armoire de commande

EN	FR
fuse	Fusbile
contactor	contacteur
protection class electrics	Classe de protection électrique
protection class enclosure	Classe de protection de l'enveloppe
black	Noir
sensor technology	Capteurs
fuse	Fusbile
circuit breaker	disjoncteur
Signal adjustment	Réglage du signal
signal separation	séparation du signal
Solid State Relay	Relais statique
target value	valeur nominale
PLC control module	Module de commande SPS
forklift pocket	Prise pour chariot élévateur
start	Start
socket	Prise
plug	Fiche
actuating value	valeur de réglage
control voltage	tension de commande
control	Commande
stop	Stop
fault	Défaut
current consumption	Compteur énérgétique
circuit diagram	Schéma éléctrique
push button	bouton
technical data	Caractéristiques techniques
temperature	température
temperature Limiter	Limiteur de température
temperature control	régulation thermique
thermoswitches	Interrupteur thermique
thermostat	thermostat
transport frame	châssis de transport
disconnect terminal	Bornier
dry air	air sec
demister	séparateurs de gouttelettes

EN	FR
overvoltage diode	Diode de surtension
unpiped	non tubé
variant	variante
valve	Valve
ventilator	ventilateur
volume flow control	contrôle du débit volumétrique
by	de
in front of	devant
at the front	avant
guard	Supperviseur
heat exchanger	échangeur thermique
warning	mise en garde
water valve	vanne d'eau
change	Changer
white	Blanc
resistor	résistance
selector switch NO	Interrupteur trois position marche / arret / auto
time relay	relais temporisé
time relay on-delayed	relais temporisé retarde

TR 190 / TR 390 Desiccant Dehumidifier Limited Warranty

Warrantor:

Therma-Stor LLC
4201 Lien Rd
Madison, WI 53704
Telephone: 1-800-533-7533

Who Is Covered: This warranty extends only to the original end-user of the TR 190 / TR 390 Desiccant Dehumidifier, and may not be assigned or transferred.

One Year Warranty: Therma-Stor LLC warrants that, for one (1) year the TR 190 / TR 390 Desiccant Dehumidifier will operate free from any defects in materials and workmanship, or Therma-Stor LLC will, at its option, repair or replace the defective part(s), free of any charge.

End-User Responsibilities: Warranty service must be performed by a Servicer authorized by Therma-Stor LLC. If the end-user is unable to locate or obtain warranty service from an authorized Servicer, the end-user should call Therma-Stor LLC at the above number and ask for the Therma-Stor Service Department., which will then arrange for covered warranty service. Warranty service will be performed during normal working hours.

The end-user must present proof of purchase (lease) upon request, by use of the warranty card or other reasonable and reliable means. The end-user is responsible for normal care. This warranty does not cover any defect, malfunction, etc. resulting from misuse, abuse, lack of normal care, corrosion, freezing, tampering, modification, unauthorized or improper repair or installation, accident, acts of nature or any other cause beyond Therma-Stor LLC' reasonable control.

Limitations and Exclusions: If any TR 190 / TR 390 Desiccant Dehumidifier part is repaired or replaced, the new part shall be warranted for only the remainder of the original warranty period applicable thereto (but all warranty periods will be extended by the period of time, if any, that the TR 190 / TR 390 Desiccant Dehumidifiers is out of service while awaiting covered warranty service).

UPON THE EXPIRATION OF THE WRITTEN WARRANTY APPLICABLE TO THE TR 190 / TR 390 DESICCANT DEHUMIDIFIER OR ANY PART THEREOF, ALL OTHER WARRANTIES IMPLIED BY LAW, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL ALSO EXPIRE. ALL WARRANTIES MADE BY THERMA-STOR LLC ARE SET FORTH HEREIN, AND NO CLAIM MAY BE MADE AGAINST THERMA-STOR LLC BASED ON ANY ORAL WARRANTY. IN NO EVENT SHALL THERMA-STOR LLC, IN CONNECTION WITH THE SALE, INSTALLATION, USE, REPAIR OR REPLACEMENT OF ANY TR 190 / TR 390 DESICCANT DEHUMIDIFIER OR PART THEREOF BE LIABLE UNDER ANY LEGAL THEORY FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION WATER DAMAGE (THE END-USER SHOULD TAKE PRECAUTIONS AGAINST SAME), LOST PROFITS, DELAY, OR LOSS OF USE OR DAMAGE TO ANY REAL OR PERSONAL PROPERTY.

Some states do not allow limitations on how long an implied warranty lasts, and some do not allow the exclusion or limitation of incidental or consequential damages, so one or both of these limitation may not apply to you.

Legal Rights: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.