

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
RO 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

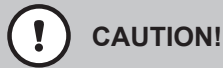
1.1 Notes on the addendum manual

This manual is an addendum for the installation of the optional RO 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 RO 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 RO 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 RO 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 RO 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 RO 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 RO 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 RO 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

3.1 Overview RO leak detection system

The leak detector will be installed at the factory, if the RO leak detection is selected when the ME system is ordered. The sensors have to be installed, connected and checked on site. The system is available with 2 or 3 sensors. The sensors are labelled with consecutive numbers on the top side. The zone is therefore visible.

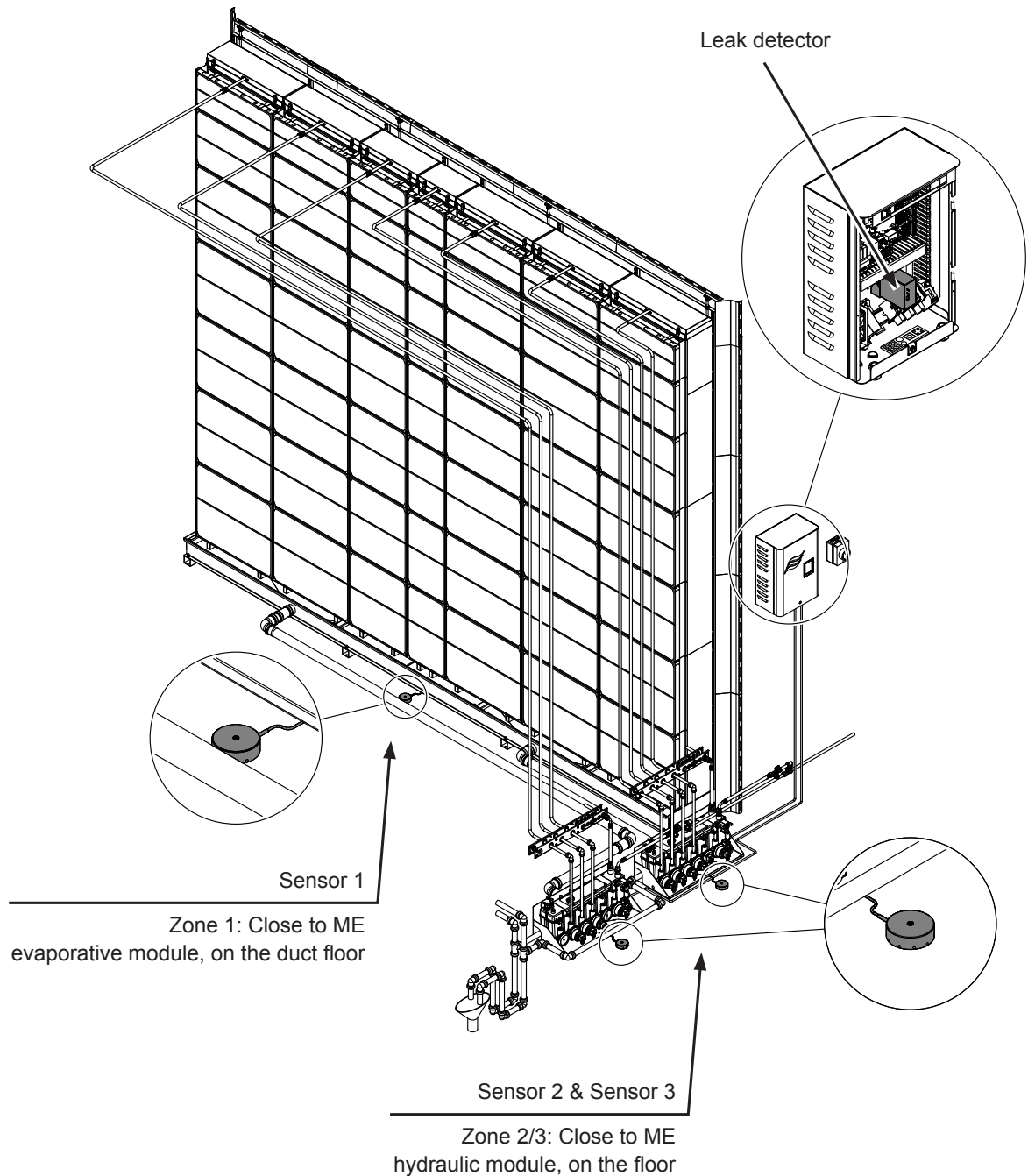


Fig. 1: Overview RO leak detection system - Showing system with 3 sensors

3.2 Scope of delivery

The RO leak detection system consists of the following components:

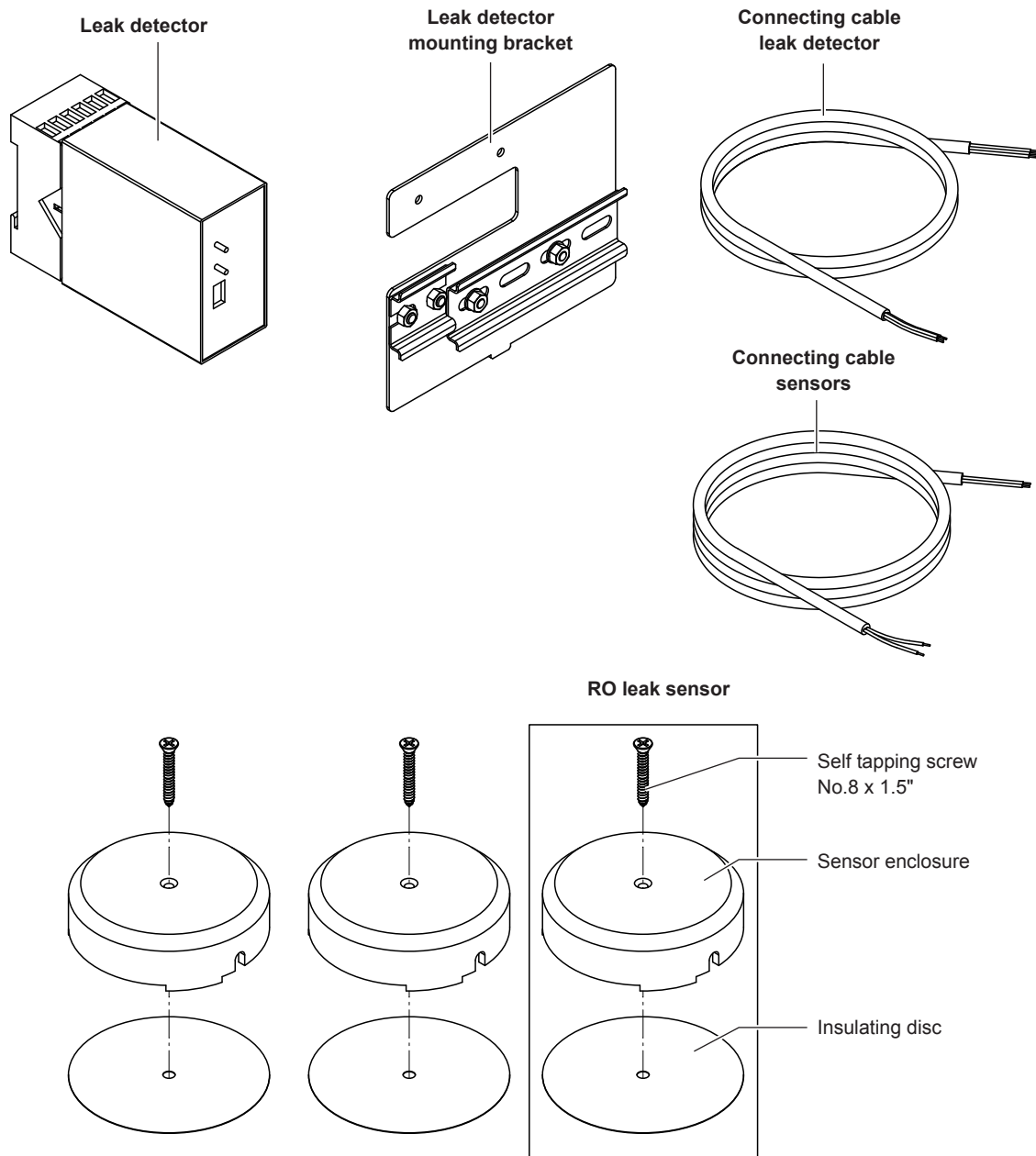


Fig. 2: Scope of delivery

3.3 Principle of operation

The RO leak detection system is designed to detect standing water inside the AHU where the Nortec ME evaporative module is installed and outside the AHU below the hydraulic modules, and prevent further flooding from occurring. When water enters the sensor enclosure it bridges the two electrodes on the bottom side of the sensor and signals the Nortec ME Control system to enter fault mode, error message (E54) will be shown on the display. 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.



Fig. 3: Fault indication on display

When the fault occurs, a trained engineer must inspect the AHU and installed equipment to ascertain the source of the fault and correct it. If the leakage problem has been solved the alarm can be switched off by switching the Condair ME control unit off and then on again (or by pressing the reset switch on the leak detector).

4 Installation work

4.1 Installing leak detector into control unit (retrofit parts only)

Nortec ME Control systems purchased with the RO leak detection system will be provided with the leak detector already fitted in the control unit.



DANGER!
Risk of electric shock!

Electrical work must only be carried out by an appropriately trained engineer. Please ensure a risk assessment has been completed before starting any electrical work. Isolate all power before carrying out any electrical work.

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. Remove the lid of the central cable trunking, then remove both screws/washers that secure the cable trunking (see [Fig. 4](#)).
5. Place the bracket underneath the cable trunking and rest the bracket tab on the slot as shown in the image below (see [Fig. 4](#)).

- Fasten the bracket and cable trunking using the screws and washers (see [Fig. 4](#)).

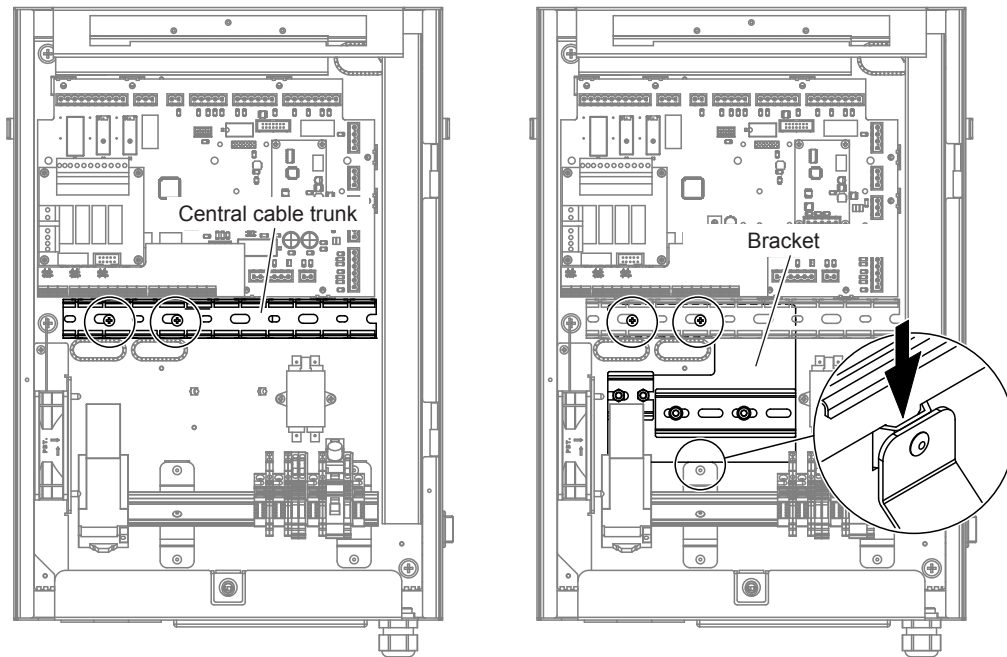


Fig. 4: Bracket Installation

- Pull off the red operating part from the base of the leak detector supplied. Connect the provided three-core cable to the terminals on the leak detector base as shown in [Fig. 5](#).

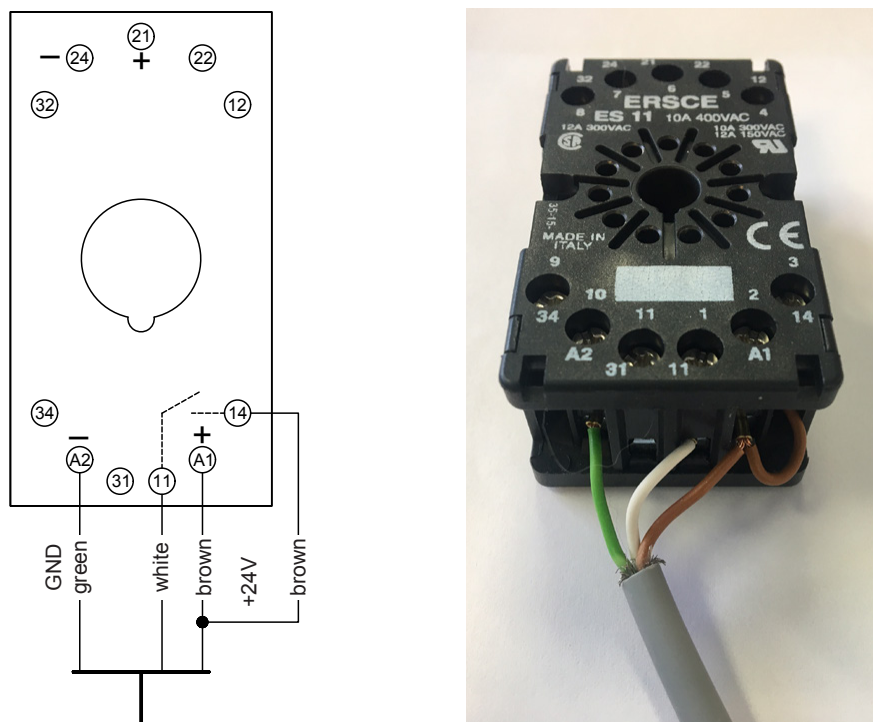


Fig. 5: Leak detector base connections

8. Attach the leak detector base to the longer of the two DIN rails on the bracket. Secure leak detector base on either side using DIN rail end stops, as shown in [Fig. 6](#).

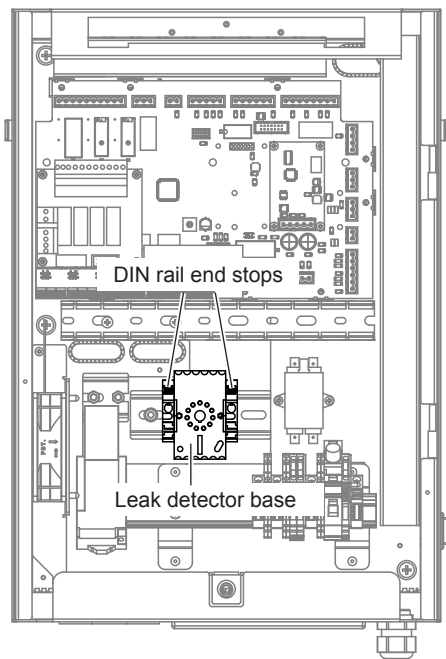


Fig. 6: Installing leak detector base

9. Remove the lids of the cable trunkings that surround the driver board and remove from the trunkings.
10. Feed the leak detection cable (grey) upwards through the cable trunking and connect it to terminal "X12" on driver board (refer to [Fig. 7](#) for details on connections).

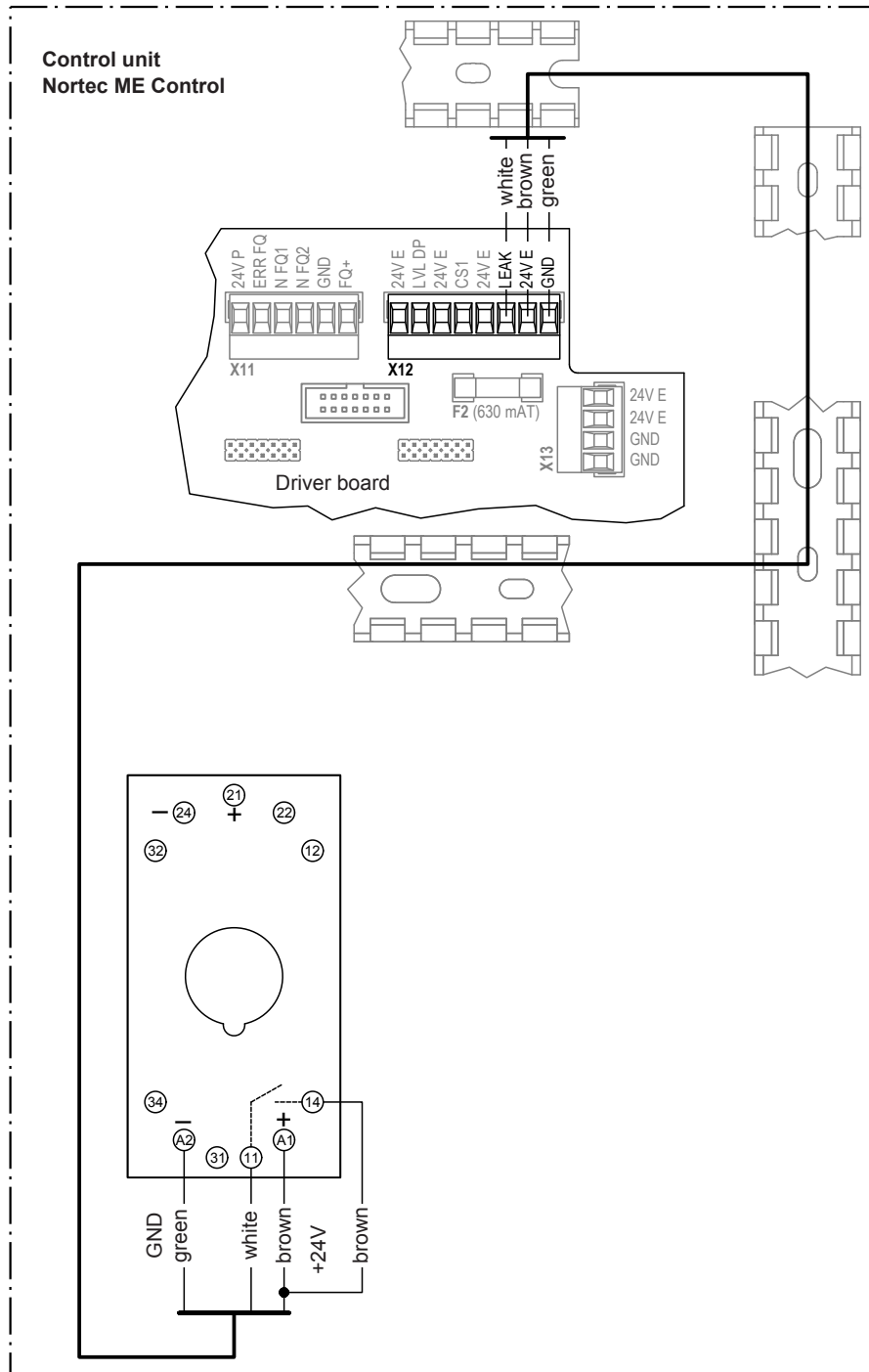


Fig. 7: Connecting the leak detector base to the driver board

11. Feed the sensor cable through the rectangular cable lead-through into the control unit lead it inside the cable trunkings to the connecting point of the leak detector base (see [Fig. 8](#)).

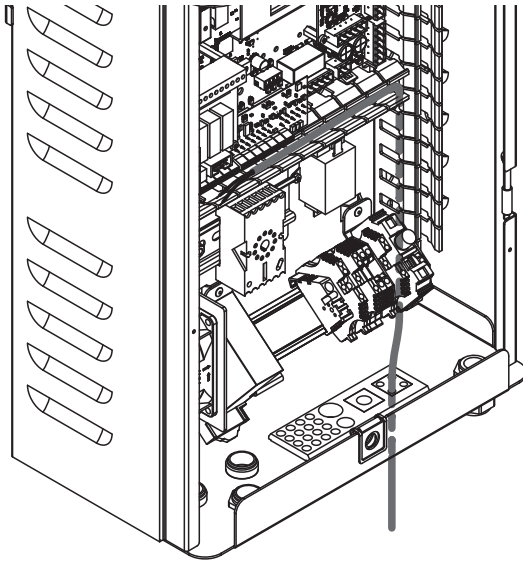


Fig. 8: Sensor cable feed through

12. Connect the sensor cable to the corresponding terminals on the leak detector base as shown in [Fig. 9](#).

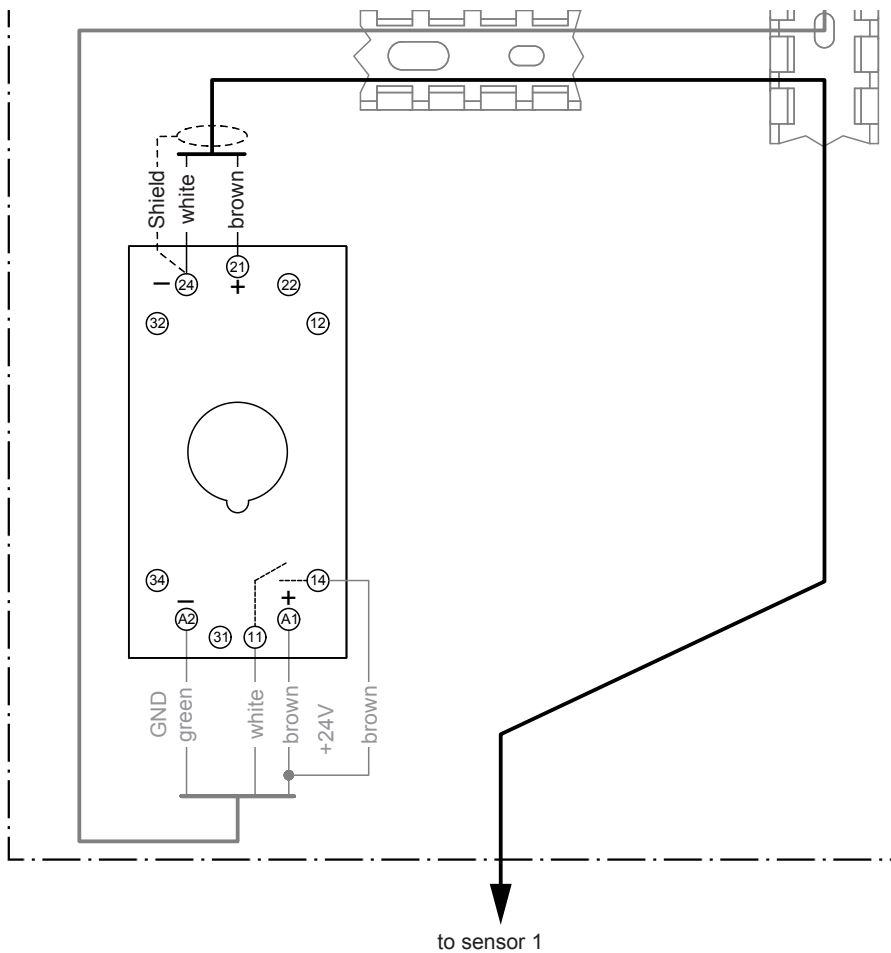


Fig. 9: Connecting the sensor cable to the leak detector

13. Put the lids back on to the cable trunking.
14. Align contact pins of the red operating part of the leak detector to the corresponding connector holes in leak detector base. Then, push the red operating part into leak detector base until it comes to a stop.
15. The installation of the leak detector in the Nortec ME control unit is now finished. Close inner door, reattach and secure the front panel.
16. Proceed with [chapter 4.2](#) to connect the cable to the sensors.

4.2 Connecting the sensors

4.2.1 Preparing the sensor cables

1. Evaluate cable length between Nortec ME control unit and sensor 1 and between sensor 1 and sensor 2 and if applicable between sensor 2 and sensor 3 and cut sensor cables to length.
2. Remove cable sheath from the last 0.8" (20 mm) of the sensor cables (see [Fig. 10](#)). Do not remove the cable shielding.
3. Pull the cable shielding back over the cable sheath (see [Fig. 10](#)).
4. Strip the last 0.2" (5 mm) of the insulation from the sensor wires (see [Fig. 10](#)).

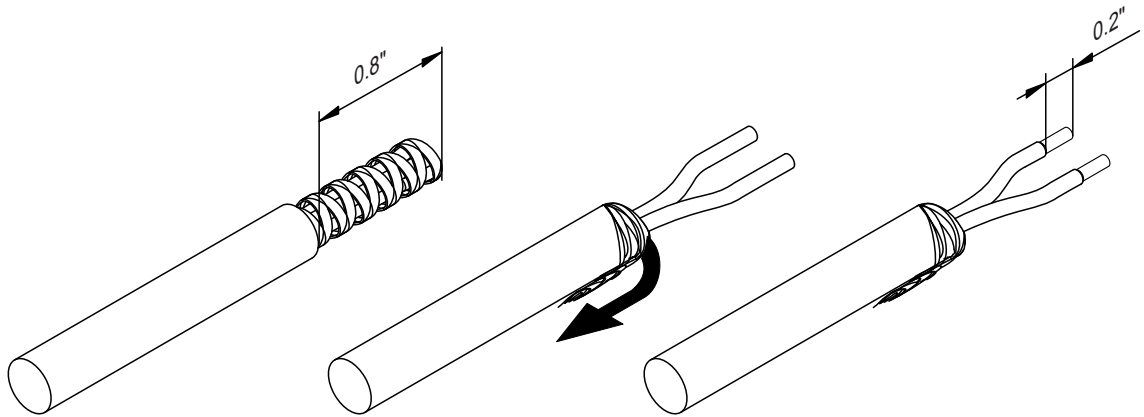


Fig. 10: Preparing the sensor cables

4.2.2 Connecting the sensor cables to the sensors

1. Remove the clamp(s) on the underside of the sensors.
2. Place sensor cable in the groove. Ensure the shielding of the sensor cable is touching the pin in the groove.
3. Reattach clamp and fasten the screws.
4. Connect brown and white wires of the sensor cables to the appropriate terminals of the sensors according to [chapter 4.2.2.1](#) (systems with 2 sensor) or [chapter 4.2.2.2](#) (systems with 3 sensor).

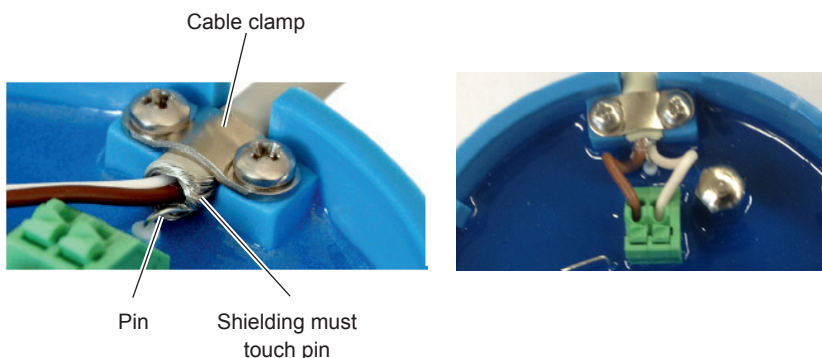


Fig. 11: Connecting the sensor cables to the sensors

4.2.2.1 Wiring layout for systems with 2 sensors

Sensor 1	
<p>Fig. 12: Sensor 1 top view</p>	<p>Fig. 13: Sensor 1 bottom view</p>
<ul style="list-style-type: none"> • Connect cable from leak detector to the terminals on the side labeled "Signalausgang". • Connect cable to sensor 2 to the terminals on the side labeled "von Folgesensor". • Cut both wire bridges of sensor 1. 	

Sensor 2 (end sesor)	
<p>Fig. 14: Sensor 2 top view</p>	<p>Fig. 15: Sensor 2 bottom view</p>
<ul style="list-style-type: none"> • Connect cable from sensor 1 to the terminals on the side labeled "Signalausgang". • Cut one of the two wire bridges of sensor 2. 	

Be aware of the correct connection of the shield and cable colours brown/white!

Do not run the sensor cables parallel to power cables!

4.2.2.2 Wiring layout for systems with 3 sensors

Sensor 1	
<p>Fig. 16: Sensor 1 top view</p>	<p>Fig. 17: Sensor 1 bottom view</p>
<ul style="list-style-type: none"> • Connect cable from leak detector to the terminals on the side labeled "Signalausgang". • Connect cable to sensor 2 to the terminals on the side labeled "von Folgesensor". • Cut both wire bridges of sensor 1. 	

Sensor 2	
<p>Fig. 18: Sensor 2 top view</p>	<p>Fig. 19: Sensor 2 bottom view</p>
<ul style="list-style-type: none"> • Connect cable from sensor 1 to the terminals on the side labeled "Signalausgang". • Connect cable to sensor 3 to the terminals on the side labeled "von Folgesensor". • Cut both wire bridges of sensor 2. 	

Sensor 3 (end sensor)



Fig. 20: Sensor 3 top view

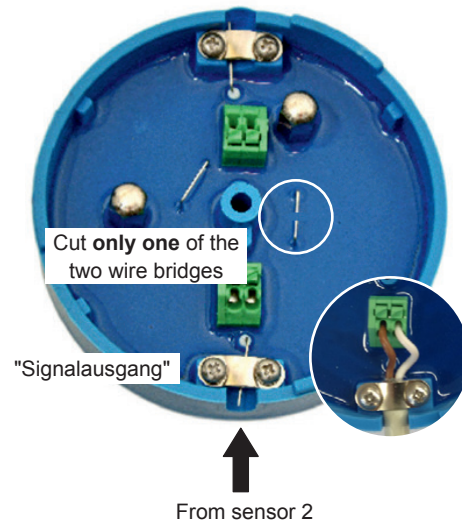


Fig. 21: Sensor 3 bottom view

- Connect cable from sensor 2 to the terminal on the side labeled "Signal Ausgang".
- Cut one of the two wire bridges of sensor 3.

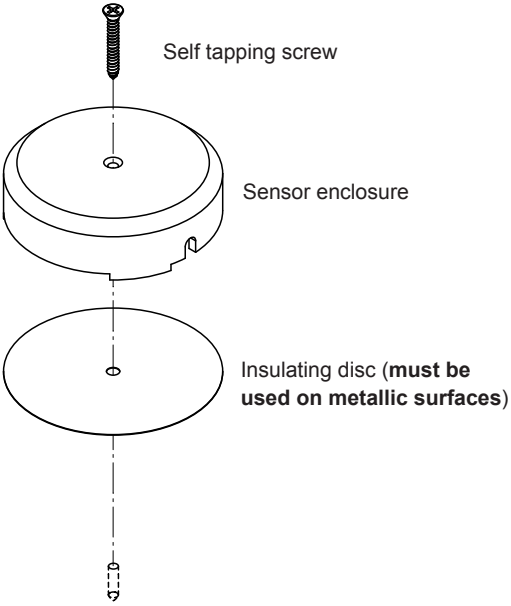
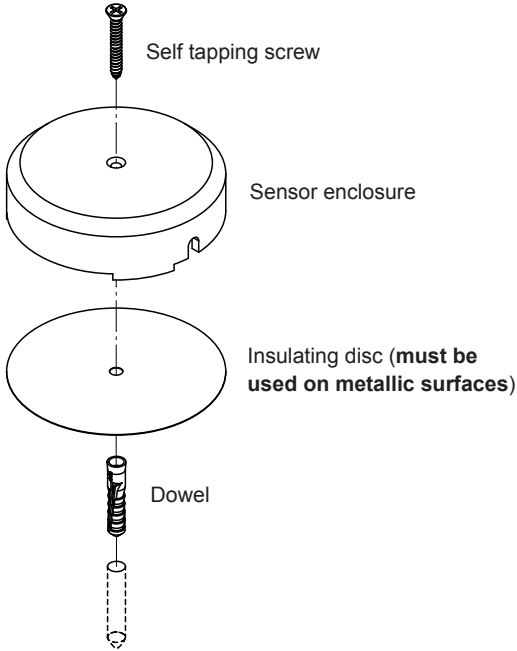
Be aware of the correct connection of the shield and cable colours brown/white!

Do not run the sensor cables parallel to power cables!

4.2.3 Fixing the sensors to the AHU floor or building floor

Important: Do not fix the sensors to the AHU/building floor unless the tests in [chapter 6.1](#) have been successfully finished.

1. Fix the 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 $\varnothing.12''$ ($\varnothing3.2$) 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 through the centre of the sensor enclosure and screw the enclosure together with the insulating disc (required for metallic surfaces) 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 through the centre of the sensor enclosure and screw the enclosure with the insulating disc (required for metallic surfaces) tight to the building floor.

2. Secure the sensor cables with cable ties at suitable intervals along the cable run between the Nortec ME control unit and the sensors.

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.

5 Configuration

5.1 Configuration process

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

If the RO 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.

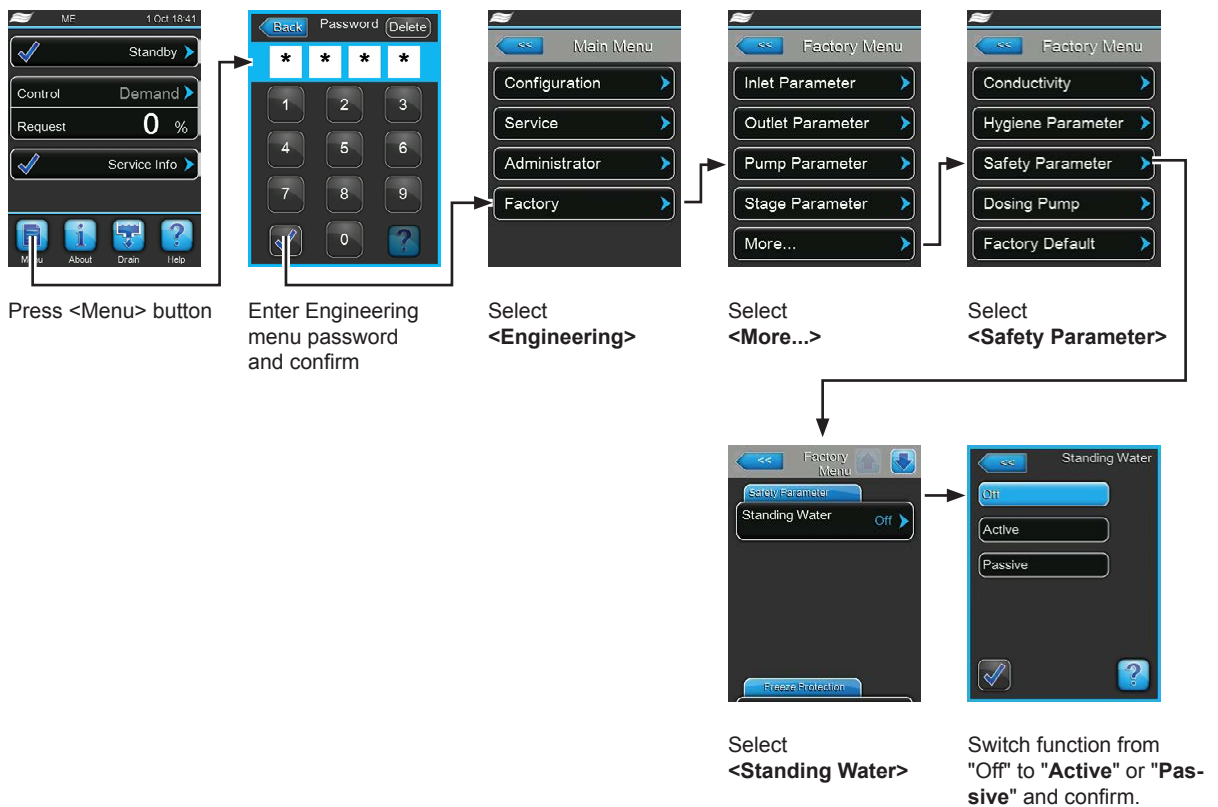


Fig. 22: Configuration process

Description of the "Active" and "Passive" mode

- **Passive:** If standing water is detected, the system activates a fault but continues to operate as normal.
- **Active:** If standing water is detected, the system stops operating and shuts the inlet and drain valve. After 24 hours the system will automatically drain the water tank.

6 Operation

6.1 Functional tests

Leak detection test

Test all sensors which will be used in the RO leakage detection system for correct functioning as follows:

1. Place the sensor in liquid, so that a conductivity connection between the two electrodes on the bottom side of the sensor is triggered (see arrow in figure below).

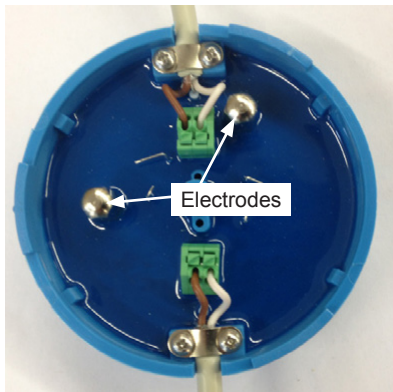


Fig. 23: Electrodes to be place in liquid

When the sensor is placed in the liquid check the following:

- Is alert audible (only if "Summer" is set to "1" on the leak detector)?
- Does the error message appear on the display?
- Did the water inlet valve close?

Note: If the ME control leak monitoring is configured to "Passive", the inlet valve will neither open nor close.

2. Remove sensor from the liquid and dry it. Reset the Error by switching off and on the Nortec ME control unit.

Important: the error must not reset automatically if sensor is removed from the liquid.

3. Repeat step 1 to 2 with the remaining sensors.

Cable break test

1. Disconnect the end sensor (sensor 2 or 3) in order to examine the cable break detection. If end sensor is disconnected check the following:

- Is alert audible (only if "Summer" is set to "1" on the leak detector)?
- Does the error message appear on the display?
- Did the water inlet valve close?

2. Reconnect end sensor.

After both tests have been carried out successfully fix sensors to the AHU/building floor, respectively as described in [chapter 4.2.3](#).

Important: It is recommended to repeat both tests periodically.

6.2 Display and operating elements of the leak detector



Fig. 24: Leak detector

LED "Alarm"	Notifies detection of a liquid
Button "Test"	Simulation of a leakage
Button "Reset"	Alarm acknowledgement
F1	1 = Auto Reset (automatic alarm acknowledgement after fixed leakage) NOT RECOMMENDED! 0 = Alarm memory (manual alarm acknowledgement by "Reset"-key or through external reset needed)
F2	no function
Summer	1 = internal buzzer activated during leakage alarm 0 = buzzer deactivated
Empfindl.	H = high sensitivity T = low sensitivity
LED "P"	Operation indicator mains voltage
LED "Störung"	Fault indicator in case of sensor cable break or defective units
Factory Settings <ul style="list-style-type: none"> - F1 = 0 - F2 = 0 - Summer = 1 - Empfindl. = H 	

7 Spare parts

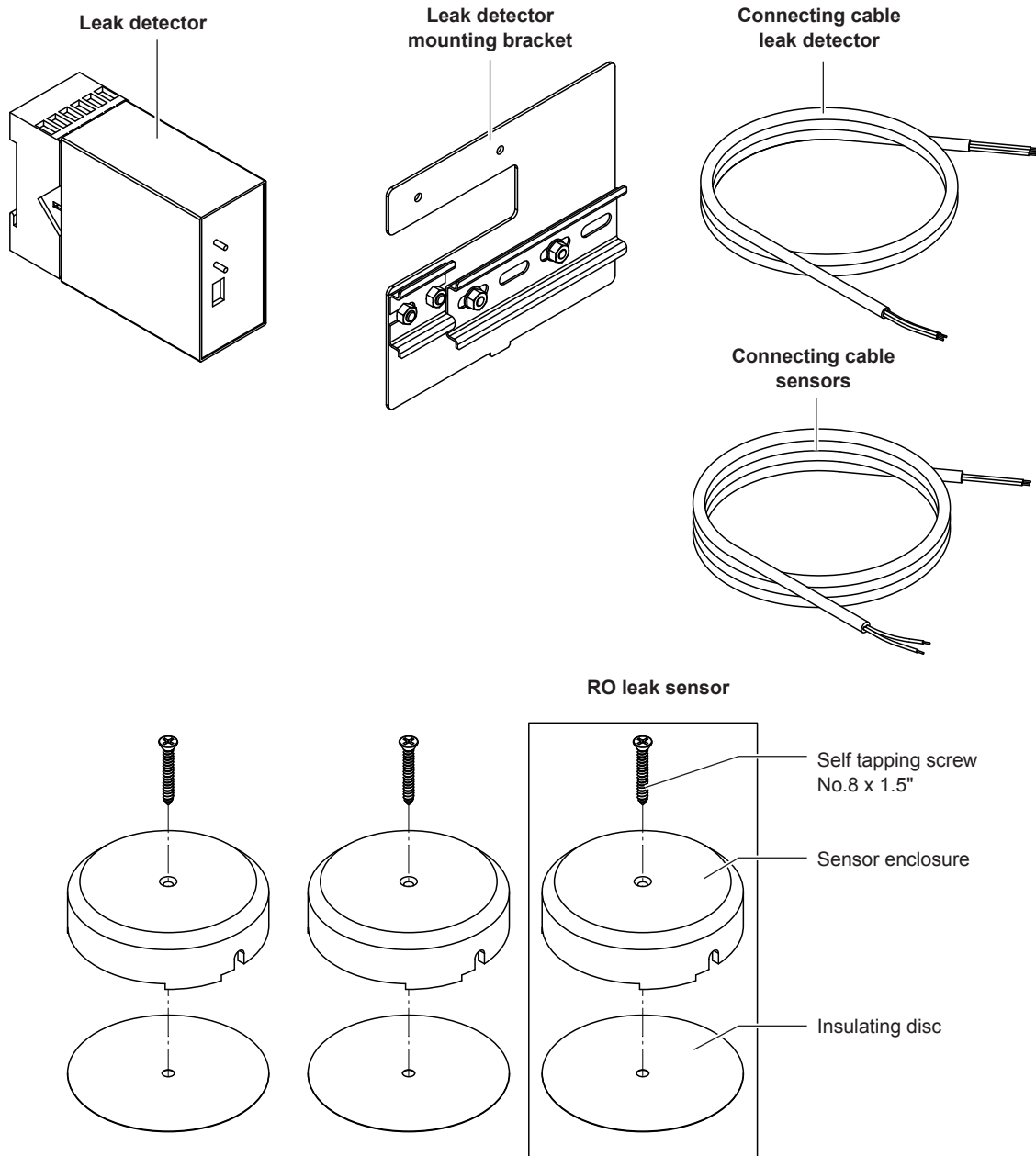


Fig. 25: Spare parts

Please contact your Nortec representative for spare parts!

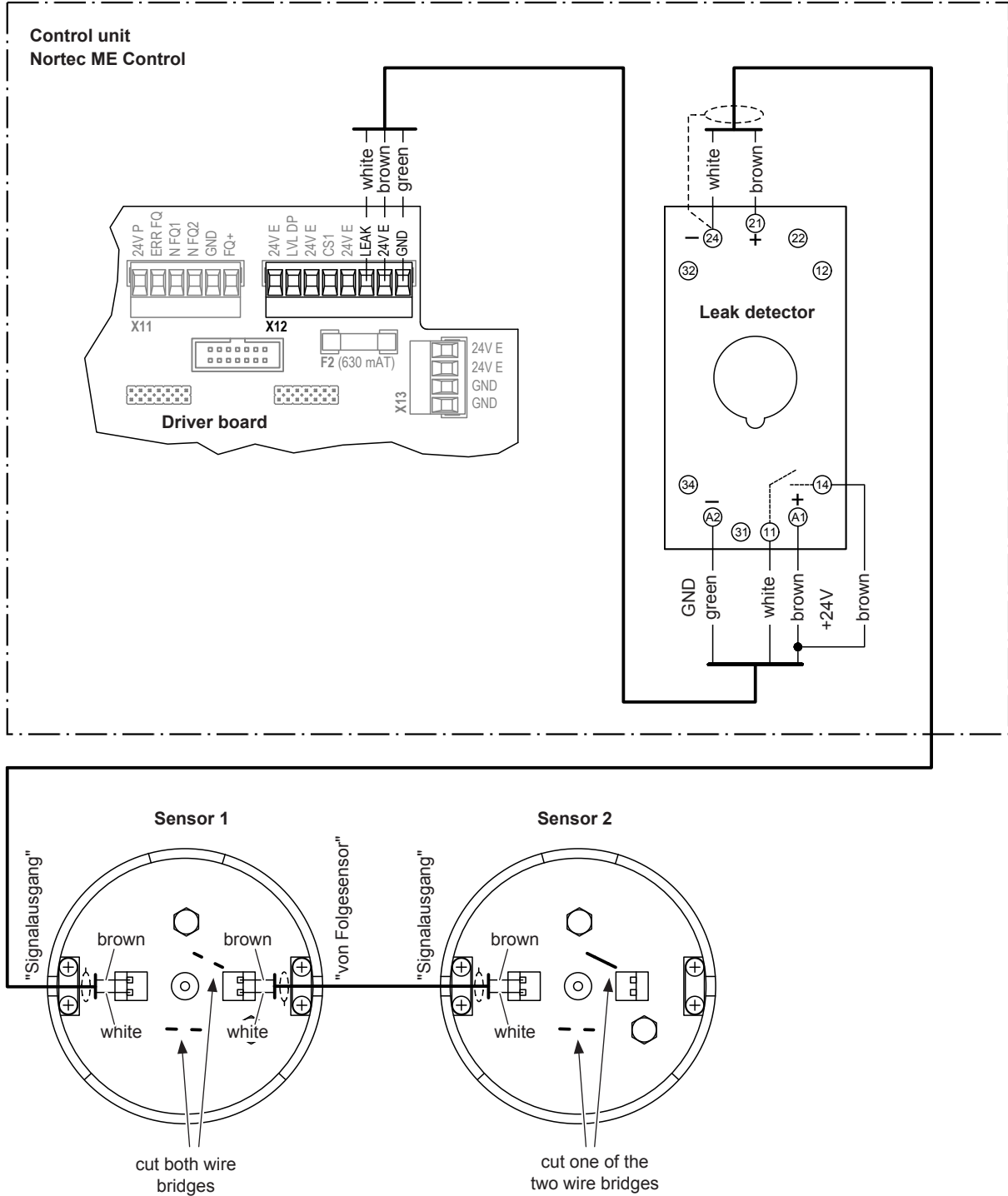
Safe disposal of electrical and electronic components



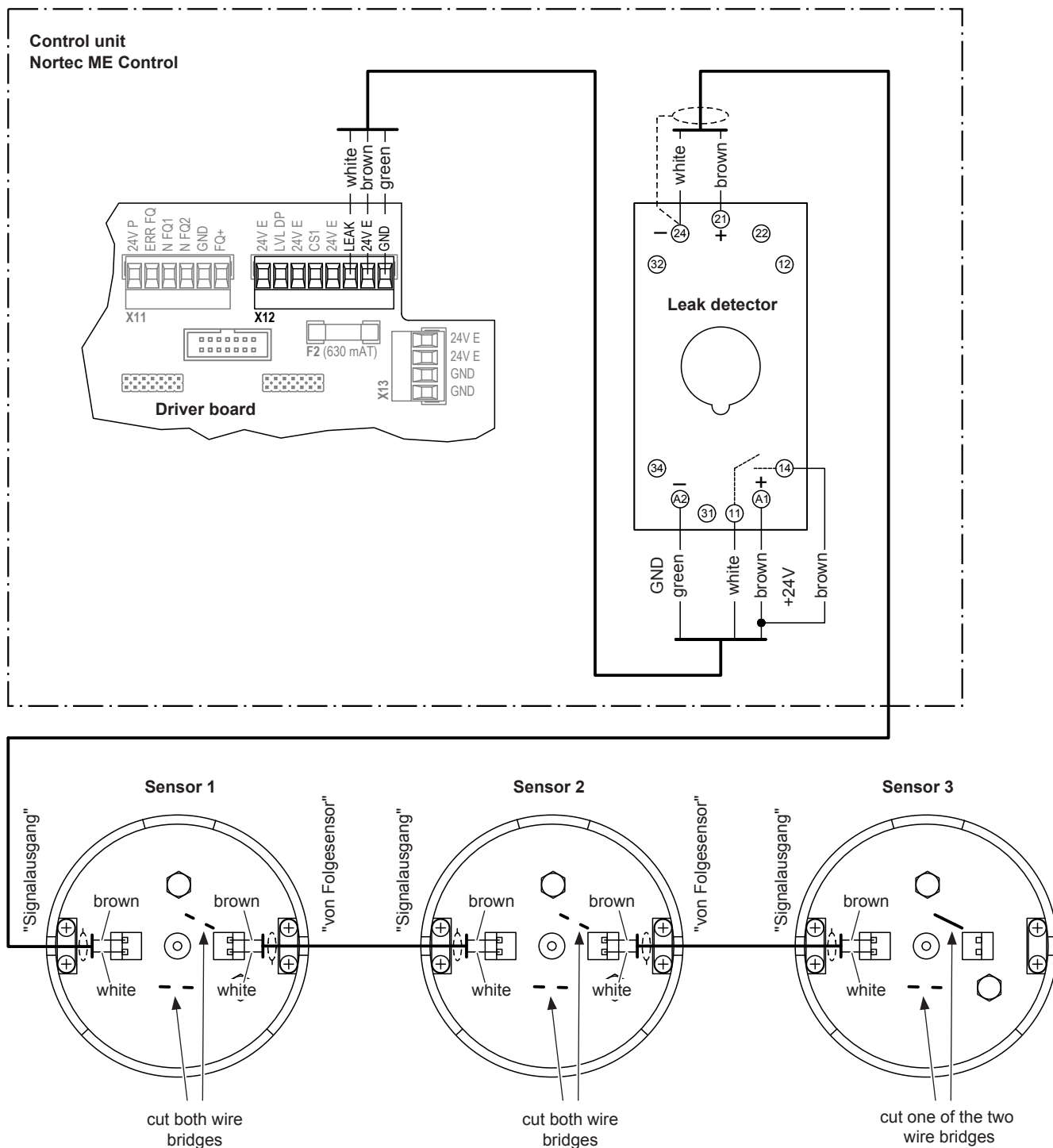
Please dispose of defective parts in accordance with your local recycling laws and regulations. Waste electrical and electronic equipment may contain hazardous substances, which, if not-treated properly, can be harmful to the environment and human health. Specific treatment of waste electrical and electronic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

8 Appendix

8.1 Wiring diagram for RO leak detection systems with 2 sensors



8.2 Wiring diagram for RO leak detection systems with 3 sensors



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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