

## **Air Heater System Airtherm**

**Art. No. 140-112-x-x**  
**Art. No. 140-112-x-x/2**



**Operating Instructions**

English 10/2010

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## Copyright

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## Validity and technical state of these operating instructions

These operating instructions apply to the Airtherm Air Heater System.  
It corresponds to the

- European standard EN 12100-1 and 12100-2
- Machine regulations 98/37/EG
- EMV - regulations 89/336/EWG
- Pressure device regulations 97/23/EG
- Device use regulations 89/655/EWG.

Technical modifications after date of printing are not considered. Subjected to be changed without notice.

Issue date of the operating instructions: October 2010

## General notes

All information given in this manual are collected and checked to the best of one's knowledge and belief.

**Read before installation and start-up of the equipment the manual attentively and always keep these in the proximity of the equipment.**

VISECO GmbH does not take any liability to any kind of damages resulting from incorrect operation or handling, misuse, unauthorized technical modifications, incorrect connection or from repairs by unauthorized personnel.

If it comes to a sale of the equipment by the customer into the non-European marketing area, no adhesions are taken over by VISECO GmbH. The equipment is conceived, built and documented exclusively for the European marketing area.

Upon resale of the equipment into the non-European area the salesman has the obligation to fulfil all legal editions of the respective marketing area/country.

## Safety notes

### Signposting of safety notes



Warnings marked with the „Danger“ symbol shown on the left have to be absolutely observed for protection of health and life of personnel working with the device!

**DANGER**

**Non-observance can lead to mortal danger and/or risk of injury!**



Safety notes marked with the „Caution“ symbol shown on the left have to be observed in order to avoid damage or destruction of devices and equipment!

**CAUTION**

### Summary of safety notes

This section summarizes all safety notes of relevance. Read and understand the safety notes before installing and commissioning the device and observe them. Safety notes of particular importance are additionally repeated in the relevant passages throughout this manual.



**DANGER**

**Work on electrical installations and equipment may only be performed by adequately trained qualified personnel and in conformity with the applicable national rules and regulations (in Germany: VDE regulations, among others).**

**Only connect and install electrical equipment when the device is switched-off and no voltage is applied. Mortal danger by electric shock!**

If electric heatings are intended for unsupervised operation (operation at night), the applicable safety regulations and the corresponding regulations of the relevant Employer's Liability Insurance Association (in Germany: regulations of VDE (Sicherheit in Elektro-Wärmeanlagen DIN EN 60619-2 [VDE 0721, Teil 441]) and "Berufsgenossenschaft") have to be observed. These regulations possibly demand thermal monitoring (or thermal limitation) or inherent safety for this kind of use.

**The system is not explosion-proof. It must not be used within explosion-endangered areas (zones 0 to 2 according to ATEX).**

**In the case of defects or leakages in the compressed air system explosive mixtures can form by running back spraying material (solvent) in the air heater. In order to prevent this, the air heater must be flowed through with compressed air at least 10 seconds long before each start up directly before switching on. Danger of explosion!**

**Warn persons in the work area because of lying cables and hoses.**

**The head end of the equipment can become hot during working. Make sure that nobody comes into contact thereby.**



**CAUTION**

A trouble free operation is not ensured, if in direct proximity of the control vibration drives, frequency changers of middle and large achievement or other operational funds, which develop larger magnet or electrical fields, are arranged. After installation and connection of a heating an EMV examination of the plant is to be made before start-up in accordance with EMV regulations 89/336/EWG.

Diving past corridor vehicles with insertable electromagnets leads likewise to malfunctions. When planning the traffic routes within or outside of the workshop this criterion is to be considered.

## 1 Specified use

The Airtherm System is an electronically regulated heating system, which was conceived exclusively for the heating up of atomizer air at hand and mechanism spray guns and thus also only for this intended purpose is intended. Another or beyond it going use is not considered than intended. For from this developing damage the manufacturer is not responsible.

To the specified use belongs

- the attention of all references of the manual
- the adherence of the inspection and service instructions
- prohibition of any changes at the equipment

Here it must be particularly noted that the system may not be installed in explosive ranges.

To the extended specified use belongs also

- that preheated condensed compressed air through VISECO GmbH certified upstream air turbines and air cylinder for the subsequent treatment of the Airtherm System equipment are certified.

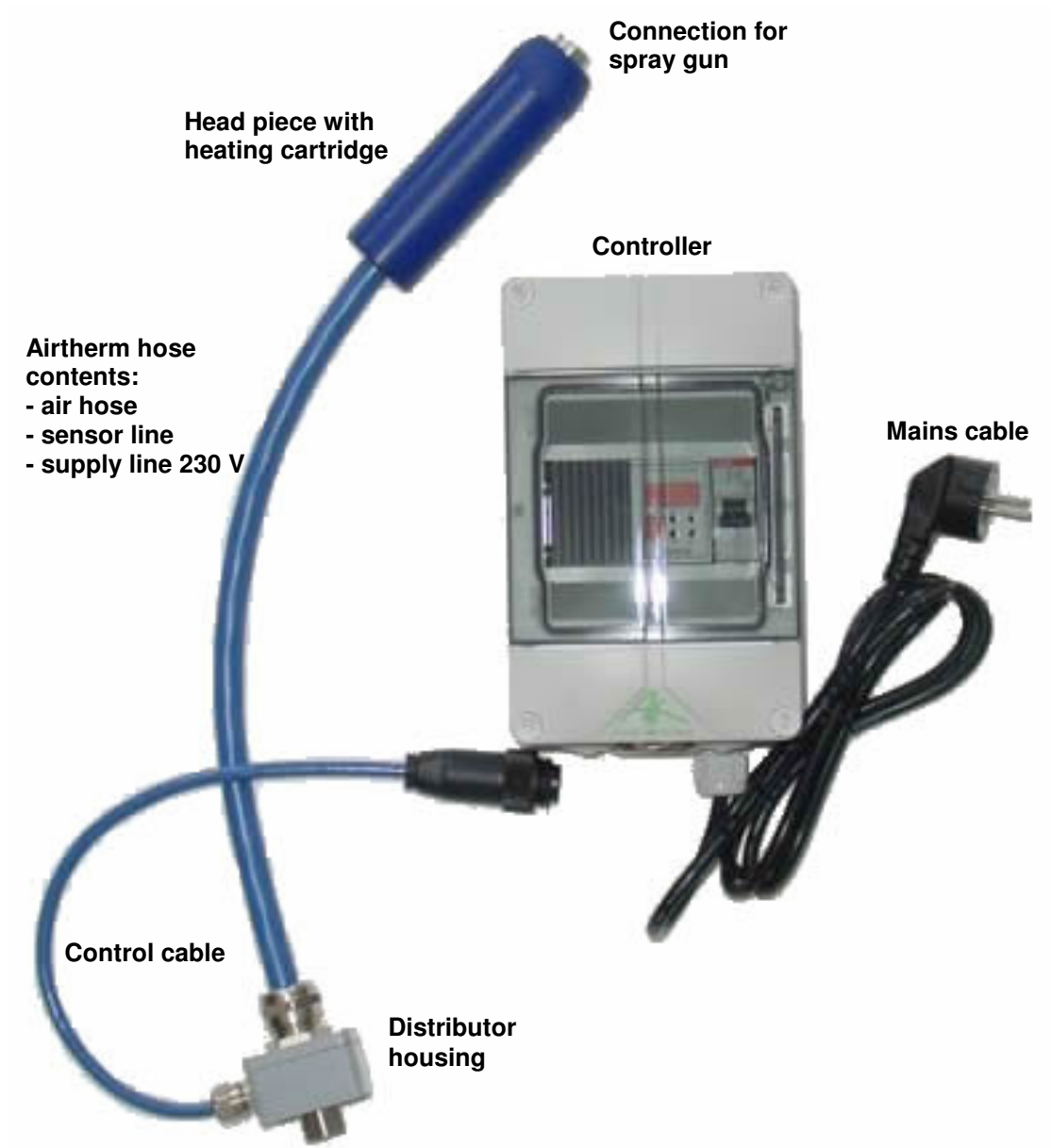
Each other use of the equipment brings dangers of damages to property and person with itself.

Another or beyond it going use is not considered than intended. For from this resulting damage VISECO GmbH is not responsible, the risk takes the operator alone.

To the specified use belong also the constant attention of the available manual and particularly the observance of the maintenance instructions

## 2 Equipment overview

### 2.1 Overview



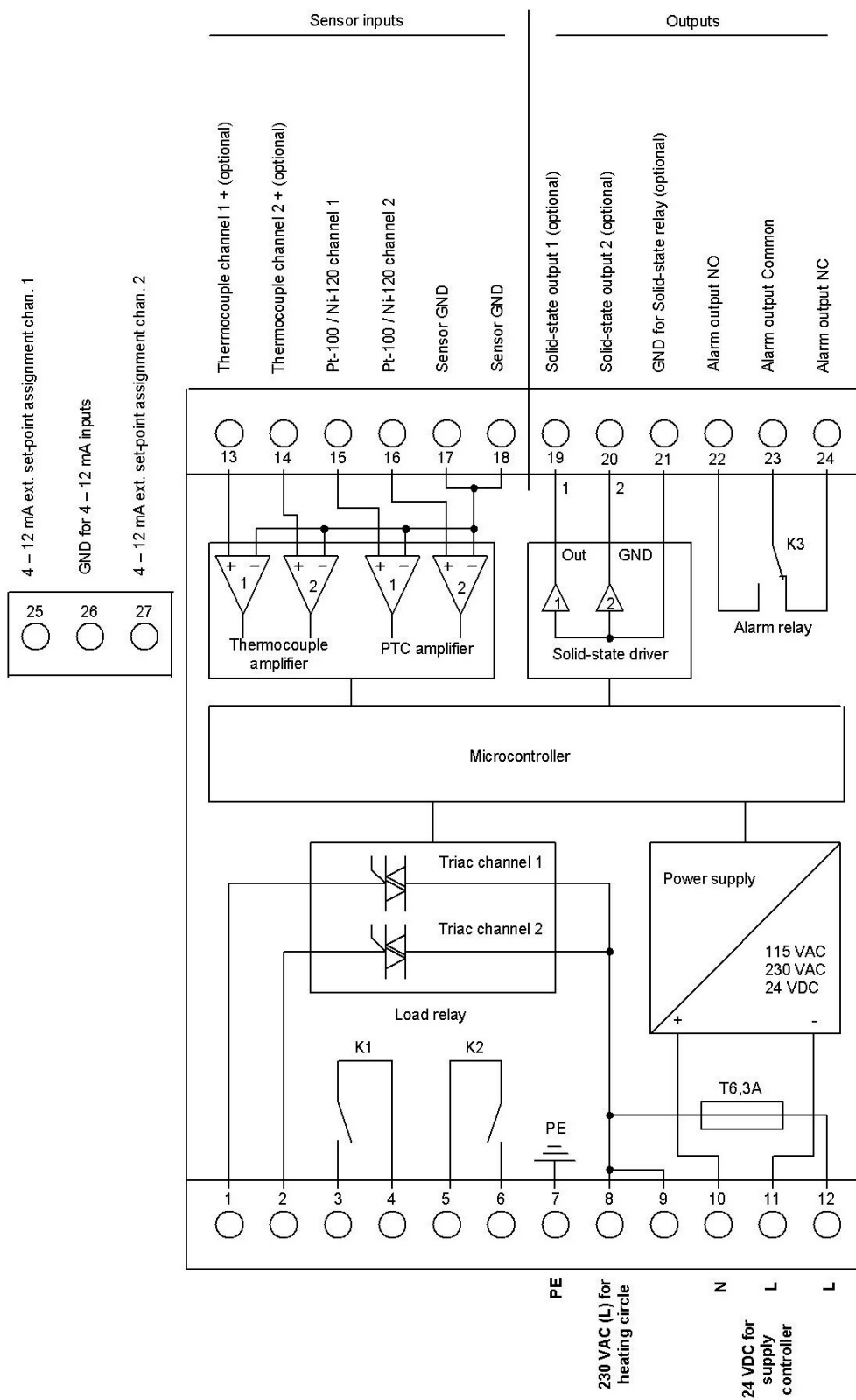
The Airtherm is available as 1-channel-system with 1 controller and 1 hose (140-112-x-x) or as 2-channel-system with 1 controller and 2 hoses (140-112-x-x/2).  
 ...-x-x declares the length: ...-airtherm hose in m-control cable in m (see chapter 8)

#### Attention!

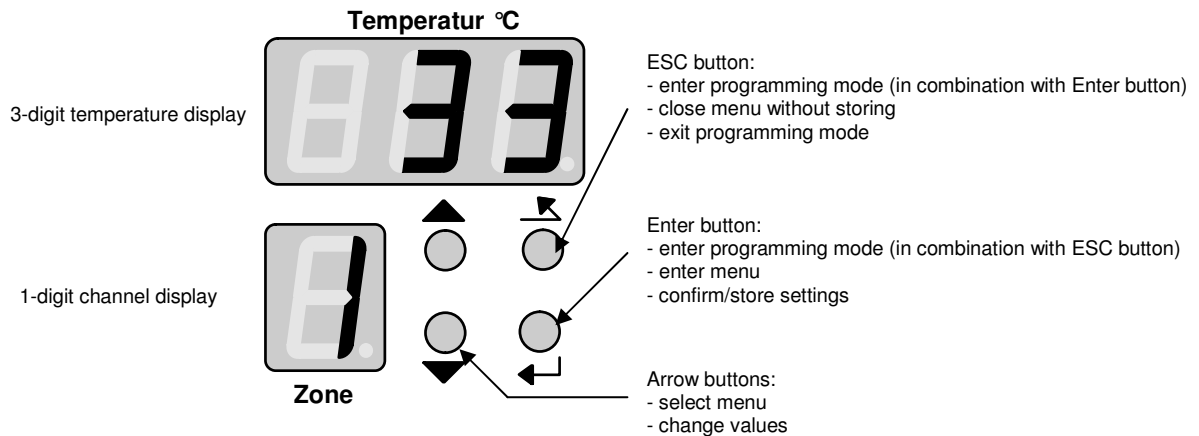
The system is not explosion-proof. It must not be used within explosion-endangered areas (zones 0 to 2 according to ATEX).

A spray gun is not contained in the scope of supply!

**2.2 Block diagram and electrical connection**



**2.3 Indicators and operating elements of the controller**

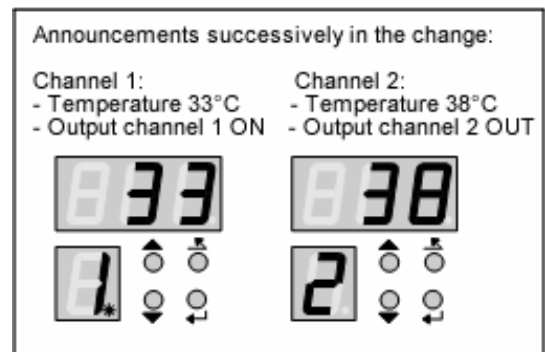


**Display in normal mode**

During normal mode the display alternately displays the current air temperature measured by the sensor for channel 1 and channel 2.

If no temperature sensor is connected on a channel there are three horizontal lines displayed instead of the temperature.

A flashing decimal point behind the channel number indicates that the output of the corresponding channel is switched on (heating "ON").



**2.4 Technical Data**

Airtherm® Control	
Mains connection	230 VAC, 150 mA
Security of the inlet (heating circle)	min. 6A
Safety class	IP40
Degree of protection	protective insulation
Permissible ambient temperatures	-20°C to +50°C
Permissible relative air humidity	max. 90%, not condensing
Temperature range of control	to max. 95°C
Sensor inputs	2 channel for sensor PT 100
Ext. set-point assignment 4-12 mA	for 2 channels, internal resistance per 200 Ω
Outputs	
- for air heater	2 channels, per max. 600 W (2,6 A)
- alarm output	1 relay with change-over contact
Weight	1,15 kg

Heating cartridge	
Ignition enclosure	T3
Mains connection	230 VAC
Power	500 VA
Range of control	20 - 95 °C
Airtherm® hose	
Air pressure	1 - 8 bar

### 3 Mounting, compressed air supply and electrical connection



Work on electrical installations and equipment may only be performed by adequately trained qualified personnel and in conformity with the applicable national rules and regulations (in Germany: VDE regulations, among others).

**DANGER**

Only connect and install electrical equipment when the device is switched-off and no voltage is applied. Mortal danger by electric shock!

If electric heatings are intended for unsupervised operation (operation at night), the applicable safety regulations and the corresponding regulations of the relevant Employer's Liability Insurance Association (in Germany: regulations of VDE (Sicherheit in Elektro-Wärmeanlagen DIN EN 60619-2 [VDE 0721, Teil 441]) and "Berufsgenossenschaft") have to be observed. These regulations possibly demand thermal monitoring (or thermal limitation) or inherent safety for this kind of use.

In the case of defects or leakages in the compressed air system explosive mixtures can form by running back spraying material (solvent) in the air heater. In order to prevent this, the air heater must be flowed through with compressed air at least 10 seconds long before each start up directly before switching on. Danger of explosion!

Warn persons in the work area because of lying cables and hoses.

The head end of the equipment can become hot during working. Make sure that nobody comes into contact thereby.



**CAUTION**

A trouble free operation is not ensured, if in direct proximity of the control vibration drives, frequency changers of middle and large achievement or other operational funds, which develop larger magnet or electrical fields, are arranged. After installation and connection of a heating an EMV examination of the plant is to be made before start-up in accordance with EMV regulations 89/336/EWG.

Diving past corridor vehicles with insertable electromagnets leads likewise to malfunctions. When planning the traffic routes within or outside of the workshop this criterion is to be considered.

### 3.1 Mounting

Connect the components of the Airtherm Air Heater System as follows:

1. Mount the spray gun at the head end of the hose. The connecting thread G 1/4" is to be provided with teflon band or with a heatproof seal (100 °C). Tighten with a fork wrench SW 17.
2. Now connect the connection housing with your compressed air supply. By unscrewing the connector the connection housing can be connected firmly by a connecting thread G 1/4" with the air network.
3. Screw the plug of the control cable into the flange socket at the soil of the controller housing.
4. Switch off the power switch and connect the power supply plug to the current supply.
5. The Airtherm Air Heater is now ready to operate, but:



**DANGER**

**In the case of defects or leakages in the compressed air system explosive mixtures can form by running back spraying material (solvent) in the air heater. In order to prevent this, the air heater must be flowed through with compressed air at least 10 seconds long before each start up directly before switching on. Danger of explosion!**

### 3.2 Compressed air supply



**DANGER**

**The operation of the Airtherm has to take place with compressed air, it is to be excluded that by the compressed air system a explosivable gas mixture can be sucked in by the equipment.**

**During the operation of the Airtherm constantly pressure must be present in the heating cartridge, so that no explosive gas mixture from the environment can penetrate the inside the heating cartridge.**



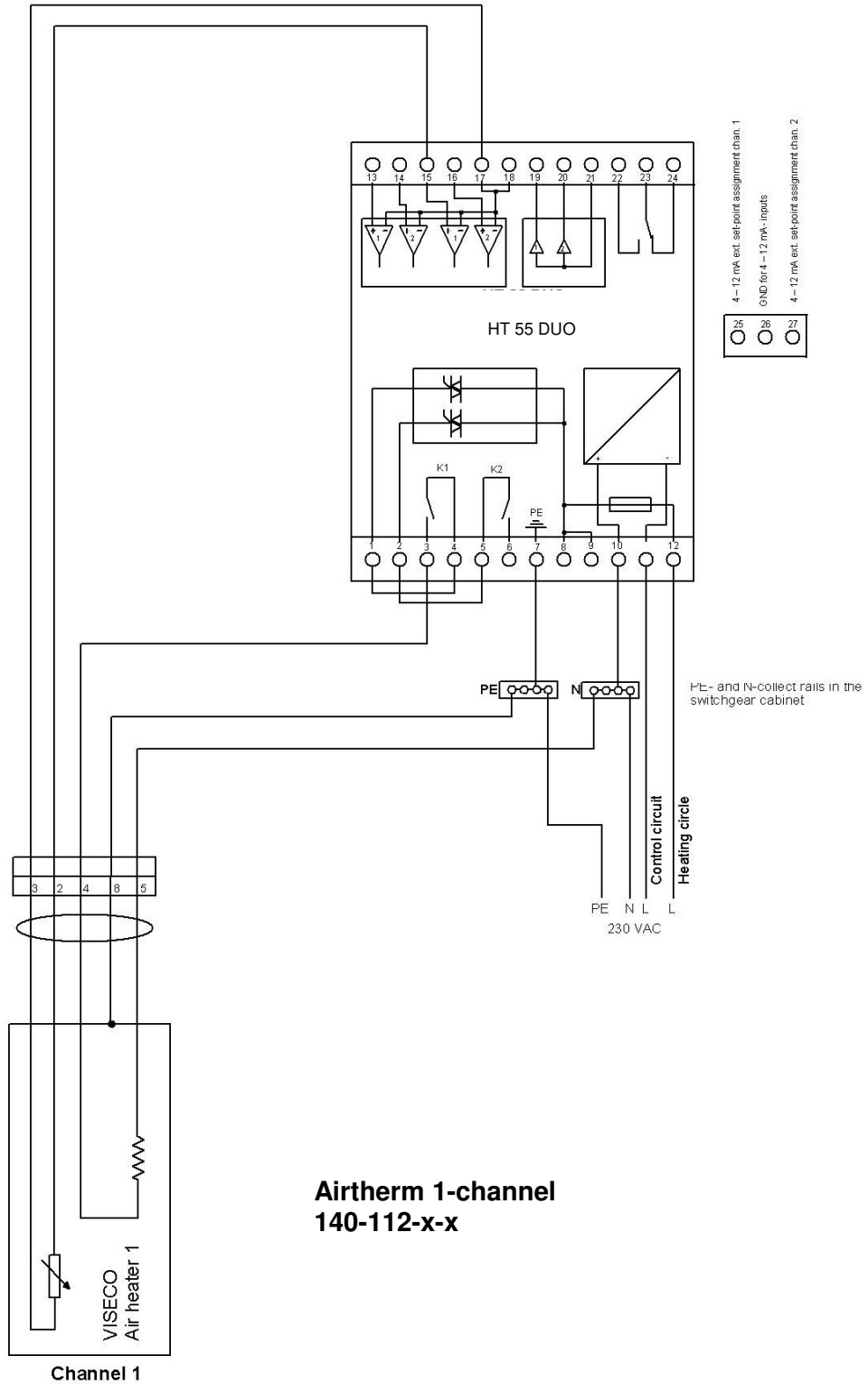
**CAUTION**

Use only filtered compressed air with a particle size  $\geq 130\mu\text{m}$  with appropriate condensate separator and particle filter.

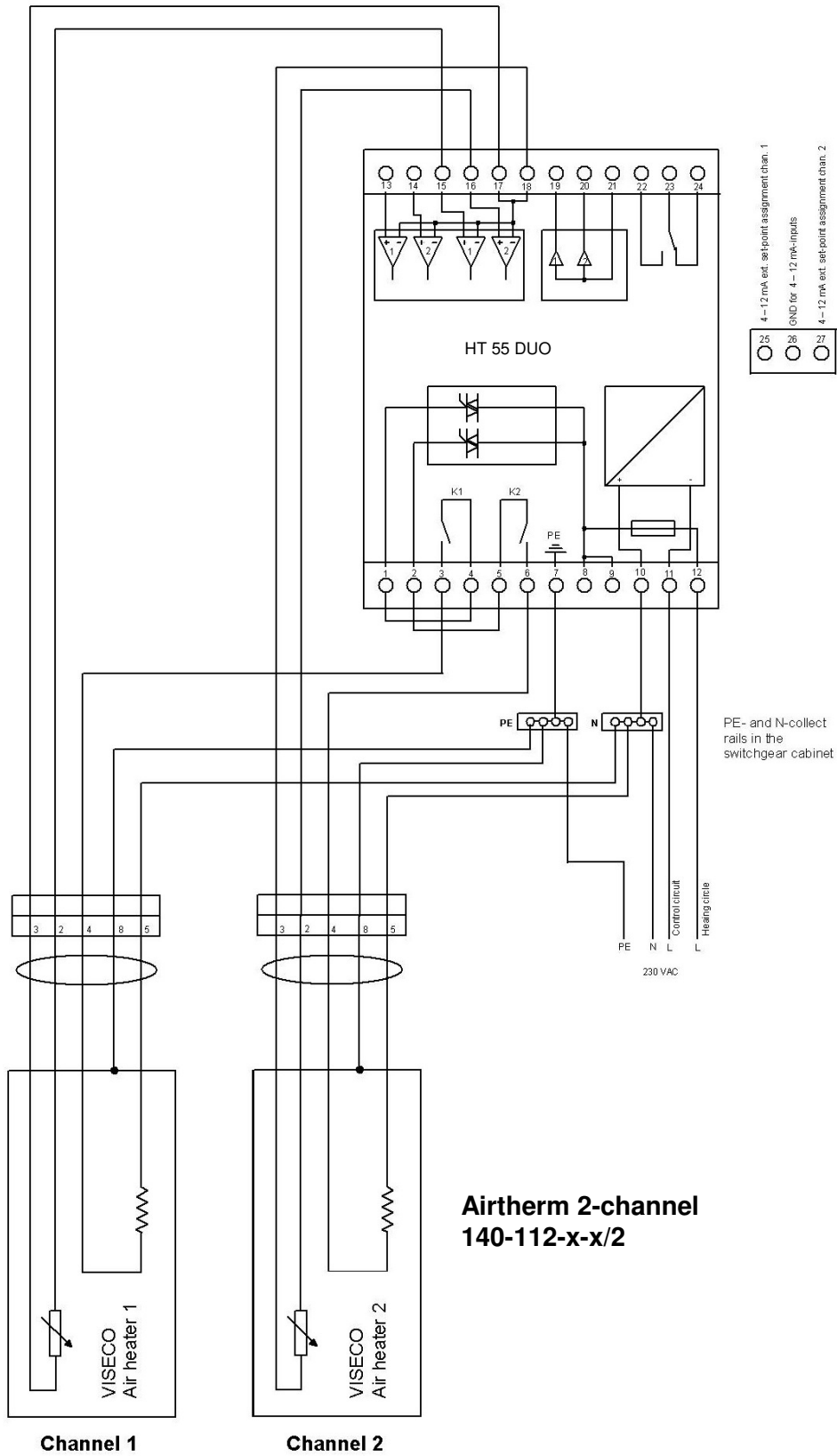
Contaminated and/or damp air can destroy the heating cartridge.

Pay attention to it that the operating pressure of max. 8 bar, according to the technical data is kept.

**3.3 Electrical connection**  
**Electrical connection for one Air Heater Airtherm**



**Electrical connection for two Air Heater Airtherm**



**Airtherm 2-channel  
140-112-x-x/2**

#### 4 Putting into operation



**DANGER**

In the case of defects or leakages in the compressed air system explosive mixtures can form by running back spraying material (solvent) in the air heater. In order to prevent this, the air heater must be flowed through with compressed air at least 10 seconds long before each start up directly before switching on.  
**Danger of explosion!**

During the operation of the Airtherm constantly pressure must be present in the heating cartridge, so that no explosive gas mixture from the environment can penetrate the inside the heating cartridge.

The head end of the equipment can become hot during working. Make sure that nobody comes into contact thereby.

**From the spraying nozzle withdraws a hot air steel! Burning hazard!**

**Never direct the spray gun toward humans!**

1. Clarify the necessary processing temperature of the medium with the manufacturer.
2. The adjusted temperature deviates depending upon flow volumes. The actual temperatures can be determined by a temperature gauge with surface sensor at the pistol nozzle. These, in such a way won, values can be helpful during the further optimization.
3. Before beginning of the actual work spaying attempts are essential.
4. Make sure that before first start-up the assembly of the air heater at the control was correctly made.
5. **Make sure that the air heater is flowed through with compressed air at least 10 minutes before switching on.**
6. Adjust the spray gun always in such a way that easy air flow is present by the spray gun. An even temperature constant of the spray gun body is obtained by this permanent current also after interruptions of work. Thus the heating cartridge is loaded less and their life span is crucially extended.
7. Switch on the supply voltage of the controller.  
After the supply voltage is on, the controller operates in normal mode and displays the actual temperature measured by the temperature sensor (display alternates between channel 1 and channel 2).  
On delivery, the outputs of both channels are switched on. When an output is switched on, the decimal point behind the displayed channel number does flash.
8. Now adjust the desired temperature set-point.
  - Use the button ▼ for displaying the adjusted set-point for channel 1.
  - Use the buttons ▼ and ▲ to adjust the desired set-point and confirm your change by pressing the Enter button ↵.
  - The controller then runs in normal mode again and alternately displays the temperatures for channel 1 and channel 2. Because channel 2 is switched of there are three horizontal lines displayed instead of the temperature.



**CAUTION**

After completion of the work witch off the Airtherm control and leave the heating cartridge by easy flowing of spraying air approx. 5 min. cooling, in order to avoid a heat build-p in the heating cartridge!

## 5 Failures and errors

The temperature display indicates two different errors:

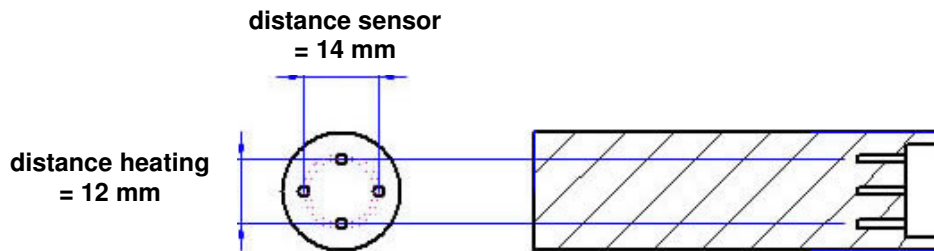
ER1: short-circuit of the sensor

ER2: broken sensor

If the controller indicates one of these two errors or the air heater doesn't heat, please measure resistance of the heating cartridge.

Desired value sensor: about 108  $\Omega$

Desired value heating: about 102  $\Omega$



If these values are not reached, the heating cartridge is defective and must be exchanged. If the values are despite an arisen error correct, please contact us (Tel. +49 (0) 8251 - 827777).

## 6 Cleaning, maintenance and repair



**DANGER**

Work on electrical installations and equipment may only be performed by adequately trained qualified personnel.

**Caution! Burning hazard! Allow the head end to cool before you work on it.**



**CAUTION**

The head end of the air heater partly consists of sensitive precision parts. Work carefully and without any use of force in order to keep the head end undamaged!

### 6.1 Replacing the heating cartridge

Please proceed in the following order:

1. Remove the power supply plug from the plug socket.
2. Allow the head end to cool.
3. Make the compressed air supply line pressure-free and unscrew the spray gun.
4. Remove the screw at the head piece and pull off the insulation sleeve.
5. Now screw off the jacket pipe. You need for it fork wrenches of the SW 17 and SW 26.
6. Pull off the old heating cartridge.
7. Check the sealing for damages and clean it. If necessary, replace it.
8. Use the new heating cartridge and build up the head piece in reverse order. Heating cartridge and head piece have a mechanical coding, in order to prevent a wrong using of the heating cartridge (see for this drawing in chapter 5). Make sure that the plug contacts fit low-friction and without application of force. When wrong assembling (polarity) the inserted temperature sensor will be destroyed immediately after switching on.

## 6.2 Cleaning of the Airtherm Systems

The control unit and the controller contained in it are generally maintenance-free and should be cleaned only if necessary with a dry soft cloth without addition by cleaning agents.

With cleaning of the air heater the following is to be considered:

- Only drying wipe off the Airtherm hose and the control cable or clean it with soapy water.
- When using cleaning agents with solvents it is to be paid attention to the fact that only solvents can be used those not change or damage PU.
- The head piece may be never dipped into solvents!

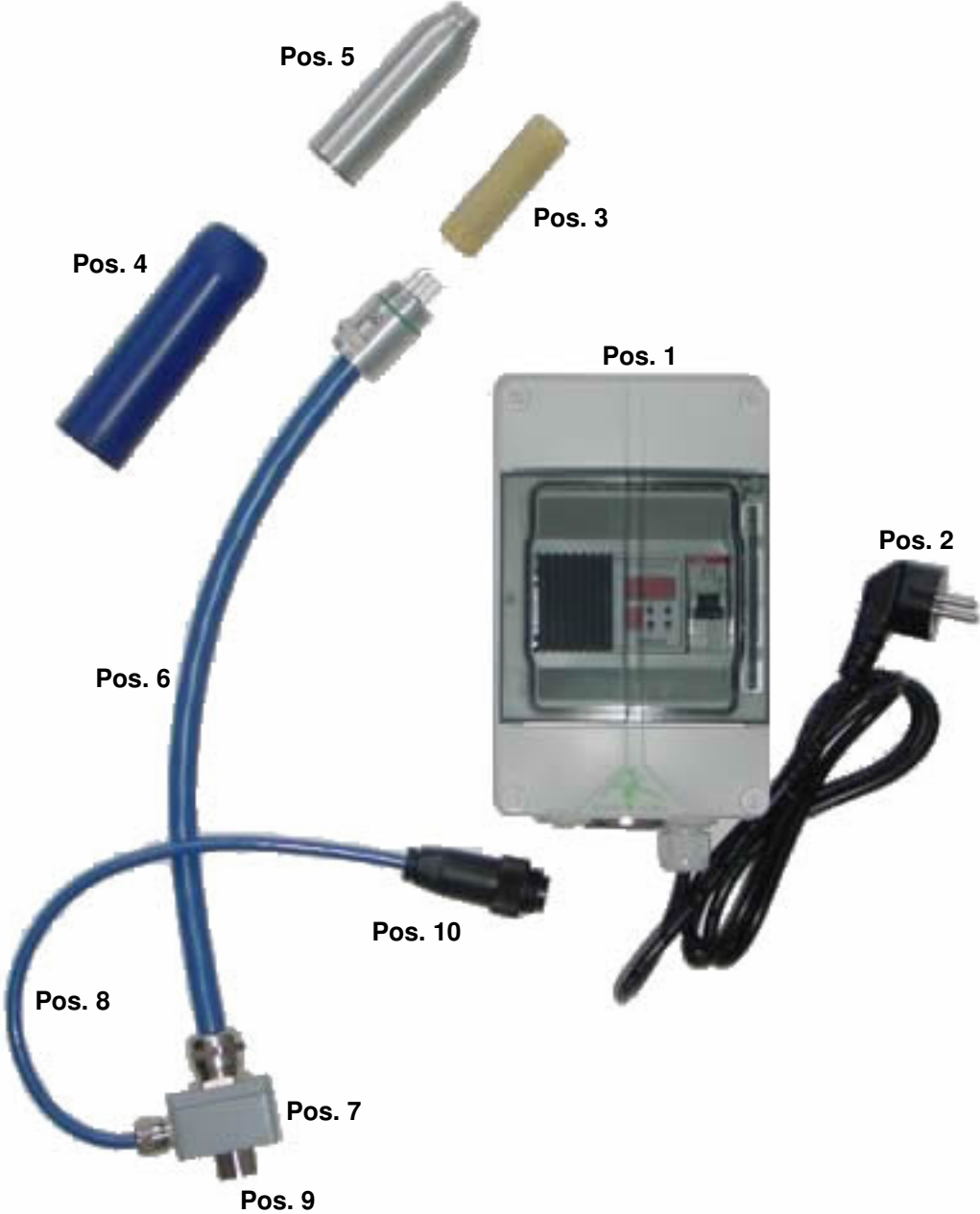
## 7 Transport and storage

To the distribution ex factory the Airtherm system may be transported only in packing suitable for electronic devices.

Permissible temperature for storage and transport: -20 °C to 50 °C

Permissible relative air humidity: max. 90%, non condensing

8 Spare parts



Pos.	Description	Art. No.	Art. No.
1	Controller 1-channel	140-112-31003HT	
	Controller 2-channel	140-112-31003HT2	
2	Mains cable	140-112-31012	
3	Heating cartridge	140-112-31004B	140-112-31009-x-x
4	Isolation sleeve	140-112-31005	
5	Jacket pipe	140-112-31008	
6	Airtherm hose		
7	Distributor housing		
8	Control cable		
9	Connector NG8		
10	Plug for controller		

### References to the order of spare parts

You can order the necessary spare parts with the help of the spare parts drawing on page 16.

The Airtherm hose and the control cable are manufactured in different lengths and combinations.

**The Airtherm hose and the Airtherm control cable can only be delivered completely with the distributor housing!**

Part number: 140-112-31009-x-x

Without indication of the last quota figures the standard version will be delivered:

Airtherm hose length 10 m  
 Airtherm control cable length 5 m  
 Part number: 140-112-31009-10-5

Please order the needed lengths as follows:

Example for order      Airtherm hose: **7,5** m  
                                  Airtherm control cable: **5** m

Part number: 140-112-31009-**7,5-5**

## 9 Manufacturer's declaration

**CE - Manufacturer's Declaration  
according to EU-machine regulations  
98/37/EG appendix II B**

Hereby we declare that the following designated product is in due to its conceiving and design to the assembly with a spray gun, is certain to an air heater and that is forbidden to put it into operation until was stated that the air heater system corresponds to the Low-voltage regulations (72/23/EWG) in the valid version.

Designation	<b>Airtherm</b>	
Article number	<b>140-112-x-x, 140-112-x-x/2</b>	
Serial number	<b>starting from 10112012</b>	
Year of construction	<b>starting from 2010</b>	
Corresponds to the regulations:	<b>Machine regulations (98/37/EG) in the valid version EMV-regulations (89/336/EWG) in the valid version Pressure device regulations 97/23/EG in the valid version Device use regulations 89/655/EWG in the valid version</b>	
Applied harmonized European standards * <sup>1</sup>	<b>EN 12100</b>	<b>Machine Safety</b>
	following to <b>DIN 44922-2</b>	<b>Electrical screwing in heating elements with screwing head and heating cartridge with metal jacket</b>
Applied ones national standards and technical specifications in particular:	<b>VDE 0100</b>	<b>Establish of electrical equipment</b>

In the case of not authorized modifications of the machine this declaration loses its validity. The manual in the available version is a component of this declaration.

\*<sup>1</sup> A complete listing is present in the technical documentation.

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Aichach, 01.01.10

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Vinko Sebalj  
(Managing Director)

## 10 Warranty

WISECO guarantees that all devices made by VISECO and wearing the name VISECO are free of material and production faults at the time they are sold by authorized sales representatives to the original buyer.

WISECO will repair or replace all parts of the device which have been accepted by VISECO to be faulty within a period of 12 months after the date of sale.

This warranty is only valid if the device has been installed, operated and maintained according to the written instructions issued by VISECO.

This warranty does not include general wear or any kind of malfunction or damage caused by incorrect installation or operation, abrasion, corrosion, inadequate or incorrect maintenance, negligence, unauthorized modifications or fitting of parts that are not original VISECO parts. Moreover, VISECO will not be liable for any malfunctions, damages or wear caused this way.

Furthermore, VISECO will not be responsible for malfunctions, damages or wear resulting from incompatibility of VISECO devices with structures, spare parts, devices or materials not supplied by VISECO or those resulting from improper design, production, installation, operation or maintenance or which are caused by structures, spare parts, devices or materials not supplied by VISECO.

This warranty will be valid under the condition that the device to be guaranteed is sent free of charge to VISECO to repair the indicated fault. If the indicated fault is confirmed, VISECO will repair or replace any kind of faulty part free of charge. The device will be sent back to the sender not free. If no material or production defect should be found during testing we will repair the device according to our valid prices which include the costs for spare parts, work and transport.

WISECO's sole liability as well as the purchaser's only appeal in case of lacking warranty result from the above said. The purchaser agrees to the fact that no other appeal will be admitted (inclusively but not exclusively claims for damages following profit losses, not concluded sales, personal and material damages or other). Any kind of lacking warranty has to be claimed within two (2) years after date of sale.

WISECO's warranty does not include any accessory parts, materials or components delivered by VISECO but not produced by VISECO. Those parts delivered by VISECO but not produced by VISECO are subject of guarantee bonds of the respective producers, as far as available. Should such a producer not fulfil his warranty, VISECO will support the purchaser with any kind of adequate assistance.

### **LIMITATION OF LIABILITY**

WISECO will not be liable in any case for indirect damages following or for particular damages resulting from the delivery of devices by VISECO, neither for damages resulting from the breach of a contract or from the lacking of warranty nor for damages due to negligence by VISECO or other circumstances. This also applies to damages possibly resulting from the design, the product features or the use of VISECO devices or other devices delivered by VISECO but not produced by VISECO.