

Manual Switch over control Type DA-CM1-230 – (with -NC or -NO contacts)

Version: 002-EN

Author: T.Tappe

Date: 07.02.2012



Contents

1.	Pro	duct-Identification and contact data	. 3
	1.1	Control unit	. 3
	1.2	Contact data	. 3
	1.3	Information to the manufacturer	. 3
	1.4	Considered Directives	. 3
	1.5	Additional documents	. 3
	1.6	Warranty notes	. 4
	1.7	Using the operating manual	. 4
2.	Safe	ety notes	. 5
	2.1	Signs and instructions	. 5
	2.2	Intended use	. 6
	2.3	Conversion and Modifications	. 6
3.	Tec	hnical description	. 7
	3.1	Scope of supply	. 7
	3.2	Function description and application	. 8
	3.3	Function – operation modes	. 8
	3.4	Operation	. 9
	Functi	on keys:	. 9
	Menu	keys :	. 9
4.	Trai	nsportation, setting up and storage	10
	4.1	Incoming inspection	10
	4.2	Transportation	10
	4.3	Storage	10
5.	Inst	allation	10
	5.1	Mounting	10
	5.2	Installing power supply	10
6.	Star	t up	11
	6.1	Requirements for initial commissioning	11
	6.2	Initial start up	11
	6.3	Setting of date and time	12
	6.4	Setting of changeover times for automatic operation	12
	6.5	Changeover interval, examples	13
7.	Shu	tting down the controller	14
	7.1	Shutting down the controller in case of emergency	14
	7.2	Stopping the controller	14
	7.3	Shutting down the controller	14
8.	Mai	ntenance	14
	8.1	Maintenance activity	14
9.	Disa	assembly and disposal	15
10). App	endix and technical documents	15
	10.1	Electrical diagram	15

1. Product-Identification and contact data

1.1 Control unit

Model:	DA-CM1-230-*	(*: Please add -NC or -NO contacts, further Info see page 15)
Manufacturing no.:		
Year of manufacture:		

1.2 Contact data

Name:	
Company:	
Address:	
Phone / Fax:	
E-mail:	

Please fill in the fields according to the type plate and your contract documents. This data enables the manufacturer to clearly identify the controller and simplifies service and provision of the proper spare parts.

A part of the listed information and further details you will on the name plate inside the panel.

1.3 Information to the manufacturer

ATESI Elektrotechnik GmbH Marienhütte 37 – D-57080 Siegen

1.4 Considered Directives

IEC / EN	IEC / EN 60 439-1 / VDE 0660 Part 500 ICE / EN 60 204-1 / VDE 0113 Part 1
Designation	CE

1.5 Additional documents

- Manual (on hand)
- Electrical diagram

Note on additional documents

Additional documents (e.g. of the components) must be adhered to. They contain additional information, e.g. on maintenance, and are therefore necessary for safe operation of the controller.

1.6 Warranty notes

In the following cases the warranty shall be void:

- If aggressive substances in the compressed air or ambient air cause damage to the controller.
- If electromagnetic energy from the ambiance disturb the function.
- If the controller is used for anything other than its intended use.
- If the controller was incorrect transported or stored.
- If the controller was incorrect installed.
- If the controller was incorrect serviced or maintained.
- If the controller is operated or maintained by personnel who do not have the required qualifications. (→ see "Target group": (→ Page 1).
- If the controller was modified. Modifications need to be agreed by the manufacturer.
- If the safety notes and instructions of this operating manual and of the additional documents are not observed.

The manufacturer accepts no liability for damages resulting from disregard of the operating manual.

1.7 Using the operating manual

This operating manual contains all the technical information required for installation and operation of the controller.

Target group

This operating manual is directed to all persons working on and with this controller and connected dryers. We point out that these persons have to be qualified personnel who, because auf their qualification and experience, are familiar with handling compressed air systems and electrical systems. If you are not experienced in using these systems, please ask the relevant experts for help. We highly recommend that commissioning and maintenance be carried out by the manufacturer or one of the authorised service partners.

Using the operating manual

Please read the operating manual and the additional documents (electrical diagram) carefully prior to installation and follow the notes and instructions. Safe and proper operation of the controller can only be guaranteed if the instructions and notes are observed. The safety notes must be observed in particular.

The operating manual must be kept in the vicinity of the controller and must be easily accessible.

The manufacturer accepts no liability for damages resulting from disregard of the operating manual.

All the information in this operating manual is valid at the time the manual is published. Due to component or workflow modifications at any time affecting dryer maintenance, the latest information should be available prior to maintenance work.

Signs and symbols used

Boxes are used for bulleted lists

Note! :

This colour strip refers to matters that should be given special attention. Observing the notes helps to ensure safe handling of the product.



CAUTION !

This symbol indicates a possible harmful situation. When not avoiding this situation, there is a danger of damage to the product or to adjacent system components.



DANGER !

Grey highlighted symbol indicates an immediate impending danger. Not avoiding this danger results in serious injury or death.

2. Safety notes

The controller has been built according to state-of-the-art technology and recognised safety rules. However, there is a risk of danger that every person working with the controller must be aware of...

- Work on electrical components must only be carried out by qualified and authorised personnel.
- Modifications to the control system may result in dangerous operating states
- Any other use is considered improper and therefore not permissible.

Work on electrical components must only be carried out by qualified and authorised personnel!

2.1 Signs and instructions



Danger

Electric voltage

Work on electrical components must only be carried out by qualified and authorised personnel. Use a voltage detector to make sure the dryer has been disconnected from the power supply and that there are no live parts before starting maintenance work.

2.2 Intended use

The controller is exclusively designed as switch-over-control for compressed air dryers. The controller is designed to operate 2 dryers + accessories

- Power supply 230 V / 50 Hz
- Total rated current 20 A

The controller is designed to be set up at a site that complies with the following requirements ...

- Indoors
- Protected against weather impact
- Ventilated
- Frost-free
- Dry
- Zero to minimum dust-laden ambient air
- No vibration via floor or connected piping
- Ambient air must be free from aggressive and corrosive substances
- Ambient air must be free from substances that damage the desiccant or influence its effectiveness (e.g. ammonia or other alkaline-reacting substances, oil mist, water spray or drizzle)
- Free from dangers due to explosive atmospheres inside and outside the dryer. (The standard dryer version does not comply with ATEX.)

2.3 Conversion and Modifications

Modifications to the controller or use of third-party parts may cause unpredictable danger and damage. Any other use is considered improper and therefore not permissible. The manufacturer accepts no liability caused by improper use.

3. Technical description

3.1 Scope of supply



- Carbon steel panel 380 x 380 x 210 mm, fabr. Rittal, painted, IP54,
- Power supply 1Ph 230V/50Hz, with main switch and switching power supply 24VDC
- Rated current 20 A
- Output- power supply:

power supply 230VAC for dryer 1, dryer 2, ball valve actuator line 1 and line 2, and condensate drains for pre filter 1 and pre filter 2 power supply 24VDC for 2 differential pressure gauges

- Control module " JZ 10-11-R31", to control 2 dryers,
- incl. real time clock and buffer battery for 10 years
- Operation and fault signal lamp per dryer line
- Signal Input
 - Common fault per dryer
 - Fault per condensate drain
 - Fault per differential pressure gauge
 - Remote Start/Stop
 - 3 spare digital input
 - 2 spare analogue input
 - 2 spare inputs (selectable, digital or analogue)
- Signal Output
 - Operation per dryer (incl. belonging condensate drain, differential pressure gauge, shut-off line valve and ventilation flap if used)
 - Operation signal per dryer
 - 2 spare output

3.2 Function description and application

The switch over control is designed to control two redundant (2x100%) compressed air dryers, for frequently automatic change over, and change over if other line has a fault.

All dryers with "Remote-Start/Stop-contact" or "compressor synchronisation contact" can be connected without any modification.

Heatless adsorption dryer with low power consumption (only for control power) can be supplied with 230VAC directly from the switch over control.

For switch on and off each dryer, the controller uses the remote start/stop or compressor synchronisation contact of each dryer.

Installed line shut-off valves, like ball valves or butterfly valves with electrical or pneumatic actuator and pilot valve (installed by client) can be switched simultaneous to the dryer operation. The Standard programming considers operation of normally open valves (actuators spring return NO). This assures that if the power supply to this controller is not available, that both dryer could operate and line valves are open. A normally closed version (NC) will be available as well, but FST needs this information before the unit will be delivered.

Further input signals can be linked into the common fault signal.

For each line are already following input contacts prepared "fault condensate drain" and "Filter differential pressure to high".

3.3 Function – operation modes

- In "Automatic mode", the controller change between both dryers acc. the programmed days and time. If there is a fault at one dryer line (alarm signal on heatless dryers only available with installed dew point sensor) the controller starts the other dryer and switch off the fault one after that. The installed line shut-off valves will.
- In "Manual mode" can be selected to run dryer 1, dryer 2, or both dryers. Manual keys (1,2,3 and 6) are only active, if the control mode is on "Local Mode" and controller was started (key 4).
- In "Local control" are all keys active. The complete unit (incl. dryers and valves) can be started and stopped, and above described "manual operation" is enable.
- **In "Remote control"** are all keys at the controller disable. In remote mode the unit can only start and stop by the remote start/stop contact.



3.4 Operation

Function keys:

Manual selection (only in local control) : dryer 1 (key 1) , dryer 2 (key 2), both dryer (key 3)

",Start" / ",Stop" (only in local mode) with key 4 + 5

Selection between "local mode" / "remote mode" with key 7 + 8

Selection between "Automatic-Operation" / "Manual Operation with key 6 + 9

With the Reset-key "0" the operating hours can be reset to "0" (Enter correct password and press key "0" for 5 sec.)



Menu keys :

With the menu keys you enter, and operate in the menu structure 18:54:47 07/02/2010 Dry 1 Auto. mode Setting Changeover timing No Alarms No Warnings Change Password 6 ocal Control -Operating hours & 1:00128//2:00156 Dryer 1 Day/Timel MON+/06:00-17:59 Dryer 1 OK Old Password \blacktriangle 4x key 0-9 Dryer 2 Day/Time 10N+/18:00-06:00 Password OK Dryer 2 OK 6 2 Sec. witchover delay MM:SS / 00:05 Condensate F1 OK New Password \checkmark 0-9 ب Diff.-Press. F1 OK Password changed 0 \land Condensate F2 οк \land Diff.-Press. F2 OK

4. Transportation, setting up and storage

4.1 Incoming inspection

Although great care is taken damages caused by transportation cannot be ruled out. Therefore, always check the controller for possible damages after transportation and packaging removal. The haulage contractor and the manufacturer or the sales partner must immediately be informed about any damage.

4.2 Transportation

Persons responsible for transportation must be appropriately qualified. Use only adequate transport and lifting equipment.

4.3 Storage

To maintain the dryer quality the dryer must be stored at a suitable location and properly prepared for storage.

The place of storage has to fulfil the following requirements:

- Indoors
- Protected against weather impact
- Frost-free
- Dry

5. Installation

5.1 Mounting

The control is to be fastened to the mounting holes prepared for it by means of suitable fixing bolts to the wall or to a suitable rack surely. The manufacturer is not responsible for damage, which results from inappropriate assembly.

5.2 Installing power supply



DANGER ! – Electric voltage

The controller is operated at electric voltages up to 230 V. Touching live parts may result in serious injury or death.

Work on electrical components must only be carried out by qualified and authorised personnel. Use a voltage detector to make sure the dryer has been disconnected from the power supply and that there are no live parts before starting maintenance work. In the event of fire, do not extinguish the fire using water.

- Pull the cable for voltage supply through the cable entry plate and connect it to the supply terminals. (see attached electrical diagram)
- Pull the cables for outgoing power supplies, and the cables for exchange signals through the cable entry plate and connect it to the destined contacts. (see attached electrical diagram). The terminal connection from the connected equipment is to taken from the respective electrical diagrams, and to register handwritten in the electrical diagram of this control.
- Don't make under any circumstances changes at the controller, without previous consultation with the manufacturer.



CAUTION ! – Moisture in electrical components

Long-term storage may lead to penetration of moisture into electrical components. This may result in short circuits or damages to these components.

- Check the electrical dryer components for internal moisture.
- The necessary actions must only be performed by a qualified electrician.
- Prior to commissioning an insulation resistance test must be carried out on the electric heater and on the blower motor.
- The insulation resistance to earth and between the individual phases must be checked.

6. Start up



DANGER ! – Electric voltage

Work on electrical components must only be carried out by qualified and authorised personnel. Before work in the cabinet voltage supply is to be switched off.

6.1 Requirements for initial commissioning

- Examine, that all connected equipment is wired acc. the electrical diagram.
- Make sure the cable clamps in the control box are tightly secured. Tighten all the screw connections using the appropriate tools.
- Check all the components for visible damages. If there are defective components, commissioning of the controller is not permitted.
- Examine, that all cables are properly installed and can't scrub at sharp edges.
- Remove all loose parts and tools.

The examination is valid also for the wiring on the connected equipment.

6.2 Initial start up

- Switch main switch "ON".
- Switch both dryers on.
- Check fault, and input signals.
- Select "Local mode" and "Manual operation". Now start both dryers, and check whether dryer works, and that the line shut-off valve opens.
- Try to change between the dryers manually.
- Change to "Auto operation" and check function, by creating a fault signal.
- Change to "Remote mode" and check whether "Remote contact" works if connected.

6.3 Setting of date and time



6.4 Setting of changeover times for automatic operation

Dry 1 Auto. Mode
Starting from the main display 🔄 ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ
Display will change to Setting for Switchover.
Select timer (Dry 1 – Dry 2) by pressing Z: SUN+/06:00/17:59
Enter Input mode by pressing . With key "3" you can change between the days (SUN, MON), and to
each day you can select with 🔽 "+" or "". "+" means that switching time will be enable for this day,
and " " is unable.
If you press again 🔤 the display returns to "SUN" and now can enter the start time (by using the num-
berkeys). Dryer1 Day/Time SUN+/00:00/18:00
Press again 🕶 Now you can enter the stop time, confirm with 🔁.
NOTE : The entered start and stop time of a timer is for every day the same.
With keys 🔽, 🔺 change to the next timer of the other dryer, or with 🔟 back to main display.

6.5 Changeover interval, examples

12 hour changeover interval





24 hour changeover interval

18/6 hour Changeover interval





13

7. Shutting down the controller

7.1 Shutting down the controller in case of emergency

- Set the main circuit breaker to the "0-OFF" position.
 - NOTE : If contacts for dryers and line shut-off valves are NC-Version,
- dryer and valves will operate if power on this controller is switched OFF (see also page 15)

7.2 Stopping the controller

- Change to "Local mode" if controller operates in "Remote mode".
- Press key "Local Stop" (5).

7.3 Shutting down the controller

- Change to "Local mode" if controller operates in "Remote mode".
- Press key "Local Stop" (5).
 - Set the main circuit breaker to the "0-OFF" position.
 - NOTE : If contacts for dryers and line shut-off valves are NC-Version,
 - dryer and valves will operate if power on this controller is switched OFF (see also page 15)

8. Maintenance

8.1 Maintenance activity



DANGER ! – Electric voltage

Work on electrical components must only be carried out by qualified and authorised personnel. Maintenance must only be carried out if the controller is disconnected from the power supply.

- Check monthly function of lamps and display.
- Year : The cable connections may be loosened due to vibrations. To prevent malfunctions from occurring, all the cable connections must be checked to ensure that they are securely fixed. The necessary actions must only be performed by a qualified electrician.
- Year : Check all the components for visible damages. If there are defective components, commissioning of the controller is not permitted. Replace any damaged or corroded components.

9. Disassembly and disposal

The waste code will have to be determined by the waste producer taking the type of contamination into consideration.

Waste code acc. to the waste catalogue ordinance

used electrical components : 160211 (European waste code)

10. Appendix and technical documents

10.1 Electrical diagram

- ZEP-S-AT-4637-NC (NC contact for dryer operation, and NC open shut-Off valves. Preferred version (cable fail safe), cause if power is lost, both dryer and valves will operate if they have still their own power supply). or
- ZEP-S-AT-4637-NO (NO contact for dryer operation, and NO open shut-Off valves. With this version you will switch off the whole equipment if you switch the main switch of the controller off, or if you have power lost on the controller.