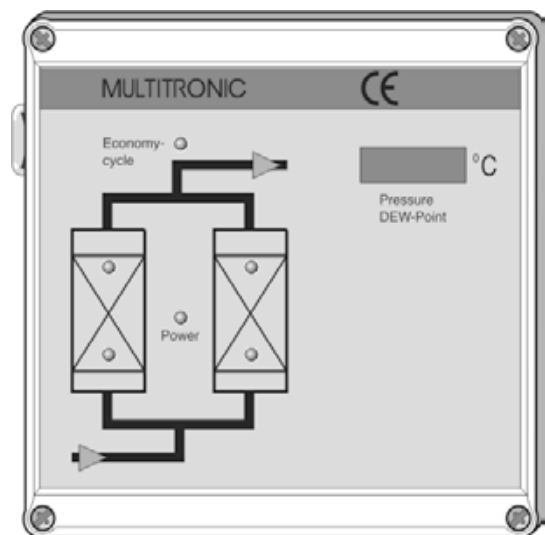




**Control system**  
**MULTITRONIC**  
**Retrofit Kit**



**Installation Guidelines**

**ADDENDUM - TO BE USED ONLY IN CONJUNCTION  
WITH *MULTITRONIC* SUMMARY OPERATING  
MANUAL!**

**Issue 06-2004/EN**



# Declaration of Conformity

**ZANDER Aufbereitungstechnik GmbH & CO KG**

**Im Teelbruch 118**

**D-45219 Essen Kettwig**

hereby declares with sole responsibility, that the products

**Control systems for heatless regenerated adsorption dryers**

**Retrofit Kit (Plus) Multitronic**

to which this declaration applies, conform to the specification of Directive 89/336/EEC including appendices, as shown in tests and as a result of compliance with harmonised standards:

The following harmonised standards were used:

- DIN EN 55011, DIN EN 61000, DIN EN 60204

The following other EC directives were used:

- 73/23/EC

Date: 01. April 2003

*Signature*



Dr. Walter Steudle  
Managing Director

# Table of contents

|   |           |
|---|-----------|
| <b>Declaration of Conformity</b> .....                              | <b>2</b>  |
| <b>General information</b> .....                                    | <b>2</b>  |
| Manufacturer's details.....   | 2         |
| Scope of delivery .....   | 3         |
| Warranty notes.....   | 3         |
| About these installation guidelines.....                            | 4         |
| <b>For your own safety</b> .....                                    | <b>5</b>  |
| General safety notes.....   | 5         |
| Safety notes on specific operating phases.....                      | 6         |
| <b>Technical product description</b> .....                          | <b>7</b>  |
| <b>Transportation and storage</b> .....                             | <b>8</b>  |
| Information on transportation packaging.....                        | 8         |
| What to do in the case of transport damage occurring?.....          | 8         |
| Storing the control system .....                                    | 8         |
| <b>Installation</b> .....   | <b>9</b>  |
| Preparation .....   | 9         |
| Connecting cables and mounting the switch box.....                  | 10        |
| Mounting the sensor cell and connecting the sensor (optional) ..... | 10        |
| Internal connections and switches .....                             | 11        |
| Installing the electrical connection.....                           | 13        |
| <b>Additional information</b> .....                                 | <b>14</b> |

## General information

### Manufacturer's details

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#### Name and address

|  |  |
|--|--|
| <b>Zander Aufbereitungstechnik GmbH &amp; Co. KG</b> |  |
| Im Teelbruch 118                                     | Postfach 185524                                    |
| 45219 Essen  | 45205 Essen  |
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| Fax  | ++49 (0)2054/934-164                               |
| Internet:  | <a href="http://www.zander.de">www.zander.de</a>   |
| E-Mail:  | <a href="mailto:info@zander.de">info@zander.de</a> |

#### Service and orders

##### **Service and replacement part order**

Telephone ++49 (0)2054/934-180

Fax ++49 (0)2054/934-117

You can also use these telephone numbers to order consumables such as drying agents etc. as well as replacement parts. When ordering replacement parts, always state the type and build no. of the dryer. Both are shown on the type plate of the dryer.

##### **Enquiries and other orders**

Telephone ++49 (0)2054/934-134

Fax ++49 (0)2054/934-139

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## Scope of delivery

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The *Multitronic Retrofit Kit* consists of the following components:

- Control unit in switch box
- Wiring harness, customised, with cable glands
- 4 self-adhesive dots

or:

*Multitronic Retrofit Kit **Plus***

- Control unit in switch box
- Wiring harness, customised, with cable glands
- 4 self-adhesive dots
- ZHM 100 dewpoint sensor, in protective packaging
- Sensor cell for sensor, complete
- Connecting cable for sensor

Associated documents:

- Summary operating instructions *Multitronic*
- Installation guidelines *Multitronic* (present)
- Type plate

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## Warranty notes

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In the following cases, the warranty shall be void:

- If the control system is used without prior approval and confirmation in writing by the manufacturer for purposes other than those specified in these installation guidelines or contractually agreed.
- If the control system is transported or stored incorrectly.
- If the control system is installed incorrectly.
- If the control system is repaired or maintained incorrectly.
- If the control system is operated by personnel that does not have the requisite qualifications.
- If modifications are carried out on the control system, the manufacturer did not approve that.

The manufacturer shall not be held liable for possible consequential damage to the controlled devices, caused by improper installation or operation of the control system.

## About these installation guidelines

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These installation guidelines contain basic information on the safe use of the control system.

### Characters and symbols used

- ▶ Work steps that you have to carry out in the sequence stated are marked by black triangles.
- Lists are marked by a small box.

#### Note:

**These notes provide you with hints and information on the safe and efficient handling of machines and devices.**



#### Warning!

**These safety notes warn against damage to property and help you to avoid such damage.**



#### Danger!

**These danger notes with a grey background warn against personal injury and/or danger to life and limb; danger notes help you to avoid serious or life-threatening situations for yourself and/or third parties.**

### Target group of these installation guidelines

These instructions have been specifically drawn up for persons involved in the installation, configuration and maintenance of the control system. We assume that these persons are

- trained technical staff, e.g. electricians, who
- have already carefully read and fully understood the summary operating instructions of the summary operating manual of the *Multitronic* control system.

### Installation guidelines: handling

These installation guidelines must be continuously available at the site where the control system is used. We recommend to prepare a copy and to keep the same in a safe and freely accessible place next to the control system. Keep the original document in a safe place.

## For your own safety

The control system has been built in accordance with the state of the art and the recognized technical safety regulations. Nevertheless, there is a risk of personal injury and damage to property when the control system is used, if

- it is operated by non-qualified personnel,
- not used within its intended design specifications,
- is repaired or maintained incorrectly.

## General safety notes



**For your own safety, when carrying out any work on the dryer comply with all applicable national safety regulations!**

### Intended use of the control system

The *Multitronic* control system is designed as a retrofit or replacement kit for **cold regeneration** adsorption dryers for compressed air that are equipped with electrically operated input and blow-off valves. The control system is customised to suit dryers of the specified series (or the specified model); it may only be used in devices that feature the agreed

- supply voltage
- valve types, and
- control cycles.

### Suspected misuse

Never use the *Multitronic* control system in conjunction with

- heat regeneration dryers,
- dryers equipped with extras, e.g. blower or heat exchanger.

If in doubt, contact the manufacturer, who will advise you on the retrofitting options.

### Personnel qualification



**Danger! Risk of electrocution!**

**All work at electrical components must be carried out by authorised and suitably qualified technical personnel!**

All persons involved in work on the *Multitronic* control system and persons operating the system must first read the summary operating manual and these installation instructions.

## Installation and modifications

The control system may only be modified

- if the respective modification is described in this installation manual,

or

- if the manufacturer has given his explicit consent in writing; these rules apply also accordingly to work in connection with installation.

## Safety notes on specific operating phases

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### General safety measures to be taken during operation



#### Warning against electrical voltage

Only qualified specialist personnel may carry out work on the electrical system!

### Safety during installation and decommissioning



#### Risk of injury due to voltage-carrying parts!

The electrical supply cable and external power lines are live even after the dryer is switched off and, in the event of body contact, may cause serious injury! Before carrying out any work on the electrical system, the electrical supply cable and all external power lines must be made voltage-free!

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## Technical product description

The *Multitronic Retrofit Kit* is a complete control unit designed for installation (retrofitting or replacement) and use in most compressed air adsorption dryer models with cold regeneration. It is suitable for dryers with 1 or 2 blow-off valves (3-valve or 4-valve models) as well as for dryers equipped with an additional pressure build-up valve (5-valve models). Whether the dryer is controlled directly or by means of pilot valve is thus not relevant.

The control system is factory-configured to suit the dryer type, whereby the necessary relays are installed and the cycle times, supply voltage and signal contacts are adjusted.

The *Multitronic Retrofit Kit* is a compact assembly whose components are not available as separate spare parts.

The *Multitronic Retrofit Kit Plus* consists of the standard kit and additional components for the measuring of the dewpoint.

For more information, please refer to the included summary operating manual of the *Multitronic* system.

## Transportation and storage

The manufacturer will not be liable for any damage caused by incorrect storage or incorrect transportation. Please note therefore the following instructions.

### Information on transportation packaging

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The control system is supplied in a sturdy cardboard box.

#### If the packaging is undamaged

- ▶ Leave the system in the undamaged packaging until all preparations for the installation are completed.

### What to do in the case of transport damage occurring?

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- ▶ Check whether only the packaging or the control system itself were damaged.
- ▶ If any damage is found, please contact the manufacturer immediately to file a damage report. The telephone number is found on page 2.



#### **Warning!**

**A damaged control system must not be taken into operation! Damaged components may lead to functional faults and possibly cause further damage.**

### Storing the control system

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If the control system is to be stored for an extended period of time, the storage location must meet the following conditions:

- Store device in dry room and protect it against dust.
- Ensure that the ambient temperature is between +1 °C and +50 °C.

# Installation



Only authorized and qualified specialist personnel may carry out work on electrical systems.



**Hazard due to a sudden release of pressure!**

Never remove any parts of the dryer, or manipulate the same in any way, for as long as the plant is still pressurised! A sudden escape of pressure may cause serious injuries.

Before carrying out any work on the dryer, first depressurise the plant.

## Preparation

### Inspection of delivered goods

- ▶ Inspect delivery for completeness.
- ▶ Check the details regarding the power supply with the data on the original type plate of the dryer to be retrofitted and ensure that the specifications are matching.

### Preparing the dryer

- ▶ Release all pressure from the unit and disconnect it from the power supply.
- ▶ Secure against inadvertent switching on.
- ▶ Preparing mounting area. If necessary, dismantle existing control system and remove cables.
- ▶ Clean mounting surface and ensure that it is free from dust and grease; use only solvent-free detergents.
- ▶ Optional for *Retrofit Kit Plus*: For the installation of the sensor cell at the compressed air outlet, you must mount a suitable branch fitting (T-piece) after the dust filter. In large units, it is generally possible to install an additional outlet line in the existing control air pipe.  
Define the place at which you wish to mount the sensor cell; the cell's power supply line should be from the side, while the sensor cell and the sensor are mounted vertically.
- ▶ Position the self-adhesive dots (not reusable) to mark the mounting position of the switch box.
- ▶ Remove the type plate and mark it as invalid.
- ▶ Attach the new supplied type plate; add missing data using a water-proof felt pen.

## Connecting cables and mounting the switch box

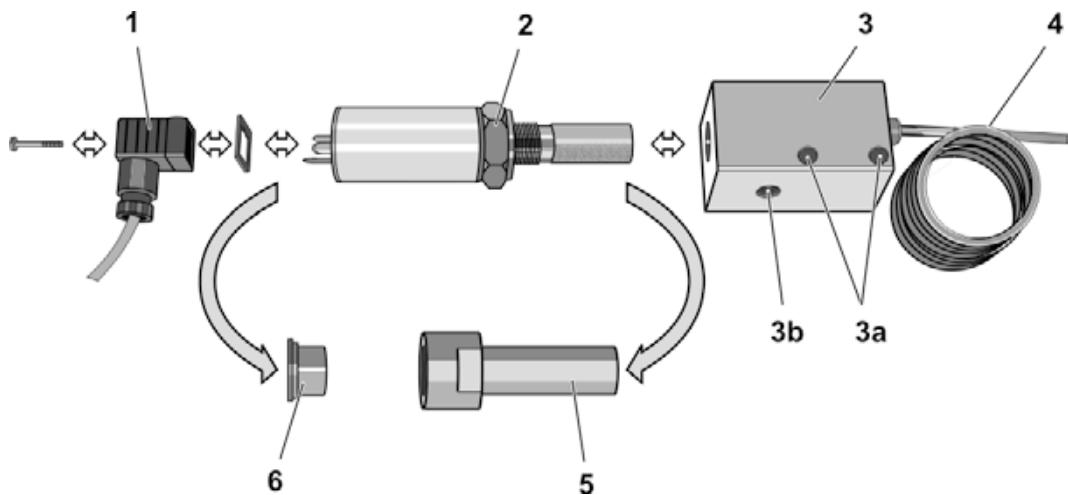
For an overview of the general layout of the circuit board, please refer to the diagram on page 11. To mount the switch box and wiring harness, proceed as follows:

- ▶ Check whether the selected position of the switch box and the cable connections to the valves are suitable by holding the box against the unit. The maximum cable length is 1300 mm. Mount conduits, if necessary.
- ▶ Connect wiring harness to the solenoid valves of the dryer.
- ▶ Insert harness through the centre metric cable gland at the base of the switch box.
- ▶ Connect the cables for the individual solenoid valves to the respective terminal bar.
  - In 3-valve models with normally closed main valves:  
Y1-Y2 to terminal bar X1-X2;  
bridge terminal bars X3 and X4, then connect Y3 to X3.
  - In 4-valve models with normally closed main valves:  
Y1-Y4 to terminal bar X1-X4.
  - In 4-valve models with normally open main valves:  
Y1 to X2, Y2 to X1; Y3 to X3 and Y4 to X4.
  - In 5-valve models with normally closed main valves:  
Y1-Y5 to X1-X5.

For detailed instructions regarding correct wiring, please refer to page 12 ff.

- ▶ Attach the switch box in the correct position, using the four self-adhesive dots.

## Mounting the sensor cell and connecting the sensor (optional)



*Installation of dewpoint sensing system (optional)*

To enable dewpoint measuring (optional), the sensor cell (3) must be mounted on the outlet side of the dryer to the outlet line (4):

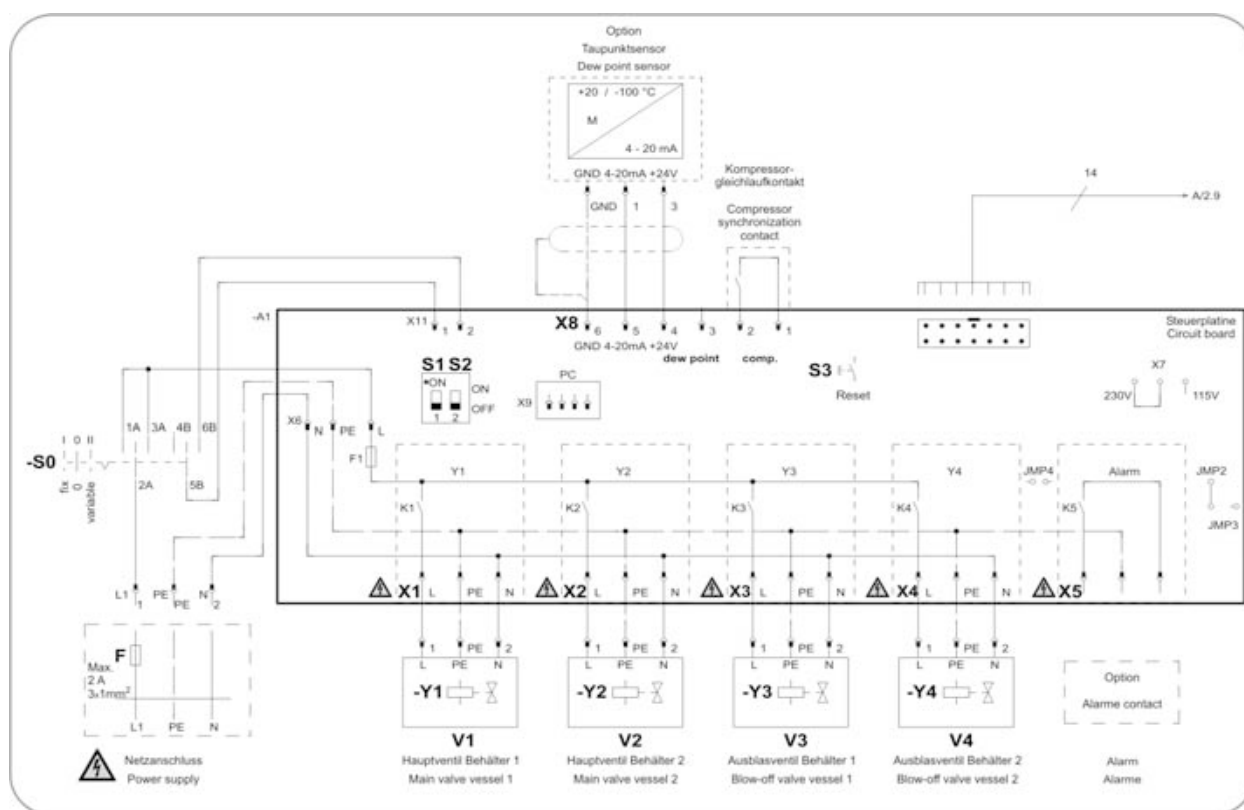
- ▶ Secure the sensor cell at a suitable place (i.e. near the compressed air outlet) and in a vertical position, using the two threaded 6.5-mm bores (3a).

- ▶ Connect the sensor cell to the outlet end of the partial flow to be analysed: Connect the components with the 1/8" threaded bore (3b), the quick-fit couplings and the 4-6mm connecting hose.
- ▶ Mount the sensor: remove the protective caps (5, 6)\_ and screw sensor (2) into the cell.
- ▶ Connect the sensor to the signal cable. Place seal onto the sealing face; connect coupler socket (1) and secure it by tightening the screw.

The coupler socket and the signal cable are factory-wired. For details of the wiring of the signal cable and the circuit board, see page 13.

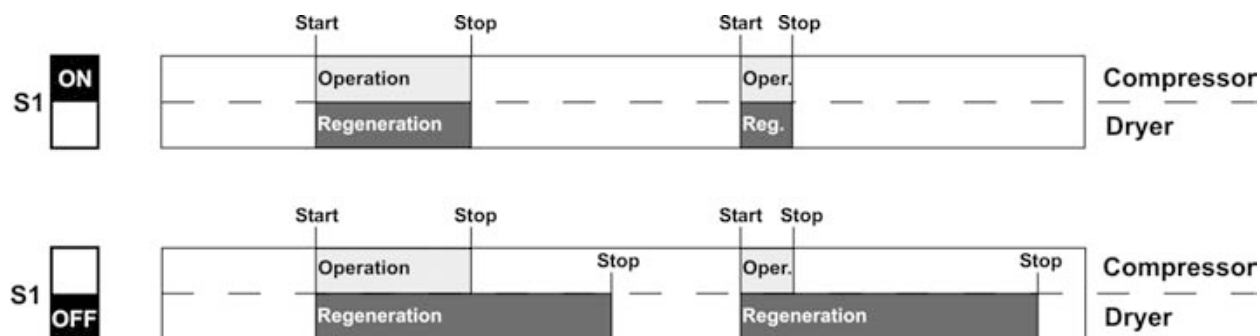
## Internal connections and switches

The following diagram shows the general layout of the circuit board including connections.



General wiring diagram of the 4-valve model [5-valve model only available without alarm contact]

### Switch S1





**Risk of injury from live parts!**

After connection to the power mains, the terminal bars, electrical supply cables and external lines are live and may cause serious injury if touched!

Therefore, first connect all wires of the valve control system and complete all necessary modifications and settings to the unit; only then connect the system to the power supply line.

Prior to carrying out any work at electrical components, disconnect the power supply line and any additional external supply cables!

## Valve control connections

### In 3-valve models with normally closed main valves

- ▶ Connect solenoid valves Y1–Y2 to terminal bars X1–X2.
- ▶ Bridge terminal bars X3 and X4.
- ▶ Connect solenoid valve Y3 to X3.

### In 4-valve models with normally closed main valves

- ▶ Connect solenoid valves Y1–Y4 to terminal bars X1–X4.

### In 4-valve models with normally open main valves

During the processing of breathing air, the main valves of the dryer are normally open, i.e. air can circulate.

- ▶ Connect solenoid valve Y1 to X2 and valve Y2 to X1; connect blow-off valve Y3 to X3 and valve Y4 to X4.

### In 5-valve models

The pressure build-up valve Y5 is wired via X5.

- ▶ Connect solenoid valves Y1–Y5 to terminal bars X1–X5.

## Connection of synchronised compressor operation – X8

Terminal bar X8 with terminals 1 and 2 is used as the input contact.

- ▶ Connect the signal line of potential-free busbar of the compressor.

For operation without compressor synchronisation, bridge terminals 1 and 2.

## Connection of optional operating alarm – X5

The board is equipped with an optional terminal bar X5 for the alarm (not available in 5-valve models). This ensures that the contact at X5 is opened in the event of an alarm or power failure.

## Connection of optional dewpoint sensor unit – X8, X5 and S2

Terminal bar X8 provides the input terminals for the dewpoint sensing system.

- ▶ Connect the signal cable of the sensor to terminals 4 (brown), 5 (white) and 6 (green) on terminal bar X8.
- ▶ If you wish to connect an external dewpoint sensing system with a 4-20 mA output, use only terminals 5 (4-20 mA) and 6 (PE/GND) of bar X8.
- ▶ If you wish to connect the alarm contact of an external dewpoint sensor to control the *Multitronic*, it must be designed as a potential-free normally closed contact and connected to terminals 3 and 4 on bar X8. In this case, DIP switch S2 must be set to position OFF to ensure that the display does not show a sensor error (“SENS”).

The terminal bar X5 is designed as a potential-free alarm contact for the output of an auto-resetting dewpoint alarm (not available in 5-valve models or in conjunction with an external digital input port).

By default, the dewpoint alarm is set to a value of +5 °C above the respective nominal switching value for dewpoint sensor control.

- ▶ If the current dewpoint measured via the 4-20 mA input is to be shown the *Multitronic* display, set DIP switch S2 to position ON.

## Resetting system

Switch S3 is used as the reset key. It enables operators to reset the currently run programme.

In order to prevent sudden changes in pressure when the system switches between the vessels, only certain steps of the programme procedure are reset (see logical diagram in the *Multitronic* summary operating manual).

## Display and configuration of the nominal dewpoint value

The display board located in the cover of the switch box is equipped with a plus/minus key labelled “Dewpoint +/-”.

- To view the preset nominal value, press the key once (ensure that the control system is on).
- To adjust the nominal value, press key again; the value is adjusted in steps of 1 degree.

The default value is –40 °C. If the measured dewpoint reaches this value, the system switches vessels.

## Installing the electrical connection

For instructions on how to connect the unit to the power supply system, please refer to the *Multitronic* summary operating manual.

## Additional information

**Note:**

For additional information regarding commissioning, operation and decommissioning of the control system, please refer to the enclosed summary operating manual of the *Multitronic* system and the operating instructions of your dryer.