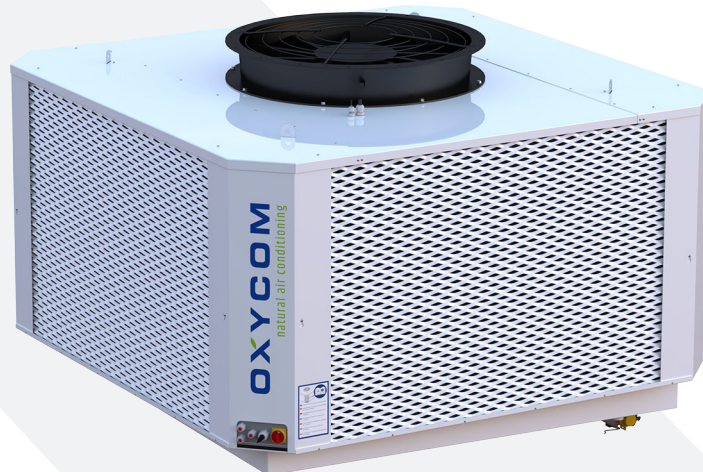


IntrCool Std. / Plus

Direct / Indirect evaporative cooler

Manual Installation



Version: Version 1.3

Date: 14/12/2021

OXYCOM
natural air conditioning

Table of contents

Preface	5
Warranty	5
Product liability	5
Compliance	6
Contact data	6
About this manual	7
Scope of this manual	7
Audience	7
Typographical conventions	8
Availability	9
Related documents	9
1 Safety	11
1.1 General (safety)	11
2 Handling and storage	13
2.1 Arrival of the package	13
2.2 Preparations	14
2.3 Handling and storage	14
2.4 Transport	16
3 Prepare the location	19
3.1 Location requirements	20
3.2 Support frame (Not provided)	22
3.3 Natural ventilator	23
3.4 Flashing kit IntrCooll® (Optional)	23
3.5 Roof beam supports	24
3.6 Opening and curb	24
3.7 Roof transit for ducting	26
3.8 Roof transits for cabling / plumbing	26
3.9 Supply air ducting	26
3.10 Exhaust air	27
3.11 Water requirements	29
3.12 Drain connection requirements	31
3.13 Overflow connection requirements	31
3.14 Water connections	32
3.15 Electrical requirements	36
3.16 Communication requirements	37
4 Install the IntrCooll®	41
4.1 Preparations	41
4.2 Step 1. Positioning and leveling	42
4.3 Step 2. Duct connection to the IntrCooll	42
4.4 Step 3. Drain valve installation	43
4.5 Step 4. Flow regulator cap	45
4.6 Step 5. Making connections	46
4.7 Step 6. Check installation and settings	47
4.8 Step 7. Finish the installation	48
5 Operation procedures	53
5.1 How to operate the IntrCooll®	53
5.2 System status and settings	58
5.3 Update firmware	64
Appendices	67

Preface

Warranty

For the warranty conditions, see our terms of delivery / warranty conditions (already in your possession).

Except when otherwise described in the contract, Oxycom warrants that all products supplied are of high quality and free from manufacturing defects in workmanship and materials.

Warranty does not cover failure if it is damaged due to improper installation, improper service procedures or if it is altered, tampered with or damaged by any cause beyond Oxycom control.

The warranty will immediately cease to be valid if:

- The product is not installed, operated or maintained in strict accordance with the instructions supplied.
- Operations are performed that are not described in this manual.
- Modifications are made to the product without the prior written approval of Oxycom.
- Spare parts other than those supplied by Oxycom are used.
- The product is used for a purpose or in a way it was not designed for.
- The product is treated in an improper, careless, incorrect and/or negligent manner.
- A defect or damage occurs to the product as result of an external cause and/or situation for which Oxycom cannot be held responsible.

The warranty does not cover use in especially corrosive or aggressive environments e.g. in air with a high salt content such as saltwater coastal areas, or sheet in contact with water or where corrosive chemicals, corrosive fumes, condensation and ash, cement dust or animal droppings may affect the surface.

Product liability

Oxycom Fresh Air B.V. or subcontractor is not liable for any claims of third parties caused by inexpert use of the machine and/or for any claims arising from use other than as stated in this manual and in compliance with the terms of delivery.

For further details, see our terms of delivery (already in your possession).

Compliance

For the EU market the machine has been tested and complies with:

- the machinery directive 2006/42/EG
- the EMC directive 2014/30/EU
- the low voltage directive 2014/35/EU.
- the pressure equipment directive 97/23/EC
- the restriction of Hazardous Substances (ROHS) 2011/65/EU
- VDI 6022 Part 1 (January 2018)*
- VDI 3803 (May 2020)*

* When operated according to the required hygiene guidelines.

The product also complies with all applicable CE-directives and therefore has a CE plate.

Additional safety features on the IntrCooll®

In addition to the usual general safety features, the IntrCooll® has several extra safety features to comply with the VDI 6022 Part 1 standard.

The most important:

- The seals are made of Polyethylene (PE) and are of the closed cell type. The seals are tested according to DIN EN ISO 846 and fulfill the requirements from the VDI 6022 Part 1 in terms of microbial inertness.
- Parts of the housing that are exposed to water are covered with a powder coating.

The instructions in this document do not take into account different national regulations and laws. When operating the machine, it is the sole responsibility of the user to make sure that all applicable local laws and regulations are obeyed.

Contact data

If you have any questions or need further details on specific matters concerning the equipment, do not hesitate to contact us:

Oxycom Fresh Air B.V.

P.O. Box 212

8100 AE Raalte

The Netherlands

Tel: +31 (0)572 349 400

E-mail: service@oxy-com.com

Website: www.oxy-com.com

About this manual

Scope of this manual

This manual describes the safety issues, preparation of the installation location and installation of the IntrCooll®.

**Caution**

Before installing the IntrCooll®, read this manual closely to get familiar with the functioning and strictly observe the given indications and instructions. If you do not understand any part of the information in this manual, contact your local service department.

The information contained in this manual is based on the latest information. It is provided subject to alterations.

Audience

This manual includes information for:

- Consultants,
- Installation engineers,
- Service / maintenance engineers.

Normal preparations and installation of the IntrCooll®, requires that these persons:

- have read this manual and understand the contents,
- have been adequately trained,
- are able to reproduce the procedures in this manual,
- have enough technical knowledge and experience to carry out the assigned tasks,
- can recognize and prevent hazards.

**Caution**

Only qualified technicians are allowed to unpack and install the equipment.

Oxycom recommends the following training levels:

- User:
Lower vocational education level or intermediate vocational education level and trained after the installation of the IntrCooll® by the installation personnel.
- Installation engineer:
Intermediate vocational education level.
- Maintenance engineer:
Intermediate vocational education level.



Note

In case of doubt, always consult the Oxycom Service Department.

For more information on the IntrCooll® and other Oxycom products, please contact Oxycom Fresh Air B.V..

Typographical conventions

The following kinds of formatting in the text identify special information:



Note

The illustrations in this manual are intended to clarify operations and functionality. The illustrations might deviate from the actual situation.

- Actions that you should perform in a specific sequence are numbered, for instance, "1. Press the power button."
- Bullets (- and •) are used for lists of items or actions.
- Single quotation marks (‘ and ’) are used for quotations.
- Bold text is used for (sub)titles and for information that needs special attention: '**Read these instructions carefully**'.
- Menu names in the user interface are always shown in italics, for example: the '*Main Menu*'.
- Control elements like soft keys, keyboard buttons, hardware buttons and rotary knobs are always shown between brackets, for example: **[Start]**, **[Enter]**, **[2]**.
- Messages displayed in the user interface are shown between quotation marks, for example: "Emergency stop active".
- Cross-references to sections, tables, figures etc. are indicated as blue text or written as (see "...." on page ...). The main purpose is easy recognition in the paper and online (PDF) version of the manual. In the online version, the cross-references function as hyperlinks that can be used to navigate through the manual by clicking on them. Example: Scope on page 7.

For situations that may endanger users, cause damage to equipment or need special attention the following text styles/symbols are used:

**Note**

Provides additional information that is helpful to do a task or to avoid problems.

**Caution**

Warns for a situation that may cause material damage if one does not follow the safety instructions.

**Warning**

Warns for a situation that may cause physical injury and/or material damage if one does not obey the safety instructions.

**Danger**

Warns for a situation that will cause serious physical injury and/or heavy material damage if one does not obey the safety instructions.

Availability

Oxycom expects this manual to be available to all installation technicians, users and service engineers of the IntrCooll®. The original hardcopy (paper) version should always be available near the IntrCooll®.

Related documents

This manual is part of the documentation set for the machine:

- Installation manual
The manual contains relevant items for the installation of the unit. Also information for commissioning and unit settings are given.
- Safety information sheet
This document contains the safety related information for the unit. As a hardcopy it is available inside the unit, behind a corner cover plate.
- Maintenance manual
This manual gives the maintenance intervals and the instructions for correct maintenance.
- Specification sheet
The specification sheet contains all important specifications for installation and operation of the unit.
- Dimensional drawings
The dimensional drawings give an overview of the sizes of the unit
- Electrical drawings
These drawings give an overview of the electrical connections.
- Fan characteristics
The sheet gives information on the speeds and flow of the fans.

1.1

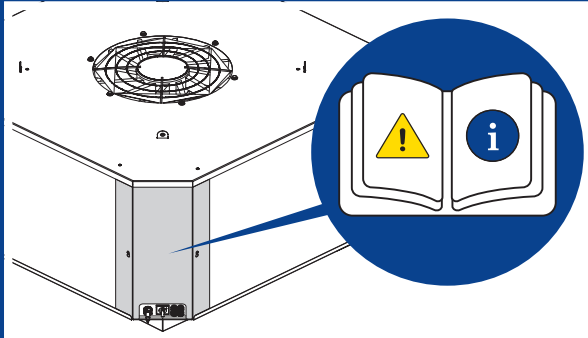
General (safety)


Operating and maintenance personnel, as well as anyone who is around this unit should be aware of the possible dangers. This recommendation applies regardless of other regulations that are issued by a higher authority or included in a (safety) standard. The owner must ensure that personnel are qualified to perform the activities involved.


**Caution**


Before operation or maintenance be sure to read and understand the safety information. The safety information can be found behind the electrical panel on the IntrCooll®.


Sticker manuals inside





 Safety instructions and manuals inside


 Veiligheidsinstructies en handleidingen aan de binnenkant

 Sicherheitshinweise und Handbücher inliegend

 Consignes de sécurité et manuels à l'intérieur

 Instrucciones de seguridad y manuales en el interior

 Istruzioni di sicurezza e manuali all'interno

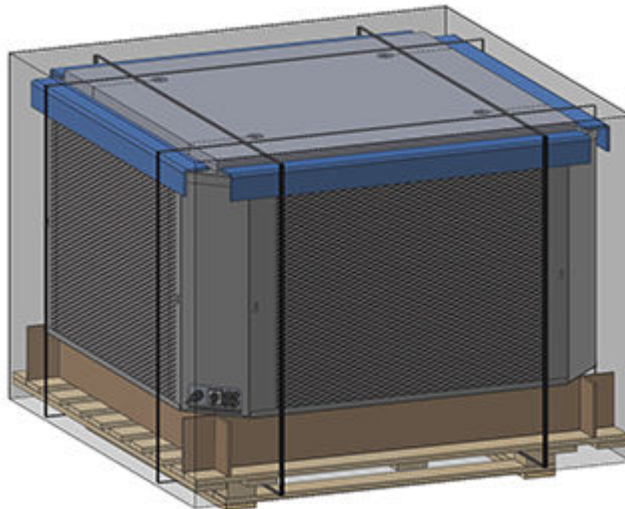
 Podręczniki i instrukcje bezpieczeństwa we wnętrzu

2.1

Arrival of the package

The IntrCooll® is always delivered on a wooden pallet.

Crate

**Caution**

Obey the instructions and icons on the crate.

At delivery of the IntrCooll®, make sure that all the components are present and undamaged.

Claims for shortages or errors should be made immediately on receipt. No responsibility will be assumed for delay, damage or loss of material while in transit or as result of transit. Broken, damaged or loss of material should be refused, or a full description of the damage or loss should be made to the carrier agent on the freight or express bill.

- At the delivery do a check on the packaging to see if it is damaged.
- Take a note of the damage before you allow the Service Technician to unpack the equipment.

- Provide a detailed description or take a photograph of the damage.
- Report any damage to the crate to the transport company.

2.2

Preparations



Wear the safety devices according to the local rules.

At least wear the following protective clothing:

- safety shoes,
- hard helmet,
- gloves.



Caution

The IntrCooll® should be transported by suitable means of transport. First and foremost, consider the permitted load capacity.

Caution

Always use the supplied pallet and the included supports when moving the IntrCooll® horizontally with a forklift or pallet truck.

Caution

Always secure the load tightly with specially designated securing chains.

Caution

Ensure that no unauthorized persons are in the vicinity.

Caution

Always place the IntrCooll® on a stable loading floor with sufficient load-bearing capacity.

Caution

Oxycom is not responsible for damage resulting from incorrect transport and storage. Warranty rights will not be accepted in the event of incorrect transport and storage.

2.3

Handling and storage

When the IntrCooll® is stored or moved before or between installation(s):

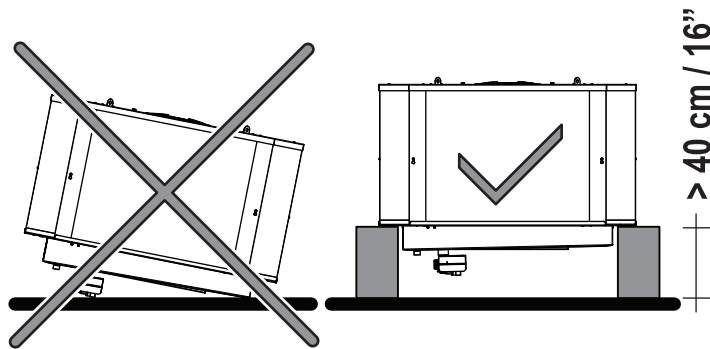
- Always obey the instructions and warning signs that are printed on the box.
- Do not unpack the IntrCooll®, leave all packing materials in the original state.
- Store the IntrCooll® in a safe and dry place indoors.
- When there is no original packing material, cover the IntrCooll® with a tarp to prevent contamination.
- Always make sure to carefully support the base of the IntrCooll® and maintain free space between the floor and the valves.

- Stacking of crates: (see Transport)
 - IntrCooll Std.: Max. 1 crate is allowed.
 - IntrCooll Plus: Do not stack the crates.
- Do not load other items on top of the crates.
- Keep dry.
- Handle with care.



Caution






Never place the IntrCooll® directly on the sump or the valves. This will damage the IntrCooll®.

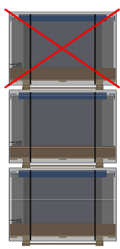

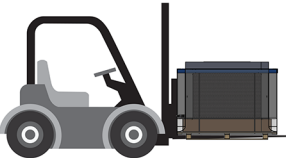





2.4

Transport

1 STORAGE AND TRANSPORT

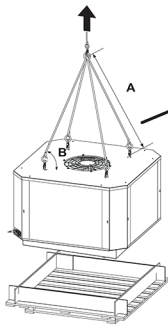




IntrCool Std.

IntrCool Plus

2 UNPACKING AND LIFTING







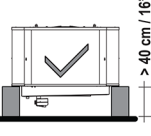
USE ALL 4 POINTS TO LIFT

4x

Std.
A > 2 m / 6,6 ft
B > 75°

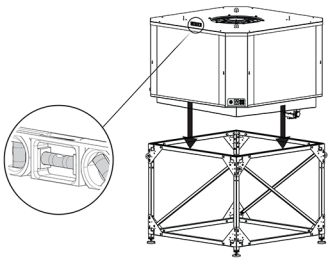

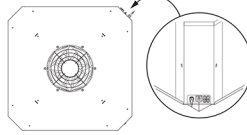
Plus
A > 3,6 m / 12 ft
B > 75°






> 40 cm / 16"

3 PLACING UNIT ON FRAME



Oxycom Fresh Air BV
Kaagstraat 31 - NL-8102 GZ Raalte P.O. Box 212 - NL-8102 AE Raalte
T +31 (0)572 349 400 E info@oxy-com.com I www.oxy-com.com

2.4.1

Package dimensions and weight

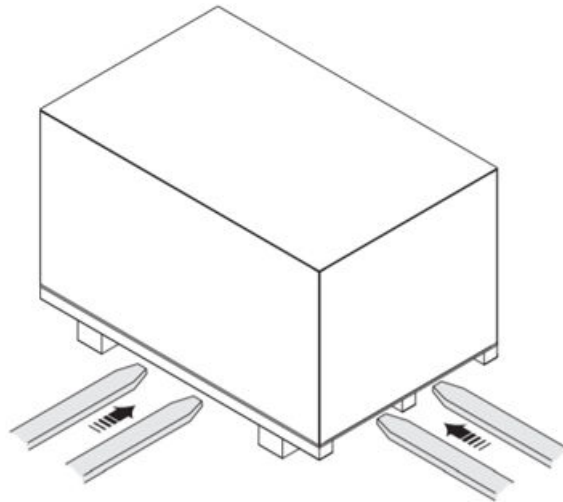
For dimensions and weight information of the unit, refer to the specification sheets.

2.4.2

Forklift instructions

The equipment is supplied on a wooden pallet with a cardboard cover. Use a forklift to move the crate. Please note the following:

- The equipment is heavy. Make sure the capacity of the forklift is sufficient to handle the equipment. See Dimensions and weight.
- Use forks with a correct length.
- Obey the icons and instructions on the crate for correct forklift use.
- Always obey local safety regulations for forklifts.

Forklift positions

2.4.3

Hoist instructions**Danger**

Always use certified hoisting equipment to hoist the IntrCooll®.

Danger

To lift, always use all 4 lifting terminals on top of the IntrCooll®. Failure to use all lifting terminals may cause serious injury and/or damage the machine.

Danger

Always respect the correct length and angle of the ropes when lifting the unit.

Danger

The IntrCooll® has heavy parts. Risk of crushing body parts or severe damage to the IntrCooll® when handling, lifting or moving.

Danger

The safe working load of the lifting cables should be sufficiently high. Cables which are not supplied as standard with the IntrCooll® should have a safety factor of at least 5.

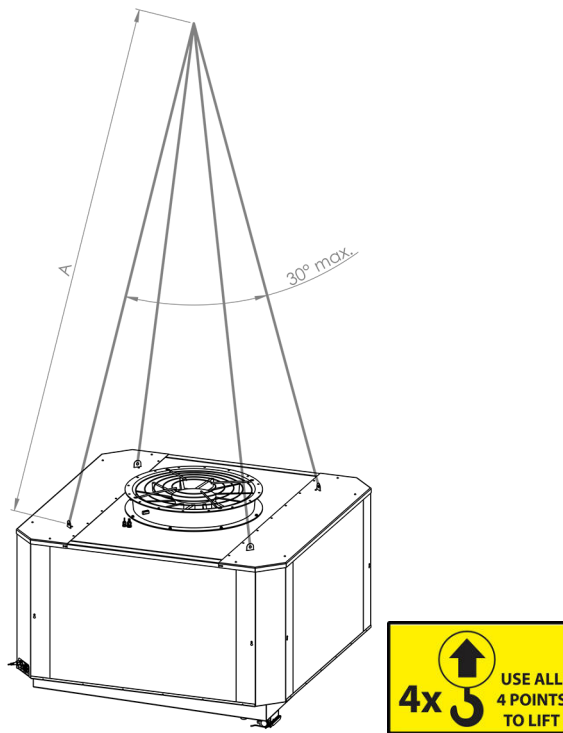
**Caution**

Never place the IntrCooll directly on the sump or the valve, this will damage the IntrCooll.

Caution

Prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or de-accelerated, and can overload the IntrCooll®. When completing an upward or downward motion, ease the load slowly to a stop.

Lifting instructions



A Rope length

Rope length (A):

- IntrCooll Std.: 2 m. minimum (4x)
- IntrCooll Plus: 3.6 m. minimum (4x)

Maximum rope angle:

- 30°

3

Prepare the location

1

2

3

4

5



Caution

Before operation or maintenance be sure to read and understand the safety information and warranty conditions. The safety and warranty information can be found behind the electrical panel on the IntrCooll®.

There are several methods/accessories to support the equipment on the roof, each having its own requirements. Below a description on installation of IntrCooll® on a standard support frame (to be provided by contractor).

Optionally there are also plug-and-play solutions available (not described in this manual): Flashing kit and Natural Ventilator module.

3.1 Location requirements

The location must be able to provide space for the unit and carry the weight of the unit.

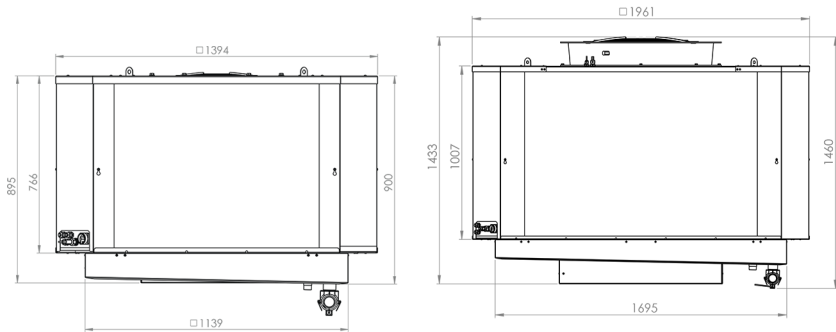
3.1.1 Weight requirements

For weight information of the unit, refer to the specification sheets.

3.1.2 Space requirements

3.1.2.1 Equipment dimensions

For dimension information of the unit, refer to the specification sheets.

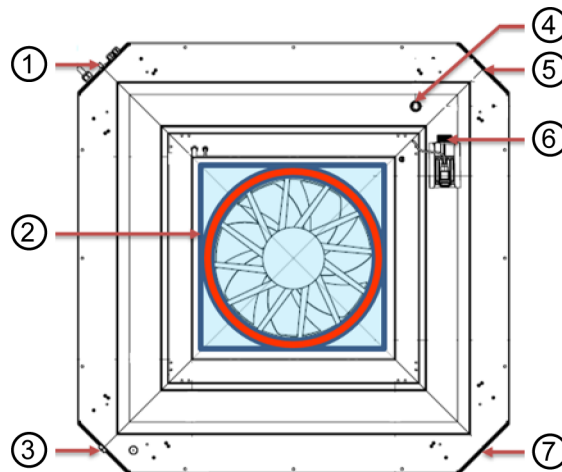


IntrCooll® Std.

IntrCooll® Plus

3.1.2.2 Connection locations

Bottom view with connections



1	Electrical compartment	<ul style="list-style-type: none"> - Isolator switch - Horizontal entry - UV-C water sterilizer (optional)
2	Duct	<ul style="list-style-type: none"> - IntrCooll® Std.: 600 mm x 600 mm - IntrCooll® Plus: 900 mm x 900 mm - 20 mm - 30 mm flange - Fasten with screws (do not screw in the red zone!)
3	Water supply compartment	<ul style="list-style-type: none"> - ¾" male connection - Always use SS flex hose with swivel
4	Overflow	<ul style="list-style-type: none"> - IntrCooll® Std.: 1" male connection - IntrCooll® Plus: 1 ¼" male connection
5	Pump compartment	
6	Drain valve	<ul style="list-style-type: none"> - 1 ½" male connection
7	50 Hz - 60 Hz by-pass compartment	<ul style="list-style-type: none"> - Standard the 50 Hz cap is mounted



3.1.2.3

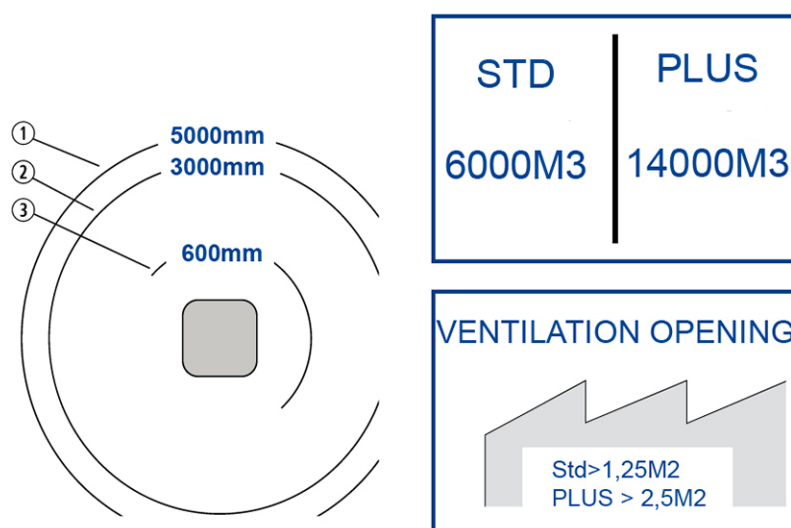
Free space around equipment

The IntrCooll® needs sufficient space around the unit to ensure that it functions correct and to make servicing possible.

The recommended minimum free space around the IntrCooll® is 1000 mm for at least three sides of the unit and at least 600 mm of free space at the fourth side.

If the unit is placed higher than 1.5 m above the roof or floor a service platform must be available for servicing purposes.

Obstacle minimum distance



1	Breather vent pipes or sewer pipes	5000 mm
2	Solid heater flue pipes	3000 mm
3	3Walls or air blocking obstacles	600 mm
	Exhaust air openings	10 000 mm
	Neighboring residences	Local regulations
	TV antenna	5000 mm

3.2



Support frame (Not provided)

Note

When not used in combination with a Flashing Kit (optional) on page 23 or a Natural Ventilator module (optional), the contractor shall provide a support frame for the IntrCooll®.

As an option a support frame can be ordered at Oxycom:

- Article no. 5301251, support frame for IntrCooll® Std.
- Article no. 5301305, support frame for IntrCooll® Plus

Refer to the accessories brochure for more information on the optional support frame.

If the contractor provides a support frame, Oxycom recommends the use of a support frame with the following specifications:

- The profile for the welded frame is galvanized steel "L".
- profile of 40 mm x 40 mm x 3 mm.
- The support frame should have a loading capacity of at least the wet weight of the unit.
- Unit must be placed/positioned 100% level. If not level, water might leak into ducting.

Minimum height:

- Std.: 400 mm.
- Plus: 500 mm.

Inside frame dimensions (L x B):

- Std.: 1154 mm x 1154 mm.
- Plus: 1714 mm x 1714 mm.

IntrCooll® on support frame



3.3

Natural ventilator

As an option a natural ventilator can be ordered at Oxycom.

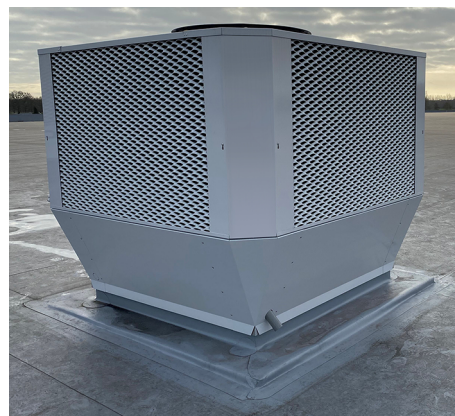
Refer to the accessories brochure for more information on the natural ventilator.

3.4

Flashing kit IntrCooll® (Optional)

The IntrCooll® can also be mounted on an optional Flashing kit. This kit and associated installation instructions are available separately from Oxycom.

IntrCooll® mounted on optional Flashing Kit



3.5 Roof beam supports

Requirements for roof beam supports:

- Must be calculated, provided and installed by the contractor (unless already present in the construction).
- Must be positioned under the support feet or the frame to hold the weight of the IntrCooll[®], including frame and ducting.

Steel support beams (examples)



Already present in the construction



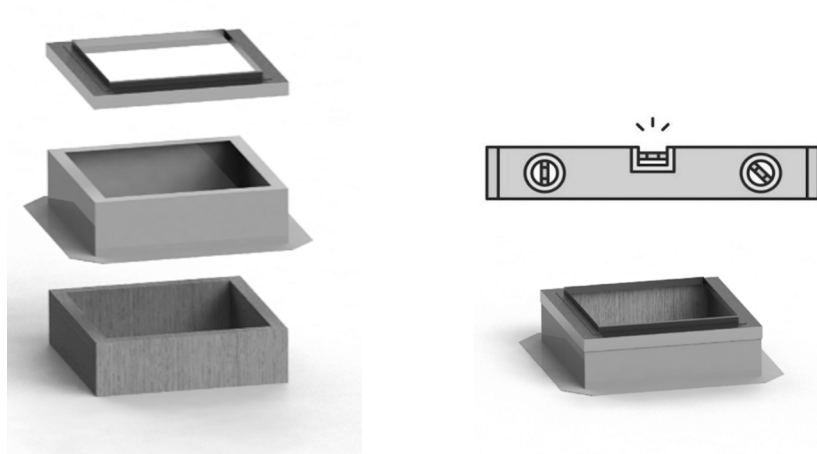
installed by the contractor

3.6 Opening and curb

To install the IntrCooll[®] properly, prepare the building on the proposed installation location of the IntrCooll[®].

- Prepare an opening in the roof of at least (add additional space the construction around the ducting):
 - IntrCooll[®] Std.: 600 mm x 600 mm
 - IntrCooll[®] Plus: 900 mm x 900 mm
- The unit must be positioned 100% level. If not level, water can leak into the ducting.

Example of a roof curb



Wrong installation example (poor accessibility of the drain valve)



- 1
- 2
- 3
- 4
- 5

3.7

Roof transit for ducting

Roof transit requirements:

- Must be provided (including materials) by contractor.
- Must be watertight.

Example of a roof transit for ducting



3.8

Roof transits for cabling / plumbing



Caution

Prevent rainwater from following the cables: always bend the cable(s) in a V-shape.



Note

For a IntrCooll® Plus with a natural ventilator, the use of a roof transit for cabling is not necessary. With this setup the cabling goes through the natural ventilator to the unit.

To guarantee a waterproof transit of power cables, control cables and water supply lines, use commercially available products with the same functionalities as the examples below:



3.9

Supply air ducting

Duct specifications

	IntrCooll® Std.	IntrCooll® Plus
Round duct	630 mm	900 mm
Square duct	600 mm	900 mm

3.10

Exhaust air

3.10.1

Exhaust vents

As an option exhaust fans can be ordered at Oxycom:

- Article no. 5301249, exhaust fan for IntrCooll® Std.
- Article no. 5301250, exhaust fan for IntrCooll® Plus

Refer to the accessories brochure for more information on the optional exhaust fans.

The supplied air must be able to smoothly leave the building at ceiling level (as high as possible).

When natural vents are used (overpressure), these can be powered and controlled by the IntrCooll® with a 0 V - 10 V modulating control signal and 24 VDC (maximum 5 watt) power supply.

IntrCooll® PCB connector to control and power the vent actuator: J8.

The contractor shall provide and install a 3-wire cable between the IntrCooll® and the vent actuator.



Note

Use a vent actuator that can be controlled with a 0 V - 10 V signal.

	Required ventilation opening
IntrCooll® Std.	1.25 m ²
IntrCooll® Plus	2.5 m ²

Roof vent (rain repellent or with rain sensor)



Wall vent (rain repellent or with sensor)



3.10.2

Exhaust fans

The supplied air shall be able to smoothly leave the building at ceiling level (as high as possible).

When mechanical exhaust fans are used, these can be powered and controlled by the IntrCooll® with a 0-10V modulating control signal.

The contractor shall provide/install a 2-wire cable between the IntrCooll® and the exhaust fan and a separate power supply cable to a local mains power source.

IntrCooll® PCB connector to control the exhaust fan: J7.

It is advised to install fans with capacity equal to the amount of air supplied by the IntrCooll®. The IntrCooll® software has the ability to slightly reduce the airflow (field setting) to prevent negative pressure inside the building.



Note

Make sure the exhaust fans can be controlled with a 0 V - 10 V signal

	Required ventilation opening
IntrCooll® Std.	1.25 m ²
IntrCooll® Plus	2.5 m ²

Wall exhaust fan



Roof exhaust fan



3.11

Water requirements

3.11.1

Supply water quality requirements

Only use tap water or reversed osmosis water for a proper operation of the IntrCooll®.



Warning

Use of groundwater, bore water, grey water, collected rainwater, softened water, or polluted water is not recommended. The unit can be heavily polluted and damaged, and warranty is void!



Caution

Water quality is of vital importance for the longevity and hygienic functioning of the system. Please consult Oxycom for a tailored advice specific for your situation.

The supplied tap water or reversed osmosis water must meet the requirements according to the table below.

Parameter	Unit	Tap water ⁽¹⁾		Reverse osmosis water	
		Supply	Recirculation	Supply	Recirculation
		Less than 1500 hours/year		Food/medical industry Less maintenance	
pH value	--	7.2–8.2	7.2–8.2	7.2–8.2	7.2–8.2
Electrical conductivity	µS/cm	<500	<1250 ⁽²⁾	40 ⁽³⁾	<400 ⁽⁴⁾
Chloride concentration	ppm Cl ⁻	<50	<200	--	<50
Sulfate concentration	ppm SO ₄ ²⁻	<90	<200	--	<90
Chloride and sulfate combined	ppm Cl ⁻ + SO ₄ ²⁻	--	<250	--	--
Ryznar Stability Index (RSI)	--	>6	>6	>6	>6
Colony-forming units (CFU)	CFU/mL	<10 ²	<10 ⁴	<10 ²	<10 ⁴
Maximum recirculations	--	--	10	--	10

⁽¹⁾ Chemical treatment can be considered (if compliant with local regulations) when tap water exceeds limit values or when usage of tap water is preferred with more than 1500 cooling hours per year.

⁽²⁾ Factory setting.

⁽³⁾ Use tap water bypass when the conductivity does not meet this threshold value or dose a corrosion inhibitor to prevent corrosion (if compliant with local regulations).

⁽⁴⁾ Change IntrCooll® water conductivity limit setting to this value when using reverse osmosis water.

3.11.1.1

RSI value

Measuring water hardness is inaccurate to predict forming of scale. Forming of scale is depending on different physical quantities like pH-value, conductivity, temperature, calcium concentration and alkalinity and can be calculated with the Ryznar Stability Index or RSI. The RSI value must be higher than 6 to prevent issues due to scale. Please contact Oxycom if you have any question concerning your water quality.

3.11.1.2

Conductivity

To remove the increased mineral concentration caused by the water evaporation process, the IntrCooll® has a built-in sensor that continuously measures the conductivity of the supply water. When the upper limit (factory setting) is reached, the entire water content in the tank is drained and replaced with clean supply water.

3.11.1.3

Oxycom Water Quality Calculator

Please contact Oxycom to be sure the supply water meets the supply water requirements on page 29.

Use the Oxycom Water Quality Calculator to:

- Check if the initial water quality (tap, RO) meets all requirements to prevent scale forming and metal corrosion.
- Calculate the amount of recirculation cycles after which the water quality has changed in such way that one of the properties is about to exceed the limit.
- When in some cases the supply water requirements cannot fully be met: Analyze the supply water quality to determine the adjustment of the conductivity setting on page 61 suitable for local circumstances. The settings must be matched with an available local water quality report.



Caution

For a proper operation and low running costs regular maintenance and cleaning is essential, refer to the maintenance document for more information. To keep warranty the specified maintenance is mandatory.



Note

For more technical specifications about the mains water supply, refer to the Specifications sheets on page 67.

3.11.2

Supply water flow requirements

For flow requirements of the supply water for the unit, refer to the specification sheets.

3.12

Drain connection requirements

The drain connection on the IntrCooll® can be set up in two different configurations:

- The drain valve discharges directly onto the roof top. To bridge the distance between the connection and the rooftop (i.e. to prevent dripping noise), connect an extension tube to the drain.
- It is possible to connect the drain valve to a local drain circuit.

3.13

Overflow connection requirements

The overflow connection on the IntrCooll® can be set up in two different configurations:

- The drain valve discharges directly onto the roof top. To bridge the distance between the connection and the rooftop (i.e. to prevent dripping noise), connect an extension tube to the drain.
- It is possible to connect the overflow output to a (combined) drain circuit.

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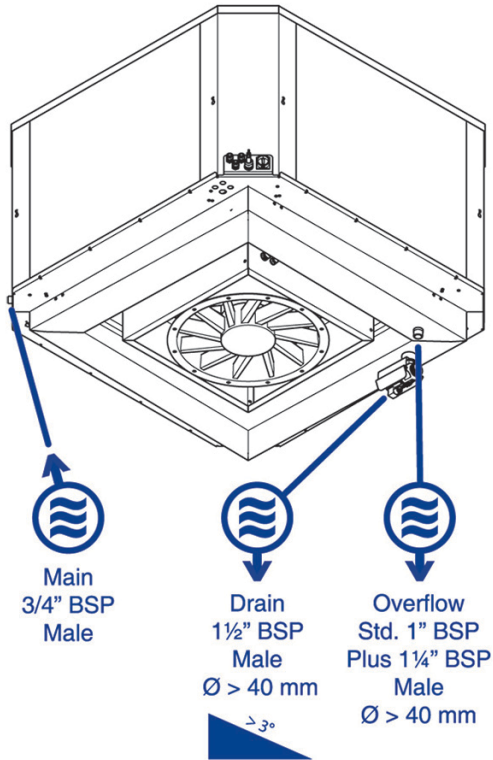
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3.14

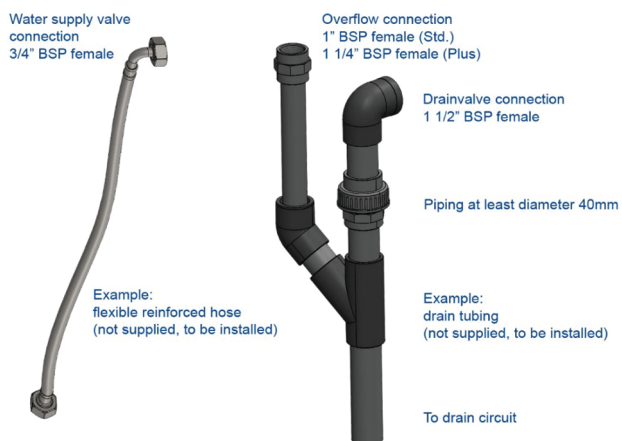
Water connections

The IntrCooll® needs a connection to the mains water supply. The water supply and drain piping must comply with the requirements as described in this manual.

Connection types



Water supply hose and drain piping (example)



Note

Hoses and piping must be provided and installed by the contractor,

3.14.1

**Supply connections****Note**

All necessary piping and installation must be provided and executed by the contractor.

Oxycom recommends to:

- Install a shut-off valve with drain option for each unit for service/maintenance reasons. The drain can be used for emptying the tubing for the winter period in combination the optional freeze protection valve set.

1

2

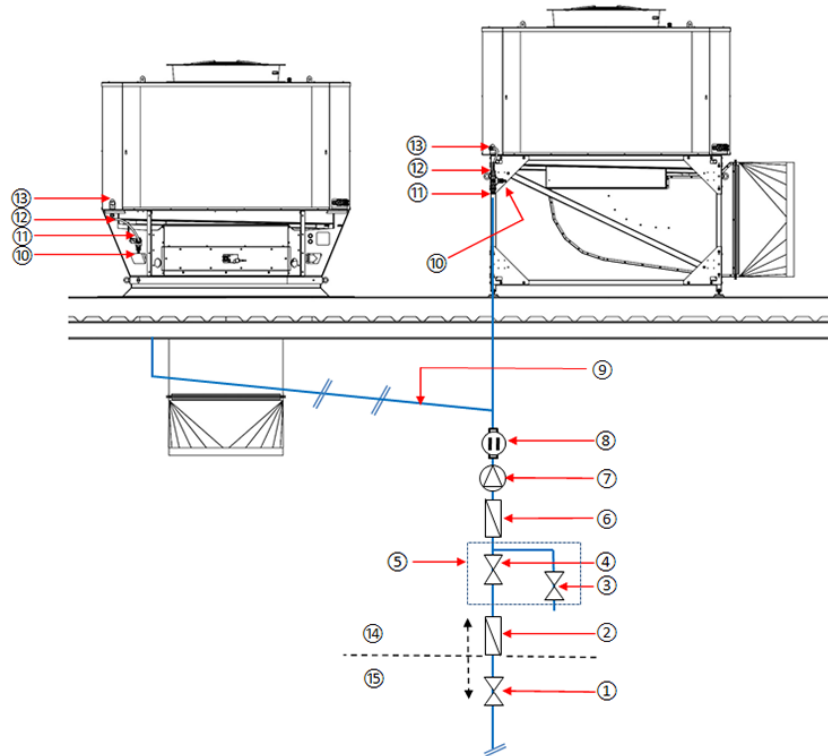
3

4

5

- Alternatively, an automatic aerator can be considered to install for winter draining.
- Install a maintenance valve and connection near the unit, for service/ maintenance reasons (i.e. water supply for pressure washer).

Supply connections schematic overview



- 1 Shut-off valve
- 2 Back-flow preventer
- 3 2-way valve for winter with positions: close - operation / open - winter (drain)
- 4 2-way valve for winter with positions: open - operation / close - winter
- 5 Accessory: Freeze protection valve set (art. 5301085)
- 6 Filter 0.1 mm (not necessary in combination with R0 installation)
- 7 Booster pump (optional)
- 8 Central water meter (optional)
- 9 Insulate pipework and place on slope
- 10 Maintenance valve with water tap
- 11 Shut-off valve with positions: open - operation / close - winter (drain)
- 12 Automatic aerator (optional / winter)
- 13 SS flexible hose 3/4 "
- 14 No drinking water
- 15 Drinking water

**Note**

The Freeze protection valve set is an optional accessory (art.5301085)

**Note**

Oxycom advises not to use copper piping material.

Note

Insulate the supply line in facilities that produce humidity.

3.14.2

Drain connections*Requirements for drain piping*

	Specification
Inner diameter drain piping, fittings and valves	minimum 40 mm

At installation note the following:

- Remove the transport plug from the drain valve.
- When using a drain piping system provide enough venting to ensure proper function of the drain valve.
- Make sure there is a minimum of restrictions (bends, connections, etc.) in the drain piping system to prevent excessive resistance.
- To prevent accumulation of water on the rooftop, make sure the water discharges from the roof via e.g. a gutter.

**Note**

At removal of the transport plug residual water may flow out of the unit.

Note

If the drain valve is connected to the sewer use unions to guarantee easy access to the drain valve, when necessary.

3.14.3

Overflow connections*Requirements for overflow piping*

	Specification
Inner diameter overflow piping and fittings	minimum 40 mm

At installation note the following:

- Install a plumbing vent to prevent the build-up of air in the system.
- Make sure there is a minimum of restrictions (bends, connections, etc.) in the overflow piping system to prevent excessive resistance.
- Apply sufficient frost protection measures.
- To prevent accumulation of water on the rooftop, make sure the water discharges from the roof via e.g. a gutter.

3.14.4

Valves

For a proper connection to the mains water supply Oxycom advises the contractor to use the following valves in the installation:

- An additional shut-off valve to isolate the IntrCooll® from the water supply, i.e. during maintenance activities or when taking the system (temporary) out of service.
- An automatic aeration valve to ensure proper drainage of the water supply line.
- A maintenance valve and freshwater connection near the unit, for maintenance reasons (i.e. water supply for pressure washer).

These valves are not included in the package and must be provided by the contractor.



Note

When several units are linked together make sure each one can be shut-off from the water supply separately for maintenance purposes.

3.15

Electrical requirements

3.15.1

Unit specifications

Refer to the specifications of the IntrCooll® on page 67 for all specifications of the IntrCooll® Std. and Plus.

3.15.2

Power supply fuse

Oxycom demands the installation of an automated circuit breaker between the power source and the IntrCooll®. The external fuse must comply to the following specifications:

- 3P+N
- At least 16A
- Type C

An automated circuit breaker is not included in the package and must be provided and installed by the contractor.



Note

The diameter of the power supply line depends on the length, position, temperature and if the wires are bundled or not. Therefore, a calculation must be executed to determine the correct diameter of the power supply line.

3.15.3

Power isolating switch



Danger

Risk of electrical shock. When the switch is in OFF position, mains voltage always remains present between the switch and the mains connection.

To fully isolate the IntrCooll® from the mains, Oxycom recommends the installation of an external maintenance switch / padlock switch between the unit's main connection and the mains AC supply. Make sure the installation is executed according to local regulations.

Padlock switch (example)



1 Switch ON (unlocked)

2 Switch OFF (locked / unlocked)

An external automated circuit breaker is not included in the package and must be provided and installed by the contractor.

3.15.4

Mains power outlet

Oxycom recommends to install a mains power outlet near the IntrCooll®. This can be used by the service technician for maintenance equipment.

3.16

Communication requirements

There are several possibilities to control the IntrCooll®. The correct choice depends on the situation and specific requirements.

3.16.1

Thermostat control

IntrCooll® can be controlled by a thermostat, unless it is controlled by a BMS system. The thermostat must be ordered separately.

If more than one IntrCooll®s are available at the location, each IntrCooll® must be connected to a separate thermostat, unless they are controlled with OxyConnect gateway (optional) or a BMS system.



Note

See the documentation of the thermostat for information on the connection cable to the IntrCooll® or OxyConnect.

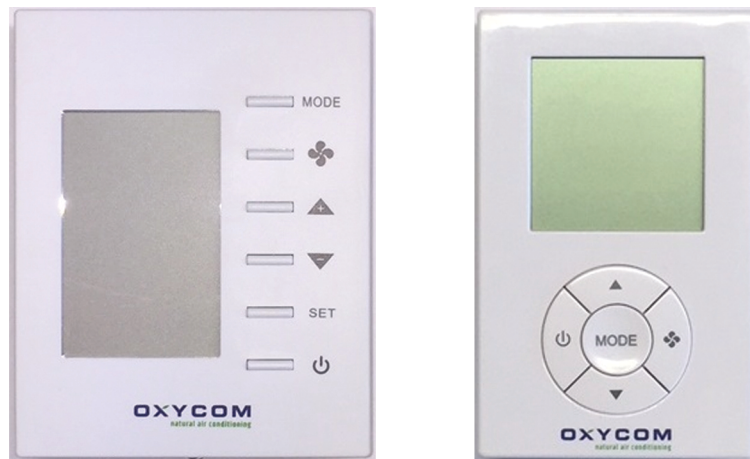
Note

The cable is not included and must be provided by contractor.

2 Types of thermostats are available:

	Temperature control	Humidity limit sensor	Time schedule
Non-programmable Thermostat	Yes	No	No
Programmable Thermostat	Yes	Yes	Yes

Example of a programmable thermostat and of a non-programmable thermostat



Each thermostat has 3 operation modes with manual or automatic switch over:

- Heat reclaim (only applicable/used when a Heat Reclaim module is ordered).
- Free cooling (fan only).
- Cooling.



Note

The thermostat must not be mounted to an exterior wall, close to a heat source or in a supply airflow of the IntrCooll®.

Note

It is advised to install an insulated plate on the back of the thermostat to minimize radiation from the wall.

3.16.2

Oxyconnect gateway control

Oxyconnect gateway control allows the control of multiple IntrCooll®s by one (or more) thermostats. It also provides for remote monitoring, configuration and control (ethernet connection required).

Oyxconnect gateway is a cloud-based portal with real-time data of all units.

To control the IntrCooll® by Oxyconnect gateway the contractor must provide the following:

- An enclosure for the power supply of the gateway control box.
- An automated fuse of 0.5A.

- Power supply to the external fuse.
- 4x0.75 mm² (shielded) cabling to and between OxyConnect the thermostats and the IntrCooll®s.

**Note**

The gateway control box must be placed indoors.

3.16.3**Control by a Building Management System**

IntrCooll® can be connected to a Modbus RTU (RS485) Building Management System (BMS) as slave device.

The contractor must take care of the control system that regulates the temperature control, fan speed and operation mode.

The Modbus interface information is available in a separate document. This can be requested at Oxycom.

3.16.4**Control by an air handling unit**

For pre-cooling purposes, the IntrCooll® can be controlled by and synchronized with an air handling unit (AHU). There are two different control options:

- Modbus RTU (RS485)
- Analog control (6 wire cable)

3.16.4.1**Modbus RTU (RS485)**

Controller I/O	I/O type	I/O function	Protocol	Connection type	Connection
J17	Isolated RS485 port	Modbus control	Modbus RTU	2-wire	Pin 1) A- Pin 3) B+

3.16.4.2**Analog control (6-wire cable)**

Controller I/O	I/O type	I/O function	Signal type	Connection type	Connection
J6	Analog input	Fan speed input 0-10V	0 V = 0% fan speed 10 V = 100% fan speed	2-wire	Pin 1) 0 V Pin 3) 0 V - 10 V input
J12	Digital input	Cooling On/Off	Off (no circuit) = Free Cooling On (circuit) = Cooling	2-wire	Pin 1) +24 VDC output Pin 3) Input
J23	Potential free contact	Alarm contact N.O.	Open (no circuit) = No alarm Closed (circuit) = Active alarm	2-wire	Pin 1) N.O. Pin 2) P

For the analog control method IntrCooll® PCB must be switched to AHU Pre-cooling mode. The following will apply:

- J6: When the speed input signal of the external fan is less than 0.2V the unit will go to stand-by.

- J12: 0 (no circuit) = Free Cooling / 1 (circuit) = Cooling.
- J23: Alarm signal (collective) feedback to AHU.

4.1

Preparations

**Warning**

Wear the safety devices according to the current rules.

**Warning**

Ensure that no unauthorized persons are in the vicinity.

**Caution**

The IntrCooll® must be transported by suitable means of transport. First and foremost, consider the permitted load capacity.

Caution

Always use the supplied pallet and the included supports when moving the IntrCooll® horizontally with a forklift or pallet truck.

Caution

Always secure the load tightly with specially designated securing chains.

Caution

Always place the IntrCooll® on a stable loading floor with sufficient load-bearing capacity.

**Note**

Oxycom is not responsible for damage resulting from incorrect transport and storage. Warranty rights will not be accepted in the event of incorrect transport and storage.

During transport and installation, at least wear the following protective clothing:

- Hard helmet
- Safety glasses
- Safety shoes
- Gloves

Before starting the installation procedure make sure you have read and understood the communication requirements on page 37 for more information.

4.1.1

Optional VDI 6022 compliance

To ensure that the unit complies with VDI 6022 Part 1 regulations, the installer must make sure by visual inspection that all parts are clean before installation. According to VDI 6022 Part 4, this visual inspection may only be performed by at least Category A qualified personnel.

4.2

Step 1. Positioning and leveling

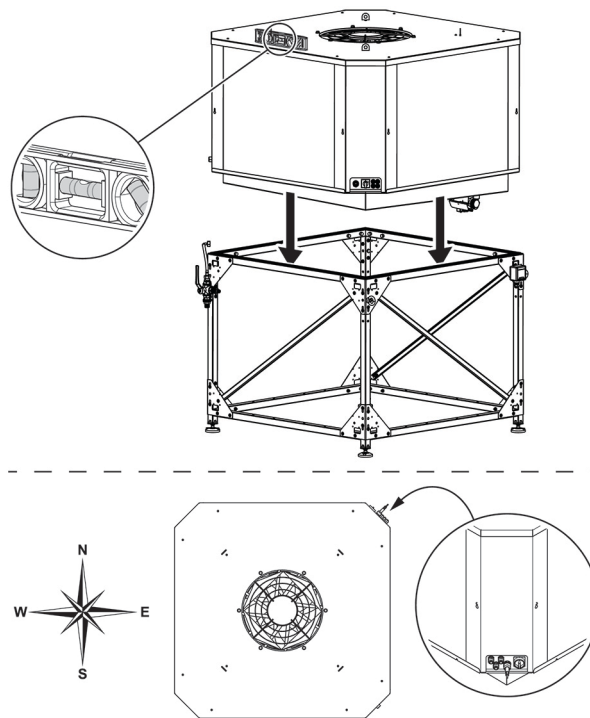


Caution

Always place the unit level to prevent damage and to ensure correct functioning.

Make sure the local facilities match the required facilities for the IntrCooll®. Refer to Installation requirements.

Positioning and leveling



4.3

Step 2. Duct connection to the IntrCooll

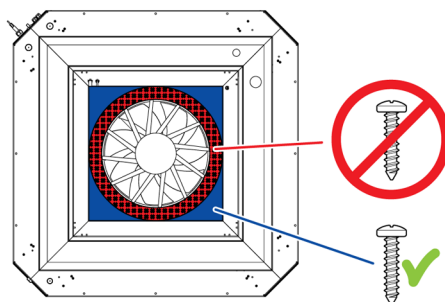
The design of the IntrCooll® facilitates to connect the unit directly to the duct via the duct connection unit. There are different ways to connect the IntrCooll® to the roof opening:

Oxycom recommends to use a flexible duct connector.

Duct connection requirements:

- In case of an elevated setup, the ducting must be insulated and the duct transit must be finished waterproof.
- In case of an elevated setup, the drainage pipe can be connected to the sewer, or the wastewater can be discharged onto the roof. The overflow connection may be combined with the drain.
- If the wastewater is discharged onto the roof, local discoloration can occur, due to minerals (calcium).

Duct connection face (do not screw in the red zone)



Example: flexible duct connector



4.4

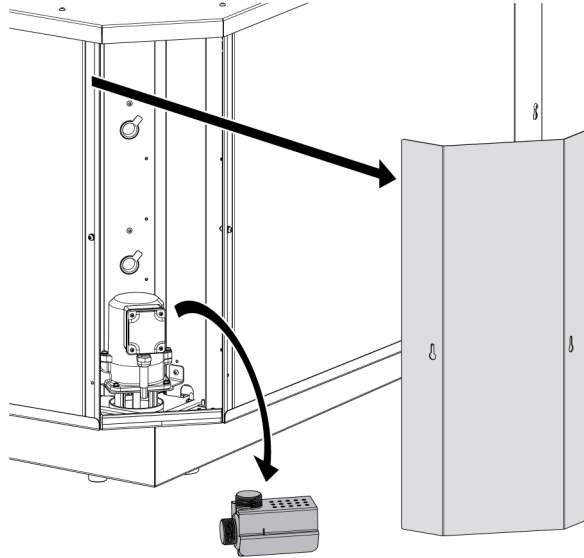
Step 3. Drain valve installation

The drain valve must be installed to the IntrCool®. It is delivered together with the IntrCool® but not installed on the unit yet.

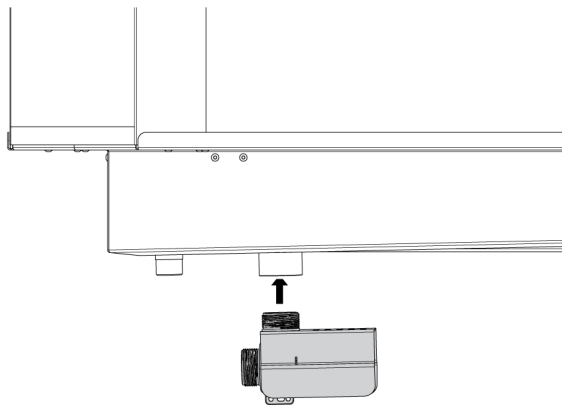
To install the drain valve:

1. Mount the IntrCool® on its final support structure. See positioning and levelling.

2. The drain valve is packed in the pump compartment during transport. Remove the corner cover and take out the drain valve package. Install the panel back in its original position afterwards.

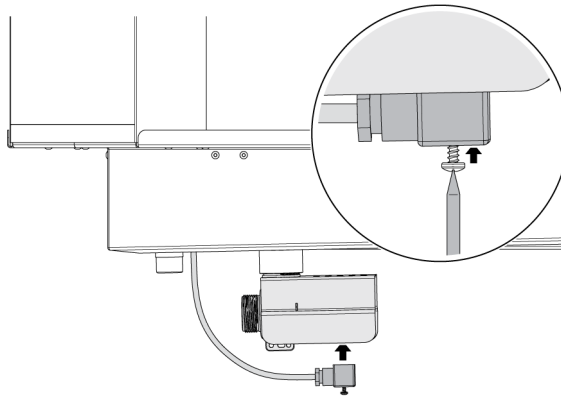


3. Mount the drain valve to the 1 $\frac{1}{2}$ " BSP Female fitting which is located at the bottom side of the IntrCool®. Use tread sealant or sealing tape between the threads.



4. Place cover panel on the valve. Make sure the valve is positioned correct. The valve must drain onto the roof or into the drain piping.

5. Connect the power supply connector for the drain valve to the drain valve.
6. Lock the connector in place with the pre-mounted screw.



4.5

Step 4. Flow regulator cap

The ring tube assembly is linked to the pump. There is a difference between the amount of water the pump delivers at 50 Hz or 60 Hz.

Because of this it is necessary to mount the correct flow regulator cap. Standard the 50 Hz version is mounted. The 60 Hz version is strapped near the mounting position.

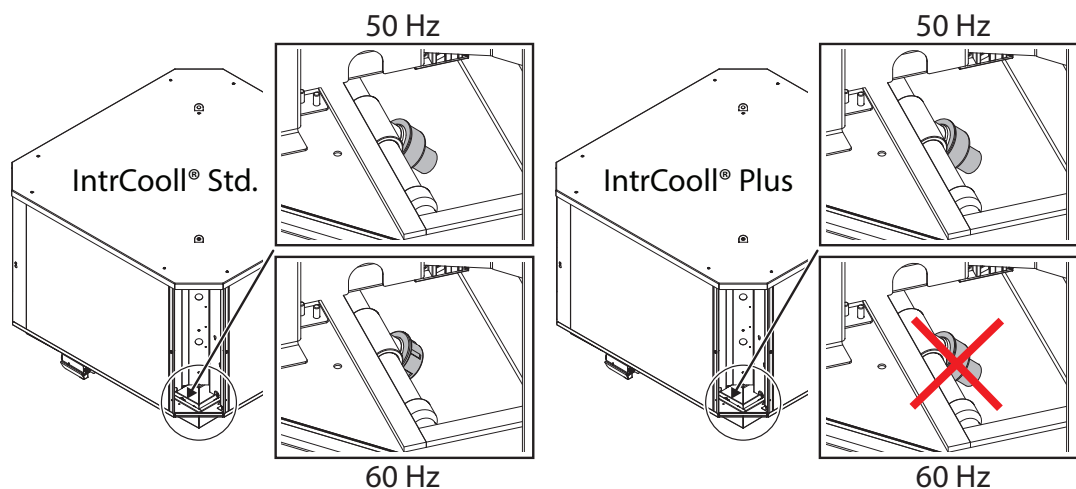
Exchange the regulator cap if necessary.



Caution

On the IntrCool® Plus 60 Hz version, the flow regulator cap must be completely removed / not mounted.

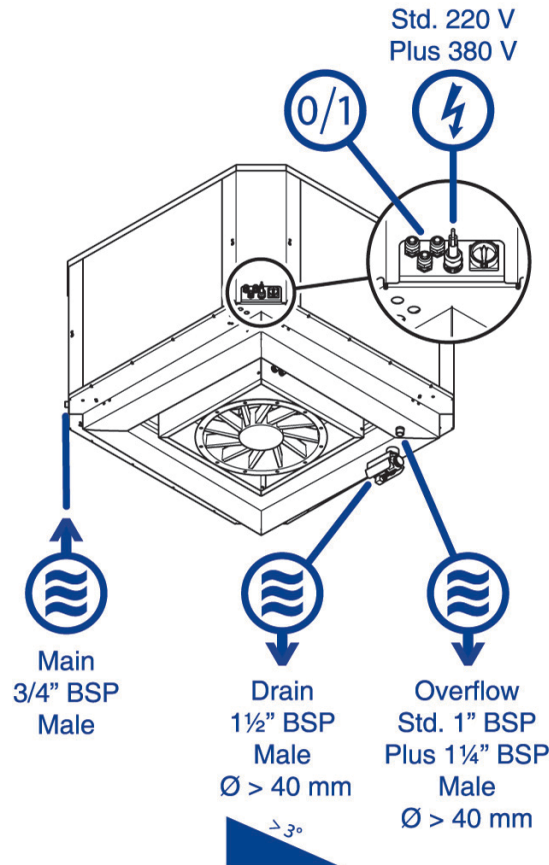
Flow regulator cap positioning and types



4.6

Step 5. Making connections

Connections on the IntrCooll®



Note

Install vents in the drain line to prevent from vacuum.

4.6.1

Water connections

Make sure that all water system components comply to the requirements as described in the section Water supply and discharge on page 29.

Mains water supply:

1. Install the approved stop valve between the mains water supply and the supply solenoid of the IntrCooll®.
2. Install the approved pressure reducing valve to prevent that the pressure in the cold-water supply pipe exceeds the maximum working pressure of 6 bar (87 psi).
3. Use a flexible hose to connect the IntrCooll® to the mains water supply to prevent from water hammer.

Drain connection on page 31:

1. Install a vent in the drain line to prevent vacuum in the drain line.

2. Make sure the drain line has a downward slope of at least 3°.
3. Connect the drain valve and the to the existing drain circuit for a closed connection.

Overflow connection on page 31:

1. Connect the overflow output to the existing drain circuit for a closed connection.

4.6.2



Danger

The equipment must be connected to earth to prevent damage to the equipment, ensure correct operation and avoid electrical shocks.

Connect the mains power supply cable.

Wiring according to European code

Wire	Color
L1	Brown
L2	Black
L3	Gray
N	Blue
Ground	Yellow / green

Each unit is delivered with a short 2m power supply cable to connect to the main switch or terminal box which is provided and installed by the contractor. If this power supply cable is too short a new cable must be installed at the same connections. Connect the new cable to the internal switch and to earth (screwed terminal connector).

Oxycom recommends the use of a cable according to the following specifications:

- Type H07RN-F or equal.



Note

Calculate the correct diameter of the power supply cable based on the factors that are of influence (length, bundled, temperature, etc.).

Note

Always use a cable of a type and diameter that complies with the local regulations.

4.7

Step 6. Check installation and settings

When the installation of the unit is completed, proceed to the following steps:

1. Connect thermostat.
2. Switch unit on.
3. Check correct software settings on page 61.
4. Check fan settings.

4.7.1

Connect the thermostat

When the IntrCooll® is controlled by a thermostat follow the documentation of the thermostat for a correct installation.

Before installation see the communication requirements on page 37 for more information.

IntrCooll® connector for communication (RS485) with thermostat is J17:

- 2 wires used for RS485 communication.
- 2 wires for 24 VDC power supply.

4.8

Step 7. Finish the installation

To finish the installation:

1. Check the following:
 - No tools and peripherals remain in the interior of the IntrCooll®.
 - All components are in place.
 - All tubes and hoses are (re)connected.
 - All electrical components are (re)connected.
2. Place all covers on the unit.

4.8.1

Step 7b. Fill-out installation checklist

Model:
Serial number:
Installation date:
Location address:
Installer:

1	Delivery of the crate and transport to the installation site	YES	NO	Reference
A	Is there a place indoor where the crated equipment can be stored temporarily?	<input type="checkbox"/>	<input type="checkbox"/>	Handling and storage
B	Is there a fork-lift truck or any other lifting device available with proper lifting gear/ropes according to manual?	<input type="checkbox"/>	<input type="checkbox"/>	Transport
Remarks:				
2	Installation requirements	YES	NO	
A	Minimum free space for 1 side of 600 mm?	<input type="checkbox"/>	<input type="checkbox"/>	Space requirements on page 20
B	Minimum free space for 3 or more sides of 1000 mm?	<input type="checkbox"/>	<input type="checkbox"/>	Space requirements on page 20
C	There are no obstacles (i.e exhaust vents/fans, sewer pipe vents) near equipment.	<input type="checkbox"/>	<input type="checkbox"/>	Location requirements on page 20
D	If the unit is placed/elevated more than 1.5 m above roof/floor, a service platform with minimum free space (see 2.A and 2.B) is provided?	<input type="checkbox"/>	<input type="checkbox"/>	
Remarks:				
3	Equipment installation	YES	NO	
A	Support frame(s) for IntrCooll® (not applicable for optional Flashing Kit or Natural Ventilator module)	<input type="checkbox"/>	<input type="checkbox"/>	Support frame (Not provided)
B	Equipment will be placed level (to prevent water leakage in ducting)	<input type="checkbox"/>	<input type="checkbox"/>	Roof transit for ducting on page 26
C	Watertight roof transit for ducting	<input type="checkbox"/>	<input type="checkbox"/>	Roof transit for ducting on page 26
D	Water tight roof transit for cabling/water pipes	<input type="checkbox"/>	<input type="checkbox"/>	Roof transits for cabling / plumbing on page 26
E	Roof beam supports are calculated/constructed such that they can hold weight of IntrCooll® in operation (wet)	<input type="checkbox"/>	<input type="checkbox"/>	Roof beam supports on page 24
F	Ducting diameter/dimensions according to specifications?	<input type="checkbox"/>	<input type="checkbox"/>	Opening and curb on page 24

1

2

3

4

5

G	Minimum free space for 3 or more sides of 1000mm?	<input type="checkbox"/>	<input type="checkbox"/>	Space requirements on page 20
H	Modulating exhaust air vents/fans including cabling are accounted for? (might require roof support beams as well)	<input type="checkbox"/>	<input type="checkbox"/>	Exhaust air on page 27
Remarks:				
4	Electrical specifications	YES	NO	
A	Electrical supply phases/voltage/frequency meets equipment requirements?	<input type="checkbox"/>	<input type="checkbox"/>	Electrical requirements on page 36
B	External power supply fuse for each unit	<input type="checkbox"/>	<input type="checkbox"/>	Power supply fuse on page 36
C	Power isolating (padlock) switch provided for each unit (preferable on the roof near the equipment)	<input type="checkbox"/>	<input type="checkbox"/>	Power isolating switch on page 36
D	Power supply cable meets specifications and local regulations	<input type="checkbox"/>	<input type="checkbox"/>	Electrical connections on page 47
E	Power supply cable connected correctly?	<input type="checkbox"/>	<input type="checkbox"/>	Electrical connections on page 47
F	Power supply cable of equipment (maximum 1.5m) will be connected to an external terminal box, so that equipment can easily be disconnected, when necessary.	<input type="checkbox"/>	<input type="checkbox"/>	
G	Equipment will be earthed.	<input type="checkbox"/>	<input type="checkbox"/>	Electrical connections on page 47
H	Main power outlet for service / maintenance available on the roof / in close proximity to equipment?	<input type="checkbox"/>	<input type="checkbox"/>	Mains power outlet on page 37
I	Correct flow regulator cap mounted? 50 Hz standard, exchange if necessary for 60 Hz use.	<input type="checkbox"/>	<input type="checkbox"/>	Step 5. Flow regulator cap on page 45
Remarks:				
5	Communication specification	YES	NO	
A	Is thermostat ordered for each IntrCooll®? Not applicable if connected to optional OxyConnect gateway or BMS system.	<input type="checkbox"/>	<input type="checkbox"/>	Communication requirements on page 37
B	Thermostat mounted on a suitable spot?	<input type="checkbox"/>	<input type="checkbox"/>	Thermostat control on page 37

C	Thermostat connected with correct cable, to specified connection in IntrCool®?	<input type="checkbox"/>	<input type="checkbox"/>	Thermostat control on page 37
D	If Oxyconnect gateway is ordered, are necessary preparations done?	<input type="checkbox"/>	<input type="checkbox"/>	Oxyconnect gateway control on page 38
E	If Building Management System will control the unit, is contractor informed to take care of installation?	<input type="checkbox"/>	<input type="checkbox"/>	Control by a Building Management System on page 39
F	IntrCool® used as AHU pre-cooling, is unit connected to specified instructions?	<input type="checkbox"/>	<input type="checkbox"/>	Control by an air handling unit on page 39
Remarks:				
6	Water Supply requirements	YES	NO	
A	Local water quality according to specification?	<input type="checkbox"/>	<input type="checkbox"/>	Supply water quality requirements
B	Measured and noted the conductivity of the water on the site?	<input type="checkbox"/>	<input type="checkbox"/>	Supply water quality requirements
C	Water Supply according to specifications?	<input type="checkbox"/>	<input type="checkbox"/>	Supply connections
D	Shut- off valve provided and installed by contractor?	<input type="checkbox"/>	<input type="checkbox"/>	Valves on page 36
E	Maintenance water connection/valve provided and installed by contractor?	<input type="checkbox"/>	<input type="checkbox"/>	Valves on page 36
F	Prepare piping for drain and overflow connection.	<input type="checkbox"/>	<input type="checkbox"/>	Drain connections on page 35 Overflow connections on page 35
G	Drain valve installed according instructions?	<input type="checkbox"/>	<input type="checkbox"/>	Step 4. Drain valve installation
Remarks:				



5.1

How to operate the IntrCooll®

5.1.1

Checks before starting

Before starting make sure that:

- All panels and covers of the IntrCooll® are installed.
- There is no marking on the IntrCooll® 'DO NOT START'.
- There are no loose or strange parts within the IntrCooll®.
- The water supply to the IntrCooll® is connected.
- The correct filters are installed.
- The correct flow regulator cap (50 Hz / 60 Hz) is installed.
- The drain is connected to a local drain circuit
- The IntrCooll® is connected to the mains power supply.
- The maintenance switch is in ON position.
- The padlock switch is in ON position.
- The thermostat is switched on and connected to the IntrCooll®.
- For correct settings, refer to the enclosed documentation in the thermostat package.

5.1.2

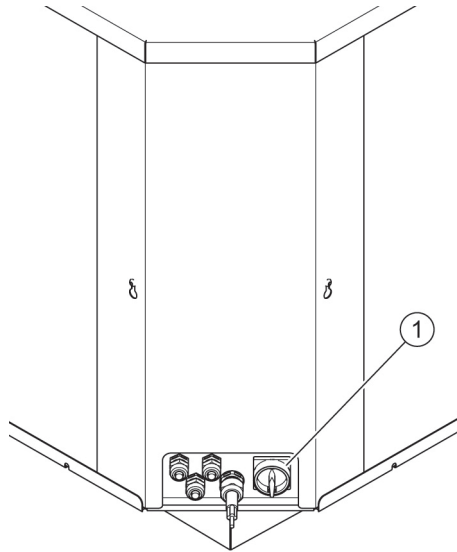
Check unit installation

Check and finish filling in the Installation checklist on page 48.

5.1.3

Power-up unit and final checks and settings

Main switch



1. Main switch

1. Check if water and electricity are connected.
2. Remove the cover from the electric component section.



Danger

Electric shock hazard while working on electric components.

3. Power up the unit by turning the main switch (1) on. The OxyLogic display will light up and the unit will start-up. It can take up to several minutes until the unit will start depending on the settings.
4. Remove the cover of the pump section.
5. Check if the pump rotates in the right direction. The arrow on top shows the direction (counterclockwise). If this is not correct it must be corrected, refer to the wiring diagram for the correct connection.
6. Install the cover of the pump section.

5.1.4

How to switch the IntrCooll® off

There are several situations from which the IntrCooll® can be switched off. To switch the IntrCooll® off:

- If the unit is on 'stand by', the main switch (1) can be switched off immediately.
- If the IntrCooll® is in active cooling mode and a thermostat has been fitted:
 - a) Set the on / off switch on the thermostat to off.
 - b) Switch off the main switch (1) on the IntrCooll®.



Warning

Do NOT turn off the IntrCooll® by interrupting the main voltage. The unit must be able to fully run the automatic drying cycle.

Note

Legionella prevention. After switching off the system, the content of the water tank is saved for a maximum of 60 minutes, after which it is automatically emptied.

Note

If the IntrCooll did not receive a cooling request for an hour, the drying cycle automatically starts. When the IntrCooll® cools the whole day, the drying cycle starts at night (time set).

Note

The Oxyvap® pads need to dry to minimize bacterial growth. The silver ions in the coating on the slats can kill the bacteria present.

Note

Only when the IntrCooll® is switched off for a shorter period of time (max 4 hours), can the drying cycle be skipped.

5.1.5

Switch off for longer periods

5.1.5.1

Take the IntrCooll® out of service

When the IntrCooll® is out of use for a longer period, obey the precautions below:

- Make sure that no water remains in the sump, heat exchangers and Oxyvap® media.
Normally the sump drains automatically when the IntrCooll® is de-energized.
- Disconnect the mains water connection and bleed the water supply line.

- Dry the IntrCooll® using the ventilation mode for 10 to 15 minutes.
- Switch off the IntrCooll®. See Switch off for maintenance.



Note

If the system is not in use for a longer period of time or if there is no cooling demand, the water supply line is automatically emptied by the automatic drain valves.

Note

Make sure the IntrCooll® is always level to drain water from the unit correctly.



Caution

In areas where temperatures can drop below 0 °C make sure no water remains in the coil. When this water freezes it will damage the coil.

To prevent from water remaining in the coil use air pressure. Use an air blow gun to put pressure on the top connection point of the coil and blow the remaining water out of the coil.

5.1.5.2

Seasonal maintenance

The IntrCooll® needs regular seasonal maintenance at the start of every season or when circumstances demand it.



Caution

See the separate IntrCooll® service documentation for the maintenance instructions.

According to the maintenance instructions the IntrCooll® requires mid-season cleaning each season. Therefore, the IntrCooll® must be put in cleaning mode.

To activate cleaning mode:

- Press and hold buttons 1 and 2 on the OxyLogic LCD and hold for 5 seconds.

5.1.5.3

Bring the IntrCooll® back into service

Before using the IntrCooll® after it is not used for a longer period, it is strongly advised to follow the procedures below:

1. Examine the overall state of the IntrCooll®.
 - a) Disassemble one coil and Oxyvap® to make sure there is no dust, birds, other pollution in the fans or in the fan compartment.
2. Open the water supply solenoid in the water line and flush the water supply system towards the IntrCooll®.
 - a) Isolate the IntrCooll® from the mains.
 - b) Disconnect the mains water supply pipe and flush it for about one minute with fresh water.
 - c) Reconnect the IntrCooll® to the water supply system.
 - d) Reconnect the IntrCooll® to the mains power supply.

Follow the procedures in the section How to turn-on the IntrCooll®.

5.1.6

Fan settings

During commissioning the nominal airflow must be checked and the correct fan speed must be set.

1. Make sure that all ductwork is installed.
2. To expose the OxyLogic LCD display, remove the cover.
3. See which software version is installed on the Oxylogic (Status value: W33).
This is important to know for the next steps.
4. Connect a USB cable between a Windows PC and the OxyLogic.
5. Open the matching version of the SettingsTool on the Windows PC:
 - a) Right mouse click on [**SettingsTool**].
 - b) Click [**Run as administrator**].
6. To update and read the settings, follow the next procedure:
 - a) Select [**IntrCooll**] application.
 - b) Select the COM port to which the OxyLogic is connected.
 - c) Click [**auto update**].
 - d) Click [**Update**].
 - e) Click [**Advanced mode**].
 - f) Login into [**Advanced mode**].
 - g) Click [**Read settings**].
 - h) Read the Differential Pressure value from the [**Readings**] tab.
This value must match the ISP* value which you can find in the supplied Datasheet. If a setting is not correct, change it.
7. To change a setting:
 - a) Select a parameter tab that needs correction (*Heating parameters, Free Cooling parameters, Cooling parameters*).
 - b) Adjust the Supply air fan speed ([**Maximum fan speed**] or [**Supply - maximum**]) by 1%.
 - c) Wait 1 minute to let the Differential Pressure value from the [**Readings**] tab stabilize.
 - d) Check the value. If necessary repeat step 7b and 7c until the Differential Pressure value matches the ISP value within 10** Pa.
 - e) If necessary, do the procedure for the next parameter tab.
8. When all settings are correct, finish the procedure:
 - a) Close the SettingsTool.
 - b) Disconnect the USB cable.
 - c) Close the covers of the unit.
 - d) To lock the covers, fasten the cover screws.

* Internal Static Pressure (ISP) is the sum of all the resistance of the internal components of the IntrCooll®

** +5 & -5 Pa

5.2 System status and settings

5.2.1 System characteristics

The system goes into adiabatic cooling mode when the following two conditions are met:

- Thermostat/Modbus Master/Pre-cooling input must be in cooling mode.
- The outdoor temperature is above the cooling release temperature.

When the system is in cooling mode:

Tank fill:

- The drain valve closes and the water supply solenoid opens.

Level control is activated:

- When level high is reached, the water supply solenoid closes.
- When level low is interrupted, the water supply solenoid opens.

When level high is reached, the pre-wet mode starts:

- The pump and water disinfection are activated (incl. pump dry-run protection).
- The fans are Off for 5 minutes.

When pre-wet is complete, the system will turn on the fans:

- The water quality control is activated.

When the conductivity exceeds the setpoint, short drain is activated:

- Water disinfection is deactivated.
- The pump is deactivated.
- The drain valve will open and all water will be drained. When the tank is empty, the water supply solenoid will open for 10 seconds to flush the tank.
- When the tank is empty, the drain valve will be closed and the supply solenoid opened to refill the tank until level high is reached.

When one of the 2 conditions for cooling ceases, the cooling mode is deactivated:

- The drain delay timer is activated (60 minutes).
- If the system switches back to cooling within 60 minutes, it will use the water that is still in the tank and continue the cooling mode.
- If the system does not switch back to cooling within 60 minutes, the tank is drained and the hygiene dry cycle is activated.

Hygiene dry-out:

- At midnight, when in cooling for longer than 24h, a hygiene dry-out cycle is activated. The duration of this cycle is 60 minutes.
- This dry-out creates a bio-shock for most bacteria. Bacteria need a wet environment to survive. The dry-out therefore reduces bacterial growth significantly.

5.2.2

Using the LCD

The OxyLogic LCD on the PCB of the IntrCooll® can show:

- *System status*: During normal operation, by default the OxyLogic LCD shows which processes are currently active in the IntrCooll®.
- *Display menu*: The actual state of various components inside the unit. These values have the prefix "W".
- *Settings menu*: Setpoints that can be changed. These items have the prefix "S".
- *Error messages*: These items have the prefix "Error".

To view, select, edit or reset the values on the OxyLogic LCD, there are 3 buttons near the OxyLogic LCD on the PCB.

OxyLogic LCD



3 1 2

1. Navigation button 1
2. Navigation button 2
3. Reset button

5.2.3

Display menu

Navigation:

- **Open** display menu: From the system status menu, press navigation button [2].
- **Scroll** through the menu: Press navigation button [1] and [2].

Display menu

Status value	Reading	Unit	Brief description
W01:Model name	-		Model name and type.
W02:SerialNumber	-		Unit serial number.
W03:Chip number	-		Number of the chip.
W04:OperatingHrs	Measured value	hh:mm	Total operating hours.
W05:CoolingHours	Measured value	hh:mm	Total cooling hours.
W06:OperatingMod	Actual mode		Actual operating mode on page 61.
W07:Outdoor Temp	Measured value	°CDB	Dry bulb temperature of outdoor air.
W08:Outdoor Temp	Measured value	°CWB	Wet bulb temperature of outdoor air.
W09:Outdoor RH	Measured value	%	Relative humidity of outdoor air.
W10:Air Pressure	Measured value	mBar	Measured barometric pressure.
W11:Supply Temp	Measured value	°CDB	Measured IntrCooll® supply temperature.
W12:PowerConsump	Measured value	Watt	Measured actual power consumption (if optional energy meter is selected).
W13:Amperage	Measured value	Amps	Measured actual amperage (if optional energy meter is selected).
W14:Voltage	Measured value	Volt	Voltage (if optional energy meter is selected).
W15:PressureLoss	Measured value	Pa	Differential pressure over Oxyvap®/Filter/Coil (filter fouling can be derived from this value).
W16:Water flow	Measured value	liters/min	Actual supply water flow (indication).
W17:Water level	Measured value		Actual water level in the sump.
W18:Conductivity	Measured value	µS/cm	Actual water conductivity in the sump.
W19:Water Temp	Measured value	°C	Actual water temperature in the sump.
W20:WaterConsump	Measured value	liters and m ³	Total water consumption.
W21:CoolingRelease	Parameter	°C	Minimum outdoor temperature for cooling mode.
W22:W-supplyValv	Status		Status of water supply solenoid.
W23:W-DrainValv	Status		Status of water drain valve.
W24:W-FrostValv	Status		Status of freeze protection valve.
W25:W-pump	Status		Status of water recirculation pump.
W26:W-disinfecti	Status		Status of water disinfection (various options).

Status value	Reading	Unit	Brief description
W27:A-ExhaustAir	Status		Output value for building exhaust output (optional damper, fan or Natural Ventilator box) (0% to 100% = 0 V to 10 V).
W28:A-OutdoorAir	Status		Output value for outdoor air/ventilation output (optional damper) (0% to 100% = 0 V to 10 V) (0% = closed / recirculation to 100% = 100% fresh air).
W29:A-AirOptimiz	Status		Output value for AirOptimizer (optional) exhaust output (damper or fan) (0% to 100% = 0 V to 10 V) (0% = heating 'vertical' to 100% = cooling 'horizontal').
W30:A-Heating	Status		Output value for required heating capacity (external heat source) (0% to 100% = 0 V to 10 V).
W31:Error codes	Status		Active errors (01 = only error code 01 and 01,03,06 = error codes 1, 3 and 6).
W32:Time	-	hh:mm:ss	Local time derived from thermostat.
W33:Software version	-		Shows the current software version on the Oxylogic.

5.2.4

Operating modes

Operating modes

Operating mode	Description
Heat reclaim	Unit is in heating mode (only when Heat Reclaim is activated).
Free cooling	Unit is in free cooling mode (cooling with outdoor air without water).
Standby	Stand-by.
Tank fill	Unit is filling the water tank.
Pre-wet	Unit is soaking the evaporative media (fans at low speed).
Cooling	Unit is in cooling mode.
OverflowProt	Drain valve open (short) to prevent tank overflow.
Drain	Unit drains the tank.
Rinse	Unit rinses/flushes the tank.
Hygiene dry-out	Unit is in hygiene dry-out mode.
System locked	Unit is locked. Error type A active.

5.2.5

Settings menu

To change a setting follow the procedure below::

1. **Activate the settings menu:** Press navigation button [1] and [2] simultaneously for two seconds.
2. **Scroll to setting to be changed:** Press navigation button [2].
3. **Edit setting:** Press navigation button [1].

4. **Save setting:** Press navigation button [1] and [2] simultaneously for two seconds.
5. **Confirm and exit:** Press navigation button [1].

Settings menu

Settings value	Value	IntrCooll Std Factor default	IntrCooll Plus Factor default	Unit	Brief discription
S01: Filtrertype	Setting	-	-		Select used filter medium.
S02: LevelsensL	Setting	10	10		Do not change this parameter.
S03: LevelsensH	Setting	10	10		Do not change this parameter.
S04: Drain delay	Setting	60	60	Minutes	Delay for draining the tank completely after cooling.
S05: Drian duration	Setting	90	90	Seconds	Short drain duration (during operation when conductivity exceeds limit), can be set
S06: Max Conductivity	Setting	1250	1250	µS/cm	Conductivity limit for recirculation water (maximum is 1250µS/cm and/or 10 cycles of concentration - above this value calcium will deposit at increased rates).
S07: OverflowProt	Setting	15	15	Seconds	Overflow protection timer (opening itme of drain valve when level high is reached).
S08: Rinse	Setting	10	10	Seconds	Flsuh duration after draining (opening time of supply solenoid).
S09: Heat Reclaim	Setting	Off	Off		Enable of disable HeatReclaim (heating) mode (enable when Heat Reclaim or 4S module is used for this unit).
S10: Operation Method	Setting	Automatic	Automatic		Manually select operation mode for maintenance (saving settings required to activate / do not forget to switch back to automatic and save again).
S11: Fan Speed	Setting	Automatic	Automatic		Manually select fan speed for maintenance (saving settings required to activate / do not forget to switch back to automatic and save again).
S12: Min Fan Heating	Setting	75	59	%	Minimum fan speed for Heat Reclaim (only change when approved by Oxycom or representative).
S13: Max Fan Heating	Setting	75	59	%	Maximum fan speed for Heat Reclaim
S14: Min Fan Free Cooling	Setting	30	30	%	Minimum fan speed for free-cooling

S15: Max Fan Free Cooling	Setting	84	76	%	Maximum fan speed for free-cooling
S16: Min Fan Cooling	Setting	30	30	%	Minimum fan speed for cooling
S17: Max Fan Cooling	Setting	84	76	%	Maximum fan speed for cooling
S18: Cooling release	Setting	15	15	°C	Minimum outdoor temperature for cooling. At a cooling demand below this temperature, the system will switch to free-cooling.
S19: Thermostat ID	Setting	2	2		Thermostat Modbus ID (corresponding thermostat).
S20: Control	Setting	Thermostat	Thermostat		Control type.
S21: Modbus Address	Setting	1	1		Unit modbus ID.
S22: Modbus Baudrate	Setting	19200	19200		Unit modbus baudrate.
S23: Modbus Parity	Setting	8N1	8N1		Unit modbus parity.
S24: Drain Valve	Setting	2-wire N.O.	2-wire N.O.		Configure drain valve type (older units have 3-wire valves, new units have 2-wire valve).
S25: Water Disinfection	Setting	None	None		UV-C Lamp on / off. (Optional)
S26: Digital Input J12	Setting	Not used	Not used		Select function of digital input J12: Not used / AHU pre-cooling / Fire contact.
S27: Winter Model	Setting	Off	Off		Enable / disable winter mode - winter mode enables free-cooling instead of cooling.
S28: Model	Setting	-	-		Set model type.
S29: Serialnumber	Setting	-	-		Set serial number.
S30: Language	Setting	English	English		Set display menu language.
S31: Factory Setting	Setting	-	-		Load factory settings (saving settings required to activate).

5.2.6

Error codes on OxyLogic LCD

Reset error: Press the reset button [3] located directly below the OxyLogic LCD (left side).

Error codes on the OxyLogic LCD

Error code	Error type ⁽¹⁾	Description
Error 01	01(A)	Tank fill takes too long; check water pressure or replace supply/drain valve (Port: 20/21).
Error 02	02(A)	Measured flow while supply solenoid was closed; check or replace supply solenoid (Port: 20).
Error 03	03(B)	Tank drain takes too long; clean drainpipe (clogged) or replace drain valve (Port: 21).
Error 04	04(B)	Filter pressure exceeded; clean or replace filters.
Error 05	05(B)	Level sensor shows deviating value; clean or replace level sensor(s) (Port: 5).
Error 06	06(B)	Conductivity sensor shows deviating value; clean or replace sensor (Port: 15).
Error 07	07(A)	Outdoor temperature sensor shows deviating value; check or replace sensor (Port: 1).
Error 08	08(B)	Supply temperature sensor shows deviating value; check or replace sensor (Port: 3).
Error 09	09(B)	No connection with thermostat or network (Modbus); check cables and parameters (Port: 16).
Error 10	10(A)	Error supply fan; check cables and fan (Port: 13).
Error 11	11(A)	Error exhaust fan; check cables and fan (Port: 14).
Error 12	12(B)	Cooling performance below minimum value; check recirculation pump (Port: 18) and water distribution.
Error 13	13(A)	System error.

⁽¹⁾ Error type explanation:

- A = system locked
- B = maintenance required

5.3

Update firmware

5.3.1

Preparations

Requirements:

- Windows laptop
- UpdateTool *
- SettingsTool *
- Settings: Datafile with PCB settings*
- Micro USB cable (A standard charger cable for mobile devices will not work.)
- Ethernet cable

* Available as download on <https://www.oxy-com.com/manuals>. No password yet? Please email your contact person at Oxycom® and ask for login details)

Accessibility:

See section Remove panels: Remove corner cover (1) on the electrical connections side of the IntrCooll®.

5.3.2

Update procedure (USB)

First install UpdateTool on your Windows PC:

1. Make sure to use the [latest version](#) of the UpdateTool.
2. Save the "UpdateTool" and "Software" to a local folder on your laptop.
3. Go to the folder with the "UpdateTool".
4. Unpack the ZIP file if needed.
5. Right mouse click on "UpdateTool" file and click "**Run as administrator**" (important).

The UpdateTool opens.

6. Click on "**Load firmware**" and select the firmware file in the folder "Software".

Update firmware on the IntrCooll® using USB:

1. On the OxyLogic LCD, press and hold the navigation button **[1]** and the reset button **[3]** simultaneously.
2. Release the reset button **[3]**.
3. When the OxyLogic LCD shows "USB ready", release the navigation button **[1]**.

The OxyLogic LCD is now ready for updating.

4. Plug in the USB to Micro USB data cable to connect OxyLogic with your laptop.

The PCB display will show "USB connected".



Note

A standard charger cable for mobile devices will not work.



Note

In some cases, depending on your Windows version, you need to install the USB Driver. Only when you receive the message that the USB Driver is not installed.

5. On the PC, select **USB** and then select **COM port**.

Firmware starts uploading to OxyLogic.



Note

Sometimes the "UploadTool" will show the message "NAK received" on your laptop, in this case, repeat step 5.

The UpdateTool shows "Software updated" when the update is complete.

1

2

3

4

5

6. When the "bootloader" is ready (see OxyLogic LCD), press the reset button **[3]** on the OxyLogic.

OxyLogic will now restart and the system is ready.

7. Disconnect the USB.

Set the language:

1. Enter the Settings menu by pressing buttons **[1]** and **[2]** simultaneously on OxyLogic for 2 seconds.
2. Press button **[2]** to scroll to setting "S30".
3. Use button **[1]** to scroll to "Preferred language".
4. Press buttons **[1]** and **[2]** simultaneously for 2 seconds.
5. Press button **[2]** to save and confirm.
6. To implement the new firmware, switch off the IntrCooll® for one minute using the main switch.

5.3.3

Update procedure (Ethernet)

Update firmware on the IntrCooll® using Ethernet:

1. Connect Ethernet cable to the OxyLogic module.
2. Connect the Ethernet cable to the laptop.
3. Configure the LAN settings on the laptop:
 - IP-adres: 192.168.0.30
 - Subnet: 255.255.255.0
 - Gateway: 192.168.0.1
4. Right mouse click on "UpdateTool" file and click "Run as administrator" (important).
5. The UpdateTool opens.
6. Click on "Select port: Ethernet". And type in the same IP-adres as above.
7. Click on "Load firmware" and select the firmware file in the folder "Software".
8. The UpdateTool shows "Software updated" when the update is complete.
9. When the "bootloader" is ready (see OxyLogic LCD), press the reset button **[3]** on the OxyLogic.
10. OxyLogic will now restart and the system is ready.
11. Disconnect the Ethernet cable.

Appendices

