

Operating Instructions

Mini Drier

KTX 50



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1 Safety

1.1 Correct Usage

For the drying of plastic granulate or similar dry bulk materials.

The machine is only intended for use of this type.

If the machine is used outside its field of application, Simar Fördertechnik GmbH is not liable for damage or faults arising during operation.

Before commissioning the drying machine, the Operating Manual must be read carefully. The notes on safety information must be followed to the letter.

Only trained and fully inducted operating personnel are qualified to operate the machines and to carry out maintenance work.

Correct usage also involves compliance with inspection and maintenance work schedules.

1.2 Safety Markings

In this document the following signal words are used in combination with safety signs to represent potential hazards.



Danger !

Fatality, serious injury or extensive damage to property **will occur** if the relevant precautionary measures are not taken.



Warning !

Fatality, serious injury or extensive damage to property **may occur** if the relevant precautionary measures are not taken.



Beware !

Slight injury **may occur** if the relevant precautionary measures are not taken.



Caution !

Damage to property **may occur**, if the relevant precautionary measures are not taken.









Application notes !







1.3 Safety Information

Knowledge of basic safety information and safety in the workplace instructions is a precondition for safe handling and problem-free operation of the machine.

This Operating Manual includes all the important information needed to operate the machine safely.

The in-house safety in the workplace regulations must be followed.

	<p>Caution ! The Drier framework must always be earthed.</p>
	<p>Warning ! Unless indicated otherwise, do not operate on voltages other than 230 V/400 V / 50 Hz.</p>
 	<p>Danger ! Touching live parts is potentially fatal.</p> <p>Always keep control cabinets locked.</p> <p>Do not carry out any work on live parts.</p> <p>Work on the electrical fittings may only be carried out by authorised electrical specialists. Access to the control cabinets is only permitted for authorised personnel with a key or tools.</p> <p>Cables may not become trapped or squashed.</p> <p>Cables must be laid in such a way that they do not constitute a trip hazard nor are liable to be damaged.</p>
	<p>Danger ! Do not work in explosive areas. Do not dry explosive materials.</p>
	<p>Caution ! Never switch off the Drier directly at the main switch. First switch off the Drier with the “Drier on” key and wait until the blower after-run time has completed (5 min.). Only now may the main switch be used to switch it off.</p>

	<p>Danger ! The machine is only safe if all safety devices are properly installed and in operation.</p> <p>Do not operate the Drier without safety devices, or with faulty devices, or with safety devices that have been bridged.</p> <p>Safety devices may only be removed once the main switch is disabled.</p> <p>Refit all safety devices once repair work is completed and test them for proper functioning.</p> <p>Anyone working on the machine must be informed prior to the start of maintenance work of any imminent movements on the machine.</p>
	<p>Warning ! Injury due to unexpected movement of the reversing box.</p>
	<p>Warning ! Risk of injury due to improper handling of compressed air.</p> <p>Never direct the outlets of compressed air lines towards people – serious injury may result.</p> <p>Do not pressurise any loose compressed air hoses. Any people who may be in their vicinity may be hit. Never hold compressed air hoses on loose objects.</p> <p>Work on the compressed air devices may only be carried out by authorised specialists.</p>
	<p>Warning ! Risk of the pallet falling during transport. Ensure equal loading of the pallet and that suitable means of transport are used.</p>
	<p>Warning ! Slip hazard due to spilt drying agent during maintenance work. Clean the floor immediately of spills.</p>
	<p>Caution ! Risk of injury due to incorrect programming. Do not make any changes to the software on programmable systems.</p>

1.4 Protective Measures

**Warning !**

Never make any unauthorised modifications to nor deactivate safety devices. These may result in serious injury.

The warning and safety signs fitted to the machine must be observed.
They may not be changed or removed.
Damaged signs must be immediately replaced.
Protective measures may not be circumvented during operation.

1.5 Residual Hazards

During operation of the Drier, further hazards may arise that can be prevented through safety-conscious working procedures.

**Danger !**

Touching live parts is potentially fatal.

Observe the warning notices fitted.



Do not remove any covers on the control cabinet.

Work on the electrical fittings may only be carried out by authorised electrical specialists.

**Caution !**

Parts of the Drier heat up during operation.

1.6 Requirements on Personnel and Duty of Care

Work on the Drier may only be carried out by reliable, trained and fully inducted personnel.

Only authorised personnel may work at the machine.

Never allow machine components to be operated by personnel who are under the influence of sedatives, or who for health reasons are not in a fit state to operate them.

Any personnel who are under training, induction, or who are involved in general training, may only work at the machine under the constant supervision of a qualified and experienced person.

Work on the electrical fittings of the individual machines may only be undertaken by authorised electrical specialists and in compliance with the operating manual of the electrical fittings supplier.

Only fully inducted personnel with special knowledge and experience of pneumatics may work on compressed air devices.





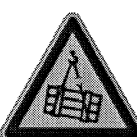
Caution !

The Operating Manual must always be available at the place of use.
The operating personnel must know where it is kept.

2 Transport

The machine is to be bolted down into the floor in the production hall.
When moving the machine, the suitability of the floor should be ascertained so as to be able to anchor the machine securely back in the floor.
Alternatively, Driers are also fitted with a mobile chassis.

	<p>Danger ! Touching live parts is potentially fatal.</p>
	<p>Even when making small changes in position, isolate the machine from any external power source. Before recommissioning the machine, it must be properly reconnected to the mains.</p>

	<p>Warning ! Risk of the pallet falling during transport.</p> <p>Ensure equal loading of the pallet and that suitable means of transport is used.</p> <p>Ensure it is securely attached and that the load is distributed horizontally.</p> <p>Never stand under a suspended load.</p> <p>Nominate a competent banksman for the lifting operation.</p>
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Only use a suitable transport vehicle with adequate load bearing capacity.
Ensure the load is reliably secure.

Prior to recommissioning, carefully fit and secure any parts that have had to be removed for transport purposes.

On recommissioning, always power up in line with the Operating Manual.

Commissioning may only be undertaken by specially trained operating and maintenance personnel.

3 Commissioning

1. Set up the drying silo on the designated site.
2. Install the connection pipework.
3. Mount the vacuum hopper loader on the drying silo.
4. Open the butterfly valves of the drying silo airlines.
5. Before filling the drying silo, close the manual stop valve for discharge of the material.
6. On the **suction box** option, the material can be extracted from the drying silo.
7. Connect the Drier up to the power supply, coolant and compressed air systems
8. Check the rotation of the motors.
9. Set the drying temperature.
10. The switch-on time and period can be preselected via the timer.
11. Switch on the Drier via the "**Drier on**" button.

4 Functional Description

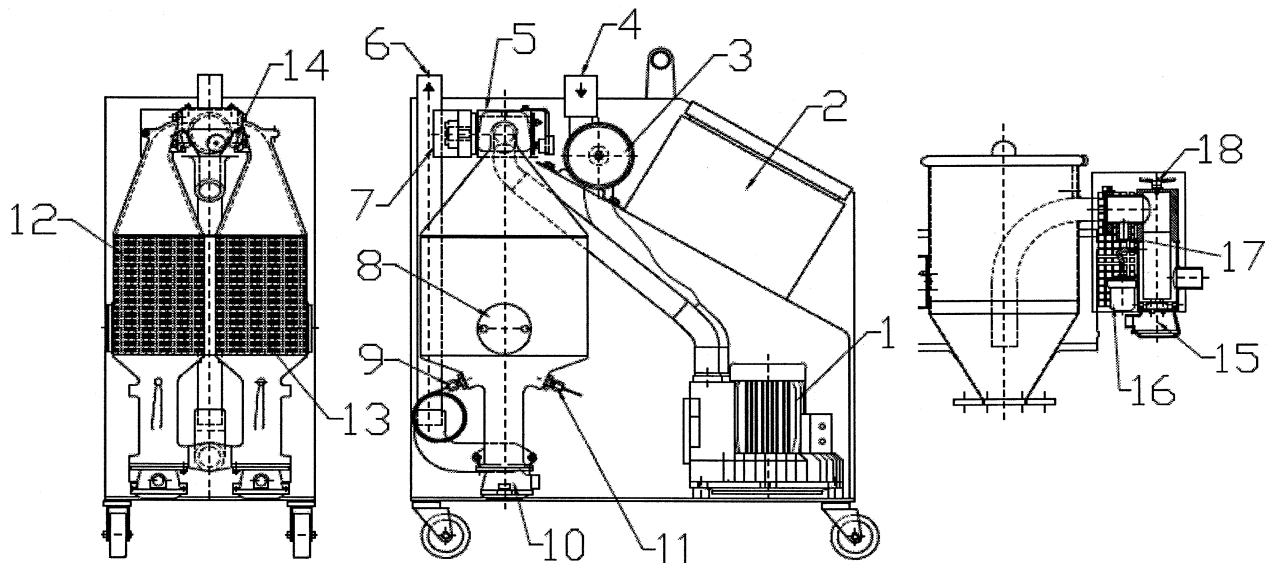
The adsorption air blower (1) extracts the moist air from the drying silo. This is cleaned via a cartridge filter (3) and cooled by an air/water heat exchanger (optional).

Via the reversing valve (5), depending on its setting, the air arrives at the drying agent bin (12+13) that is ready for drying. Here the moisture is removed from the air by the drying agent.

Next, the dried air flows through the adsorption heater (15), where it is heated up to the preset drying temperature, and back to the drying silo.

As the drying agent becomes saturated after a certain time, it has to be regenerated. This regeneration is divided into two phases and occurs in parallel with the drying operation, but in a second circuit of the system.

During the first phase of regeneration, a partial airflow of dry air is heated to approximately 200°C and pressurised through the drying agent via the adsorption air blower. Due to the high air temperature, the moisture is driven out of the drying agent and released into the air via the reversing box.



- | | |
|---|--|
| 1 Adsorption air blower | 10 Regeneration heaters |
| 2 Controller | 11 PT 100 regeneration heater |
| 3 Return air filter | 12 Drying agent bin 1 |
| 4 Return connection | 13 Drying agent bin 2 |
| 5 Reversing box | 14 Limit switch for valve setting |
| 6 Inlet connection | 15 Adsorption heater |
| 7 Motor actuator | 16 Pressure switch |
| 8 Aperture for drying agent changeover | 17 PT 100 adsorption heater |
| 9 Safety thermostat regeneration heater | 18 Safety thermostat adsorption heater |

Once the regeneration time has completed, the regeneration heater is switched off and the second phase – drying agent bin cooling – begins.

Once the cooling time has completed, the reversing valve is switched and the regeneration of the second drying agent bin starts.

On the dew-point evaluation option, the post-regeneration cooling phase is extended until the temperature drops below a preset dew-point value. Only then does changeover to the next drying agent bin occur, and a new regeneration phase begins.

This reduces the energy consumption that would have resulted from unnecessary premature regeneration.



Nevertheless, the permanently preset programmed times always run first, as these are needed for optimum regeneration of the drying agent. This means that during operation the dew-point may also drop below the preset value.

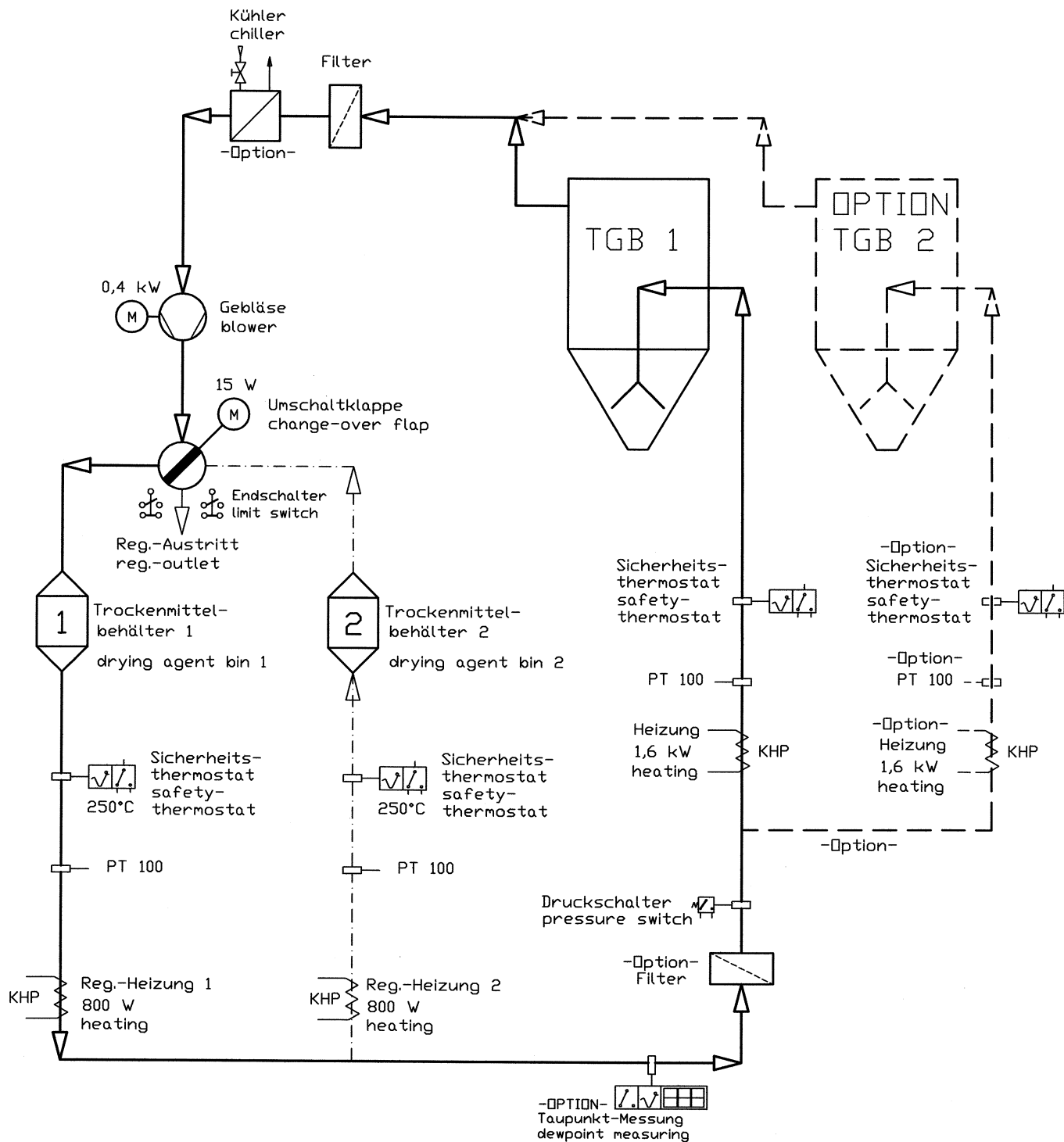
In the diagram, dehumidification of the air via drying agent bin 1 (regeneration of drying agent bin 2) is illustrated.

4.1 Factory Settings

Blower after-run time	5 min.
Valve actuating time	90 sec.
Regeneration time	40 min.
Cooling time	30 min.
Regeneration monitoring time	30 min.
Adsorption monitoring time	30 min.
Regeneration temperature	195°C
Adsorption temperature deviation	10°C
Automatic restart	NO
Start-up monitoring	OFF

On the dew-point option

Dew-point evaluation	Evaluation ON
Changeover set point	-25°C
Dew-point alarm output (OPTIONAL)	0°C



Ohne unsere Genehmigung darf diese Zeichnung weder vervielfältigt, noch dritten Personen oder Wettbewerbsfirmen zugänglich gemacht werden. Technische Änderungen vorbehalten

Regeneration drying bin 2 Regeneration Trockenmittelbehälter 2

simac
FÖRDERTECHNIK GmbH

Werkstoff

Maßstab

A4

Flow diagram Drier KTX 50

Fließbild KTX 50

CAD - Zeichnung Nr.:

KTX50d-gbk

Blatt
Bl.

A-Nr.	Änderung	Tag	Name

2007	Tag	Name
Bearb.	24.01.	We
Gepr.		

5 Technical Data

Dry air generator

Type designation	KTX 50
Adsorption air mass	50 cbm/h
Regeneration air mass	12 cbm/h
Total connected rating	3.0 kW
Operating voltage	230 V/50 Hz
Total rated current	14.5 A
Coolant consumption	40 l/h

Adsorption air blower

Type designation	SE0070C
Connected rating	0.4 kW
Operating voltage	230 V/50 Hz
Rated current	2.8 A

Adsorption air heater

Type designation	PK 1600
Connected rating	1.6 kW
Operating voltage	230 V
Rated current	7 A

Regeneration air heater

Type designation	PK 800
Connected rating	0.8 kW
Operating voltage	230 V
Rated current	3.5 A



When drying with several auxiliary heaters, see the relevant nameplate for the connection data of the Drier.





Material	Start Moisture %	Resident Time hr.	Temperature ° C	Capacity max. kg/hr.	Capacity in kg/hr.					
					20 ltr.	40 ltr.	60 ltr.	100 ltr.	150 ltr.	60+60 ltr.
ABS	0,4	3.4	80	32	4	8	12	20	30	24
CA	0,8	2.3	75	25	4	9	13	22	25	25
CAB	1	2.3	75	20	4	9	13	20		20
CP	1	2.3	70	23	4	9	13	20	23	23
LCP	0,04	4	150 *	35	3	6	10	16	25	20
Ionomere	1	4.5	90	18	3	6	9	15	18	18
PA 11	1	4.5	100	20	3	6	9	15	20	18
PA 12	1	5	100	25	3	6	9	15	25	18
PA 6	1	4.5	80	21	3	6	9	15	21	18
PA 6	2	4.6	80	18	2	4	6	10	15	12
PA 6.6, 6.10	1	4.5	85	25	3	6	9	15	23	18
PA 6.6, 6.10	2	4.6	85	21	2	4	6	10	15	12
PBTP	0,5	2.3	120 - 135	30	3	6	9	15	23	18
PC	0,2	3	120	35	4	9	13	22	33	26
PE*		2	85	22	6	12	18	20	22	
PE black	1	2.3	85	20	4	9	13	18	20	20
PEEK		4	150 *	35	3	6	9	15	23	18
PETG	0,4	4.5	65	16	3	6	9	15	16	16
PETP inj.mould.	0,5	3.4	120	40	3	6	9	15	23	18
PI	0,1	2.3	120	50	6	12	18	30	45	36
PMMA	0,4	2.3	90	35	4	8	12	20	30	24
POM	0,6	2	100	40	6	12	18	30	40	26
PP*		1.2	100	28	8	16	24	28		
PPO Noryl	0,1	2	120	33	6	12	18	30	33	33
PPS	0,1	3.4	150 *	35	3	6	9	15	23	18
PS*	0,1	1	80	45	12	24	36	45		45
PSU Polysulfon	0,2	2.3	120	40	4	9	13	22	33	26
PUR	0,3	2.3	90	28	4	9	13	22	28	26
PVC	0,4	1	70	45	12	24	36	45		
SAN	0,2	2	80	40	8	16	24	40		
SB	0,4	1.2	80	40	8	16	24	40		

* High temperature drier required

6 Maintenance

6.1 Safety Information for Maintenance and Repairs

Regular maintenance and service is a precondition for reliable use of the machine.

	<p>Warning ! Only carry out maintenance and repair work on the machine when the machine is switched off at the main switch.</p>
	<p>Warning ! Crush hazard when the reversing valve switches.</p>
	<p>Warning ! Risk of injury due to improper handling of compressed air.</p> <p>Before commencing repair work, depressurise the system sections and pressure lines that need to be opened.</p> <p>Never hold compressed air hoses on loose objects.</p>
	<p>Warning ! The drying agent bin and various components in the Drier housing can become very hot.</p> <p>Before work is varied out in the Drier housing, the Drier must be switched off.</p> <p>The drying agent bins may still be hot even after longer downtimes.</p>

6.2 Maintenance Schedule

**Warning !**

The use of unauthorised spare parts may result in injury to people and damage to the machine.

Only use original spare parts !

Please observe the details from the relevant manufacturers relating to maintenance of the individual machine components. You can find the maintenance details in the accompanying documentation supplied.

6.3 Dry Air Filter

**Caution !**

Clean the dry air filter each week.

Switch the Drier off via the ON key (*-key) and wait for the blower after-run time (5 min.) to complete. Loosen the hex nut in the middle of the filter bowl and withdraw the cartridge. Blast compressed air from the inside outwards to clean the filter cartridge.

**Caution !**

The filter housing should not be blasted clean with compressed air, as dirt might enter the drying agent as a result.

In the course of time, the fine pores of the filter cartridge, particularly on the dry air filter, become clogged with foreign bodies, with the result that adequate cleaning is not possible. For this reason, the filter cartridge should be renewed annually, possibly earlier depending on operating conditions.

6.4 Inlet Filter - Optional -

The inlet filter is for cleaning small particles of drying agent from the dry air. The small particles arise from friction on the drying agent in the drying agent bins. The inlet filter is mounted on the floor of the housing of the Drier next to the blower.

To clean the filter, switch off the Drier and wait until the blower after-run time (5 min.) has completed. Open the front doors of the Drier underneath the control cabinet. Loosen the hex nut in the middle of the black filter bowl and withdraw the filter cartridge. Cleaning of the filter is just as described in Section 6.3 (dry air filter). However, as a rule the inlet filter only needs to be checked and cleaned at six monthly intervals.

6.5 Drying Agent

If treated properly, the drying agent remains active for many years. If the granulate becomes overheated due to operating errors, plasticisers or aggressive vapours may escape, depending on the type of plastic, and these generally adhere to the drying agent and deactivate it. The drying agent must then be replaced.

To do this, loosen the hoses on the Drier and take the cover off once you have loosened the Allen screws on the handle.

Bring the Drier into a position so that the locking covers of the drying agent bin (see Functional Description, item 8) point upwards. The bin is best emptied with an industrial extractor.

Filling is also via this aperture. To obtain a good drying result the drying agent bin must be completely filled with molecular sieve. As you do this, shake and tamp the molecular sieve poured in to compress it.

Lock the bins with the locking covers. After assembling the cover and connecting the hoses, the Drier is once again ready for use.



Disposal of molecular sieve !

*According to the Ordinance on Hazardous Substances, molecular sieve is **not subject to labelling requirements**.*

It is classified under the EWC Code: 120199 (European Waste Code)

and can be disposed of as industrial waste akin to domestic waste.



Warning !

Slip hazard due to spilt drying agent during maintenance work.
Clean the floor immediately of spills.

6.6 Return Air Cooler

Cleaning is only required when the dry air filter is faulty or when plasticisers or other vapours are released.

If there is slight contamination, once the connection lines have been removed, cleaning can be carried out in situ by extraction and/or air blasting.

If there is heavier contamination, the cooler must be dismantled and cleaned with a solvent.

6.7 Blower Motors

The motors are fitted with ball bearings.

Based on the details from the manufacturer, the grease packing is sufficient for an operating time of around 2½ years and should then be renewed.

6.8 Reversing Valve

The reversing valve is maintenance-free.

If it does not move freely, the two M6 hex nuts (SW 10) that hold the sealing washer tight may be loosened slightly.

OA T/TG-Nr : 1 E1202500

Description1 : Spare part list KTX 50

Description2

Klassifiz : E-Liste KTX50

Part list no.: 1

Gült-Los : 1,000 - 999999,999

Description : Standard

Gült-Dat : 18.12.2006 - 31.12.2999

Pos	OA T/TG-Nr	Bezeichnung	Z-Pos	BA	A	AVO	F	P	KB	LB	Menge	ME
10	1 7012080	Graphics-Display MFD-80-B, Type MFD-80-B-"SIMAR-KT"		2		0		1	0	0	1,000	pc
20	1 7012084	Easy Power supply unit CPU for MFD- Type MFD-CP8-ME MFD-CP8-ME		1		0		1	0	0	1,000	pc
30	1 7012081	I/O-Modul MFD-T16, 24V DC Type MFD-T16 12 dig. Inputs		2		0		1	0	0	1,000	pc
40	1 7012083	Easy-Extension Easy202-RE, Type Easy202-RE		2		0		1	0	0	1,000	pc
50	1 7012085	Easy Power Supply unit CPU for MFD- Type MFD-CP8-NT NET, MFD-CP8-NT		1		0		1	0	0	1,000	pc
60	1 7012074	Easy-control unit Easy821-DC-TCX Type Easy821-DC-TCX		2		0		1	0	0	1,000	pc
70	1 7012076	Bus terminal resistor, EASY-NT-R, Type EASY-NT-R		2		0		1	0	0	1,000	pc
80	1 7005085	Plug relay 24V DC 40.52.9.024 Type 40.52.9.024		2	X	0		1	0	0	1,000	pc
90	1 7005148	Screw socket Typ 95.95.3 for Plug relay 40.52.9.024		2		0		1	0	0	1,000	pc
100	1 7010027	Solid state relay 30A, 600V, Type RJ1A60D30E Typ: RJ1A60D30E, Carlo Cavazzi		1		0		1	0	0	1,000	pc
110	1 7012049	Instrument Amplifier LC-MV-1xPT100. Type LC-MV-1xPT100		2		0		1	0	0	1,000	pc
120	1 7012050	Instrument Amplifier LC-MV-2xPT100. Type LC-MV-2xPT100		2		0		1	0	0	1,000	pc
130	1 7009023	Transformer 24V / 2,5A , DRA060-24A Type DRA060-24A		2		0		1	0	0	1,000	pc
140	1 6401002	Caster wheel d=75 without blockade		1	X	0		1	0	0	1,000	pc
150	1 6401003	Caster wheel d=75x23 without blocka		1	X	0		1	0	0	1,000	pc
160	1 7001003	Snap switch S 870 W2 D11		1	X	0		1	0	0	1,000	pc
170	1 5403050	Actuator NM 230 8Nm open/close K		1	X	0		1	0	0	1,000	pc
180	1 7101061	Integrated-Thermostat EM-3; Justier Calibration point 250°C		1		0		1	0	0	1,000	pc

OA T/TG-Nr : 1 E1202500

Description1 : Spare part list KTX 50

Description2

Klassifiz : E-Liste KTX50

Part list no.: 1

Gült-Los : 1,000 - 999999,999

Description : Standard

Gült-Dat : 18.12.2006 - 31.12.2999

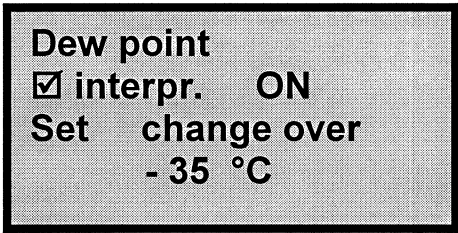
Pos	OA T/TG-Nr	Bezeichnung	Z-Pos	BA	A	AVO	F	P	KB	LB	Menge	ME
190	1 7101110	Resistant thermometer PT100 for hea		1		0		1	0	0	1,000	pc
200	1 7102039	Ceramik Heating Element 800 W, 230 V, d=45,9 mm , l=120 mm		1	X	0		1	0	0	1,000	pc
210	1 7102040	Heater element, ceramics, d=45,9 d 45,9 mm x 120 mm, 230 volt, KT40 since 4/94		1	X	0		1	0	0	1,000	pc
220	1 7102042	Heater element, ceramics 2000W d=45		1	X	0		1	0	0	1,000	pc
230	1 9301104	Socket Ads. heater KT50 casting Draw.no. 9301104		1		0		1	0	0	1,000	pc
240	1 9301103	Locking cover for ceramic cartridge for ceramic cartridge KT/KTX 50		1		0		1	0	0	1,000	pc
250	1 6602130	Molecular sieve 4A-401, gran. size KT40=3kg, KT50=13kg, KT100=8kg, KT80/120=25kg, KTF102=20kg, KT150/200=30kg, KT250=50kg, KT450/600=100kg, KT900=160kg		1	X	0		1	0	0	12,500	kg
260	1 5401087	Side channel blower 0,38kW,50Hz,230 single phased		1		0		1	0	0	1,000	pc
270	1 5301040	Filter cartridge C 940 KT 40 d2=88		1	X	0		1	0	0	1,000	pc
280	1 7101017	Thermostat button formed 2455RD 140		1	X	0		1	0	0	1,000	pc
290	1 6003035	Pressure switch Typ 901.61,		2		0		1	0	0	1,000	pc
300	1 6003008	Pressure control device Typ DDW-10, for KT80/120 , 1...10 mbar,		2		0		1	0	0	1,000	pc
310	1 5103062	Flexible hose DN 50 up to 150°C		1	X	0		1	0	0	1,000	MTR
320	1 5103061	Flexible hose DN 38 up to 150°C		1	X	0		1	0	0	1,000	MTR
330	1 5103089	High temperature hose DN 38, max. 2		1	X	0		1	0	0	1,000	MTR
340	1 5103097	high temperatur hose DN50		1	X	0		1	0	0	1,000	MTR
350	1 1200608	Cooler Zsb., KT 50 casting		1	X	0		1	0	0	1,000	pc
360	1 7101043	Easidew dew point transmitter, 0-20 mA, -100 to +20°Ctp voltage supply 12-28 V dc for ComCon 90		2		0		1	0	0	1,000	pc

End of partlist

8 Bypass Moisture Measuring System - Optional

8.1 Introduction

Using the bypass moisture measuring system the dew-point in the process air is continuously measured, monitored and displayed.



Dew point
☒ interpr. ON
Set change over
- 35 °C

Dew-point monitoring can be switched on and off in the Drier operating menu. Here the changeover dew-point value can also be entered.

This value determines the changeover (reversal) time between the two drying agent bins depending on the relevant regeneration or cooling phase.

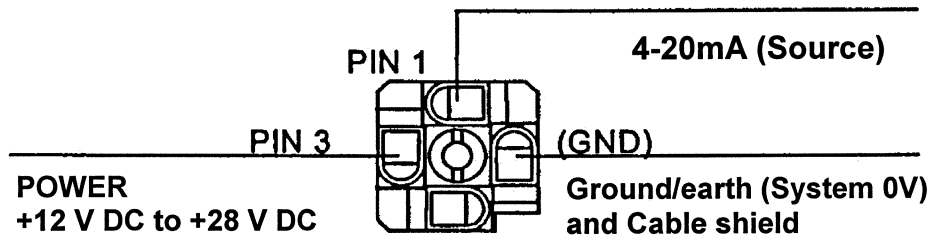
This allows unnecessary premature reversal to be avoided. The resulting extended pause times between the individual regeneration phases can make a major contribution to saving energy, as the regeneration heaters remain switched off during these pause times. Please note that a more negative changeover dew-point value results in shorter pause times. In most cases a dew point of -25°C is sufficient for adequate dehumidifying of the plastic granulate.

8.2 Dew- Point Transmitter

The dew-point transmitter is an inline instrument for measuring the moisture content of air and other gases over a working range of -100°C to $+20^{\circ}\text{C}$ dew-point. The analog output is standardised and factory preset to 0-10 V. The sensor functions as a 0-10 V transmitter, providing a linear analog output to an external controller or monitoring unit. The dew-point indication is on the Drier controller display.

8.3 Dew-Point Transmitter Connection

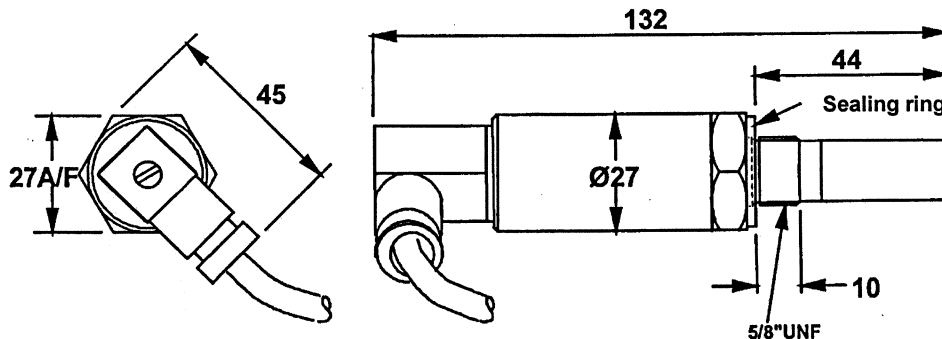
The sensor can be connected via the detachable plug connector. The inside unit of the plug connector can be removed by first removing the central screw and then levering out the terminal block using a small screwdriver. The three sensor cable wires with terminals are connected as follows to the interface unit.



8.4 Maintenance

Routine maintenance of the dew-point transmitter is limited to regular calibration. The only option for recalibration is to expose the moisture sensor to a test gas of known humidity. In most applications annual recalibration is sufficient to maintain the specified accuracy of the sensor. Transmitters with a 4-20 mA interface can be interchanged at will. Interchangeability of the sensors is not affected by the length of the sensor cable, meaning that for all sensors replacement may be used as an alternative method to calibration. For applications where the dew-point transmitter is not continuously in use, it may be sent in to Simar for recalibration.

Dimensions



8.5 Technical Specification of Dew-Point Transmitter

Measuring range	-100 to +20°C dew point
Power supply	12 to 28 V DC
Output	0 –10 V power source over the entire dew-point
Dew-point accuracy	± 2°C over the entire measuring range
Gas temperature	- 40°C to + 60°C
Service environment	- 20°C to + 50°C
Storage temperature	- 40°C to + 75°C
Temperature coefficient	Temperature compensated
Working pressure	10 ⁻⁶ bar vacuum to 300 bar
Flow rate	1 to 5 l/min when fitted in standard sampling block 0 to 10 m/sec. on direct application (80 µm sinter protection)
Certification basis	- 90 to + 82°C dew-point based on National Physical Laboratory - 75 to + 20°C dew-point based on National Institute of Standards and Technology (For dew-points < - 90°C : with direct reference to a dew-point monitor that works according to a fundamental measuring principle).
Protection of the environment	IP 65 (IP 66 or NEMA 4 available as an option)
Weight	0.15 kg
Max. load (power source)	200 Ω at the PSU = 12 V, 750 Ω at the PSU = 24 V Absolute max. load is 1K Ω at the PSU = 28 V

9 Dismantling and Disposal

When replacing machine components and disposing of them, statutory regulations must be followed.



Caution !

Disposal of the drying agent is subject to stringent regulation under environmental protection legislation and its bylaws.

Deliver used lubricants to your special waste reception point. If you spill lubricants, these must be immediately broadcast with binding agents and disposed of as special waste once bonding has occurred.

Take precautions to catch any spilt lubricant (sealed floors, spill trays, spillage tarpaulins).

9.1 Drying Agent Disposal



Disposal of molecular sieve!

*According to the Ordinance on Hazardous Substances, molecular sieve is **not subject to labelling requirements.***

It is classified under the EWC Code: 120199

(European Waste Code)

and can be disposed of as industrial waste akin to domestic waste.

Operating Instructions Control Unit

KTX 50
KTX 120
KTX 180



Item no.: 5090100_e
Edition: 12/06
File: J:\Wamser\KTX-Steuerung_E



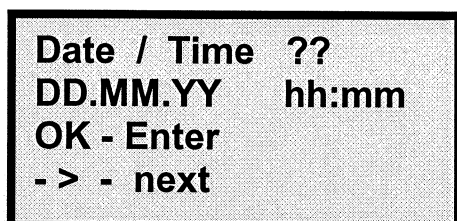
Simar Fördertechnik GmbH
Am Fuchsloch 7 D-71665 Vaihingen/Enz
☎ 07042 / 903 0 Fax 07042 / 903 39

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1 Initial Start-Up

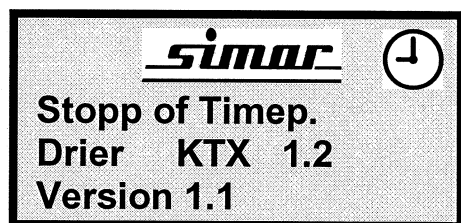
Once the Drier is switched on at the main switch, the current date and time appear on the display.



To change the date/time:

1. Press the "OK" key. Date and time flash.
2. Change values with the ◀ ▶ keys.
3. Confirm with the "OK" key.
4. Drier program starts.

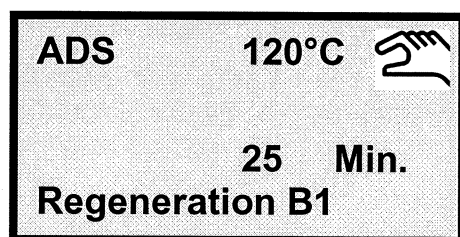
Pressing the "▶" key confirms the date, the Drier program starts and the  info box appears:



2 Operating Modes

2.1 Manual Mode

Pressing the "*" key switches on the Drier.
The status display appears.



Here the current adsorption temperatures, the dew-point (optional), the current Drier process, the remaining residual time of the drying process, and the operating mode (manual or timer program) are all displayed.

Note:

If start-up monitoring is activated, this is displayed alternately with the status display (e.g. Regeneration B1).

2.2 Timer Program Mode

For timer mode, two timer programs are available.

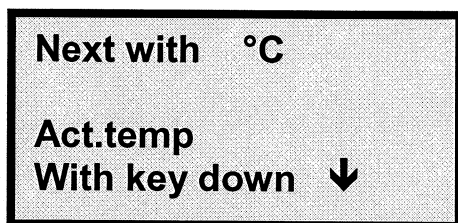
Operation controlled via a timer is activated/deactivated by pressing the "ALT" key.

For programming the switching times, see Item 3.2.2

3 Operating Parameters

3.1 General Operating Parameters in °C

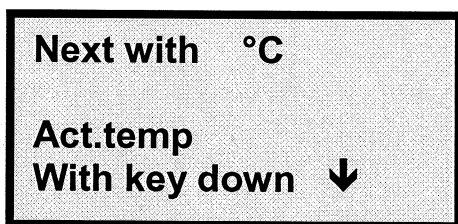
Pressing the "DEL" key once takes you into the first sub-menu.



Here the current adsorption temperatures, the current dew-point (optional) and the current temperatures of the two regeneration heaters are displayed.

In addition the values for the adsorption temperature and start-up monitoring can be entered here.

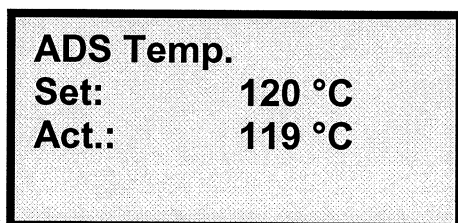
3.1.1 Setting the adsorption temperature



Press the "▼" key to take you to the drying temperatures.

Here the set point and actual value of the relevant adsorption heater are displayed.

The set point can be changed here.



To change the set point:

- Press the "OK" button – the set point flashes
- Set the set point with the ◀ ▶ keys.
- Confirm the new set point with the "OK" key

3.1.2 Dew-point display (optional)

ADS Temp.	
Set:	120 °C
Act.:	119 °C

Press the “▼” key to display the current dew-point.

Note:

If no dew-point measuring unit is installed, this display does not appear

Dew point	
Act.:	- 43 °C

3.1.3 Regeneration heater temperature display

Reg Temp.	
Chamber 1	195 °C
Chamber 2	63 °C

Press the “▼” key again to display the current temperatures of the two regeneration heaters.

3.1.4 Start-up monitoring

Residence time		
Set:	180	Min.
Act.:	57	Min.
<input checked="" type="checkbox"/> Reset		

Press the “▼” key again to take you to the start-up monitoring menu.

A timer is fitted for start-up monitoring to help you keep to the prescribed drying times. Start-up monitoring is particularly helpful in batch drying. In addition, start-up monitoring monitors the dwell time when the Drier is starting up after a restart..

Note:

If start-up monitoring is activated, the green LED next to the display flashes until the preset start-up time is complete. In addition, the status display in the main menu flashes alternately with the “**Start-up monitoring**” text display

Residence time		
Set:	180	Min.
Act.:	57	Min.
<input checked="" type="checkbox"/> Reset		

To change the set point:

- Press the "OK " button – the set point flashes
- Set the set point with the ◀ ◆ ▶ keys.
- Confirm the new set point with the "OK" key.
- Press the "OK " key again to complete the reset and the new start-up time is enabled.

Pressing the "OK " key twice in this menu results in a reset without any change to the set point.

For activating or deactivating start-up monitoring, see Item 3.2.5


Note:

The start-up monitoring function is only possible for the Drier as a whole, but not for each individual drying silo (where present).

Pressing the "DEL " key four times takes you back to the status display.

3.2 Password-Protected Operating Parameters in °C

Pressing the "DEL " key twice in the status menu takes you to the password-protected operating parameters.

ADS	120 °C	
Dew point	- 43 °C	
	25 Min.	
Regeneration	B1	

2 x
„DEL“ →

next with °C
Setup user
User with ↓

Pressing the "▼" key takes you to the password query.

Enter the password "01357" and confirm this with the "OK " key.

You can change the individual figures with the arrow keys.

Once you have successfully entered the password you can access the protected operating parameters.

3.2.1 Temperature monitoring using limit comparator

Deviation	ADS
	10 °C

To change the tolerance value:

- Press the "OK " key – the set point flashes
- Set the set point with the ◀ ◆ ▶ keys.
- Confirm the new set point with the "OK" key.

Note:

We do not recommend that you set the tolerance below 5°C.

3.2.2 Timer

For timer mode, two timer programs are available.

Timer A	
ON	WD hh : mm
OFF	WD hh : mm

Timer B	
ON	WD hh : mm
OFF	WD hh : mm

A switch-on and switch-off time can be entered for each control program.

Program examples:

- a) The Drier is to switch on each working day at 06:00 and switch off in the evening at 17:30.

Setting:

Timer A
On MO 06:00
Off FR 17:30

Note:

For this case, timer B is not needed.
Set the switch-on and switch-off time here to 00:00

- b) The Drier is to be in operation continuously from Monday 04:00 to Friday 22:00.

Setting:

Timer A
On MO 06:00
Off TH 23:59

and



Timer B
On TU 24:00
Off FR 22:00

Timer A	
ON	WD hh : mm
OFF	WD hh : mm

To change the switching times:

- Press the "OK" key – the switch-on time flashes
- Set the switch-on time with the ◀ ▶ keys.
- Confirm the switch-on time with the "OK" key.
- Specify the switch-off time with the ◀ ▶ keys and confirm with the "OK" key.

Activation of timer mode occurs when the "ALT" key is pressed.

 
Stop of Timep. Drier KTX 1.2 Version 1.1

Note:

If the Drier is switched off because of a timer program, this is shown on the display.

3.2.3 Dew-point evaluation (optional)

If a dew-point measuring unit is installed, regeneration that is dew-point dependent can be activated here.

Dew-point dependent regeneration allows the cooling time after the regeneration phase to be delayed until the dry air has attained a given dew-point threshold. Only then does changeover to the next drying agent bin occur, and a new regeneration phase begins. This allows a reduction in the energy consumption of the Drier.

Note:

To be able to ensure safe operation of the Drier where a dew-point sensor is faulty, once the cooling time has been extended by 2 hours, forced changeover is automatically performed.

Dew point	
<input checked="" type="checkbox"/> interpr.	ON
Set	change over
	- 35 °C

To activate dew-point evaluation:

- Press the "OK " key – ☐ flashes
- Press the "OK " key again – ☒ Evaluation activated
- Specify the set point with the ◀ ◆ ▶ keys.
- Confirm the new set point with the "OK" key.

3.2.4 Menu language

You can choose from four menu languages.

Select language	
<input type="checkbox"/> Deutsch	↑
<input checked="" type="checkbox"/> English	
<input type="checkbox"/> Francais	↓

To change the menu language:

- Press the "OK " key – the menu language flashes
- Select a new language with the ◆ key.
- Confirm the new language with the "OK" key.

3.2.5 Automatic restart and activation of start-up monitoring

Using a restart the operating behaviour of the Drier after a power cut is specified. If automatic restart is activated, the Drier restarts automatically after a power cut, e.g. as a result of a lightning strike.

If automatic restart is deactivated, the Drier remains switched off.

The start-up monitoring function can also be activated and deactivated in this menu..

Restart	
<input checked="" type="checkbox"/> YES	
Start up control	
<input checked="" type="checkbox"/> ON	

To activate the functions:

- Press the "OK " key – ☐ flashes
- Press the "OK " key again – ☒ Function activated

Using the "ESC " key you can toggle from restart to start-up monitoring.

Pressing the "DEL " key three times takes you back to the status display.

4 Machine Parameters

Next with °C
Act. temp.
With key down ↓

The machine parameters are stored in a second password level and ensure that the Drier functions safely.

This level can only be accessed by Simar technicians

5 Auxiliary Heaters

ADS 120 °C ⌚
Dew point - 43 °C
25 Min.
Regeneration B1

On Driers with several adsorption heaters the current temperatures of the individual heaters are displayed alternately in the status display.

ADS Temp. 1
Set: 80 °C
Act.: 80 °C
Off - >

ADS Temp. 2
Set: 110 °C
Act.: 109 °C
OFF - >

The set points of the individual heaters are set as described in Item 3.1.1.

ADS Temp. 2
Set: 110 °C
Act.: 109 °C
OFF - >

To switch the heater on and off

- Set to on or off with the ◀ ◆ ▶ keys.
- The heating is switched on or off with the ▶ key.

Note:

The tolerance deviation of the limit comparator, see Item 3.2.1, is the same for all heaters.

6 Factory Settings

Blower after-run time	5 min.
Valve actuating time	90 sec.
Regeneration time	40 min.
Cooling time	30 min.
Regeneration monitoring time	30 min.
Adsorption monitoring time	30 min.
Regeneration temperature	195 °C
Adsorption temperature deviation	10 °C
Automatic restart	NO
Start-up monitoring	OFF

On the dew-point option

Dew-point evaluation	Evaluation ON
Changeover set point	-25 °C
Dew-point alarm output (optional)	0°C

7 Fault Signals



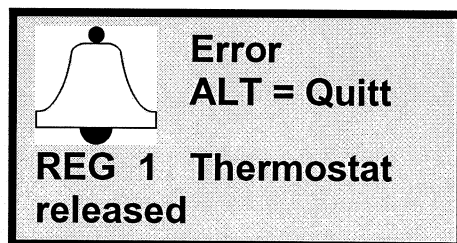
In the event of an operating fault on the Drier, the red LED next to the display flashes.

In addition, the fault is displayed in alphanumeric letters on the display.

The fault alarm is acknowledged with the “ALT” key.

Using the “ESC” key you can toggle between the status menu and the fault signal menu.

7.1 Regeneration Thermostat Triggered

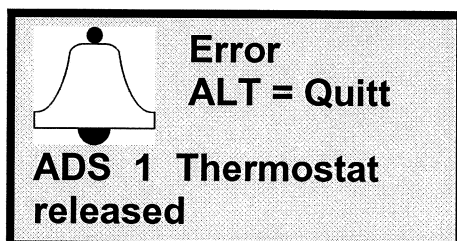


The safety thermostat of the regeneration heater has been triggered.

Possible fault source

- Semi-conductor relay of the regeneration heater faulty
- Safety thermostat of the regeneration heater faulty
- Input on Easy control relay faulty

7.2 Adsorption Thermostat Triggered

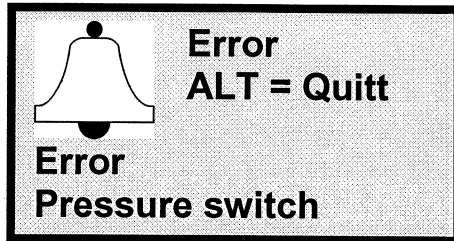


The safety thermostat of the adsorption heater has been triggered.

Possible fault source

- Semi-conductor relay of the adsorption heater faulty
- Safety thermostat of the adsorption heater faulty
- Input on Easy control relay faulty

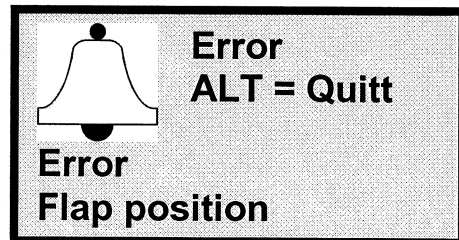
7.3 Pressure Switch Fault



The pressure switch for monitoring of the airflow did not switch.

- Possible fault source
- Faulty pressure switch
 - Inlet hose between Drier and drying silo removed or faulty
 - Silicon hose to pressure switch removed or faulty
 - Input on Easy control relay faulty

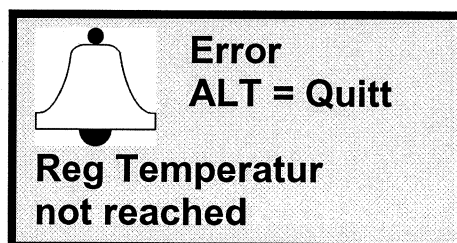
7.4 Valve Actuation Fault



The limit switch for monitoring the end positions of the reversing valve did not switch within the changeover time of 90 sec.

- Possible fault source
- Limit switch on reversing valve faulty
 - Motor actuator faulty
 - Reversing valve too stiff
 - Faulty motor actuator relay
 - Input of the limit switch or output for motor actuator on Easy control relay faulty

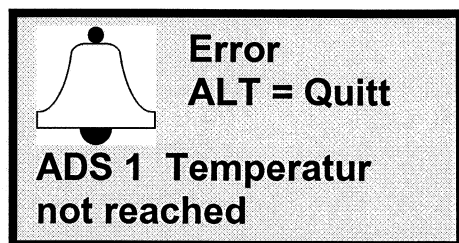
7.5 Regeneration Temperature Not Reached



During the monitoring time the regeneration temperature was not reached.

- Possible fault source
- Faulty regeneration heater
 - Faulty output for regeneration heater on Easy control relay
 - Semi-conductor relay of the regeneration heater faulty
 - Fuse for regeneration heater faulty

7.6 Adsorption Temperature Not Reached

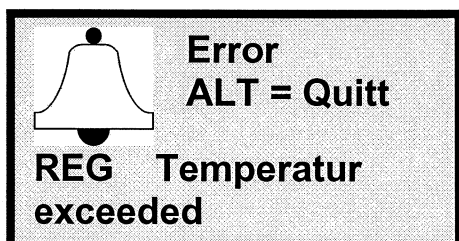


During the monitoring time the adsorption temperature was not reached.

Possible fault source

- Fuse for adsorption heater faulty
- Adsorption heater faulty
- Semi-conductor relay for adsorption heater faulty
- Faulty output for adsorption heater on Easy control relay

7.7 Regeneration Temperature Exceeded

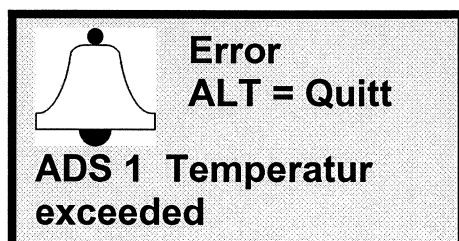


Die Regenerationstemperatur wurde überschritten.

Possible fault source

- Semi-conductor relay of the regeneration heater faulty
- Faulty output for regeneration heater on Easy control relay

7.8 Adsorption Temperature Exceeded

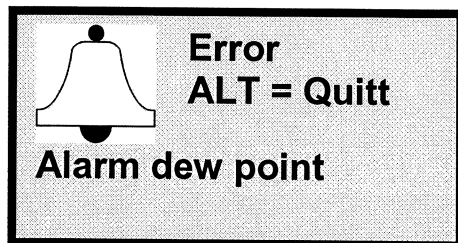


Adsorption temperature was exceeded.

Possible fault source

- Semi-conductor relay for adsorption heater faulty
- Faulty output for adsorption heater on Easy control relay
- Tolerance value of the limit comparator selected too low (<5°C)

7.9 Dew-Point Alarm (Optional)



The dew-point exceeded the limit of 0°C.

Possible fault source

- Worn drying agent
- Faulty regeneration heater
- Faulty dew-point sensor or in need of recalibration
- Air hose on dew-point sensor blocked or faulty
- Return air cooler (optional) dirty

EC Attestation of Conformity

According to the EC guide line machines 98/37/EG, appendix IIA

The legality of this attestation and the CE-sign on the name plate is valid for

Type designation KTX 50
Manufacturer Simar

This machine is developed, designed, and manufactured according to the EC guide line 98/37/EG as well as to the EC low voltage guide line 73/23/EWG and the electromagnetic compatibility guide line 89/336/EWG, in own responsibility of

Company Simar Fördertechnik GmbH, D-71665 Vaihingen / Enz

Following harmonized standards are applied

- ☒ DIN EN 292 security of machines
- ☒ DIN EN 60 204 electrical equipment for industrial machines
- ☐
- ☐
- ☐
- ☐
- ☐

Following national standards, guide lines and specifications are applied

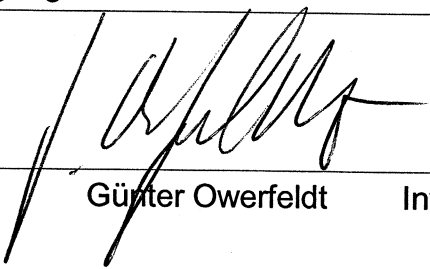
- ☐
- ☐
- ☐
- ☐
- ☐

A complete technical documentation is available.
The operating instruction for this machine is available

- ☐ in the original version
- ☒ in the national language of the user

Vaihingen/Enz, 13.08.1999


Place, date


Günter Owerfeldt

Managing Director

Information about the signatory

SYSTEM - DESIGN

MANUFACTURER:
 FÖRDERTECHNIK GmbH
Am Fuchsloch 7
D-71665 Vaihingen/Enz
Tel.: 07042/903-0

These drawings are done on a CAE system.
Changes must only be carried out by us.

COMMISSION:

CUSTOMER:

CABLE COLOURS :

MAIN CIRCUIT : BLACK
CONTROL >65 V : RED
CONTROL <65 V : DARK BLUE
ISOLATOR : LIGHT BLUE
EXTERNAL VOLTAGE : ORANGE
NON-FUSE EARTHED CONDUCTOR: GREEN/YELLOW

SWITCH CABINET:

MANUFACTURER : RITTAL
TYPE : AE 1033
PAINTING : RAL 7038
CABLE ENTRY : BELOW
DIMENSIONS BxHxT : 300x300x210

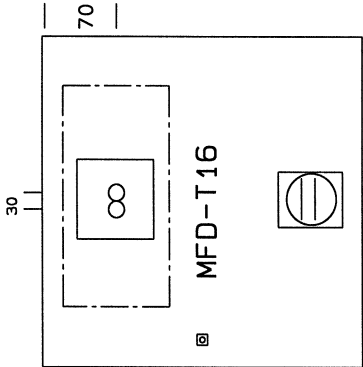
TERMINALS:

X0 : POWER SUPPLY
X1 : CONTROL VOLTAGE 230VAC
X2 : CONTROL VOLTAGE 24VDC
X3 : POTENTIAL FREE

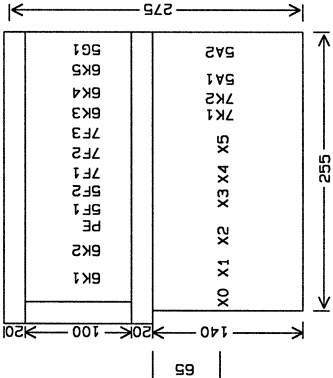
VOLTAGE :

INSTALLED POWER : ca. 3 KW
MAX. SUPPLY FUSE : 16A
POWER SUPPLY FROM: BELOW
MAINS VOLTAGE : 1/230/N/PE/50-60HZ
CONTROL VOLTAGE : 230V AC / 24V DC

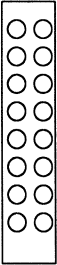
front view



mounting plate

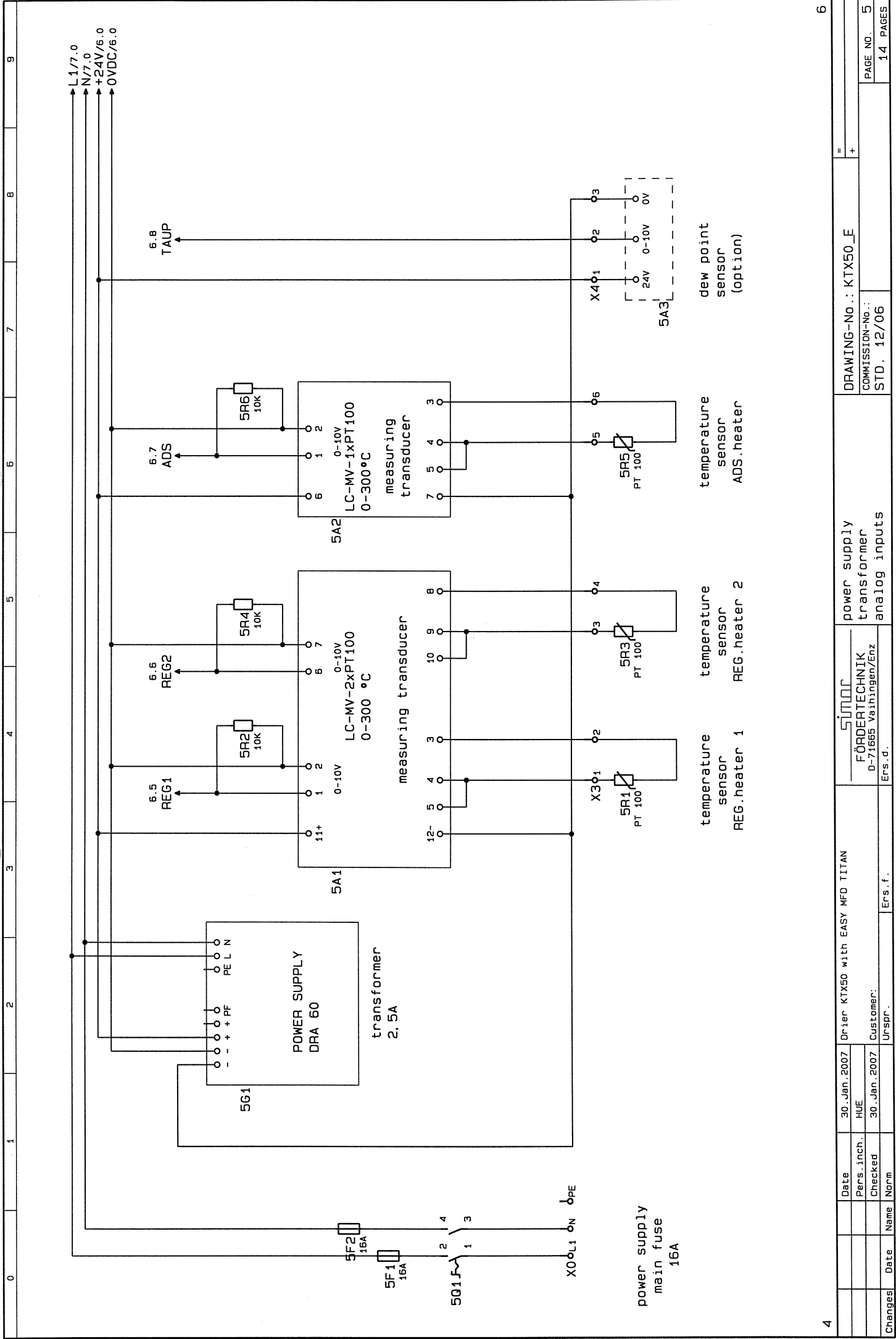


flanged plate

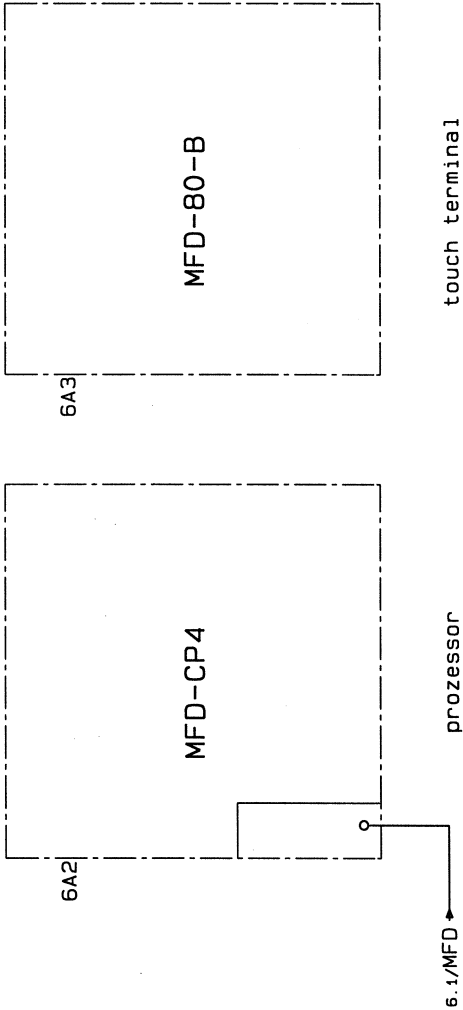


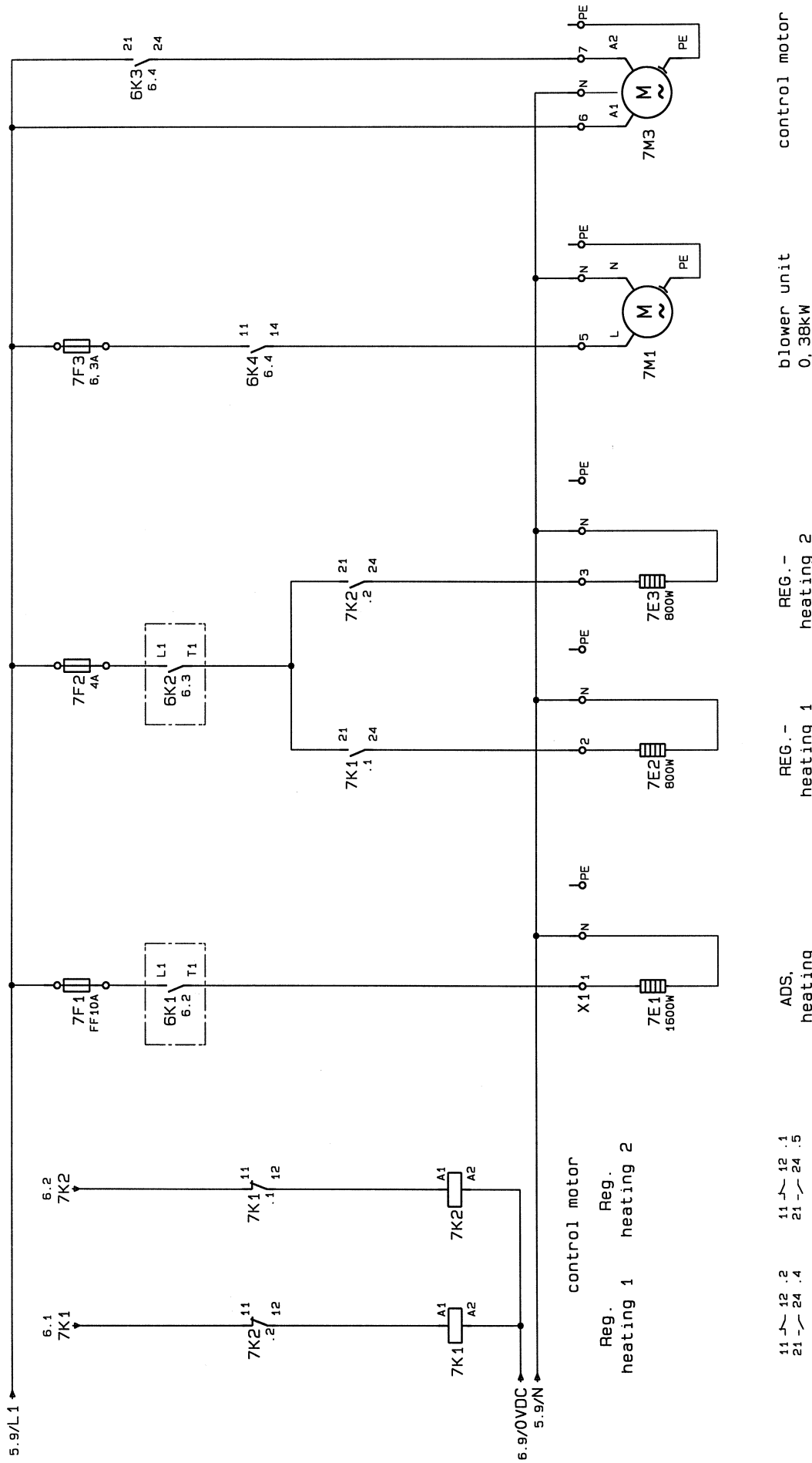
16xM16

- PE,
- X0-L, N, PE,
- X1-6xL, N, PE,
- X2-6xL, L, PE,
- X3-3xDK4
- PE
- X4-2xDK4
- PE
- X5-2xDK4
- PE



Changes	Date	Name	Norm	Checked	Date	30. Jan. 2007	HUE	Drier KTX50 with EASY MFD TITAN	power supply transformer analog inputs	power supply transformer analog inputs	DRAWING-No.: KTX50_E	+	14	PAGE NO. 5	14	PAGES
						30. Jan. 2007	Urspr.	Customer:			COMMISSION-No.:					
											STD. 12/06					





Belzner Montagen und Dienstleistungen

Gladiolenweg 7
74747 Ravenstein-Erlenbach

Telefon 06297-929290
Telefax 06297-929422

Confirmation

in accordance with article 5 paragraph 4 of the accident prevention regulation concerning „electrical installations and operational equipment“ (VBG 4) and VDE certification

To

Simar Fördertechnik GmbH

(customer's address)

Am Fuchsloch 7

71665 Vaihingen/Enz

It is herewith confirmed that the electrical installation/the electrical operational equipment/the electronic equipment of the machine or plant.

Electrical and pneumatic controls

(exact details concerning type and place of erection)

All necessary components provided, fitted and wired by Messrs Belzner.

meets the requirements stipulated in the accident prevention regulation concerning "Electrical installations and operational equipment (VBG 4).

The sole purpose of this confirmation is to release the contractor from the obligation of having to test the electrical installation (the electrical operational equipment/electro-technical equipment of the machine), or having it tested, before initial commissioning (article 5 paragraph 1,4 of VBG 4). Civil guarantee and liability claims are not regulated by this confirmation.

The installation also meets the relevant VDE and fire prevention requirements.

Manufacturer or company setting up the installation/operational equipment.

Belzner
Montagen und Dienstleistungen

Ravenstein-Erlenbach, 20.04.2006
(Place and date)

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