

READ AND SAVE THESE INSTRUCTIONS

This manual must be read in conjunction with
Nortec ME Control installation manual and operation manual!

ADDENDUM MANUAL

Adiabatic air humidification/air cooling system
Water Leak Detection Option
for Nortec ME Control

Thank you for choosing Nortec

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Location ref.:

Model:

Serial number:

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1 Introduction

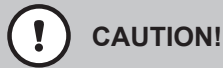
1.1 Notes on the addendum manual

This manual is an addendum for the installation of the optional leak detection system for the Nortec ME Control and must be read in conjunction with the installation manual and operation manual for Nortec ME Control.

This addendum manual has been written to ensure the safe use, performance and longevity of the equipment and is intended for use by engineers and properly trained technical personnel. Please read this manual thoroughly before installing the optional leak detection sensor.

If you have questions after reading this documentation, please contact your Nortec representative. They will be glad to assist you.

Symbols used in this manual



The catchword “CAUTION” used in conjunction with the caution symbol in the circle designates notes in this manual that, if neglected, may cause **damage and/or malfunction of the unit or other material assets**.



The catchword “WARNING” used in conjunction with the general caution symbol designates safety and danger notes in this manual that, if neglected, may cause **injury to persons**.



The catchword “DANGER” used in conjunction with the general caution symbol designates safety and danger notes in this manual that, if neglected, may lead to **severe injury or even death of persons**.

Safekeeping

Please safeguard this addendum manual in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation must be passed on to the new operator.

If the documentation gets misplaced, please contact your Nortec representative.

Language versions

This addendum manual is available in various languages. Please contact your Nortec representative for information.

2 For your safety

General

Every person working with the leak detection system and the Nortec ME Control must have read and understood this addendum manual, and the Nortec ME Control installation manual and operation manual, before carrying out any work.

Knowing and understanding the contents of the manuals is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

Qualification of personnel

All work described in this addendum manual **may only be carried out by specialists who are well trained and adequately qualified and are authorized by the customer.**

For safety and warranty reasons any action beyond the scope of this manual must only be carried out by personnel with appropriate industry recognised qualifications or training.

It is assumed that all persons working with the leak detection system and the Nortec ME Control are familiar and comply with the appropriate local regulations on work safety and the prevention of accidents.

Intended use

The leak detection system is intended exclusively for **the detection of standing water in AHU's or air ducts, or at the location of hydraulic installation of the Nortec ME Control**, and within the specified operating conditions. Any other type of application, without the written consent of the manufacturer, is considered as not conforming with the intended purpose and may lead to the Nortec ME Control becoming dangerous.

Operation of the equipment in the intended manner requires **that all the information contained in this addendum manual as well as in the Nortec ME Control installation manual and operation manual are observed (in particular the safety instructions).**

Danger that may arise from the Nortec ME Control



DANGER!
Risk of electric shock!

The control unit of the Nortec ME Control contains live mains voltage. Live parts may be exposed when the control unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: Before commencing any work on the leak detection system and the control unit disconnect the mains supply voltage to the control unit via the electrical isolator in the mains supply line, and secure the electrical isolator in "Off" position against inadvertent switching on.

Safety Reporting

All persons working with the leak detection system are obliged to report any alterations to the system that may affect safety to the owner without delay and to **secure such systems against accidental power-up**.

Prohibited modifications to the unit

No modifications must be undertaken on the leak detection system without the express written consent of the manufacturer.

For the replacement of defective components use exclusively **original accessories and spare parts** available from your Nortec representative.

3 System overview / Principle of operation

The leak detection system consists of the following components:

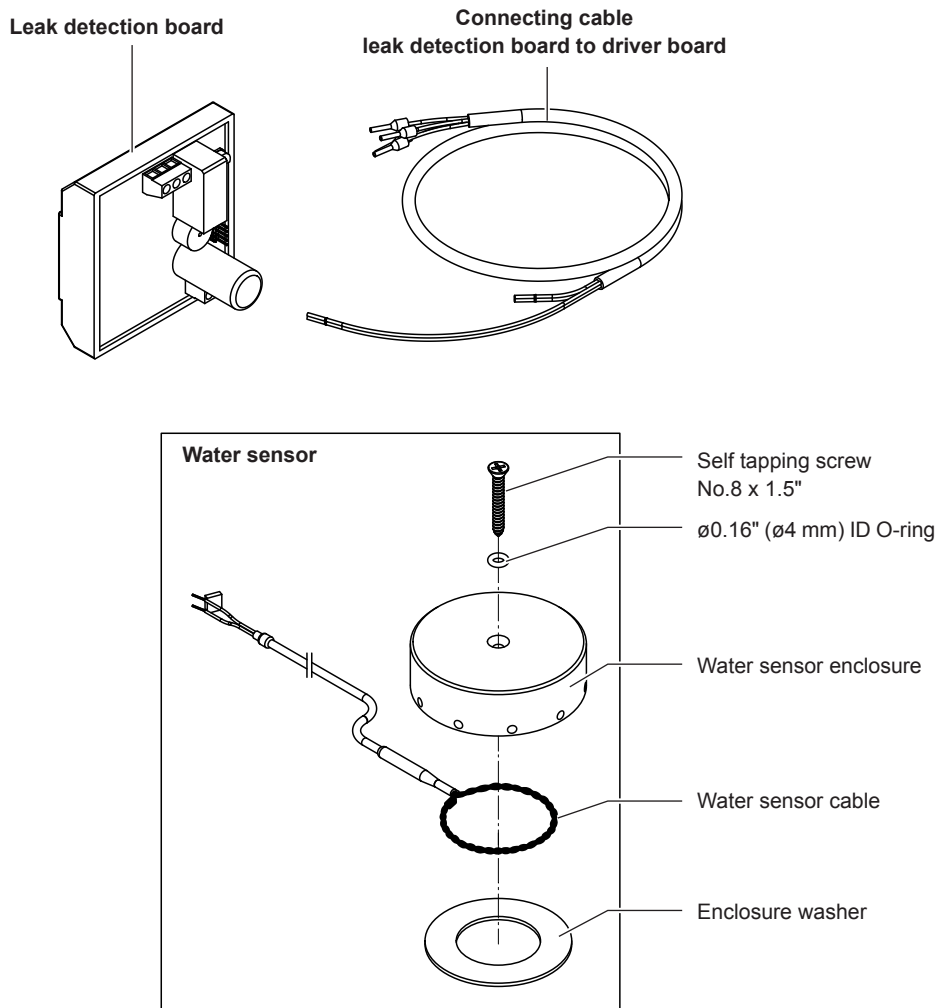


Fig. 1: Overview / Scope of delivery

Principle of Operation

The water leak detection system is designed to indicate when water is pooling inside the AHU where the Nortec ME Control system is installed, and prevent further flooding from occurring. When water enters the detection enclosure it bridges a circuit on the cable sensor inside and signals the Nortec ME Control system to enter fault mode. The indications are an audible alarm from the system PCB and a fault message on the display screen of the Nortec ME Control. Depending on the operating mode selected the system can either be left to continue running, or be disabled with the water inlet valve and drain held closed in order to minimise the potential for further flooding.

When the fault occurs, a trained engineer must inspect the AHU and installed equipment to ascertain the source of the fault and correct it.

Important: If a reverse osmosis system is being used to supply the Nortec ME Control with RO water, a different "**RO water leak detection system**" must be used in place of this "water leak detection system" as the conductivity of RO water is generally too low for this system to detect. Contact your Nortec distributor for details of the "**RO water leak detection system**" if required.

4 Installation work

4.1 Installing the leak detection enclosure

The water sensor enclosure should be placed near to the hydraulic module or tank connection at the lowest point where water can collect, and fixed to the floor of the AHU or other chosen position using the central fixing point of the enclosure. A 0.16" (4 mm) O-ring is provided to form a seal at the top of the enclosure, the installer should use an appropriate screw or removable fixing to ensure that the enclosure cannot be accidentally moved from the required position.

This leak detection system only supports a single leak detection sensor, if more than one sensor is required to monitor multiple locations the "**RO water leak detection system**" which supports multiple sensors should be used.

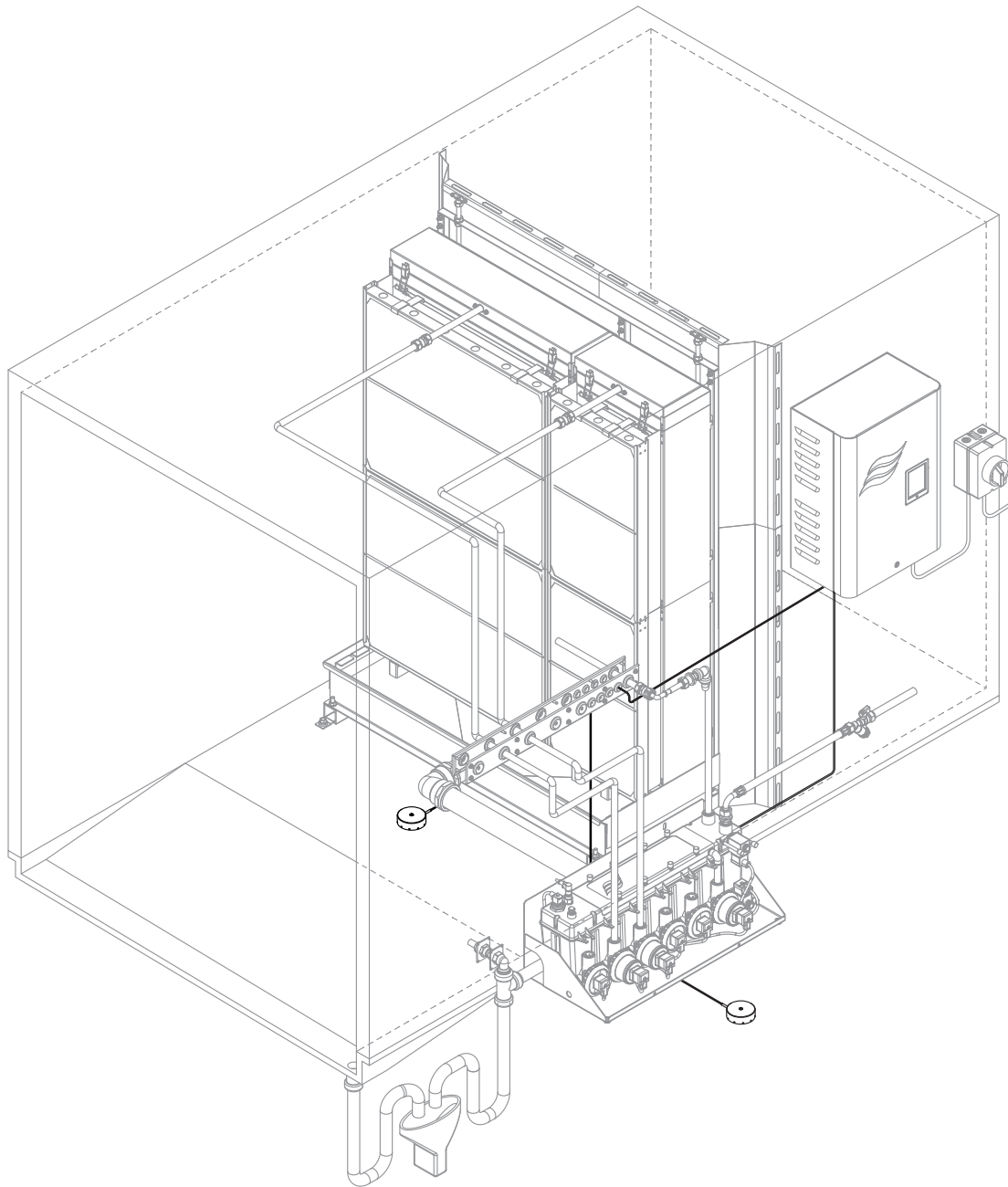


Fig. 2: Placement of the sensor enclosure assembly

1. Before the installation of the leak detection enclosure can take place, the user must ensure that the following actions have been carried out. Refer to the decommissioning section in the Nortec ME Control operation manual for additional instructions regarding these actions.
 - Isolate the water supply (close shut-off valve in the water supply line).
 - Drain the tank fully.
 - Isolate power supply to the control unit.
2. If the water sensor enclosure is installed in the AHU/Air duct: Run the sensor cable (with the sensor end of the cable) into the AHU/air duct via a wall feed through equipped with cable glands.
Note: The cable feed through must be done by the customer and must be equipped with cable glands.
3. Assemble the water sensor as shown in the figure below. Ensure the water sensor cable is securely fitted in the water sensor enclosure with the flat neoprene enclosure washer in place.

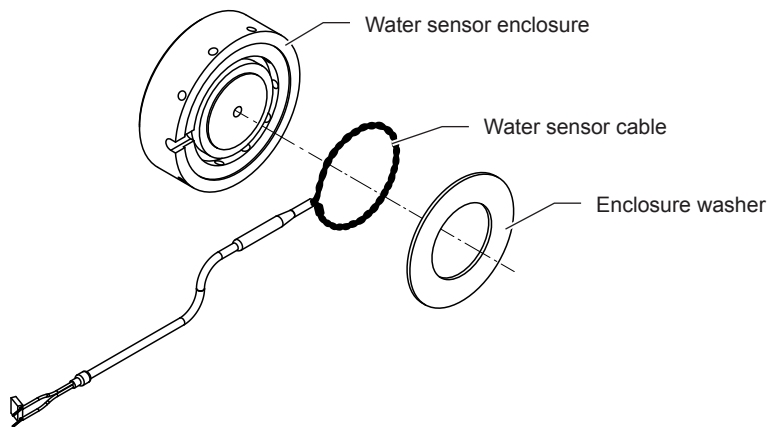
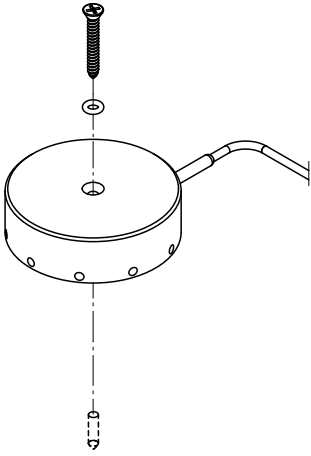
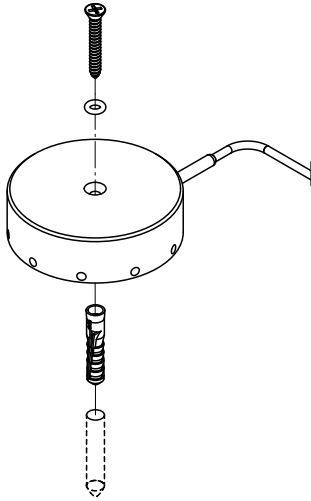


Fig. 3: Assembling the water sensor

4. Place the assembled enclosure at the appropriate position with the washer side downwards. Hold washer in place while positioning the assembled water sensor enclosure.
Note: Ensure the desired location for the enclosure is clean and dry.

5. Fix the water sensor enclosure to the AHU/building floor:

Recommended fixing for AHU's	Recommended fixing for building floor
	
<ul style="list-style-type: none"> • Drill a $\varnothing 0.13$" ($\varnothing 3.2$ mm) pilot hole into the floor of the AHU at the central point of location. • Insert a No.8 x 1.5" self-tapping screw with the $\varnothing 0.16$" ($\varnothing 4$ mm) O-ring through the centre of the fully assembled water sensor enclosure and screw the enclosure tight to the floor of the AHU. 	<ul style="list-style-type: none"> • Drill at the desired position a hole for a dowel with the appropriate diameter and depth into the floor. • Insert the appropriate dowel into hole, then insert a No.8 x 1.5" self-tapping screw with the $\varnothing 0.16$" ($\varnothing 4$ mm) O-ring through the centre of the fully assembled water sensor enclosure and screw the enclosure tight to the building floor.

6. Secure the sensor cable with cable ties at suitable intervals along the cable run to the Nortec ME control unit.

Note: Ensure sensor cable is placed in such a way that the insulation is not damaged by sharp edges and so that it does not create a trip hazard or hinder correct maintenance of the components.

4.2 Mounting the leak detection sensor board and connecting the sensor cable

Nortec ME Control systems purchased with the leak detection system will be provided with the leak detection sensor board already fitted.

1. Isolate power to the Nortec ME control unit by switching off the electrical isolator. Secure the electrical isolator in the "Off" position to prevent inadvertent switching on.
2. Remove the front cover of the control unit.

CAUTION!

Electronic components are very sensitive to electrostatic discharge. Before proceeding with the next step, appropriate measures (ESD-protection) must be taken to prevent damage to electronic components.

3. Open the control unit inner door.
4. Clip the leak detection board to a space on the DIN rail at the bottom of the internal mounting plate with the sensor terminals at the bottom and the relay terminals at the top.

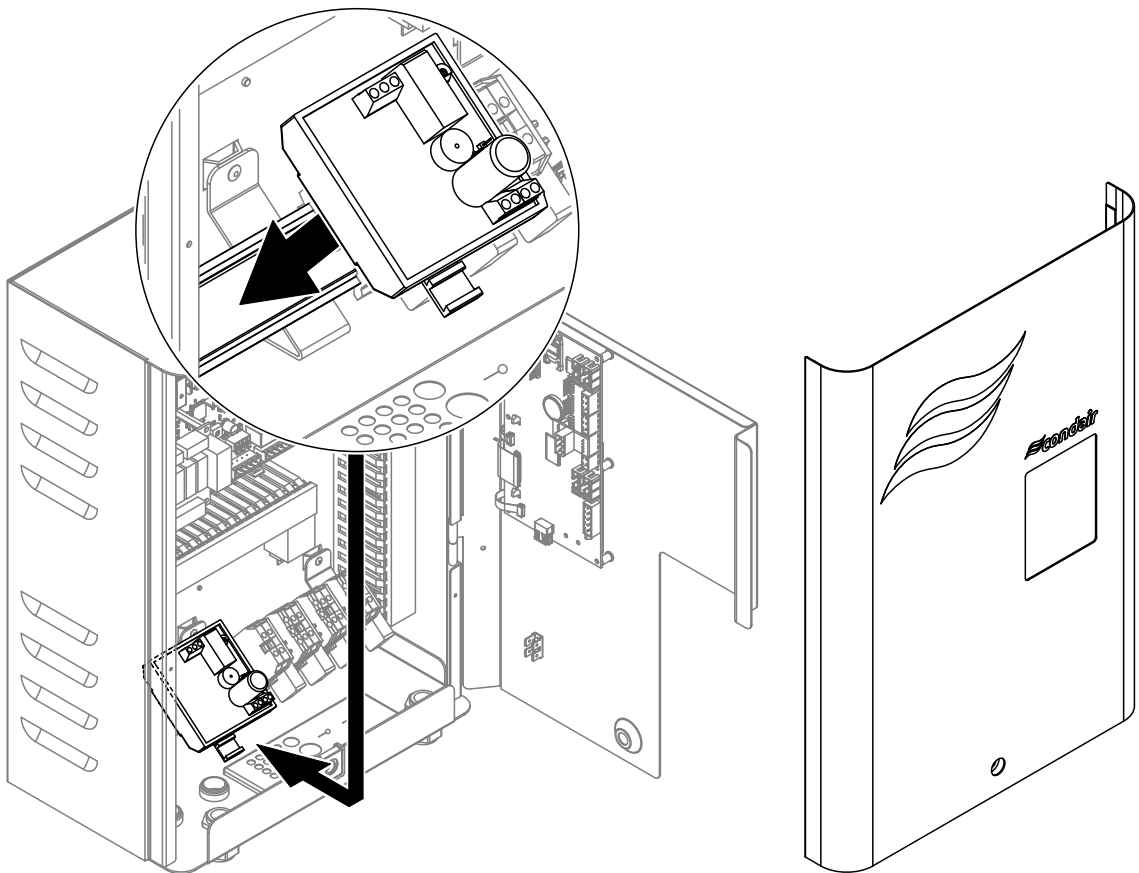


Fig. 4: Mounting the leak detection board

5. Unclip the cable trunking covers that surround the driver board and remove from the trunking.
6. Connect the insulated ferrule ends of the driver board to leak detection cable into the appropriate terminals of terminal block "X12" on the driver board as shown in [Fig. 5](#).

7. Feed the cable into the closest appropriate gap in the cable trunking and route it around the trunking channel to exit through another gap at a point near the leak detection sensor board.
8. Install the free ends of the driver board to leak detection cable to the terminals on the leak detection sensor board as shown in *Fig. 5*.
9. Lead the sensor cable through the rectangular cable lead-through into the control unit and pull through all excess from outside.
10. Inside the control unit, install the sensor cable ends into the sensor terminals of the leak detection sensor board as shown in *Fig. 5*. Ensure that the blue capacitor component is attached to both ends of the sensor cable.

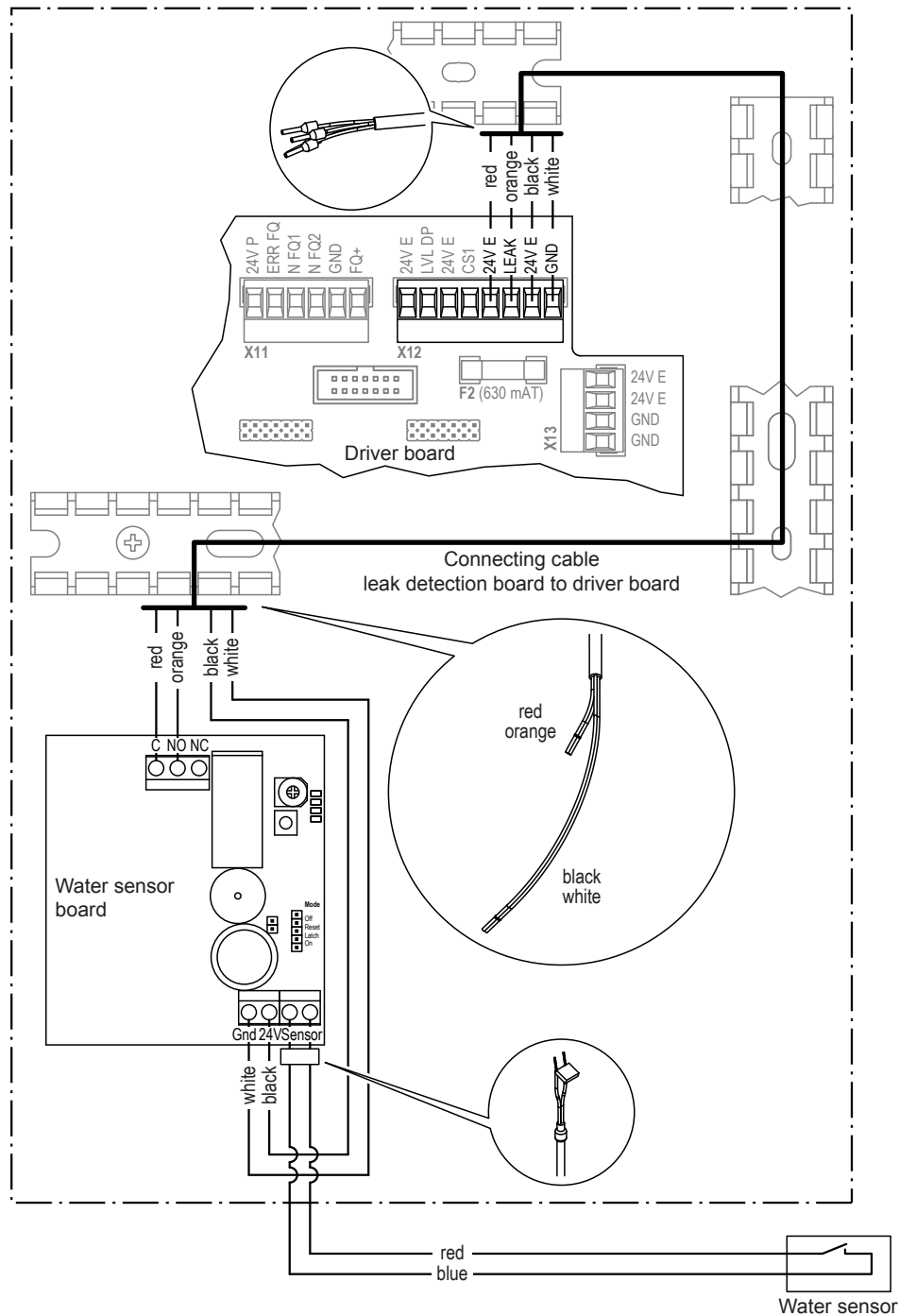


Fig. 5: Wiring diagram

11. Secure any loose sensor cable either in an appropriate section of the trunking or at the bottom of the control unit with a cable tie.
12. Replace the trunking covers and close the control unit inner door. Replace the front cover and secure it with the retaining screw.

5 Configuration

5.1 Configuration process

Nortec ME Control systems purchased with the leak detection system will be provided with the leak detection function already activated.

If the leak detection system is retrofitted into an existing Nortec ME Control system, the function must be activated in the Engineering level of the control software as follows.

Note: This process is only to be carried out by a Nortec engineer or distributor.

For a description of "Active" and "Passive" modes see [chapter 6.1](#).

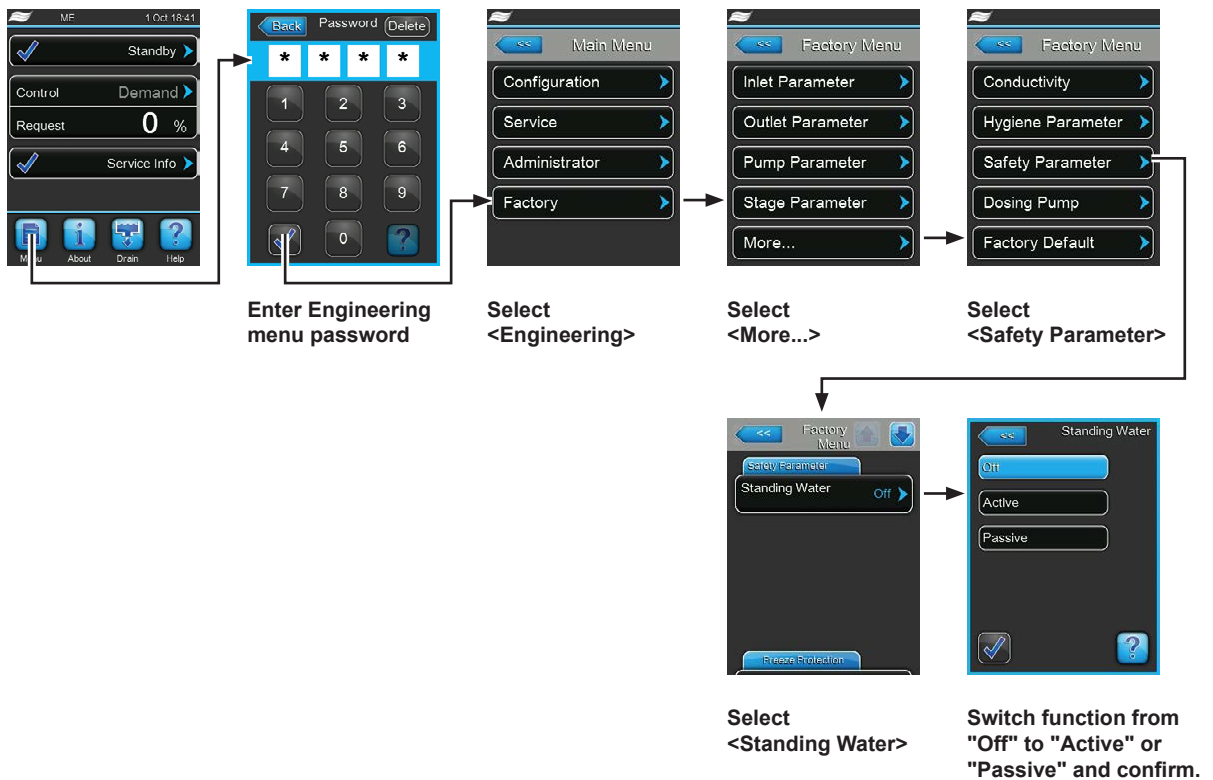


Fig. 6: configuration process

5.2 Sensor setup

Important: The alarm system settings have been checked by Nortec and should not require changing. Any change of settings is done so at the users own risk.

Ensure the power supply is isolated, the isolator is secured in the off position, and suitable electrostatic discharge protection is used before opening the control panel to change these settings.

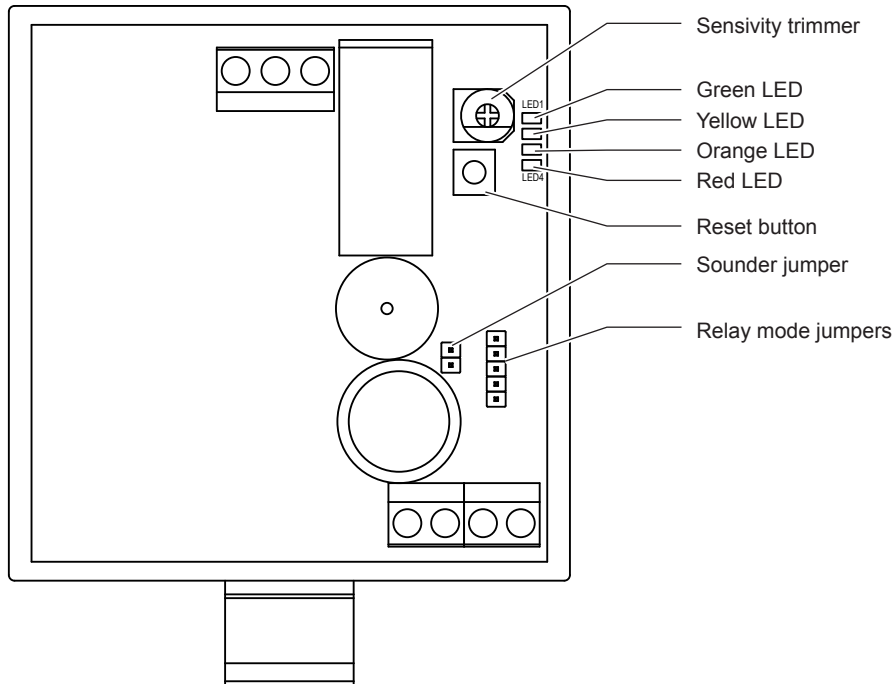


Fig. 7: Display and operating element of the leak detection board





5.2.1 Sounder Jumper modes

The default position for this jumper is Active mode. All subsequent instructions in this document that refer to an audible alarm are based on the jumper remaining in this default position.

Jumper setting	Sounder mode	Description
	Silent	If jumper is removed, the sounder is disabled and will remain silent even if a water leakage is detected.
	Active	If jumper is set, the sounder is enabled. If a water leakage is detected the sounder is activated and an audible alarm will sound.

5.2.2 Relay output jumper modes

The default position for this jumper is Latch mode, if the jumper position is changed the panel may not report a leak correctly. Do not change this setting unless carrying out a specific test on the system and always return the jumper to the Latch mode position.

Jumper setting	Output mode	Description
	Off	The relay will be de-energised and the sounder silent, no matter what the sensor condition. The green and yellow LEDs will flash alternately while in “learning” mode, and then just the green LED will flash continuously to show that this mode is selected. The other three LED’s will indicate as normal.
	Reset	The unit will report all flood alerts by releasing the relay and activating the sounder (if enabled). Any transition will be reported for a minimum of two seconds. When the sensor stops indicating a flood, the unit resets automatically.
	Latch	In latching (manual reset) mode the unit reports the initial flood alert by releasing the relay and activating the sounder (if enabled). The relay and sounder will continue to indicate the alarm until the reset switch on the unit has been pressed. NB The LED’s will indicate the true status of the sensor.
	On	This is a mode used to test the installation without needing to wet the sensor. The sounder and relay will be energised and the green and red LEDs will flash alternately for approximately 2 minutes to show that this mode is selected. After this time, the green LED will be ON while the red LED will continue to flash.

6 Operation

6.1 Basic operation

When the unit is first powered up, or if the reset button is pressed, the sounder will be activated (if enabled) and the LED's demonstrated. The relay will be left de-energised for a minimum of two seconds.

Once the relay has been energised, it will be held in this state for a minimum of two seconds, even if a flood is detected immediately.

During normal operation the relay is energized, if a leak is detected the relay is de-energized and the control panel reports a leak.

When a leak is detected:

- The Nortec ME Control will enter a fault mode and an audible alarm will sound.

If Active mode has been selected:

- The system will stop operation and no pumps will run.
- The inlet will be held closed so no more water can enter the tank and hydraulic module.
- The drain will also be held closed so that, in case of a drain issue, no more water will be released from the tank or hydraulic module.

Note: for hygiene reasons, if the leak detection fault has not been cleared within 24 hours the tank will automatically drain.

If Passive mode has been selected:

- The system will remain in operation and continue with normal cycles.

A trained engineer must inspect the AHU and installed equipment to ascertain the source of the fault and correct it. Once the leak has been corrected, any standing water cleared and all surfaces dried, the enclosure should be disassembled and all parts dried thoroughly. The enclosure can then be reassembled and reinstalled in position following the steps in [chapter 4.1](#).



WARNING!

In the event of water carry-over from the evaporative cassettes or a water leak, surfaces near the ME system may have become wet. This could result in a slipping hazard or an increased risk when handling components. If this occurs, risk assess the situation and take suitable precautions before working on the ME system. If carry-over was the cause of any standing water in the AHU/duct, follow the advice in [chapter 7.4 - Malfunctions without indication](#) of the operation manual to remedy the problem.

The fault and audible alarm in the ME Control unit can be reset by cycling the power switch on the right side of the Nortec ME control unit, once the unit has rebooted normal operation should be resumed.

Alternatively this can be done by pressing the reset button on the sensor board. If opening the panel for any reason while it is energized, ensure appropriate measures are in place to safeguard against electric shock and electrostatic discharge.



DANGER!
Risk of electric shock!

The control unit of the Nortec ME Control contains live mains voltage. Live parts may be exposed when the control unit is open. Touching live parts may cause severe injury or danger to life.

6.2 Advanced operation features

6.2.1 LED status

If the Alarm does not sound when the sensor is submerged, or sounds continuously when dry, the LEDs can provide indication of the unit state.

Green LED: The green LED should be on continuously during normal operation, except in the “Off” mode or there is an error (see [chapter 6.2.3](#)).

Yellow LED: This will be on if the sensor reading is more than 33% of the threshold setting.

Orange LED: This will be on if the sensor reading is more than 66% of the threshold setting.

Red LED: This will be on solidly if the sensor reading exceeds the threshold setting. If the red LED is flashing, it is either because the unit is in “test” mode or, if the green LED is off, because the unit has discovered an error (see [chapter 6.2.3](#)).

6.2.2 Adjusting the alarm threshold

The alarm threshold trimmer can be used to raise or lower the sensitivity of the unit.

On power-up or by pressing the reset button, the unit enters “learning” mode. In “learning” mode, the sensor sensitivity trimmer can be adjusted, which changes the threshold at which the unit will report an alarm. The unit will only be in “learning” mode for approximately 20 seconds after power-up or reset. After this time the unit will enter “run” mode, and any adjustment of the trimmer or change to the relay mode jumper will have no effect.

Note that if the reset button is pressed, the alarm will sound (if enabled) for at least two seconds as part of the initialisation function. In this event, the mode jumper and trimmer setting should be checked before the unit is left to monitor the sensor autonomously.

With the sensor is connected and the unit in learning mode, slowly adjust the threshold trimmer. As the input becomes more sensitive, the yellow, orange and finally red LED's will progressively light. If the red LED is lit, the sensitivity is set too high, and the unit is in alarm.

6.2.3 Error indication

If the unit thinks that there is an error (for example, the sensor reads such an extreme level that a short circuit is suspected) then the red LED will flash continuously, the relay will be de-energised, and the sounder will be activated (if enabled). The sounder pattern will be three tones followed by a gap, to differentiate it from the flood warning. The green LED will be off to differentiate between an error report and the “Test” mode. The error report will be held until the reset button is pressed, although this function could reset automatically if the unit is in “Reset” mode.

7 Spare parts

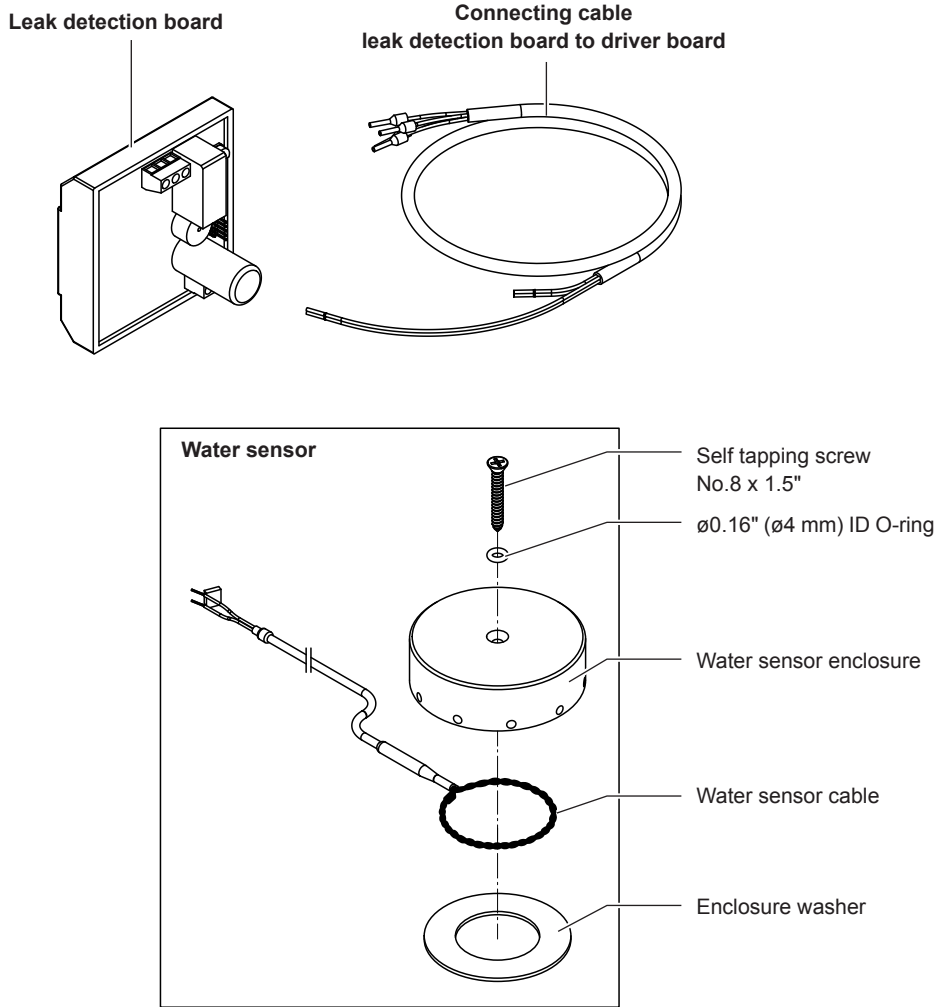


Fig. 8: Spare parts

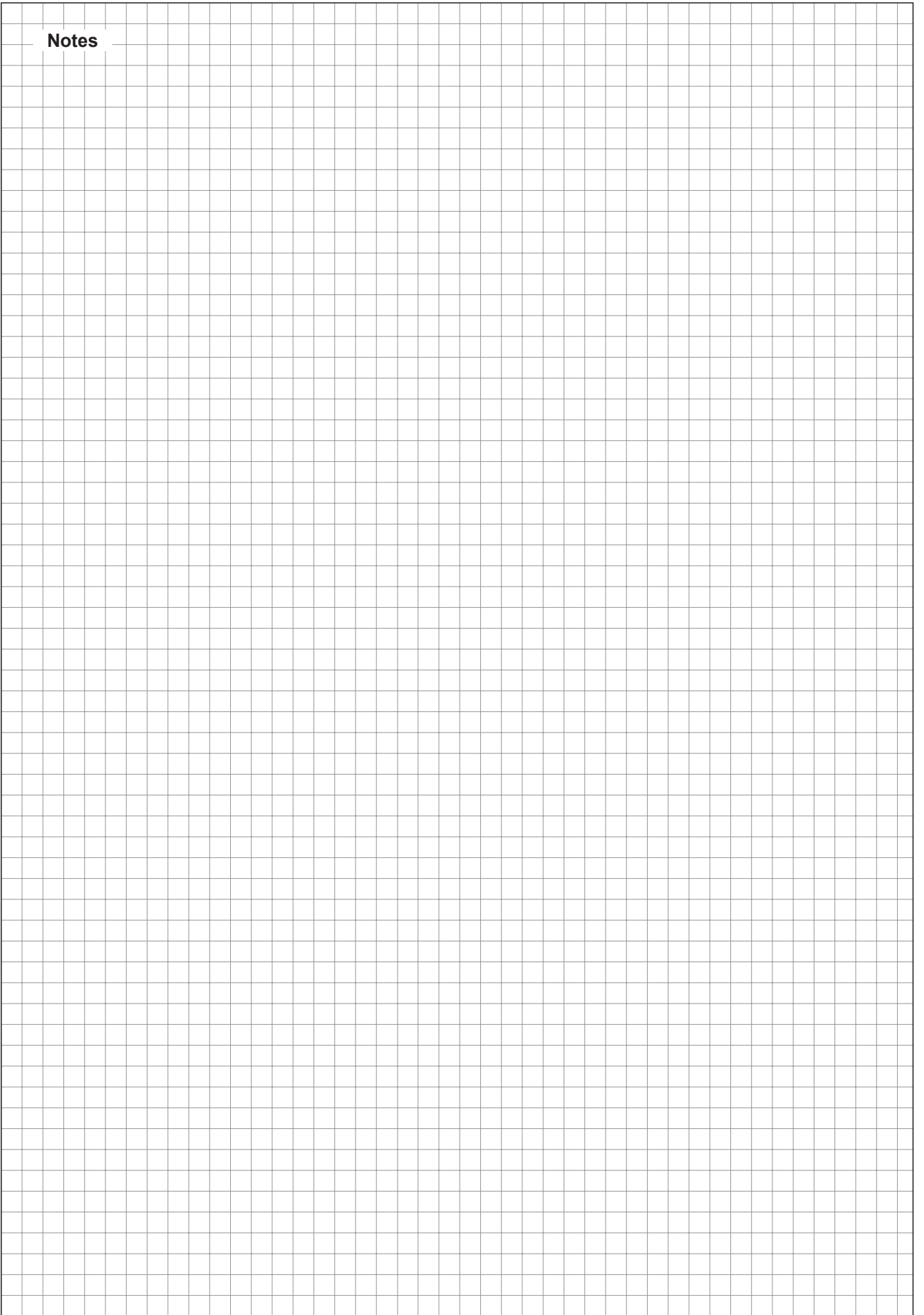
Please contact your Nortec representative for spare parts!

Safe disposal of electrical and electronic components

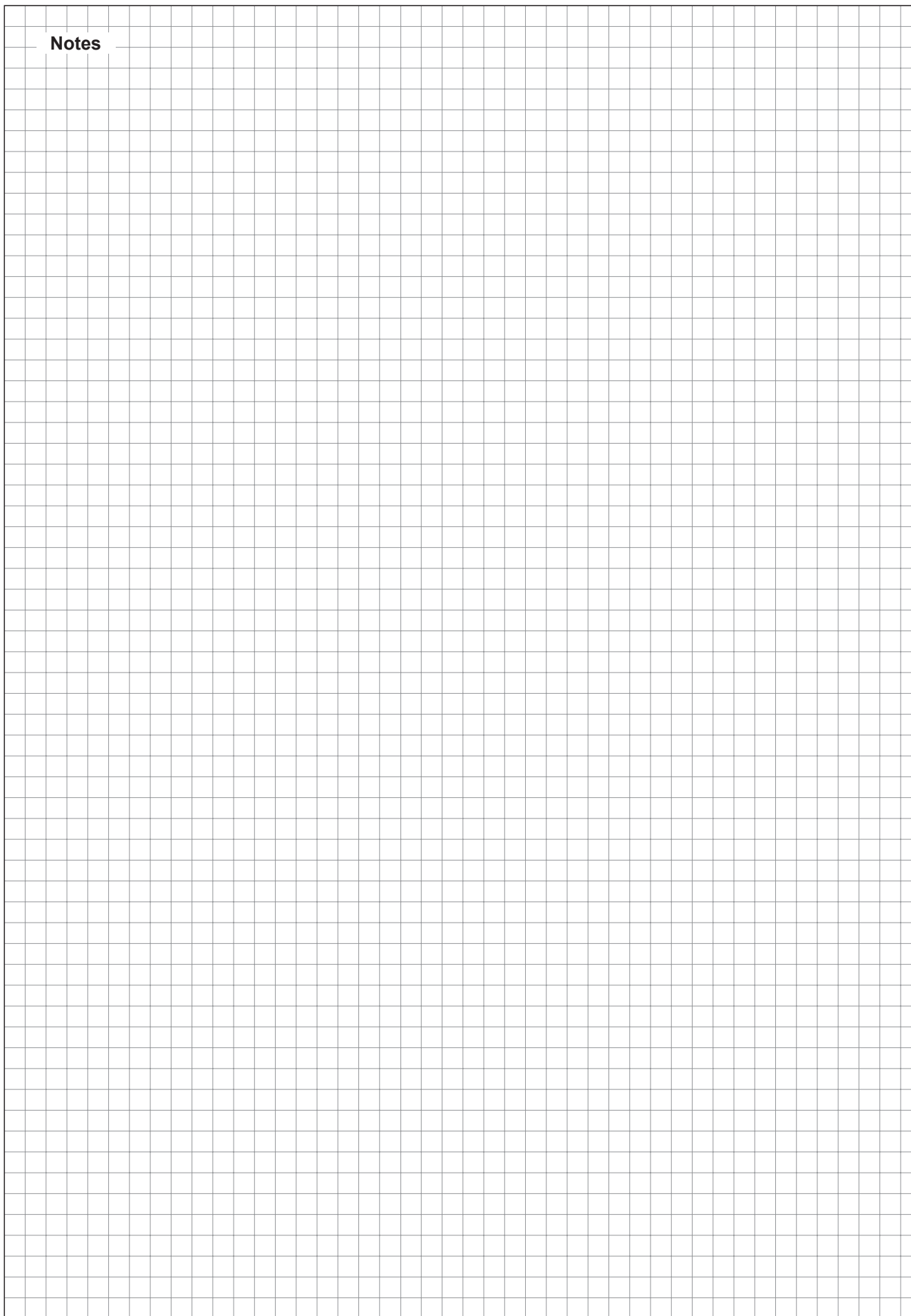


Please dispose of defective parts in accordance with your local recycling laws and regulations. Waste electrical and electronic equipment may contain hazardous substances, which, if not treated properly, can be harmful to the environment and human health. Specific treatment of waste electrical and electronic equipment is therefore essential.

Notes



Notes



Warranty

Nortec Humidity Inc. and/or Nortec Humidity Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years after installation or 30 months from manufacturer's ship date, whichever date is earlier, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to THE COMPANY until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of THE COMPANY.

THE COMPANY's limited warranty on accessories, not of the companies manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or steam distribution systems.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.

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