

Original instructions

# User manual

## IceDry 30



# Desiccant dehumidifier

190TEN-1049-H1307

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## Important user information

### Intended use

Munters dehumidifiers are intended to be used for the dehumidification of air. Any other use of the unit, or use which is contrary to the instructions given in this manual, can cause personal injury and damage to the unit and other property.

No modification of the unit is allowed without prior approval by Munters. Attachment or installation of additional devices is only allowed after written agreement by Munters.

### Warranty

The warranty period is valid from the date the unit left our factory, unless otherwise stated in writing. The warranty is limited to a free exchange of parts or components which have failed as a result of defects in materials or workmanship.

All warranty claims must include proof that the fault has occurred within the warranty period and that the unit has been used in accordance with the specifications. All claims must specify the unit type and fabrication number. This information is stamped on the identification plate, see section *Marking*.

It is a condition of the warranty that the unit for the full warranty period is serviced and maintained by a qualified Munters engineer or Munters approved engineer. Access to specific and calibrated test equipment is necessary. The service and maintenance must be documented for the warranty to be valid.

Always contact Munters for service or repair. Operating faults can occur if the unit is maintained insufficiently or incorrectly.

### Safety

Information about dangers are in this manual indicated by the common hazard symbol:



#### **WARNING!**

*Indicates a possible danger that can lead to personal injury.*



#### **CAUTION!**

*Indicates a possible danger that can lead to damage to the unit or other property, or cause environmental damage.*

**NOTE!** *Highlights supplementary information for optimal use of the unit.*

### Conformity with Directives

The dehumidifier is in conformity with the essential safety requirements of the Machinery Directive 2006/42/EC, the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC. The dehumidifier is manufactured by an ISO 9001:2008 accredited manufacturing organisation.

### Copyright

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# 1 Introduction

## 1.1 General

Munters manufactures a wide range of efficient dehumidifiers designed for different uses and applications. Please contact your nearest Munters office if you have any questions regarding the installation of your dehumidifier, or visit the web site at [www.munters.com](http://www.munters.com).

The unit is inspected and checked prior to leaving the factory to guarantee consistent quality and maximum reliability. For product data, see section *Technical specification*.

## 1.2 About this manual

This manual is written for the user of the dehumidifier. It contains necessary information for how to install and use the dehumidifier in a safe and efficient way. Read through the manual before the unit is installed and used.

## 1.3 Safety and cautions

Every measure has been taken in the design and manufacture of the dehumidifier to ensure that it meets the safety requirements of the directives and standards listed in the EC Declaration of Conformity.

The information in this manual includes suggestions for best working practice and shall in no way take precedence over individual responsibilities or local regulations.

During operation and other work with a machine it is always the responsibility of the individual to consider:

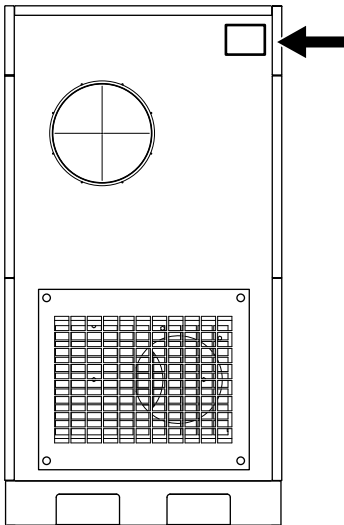
- The safety of all persons concerned.
- The safety of the unit and other property.
- The protection of the environment.

**For information about the safety symbols used in this manual, see section *Important user information*.**

**WARNING!**

- *The unit is not intended for use in hazardous (classified) areas where explosion safety compliant equipment is required.*
  
- *The unit must not be splashed with or immersed in water.*
  
- *Do not connect the unit to other mains voltage than specified on the unit's identification plate, see section Marking.*
  
- *The mains power supply is permanently connected to the main power switch of the unit.*
  
- *Do not operate the unit near any heat-generating devices or flammable and dangerous materials.*
  
- *Do not insert fingers or any other objects into the air vents.*
  
- *All electrical installations must be carried out by a qualified electrician and in accordance with local regulations.*
  
- *The dehumidifier can restart automatically after a power cut. Always set and lock the main power switch in the OFF position before carrying out any service work.*
  
- *Use only approved lifting equipment to prevent accidents.*
  
- *Always contact Munters for service or repair.*

## 1.4 Marking



*Explanation of "Fabr. No" on the identification plate:*

*09 = year of manufacture, 19 = week of manufacture, 190XXX = article number, XXXXXX = serialnumber*

## 1.5 Supervision of operation

The dehumidifier is controlled and monitored from the operator panel located on the external electrical cabinet.

## 1.6 Fault indications

Any faults are indicated through illumination of the red lamp on the operator panel. For detailed information, see section 6.4.5, *Window 5, Alarm*.



## 2 Product design

### 2.1 Product description

The desiccant dehumidifiers in the IceDry series have been developed to effectively dehumidify the air in cold stores in order to minimise frost and ice build-up

The dehumidifier is equipped with an encapsulated rotor unit. The rotor casing is constructed of durable thermoset plastic and contains isolated sections that provide a precise balance for the dehumidification, reactivation and heat recovery airflows.

The electrical control system complies with the EN60204 (IEC60204) standards. For operating temperature, see section 9.2, *Technical data*.

The dehumidifier is manufactured in accordance with uniform European standards and established requirements for CE-marking.

### 2.2 Principle of operation

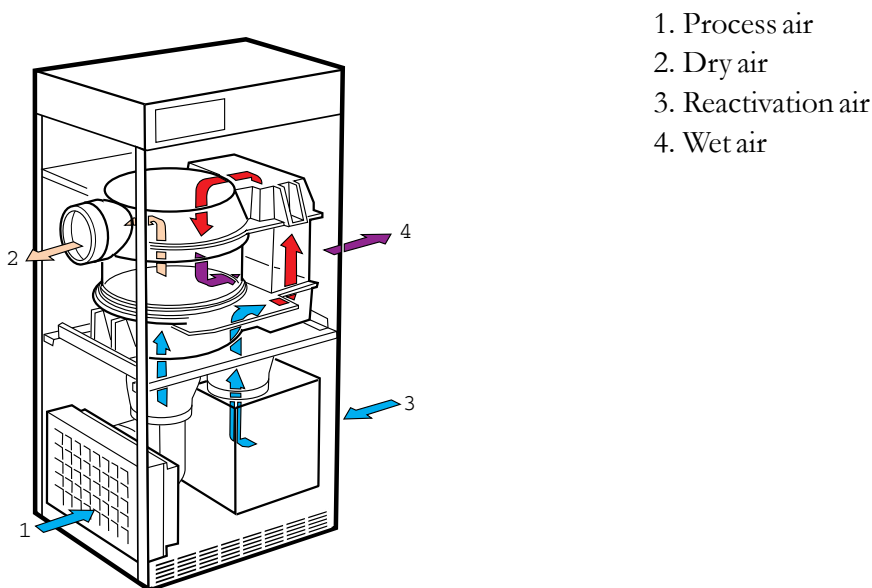


Figure 2.1 Principle of operation

The desiccant rotor is made of a composite material that is highly effective in attracting and retaining water vapour. The rotor is divided in two zones. The air flow to be dehumidified, **process air**, passes through the rotor's largest zone and then leaves the rotor as **dry air**. Since the rotor rotates slowly, the incoming air always meets a dry zone on the rotor, thus creating a continuous dehumidification process.

The air flow that is used to dry the rotor, **reactivation air**, is heated. The reactivation air passes through the rotor in the opposite direction to the process air and leaves the rotor as **wet air** (warm, moist air). This principle enables the dehumidifier to work effectively, even at freezing temperatures.

## 2.3 Main components

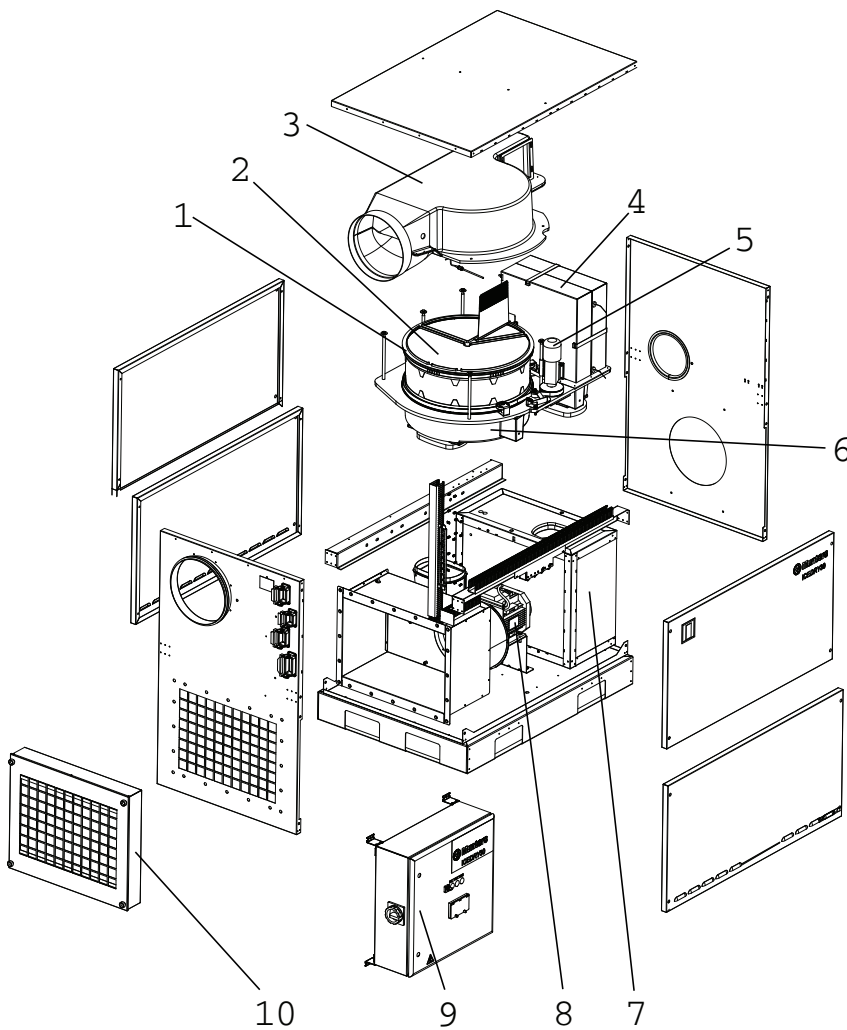


Figure 2.2 Main components

- |                        |                                |
|------------------------|--------------------------------|
| 1. Rotor seal ring     | 6. Lower rotor cover           |
| 2. Rotor               | 7. Reactivation fan            |
| 3. Upper rotor cover   | 8. Process fan motor           |
| 4. Reactivation heater | 9. External electrical cabinet |
| 5. Rotor drive motor   | 10. Process air filter         |

## 3 Transport, inspection and storage

### 3.1 Moving the equipment

The dehumidifier is delivered on a pallet and must be handled carefully. All panel doors on the unit must be closed during transport. Provided that the dehumidifier is still secured to its delivery pallet, it can be moved using a fork-lift truck.

Weight of the dehumidifier can be found in section 9.1, *Dimensions and service space*.

### 3.2 Packaging and delivery inspection

1. Check the delivery against the delivery note, order confirmation or other delivery documentation and check that everything is included and nothing is damaged.
2. Contact Munters immediately if the delivery is not complete in order to avoid installation delays.
3. If the unit is to be put into storage prior to installation, see section *Storing the equipment*.

**NOTE!** *If installation is not to be carried out immediately after arrival of the equipment, it is advisable to leave the packaging material in place on the dehumidifier, or to re-use the packaging material to provide temporary protection for the unit during later transportation to the site and during installation.*

4. Remove all packaging material from the unit, check carefully to make sure that no damage has occurred during transportation.
5. Any visible damage must be reported in writing to Munters within 5 days and prior to installation of the unit.
6. Dispose of the packaging material according to local regulations.

**NOTE!** *G3 filter cartridges for process and reactivation air are included in the delivery. One cartridge is mounted on the dehumidifier process air inlet and one on the outside of the cold-storage room, in the reactivation air inlet.*

### 3.3 Storing the equipment

The following is important if the dehumidifier is to be stored prior to installation:

- Place the dehumidifier in an upright position on a horizontal surface.
- Protect the dehumidifier from physical damage.
- Store the dehumidifier under cover and protect it from dust, frost, rain and aggressive contaminants.

## 4 Installation

### 4.1 General

IceDry dehumidifiers are intended for installation in cold stores with ambient air down to minus 25 °C. These conditions require that installation instructions are followed carefully as faulty installation can result in serious operational disturbances.

If the unit is to be put into storage prior to installation, see section 3.3, *Storing the equipment*.

### 4.2 Safety



#### **WARNING!**

*The mains power supply is permanently connected to the main power switch of the unit. Adjustments, maintenance and repairs must only be carried out by authorised personnel.*



#### **WARNING!**

*The wet air outlet is hot. To avoid burns from unintended contact, make sure it is insulated.*



#### **CAUTION!**

*The built-in heater requires a continuous power supply to prevent functional disorder. Only switch off the unit's power in case of emergency.*



#### **CAUTION!**

*Condensation is easily formed on the inside of the duct due to the high humidity of the reactivation air. To avoid condensation, the ductwork must be insulated*



#### **CAUTION!**

*Activate the main switch for the dehumidifier as soon as the unit has been installed. This allows the built-in heater to operate and prevents internal ice formation.*



#### **CAUTION!**

*Before starting the unit, the reactivation air inlet and wet air outlet must be thoroughly checked. Any ice must be removed. To avoid malfunction, it is important to have clear air passage throughout the ductwork.*



#### **CAUTION!**

*If the process airflow damper is fully open, the high cold air density in the cold-storage room could damage the process air fan.*



#### **CAUTION!**

*Failure to correctly adjust the process and reactivation airflows could cause the unit to malfunction.*

### 4.3 Site requirements

The dehumidifier is adapted to operation inside cold stores. The permitted operational temperatures are from minus 25 to 0 °C. It is important that the intended installation site meets the location and space

requirements for the equipment in order to achieve the best possible performance and facilitate servicing. Therefore, comply with the recommended service spaces, see section 9.1, *Dimensions and service space*.

**NOTE!** *The unit must be removed from the cold store at certain service intervals. Have extra cables for unit connection available.*

## 4.4 Where to install the dehumidifier

Select a place where the dehumidifier causes the least disturbance to the cold-storage room activities, while allowing for maintenance work such as process filter replacement.

When the unit is installed on a base frame, the base frame must be designed in such a way that it can easily be removed from the cold store/freezer. Make sure openings for forklift are included.

The dehumidifier must be placed so that there is no risk of the process intake and filter icing up. Ice normally forms near the doors and air-locks of the cold store where warm, humid air flows in.

Install the dehumidifier in such a way that the reactivation air and wet air ducts are as short as possible, max 1.5 m. See section 4.6, *Installation examples — cold storage room (freezer)*.

## 4.5 Ducting

### 4.5.1 General recommendations

**NOTE!** *Vibration reduction. If there is a need for reduction of vibrations from the dehumidifier, contact Munters for instructions. Refer to standard EN 1299+A1:2008.*

Due to the cold surroundings and risk of freezing, it is vital that all ducting are installed according to instructions. See also 4.6, *Installation examples — cold storage room (freezer)*.

To facilitate easy transfer of the dehumidifier out of the cold-storage room for service, all duct connections should be easily disassembled. Should the dehumidifier, despite this recommendation, be installed in such a way that it cannot be easily removed for service, it is important that the minimum service space requirements are met, see 9.1, *Dimensions and service space*. A vapour-tight connection between the wall and the duct is vital. Preferably, polyurethane foam should be used if the temperature is sufficiently high during application.

When installing ductwork between the dehumidifier and the inlet and outlet connections, the following recommendations should be observed:

- The length of ductwork should be kept as short as possible to minimise static air pressure losses.
- To maintain performance, all rigid process or reactivation air ductwork joints must be air and vapour tight.
- The design of the duct connections should facilitate easy disconnection of the unit for service outside the cold-storage room.
- Condensation easily builds up on the inside of the duct due to the high humidity of the reactivation air. To avoid condensation, the ductwork must be insulated.
- The process air ductwork should be insulated to prevent condensation from developing on the outside of the duct whenever the temperature of the air within the duct falls below the dewpoint of the ambient air through which the ductwork is routed.
- The wet air leaving the dehumidifier will easily cause condensation on the inside of the duct walls due to the high moisture content. This must be avoided by insulating the ducts.

- Ensure that access for operation and servicing is not restricted when designing and installing ducting. For more information, see section 9.1, *Dimensions and service space*.
- To reduce noise and/or vibration being transmitted along rigid ductwork, good quality, airtight flexible connections should be fitted.
- Ducts mounted directly onto the dehumidifier should be adequately supported to minimise the load and stress due to the weight and movement of the ducting.
- Dampers for balancing the air flow must be installed in the reactivation air inlet duct. Correct airflows are essential for maintaining the operating efficiency of the unit. For airflow adjustment details, see section 4.10, *Airflow check and adjustment*.
- Process air pressure and flow are adjusted using the process air fan's frequency converter. If this is the case, it is not necessary to have a damper in the dry air duct.
- The total resistance in the process and reactivation ductwork must not exceed the performance rating of the fans fitted in the dehumidifier. For details of minimum available static pressure, see chapter 9.2, *Technical data*.

#### 4.5.2 Process air inlet

The dehumidifier has an external filter box for the process air inlet. If there is a risk of the process air filter icing up, a duct should be connected to retrieve process air from a dry location 5-10 metres from the door opening. The filter box can then be moved to the inlet side of the duct.

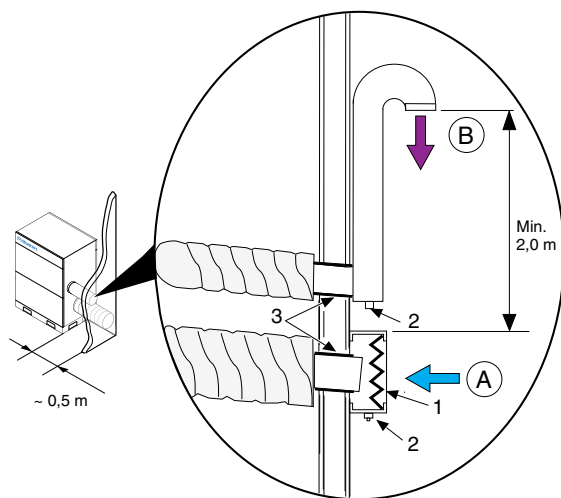
#### 4.5.3 Dry air outlet duct

Channel out the dry air from the dehumidifier and distribute it so that it mixes with the warm, humid air that normally enters the cold store above the doors and air-locks that are opened regularly. Install an adjustable damper in the duct.

#### 4.5.4 Reactivation air intake

Place the reactivation air intake and filter box outside the cold store. Mount the filter box directly on the wall. The duct to the dehumidifier reactivation air intake should be at most 1.5 metres long, and must be insulated to prevent ice build-up. This also applies to the section of duct passing through the wall. An adjustable damper is installed in the duct.

To prevent the outgoing wet air humidifying the incoming reactivation air, the reactivation air intake must be positioned at least 2 metres from the wet air outlet



- A. Reactivation air
- B. Wet air
- 1. Filter box
- 2. Condensate drains
- 3. Vapour-tight grommet

Figure 4.1 Inlet for reactivation air and outlet for wet air.

#### 4.5.5 Ductwork for wet air outlet

The wet air duct must be made of plastic or another corrosion resistant material. It must be able to handle temperatures between  $-30\text{ }^{\circ}\text{C}$  and  $75\text{ }^{\circ}\text{C}$ , be no more than 1.5 metres long and be insulated to prevent ice formation. This also applies to the part of the duct passing through the wall.

Because of its high moisture content the wet air leaving the dehumidifier will condense on the inside of the duct walls. Due to the low ambient temperature there is a risk of ice formation. The wet air duct must therefore be insulated.

- Horizontal ducts must be installed with a slight decline (away from the dehumidifier) to drain away possible condensation. The decline must be at least 2 cm/m of duct.
- 5 mm drain holes should be made at low points of the duct to prevent water accumulation in the duct.
- To prevent the outgoing wet air from humidifying the incoming reactivation air, the wet air outlet must be placed at least 2 metres from the reactivation inlet. See *Figure 4.1*.

**NOTE!** Always drill the drain holes on the outside of the cold storage/freezer room wall.



#### **WARNING!**

The wet air outlet is hot. To avoid burns from unintended contact, make sure it is insulated.

### 4.6 Installation examples — cold storage room (freezer)

Munters recommends the following installations. If in doubt, contact Munters for advice.  
 Note the service space requirements in section 9.1, *Dimensions and service space*.

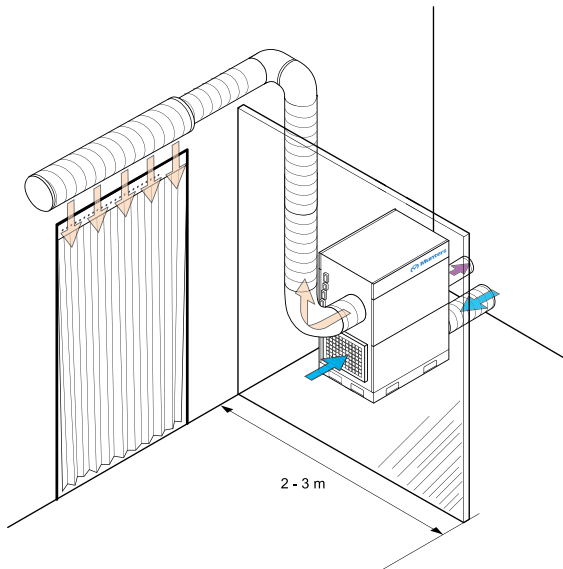


Figure 4.2 Position behind screen.

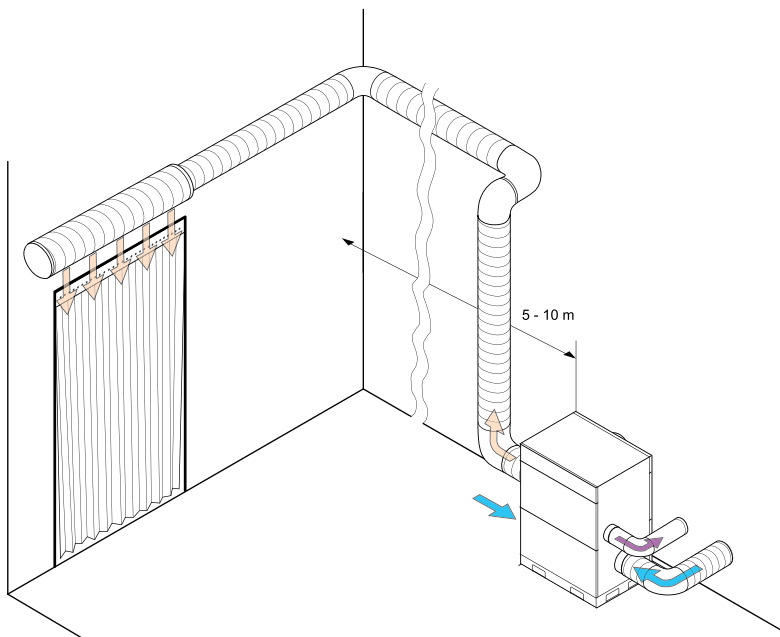


Figure 4.3 Position far away from door / airlock.



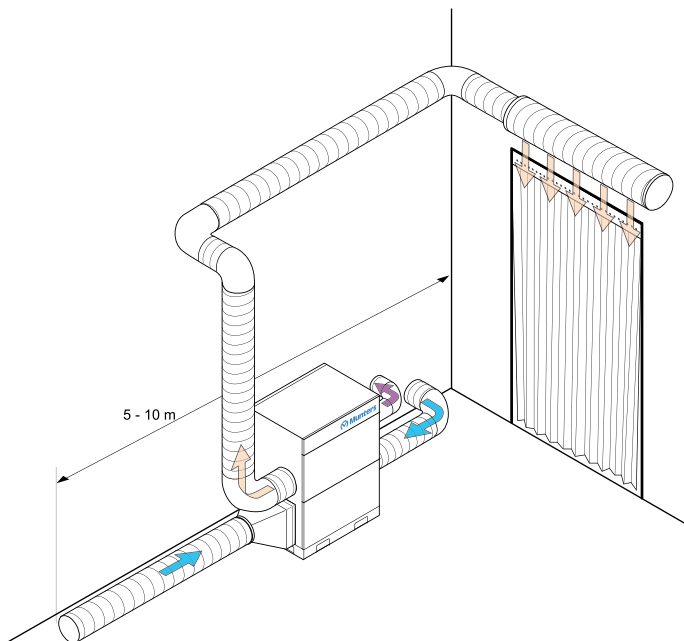


Figure 4.4 Process air duct far away from door / air lock.



### CAUTION!

Activate the main switch for the dehumidifier as soon as the unit has been installed. This allows the built-in heater to operate and prevents internal ice formation.

The openings of inlet and outlet ducts must be well sealed during installation and operation stops, when the dehumidifier is normally switched off. This prevents ice formation in ducts and dehumidifier caused by unintended ventilation and low temperature in the cold-storage room.

## 4.7 Electrical connections



### WARNING!

All electrical installations must be carried out by a qualified electrician and in accordance with local regulations.

All units are delivered complete with all internal cabling installed and configured to the voltage and frequency given on the ID plate.

**NOTE!** Supply voltage must not vary more than 10% of the specified operating voltage.

The unit must be adequately connected to earth.

For connection details, refer to the *ID plate*, Electrical circuit diagrams or section 9.2, *Technical data*. The connection cable and main fuses must be suitable to the unit being installed.

Connect the unit with a flexible cable to a wall mounted socket. This way the unit can easily be disconnected from the power supply by removing the plug from the socket.

The dehumidifier is connected to the external electrical cabinet via the supplied cables (about 10 m) with marked connectors. A special bracket is provided for wall mounting of the external electrical cabinet.

## 4.8 Pre-start settings

On delivery the operational parameters are set for use in a cold store.

A number of alternatives, to minimise the risk of operational disturbance, can be set on initial start-up, see section 6, *Control system*.

The application does not require the connection of external sensors or external input/output signals.

## 4.9 Pre-start checks



### **WARNING!**

*The main power supply is permanently connected to the main power switch of the unit. Adjustments, maintenance and repairs must only be carried out by authorised personnel.*

Before starting the dehumidifier for the first time, ensure that the main power supply is isolated from the dehumidifier and carry out the following checks:

1. Make sure that the mode selector switch on the dehumidifier is in the **OFF** position. .
2. Make sure that the air intake filters are undamaged and properly fitted, and that all areas inside the unit are clean and free from ice.
3. Visually inspect all ducting and duct connections to make sure that all connections have been correctly installed and that there are no signs of damage to the system. Also check that all ducts are free from obstacles blocking the air passage.
4. Check that the incoming power supply voltage is correct and that the cables are correctly connected.
5. After connecting the process fan to power, check the fan turning direction.
6. Open the dehumidifier's front panel.
7. Start the dehumidifier and check that the fan is turning.
8. Switch off the dehumidifier and check the fan just before it stops. Make sure it has a clockwise rotation
9. Make sure that the unit's power supply and main switch are on as soon as the unit has been installed in the cold-storage room. If not, check if there is ice in the unit.
10. Set the damper for the reactivation airflow fully open.
11. Set the damper for the process airflow 50 % open.



### **CAUTION!**

*If the process airflow damper is fully open, the high cold air density in the cold-storage room could damage the process air fan.*



### **CAUTION!**

*Before starting the unit, the reactivation air inlet and wet air outlet must be thoroughly checked. Any ice must be removed. To avoid malfunction, it is important to have clear air passage throughout the ductwork.*

## 4.10 Airflow check and adjustment

Contact Munters Service for dehumidifier installation and adjustment. The addresses to Munters can be found on the back page of this manual.



### **CAUTION!**

*If the process and reactivation airflows are not properly adjusted, the unit can malfunction. The airflow must be set to maximum 10% above the specified nominal value listed in section 9.2, Technical data.*

1. By adjusting the dampers installed in the dry air outlet and reactivation air inlet ducts, the process and reactivation airflows can be changed to the required setting.
2. Start the dehumidifier for approximately 10 minutes to allow the reactivation heater to reach its normal operating temperature. See section 5.5, *Operating the unit*.
3. Check that the temperature difference between reactivation air downstream of the heater, and the regeneration temperature is approx. 95 °C (tolerance limit is  $\pm 5$  °C).
4. If the temperature difference lies outside of the tolerance limit, the reactivation air damper can be adjusted in small steps (which causes the temperature indicator to stabilise after each adjustment) until reactivation temperature is within the specified tolerances.

### **Example:**

Inlet air temperature = 15 °C

Reactivation air temperature = 110 °C

Temperature increase = 95 °C

## 5 Operation

### 5.1 General

The dehumidifier is equipped with an external electrical cabinet containing control panel, main power switch, mode switch, display and indicator lamps.

The mode switch has two operating positions:

- Position **0**: No dehumidification. The heater in the electrical cabinet and the reactivation heater is still in operation to avoid ice formation. An automatic rotor defroster function may still be in operation, see section 5.6.2, *During downtime*.
- Position **1**: Continuous operation and dehumidification. Automatic rotor defrosting is normal during operation, see section 5.6.1, *During operation*.

### 5.2 Safety



#### **WARNING!**

*In the case of a power cut, the dehumidifier will restart automatically when the power supply is restored.*



#### **CAUTION!**

*At initial start-up or when restarting after a service stop, the main power switch must have been on for at least 12 hours before starting. This is necessary to remove any ice build-up inside the unit.*



#### **CAUTION!**

*Before starting the unit, the reactivation air inlet and wet air outlet must be thoroughly checked. Any ice must be removed. To avoid malfunction, it is important to have clear air passage throughout the ductwork.*



#### **CAUTION!**

*To prevent damage to the fans, the unit must not be run for longer than a few minutes prior to setting-up the process and reactivation airflows.*



#### **CAUTION!**

*Do not turn off the main power switch. This can lead to ice formation and malfunction of the dehumidifier.*

### 5.3 Quick stop

The mode switch is used to start and stop the unit in normal operation. In case of an emergency, use the main power switch on the dehumidifier, see section 5.4, *External electrical cabinet*.



#### **CAUTION!**

*Only use the main power switch to stop the unit in the case of an emergency. The normal shutdown sequence will not be followed. The fans stop and the heater can be very hot, which can result in damage to the heater and other components close to it.*

## 5.4 External electrical cabinet

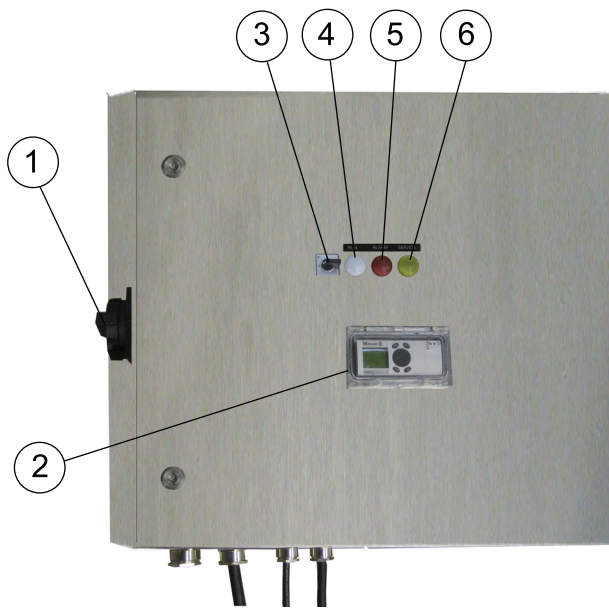


Figure 5.1 External electrical cabinet

Item	Description	Function
1	Main Power Switch	When the main power switch is in the "0" position, the unit is not powered beyond the switch. When the main power switch is in the "1" position, the dehumidifier can be started.
2	Control system	See chapter 6, <i>Control system</i> for information about control system functions.
3	Mode switch	Position "0" No dehumidification. The heater in the electrical cabinet and the reactivation heater is still in operation to avoid ice formation. An automatic rotor defroster function may still be in operation, see section 5.6.2, <i>During downtime</i> Position "1" the dehumidifier operates continuously (full capacity). Continuous operation and dehumidification. Automatic rotor defrosting is normal during operation, see section 5.6.1, <i>During operation</i> .
4	White lamp (RUN)	Illuminates when the unit dehumidifies.
5	Red lamp (ALARM)	Lights in the event of an alarm. See section 6.4.5, <i>Window 5, Alarm</i> for fault type.
6	Yellow lamp (SERVICE)	Lights up when the dehumidifier has been running for a certain number of hours. Maintenance must now be carried out, see section 7.6, <i>Service and maintenance schedule</i> .

Table 5.1 Functions for external electrical cabinet.

## 5.5 Operating the unit

### 5.5.1 General



#### **CAUTION!**

*At initial start-up or when restarting after a service stop, the main power switch must have been on for at least 12 hours before starting. This is necessary to remove any ice build-up inside the unit.*



#### **CAUTION!**

*Before starting the unit, the reactivation air inlet and wet air outlet must be thoroughly checked. Any ice must be removed. To avoid malfunction, it is important to have clear air passage throughout the ductwork.*

When the unit is installed into the freezer and the reactivation circuit is connected, the connections have to be blocked until the unit can be started. If this is not done there is risk that there will be ice build up in the reactivation piping.

Before starting the unit, make sure that the reactivation ducting is free of ice.

Power must be connected to the unit as soon as possible to keep the reactivation fan free of ice (heater inside).

Unless the power is connected immediately upon installation, wait a minimum of 12 hours prior to the start of the unit.

### 5.5.2 Start

1. Turn the main power switch to position "1" and check that the display is illuminated. The three lamps on the electrical cabinet should flash twice as a check of lamp function.
2. Turn the mode switch to position "1". Check that:
  - The white lamp is on, which indicates that the unit is operating.
  - The reactivation air fan and rotor drive motor have started, see section 6.4.3, *Window 3, Motor status*.
3. Leave the unit operating and check that:
  - The temperature of the reactivation heater increases, see 6.4.1, *Window 1, Reactivation temperature*.
  - The process fan starts when the wet air temperature reaches 40 °C.

### 5.5.3 Restart after power failure

When the power is removed from the unit, or there is a unit stop due to a unit malfunction, the reactivation flow and heater is also stopped.



#### **CAUTION!**

*Do not restart the unit without first leaving the reactivation heater on for 12 hours. Serious damage to the unit can be the result. Without immediate action there is a risk that there will be ice build-up in the reactivation circuit.*

To avoid the risk for ice to build up, the in and outlet openings have to be blocked so no moisture can enter the circuit and condensate and freeze up. With high humidity values outside this will create a problem within a few hours.

Contact Munters Service to discuss the best solution how to minimise the effects of a power supply failure.

### 5.5.4 Stop

1. Turn the mode switch to position "0". In order to dissipate any residual heat, the reactivation air fan and the rotor drive motor will continue to run until the reactivation temperature has fallen below approximately 50 °C.
2. Check that the reactivation air fan and the drive motor stop once the reactivation temperature has fallen below approximately 50 °C. A few minutes delay is normal.

### 5.5.5 Alarms

All alarms stop the dehumidifier and triggers the red alarm lamp on the electrical cabinet. Do as follows:

1. Check the current alarm code on the control system display, see section 6.4.5, *Window 5, Alarm*. In the event of several simultaneous alarms the display switches automatically between the alarm codes.

**NOTE!** *Alarm codes are reset when the mode switch or main power switch is moved to position "0". Always note the current alarm codes first.*

2. Set the mode switch and main power switch to position "0" when working in the electrical cabinet or dehumidifier. Remedy any faults.
3. Restart the dehumidifier.

## 5.6 Defrosting

The dehumidifier is delivered with the defrosting function activated. The dehumidifier is defrosted at regular intervals, both in operation mode "1" and when the mode switch is in position "0".

The function can be deactivated via the control system display; see section 6.5.2, *Display 11, Defrosting during operation*.



### **CAUTION!**

*Ask Munters Service for advice before switching off the defrosting function.*

#### 5.6.1 During operation

Defrosting during operation (mode switch in position "1") means that the process fan stops for a short time, about twice a day, so that the rotor heats up. When the wet air temperature has increased to approximately 40 °C the process fan starts again.

#### 5.6.2 During downtime

Defrosting during downtime (mode switch in position "0") means that the reactivation fan, heater and rotor starts automatically and run for a short time until the wet air temperature has increased to approximately 40 °C.

## 6 Control system

### 6.1 General

The dehumidifier is provided with a programmable control system, which can be adapted to a certain extent. On delivery, the system is set to standard values for operation in a cold store.



Figure 6.1 Control system panel

### 6.2 Structure

The system comprises a number of windows for operation (windows 1-5) and basic settings (windows 10-12). Normally, the basic setting component is only used to set basic values in conjunction with the initial start-up.

### 6.3 Working with the control system



Figure 6.2 Keypad

Press > or < to page forward or back between the different operating windows.

Hold < depressed for three seconds to shift to the window for basic settings. Then press > or < to page forward or back between the different operating windows. Press  $\bar{U}$  or  $\bar{D}$  to change the set value.

If you cannot find your way back to the start point, switch off the unit using mode switch. When the unit has stopped completely, switch off the main power switch and then switch it on again. This resets the system.

The DEL, ALT, ESC, OK keys are only used for basic programming and for configuring the control system and must not be used during normal operation.



## 6.4 Operating windows (windows 1-5)

Window for monitoring only. No settings can be made here.

### 6.4.1 Window 1, Reactivation temperature

Displays operational status and current reactivation temperature (-C). ON is indicated "001" and OFF by "000".

```
1 -- ICEDRY ---
RUN      +000
R-TEMP  +000C
```

Figure 6.3 Window 1

RUN	Operational status
R-TEMP	Reactivation temperature

### 6.4.2 Window 2, Runtime

This displays the total running time of the dehumidifier. The running time remaining before the next scheduled maintenance service are also displayed here.

```
2 -- RUNTIMES --
RUNTIME: +000000h
SERVICE: +004000h
```

Figure 6.4 Window 2

RUNTIME	Total running time.
SERVICE	Remaining time until next service. A negative value indicates that service was not carried out as recommended.

### 6.4.3 Window 3, Motor status

This provides a simple way to check the status (on/off) of the motors for the process and reactivation fans as well as the drive motor (Off = +000, On = +001).

```
3 --- MOTORS ---
PROCESS FAN +000
REACT. FAN  +000
DRIVE MOTOR +000
```

Figure 6.5 Window 3

PROCESS FAN	Process fan
REACT. FAN	Reactivation fan
DRIVE MOTOR	Drive motor

### 6.4.4 Window 4, Reactivation power

This shows the percentage of the total reactivation heater output being used at the time of the reading.

```
4 -- HEATER ---
HEATER  +000%
```

Figure 6.6 Window 4

HEATER	Reactivation output being used.
--------	---------------------------------

### 6.4.5 Window 5, Alarm

This indicates all alarms. The alarms are denoted by a number, which represents a specific function alarm. For a description of the corrective action for each alarm, see 8, *Fault tracing*.

If an alarm is activated, the red lamp on the control panel lights up. The alarm indication disappears automatically when its cause is removed.

The dehumidifier always stops when an alarm is activated. The dehumidifier is equipped with the following alarms:

1. Temperature too high, reactivation heater
2. Reactivation fan
3. Process air fan
4. Rotor drive motor
5. Reactivation heater
6. -
7. -
8. Temperature too high, reactivation fan heater

## 9. Connection with control panel cut



Figure 6.7 Window 5

## 6.5 Basic settings (windows 10-12)

Setting displays when commissioning or changing operating conditions. These can only be activated when the mode switch is in position "0".

Hold down < for three seconds to switch to the basic setting displays.

Hold down < for three seconds or wait for 30 seconds to return to operating mode.

### 6.5.1 Display 10, Software information

This shows the software version of the control system. This number is most often needed when contacting Munters Service.



Figure 6.8 Window 10

### 6.5.2 Display 11, Defrosting during operation

The required defrosting function is set here during operation.

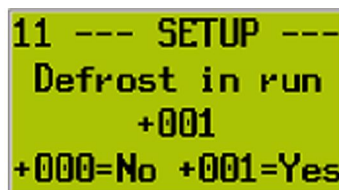


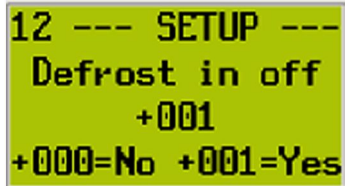
Figure 6.9 Window 11

+000=No	Automatic defrosting not activated.
+001=Yes	Automatic defrosting activated (preset option, contact Munters Service before changing this).

See also 5.6, *Defrosting*.

### 6.5.3 Window 12, Defrosting during downtime

The required defrosting function is set here during longer periods of downtime. See also 5.6, *Defrosting*.



```
12 --- SETUP ---  
Defrost in off  
+001  
+000=No +001=Yes
```

Figure 6.10 Window 12

+000=No	Automatic defrosting not activated.
+001=Yes	Automatic defrosting activated (preset option, contact Munters Service before changing this).

## 7 Service and maintenance

### 7.1 Safety



#### **WARNING!**

*Adjustments, maintenance and repairs must only be carried out by qualified personnel.*



#### **CAUTION!**

*At initial start-up or when restarting after a service stop, the main power switch must have been on for at least 12 hours before starting. This is necessary to remove any ice build-up inside the unit.*



#### **CAUTION!**

*Before starting the unit, the reactivation and wet air inlets and outlets must be thoroughly checked. Any ice must be removed. To avoid malfunction, it is important to have clear air passage throughout the ductwork.*

### 7.2 General

The dehumidifier is designed for continuous use over a long period of time with a minimal amount of supervision. Under normal operating conditions, maintenance requirements are minimal. The service interval depends mainly on the operational conditions and working environment.

See section 7.6, *Service and maintenance schedule* for an example of a standard service and maintenance program.

### 7.3 Service options

In addition to commissioning of the unit there are four service options (A - D) as standard.

**S.** Commissioning/start-up.

**A.** Inspection and if necessary change of filter. General function check.

**B.** In addition to A, safety check and capacity, temperature and humidity regulation measurements.

**C.** In addition to B, preventive replacement of some components after 3 years of operation.

**D.** In addition to C, preventive replacement of some components after 6 years of operation.

**NOTE!** *Always contact Munters for service or repair. Operating faults can occur if the unit is maintained insufficiently or incorrectly.*

**NOTE!** *Commissioning/Start-up inspection "S" by Munters is mandatory to validate the full warranty.*

**Munters service engineers** have special equipment and rapid spare parts access to handle service on all Munters products. All test equipment used by our personnel to ensure proper system balancing is certified for accuracy.

**Munters Service** can offer a service plan adapted to suit the conditions of a specific installation. See contact addresses on the back page of this manual.

### 7.4 Extended warranty

Munters offers an extended warranty to the standard terms when the Customer signs a service contract with Munters. Details are available on request.

## 7.5 Service indicator lamp

The yellow service lamp indicates the need for a filter replacement or a comprehensive service. Remove the filter cover and replace the filter if this is the cause.

Window 2 shows the number of operating hours until the next service is needed. A minus sign before the number of hours indicates that the service should already have been carried out.

## 7.6 Service and maintenance schedule

Service work	Service level	S	A	B	A	C	A	B	A	D
	Operating time in hours	0	4000	8000	12000	16000	20000	24000	28000	32000
	Calendar time in months	0	6	12	18	24	30	36	42	48
Filter replacement and operational checks		X	X	X	X	X	X	X	X	X
Preventive inspection incl. safety check		X		X		X		X		X
Capacity check, rotor inspection						X				X
Replacement of HTCO Thermostats										X
Inspect drive belt and backing rollers, replace if necessary						X				X
Rotor drive motor replacement										X
Fan revision (impellers, motors, bearings)										X
Switch board - control box, operational check		X		X		X		X		X
Check temperature control sensors				X		X		X		X
Rotor covers - rotor seals - connection piece, replacement										X

Table 7.1 Service and maintenance schedule (0 - 48 months)

**NOTE!** The unit must be removed from the cold storage room at service level C and D.

Service work	Service level	A	B	A	C	A	B	A	D
	Operating time in hours	36000	40000	44000	48000	52000	56000	60000	64000
	Calendar time in months	54	60	66	72	78	84	90	96
Filter replacement and operational checks		X	X	X	X	X	X	X	X
Preventive inspection incl. safety check			X		X		X		X
Capacity check, rotor inspection					X				X
Replacement of HTCO Thermostats									X
Inspect drive belt and backing rollers, replace if necessary					X				X
Rotor drive motor replacement									X
Fan revision (impellers, motors, bearings)									X
Switch board - control box, operational check			X		X		X		X
Check temperature control sensors			X		X		X		X
Rotor covers - rotor seals - connection piece, replacement									X

Table 7.2 Service and maintenance schedule (54 - 96 months)

**NOTE!** The unit must be removed from the cold storage room at service level C and D.



## 8 Fault tracing

### 8.1 General

The purpose of this chapter is to provide guidance in basic fault tracing and provide instructions for corrective actions to remedy any faults. Go through the list below before contacting Munters Service.

### 8.2 Safety



#### **WARNING!**

*Adjustments, maintenance and repairs must only be carried out by qualified personnel.*



#### **WARNING!**

*Always switch off the main power switch before removing the unit's panels.*

### 8.3 Fault tracing list

The red alarm lamp and the control system display constitute the primary source of information for fault tracing when an alarm has been triggered and the unit has stopped.

See the wiring diagram for identification of electrical components in the separate control panel.

Fault symptom	Indicators	Possible cause	Corrective action
Unit has stopped	Lamps and display are off	Power supply failure	Check power supply to the unit.
			If observed immediately, reset the circuit breaker.
			If the time of the power failure is not known see section <i>Restart after power failure</i> or call Munters Service before start up.
Unit has stopped	Lamps and display are off	Mains power switch (No.1) is in position "0".	Move the mains power switch to position 1 and check that the display is activated and that the three lamps flash a lamp test.
		One or more automatic fuses FU 20-24 have been tripped.	Investigate the cause of the fault and rectify. Reset fuses.
Unit has stopped	Lamps and display are off	Circuit breaker QM 17 tripped due to a wiring fault.	Investigate the cause of the fault and rectify. Reset. If the fault recurs, contact Munters Service.

Fault symptom	Indicators	Possible cause	Corrective action
Unit has stopped	The red lamp illuminates (alarm ) and window 5 shows: Alarm code No. 1	Reactivation heater's high temperature cut-out BT35 or BT35A has been tripped, either due to a block of reactivation airflow or because the reactivation airflow setting is too low.	Leave the unit to cool down. Check that the air inlet and outlet ducts and filters are free from obstructions and are not blocked by ice or dirt. Adjust the reactivation airflow.
	Alarm code No. 2	Rotor has stopped.	Check that the drive belt is intact.
	Alarm code No. 3	Reactivation fan is not working:	
		- the circuit breaker has tripped	Reset QM15. If the fault re-occurs call Munters Service.
	- contactor fault	Check KM 32.	
Unit has stopped	Alarm code No. 4	Process air fan is not working:- the circuit breaker has tripped	Investigate the reason and reset QM 16.
	Alarm code No. 5	Temperature too high in drive motor	Leave the motor to cool down and rectify the cause.
	Alarm code No. 6	Reactivation heater is not working	Reset QM 12, 13 or 14.
	Alarm code No. 7	Reserve	
	Alarm code No. 8	Reserve	
	Alarm code No. 9	High temperature in reactivation fan heater. High temperature cut-out BT23 and/or BT37 has tripped.	High temperature cut-out BT23 must be reset manually. It is located on the fan house within the dehumidifier. To access, remove the centre panel on the dehumidifier.
	Alarm code No. 10	External wiring not connected	Check that all external control panels and dehumidifier connectors are properly connected.
Loss of performance. The dehumidifier is in operation but is not controlling the humidity.	None	The reactivation air temperature is too low according to display No. 1.	Check the function of the reactivation heater.
	None	Reactivation and process airflows do not correspond to the rated airflows.	Check and adjust the reactivation and process airflow, see section 4.10, <i>Airflow check and adjustment</i> .
	None	Frost and ice build-up in the rotor.	Check that the automatic defrosting function is working, see section 5.6, <i>Defrosting</i> .

Table 8.1 Fault tracing list

## 9 Technical specification

### 9.1 Dimensions and service space

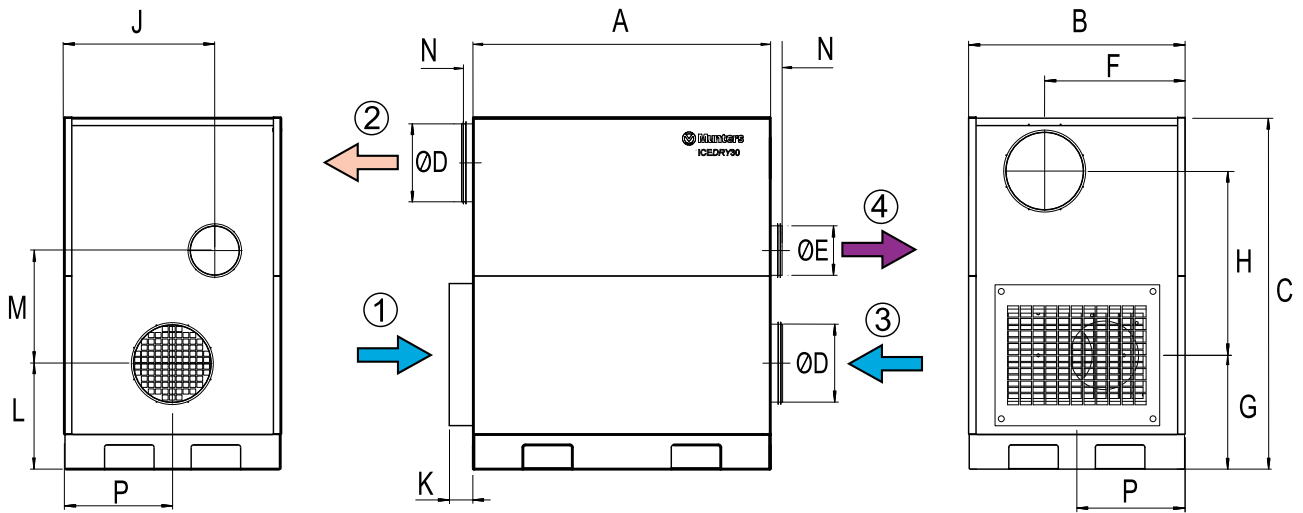


Figure 9.1 Dimensions

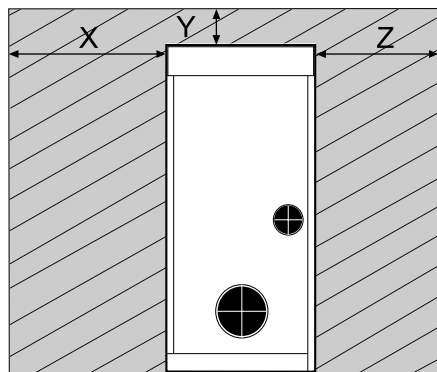


Figure 9.2 Service space requirements

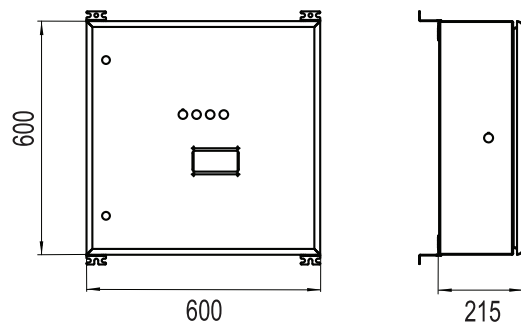


Figure 9.3 Dimensions for external electrical cabinet

1. Process air inlet
2. Dry air outlet
3. Reactivation air inlet
4. Wet air outlet

Dimensions (mm)																	Weight (kg)
A	B	C	D	E	F	G	H	J	K	L	M	N	P	X <sup>(1)</sup>	Y <sup>(1)</sup>	Z <sup>(1)</sup>	260 + 25
1200	875	1425	315	200	568	460	756	608	50	460	424	48	438	900	200	500	
(1) Space for service																	

Table 9.1 Dimensions and service space

## 9.2 Technical data

<b>Process air</b>	
Rated airflow (m <sup>3</sup> /s)	0,833
Rated airflow (m <sup>3</sup> /h)	3000
Minimum available static pressure (Pa)	300
Fan motor power (kW)	3,0
<b>Reactivation air</b>	
Rated airflow (m <sup>3</sup> /s)	0,175
Rated airflow (m <sup>3</sup> /h)	630
Minimum available static pressure (Pa)	300
Fan motor power (kW)	1,55
<b>Rated Current</b>	
Current (Amps/Phase) 3~ 50 Hz 200 V	79,2
Current (Amps/Phase) 3~ 60 Hz 200V	79,2
Current (Amps/Phase) 3~ 50 Hz 230 V	65,2
Current (Amps/Phase) 3~ 50 Hz 380 V	39,4
Current (Amps/Phase) 3~ 50 Hz 400 V	38,0
Current (Amps/Phase) 3~ 50 Hz 415 V	36,8
Current (Amps/Phase) 3~ 60 Hz 440 V	36,2
Current (Amps/Phase) 3~ 60 Hz 460 V	35,1
Current (Amps/Phase) 3~ 60 Hz 480 V	33,8
<b>Reactivation Heater</b>	
Temperature increase across heater (°C)	95
Reactivation Heater Power (kW)	18
<b>Other Technical Data</b>	
Operating range for dehumidifier, ambient temperature (°C)	-25 to 0
Operating range for external electrical cabinet, ambient temperature (°C)	
– for mounting in cool area	-25 to +10
– for mounting in warm area	+10 to +25
Drive motor power (W)	10
Reactivation fan heater power (W)	85
Output, heater in electrical cabinet (W)	150
Air filtration (standard)	G3
Electrical protection standard, dust and water resistant (main casing)	IP33
Fan Motor Winding Insulation Class	Klass F
Drive Motor Winding Insulation Class	Klass F
High Temperature Cut-Out (°C)	160 +/- 5
Contacting coil, voltage (V AC)	230

Table 9.2 Technical data

### 9.3 Sound data

Noise for	Correction Kok dB at ISO-band centre frequency, Hz									
	dB(A)	Lwt	63	125	250	500	1000	2000	4000	8000
Duct 1	Na	101	-10	-2	-9	-13	-20	-22	-27	-33
Duct 2	Na	102	-3	-5	-13	-20	-20	-19	-21	-26
Duct 3	Na	94	-5	-6	-5	-17	20	-21	-23	-27
Duct 4	Na	88	-2	-6	-12	-25	-31	-31	-33	-35
Room	64	90	-1	-8	-14	-16	-20	-23	-26	-31

#### Noise paths to surroundings

1. Ductwork for dry air
2. Ductwork for process air
3. Ductwork for reactivation air
4. Ductwork for wet air

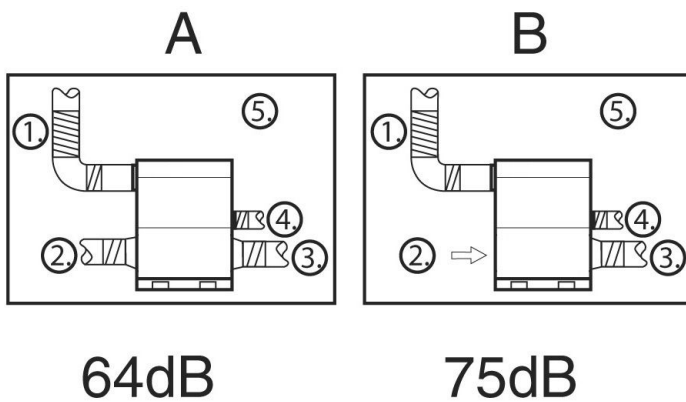


Figure 9.4 Noise paths to equipment room

#### SYMBOLS

Lwt = Total noise level dB (rel. 10-12 W)

Lw = Noise power level in octave band dB (rel. 10-12 W)

Kok = Correction for calculating Lw ( $Lw = Lwt + Kok$ )

dB(A) = Rated noise level at 100m<sup>2</sup> room absorption

## 10 Scrapping

The unit must be scrapped in accordance with applicable legal requirements and regulations. Contact your local authorities.

The rotor material is not combustible, and should be deposited like glass fibre materials.

If the rotor has been exposed to chemicals that are dangerous to the environment the risk must be assessed. The chemicals can accumulate in the rotor material. Take the necessary precautions to comply with applicable legal requirements and regulations.



### **WARNING!**

*If the rotor is to be cut in pieces, wear a suitable CE marked face mask selected and fitted in accordance with the applicable safety standards to protect from the dust.*

## 11 Contact Munters

<b>AUSTRIA</b>	Munters GmbH Air Treatment Zweigniederlassung Wien	Eduard-Kittenberger-Gasse 56, Obj. 6 A-1235 Wien	Tel: +43 1 616 4298-92 51 luftentfeuchtung@munters.at www.munters.at
<b>BELGIUM</b>	Munters Belgium nv Air Treatment	Blarenberglaan 21c B-2800 Mechelen	Tel: +3215285611 service@muntersbelgium.be www.muntersbelgium.be
<b>DENMARK</b>	Munters A/S Air Treatment	Ryttermarken 4 DK-3520 Farum	Tel: +4544953355 info@munters.dk www.munters.dk
<b>FINLAND</b>	Munters Finland Oy Kuivaajamynti	Hakamaenuja 3 FI-01510 VANTAA	Tel: +358 207 768 230 laitemyynti@munters.fi www.munters.fi
<b>FRANCE</b>	Munters France SAS Air Treatment	106, Boulevard Héloïse F-95815 Argenteuil Cedex	Tel: +33 1 34 11 57 57 dh@munters.fr www.munters.fr
<b>GERMANY</b>	Munters GmbH Air Treatment-Zentrale	Hans-Duncker-Str. 8 D-21035 Hamburg	Tel: +49 (0) 40 879 690 - 0 mgd@munters.de www.munters.de
<b>ITALY</b>	Munters Italy S.p.A Air Treatment	Strada Piani 2 I-18027 Chiusavecchia IM	Tel: +39 0183 521377 marketing@munters.it www.munters.it
<b>NETHERLANDS</b>	Munters Vochtbeheersing	Energieweg 69 NL-2404 HE Alphen a/d Rijn	Tel: +31 172 43 32 31 vochtbeheersing@munters.nl www.munters.nl
<b>POLAND</b>	Munters Sp. z o.o. Oddzial w Polsce Air Treatment	ul. Swietojanska 55/11 81-391 Gdynia	Tel.: +48 58 305 35 17 dh@munters.pl www.munters.com.pl
<b>SPAIN</b>	Munters Spain SA Air Treatment	Europa Epresarial. Edificio Londres. C/Playa de Liencres 2. 28230 Las Matas. Madrid	Tel: +34 91 640 09 02 marketing@munters.es www.munters.es
<b>SWEDEN</b>	Munters Europe AB Air Treatment	P O Box 1150 S-164 26 Kista	Tel: +46 8 626 63 00 avfuktning@munters.se www.munters.se
<b>SWITZERLAND</b>	Munters GmbH Air Treatment Zweigniederlassung Rümlang	Glattalstr. 501 CH-8153 Rümlang	Tel: +41 52 343 88 86 info.dh@munters.ch www.munters.ch
<b>UNITED KINGDOM</b>	Munters Ltd Air Treatment	Pathfinder Place 10 Ramsay Court Hinchingbrooke Business Park Huntingdon PE29 6FY Cambs	Tel: +44 1480 432 243 info@munters.co.uk www.munters.co.uk
<b>AUSTRALIA</b>	Tel: +61 288431588 dh.info@munters.com.au	<b>MEXICO</b>	Tel: +52 722 270 40 29 munters@munters.com.mx
<b>BRAZIL</b>	Tel: +55 11 5054 0150 www.munters.com.br	<b>SINGAPORE</b>	Tel: +65 6744 6828 singapore@muntersasia.com
<b>CANADA</b>	Tel: +1-800-843-5360 dhinfo@munters.com	<b>SOUTH AFRICA</b>	Tel: +27 11 997 2000 info@munters.co.za
<b>CHINA</b>	Tel: +86 10 804 18000 marketing@munters.cn	<b>TURKEY</b>	Tel: +90 216 548 14 44 info@muntersform.com
<b>INDIA</b>	Tel: +91 20 668 18 900 info@munters.in	<b>UAE (Dubai)</b>	Tel: +971 4 881 3026 middle.east@munters.com
<b>JAPAN</b>	Tel: +81 3 5970 0021 mkk@munters.jp	<b>USA</b>	Tel: +1-800-843-5360 dhinfo@munters.com
<b>KOREA</b>	Tel: +82 2 761 8701 munters@munters.kr		

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