Installation and maintenance manual

SYSAER R32

SR R32 105 / SR R32 120 / SR R32 140

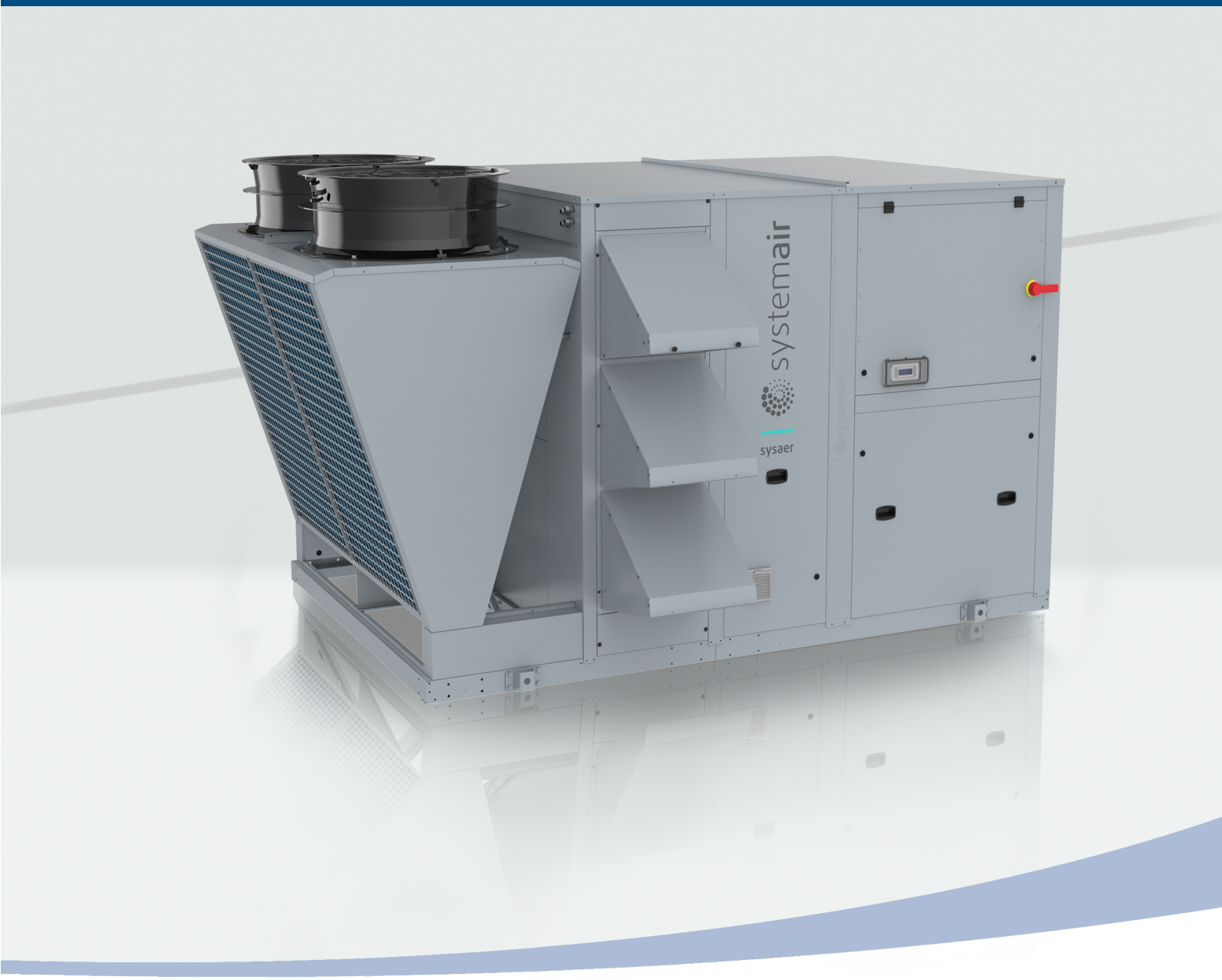
Roof-mounted air conditioning unit

R32

106 ➔ 139 kW

106 ➔ 142 kW

19 200 ➔ 25 500m³/h



CE

INSTALLATION INSTRUCTION — English

NOTICE D'INSTALLATION — Français

INSTALLATIONSHANDBUCH — Deutsch

ISTRUZIONI INSTALLAZIONE — Italiano

INSTRUCCIONES DE INSTALACIÓN — Español

English

CONTENTS

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING WORK IN THE ELECTRIC CONTROL BOX

1. GENERAL RECOMMENDATIONS

The purpose of this Manual is to provide users with instructions for installing, commissioning, using and maintaining the units.

It does not contain the complete description of all the maintenance operations guaranteeing the unit's long life and reliability. Only the services of a qualified technician can guarantee the unit's safe operation over a long service life.

Please read the following safety precautions very carefully before installing the unit.

All refrigerant piping work, electrical work, air-tightness test, and brazing work must be performed by qualified personnel.

1.1. SAFETY DIRECTIONS

Follow the safety rules in forces when you are working on your appliance.

The installation, commissioning, use and maintenance of these units should be performed by qualified personnel having a knowledge of standards and local regulations, as well as experience of this type of equipment.

This appliance has not been designed for use by persons (including children) with reduced physical, sensorial or mental faculties or by persons without any experience or knowledge of heating systems, unless they act under the safety and supervision of a responsible person or have received prior training concerning the use of the appliance.

The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

Given the high refrigerant temperatures present at certain points in the cooling circuit, access to the area protected by the panels is strictly reserved for qualified personnel only. These panels are easily opened with a special tool. This tool should be kept by the installers or by the maintenance company.

Any wiring produced on site must comply with the corresponding national electrical regulations.

Make sure that the power supply and its frequency are adapted to the required electric current of operation, taking into account specific conditions of the location and the current required for any other appliance connected to the same circuit.

The unit must be EARTHED to avoid any risks caused by insulation defects.

It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

1.2. INFORMATION ON THE REFRIGERANT USED

This product contains R32 refrigerant that has a minimal environmental impact, thanks to its low value of Global Warming Potential (GWP).

According to ISO 817, R32 refrigerant is classified as A2L, which is slightly flammable, since the flame propagation rate is low, and non-toxic.

R32 refrigerant can burn slowly when all the following conditions are present:

- The concentration is between the lower and upper flammability limit (LFL & UFL).
- T Wind velocity < propagation of flame velocity
- Energy of the ignition source > Minimum ignition energy

Safety class (ISO 817)	A2L
PED Group	1
Practical limit (kg/m³)	0.061
ATEL/ ODL (kg/m³)	0.30
LFL (kg/m³) @ 60°C	0.307
Vapour density @25°C, 101.3 kPa (kg/m³)	2.13
Molecular mass	52.0
Boiling point (°C)	-52
GWP (100 yr ITH)	675
GWP (ARS 100 yr ITH)	677
Autoignition temperature (°C)	648

1.3. INSTALLATION INFORMATION

This rooftop has to be installed in open air or machinery room (location classification III).

To ensure location classification III a mechanical vent on the secondary circuit(s) has to be installed.

Local building codes and safety standards shall be followed; in absence of local codes and standards refer to EN 378-3:2016 as a guide.

1.3.1. GENERAL GUIDELINES FOR SAFE USE OF R32 FOR EQUIPMENT LOCATED IN THE OPEN AIR

Refrigerating systems sited in the open air shall be positioned to avoid leaked refrigerant flowing into a building or otherwise endangering people and property.

The refrigerant shall not be able to flow into any ventilation fresh air opening, doorway, trap door or similar opening in the event of a leak. Where a shelter is provided for refrigerating equipment sited in the open air it shall have natural or forced ventilation.

For refrigeration systems installed outside in a location where a release of refrigerant can stagnate e.g. below ground, then the installation shall comply with the requirements for gas detection and ventilation of machinery rooms.

1.3.2. GENERAL GUIDELINES FOR SAFE USE OF R32 FOR EQUIPMENT LOCATED IN A MACHINERY ROOM

When a machinery room is chosen for the location of the refrigerating equipment it shall be located in accordance with local and national regulations. The following requirements (according to EN 378-3:2016) can be used for the assessment.

- Machinery rooms should not be used as occupied spaces. The building owner or user shall ensure that access is permitted only by qualified and trained personnel doing the necessary maintenance to the machinery room or general plant.
- Machinery rooms shall not be used for storage with the exception of tools, spare parts and compressor oil for the installed equipment. Any refrigerants, or flammable or toxic materials shall be stored as required by national regulations.
- Open (naked) flames shall not be permitted in machinery rooms, except for welding, brazing or similar activity and then only provided the refrigerant concentration is monitored and adequate ventilation is ensured. Such open flames shall not be left unattended.
- A remote switching (emergency type) for stopping the refrigerating system shall be provided outside the room (near the door). A similar acting switch shall be located at a suitable location inside the room.
- All **piping and ducting** passing through floors, ceiling and walls of machinery room shall be sealed.
- Hot surfaces shall not exceed a temperature of 80 % of the auto-ignition temperature (in °C) or 100 K less than the auto-ignition temperature of the refrigerant, whichever is lower.

Refrigerant: R32

- Self-Ignition temperature: 648°C
- Maximum surface temperature: 548°C

Machinery rooms shall have doors opening outward and sufficient in number to ensure persons can escape in an emergency.

- **The doors** shall be tight fitting and self-closing. They shall be so designed that they can be opened from inside (anti-panic system). The doors shall have at least a one-hour fire resistance construction, using materials and construction tested in accordance with EN 1634. There shall be no openings that permit unintended passage of escaping refrigerant, vapours, odours and all other gases to any occupied space.
- **Provision** shall be made to facilitate immediate exit from the machinery room in the event of an emergency. At least one emergency exit shall open directly to the open air or it shall lead to an emergency exit passageway.
- **Service ducts** shall conform to the requirements of EN 1366-1 and EN 1366-2, and they shall be sealed to minimize escaped refrigerant leakage into the service duct, and shall have at least the same fire resistance as walls and doors.
- **Service ducts**, including walkways and crawl spaces, containing piping for refrigerants shall be vented to a safe place to prevent a dangerous accumulation of refrigerant in the event of a leak. Service ducts shall not be used for ventilation or conditioned air.
- Sheet metal for normal and emergency **ventilation ducts** shall be in accordance with EN 1507 and supported as required by EN 12236. After erection all duct seams and joints shall be sealed to minimize gas leakage from the duct. The ventilation duct shall have at least the same fire resistance as the doors and walls of the machinery room.
- **Ventilation**: The ventilation of machinery rooms shall be sufficient both for normal operating conditions and emergencies. Air from machinery rooms shall be vented outdoors using mechanical ventilation in case of a release of refrigerant due to leaks of components. This ventilation system shall be independent of any other ventilation system on the site.

  Provision shall be made for a sufficient supply of outside replacement air and a good distribution of that air over the machinery room avoiding dead zones.
  Openings for outside air shall be positioned to avoid re-circulation into the room.

  - ✔ Ventilation for normal operating conditions or when machinery room is occupied
    Ventilation shall be in accordance with national regulations with a minimum of 4 air changes per hour when the machinery room is occupied. In the event that the necessary ventilation rate cannot be achieved an audible and/or visual alarm shall be initiated and, where relevant, electrical supplies shall be terminated.
  - ✔ Emergency mechanical ventilation
    If gas detection is required in the machinery room, the emergency mechanical ventilation system shall be activated by a detector(s), located in the machinery room.
    Emergency mechanical ventilation shall be provided with two independent emergency controls one located outside the machinery room, and the other inside.
  - ✔ Required airflow for emergency mechanical ventilation
    Airflow of the mechanical ventilation shall be at least the quantity obtained by Formula (1):
    Where

    $$\dot{V} = 0{,}014 x m^{2/3}$$

    - $\dot{V}$ is the air flow rate in m^3/s;
    - m is the mass of refrigerant charge, in kg, in the refrigerating system with the largest charge, any part of which is located in the machinery room;
    - 0,014 is a conversion factor with units of $m^3/s\ kg^{2/3}$.

    An emergency ventilation system with 15 air changes per hour is sufficient
  - ✔ Mechanical ventilation openings
    Mechanical ventilation openings shall be made in the position and of sizes to permit sufficient airflow considering the characteristics of the refrigerant, the choice of intake or exhaust and the performance of the ventilator. The intake and exhaust openings shall be arranged to evacuate the refrigerant under all conditions of leaking refrigerant

➢ **Refrigerant detectors for R32**

A refrigerant detector for a group A2L refrigerant shall activate the alarm signal at a level not exceeding 25 % of the LFL of the refrigerant. The detector shall continue to activate at higher concentrations. The detector shall be set lower for the toxicity, if applicable. It shall automatically activate an alarm, start mechanical ventilation and stop the system when it triggers.

Refrigerant	LFL	Threshold level
R32	0,307 kg/m³	0,7675 kg/m³ => 36000 ppm

The installation of the detector shall allow access for checking, repair or replacement by an authorized person.
The detector shall be installed so its function can be verified easily.
The detector shall be protected to prevent tampering or unauthorised resetting of the pre-set value

1.4. GAS DETECTOR

The R32 detector is composed of a gas sensor on ventilation side and a control board.

The sensitive layer of the sensors reacts chemically in the presence of R32, changing its conductivity. The different oxidation processes modify the conductivity and therefore the measurement, which is why regular calibrations are necessary. Regular maintenance must be carried out in accordance with the instructions. Do not generate electrostatic discharges.

The following are currently known to poison the sensor and change its sensitivity:

- Polymerizing substances such as ethylene oxide, acrylonitrile, butadiene, styrene, silicone.
- Catalytic poisons, such as Sulphur and phosphorus compounds, silicon compounds, metallic vapors.
- Organic solvents.

1.5. WARNING

Cutoff power supply before starting to work on the appliance.

When making the hydraulic connections, ensure that no impurities are introduced into the pipe work.

The manufacturer declines any responsibility and the warranty becomes void if these instructions are not respected.

If you meet a problem, please call the Technical Department of your geographical area.

If possible, assemble the compulsory or optional accessories before placing the appliance on its final location. (see instructions provided with each accessory).

In order to become fully familiar with the appliance, we suggest to read also our Technical Instructions.

The information contained in these Instructions are subject to modification without advance notice.

1.6. EQUIPMENT SAFETY DATA

Safety Data	Difluoromethane R32
Chemical Formula	CH2F2
Toxicity	Low
Classification of substance	Flammable gas – Category 1 – Danger (H220) Gases under pressure – Liquefied gas – Warning (H280)
Critical temperature (°C)	-78,4 °C @ 58,10 Bar
Upper/lower flammability	28,40 Vol. % / 13,10 Vol. %
In contact with skin	Skin contact with the rapidly evaporating liquid may cause tissue chilblains. In case of skin contact with the liquid, warm the frozen tissue with water and call a doctor. Remove contaminated clothing and footwear. Wash the clothing prior to re-use.
In contact with eyes	Vapours have no effect. Liquid splashes or sprays may cause freeze burns. In these cases rinse your eyes with running water or with a solution for eye lavages for at least 10 minutes. Immediately contact a doctor.
Ingestion	In this case, burns may result. Do not attempt to make the patient vomit. If the patient is conscious, rinse the mouth with water. Call a doctor immediately.
Inhalation	In case of inhalation, move the patient to an area with fresh air and provide oxygen if necessary. Perform artificial respiration if the patient has stopped breathing or lacks air. In case of cardiac arrest, perform external cardiac massage. Call a doctor immediately.
Further Medical Advice	Exposure to high concentrations can be dangerous for individuals with cardiac problems, as the presence of catecholamines such as adrenalin in the bloodstream may lead to increased arrhythmia and possible cardiac arrest.
Occupational exposure limits	R32: Recommended limits: 1,000 ppm v/v 8 hours TWA.
Stability	Stable product
Conditions to avoid	Increased pressure due to high temperatures may cause the container to explode. Keep out of the sun and do not expose to a temperature >50°C.
Hazardous reactions	Possibility of dangerous reactions in case of fire due to the presence of F and/or CI radicals
General precautions	Avoid the inhalation of high concentrations of vapours. The concentration in the atmosphere shall be kept at the minimum value and anyway below the occupational limits. Since vapours are heavier than air and they tend to stagnate and to build up in closed areas, any opening for ventilation shall be made at the lowest level.
Breathing protection	In case of doubt about the actual concentration, wear breathing apparatus. It should be self-contained and approved by the bodies for safety protection.
Precautions for safe handling: general	Only experienced and properly instructed persons should handle gases under pressure. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Purge air from system before introducing gas. Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide. Assess the risk of a potentially explosive atmosphere and the need for suitable equipment i.e. explosion-proof. Take precautionary measures against static discharges. Keep away from ignition sources (including static discharges). Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres. Use non-sparking tools. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Ensure the complete system has been (or is regularly) checked for leaks before use.

Safety Data	Difluoromethane R32
Precautions for safe handling: container	Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. Secure cylinders in an upright position at all times, close all valves when not in use. Provide adequate ventilation. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Avoid suckback of water, acid and alkalis. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. When using do not eat, drink or smoke. Store in accordance with. Never use direct flame or electrical heating devices to raise the pressure of a container.
Precautions for safe handling: valves	Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Damaged valves should be reported immediately to the supplier Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminates particularly oil and water. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to transfer gases from one container to another. Container valve guards or caps should be in place.
Conditions for safe storage, including any incompatibilities	All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere. Segregate from oxidant gases and other oxidants being stored. Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material.
Protection clothes	Wear boots, safety gloves and glasses or masks for facial protection.
Behaviour in case of leaks or escapes	Never forget to wear protection clothes and brething apparatus. Isolate the source of the leakage, provided that this operation may be performed in safety conditions. Any small quantity of refrigerant which may have escaped in its liquid state may evaporate provided that the room is well ventilated.In case of a large leakage, ventilate the room immediately. Stop the leakage with sand, earth or any suitable absorbing material. Prevent the liquid refrigerant from flowing into drains, sewers, foundations or absorbing wells since its vapours may create an asphyxiating atmosphere.
Disposal	The best procedure involves recovery and recycle. If this is not possible, the refrigerant shall be given to a plant which is well equipped to destroy and neutralise any acid and toxic by-product which may derive from its disposal.
Fire-fighting measures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.
Containers	If they are exposed to the fire, they shall be constantly cooled down by water sprays. Containers may explode if they are overheated.

2. INSPECTION AND STORAGE

At the time of receiving the equipment carefully cross check all the elements against the shipping documents in order to ensure that all the crates and boxes have been received. Inspect all the units for any visible or hidden damage.

Confirmation of the type of unit ordered can be obtained by reading the maker's plate (capacity, type and air blowing configuration).

In the event of shipping damage, write precise details of the damage on the shipper's delivery note and send immediately a registered letter to the shipper within 48 hours, clearly stating the damage caused. Forward a copy of this letter to the manufacturer or his representative.

Never store or transport the unit upside down. Protect unit at the job side from damages made by others. When unit is stored on the ground, avoid mud store unit leveled.

3. WARRANTY

The appliances are delivered fully assembled, factory tested and ready to operate.

Any modification to the units without the manufacturer's prior approval, shall automatically render the warranty null and void.

The following conditions must be respected in order to maintain the validity of the warranty:

- Commissioning shall be performed by specialised technicians from technical services approved by the manufacturer.
- Maintenance shall be performed by technicians trained for this purpose.
- Only Original Equipment spare parts shall be used.
- All the operations listed in the present manual shall be performed within the required time limits.

INSTRUCTIONS FOR FILLING IN THE "1st START-UP FORM"

(SEE APPENDIX)

It is the responsibility of the OWNER to make sure that the "1st Start-up Form" is fully filled in by the authorized Service Centre and sent by registered mail - notified in advance by fax - to the After-Sales Service of the constructor within 8 days of the initial start-up.

Failure to receive the form on the part of the constructor will render the guarantee null and void.

THE WARRANTY SHALL BE NULL AND VOID IN THE EVENT OF NON-COMPLIANCE WITH ANY OF THE ABOVE CONDITIONS.

4. PRESENTATION

All the models in the **SYSAER R32** are produced to state-of-the-art design and manufacturing standards. In this way, they offer guarantees of high performance and reliability as well as the capability of adapting to all types of air conditioning installations. The unit has been designed for an outdoor mounted application, ensuring perfectly weatherproof circulation of the air within the compartments. It is not adapted for any use other than those specified in the present manual.

Improper usage of the unit or a use for purposes other than those originally intended, without the prior approval by the manufacturer or its agents, could result in the unit functioning outside its safe operating limits and could present risks to both personnel and property.

The **SYSAER R32** is design very compact and it has an optimal foot print/weight ratio. Numerous accessories and options can be added to the basic version to adapt it perfectly to the client's specific requirements.

The **SYSAER R32** units are designed to safeguard to environment and reduce building energy consumption by the use of R32 as a refrigerant and double skin 25 mm panels for greater thermal insulation.

After the units are assembled, the refrigerating and electrical circuits are tested at the factory in order to guarantee correct operation.

The are filled with an operational refrigerant fluid charge and are subjected to pressure tightness tests.

5. CONTENTS OF PACKAGE

1 SYSAER R32

1 Installation and maintenance manual

1 Control manual

1 Siphon

5.1. OPTIONALS ACCESSORIES

Anti-vibration rubber pads

Duct connection frame

On opening the carton, check that all the accessories required for installation are present.

6. DIMENSIONS

SEE APPENDIX

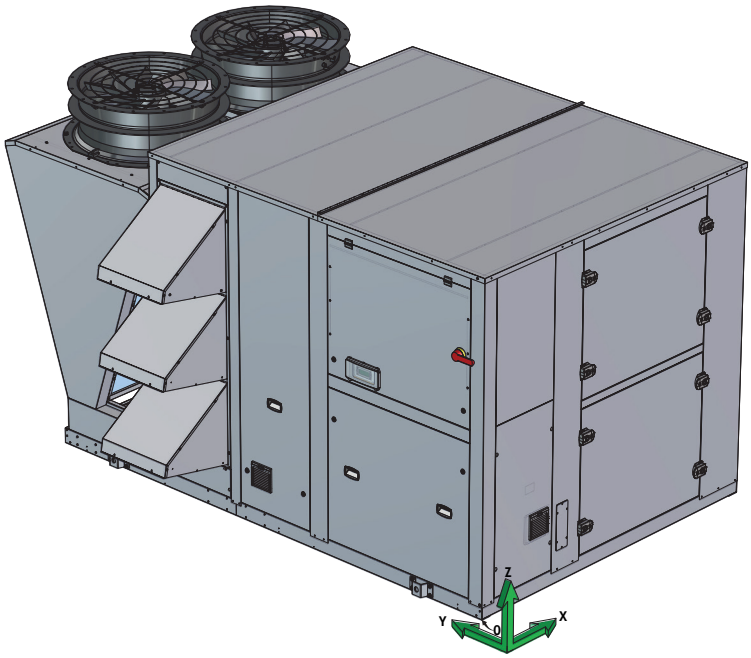
7. HANDLING

7.1. NET WEIGHT

			SR R32 105	SR R32 120	SR R32 140
basic		kg	1 685	1 805	1 855
Filter	G4	Kg	45	45	45
	G4+F7	kg	65	65	65
	G4+F9	kg	65	65	65
2 dampers		Kg	115	115	115
3 dampers RECO		Kg	430	450	450
Electric heating		Kg	30	30	30
Warm water coil		Kg	30	30	30

7.2. GRAVITY CENTER POSITION

	Xg	Yg	Zg
	mm	mm	mm
SR R32 105	1 050	1 530	900
SR R32 120	1 000	1 450	900
SR R32 140	970	1 400	900



7.3. MANUTENTION GENERALITES

The good method of handling depends on the model of **SYSAER R32** and its final destination.

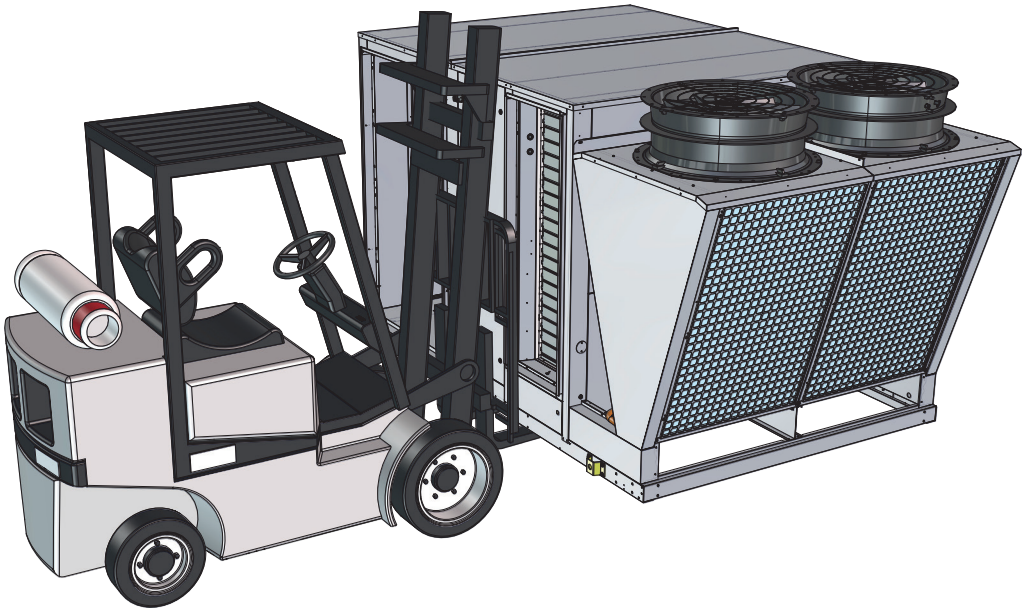
- Take care to avoid any rough handling or impacts when unloading and moving the appliance.
- Before hoisting into position, test lift to insure stability and balance. Avoid twisting or uneven lifting of the units.
- The units shall be carefully inspected before unit installation to make sure this has not happened.
- ll these sections have been inspected before leaving the factory. It is important to insure that no bolts, screws or other fixing system are loosened or missing before the commissioning.

Caution

Never submit the metal work (panels, posts) of the **SYSAER R32** to handling constraints, as only its base is designed for that purpose.

7.3.1. HANDLING WITH A FORKLIFT

When a forklift is used to handle the **SYSAER R32** units, lift them only along their width.



Place a safety wedge between the unit base and the fork lift truck to avoid damaging the unit's structure and casing.

Caution

The forklift must be fitted with forks with a minimum length of 2.5m.

7.3.2. HANDLING BY SLINGING

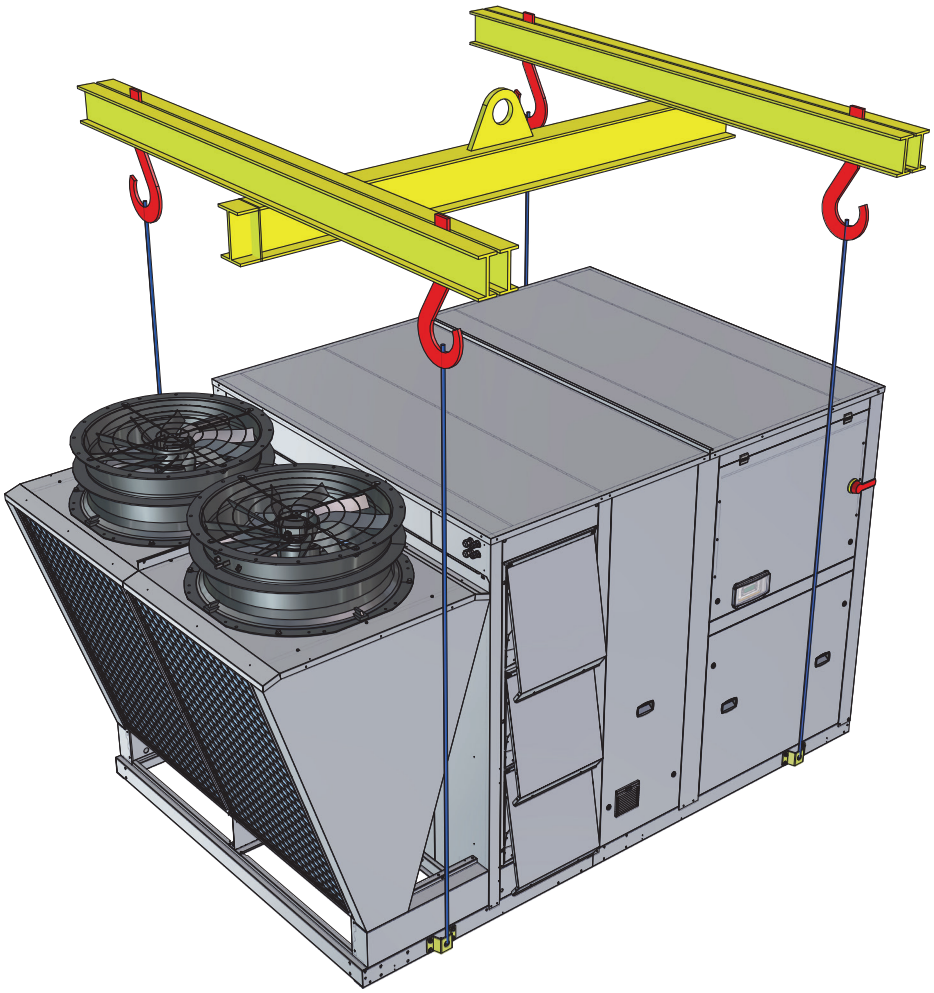
Lifting is also possible by slinging in four or six sling.

Rings attached rigidly to the unit structure are intended for completely safe handling.

It is essential to use a spreader or spacer so as not to damage the panels and the structure of the machine.

Caution

Slings must never touch the unit casing of **SYSAER R32**.



Caution

The lifting point must suit the unit's centre of gravity.

8. TECHNICAL SPECIFICATIONS

8.1. PHYSICAL CHARACTERISTICS

			SR R32 105	SR R32 120	SR R32 140
Supply voltage			400V/3~/50Hz		
Number of refrigerang circuit			2	2	2
REFRIGERANT					
Type			R32		
Factory charge			SEE NAME PLATE		
COMPRESSORS					
Type			Scroll		
Number			2	2	2
Part load steps		%	0/50/100	0/50/100	0/50/100
Crankcase heater		W	2 x 70	2 x 70	2 x 70
INDOOR COILS					
Type			Tubes copper & fins aluminum		
Number of rows			4	4	4
Frontal surface		m^2	3.24	3.24	3.24
INDOOR FAN					
Type			Plug Fan		
Number (1)			2	2	2
Air flow rate (1)	Minimum	m^3/h	15 600	17 200	20 400
	Nominal	m^3/h	19 200	21 500	25 500
	Maximum	m^3/h	23 400	25 800	30 600
Power input		kW	4.23	4.6	5.72
OUTDOOR COILS					
Type			Tubes copper & fins aluminum		
Number of rows			3	3	3
Frontal surface		m^2	1.50	1.50	1.50
OUTDOOR FAN					
Type			Axial		
Number			2	2	2
Diameter		mm	900	900	900
Air flow rate	Nominal	m^3/h	20 000	20 000	20 000
Power input		kW	1.51	1.51	1.51

(1) EC standard fan

8.2. REFRIGERATION SPECIFICATIONS

8.2.1. REFRIGERANT CIRCUIT DIAGRAM

SEE APPENDIX

8.2.2. REFRIGERANT CHARGE

Caution

This equipment contains fluorinated gas with greenhouse gas effects covered by the Kyoto agreement.

The type and quantity of refrigerating fluid per circuit are indicated on the product plate.

The installer and end user will get informed on local environmental regulations for the installation, operation and disposal of the equipment ; more particularly, for the collection of substances hazardous for the environment (refrigerating fluid, oil, antifreeze, etc.). A refrigerating fluid, whatever it is, must not be vented. Refrigerating fluids must be handled by skilled personnel.

Caution

SYSAER R32 units use the R32 HFC refrigerant which is a flammable gas classified A2L (Slightly flammable). This gas is a subject to more important safety regulations due to their flammability class A2L Reduced flammability so some precautions are required to prevent accidental build-up of refrigerant. Particularly during charging of systems. Manufacturers recommend use of extract fans while charging, particularly if the outdoor unit is used in an enclosed area. The standard EN378 defines requirements for safe concentration levels of the refrigerants.

8.2.3. FLUOROCARBON GAS REGULATIONS

The EC No. 517/2014 regulation covering fluorinated greenhouse gases requires of refrigeration equipment operators to comply with the following five obligations:

1. Installation, servicing, maintenance as well as checking the sealing must be carried out by qualified personnel.
2. The fluorinated gas must be recovered during servicing and maintenance as well as the end of the installation.
3. All the necessary measures must be taken to prevent the leakage of fluorinated gases and any leaks must be repaired as rapidly as possible.
4. Regular checks on any leaks must be performed according to the following conditions:
   - ✔ for equipment containing fluorinated greenhouse gases in quantities greater than or equal to the equivalent of 5 tonnes of CO_2 but less than the equivalent of 50 tonnes of CO_2: at least every twelve months or, if a leak detection system is installed, at least every twenty-four months
   - ✔ for equipment containing fluorinated greenhouse gases in quantities greater than or equal to the equivalent of 50 tonnes of CO_2 but less than the equivalent of 500 tonnes of CO_2: at least every six months or, if a leak detection system is installed, at least every twelve months
   - ✔ for equipment containing fluorinated greenhouse gases in quantities greater than or equal to the equivalent of 500 tonnes of CO_2: at least every three months or, if a leak detection system is installed, at least every six months.
5. A document grouping a description of all the operations carried out on the cooling circuit must be drafted and conserved.

Caution

Non-compliance with one of these obligations constitutes an offense and can result in financial penalties.
Furthermore, compliance of the equipment with the fluorinated gases regulation must be proven to the insurance company.

8.2.3.1. GREENHOUSE GASES CALCULATION

Greenhouse quantity gases (kg of CO_2) = Quantity of gas (kg) x GWP of the gas

Greenhouse gas quantity expressed in weight (kg) and in equivalent of CO_2

Gas quantity: Gas quantity contained in the machine in kg (see product plate)

GWP (Global Warming Potential) some gas contained in the machine (see product plate)

- **GWP for R32 = 675 - Medium Category 300-750**
- **GWP for R410A = 2088 - High category >750**

Also according 2014 EU F-Gas Regulation (517/2014), Europe must reduce the Global Warming Performance. R32 has a much lower impact on global warming when compared to its blended predecessors - its Global Warming Potential (GWP) is significantly lower than that of R410A.

8.2.3.2. ENVIRONMENTAL INNOVATION

- Zero impact on the ozone layer.
- 75% less impact on global warming.

	R410A	R32
Composition	Blend of 50% R32 + 50% R125	Pure R32 (no blend)
GWP (Global Warming Potential)	2087,5	675
ODP (Ozone Depletion Potential)	0	0

R32 is a refrigerant with just one-third the global warming potential of R410A, meaning less risk of damage to the environment.

8.3. ELECTRIC SPECIFICATIONS

The maximum intensity absorbed by the **SYSAER R32** as well as the total start-up intensity are calculated by adding the basic values provided for the **SYSAER R32** with the additional options.

SYSAER R32 BASIC

		SR R32 105	SR R32 120	SR R32 140
Supply voltage		400V / 3~ / 50Hz		
Maximum intensity	A	81.0	85.0	106.0
Total start intensity (without soft starter)	A	284.0	288.0	346.0

IFAN - BLAST FAN

Maximum intensity			SR R32 105	SR R32 120	SR R32 140
EC Motor	HPF	A	13.0	13.0	13.0

ELECTRIC HEATING COIL

		SR R32 105	SR R32 120	SR R32 140
Power	kW	48	48	48
Maximum intensity	A	76.2	76.2	76.2

IMPORTANT

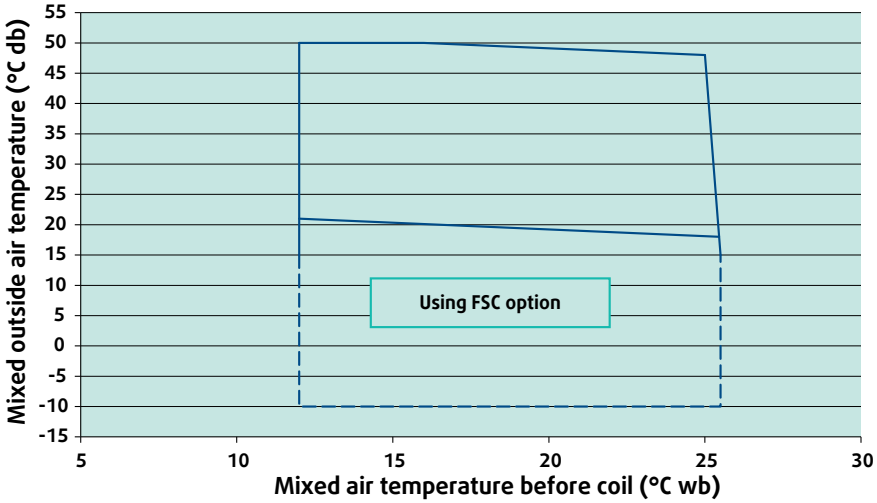
These datas are given for guidance only. They must be checked at commissioning according to prevailing standards. They depend on the installation and the cables used.

A main fuse must mandatorily be provided on the power supply.

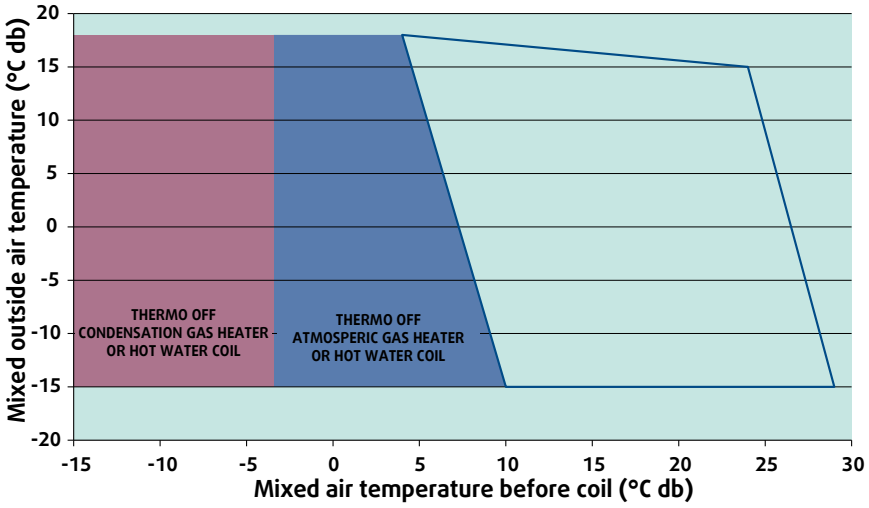
- Fuses not supplied
- Cables not supplied

8.4. OPERATING LIMITS

8.4.1. COOLING MODE



8.4.2. HEATING MODE



9. CONFIGURATION OF THE UNIT

9.1. GENERALITIES

The unit is designed to be connected to a duct work. The duct network pressure loss must be related to available outdoor pressure of **SYSAER R32**.

4 discharges and 3 intakes air configurations are available.

For each configuration, note the dimensions of the discharge air duct to be provided before the unit arrives on site. Make sure that it is fireproof and that it does produce toxic smoke in the event of a fire in the building. The interior surfaces must be smooth and cleanable to avoid contamination of the circulated air.

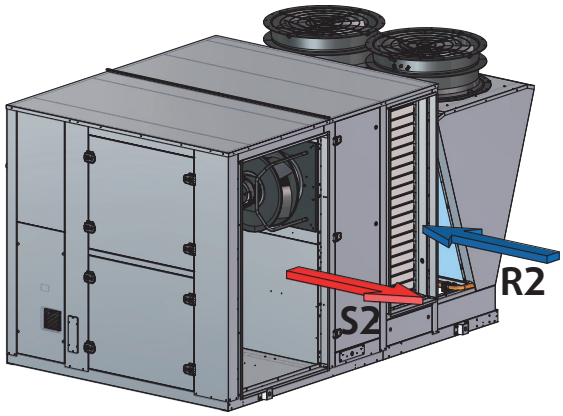
To ensure itself of a good air tightness and to water enters the machine and the air duct.

Caution

Never drill any holes in the air treatment zone of the unit. The manufacturer's warranty WILL be CANCELLED in the event of any water leaks resulting from the drilling of holes in the casing.

9.2. SUPPLY AIR

- Downward discharge: **S1**
- Sideway discharge: **S2**
- Discharge from the rear: **S3**
- Top discharge: **S4**



Information

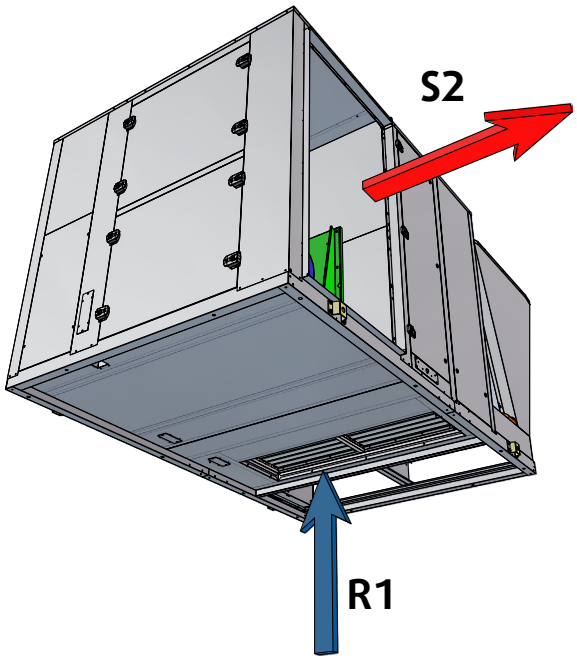
The gas burner is only available in configurations:

- Downward discharge: **S1**
- Discharge from the rear: **S3**

9.3. AIR INTAKE

- Return air from below: **R1**
- Return air from the side: **R2**
- Return air from the top: **R4**

Lower blowing (S1) or lower air intake (R1) require the presence of a roof curb. For other versions, given the unit's weight, analyse the installation to avoid any risk of damage to the bracket on which the unit will be placed.



9.4. DUCT OUTLET DIMENSIONS

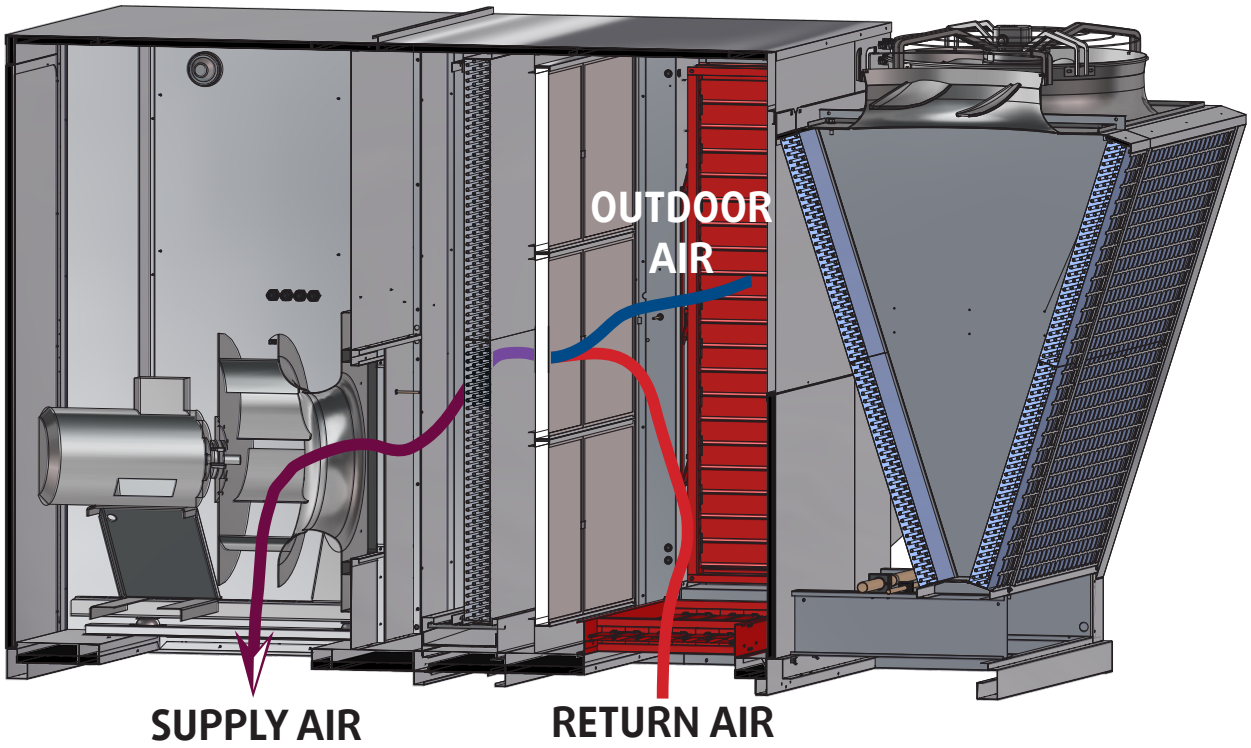
SEE APPENDIX

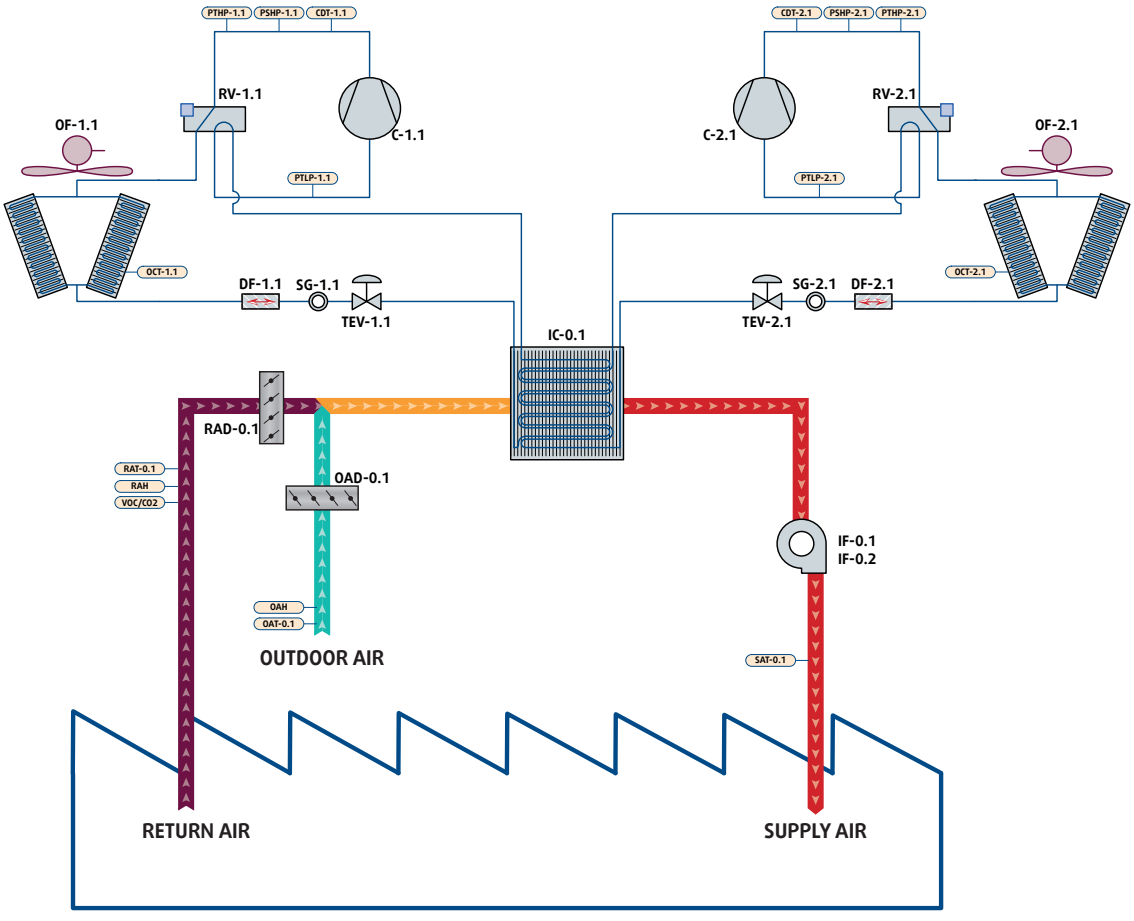
English

9.5. ECONOMISER

9.5.1. ECONOMISER - 2 DAMPERS

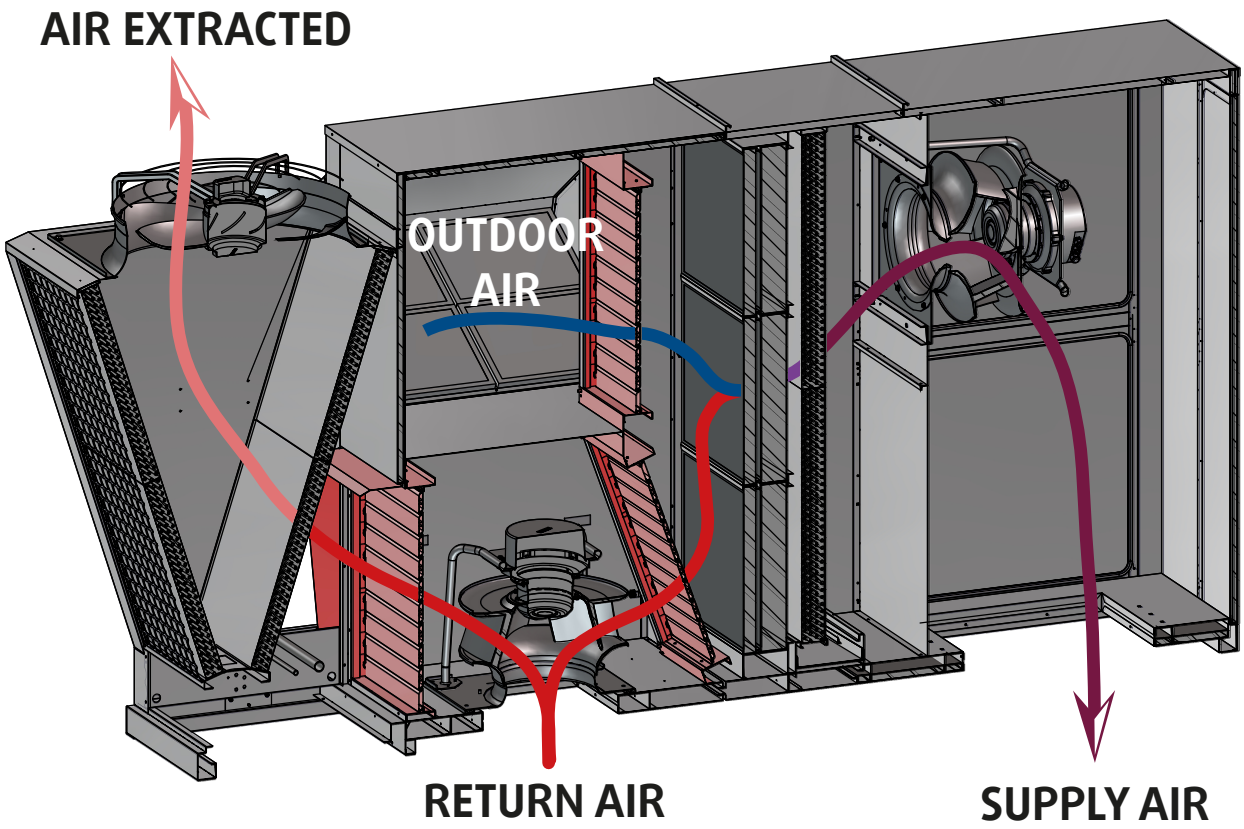
The economiser is an assembly with two dampers connected to servomotors. The quantity of air entering the building varies depending on the given setpoint and enables energy savings in both modes. The economiser is used to ensure modulation of fresh air and recycled air flows in the building.

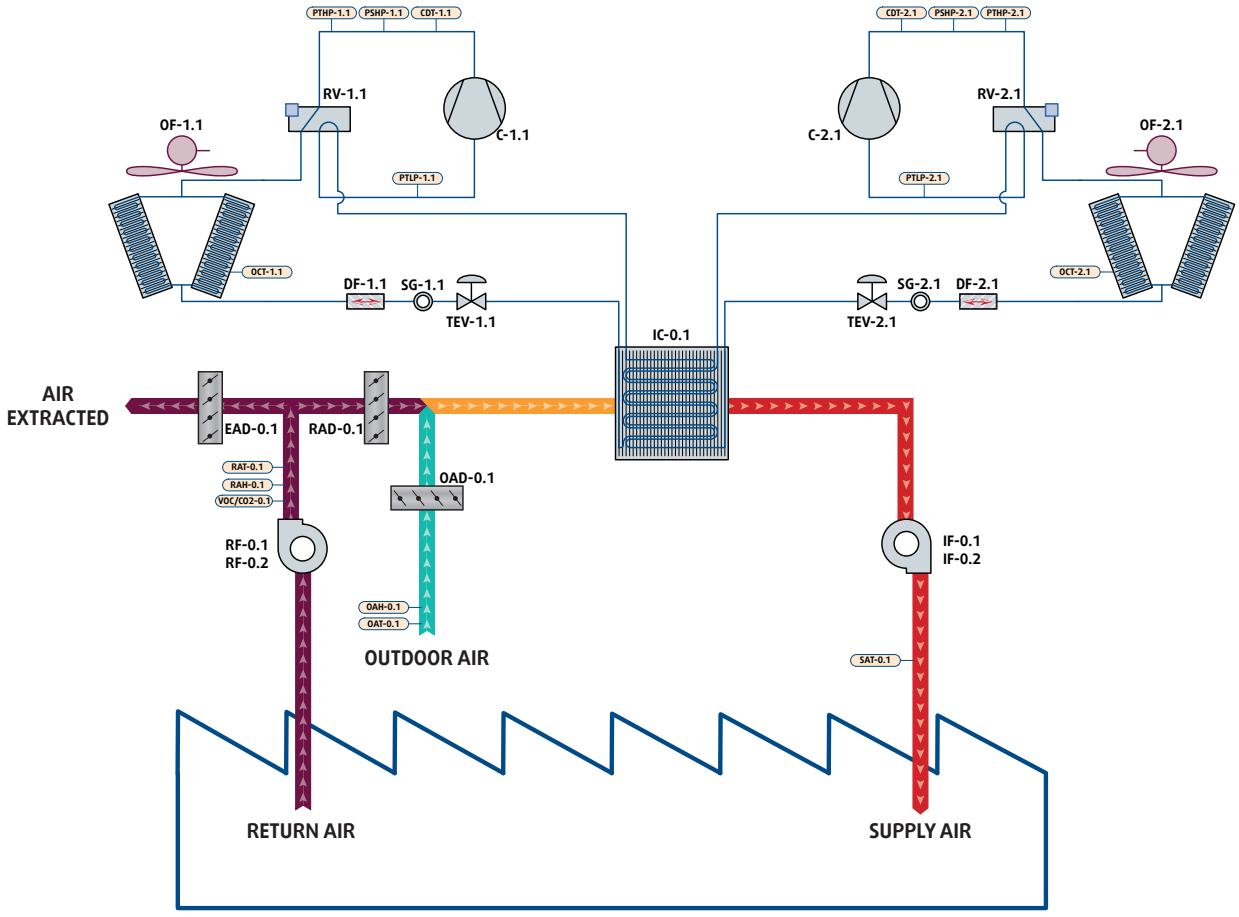




9.5.2. ECONOMISER - 3 DAMPERS

It comprises of a set of 3 dampers with an intake fan that enables on the one hand, to combat the pressure loss from the return ducts and on the other hand, to extract vitiated air from the building in order to avoid excessive pressure build ups.





10. OPTIONS

10.1. CO2 SENSOR

RCO2-W

RCO2-W room sensor with active/switching output, automatic calibration (can be switched off), for determining the CO2 content in the air (0...2000 ppm / 0...5000 ppm). The transmitter converts the measured values into a standard signal of 0 -10 V or 4...20 mA (switchable).

Output: analogue 1 x 0-10V or 4-20mA (switchable) + 1 x changeover contact (adjustable).

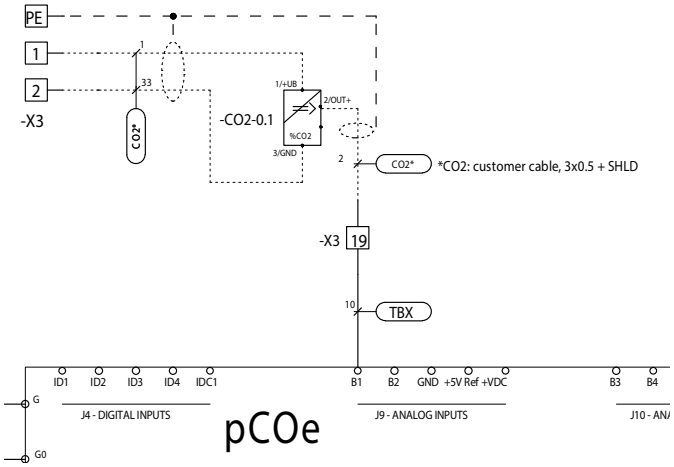
Measuring range: 0...2000ppm or 0...5000ppm (switchable).

Display: without.

Protection class: IP30.

Brand: S+S Regeltechnik.

The connection of this sensor can be found on page 13 of the wiring diagram (See APPENDIX). Terminal block X3 is located in the intermediate compartment.



The cable (here named CO2) will be supplied by the customer. The 4/20mA signal requires a twisted + shielded cable with at least 3 conductors of 0.5mm2.

This cable enters the machine through a grommet on the top of the machine. It will be enough to pierce the plastic to slide the wire in, to put the cable gland without locknuts.

Then the cable CO2 runs along other cables to terminal block X3.

X3-1 = 24Vac

X3-2 = 0V

X3-19 = Sensor signal.

The first calibration of the probe will be done at the factory. The auto 'calibration(DIP SWITCH) will be disabled:

DIP SWITCH = ON-ON-OFF-OFF-OFF

The controller opens the fresh air supply depending on the CO2 level in the room area of the sensor. It displays a message in the alarms if there is no 4/20mA signal (a problem with the probe connection) or if the value read is >2000ppm.

NOTE: for more information refers to the Installation manual of CO2 sensor.

11. INSTALLATION

Caution

The unit is not designed to withstand weights or stresses from adjacent equipment, pipe work or constructions. Any foreign weight or stress on the unit structure could lead to a malfunction or a collapse with dangerous consequences for personnel and property. In such an event, the warranty shall be null and void.

Caution

The unit base shall be arranged as indicated in the manual. There could be a risk of personal injury or damage to property in the event of the unit being incorrectly supported.

11.1. SITING THE INSTALLATION

The **SYSAER R32** must be installed outdoors with sufficient surrounding clearance to enable unobstructed air circulation through the appliance and access for maintenance work.

- The building structure must be capable of carrying the weight of the unit during operation.
- The place of installation must not be subject to flooding.
- The **SYSAER R32** should be installed on a flat, clean surface without any obstacles. The surface area must be sufficient to spread the weight of the unit over the building structure.
- It must be high enough to permit good drainage of defrost water with siphon
- Keep duct connections to a minimum to reduce pressure drop.
- Ensure that the recommended free clearances around the unit are maintained to avoid any risk of malfunctions.
- The installer is responsible for providing the weatherproof seal between the building and the **SYSAER R32**. The installer must be fully versed in the practice of roof mounted equipments and must comply with the recommendations and rules detailed in the Technical Directives.
- In order to avoid risk of condensation and energy losses, all outdoor ducting and piping must be insulated.
- The unit's tightness must not be deteriorated by power supply connections.

Caution

Do not expose the **SYSAER R32** to rejections from chimneys or vents. Fumes charged with soot or grease as well as acid rejections are likely to clog or damage the condenser irreversibly. This would cancel the warranty.

11.1.1. PREVAILING WIND

In the case of the unit being sited in areas exposed to high winds, you must avoid the wind hitting the fan blowing surface areas directly to avoid any risk of recycling cooled air. Exchanger fan operation can be disrupted by strong winds, which can cause de-icing problems and fan malfunctions.

11.1.2. CONDENSATE WATER MANAGEMENT IN HEATING MODE

Depending on temperature and outdoor air humidity conditions, water vapour contained in the air can condense on the finned heat exchanger and even form ice under low outdoor temperature conditions (around < 5°C). This condensate water and defrosted water runs off via outlets provided under the exchanger. To aid water run-off and avoid frozen water remaining in the appliance in winter, we recommend that it is mounted at a height of around 10cm off the ground. In this way, condensate and defrosted water can run off freely and be absorbed into the ground or channelled to a basin built under the appliance in order to protect the environment.

In areas where outdoor temperatures fall below 1°C, the system can be equipped with a condensate anti-freeze protection system (e.g. a heated pipe sheath, Not supplied).

11.1.3. HOW TO REDUCE NOISE POLLUTION

In order to contain noise levels, we equip our appliances with quiet fans and encase the technical compartment in sound-proofed panels. However, noise levels can be reduced even further by following a few installation precautions:

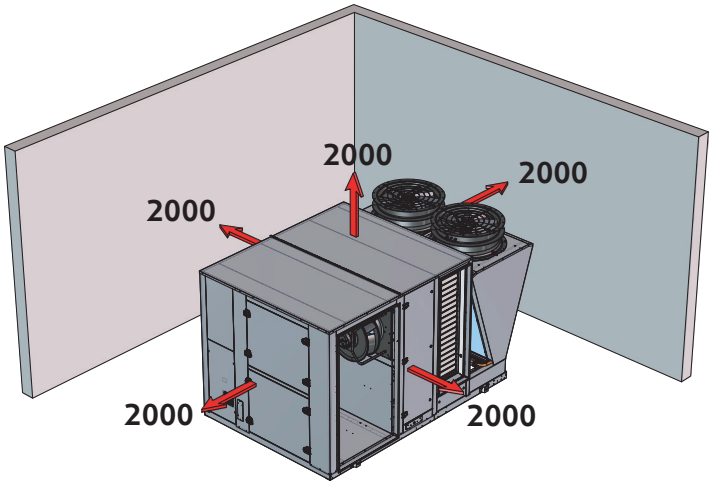
- Do not install the appliance near a window.
- Do not install the unit in enclosed or confined yards, narrow locations where noise may be reflected on walls
- Avoid locating the appliance in a corner (increased reverberated noise).
- Install the rubber pads supplied or anti-vibration pads (available as an option) under the appliance.
- Do not join the concrete slab supporting the appliance to the structure of the dwelling (structure-borne noise transmission).
- Electrical and hydraulic connections to the unit must be flexible to avoid transmitting vibrations.

Also Compressors are a typical source of annoying noise, so for the **SYSAER R32** they are mounted with acoustic jacket that can substantially reduce the resulting noise emissions. For an easy installation our jackets are equipped with clips and adjustable straps that allows ideal adaptation to compressor dimensions. Those jackets are composed of a PVC outer surface: robust, weather-resistant and easy to clean.

11.2. CLEARANCE

When choosing the location for the **SYSAER R32**, take care to leave sufficient free clearance on all sides to ensure easy access for maintenance work.

Indeed, the unit is equipped with a R32 refrigerant leak detection card allowing it to be shut down and the evacuation of the hydrocarbon to the outside air (before reaching the flammability limit of the fluid). For this purpose, two openings are present on the chassis: the first, fitted with the exhaust fan, sucks the outside air to the interior of the frame and the second one evacuates the stale air into the open air.

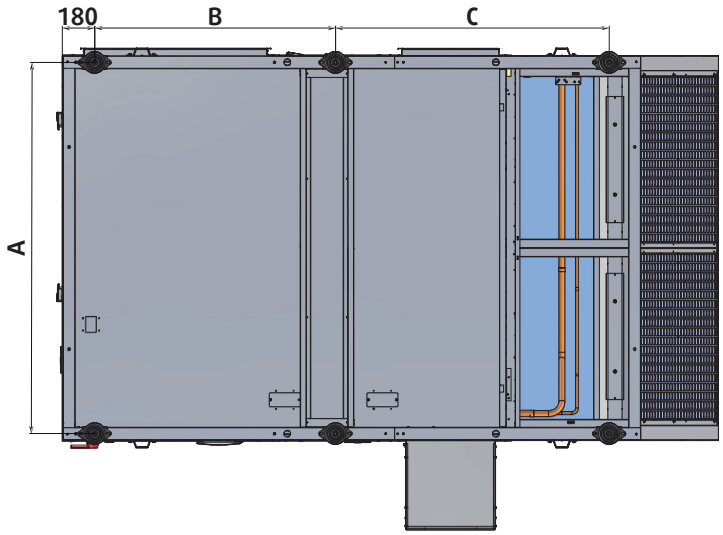


These minimum dimensions of the clearance zones must be respected, both to ensure the correct operation of the unit and to allow access, maintenance, cleaning and, above all, to guarantee the safety of individuals.

Caution

When several **SYSAER R32** units are installed, ensure proper clearance is implemented around the condensers specific to each machine.

11.3. ATTACHMENT TO THE GROUND



The surface of the floor or structure located under the **SYSAER R32** must be flat, and with sufficient strength to withstand the unit's weight, and occasional presence of maintenance equipment.

The **SYSAER R32** does not require anchoring on the foundations, except in regions exposed to a high earthquake risk or if the device is installed on a high level on a steel frame.

		A	B	C
		mm	mm	mm
SR R32 105 SR R32 120 SR R32 140	base module 2 dampers	2 120	1 375	1 562
	3 dampers	2 120	1 540	2 073

For normal applications, rigidity of the **SYSAER R32** and the positions of supports allow for an installation minimizing vibrations. However, the installers can use anti-vibration rubber pads (supplied in option).

When fitting anti-vibration pads, refer to the manual supplied with the kit.

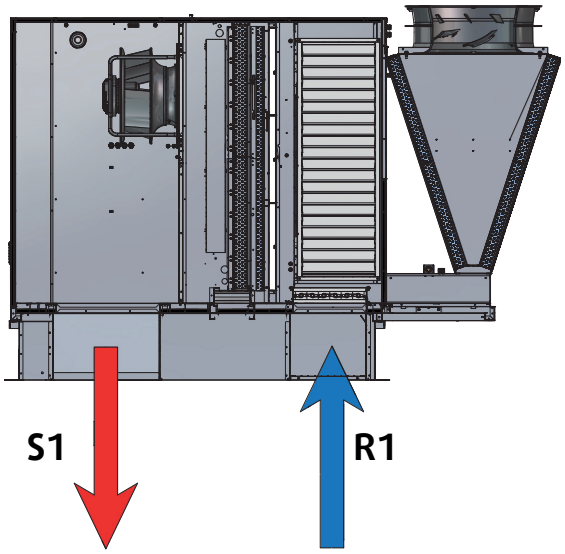
11.4. ROOF CURB

The main purpose of the roof curb is to provide weatherproof passage, supply and return air down to the building from the **SYSAER R32**.

All connections (air, electricity) will be protected against adverse weather. Thanks to the roof curb, the sealing and thermal insulation achieved by the installer and the distribution of weight are perfect between the **SYSAER R32** and the roof.

The roof curb should be used for a downward configuration at supply and return air. The roof curb guarantees the perfect weathertight sealing between the building structure and the appliance.

The roofcurb is factory assembled, and it must be adjusted on site.



Caution

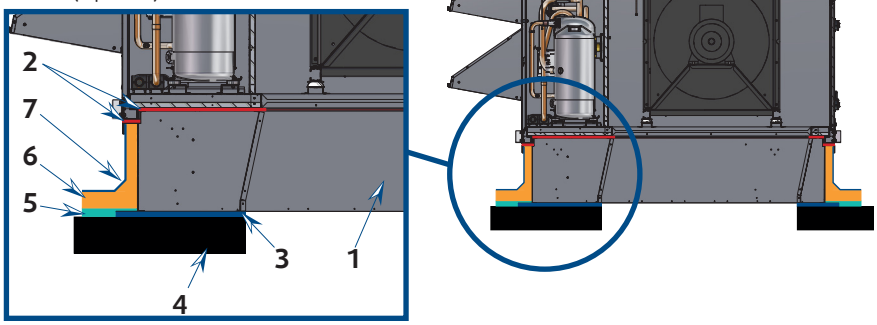
The frame of the curb receiving the unit must be leveled. The unit must slot perfectly into the roof curb.

11.4.1. DIMENSIONS

SEE APPENDIX

Positioning of the roof curb on the roof (cutaway view)

1. Roof curb
2. Rubber seal (supplied with the roof curb)
3. Hard vibration-absorbent rubber (option)
4. Concrete beam or slab
5. Vapour sealing film (supplied by the roofer)
6. Roof insulation (supplied by the roofer)
7. Sealant roofskin (supplied by the roofer)



Caution

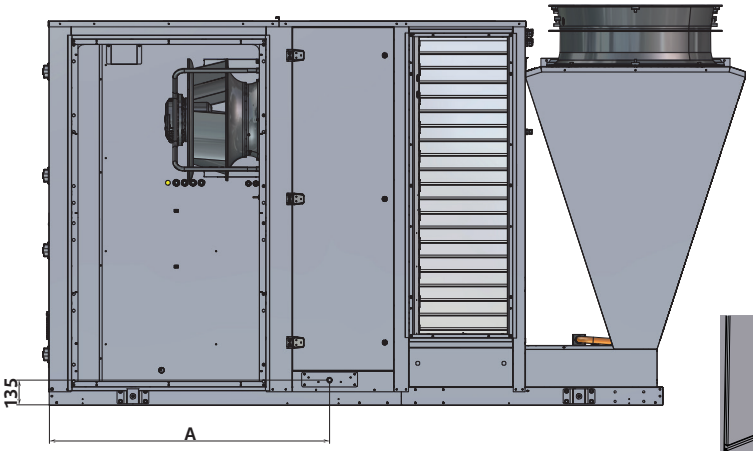
In order to break a thermal bridge between the roof curb and the unit, a seal (N°2) (50 X 5 mm) is supplied with the roof curb. This seal must be glued by the installer on the roof curb to avoid metal to metal contact and reduce eventual vibration transfer..

Once installed and fastened to the roof structure, the outside wall of the curb must be fully integrated in the roof insulation.

The minimum insulation thickness required is 25 mm and the surface must be protected by a bituminous coating (or any other equivalent material) to ensure a perfect weatherproof seal.

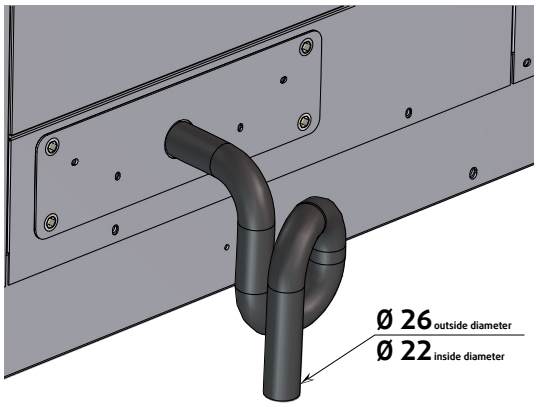
12. HYDRAULIC LINKS

12.1. CONDENSATE DRAIN LINE



The installer must imperatively supply a siphon.

		SR R32 105	SR R32 120	SR R32 140
A	mm	1 506	1 506	1 506



Caution

If the outdoor temperature is likely to fall below +1°C, provide a system to prevent the condensates from freezing (e.g. heating cord).

12.2. FROST PROTECTION

12.2.1. WATER LOOP GLYCOLING

Caution

THE USE OF A GLYCOL-BASED SOLUTION IS THE ONLY EFFECTIVE FROST-PROTECTION MEANS

The glycol-based water solution must be sufficiently concentrated to ensure appropriate protection and prevent ice from forming. Take precautions when using non inert MEG antifreeze solutions (Mono Ethylene Glycol) or MPG (Mono Propylene Glycol). With this type of antifreeze solution, corrosion may occur in the presence of oxygen.

Contact glycol resellers to ensure that its characteristics are compatible with environmental directive applicable on site (this is not under manufacturer responsibility).

Glycoling the water loop worsens slightly the performances, in particular the pressure drops. The hereunder table gives corrective factors with respect of type and concentration of the glycol. For instance, the 20% MEG glycoling will :

- Increase the pressure drops : with glycol = 1.129 x without glycol
- Increase the flowrate : with glycol = 1.040 x without glycol
- Decrease the capacity : with glycol = 0.982 x without glycol

Concentration		%	10		20		30	
Glycol			MEG	MPG	MEG	MPG	MEG	MPG
Correction factor	pressure drops		1.070	1.068	1.129	1.147	1.181	1.248
	water flow		1.013	1.010	1.040	1.028	1.074	1.050
	thermodynamic power		0.991	0.987	0.982	0.975	0.972	0.962

Draining the water circuit is not recommended for frost protection, for the following reasons:

- The water circuit will rust, which will shorten its lifetime.
- Water will remain at the bottom of the plate exchangers and freezing may cause damage.

12.3. WATER QUALITY

The water must be analysed; the hydraulic network system installed must include all elements necessary for water treatment: filters, additives, intermediate exchangers, drain valves, vents, check valves, etc., according to the results of the analysis.

Using improperly treated or non treated water may cause scaling, erosion, corrosion or algae or sludge deposits in the exchangers. Refer to a specialist skilled in water treatment to determine any treatment to apply. The manufacturer will not be held liable for damages caused when non treated or improperly treated water.

Apply the following guidelines :

- No NH_4^+ ammonium ions in the water, highly detrimental to copper. <10mg/l
- Cl^- chloride ions are detrimental to copper with a risk of puncture by picking corrosion. <10mg/l.
- SO_4^{2-} sulphate ions may cause perforating corrosion. < 30mg/l.
- No fluoride ions (<0.1 mg/l)
- No Fe^{2+} and Fe^{3+} ions, particularly in case of dissolved oxygen. Fe< 5mg/l with dissolved oxygen < 5mg/l. The presence of these ions with dissolved oxygen indicates corrosion of steel parts, likely to generate corrosion of copper parts under Fe deposits, particularly in the case of multitubular exchangers.
- Dissolved silica: silica is an acid element of water and may also cause corrosion. Content < 1mg/l.
- Water hardness: Values between 10 and 30 may be recommended. This facilitates scaling deposits likely to limit copper corrosion. Excess TH values may lead to clogging the pipes.
- TAC<100
- Dissolved oxygen: Prevent any sudden change in the water's oxygenation conditions. Also, avoid deoxygenating water by sparging inert gas as well as overoxygenating it by pure oxygen sparging. Disturbing oxygenation conditions destabilizes copper hydroxides and particle salting-out.
- Electrical Resistivity - Conductivity: The higher the resistivity, the slower the corrosion. Values above 3000 ohm/cm are preferred. A neutral environment favours maximum resistivity. For electrical conductivity, values around 200-600 S/cm can be recommended.
- pH: neutral pH at 20°C (7 < pH < 9)

Caution

If the water circuit is to be drained for a time exceeding one month, the circuit must be fully charged with nitrogen to prevent any risk of corrosion.

Caution

The manufacturer is not liable for recommendations in terms of water treatment (call a specialized company).

However, this matter has a critical nature, and particular care must be given to ensure that the type of treatment applied is effective.

The liability of the manufacturer or its representative will not be sought when non treated water or non compliant quality water is used.

13. WIRING DIAGRAM AND LEGEND

13.1. WIRING DIAGRAM

SEE APPENDIX

13.2. LEGEND

N 819			
SE4903	Models SR R32 105 -120- 140	Power	400V / 3~ / 50Hz ± 10%
SE4903	Gas detection module	Control	230V / 50Hz ± 10%

13.2.1. POWER SUPPLY

Power cable must be connected to the main power supply switch QG (Copper cable is recommended).

The supply is protected at the head by an FFG main fuse holder supplied by the installer. It must be fitted next to the unit. Refer to the § **ELECTRIC SPECIFICATIONS**, page 15

The electrical installation and wiring of this unit must comply with local electrical installation standards.

➢ Three phase 400 V~ 50Hz + Ground :
On the L1, L2, L3 terminals of the QG section switch
On the ground screw of the earth cable.

13.2.2. WIRING DIAGRAM KEY DESCRIPTIONS

SEE APPENDIX

13.2.3. RANGE AND SETTINGS OF THEMAL PROTECTION / NOMINAL INTENSITY OF THE CONTACTORS (CLASSE AC3)

13.2.3.1. SYSAER R32 WITH STANDARD FAN

MODELS		SR R32 105	SR R32 120	SR R32 140
FTC-1.1	Range	30-40A	30-40A	37-50A
	Adjustment	38A	38A	48A
FTC-2.1	Range	30-40A	30-40A	37-50A
	Adjustment	32A	38A	48A
FTIF-0.1	EC motor	14A	18A	18A
FTOFxx	Range	2.5-4A	2.5-4A	2.5-4A
	Adjustment	3.5A	3.5A	3.5A
FTCC-0.1		2A	2A	2A
FF-0.2		1A	1A	1A
FTGB-0.1		6A	6A	6A
FF-0.3		1A	1A	1A
Contactors AC3				
KC-1.1		40A	40A	50A
KC-2.1		40A	40A	50A
KOFxx		6A	6A	6A

Customer TB = XC on the diagram.

XC 26-27 = OUT: Alarm from Gaz detection (Normally Close free contact) – 250Vac-3A max

XC 51-52 = OUT: General Alarm (Normally Open 230V powered contact)

XC 53-22 = IN: On/Off switch (Normally Open contact)

XC 54-22 = IN: Summer/winter switch (Normally Open contact)

XC 55-22 = IN: Smoke Detector contact (Normally Open contact)

XC 56-22 = IN: Remote Ambient Sensor (NTC100)

13.2.3.2. ADJUSTMENT RANGE OF THE GAS DETECTION CARD

The safety fan pressure switch is factory set to a value less than or equal to 0.6 mbar.

14. ELECTRICAL CONNECTIONS

WARNING

Before carrying out any work on the equipment, make sure that the electrical power supply is disconnected and that there is no possibility of the unit being started inadvertently.

Non-compliance with the above instructions can lead to injury or death by electrocution.

The electrical installation must be performed by a fully qualified electrician, and in accordance with local electrical standards and the wiring diagram corresponding to the unit model.

Any modification performed without our prior authorisation may result in the unit's warranty being declared null and void.

The power supply cable section must be sufficient to provide the appropriate voltage to the unit's power supply terminals, both at start-up and under full load operating conditions.

The power supply cable shall be selected in accordance with the following criteria:

1. Length and material of supply cables
2. Maximum intensity - the cables must support a suitable amperage under the unit's functioning conditions.
3. Power supply cables' installation mode.

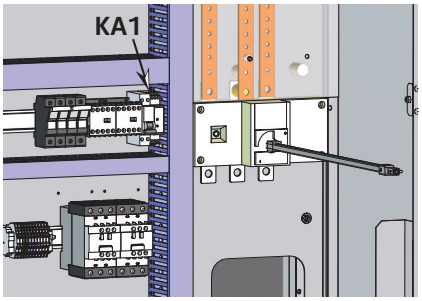
Short circuit protection shall be provided. This protection shall comprise fuses or circuit breakers with high breaking capacity, mounted on the distribution board.

If the local control includes an remote ambient temperature sensor and/or a set temperature adjustment module, these shall be connected with shielded cable and shall not pass through the same conduits as the power supply cables as the voltages induced may create reliability faults in the unit's operation.

VERY IMPORTANT:

3~400V-50HZ

The **SYSAER R32** is equipped as standard with a phase sequence and cut-out controller located in the electrical box.



THE LED's INDICATE THE FOLLOWING CONDITIONS:

Green LED = 1	**Green LED = 1**	**Green LED = 0**
Yellow LED =1	**Yellow LED =0**	**Yellow LED =0**
Power ON	Phase inversion or phase absent (L1)	Phase absent (L2 or L3)
The compressor rotation direction is correct.	The compressor and the fans do not start.	The compressor and the fans do not start.

Caution

Before connecting the supply lines, check that the voltage available is within the limits specified (Refer to the § ELECTRIC SPECIFICATIONS, page 15).

Voltage differences between each phase do not have to exceed 2 %.

If the unbalance is inacceptable, call the distribution company to have this anomaly corrected.

Caution

Supplying the unit with a line with an unbalance exceeding the acceptable value results in cancelling the warranty.

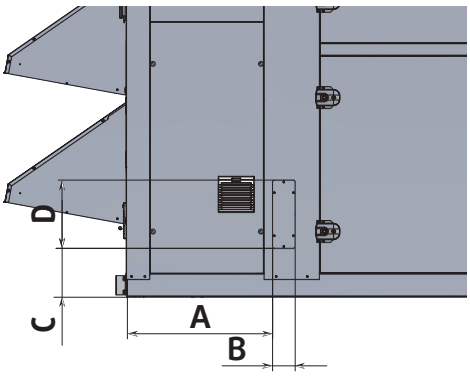
Caution

Correction of the excessive centralized power factor (>0.95) may generate transient phenomena dangerous for the motors and contactors of the unit during the start and stop phases. Check instant voltages during these phases.

The electric connection of range RT is done in a single point on the level of the principal circuit breaker.

Electrical power supply cable should be inserted by the base or on the side of the unit.

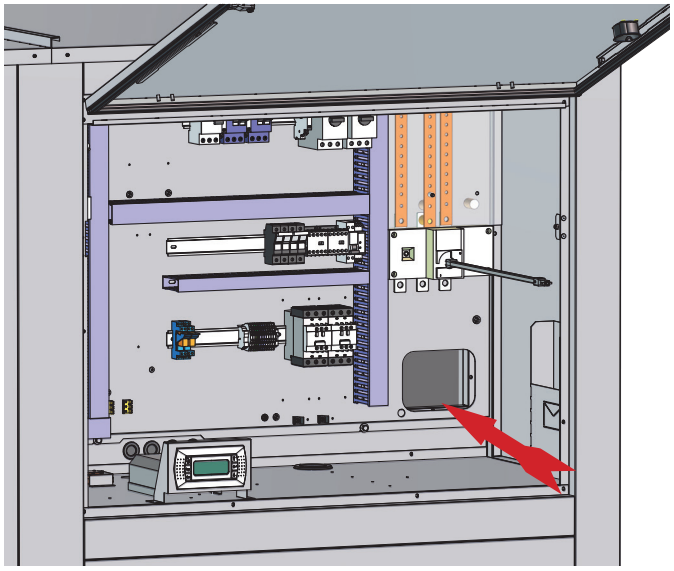
Cable holes need to be drilled in the panel in relation to the thickness of the power cables.

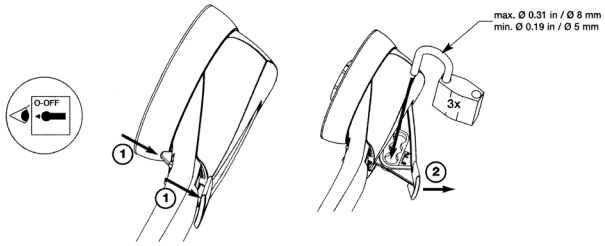


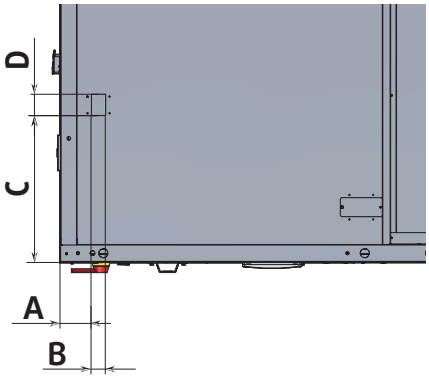
	A	B	C	D
	mm	mm	mm	mm
SR R32 105	624	69	213	259
SR R32 120	624	69	213	259
SR R32 140	624	69	213	259

Caution

The installer is responsible for ensuring that the cable hole in the panel is sealed properly.







These units are equipped with a local switch used as general terminal board.

The switch can be padlocked.

	A	B	C	D
	mm	mm	mm	mm
SR R32 105	129	60	615	90
SR R32 120	129	60	615	90
SR R32 140	129	60	615	90

A circuit breaker or fuse holder (not supplied) must be installed on the main power supply of the unit in accordance with the circuit diagram.

To ensure proper contact, fit the end pieces adapted to the cross-section of the connecting cable.

14.1. GAS DETECTION MODULE

The SYSAER R32 unit is equipped with a gas detection module to ensure the safety of the personnel and the machine in case of R32 leakage.

Caution

The detection system is dependent on the unit's general power supply. When the unit is not powered, detection will therefore also stop.

The gas detection module has a dedicated alarm indicator. This information is available via a dry contact (Normally Closed) by connecting to the unit's terminals 26 and 27.

Caution

The unit must only be rendered accessible for maintenance if the client cables connected to terminals 26 and 27 are disconnected or rendered inoperative upstream of the unit.

14.1.1. INSPECTION

Gas sensors must be checked regularly by a competent person. The following must be checked :

- Maintenance/calibration interval not exceeded
- Visual inspection of the sensor, wiring, etc.
- Remove dust deposits, especially at the gas inlet.

15. COMMISSIONING

Caution

When performing startup and service, thorough safety precautions shall always be taken.

Only qualified individuals should perform these functions.

15.1. PRE-START CHECK LIST

Before commissioning the system, you must carry out a certain number of installation checks to ensure that the appliance will operate in the best possible conditions. The following list of checks is not exhaustive and only serves as a minimum reference guide.

1. Check that the equipment installed matches the order
2. Check that the oil heating resistances have been energised for at least 12 hours.

15.1.1. VISUAL CHECK

1. Ensure that no debris, cartons or accessories remain in the unit.
2. Check free clearances around the unit :
   - ✔ exchanger air intake
   - ✔ exchanger air outlet
   - ✔ access or maintenance work.
3. Unit mounted as specified.
4. Check that the unit is level and that condensates drain freely away from the unit.
5. Check that there is no possibility of blown air being recycled through the fans due to wind exposure.
6. In arduous climates (sub-zero temperature, snow, high humidity), check that the appliance is raised 10 cm off ground.
7. For loose or missing bolts or screws.
8. For refrigerant leaks in connections and components.
9. Check that filters are present and correctly installed.

15.1.2. ELECTRICAL CHECK

1. Electrical installation has been carried out according to unit wiring diagram and the Supply Authority Regulations in effect.
2. Size fuses or circuit breaker has been installed at the main switchboard.
3. Supply voltages as specified on unit wiring diagram.
4. **Check that all of the appliance's electrical connections have been tightened.**
5. Check that the electric motors are planned for the network supply voltage.
6. the cables and wires are clear of or protected from pipework and sharp edges.
7. Check the electrical grounding of the appliance.

15.1.3. FANS AND DUCTS

1. Check that duct connections are as required on the **SYSAER R32**.
2. Check suitable tightening of freewheels on plug fans on motorshafts, as well as the correct alignment in relation to the eye of the turbine.
3. Ensure that the fan turbine can turn freely and that no foreign body can be found inside.

15.2. OPERATING CHECK LIST

15.2.1. GENERAL

Cheek for any unusual noises or vibration in the running components, particularly the indoor fan drive system.

15.2.2. PHASE ROTATION PROTECTION

If the phase of the power supply are not correct, the phase rotation protection device will prevent the machine from starting.

15.2.3. ELECTRICAL

15.2.3.1. SET POINTS

1. Compressors circuit breaker settings.
2. Fan Circuit breaker settings.

NOTE : The indoor or outdoor fan motor is equiped with an internal safety device with automatic reset.

15.2.3.2. OPERATING VOLTAGE

Recheck voltage at unit supply terminals.

15.2.3.3. CONTROL

1. Operate system and thermostat switches.
2. Check unit is wired for correct control of unit fan, cooling and heating modes.
3. Verify all sensor inputs, using the controller display.

15.2.4. COMPRESSORS AND REFRIGERATION SYSTEM

1. Running check: Start the compressors. Check for any unusual noise or vibration.
2. Operating Pressures: Operate the unit for at last 20 minutes and ensure that the refrigerant pressures are stabilised, and cheek that they are within the normal operating ranges.
3. Operating Temperature: Check discharge, suction and liquid temperatures.
4. The backflow temperature in the cold cycle should not normally exceed 125°C.
5. Suction superheat should be 8K ±2K.

15.2.5. FINAL CHECK

1. All panels and fan guards are in place and secured.
2. Unit clean and free of remainder installation material.

16. FINAL TASKS

Place the plugs back on the valves and check that they are properly tightened.

If needed, fix the cables and the pipes on the wall with clamping collars.

17. IN CASE OF WARRANTY - MATERIAL RETURN PROCEDURE

Material must not be returned without permission of our After Sales Department.

To return the material, contact your nearest sales office and ask for a "return form". The return form shall be sent with the returned material and shall contain all necessary information concerning the problem encountered.

The return of the part is not an order for replacement. Therefore, a purchase order must be entered through your nearest distributor or regional sales office. The order should include part name, part number, model number and serial number of the unit involved.

Following our personal inspection of the returned part, and if it is determined that the failure is due to faulty material or workmanship, and in warranty, credit will be issued on customer's purchase order. All parts shall be returned to our factory, **transportation charges prepaid**.

18. ORDERING SERVICE AND SPARE PARTS ORDER

The part number, the order confirmation and the unit serial number indicated on the name plate must be provided whenever service works or spare parts are ordered.

For any spare part order, indicate the date of unit installation and date of failure. Use the part number provided by our service spare parts, if it not available, provide full description of the part required.

19. MAINTENANCE

Caution

The user is responsible for ensuring that the unit is in perfect working order and that the technical installation and **minimum periodic maintenance** operations have been performed by a qualified technician in accordance with the procedures described in the present manual.

Depending on actual operational constraints and regulatory changes, the installer might recommend increased maintenance operations and more frequent inspections.

Simple preventive maintenance ensures longevity of your **SYSAER R32** :

- Better refrigeration performance
- Reduced power consumption
- Accidental component breakage prevention
- Prevention of heavy, late, and expensive interventions
- Environment protection

Caution

All refrigerating fluid charging, sampling and draining operations must be performed by a skilled technician using equipment adapted to the unit, in agreement with authority regulation in effect on site.

Any inappropriate handling may cause uncontrolled fluid venting into the atmosphere.

Warning

Isolate unit from power supply before working on unit.

Warning

Opening the refrigeration circuit then involves vacuum drawing, checking the circuit sealing and recharging refrigerating fluid. For any intervention on the refrigerating fluid circuit, first drain the unit's charge using a refrigerating fluid collection station.

19.1. WEEKLY CHECK

Inspect the entire running installation, while paying particular attention to :

- any damage on the **SYSAER R32** housing
- any traces of oil (sign of refrigerating fluid leak)
- any water leak
- the presence of removed protections, doors or lids improperly closed
- the coil's cleanliness.

Check:

- the oil level of the compressors (use sight glass on the oil equalization pipe of compressor tandems)
- the humidity rate of the refrigerating fluid using the fluid indicator
- the operating pressure of the installation

When the **SYSAER R32** is running, perform a sound check of the compressors and fans. Also check that no vibration can cause breakage or wear by vibrating contact.

It is essential to keep an up to date maintenance booklet recording readings for temperatures, pressures and all checks performed on the **SYSAER R32** system.

19.2. PERIODIC TABLE OF SERVICE AND MAINTENANCE

TASKS PER COMPONENTS		ACTIONS	1 month	3 months	6 months	12 months	24 months
			Recommended inspection and maintenance interval				
1 - Casing							
1.1	Control possible contaminations, damage and/or corrosion.	Clean and repair if required.				✘	
1.2	Check the possible presence of water (condensates, leakages,...).	Clean and look for the cause, then repair.			✘		
1.3	Check the condensate recovery tray	Check that the drainage orifices, conduits and siphon are not blocked. Eliminate all accumulated dirt.			✘		
1.4	Verify thermal insulation aspect	Replace if required.				✘	
1.5	Check the state of the anti-vibration pads	Replace if required.				✘	
1.6	Check the condition of door gasket.	Replace if required.	At each inspection				
2 - REFRIGERANT CIRCUIT							
2.1	Verify oil compressor level when compressors are off			✘			
2.2	Check the lack of gas bubbles in the fluid line			✘			
2.3	Check the lack of humidity in the refrigerating fluid			✘			
2.4	Check the pipes or capillaries do not rub and vibrate.				✘		
2.5	Check the compressors do not emit abnormal noise or vibration.			✘			
2.6	Check the backflow temperature.		✘				
2.7	Record the operating pressure	Check it is above or below those recorded when the unit was started up.	✘				
2.8	Check the compressor fastening screws are tight.				✘		
2.9	Check the crankcase heater are powered on during the stop cycle.		✘				
2.10	Check the cleanliness of the coil.	Clean if required.		✘			
2.11	Test the oil for contamination.	Change the oil if required.				✘	
2.12	Check the filter drier clogging.	Replace if required		✘			
2.13	Check the operation of the high pressure switch.	Replace if required	✘				
2.14	Check the lack of refrigerating fluid leak (visuel + détecteur si nécessaire)	Repair				✘	
2.15	Check the cycle reversal valve				✘		
2.16	Check the condition of the anti-vibration studs	Replace if required			✘		
3 - FILTRERS							
3.1	Check the absence of contamination, damage (air leakage) or odour.	The air filters must have a basic efficiency appropriate to the desired filter class for their complete lifetime. The filter must be replaced when contaminants or leakages would have been noticed. Replace affected air filter(s) if the previous control dates less than 6 months, the totality of the filtering bank in the contrary case.		✘			
3.2	Check filter air pressure drops.	Replace filters from filtering bank if the maximum air pressure drop accepted by filters is exceeded.	✘				
3.3	Check the non-cleanable filters changed most recently.					✘	
3.4	Inspection of cleanness condition of filter section.	Clean the frame and the casing. Interval in conformity with VDI6022 recommendations of RLT Hygiene standard. Even if the casing seems clean, fungus or germs invisible to the naked eye can multiply.			✘		
3.5	Inspection of cleanness condition of metallic filters.	Rinse filtering cells in an anti-fungicide and anti-bacterial disinfecting cleaning bath.			✘		

TASKS PER COMPONENTS		ACTIONS	1 month	3 months	6 months	12 months	24 months
			Recommended inspection and maintenance interval				
4 - ELECTRIC CIRCUIT							
4.1	Check the electrical voltage applied to the unit, which must remain stable within the tolerances specified in the information plates.			✘			
4.2	Check that the main supply cable is void of alterations likely to impact the insulation.	Replace if required.		✘			
4.3	Check the grounding of the metallic structure	Repair if required.	✘				
4.4	Inspect the contacts.	Replace if required.	✘				
4.5	Check that all electrical connections of the device are tight	Tighten if required.	✘			✘	
4.6	Check the thermal protection relays of the motors	Replace if required.	✘				
4.7	Check the nominal intensity and condition of the fuses.		✘				
4.8	Check the condition of the condensers.		✘				
4.9	Clean the compressed air electrical unit to remove any dust or other contaminants building up.			✘		✘	
4.10	Check the motor windings are insulated.			✘			
5 - FAN(S)							
5.1	Check the lack of contamination, corrosion or damage.	Clean if required			✘		
5.2	Check proper fastening of the fan.	Tighten if required.			✘		
5.3	Check the vanes to guarantee balancing.	Clean if required.				✘	
5.4	Check the bearings for noise.	Repair if required.	✘				
5.5	Check the condition of the fan motor.			✘			
6 - REGULATION							
6.1	Check the condition of the alarms	Acknowledge them after taking them into consideration	✘				
6.2	Check the setting points		✘				
6.3	Check the operation of all probes		✘				
6.4	Check and clean the smoke detector	Remove any dust that has accumulated on the fins of the sensor head, using a vacuum cleaner or an anti-static cloth. Clean the sensor assembly with a sponge or a slightly damp cloth.				✘	
6.5	Check the gas detection module					✘	

TASKS PER COMPONENTS		ACTIONS	1 month	3 months	6 months	12 months	24 months
			Recommended inspection and maintenance interval				
7 - HEATING COILS							
7.1	Check the state of the function, check there is no damage nor corrosion.	Clean and repair.		✘			
7.2	Check the condition of the exchanger, in terms of corrosion and functionality.	Clean and repair.			✘		
7.3	Check the tightening of the pipe connections and fastening	Readjust and repair if necessary.				✘	
7.4	Verify the pressure value of the hydraulic circuit					✘	
7.5	Bleed the air.					✘	
7.6	Run the isolation valves						
7.7	Check there is no ice set.					✘	
7.8	Check the state of the piping thermal insulation.	Repair and replace if required.					
7.9	Check the frost protection devices (glycol-based water, thermostat, ...).	Repair and replace if required. When air temperatures are wintery, and after general stoppage of the installation, the water contained in the exchanger may freeze. To prevent such problems, fully drain the unused plate exchanger or protect it by pouring an antifreeze solution into the hydraulic circuit or other devices. ⚠ The manufacturer waives any liability for damage to the exchanger caused by water freezing inside the unit.	Whenever there is a risk of freezing				
7.10	Check filter cleanliness.	Clean	✘				
7.11	Check that the hydraulic circuit is filled properly		✘				

19.3. MAINTENANCE PROCEDURES

19.3.1. REFRIGERANT CIRCUIT

This equipment must be submitted to sealing checks **minimum once per year, by a professional authorized to perform such an operation**. Refer to national requirements for the frequency of these checks.

Caution

Never use the compressor as a vacuum pump to drain the installation.

19.3.1.1. REFRIGERATING FLUID CHARGE

Run the unit in refrigerating mode to determine whether the group's charge is correct by checking actual sub-refrigeration.

19.3.1.2. COMPRESSOR OIL

Oil for refrigeration equipment is light and transparent. It maintains its colour for a long operating period.

As a refrigeration system designed and installed properly will run without problem, the compressor oil does not require replacement, even after a long operating period.

Blackened oil has been exposed to impurities in the refrigeration piping system, or excess temperatures on the compressor backflow side, which inevitably degrades oil quality. Blackening oil or degradation of its qualities may also be caused by humidity in the system. Change the oil when its colour changes or when it is degraded.

In this case, before restarting the unit, the refrigeration circuit must be emptied.

Caution

Compressors use polyester oil. During maintenance interventions on the compressor, or if the refrigeration circuit has to be opened in any point, do not forget that this type of oil is highly hygroscopic, and avoid exposing it to the atmosphere during long periods, which would require to change the oil.

Warning

Protect the **SYSAER R32** frame so as to get back oil that could flow out accidentally.

19.3.1.3. FILTER DRIER

Refrigeration circuits are fitted with filters drier.

The fluid indicator is used to check the refrigeration flow and humidity rate of the refrigerating fluid. The presence of bubbles indicates that the filter drier is clogged or the charge insufficient.

In this event, even after cleaning the cartridge, the air bubbles remain, which means that the system has lost part of its refrigerating fluid in one or several points, which must be detected and repaired.

The glass window contains a colour indicator. Comparing the indicator colour with the scale present on the glass window allows to calculate the humidity rate of the refrigerating fluid. If excessive, change the filter cartridge, run the system for one day, then check the humidity rate again.

A humidity rate within the preset limits requires no further intervention. If the humidity rate remains too high, change the filter drier again, start the unit, and run it for another day.

19.3.1.4. AIR COOLED CONDENSER

Caution

Fin edges are sharp and can cause injury hazard. Avoid contact with them.

Condenser coils are composed of copper tubes and aluminium fins. In case of leaks due to damage or shock, the coils must be repaired by one of the authorized Support Centres. To guarantee the best possible operation of the condenser bank, the condenser surface must be maintained as clean as possible, and it must be void of foreign materials (leaves, wires, insects, slag, etc.). A dirty coil will see its absorbed electrical power increase. In addition, condensation pressure could increase and trigger a high pressure alarm.

Clean the air exchanger using a special product for aluminium-copper coils and rinse with water. Do not use hot water nor steam, as these may increase the refrigerating fluid's pressure.

Caution

Avoid damaging the aluminium fins during cleaning. Never use pressurized water without a wide diffuser. Concentrated and/or rotating water jets are strictly forbidden.

CAUTION

BEFORE CARRYING OUT ANY OPERATION ON THE EQUIPMENT, CHECK THAT THE ELECTRICAL POWER SUPPLY IS SWITCHED OFF AND THAT IT CANNOT BE SWITCHED ON INADVERTENTLY.

IT IS RECOMMENDED THAT THE DISCONNECT SWITCH BE PADLOCKED

20. TROUBLE SHOOTING

Problem	Probable cause	Solution
Unit operates continuously but without generating cooling	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
	Clogged dehumidification filter.	Replace the dehumidification filter.
	Reduced output from one or both circuits	Check the compressor valves and change them if necessary.
Frozen intake line	The overheating setting on the thermostatic pressure relief valve is too low.	Increase the setting.
		Check the refrigerant fluid charge
Excessive noise	Vibrating pipe work	Attach the pipe work correctly.
		Check the pipe work attachments.
	Whistling noise from the thermostatic pressure relief valve	Top up the refrigerant fluid charge.
		Check and replace the dehumidification filter if necessary.
	Noisy compressor	Check the condition of the valves. Seized bearings. Replace the compressor
		Check the tightness of the compressor attachment nuts.
Low oil level in the compressor	Presence of one or several oil or gas leaks in the circuit	Locate and repair the leaks
	Mechanical compressor damage.	Contact an approved Service Centre.
	Sump oil heater resistance fault.	Check the electrical circuit and the condition of the resistance. Replace defective parts if necessary.
One or both compressors do not operate.	Electrical circuit cut.	Check the electrical circuit and seek out any grounding and/or short- -circuits. Check the fuses.
	High pressure pressostat activated.	Reset the pressostat from the control panel and restart the unit. Identify and eliminate the causes of this activation.
	Circuit breaker open	Check the control circuit and seek out any grounding and/or short-circuits. Reset the circuit breaker.
	Connection problem	Check the tightness of all the electrical connection terminals.
	Electrical circuits thermal protection cuts in.	Check the operation of the control and safety devices. Identify and eliminate the cause of the activation.
	Incorrect wiring.	Check the wiring of the control and safety devices.
	Mains voltage too low.	Check the power line. Eliminate any possible problems associated with the system. If the problem is due to the network, inform the Electricity Company.
	Compressor motor short-circuited.	Check the continuity of the motor winding.
	Compressor seized	Replace the compressor.
Circuit stoppage further to the low pressure thermostat being activated.	Presence of a leak.	Identify and repair the leak.
	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
	Pressostat operating fault.	Replace the pressostat.

Problem	Probable cause	Solution
Circuit stoppage further to the high pressure thermostat being activated.	Incorrect operation of the high pressure pressostat.	Check the operation of the pressostat. Replace it if required.
	Outlet valve partially closed.	Open the valve. Replace it if required.
	Non-condensable particles in the circuit.	Bleed the circuit
	Condenser fan(s) not operating.	Check the wiring and the motors. Repair and replace if required.
Liquid line too hot	Insufficient refrigerant fluid charge.	Locate and eliminate the causes of charge losses and top up the refrigerant fluid charge.
Liquid line frozen	Liquid line valve partially closed.	Checking the opening of all the valves.
	Clogged dehumidification filter.	Replace the filter cartridge.
Fans do not operate.	Electrical circuit problems.	Check the connections.
	Internal circuit thermal cut-out activated.	Contact an approved Service Centre.
Reduced output in both Heating and Cooling mode	Compressor operating fault	Contact an approved Service Centre.
	Dirt in the evaporator water circuit.	Chemical cleaning of the evaporator water circuit.
	Condenser battery blocked.	Clean the condenser battery.
	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
Evaporator heater is not operating.	No power supply.	Check the main fuse and the auxiliary fuses.
	Heater circuit open	Check the heater and replace if required.
No/ little control over water temperature.	Incorrect thermostat setting.	Check the temperature setting on the control panel.
	Incorrect temperature differential between evaporator inlet and outlet.	Check the water flow and the quantity of liquid in the water circuit.
	Electronic control system malfunction.	Contact an approved Service Centre.
Insufficient water circulation.	Air in the circuit	Bleed the air via the safety valve.
	Deposits or impurities in the evaporator.	Wash out the evaporator by back-flushing.
Unit not operating, no alarm activation	Water circulation fault	Check the pump.
	Flow controller inoperable.	Check the flow controller.
	Differential pressostat inoperable.	Check the differential pressostat.

APPENDIX
ANNEXE
ANLAGE
ALLEGATO
ANEXO

APPENDIX

ANNEXE

ANLAGE

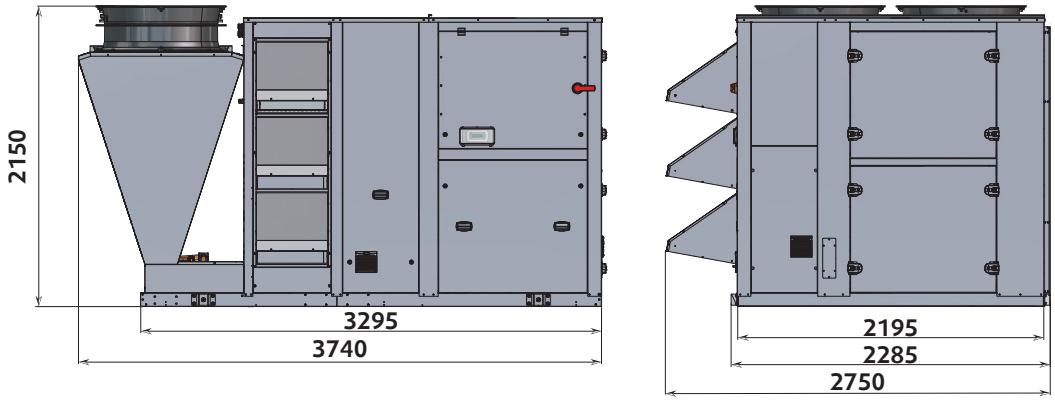
ALLEGATO

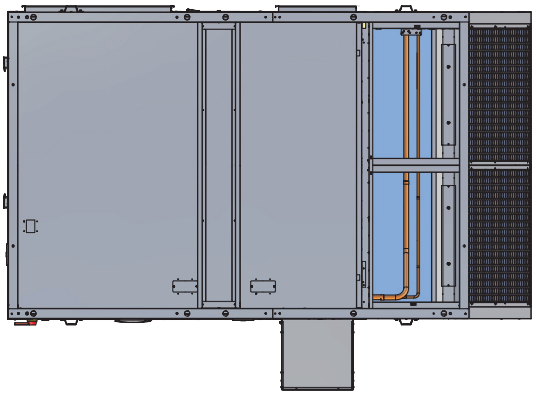
ANEXO

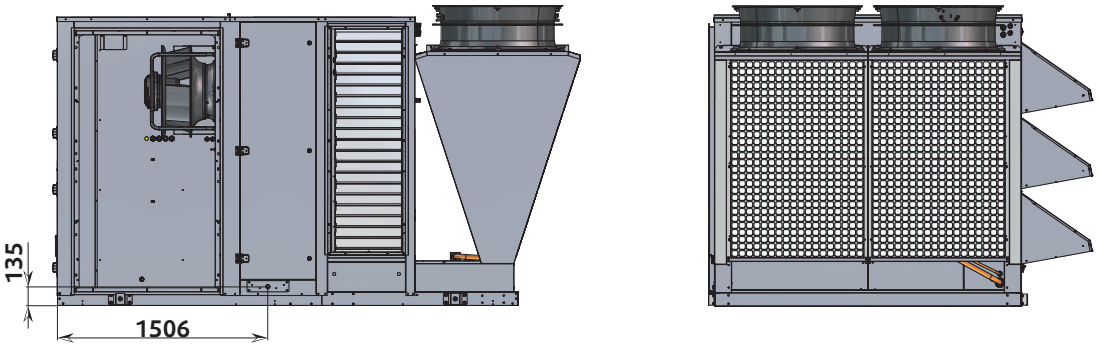
DIMENSIONS
DIMENSIONS
ABMESSUNGEN
DIMENSIONI
DIMENSIONES

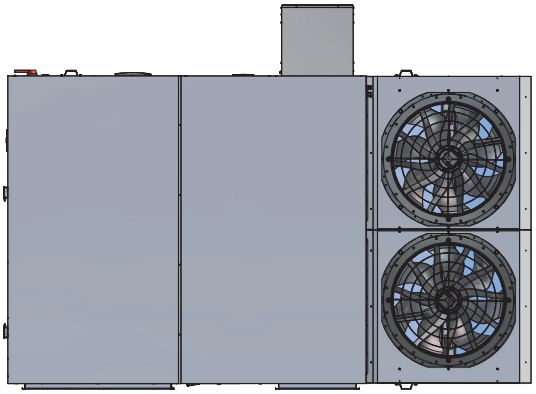
SYSAER SR R32 105 - SR R32 120 - SR R32 140

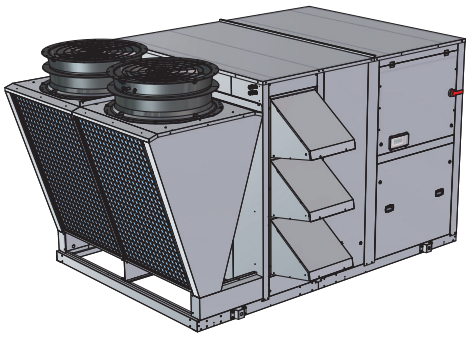
BASE MODULE / BASE MODULE WITH 2 DAMPERS



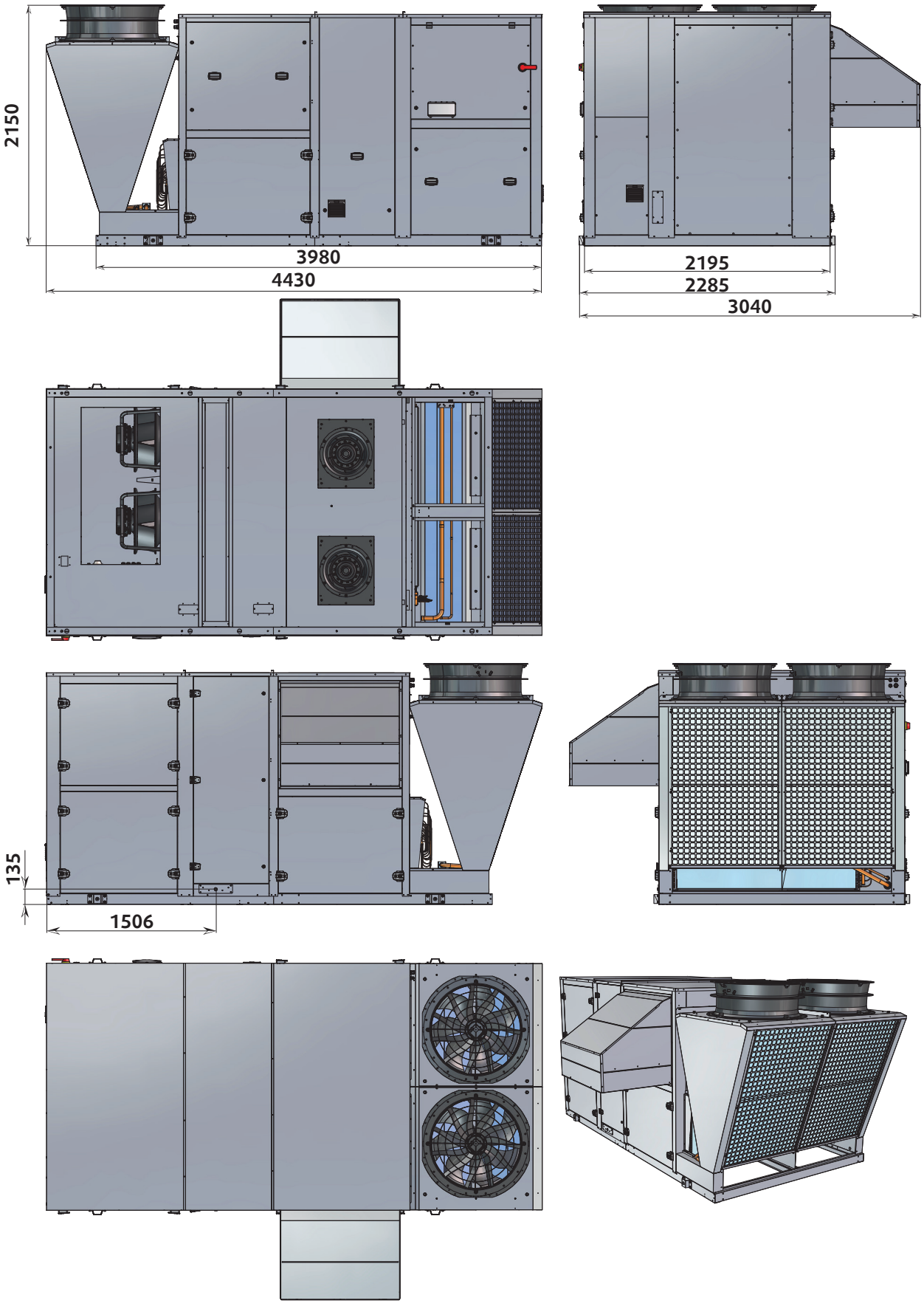




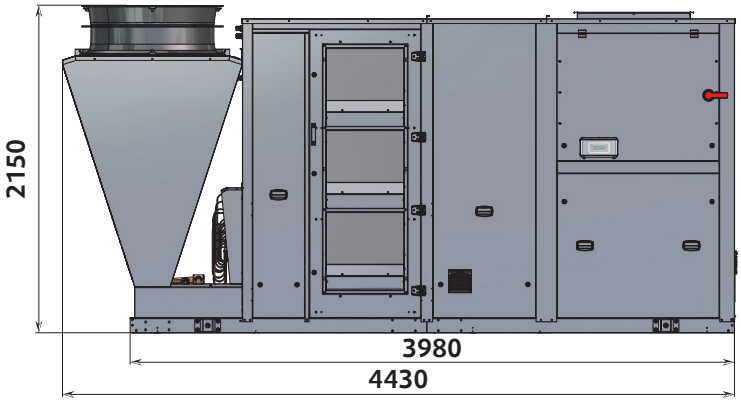


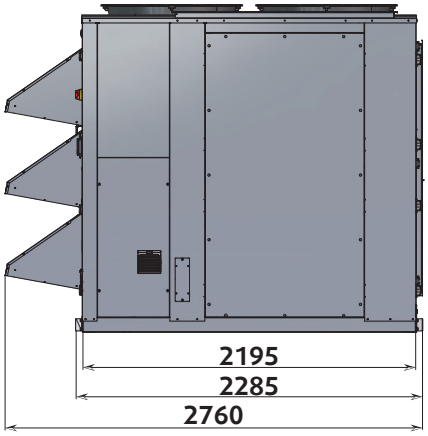


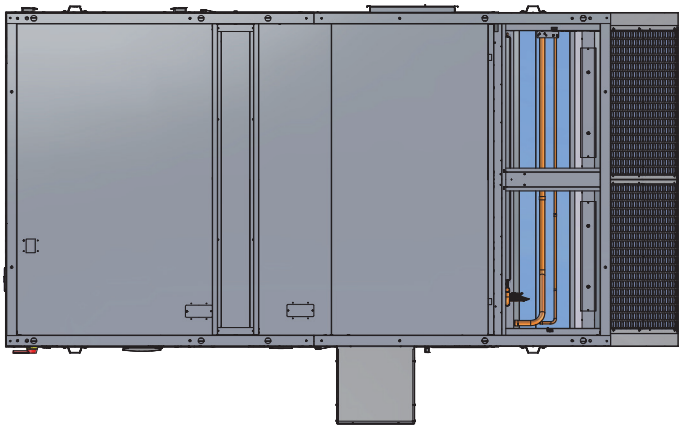
BASE MODULE R1 WITH 3 DAMPERS

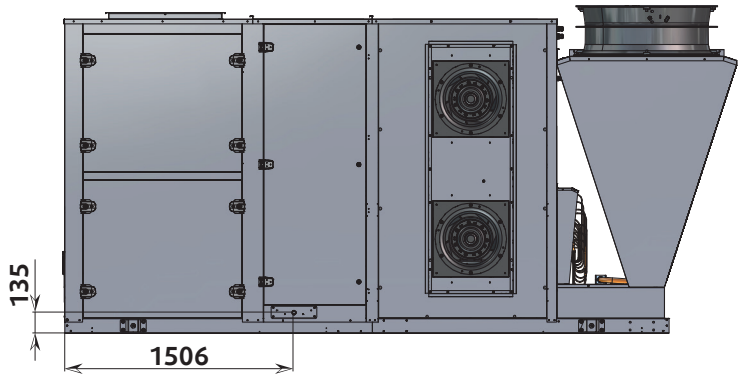


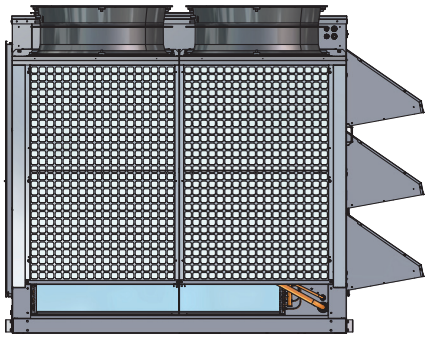
BASE MODULE R2 WITH 3 DAMPERS

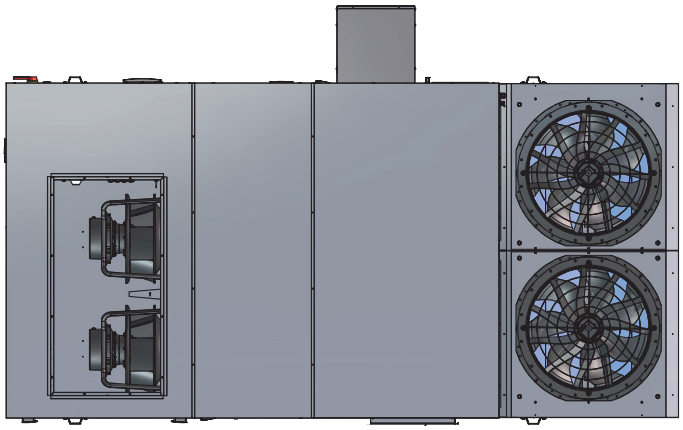


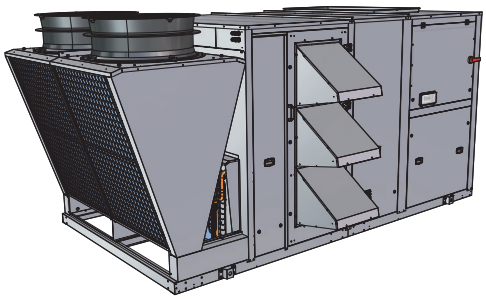




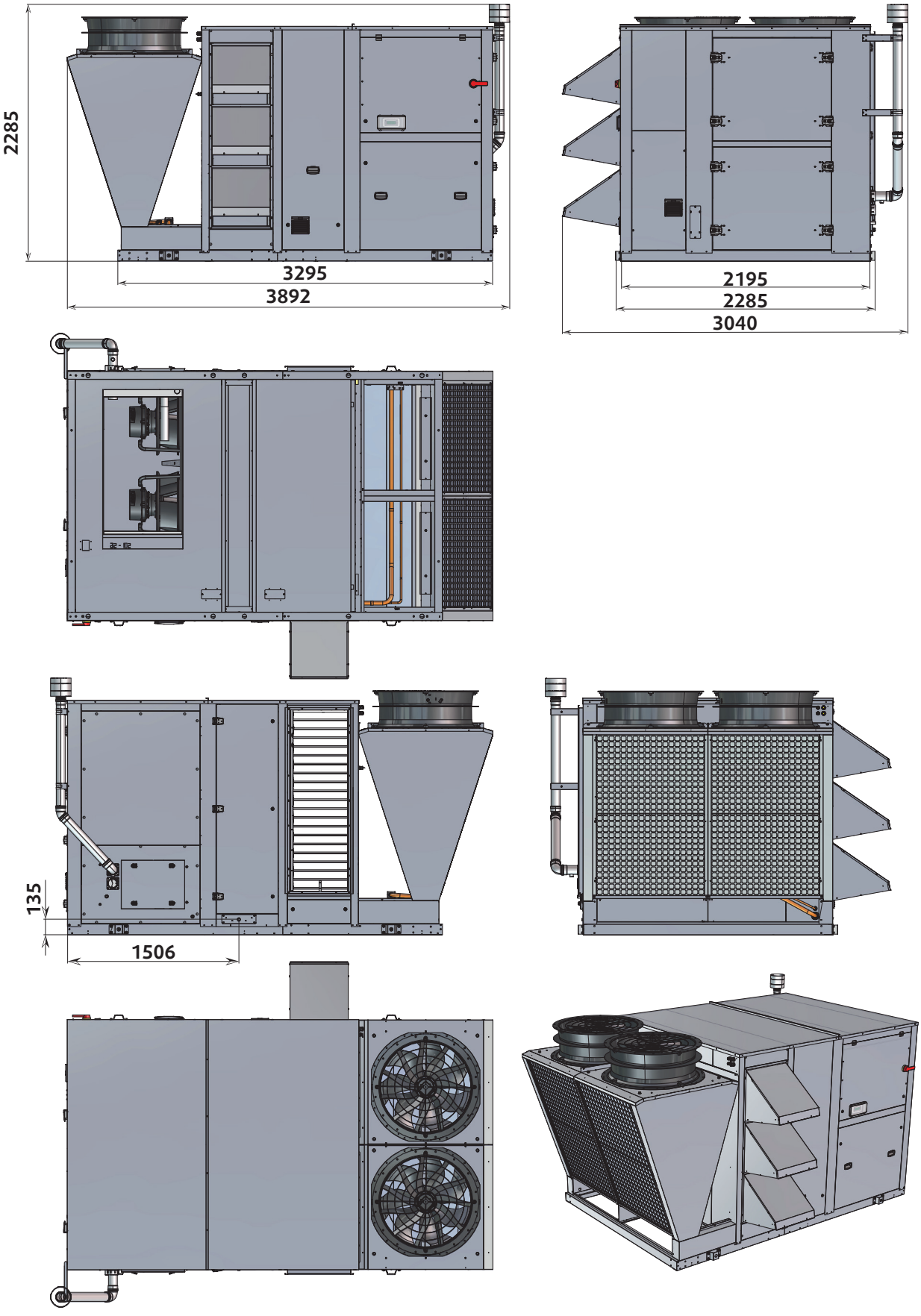




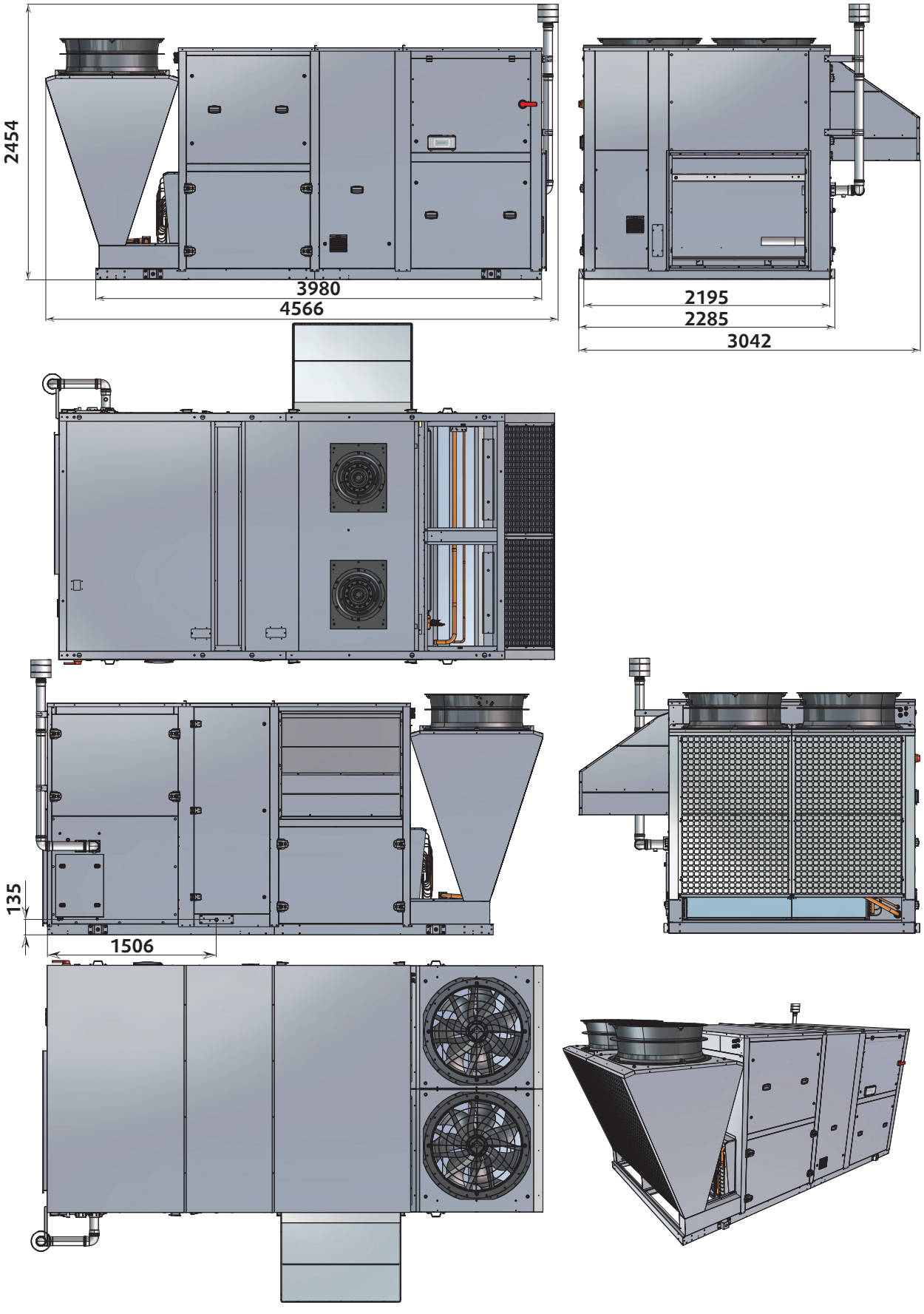




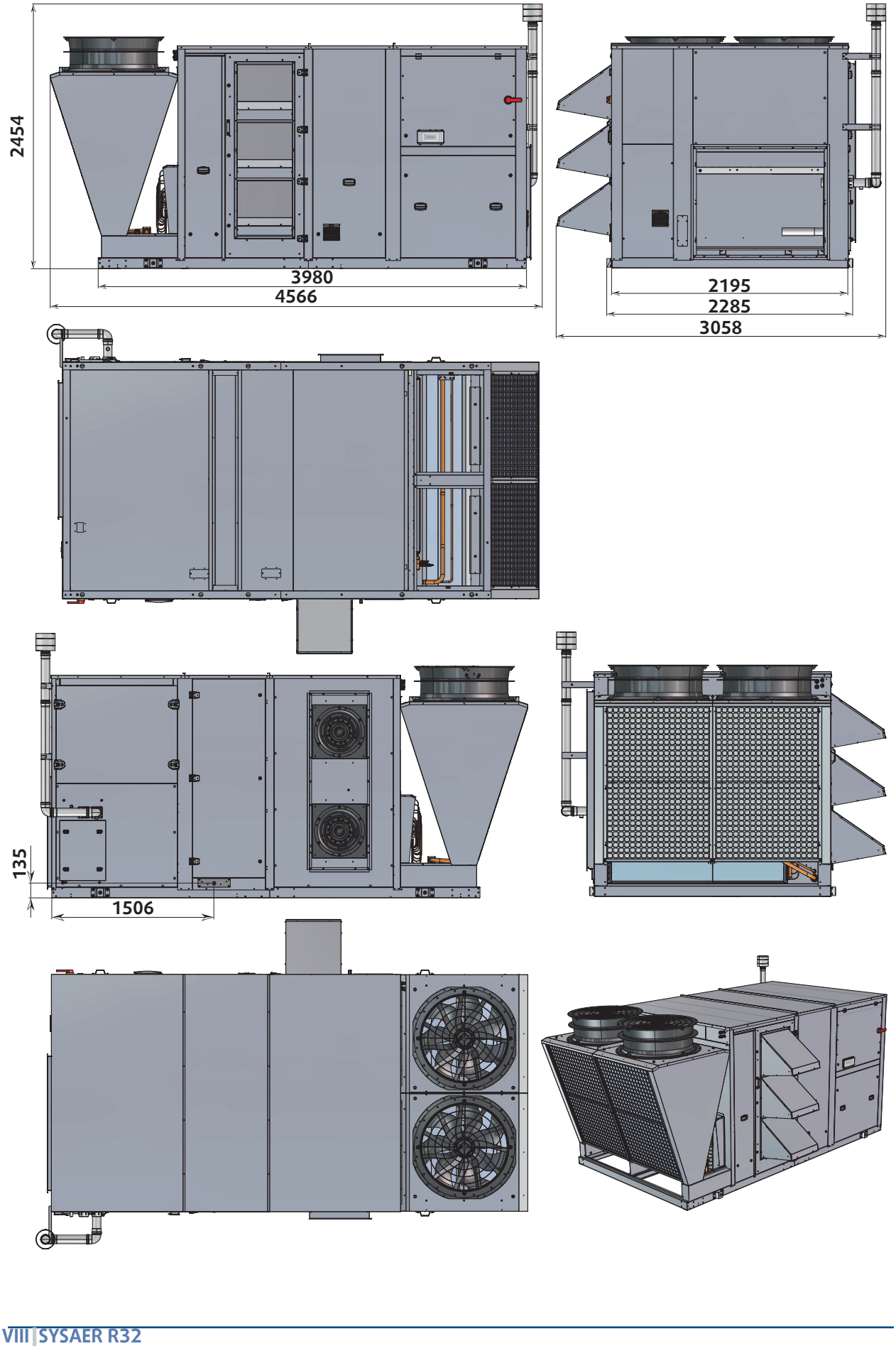
BASE MODULE WITH 2 DAMPERS AND GAS BURNER



BASE MODULE R1 WITH 3 DAMPERS AND GAS BURNER

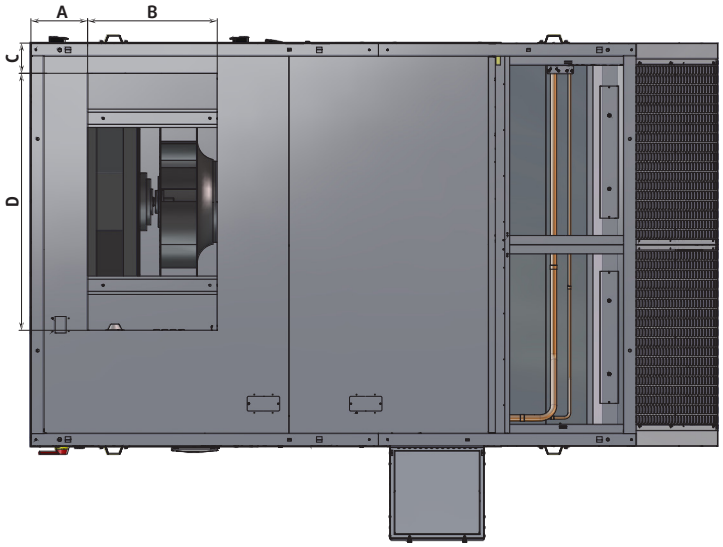


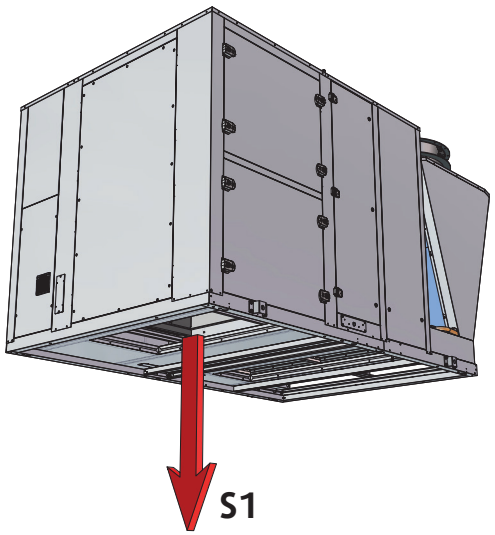
BASE MODULE R2 WITH 3 DAMPERS AND GAS BURNER



DUCT OUTLET DIMENSIONS
DIMENSIONS DEPART DE GAINES
ABMESSUNGEN DER KANALABGÄNGE
DIMENSIONI DELLE USCITE DI CONDOTTA
DIMENSIONES DE LAS SALIDAS DE CONDUCTOS

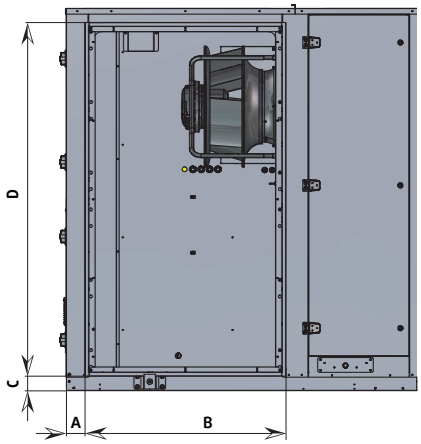
S1

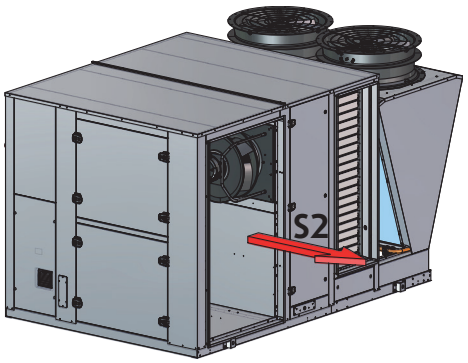


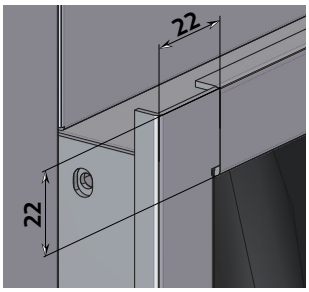


		SR R32 105	SR R32 120	SR R32 140
A	mm	310	310	310
B	mm	705	705	705
C	mm	164	164	164
D	mm	1 400	1 400	1 400

S2



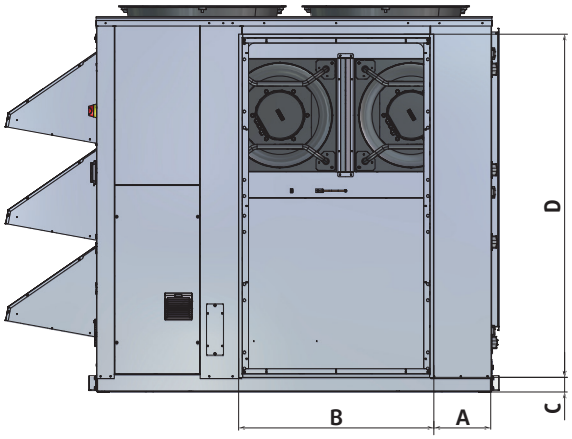


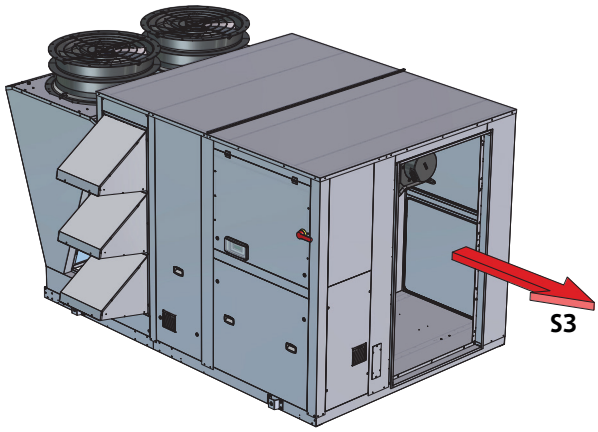


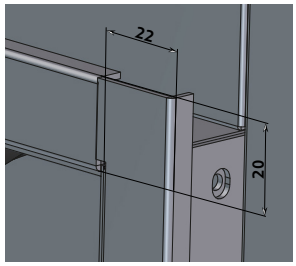
		SR R32 105	SR R32 120	SR R32 140
A	mm	100	100	100
B	mm	1 087	1 087	1 087
C	mm	78	78	78
D	mm	1 910	1 910	1 910

S3

WITHOUT GAS BURNER

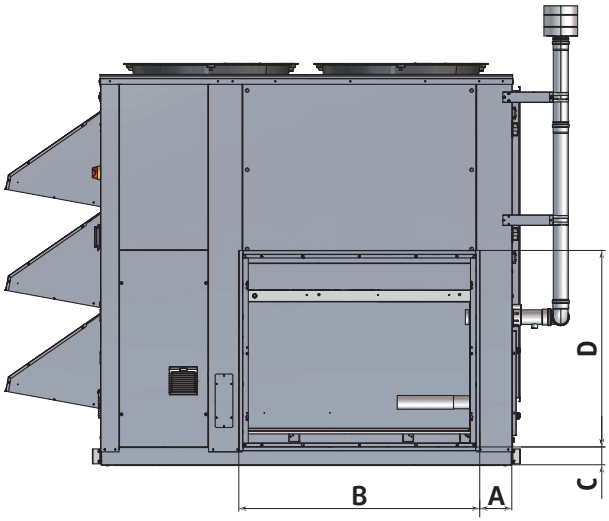


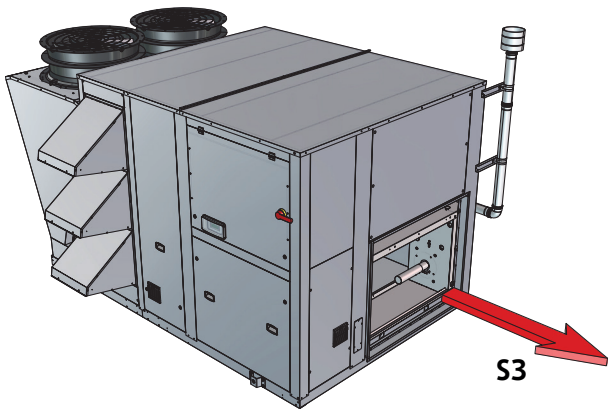


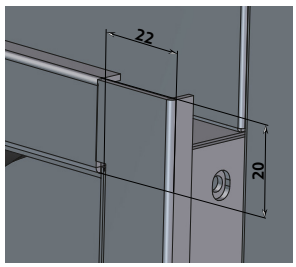


		SR R32 105	SR R32 120	SR R32 140
A	mm	320	320	320
B	mm	1 086	1 086	1 086
C	mm	77	77	77
D	mm	1 911	1 911	1 911

WITH GAS BURNER

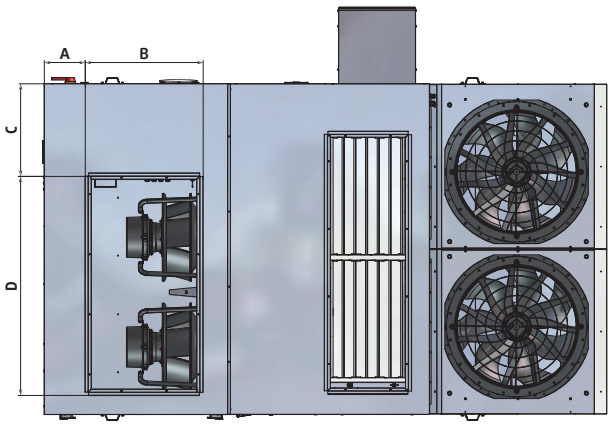


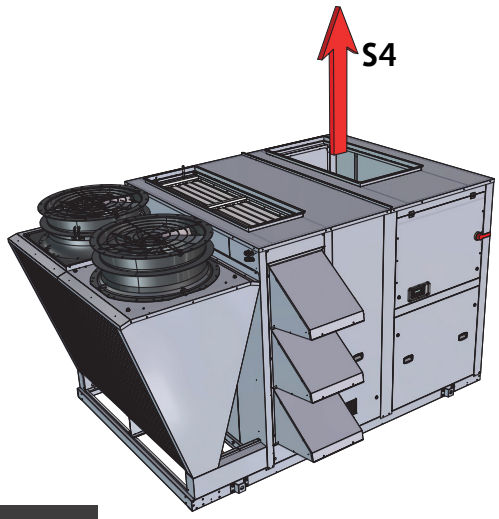


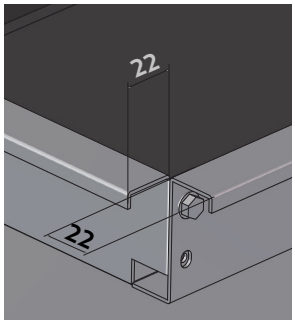


		SR R32 105	SR R32 120	SR R32 140
A	mm	172	172	172
B	mm	1 287	1 287	1 287
C	mm	77	77	77
D	mm	1 069	1 069	1 069

S4



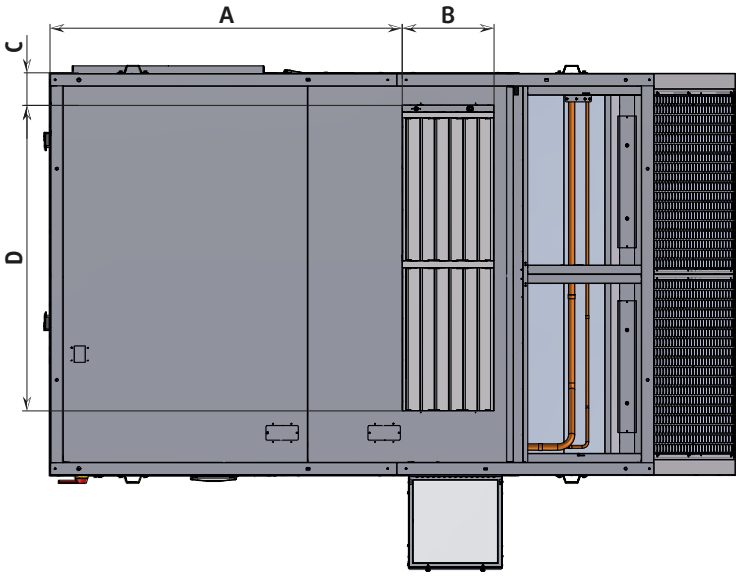


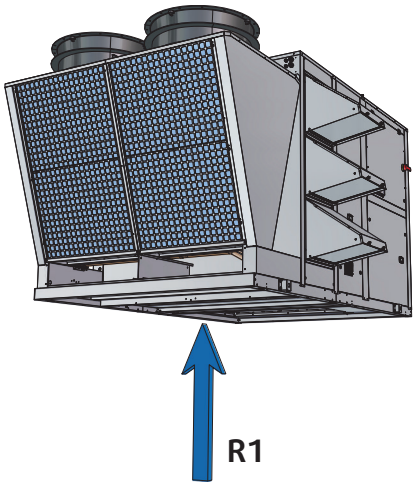


		SR R32 105	SR R32 120	SR R32 140
A	mm	272	272	272
B	mm	786	786	786
C	mm	595	595	595
D	mm	1 481	1 481	1 481

R1

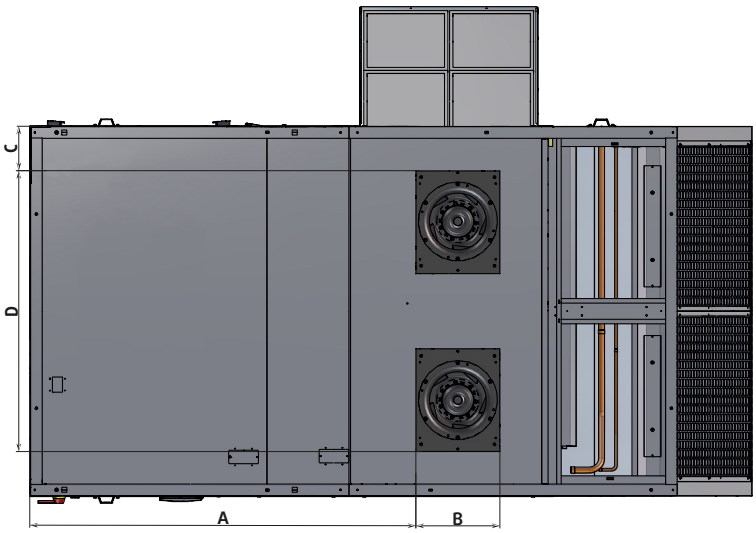
BASE MODULE OR 2 DAMPERS

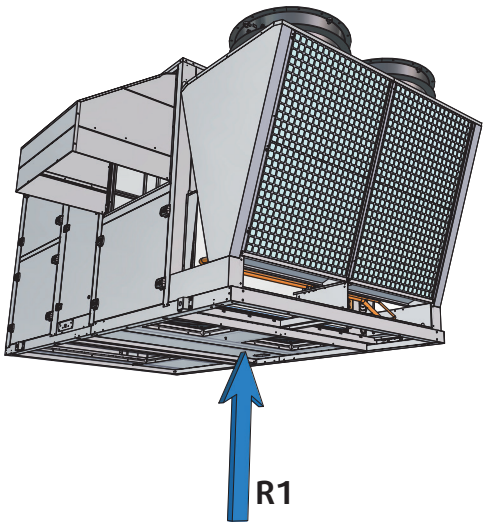




		SR R32 105	SR R32 120	SR R32 140
A	mm	1 924	1 924	1 924
B	mm	500	500	500
C	mm	173	173	173
D	mm	1 669	1 669	1 669

3 DAMPERS

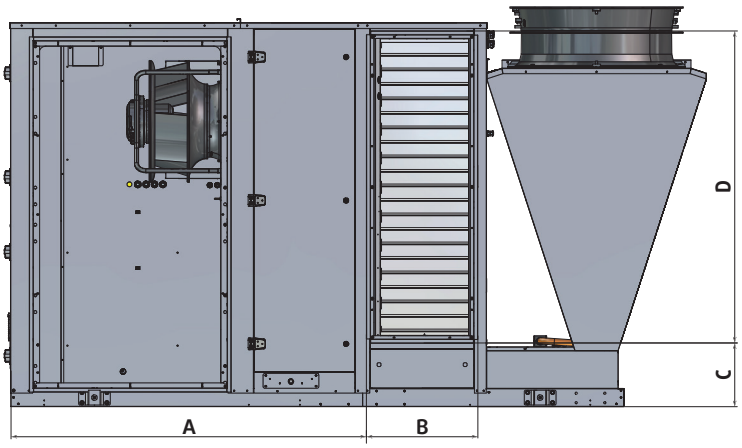


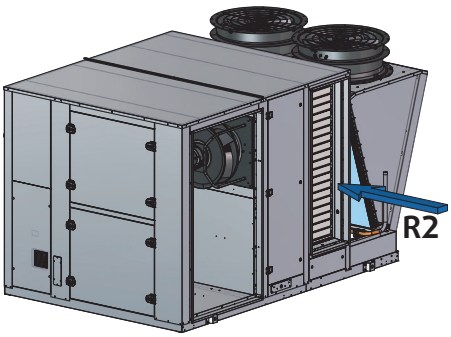


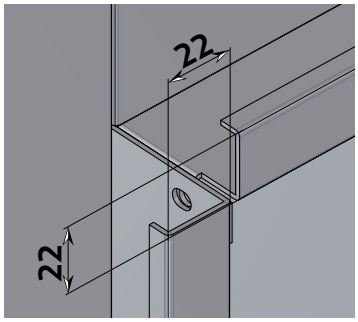
		SR R32 105	SR R32 120	SR R32 140
A	mm	2 420	2 420	2 420
B	mm	500	500	500
C	mm	271	271	271
D	mm	1 651	1 651	1 651

R2

BASE MODULE OR 2 DAMPERS

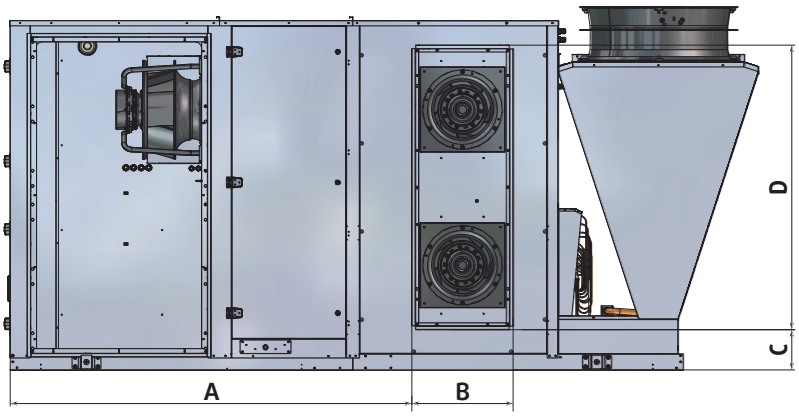


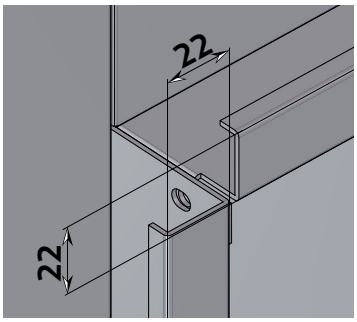




		SR R32 105	SR R32 120	SR R32 140
A	mm	1 915	1 915	1 915
B	mm	599	599	599
C	mm	341	341	341
D	mm	1 680	1 680	1 680

3 DAMPERS

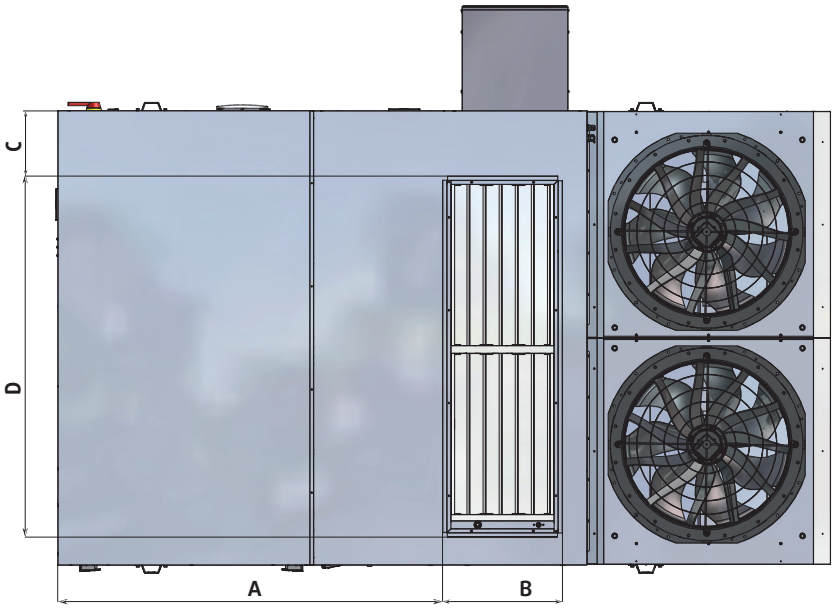


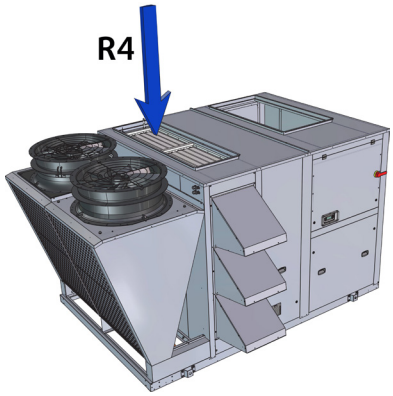


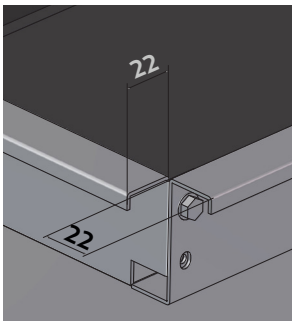
		SR R32 105	SR R32 120	SR R32 140
A	mm	2 370	2 370	2 370
B	mm	599	599	599
C	mm	240	240	240
D	mm	1 680	1 680	1 680

R4

BASE MODULE OR 2 DAMPERS





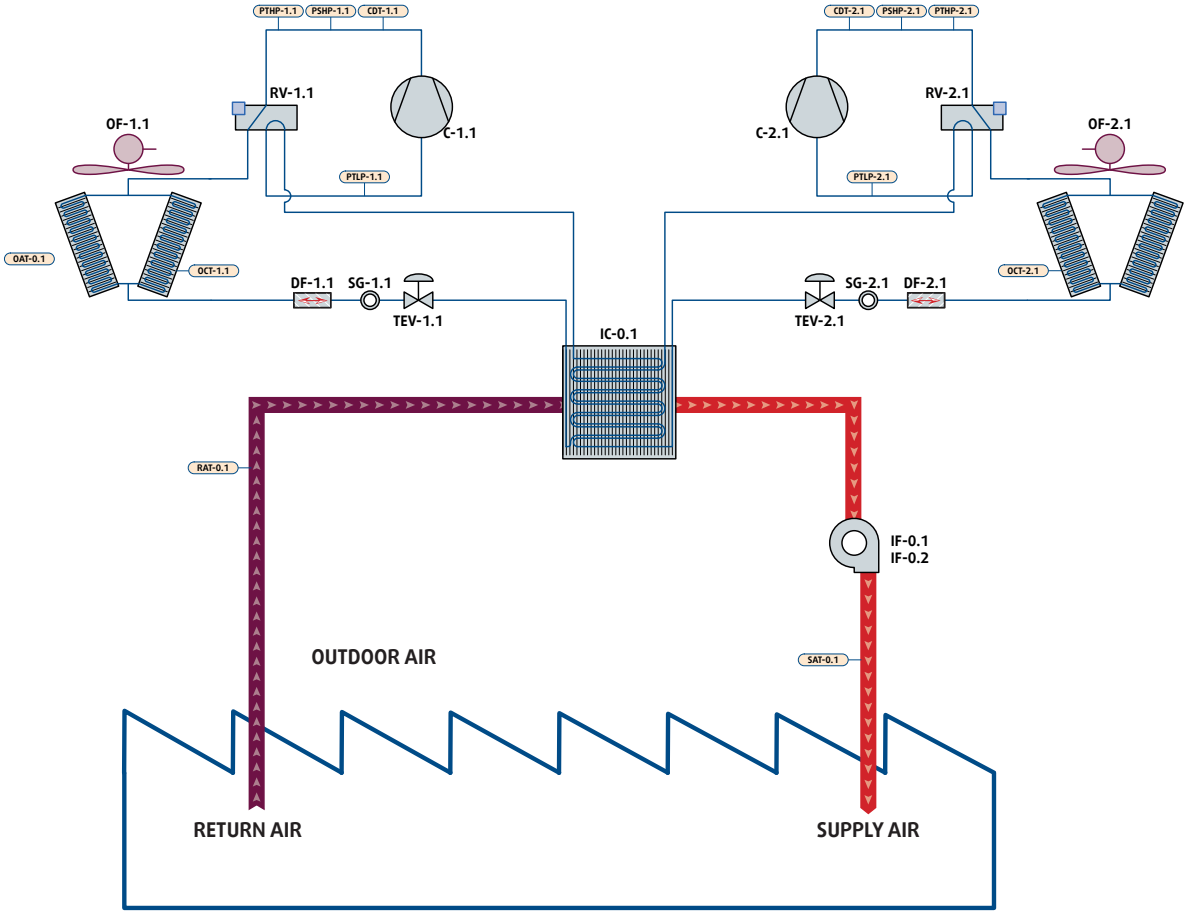


		SR R32 105	SR R32 120	SR R32 140
A	mm	1 865	1 865	1 865
B	mm	581	581	581
C	mm	316	316	316
D	mm	1 750	1 750	1 750

REFRIGERANT CIRCUIT DIAGRAM
SCHEMA DU CIRCUIT FRIGORIFIQUE
KÄLTEKREISLAUFDIAGRAMM
SCHEMA DEL CIRCUITO REFRIGERANTE
ESQUEMA DEL CIRCUITO FRIGORIFÍCO

	English	Français	Deutsch	Italiano	Español
REPERE	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESIGNACIÓN
C-1.1 / C-1.2 C-2.1 / C-2.2	Compressor	Compresseur	Verdichter	Compressore	Compresor
RV-1.1 / RV-2.1	Cycle reversal valve	Vanne d'inversion de cycle	Zyklusumschaltventil	Valvola inversione di ciclo	Válvula de inversión del ciclo
OF-1.1 / OF-1.2 OF-2.1 / OF-2.2	Outside fans	Ventilateurs extérieurs	Außenventilatoren	Ventilatori esterni	Ventiladores exteriores
DF-1.1 / DF-2.1	Dehydrating filter	Filtre déshydrateur	Filtertrockner	Filtro essiccatore	Filtro deshidratador
SG-1.1 / SG-2.1	Liquid light	Voyant liquide	Kontrollleuchte Flüssigkeit	Spia del liquido	Indicador de líquido
TEV-1.1 / TEV-2.1	Pressure reducing valve Thermostatic (SR R32 105 to SR R32 140)	Détendeur thermostatique (SR R32 105 to SR R32 140)	Expansionsventil Thermostatisches (SR R32 105 to SR R32 140)	Riduttore di pressione termostatico (SR R32 105 to SR R32 140)	Válvula de expansión termostático (SR R32 105 to SR R32 140)
IC-0.1	Internal coil (evaporator)	Batterie interne (evporateur)	Internes Heizregister (Verdampfer)	Batteria interna (evaporatore)	Batería interna (evaporador)
CDT-1.1 / CDT-2.1	Backflow temperature	Température de refoulement	Rücklauftemperatur	Temperatura di mandata	Temperatura de retorno
PSH-1.1 / PSH-2.1	High pressure switch	Pressostat haute pression	Hochdruckregler	Pressostato di alta pressione	Presostato de alta presión
OCT-1.1 / OCT-2.1	Condenser temperature	Température condenseur	Kondensatortemperatur	Temperatura condensatore	Temperatura del condensador
PTHP-1.1 / PTHP-2.1	High pressure sensor	Capteur haute pression	Hochdrucksensor	Sensore di alta pressione	Sensor de alta presion
PTLP-1.1 / PTLP-2.1	Low pressure sensor	Capteur basse pression	Niederdrucksensor	Sensore bassa pressione	Sensor de baja presión
IF-0.1 / IF-0.2	Blast fans	Ventilateurs de soufflage	Strahlventilatoren	Ventilatori a getto	Ventiladores de soplado
RF-0.1 / RF-0.2	Extraction fans	Ventilateurs d'extraction	Abluftventilatoren	Ventilatori aspiranti	Ventiladores de extracción
RAD-0.1	Air return damper	Registre air repris	Rückluftklappe	Registro aria di recupero	Registro de aire de retorno
OAD-0.1	Fresh air damper	Registre air neuf	Frischluftklappe	Registro aria fresca	Registro de aire nuevo
EAD-0.1	Extracted air damper	Registre air extrait	Abluftklappe	Registro aria estratta	Registro de aire extraído
RAT-0.1	Air return temperature	Température air repris	Rücklufttemperatur	Temperatura aria di recupero	Temperatura del aire de retorno
RAH-0.1	Air return hygrometry	Hygrométrie air repris	Rückluftfeuchtigkeit	Igrometria aria di recupero	Humedad del aire de retorno
VOC/CO2-0.1	Air quality sensor	Sonde de qualité de l'air	Luftqualitätsmesser	Sonda della qualità dell'aria	Sonda de calidad del aire
OAH-0.1	Outside air hygrometry	Hygrométrie air extérieur	Außenluftfeuchtigkeit	Igrometria aria esterna	Humedad del aire exterior
OAT-0.1	Outside air temperature	Température air extérieur	Außentemperatur	Temperatura aria esterna	Temperatura del aire exterior
MAT-0.1	Temperature of air mix before coil	Température de mélange d'air avant batterie	Mischlufttemperatur vor dem Heizregister	Temperature della miscela d'aria prima della batteria	Temperatura de la mezcla de aire antes de la batería
SAT-0.1	Blast air temperature	Température air de soufflage	Strahllufttmperatur	Temperatura aria di ventilazione forzata	Temperatura del aire de soplado
FA-0.1	Automatic reset heating safety thermostat	Thermostat chauffage réarmement automatique	Heizthermostat mit automatischer Wiedereinschaltvorrichtung	Termostato riscaldamento a ripristino automatico	Termostato de calefacción con restablecimiento automático
FM-0.1	Manual reset heating safety thermostat	Thermostat chauffage réarmement manuel	Heizthermostat mit manueller Wiedereinschaltvorrichtung	Termostato riscaldamento a ripristino manuale	Termostato de calefacción con restablecimiento manual

SR R32 105 - SR R32 120 - SR R32 140



WIRING DIAGRAM
SCHEMAS ELECTRIQUES
STROMLAUFPLANS
SCHEMA ELETRICO
ESQUEMA ELECTRICO

TAKE CARE!

These wiring diagrams are correct at the time of publication. Manufacturing changes can lead to modifications. Always refer to the diagram supplied with the product.

ATTENTION

Ces schémas sont corrects au moment de la publication. Les variantes en fabrication peuvent entraîner des modifications. Reportez-vous toujours au schéma livré avec le produit.

ACHTUNG!

Diese Stromlaufplans sind zum Zeitpunkt der Veröffentlichung gültig. In Herstellung befindliche Varianten können Änderungen mit sich bringen. In jedem Fall den mit dem Produkt gelieferten Stromlaufplan hinzuziehen.

ATTENZIONE !

Questi schemi sono corretti al momento della pubblicazione. Le varianti apportate nel corso della fabbricazione possono comportare modifiche. Far sempre riferimento allo schema fornito con il prodotto.

ATENCIÓN !

Esto esquemas son correctos en el momento de la publicación. Pero las variantes en la fabricación pueden ser motivo de modificaciones. Remítase siempre al esquema entregado con el producto.

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOXES!

MISE HORS TENSION OBLIGATOIRE AVANT TOUTE INTERVENTION DANS LES BOITIERS ELECTRIQUES.

VOR JEDEM EINGRIFF AN DEN ANSCHLUßKÄSTEN UNBEDINGT DAS GERÄT ABSCHALTEN!

PRIMA DI OGNI INTERVENTO SULLE CASSETTE ELETTRICHE ESCLUDERE TASSATIVAMENTE L'ALIMENTAZIONE !

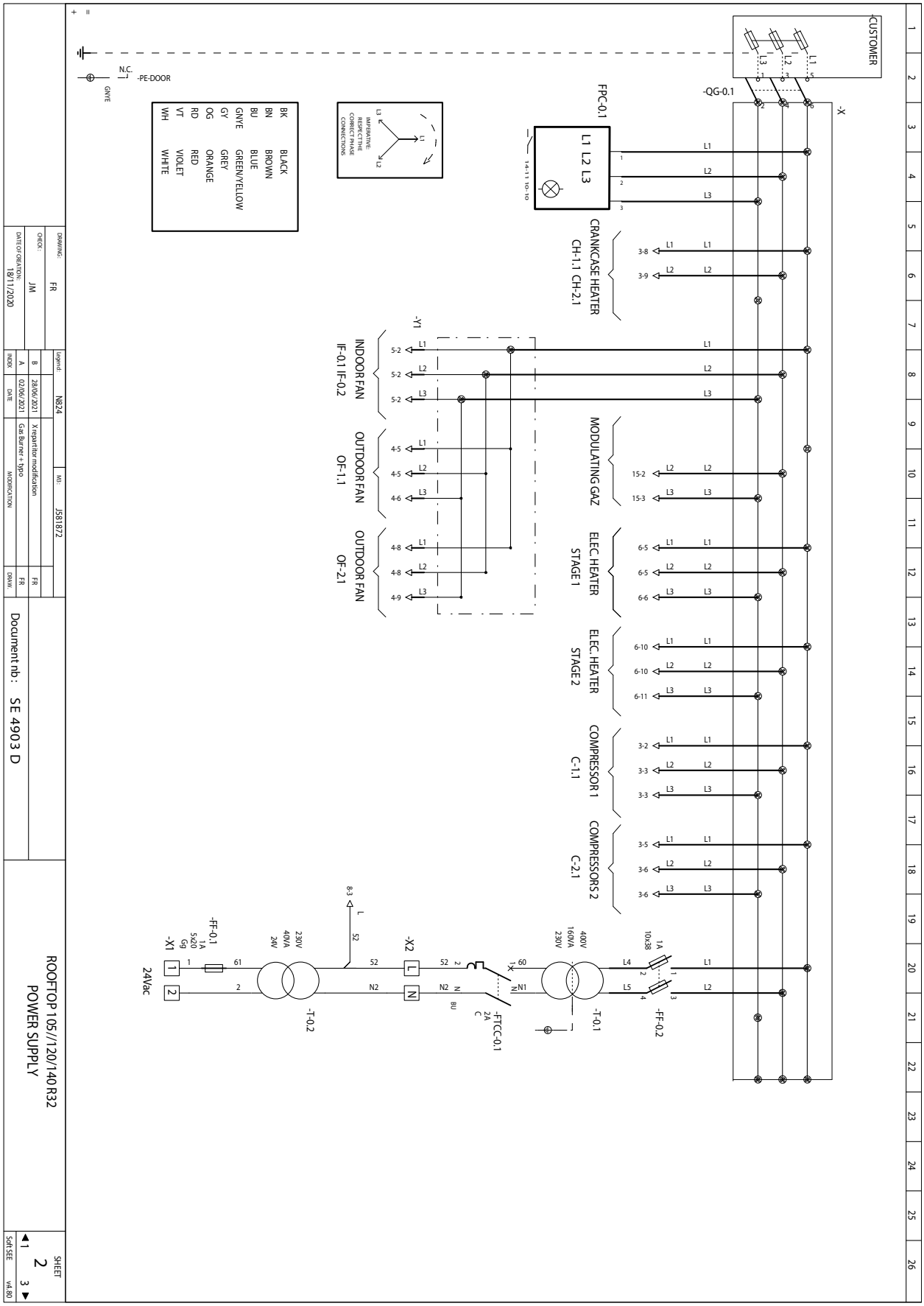
PUESTA FUERA DE TNESIÓN OBLIGATORIA ANTES DE CUALQUIER INTERVENCIÓN EN LAS CAJAS ELÉCTRICAS!

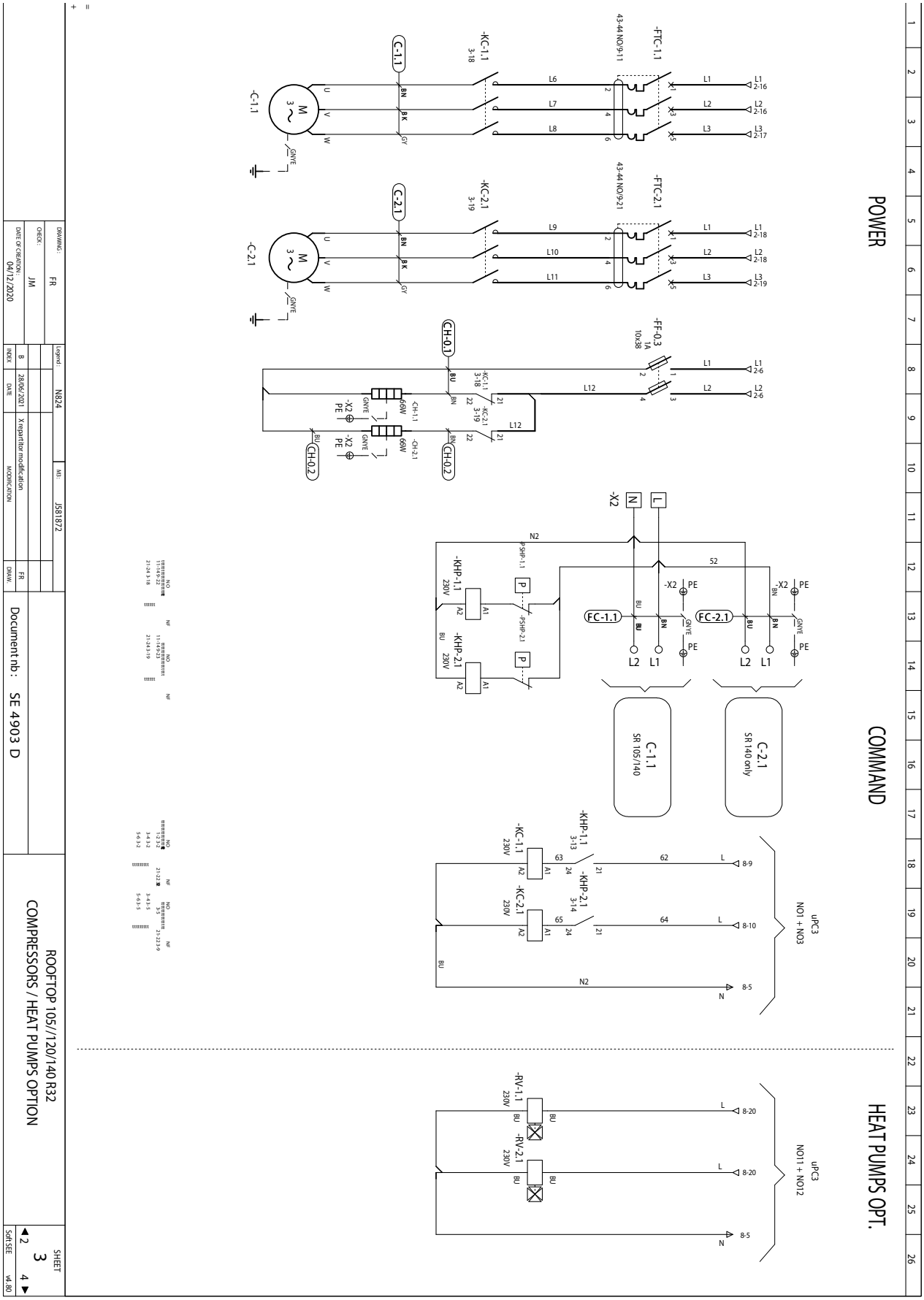
	English	Français	Deutsch	Italiano	Español
REPERE	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESCRIPCIÓN
C-1.1 / 1.2	Compressors 1 and 2 of circuit 1	Compresseurs 1 et 2 du circuit 1	Verdichter 1 und 2 Kreislauf 1	Compressori 1 e 2 del circuito 1	Compresores 1 y 2 del circuito 1
C-2.1 / 2.2	Compressors 1 and 2 of circuit 2	Compresseurs 1 et 2 du circuit 2	Verdichter 1 und 2 Kreislauf 2	Compressori 1 e 2 del circuito 2	Compresores 1 y 2 del circuito 2
CDT-1.1/2.1	Backflow temperature sensor	Sonde de température de refoulement	Rücklauftemperaturfühler	Sonda temperatura di mandata	Sonda de temperatura de retorno
CH-1.1 / 2.1	Compressor carter resistors	Résistances de carter des compresseurs	Kurbelgehäuseheizung Verdichter	Resistenze del carter dei compressori	Resistencias de cárter de los compresores
CO2-0.1	Air quality sensor, CO2 returned air (option)	Sonde de qualité de l'air, CO2 air repris (option)	Luftqualitätsmesser, CO2 Rückluft (Option)	Sonda della qualità dell'aria, CO2 aria di recupero (optional)	Sonda de calidad del aire, CO2 aire de retorno (opcional)
EH-0.1	Heating resistors	Résistances de chauffages	Heizwiderstände	Resistenze di riscaldamento	Resistencias de calefacción
EM-0.1	Energy Meter	Compteur d'Energie	Energiemessgerät	Contatore di energia	Medidor de energía
FA-0.1	Automatic reset heating safety thermostat (option)	Thermostat de sécurité chauffage à réarmement automatique (option)	Sicherheitsthermostat Heizung mit automatischer Wiedereinschaltvorrichtung (Option)	Termostato di sicurezza riscaldamento a ripristino automatico (optional)	Termostato de seguridad de calefacción con restablecimiento automático (opcional)
FC-1.1	Internal safety compressor C-1.1 (SR105/SR120/SR140) compressor C-1.1 (SR210)	Sécurité interne compresseur C1.1 (SR105/SR120/SR140) compresseur C1.1 (SR210)	Interne Sicherheit Verdichter C1.1 (SR105/SR120/SR140) Verdichter C1.1 (SR210)	Sicurezza interna compressore C1.1 (SR105/SR120/SR140) compressore C1.1 (SR210)	Seguridad interna del compresor C1.1 (SR105/SR120/SR140) compresor C1.1 (SR210)
FC-2.1	Internal safety compressor C-1.2 (SR120/SR140)	Sécurité interne compresseur C1.2 (SR120/SR140)	Interne Sicherheit Verdichter C1.2 (SR120/SR140)	Sicurezza interna compressore C1.2 (SR120/SR140)	Seguridad interna del compresor C1.2 (SR120/SR140)
FF-0.1/0.2/...	Fuse terminal + fuse	Borne fusible + fusible	Sicherungsklemme + Sicherung	Morsetto fusibile + fusibile	Terminal del fusible + fusible
FM-0.1	Manual reset heating safety thermostat (option)	Thermostat de sécurité chauffage à réarmement manuel (option)	Sicherheitsthermostat Heizung, manuelle Rückstellvorrichtung (Option)	Termostato di sicurezza riscaldamento a ripristino manuale (optional)	Termostato de seguridad de calefacción con restablecimiento manual (opcional)
FPC-0.1	Tri-phase network control relay (order and shutoff of phases) + default contact	Relais de contrôle réseau triphasé (ordre et coupure de phases) + contact de défaut	Steuerrelais Dreiphasennetz (Phasenanschnitt und Phasenabschnitt) + Störungskontakt	Relè di comando rete trifase (avvio e arresto potenza) + Contatto di default	Relé de control de red trifásica (orden y apagado de fases) + Contacto de fallo
FTC-1.1/2.1	Compressor thermal magnetic breakers + additional contacts	Disjoncteurs magnétothermiques des compresseurs + contact additionnels	Thermomagnetische Schutzschalter der Verdichter + Zusätzliche Kontakte	Interruttori magnetotermici dei compressori + Contatti aggiuntivi	Disyuntores magnetotérmicos de los compresores + contactos adicionales
FTCC-0.1	Control circuit magnetic breaker	Disjoncteur magnétique du circuit de commande	Magnetischer Schutzschalter Steuerkreis	Interruttore magnetico del circuito di comando	Disyuntor magnético del circuito de control
FTEH-0.1/0.2	Magnetic breakers for heating elements (option) + additional contacts	Disjoncteurs magnétiques des éléments chauffants (option) + contact additionnels	Magnetische Schutzschalter der Heizelemente (Option) + Zusätzliche Kontakte	Interruttori magnetici degli elementi riscaldanti (optional) + Contatti aggiuntivi	Disyuntores magnéticos de los elementos calefactores (opcional) + contactos adicionales
FTGB-0.1	Gas burner protection circuit	Circuit de protection du brûleur à gaz	Schutzschaltung für Gasbrenner	Circuito di protezione del bruciatore a gas	Circuito de protección del quemador de gas
FTIF-0.1	Magnetic breaker for blast fans + additional contacts	Disjoncteur magnétique de la ventilation de soufflage + contact additionnels	Magnetischer Schutzschalter Strahlventilator + Zusätzliche Kontakte	Interruttore magnetico ventilazione forzata + Contatti aggiuntivi	Disyuntor magnético de ventiladores de soplado + contactos adicionales
FTOF-1.1/2.1	Magnetic thermal breakers for outside fans + additional contacts	Disjoncteurs magnétothermiques des ventilations extérieures + contact additionnels	Thermomagnetische Schutzschalter Außenventilatoren + Zusätzliche Kontakte	Interruttori magnetotermici delle ventilazioni esterne + Contatti aggiuntivi	Disyuntores magnetotérmicos de los ventiladores exteriores + contactos adicionales
FTPC-0.1	30mA circuit breaker for modem socket	Disjoncteur 30mA prise modem	30mA-Schutzschalter für Modembuchse	Interruttore 30mA per presa modem	Disyuntor de 30mA para la toma del módem
GB-0.1	Gas module	Module gas	Gas-Modul	Modulo gas	Módulo de gas

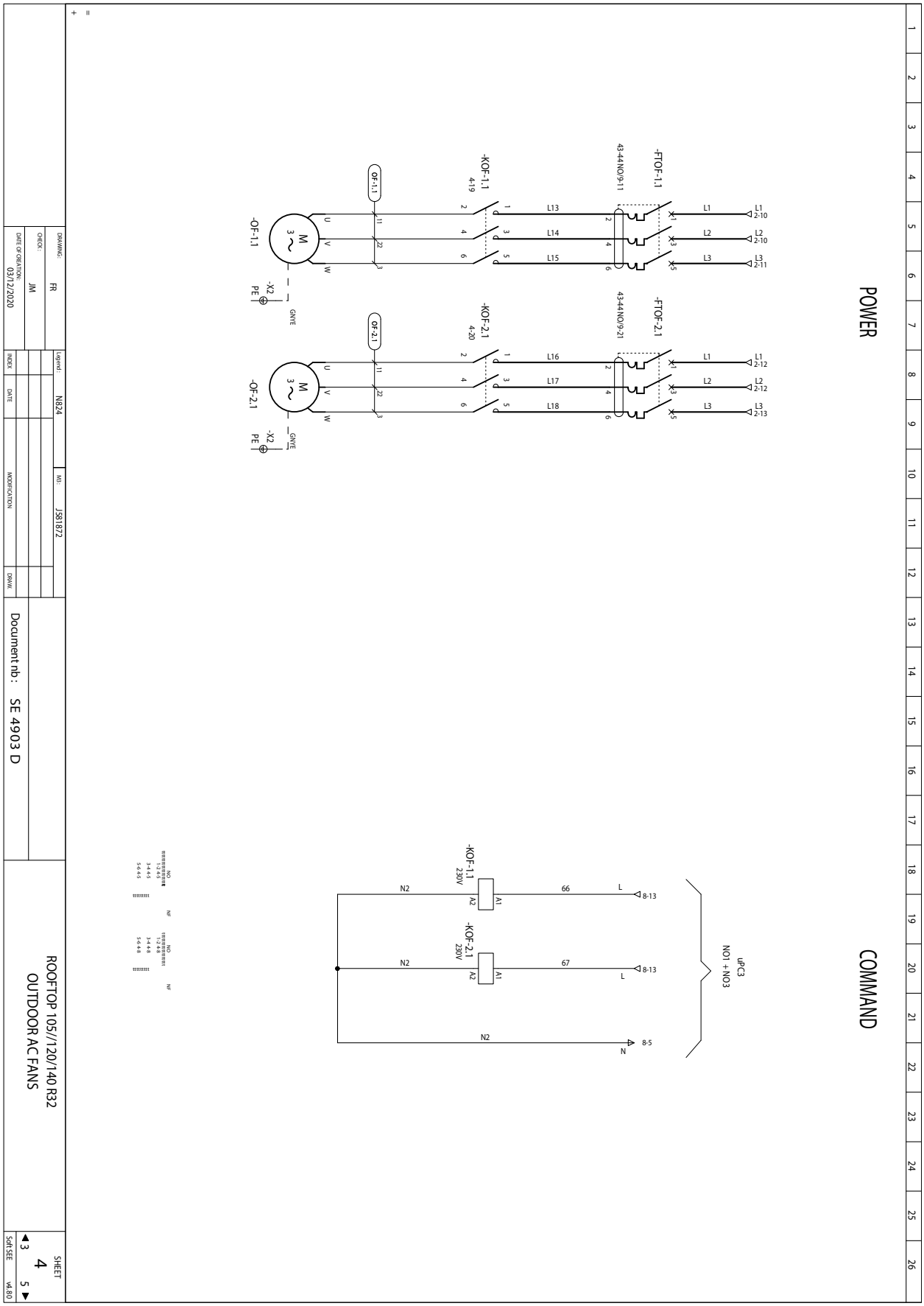
	English	Français	Deutsch	Italiano	Español
REPERE	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESCRIPCIÓN
IF-0.1/0.2	Blast fan motor + default contact	Moteur de la ventilation de soufflage + contact de défaut	Motor des Strahlventilators + Störungskontakt	Motore della ventilazione forzata + Contatto di default	Motor de la ventilación de soplado + Contacto de fallo
KC-1.1/2.1	Compressor power contactors	Contacteurs de puissance des compresseurs	Leistungsschütze der Verdichter	Contattori di potenza dei compressori	Contactores de potencia de los compresores
KEH-0.1/0.2	Power contactors for heating elements (option)	Contacteurs de puissance des éléments chauffants (option)	Leistungsschütze Heizelemente (Option)	Contattori di potenza degli elementi riscaldanti (optional)	Contactores de potencia de los elementos calefactores (opcional)
KFA-0.1	Relay of automatic reset heating safety (option)	Relais de la sécurité chauffage à réarmement automatique (option)	Sicherheitsrelais Heizung mit automatischer Wiedereinschaltvorrichtung (Option)	Relè di sicurezza riscaldamento a ripristino automatico (optional)	Relé de seguridad de calefacción con restablecimiento automático (opcional)
KHP-1.1/2.1	High pressure security relay	Relais de sécurité haute pression	Hochdruck-Sicherheitsrelais	Relè di sicurezza alta pressione	Relé de seguridad de alta presión
GB-0.3	On/Off Gas burner contactor	Contacteur du brûleur à gaz marche/arrêt	Ein/Aus Gasbrennerschütz	Contattore On/Off del bruciatore a gas	Contactor de encendido/apagado del quemador de gas
KOF-1.1/2.1	Outdoor fan power contactors	Contacteurs de puissance des ventilations extérieures	Leistungsschütze Außenventilatoren	Contattori di potenza delle ventilazioni esterne	Contactores de potencia de los ventiladores exteriores
MT-0.1/0.2/0.3	Measuring torus for energy meter	Tores de mesure pour compteur d'énergie	Messtorus für Energiezähler	Toro di misura per contatore di energia	Toro de medición para el contador de energía
OAH-0.1	Hygrometry sensor, outdoor air (option)	Sonde d'hygrométrie, air extérieur (option)	Feuchtigkeitssensor, Außenluft (Option)	Sonda igrometrica, aria esterna (optional)	Sonda de humedad, aire exterior (opcional)
OAT-0.1	Temperature sensor, outdoor air	Sonde de température, air extérieur	Temperaturfühler, Außenluft	Sonda di temperatura, aria esterna	Sonda de temperatura, aire exterior
OCT-0.1 / 0.2	Circuit 1 and 2 condenser temperature sensor	Sonde de température condenseur circuits 1 et 2	Temperaturfühler Kondensator Kreislauf 1 und 2	Sonda di temperatura condensatore circuiti 1 e 2	Sonda de temperatura del condensador de los circuitos 1 y 2
OF-1.1/2.1	Outdoor fan motors	Moteurs des ventilations extérieures	Motor der Außenventilatoren	Motori dei ventilatori esterne	Motores de los ventiladores exteriores
ON/OFF	On/off switch (not supplied)	Interrupteur marche/arrêt (non fourni)	Ein/Aus-Schalter (nicht mitgeliefert)	Interruttore on/off (non in dotazione)	Interruptor de encendido/apagado (no suministrado)
pCOe	CAREL regulation extension	Extension régulation CAREL	Erweiterung CAREL-Regler	Estensione regolazione CAREL	Extensión de regulación CAREL
PC-0.1	230V electrical outlet	Prise électrique 230V	230V-Steckdose	Presa elettrica 230V	Toma de corriente de 230 V
PTHP-1.1 / 2.1	Circuit 1 and 2 high pressure sensors	Capteurs haute pression des circuits 1 et 2	Hochdrucksensoren Kreislauf 1 und 2	Sensori di alta pressione dei circuiti 1 e 2	Sensores de alta presión de los circuitos 1 y 2
PTLP-1.1 / 2.1	Circuit 1 and 2 low pressure sensors	Capteurs basse pression des circuits 1 et 2	Niederdrucksensoren Kreislauf 1 und 2	Sensori di bassa pressione dei circuiti 1 e 2	Sensores de baja presión de los circuitos 1 y 2
PSAF-0.1/0.2	Clogged filter alarm (option)	Alarme filtre encrassé (option)	Alarm, verstopfter Filter (Option)	Allarme filtro intasato (optional)	Alarma de filtro sucio (opcional)
PSHP-1.1/2.1	Circuit 1 and 2 auto reset high pressure pressure switch	Pressostats haute pression à réarmement automatique circuit 1 et 2	Hochdruckregler mit automatischer Wiedereinschaltvorrichtung, Kreislauf 1 und 2	Pressostati alta pressione a ripristino automatico circuito 1 e 2	Presostatos de alta presión con restablecimiento automático de los circuitos 1 y 2
PTIF-0.1	Blast fan pressure sensor	Capteur de pression pour ventilateur de soufflage	Drucksensor des Zuluftventilators	Sensore di pressione del ventilatore di alimentazione	Sensor de presión del ventilador de alimentación
PTRC-0.1	Pressure sensor for the R32 exhaust fan	Capteur de pression pour le ventilateur d'extraction R32	Drucksensor für den R32 Abluftventilator	Sensore di pressione per la ventola di scarico R32	Sensor de presión para el extractor del R32
QG-0.1	Main interrupter	Interrupteur principal	Hauptschalter	Interruttore principale	Interruptor principal

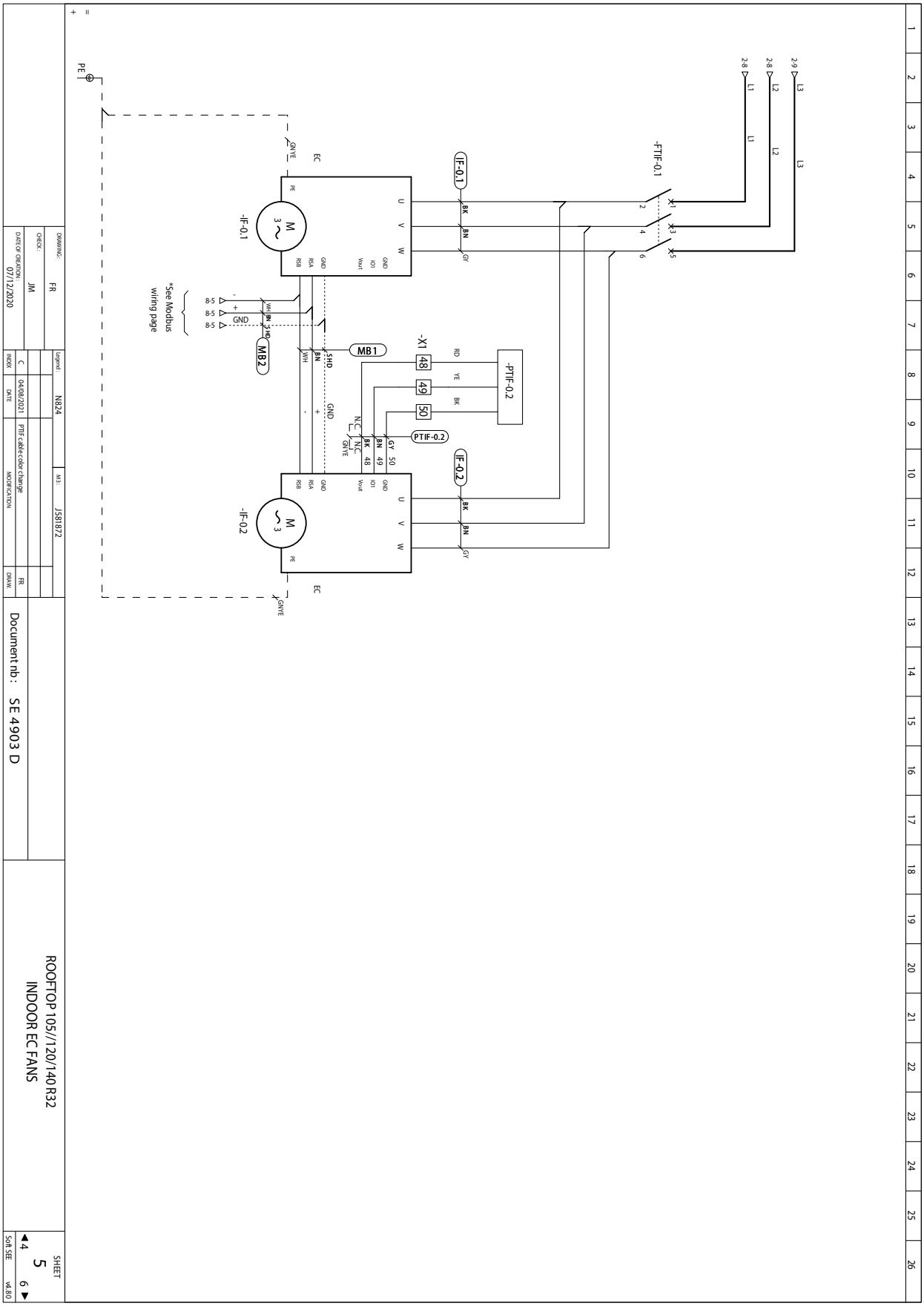
	English	Français	Deutsch	Italiano	Español
REPERE	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESCRIPCIÓN
RAD-0.1/OAD-0.1/EAD-0.1	Motor for return / fresh air / extracted air dampers (option)	Moteur des registres reprise / air neuf / air extrait (option)	Motoren der Lüftungsklappen Rückluft/Frischluft/Abluft (Option)	Motore dei registri aria di recupero/ aria fresca/aria estratta (optional)	Motor de registros de aire de retorno / aire nuevo / aire extraído (opcional)
RAH-0.1	Hygrometry sensor, returned air (option)	Sonde d'hygrométrie, air repris (option)	Feuchtigkeitssensor, Rückluft (Option)	Sonda igrometrica, aria di recupero (optional)	Sonda de humedad, aire de retorno (opcional)
RAT-0.1	Return air temperature sensor	Sonde de température air repris	Rücklufttemperaturfühler	Sonda di temperatura aria di recupero	Sonda de temperatura del aire de retorno
RC-0.1	R32 gas detection card	Carte de détection gas R32	R32-Gasmesskarte	Scheda di rilevamento gas R32	Tarjeta de detección de gases R32
RV-1.1/2.1	Cycle reversal valves, circuits 1 and 2 (option)	Vannes d'inversion de cycle, circuits 1 et 2 (option)	Zyklusumschaltventil Kreislauf 1 und 2 (Option)	Valvole di inversione ciclo, circuito 1 e circuito 2 (optional)	Válvulas de inversión del ciclo, circuitos 1 y 2 (opcional)
SAT-0.1	Temperature sensor, blast air (option)	Sonde de température, air de soufflage (option)	Temperaturfühler, Strahlluft (Option)	Sonda di temperatura, aria forzata (optional)	Sonda de temperatura, aire de soplado (opcional)
SD-0.1	Smoke detector (option)	Détecteur de fumée (option)	Rauchmelder (Option)	Rilevatore di fumo (optional)	Detector de humo (opcional)
SWS	Summer/winer switch (not supplied)	Interrupteur hiver/été (non-fourni)	Winter/Sommer-Schalter (nicht mitgeliefert)	Interruttore estate/inverno (non in dotazione)	Interruptor de invierno/verano (no suministrado)
T-0.1/0.2/...	Transformer	Tranformateur	Transformator	Trasformatore	Transformador
uPC3	CAREL regulation	Régulation CAREL	CAREL-Regler	Regolazione CAREL	Regulación CAREL
X	Phase distributor	Répartiteur de phases	Phasenteiler	Ripartitore di potenza	Distribuidor de fases
X1/2/3/4/...	Device' electrical boxs	Borniers machine	Maschinenklemmen	Terminali macchina	Terminales de máquinas
XC	Customer terminal block	Bornier Client	Client-Klemmenblock	Morsettiera cliente	Bloque de terminales del cliente
Y1/2	Comb distributor	Répartiteur peigne	Kammverteiler	Distributore a pettine	Distribuidor de peines

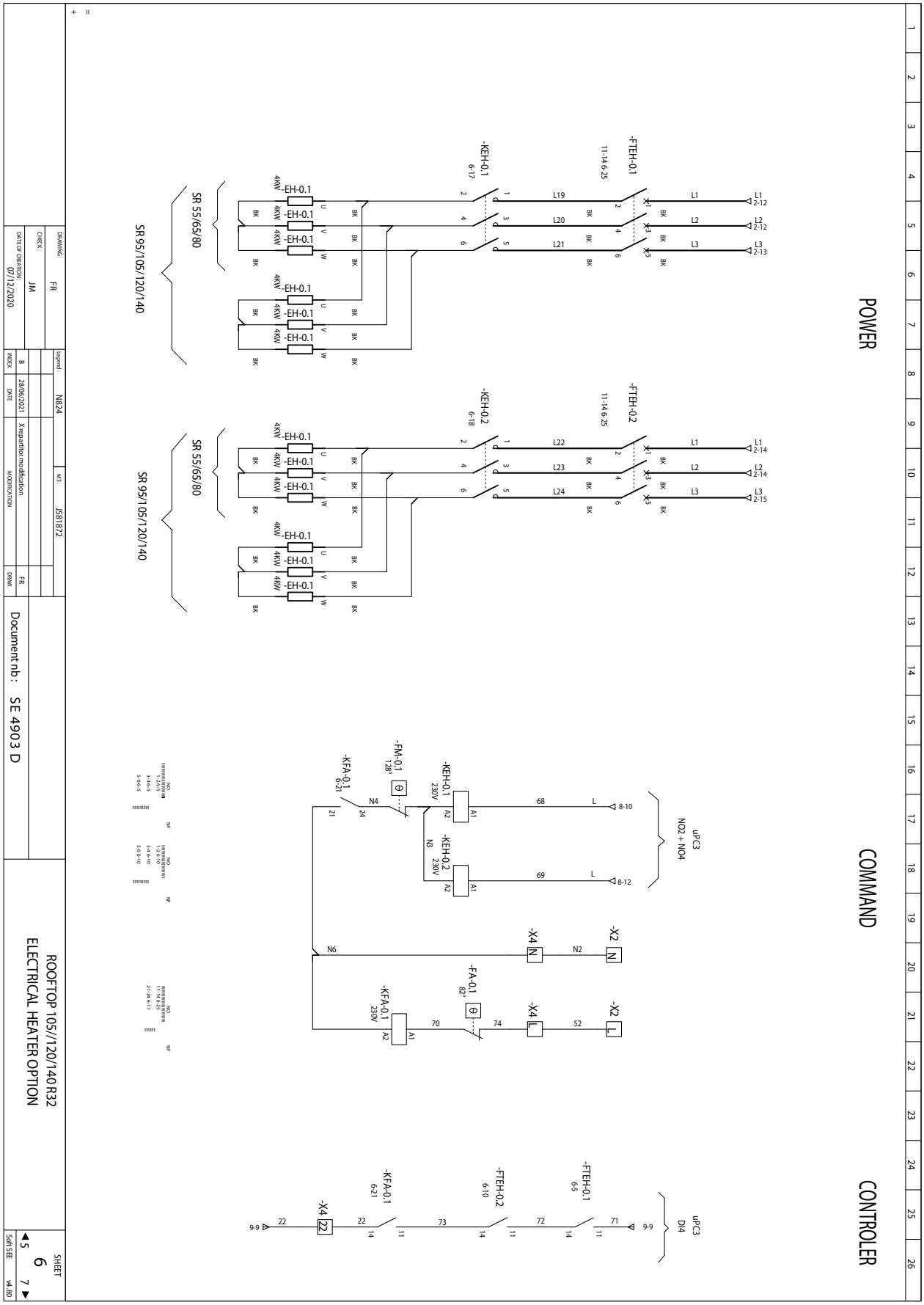
SR R32 105 - SR R32 120 - SR R32 140

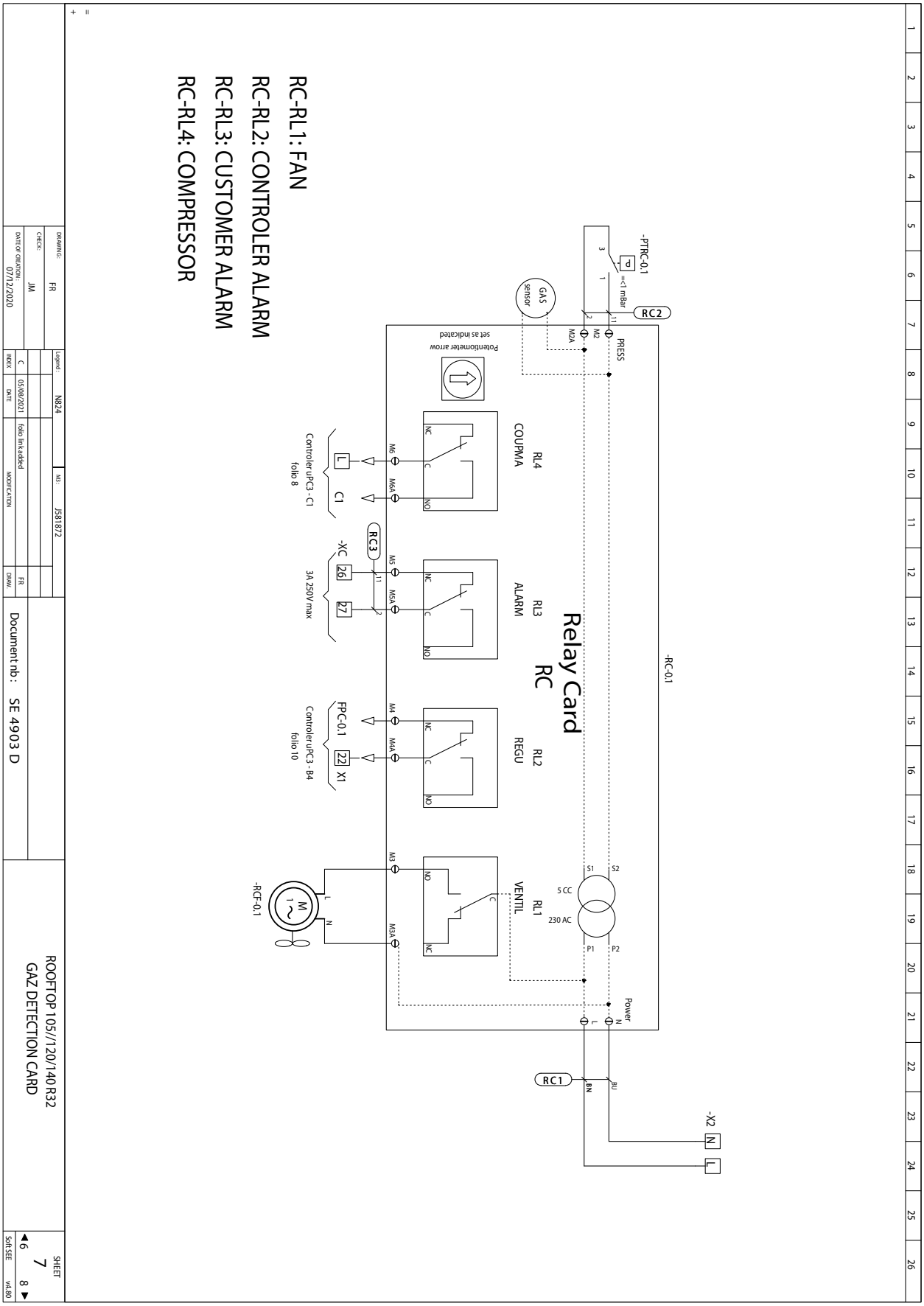


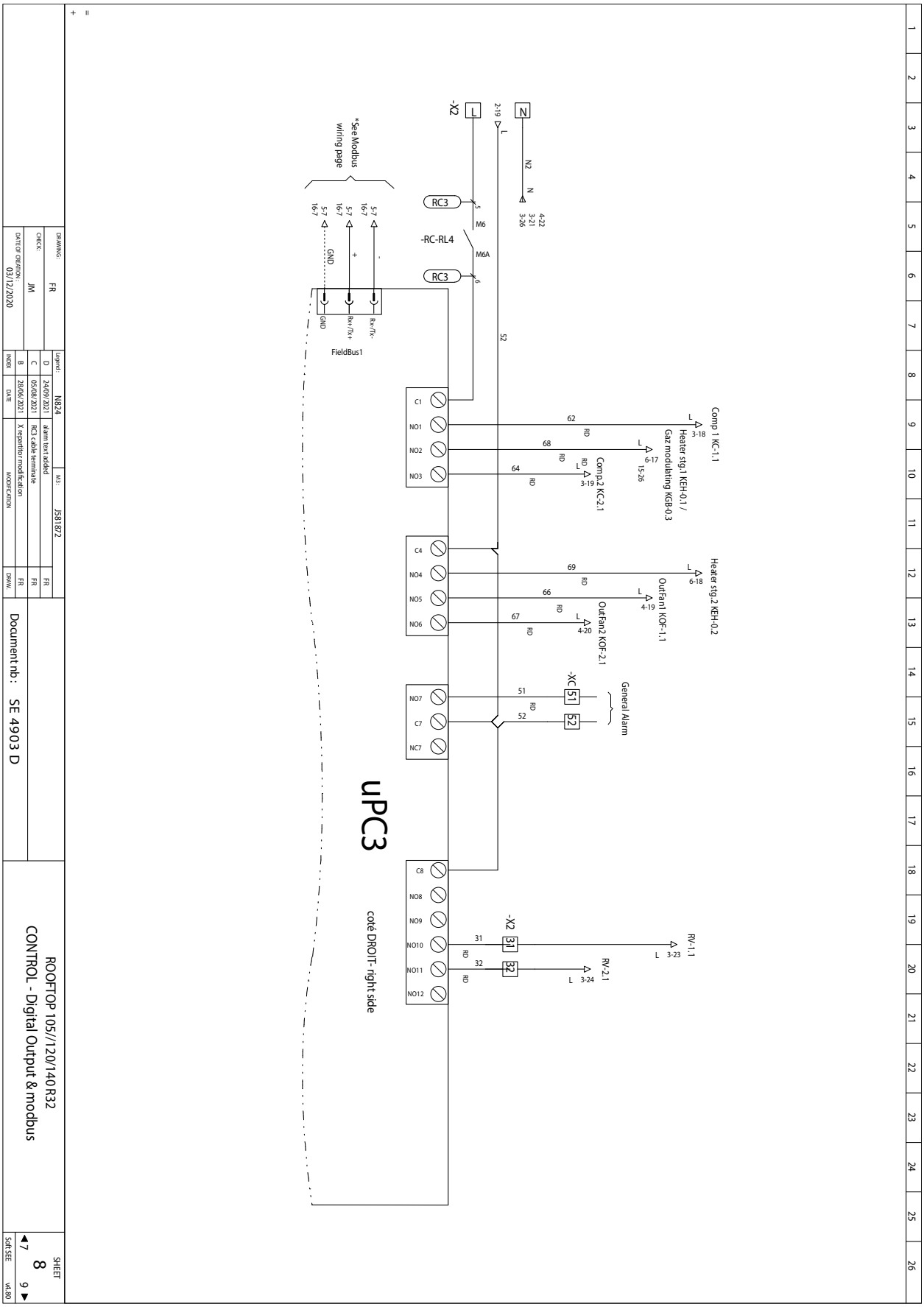

POWER
COMMAND
HEAT PUMPS OPT.
-FTC-1.1
-FTC-2.1
-KC-1.1
-KC-2.1
-C-1.1
-C-2.1
-FF-0.3
-X2
-KHP-1.1
-KHP-2.1
-RV-1.1
-RV-2.1
FC-1.1
FC-2.1
C-1.1
SR 105/140
C-2.1
SR 140 only
uPC3
NO1 + NO3
uPC3
NO11 + NO12
ROOFTOP 105/120/140 R32
COMPRESSORS / HEAT PUMPS OPTION
Document nb : SE 4903 D
DRAWING : FR
CHECK : JM
DATE OF CREATION : 04/12/2020
Legend : N824
M3 : J5818972
INDEX B
DATE 28/06/2021
MODIFICATION Xreparitor modification
DRAW FR
SHEET 3
Soft SEE
ref. 80

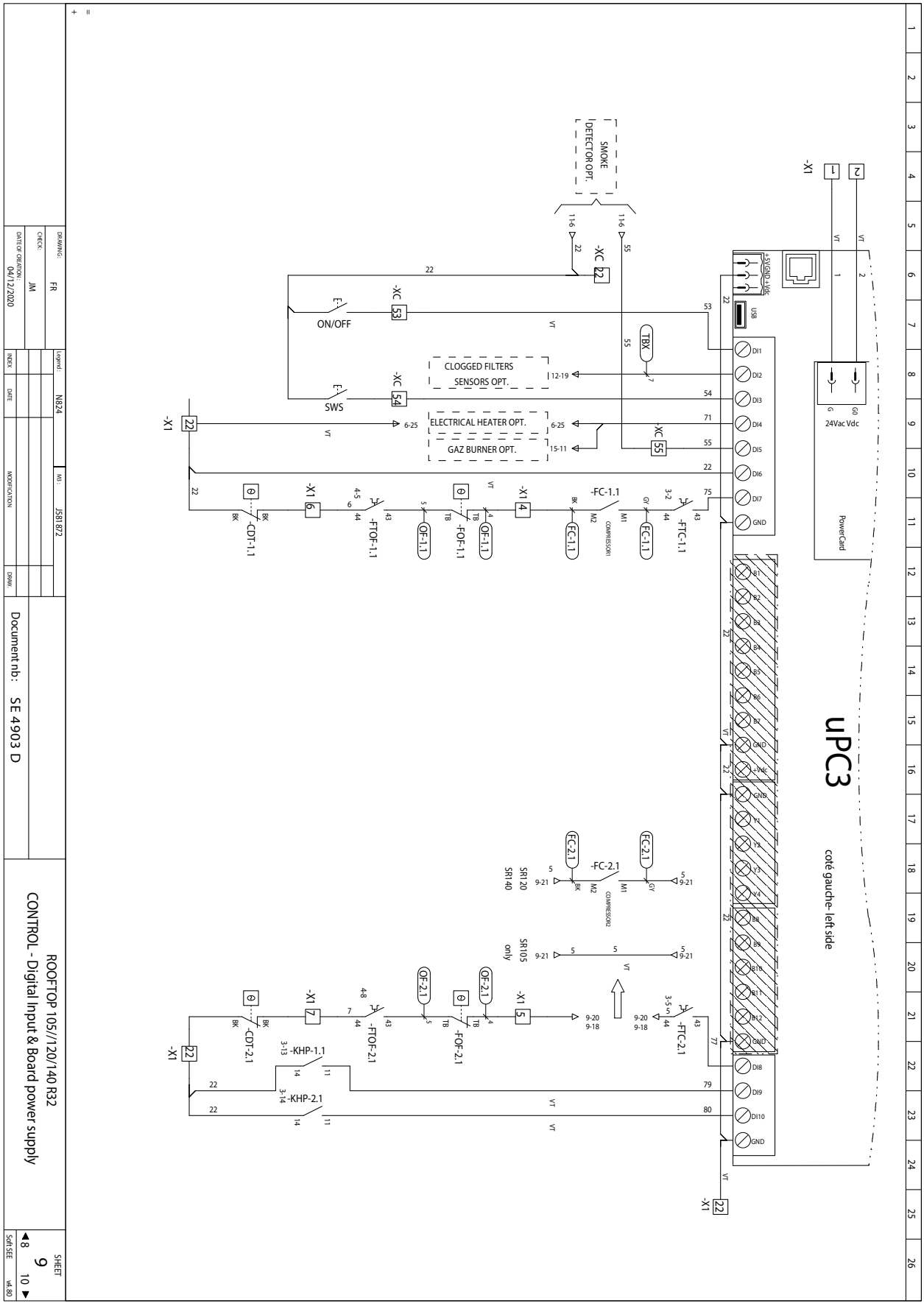

POWER
COMMAND
-FTOF-1.1
-FTOF-2.1
-KOF-1.1
-KOF-2.1
-OF-1.1
-OF-2.1
-X2
GN/YE
uPC3
NO1 + NO3
ROOFTOP 105//120/140 R32
OUTDOOR AC FANS
Document nb : SE 4903 D
DRAWING: FR
CHECK: JM
DATE OF ISSUE: 03/12/2020
N824
J581872
SHEET 4
Soft SEE
v4.80

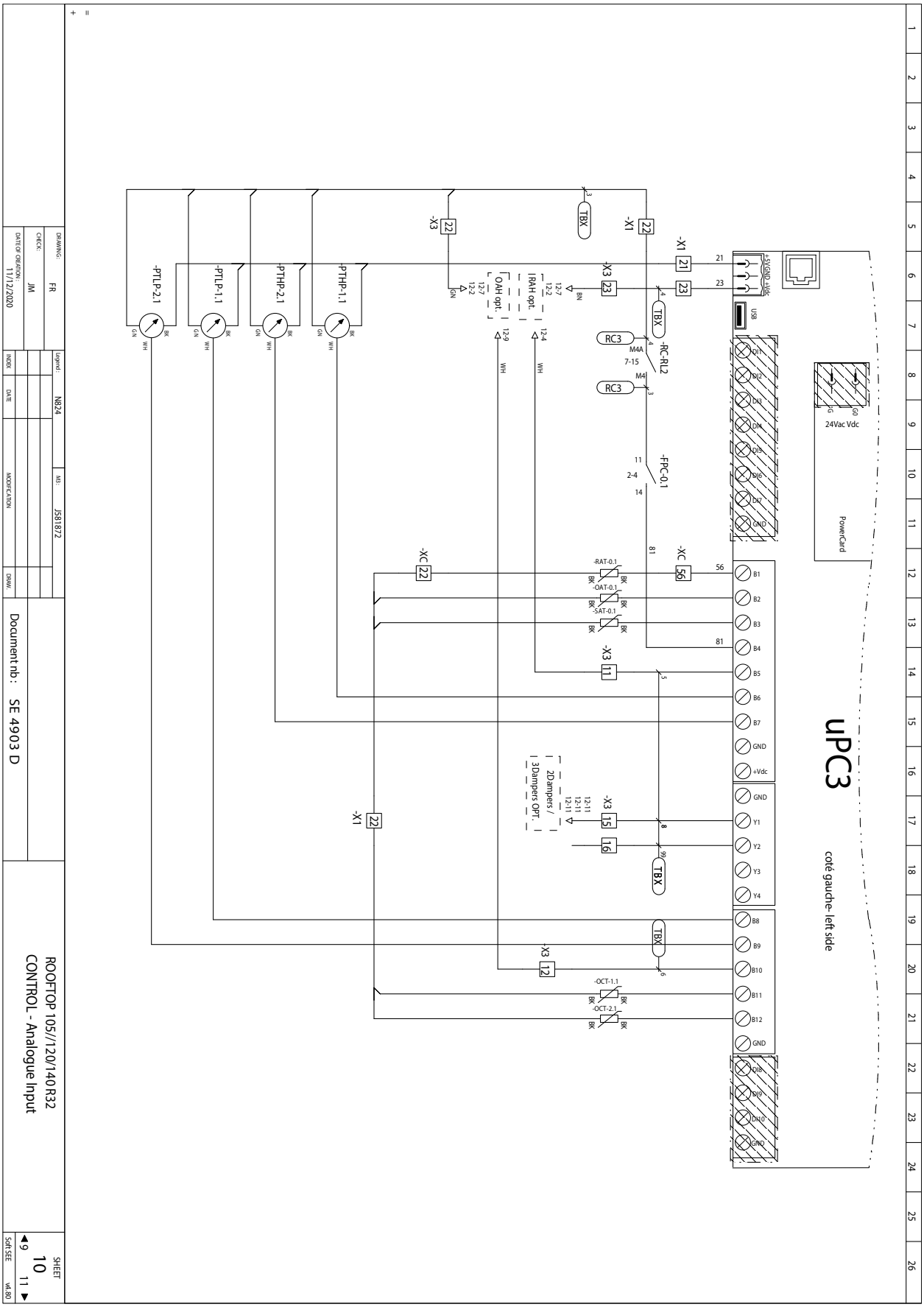

-FTIF-0.1
-IF-0.1
-IF-0.2
-PTIF-0.2
PTIF-0.2
MB1
MB2
-X1
*See Modbus wiring page
ROOFTOP 105//120/140 R32
INDOOR EC FANS
Document nb : SE 4903 D
07/12/2020
04/08/2021
PTIF cable color change
J5881872
N824

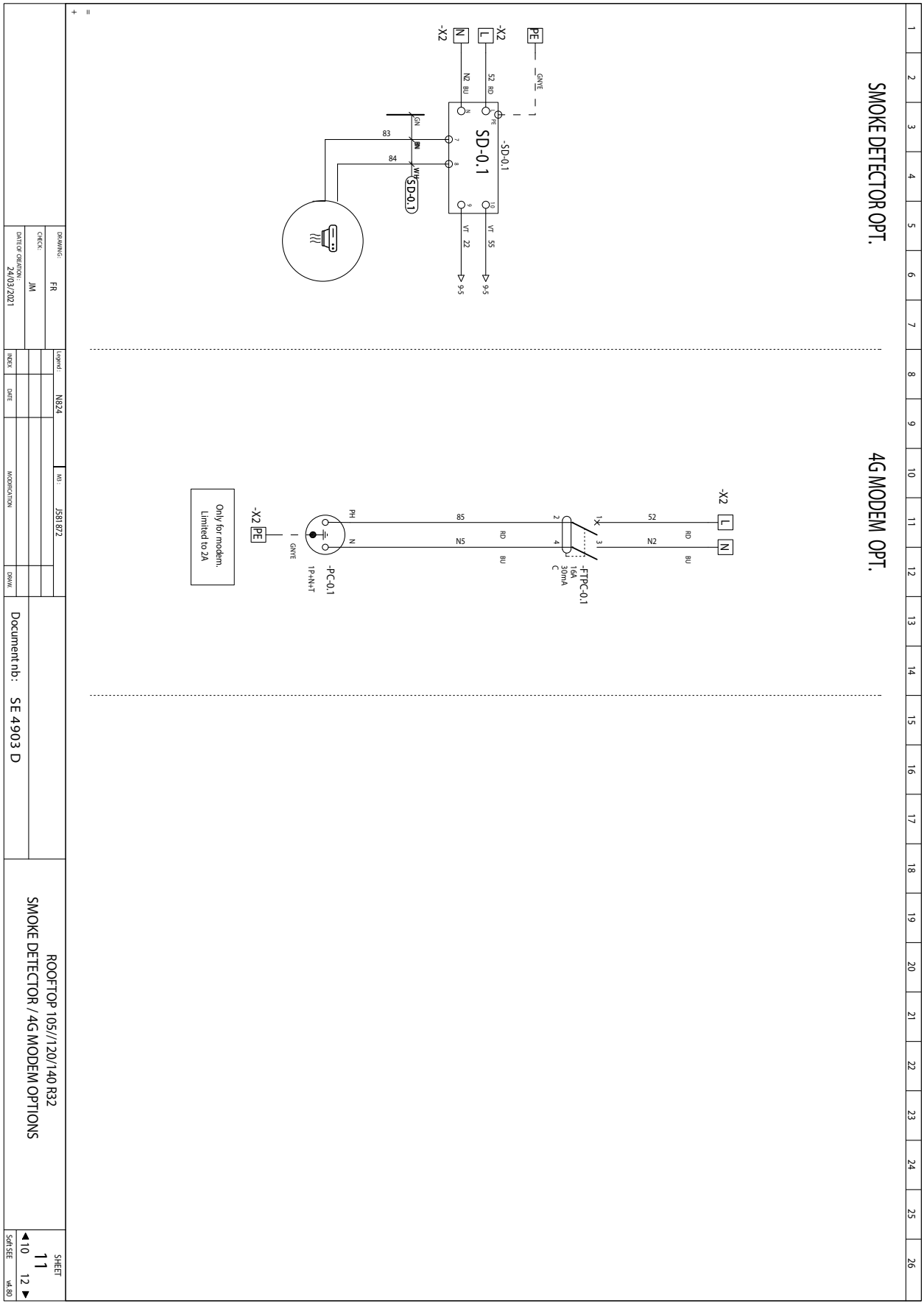

POWER
COMMAND
CONTROLER
-KEH-0.1
-KEH-0.2
-FTEH-0.1
-FTEH-0.2
-EH-0.1
SR 55/65/80
SR 95/105/120/140
-FM-0.1
-KFA-0.1
-FA-0.1
uPC3
NO2 + NO4
DI4
-X2
-X4
ROOFTOP 105//120/140 R32
ELECTRICAL HEATER OPTION
Document nb : SE 4903 D
DRAWING: FR
CHECK: JM
DATE OF CREATION: 07/12/2020
INDEX B
DATE 28/06/2021
MODIFICATION X repartitor modification
DRAW. FR
SHEET 6
Soft SEE v4.80


RC-RL1: FAN
RC-RL2: CONTROLER ALARM
RC-RL3: CUSTOMER ALARM
RC-RL4: COMPRESSOR
Relay Card
RC
-RC-0.1
-PTRC-0.1
≈<1 mBar
GAS sensor
RC2
PRESS
Potentiometer arrow set as indicated
RL4 COUPMA
RL3 ALARM
RL2 REGU
RL1 VENTIL
5 CC
230 AC
Power
RC1
-X2
Controler uPC3 - C1 folio 8
C1
-XC
RC3
3A 250V max
Controler uPC3 - B4 folio 10
FPC-0.1
X1
-RCF-0.1
ROOFTOP 105//120/140 R32
GAZ DETECTION CARD
Document nb : SE 4903 D
DRAWING: FR
CHECK: JM
DATE OF CREATION: 07/12/2020
INDEX C
DATE 05/08/2021
MODIFICATION folio link added
DRAW. FR
Legend : N824
M5 : J581872
SHEET 7
Soft SEE v4.80

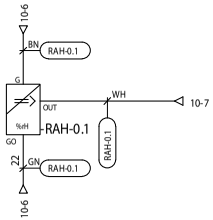

uPC3
coté DROIT- right side
-X2
-XC
-RC-RL4
RC3
M6
M6A
N
L
N2
*See Modbus wiring page
FieldBus1
GND
Rx+/Tx+
Rx-/Tx-
C1
NO1
NO2
NO3
C4
NO4
NO5
NO6
NO7
C7
NC7
C8
NO8
NO9
NO10
NO11
NO12
Comp 1 KC-1.1
Heater stg.1 KEH-0.1 / Gaz modulating KGB-0.3
Comp.2 KC-2.1
Heater stg.2 KEH-0.2
OutFan1 KOF-1.1
OutFan2 KOF-2.1
General Alarm
RV-1.1
RV-2.1
DRAWING: FR
CHECK: JM
DATE OF CREATION: 03/12/2020
INDEX
DATE
MODIFICATION
DRAW
Legend
D 24/09/2021 N6224 alarm text added FR
C 05/08/2021 M3 RC3 cable terminate FR
B 28/06/2021 J5810872 X expantion modification FR
Document nb : SE 4903 D
ROOFTOP 105//120/140 R32
CONTROL - Digital Output & modbus
SHEET 8
Soft SEE vé.80


ROOFTOP 105//120/140 R32
CONTROL - Digital Input & Board power supply
Document nb: SE 4903 D
DRAWING: FR
CHECK: JM
DATE OF CREATION: 04/12/2020
Legend: N824
M1: J581872
SHEET 9
uPC3
coté gauche- left side
PowerCard
24Vac Vdc
SMOKE DETECTOR OPT.
ON/OFF
SWS
CLOGGED FILTERS SENSORS OPT.
ELECTRICAL HEATER OPT.
GAZ BURNER OPT.
-FC-1.1
-FC-2.1
-FTOF-1.1
-FTOF-2.1
-FTC-1.1
-FTC-2.1
-FOF-1.1
-FOF-2.1
-CDT-1.1
-CDT-2.1
-KHP-1.1
-KHP-2.1
SR120 SR140
SR105 only

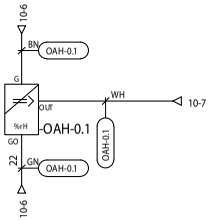

uPC3
coté gauche- left side
PowerCard
24Vac Vdc
USB
+5V GND +VDC
-PTLP-2.1
-PTLP-1.1
-PTHP-2.1
-PTHP-1.1
-X1
-X3
-XC
TBX
RC3
-RC-RL2
-FPC-0.1
-RAT-0.1
-OAT-0.1
-SAT-0.1
-OCT-1.1
-OCT-2.1
RAH opt.
OAH opt.
2Dampers / 3Dampers OPT.
B1
B2
B3
B4
B5
B6
B7
GND
+Vdc
Y1
Y2
Y3
Y4
B8
B9
B10
B11
B12
DI8
DI9
DI10
DI11
GND
DRAWING: FR
CHECK: JM
DATE OF CREATION: 11/12/2020
Legend
N824
M3
J5810372
INDEX
DATE
MODIFICATION
DRAW
Document nb : SE 4903 D
ROOFTOP 105//120/140 R32
CONTROL - Analogue Input
SHEET
10
Soft SEE
vit 80


SMOKE DETECTOR OPT.
4G MODEM OPT.
-X2
PE
L
N
GN/YE
S2 RD
N2 BU
SD-0.1
-SD-0.1
SGN
83
84
WH
-SD-0.1
VT 55
VT 22
9-5
9-5
-FTPC-0.1
16A
30mA
C
52
N2
RD
BU
85
N5
PH
N
-PC-0.1
1P+N+T
Only for modem.
Limited to 2A
DRAWING: FR
CHECK: JM
DATE OF CREATION: 24/03/2021
Legend:
N824
M1:
J581872
INDEX
DATE
MODIFICATION
DRAW.
Document nb: SE 4903 D
ROOFTOP 105//120/140 R32
SMOKE DETECTOR / 4G MODEM OPTIONS
SHEET
11
10
12
Soft SEE
v4.80

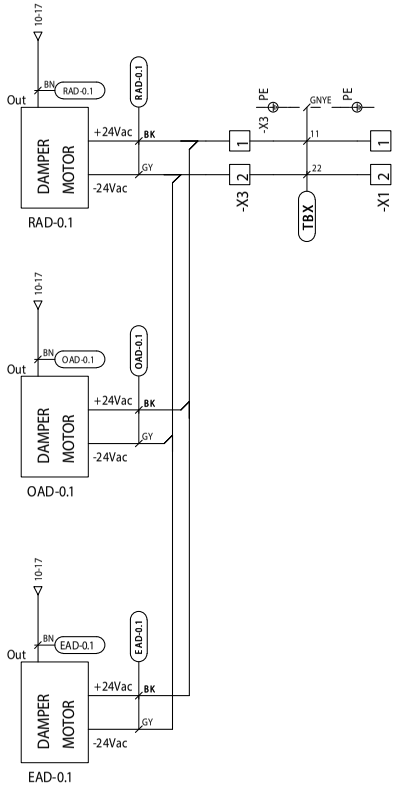
RETURNED AIR HYMIDITY SENSOR OPT.



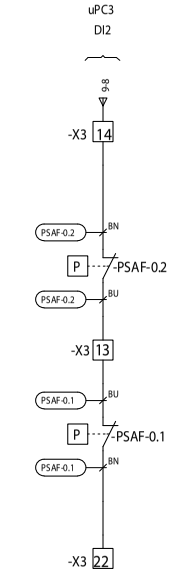
OUTDOOR AIR HYMIDITY SENSOR OPT.



2Dampers / 3Dampers OPT.

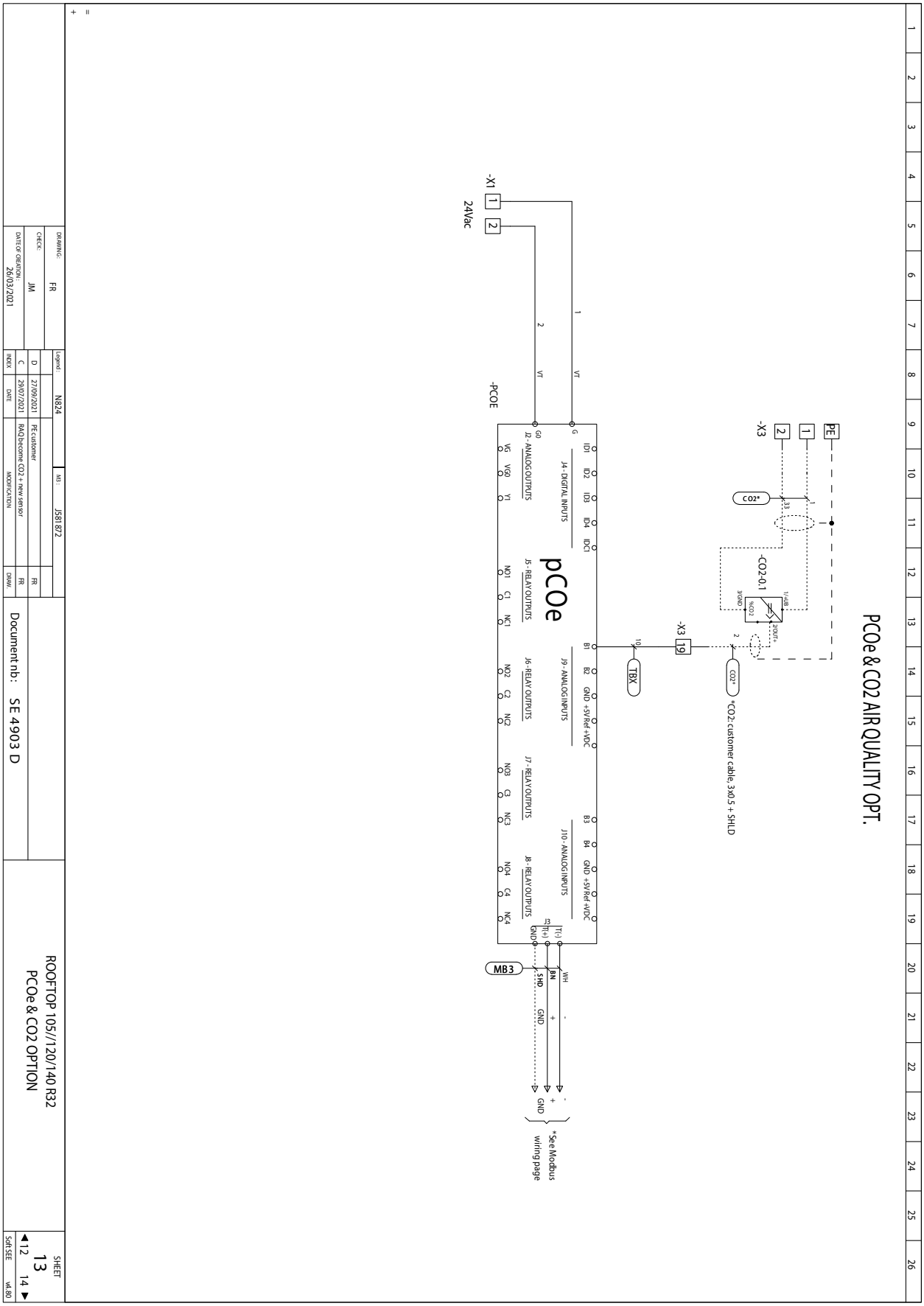


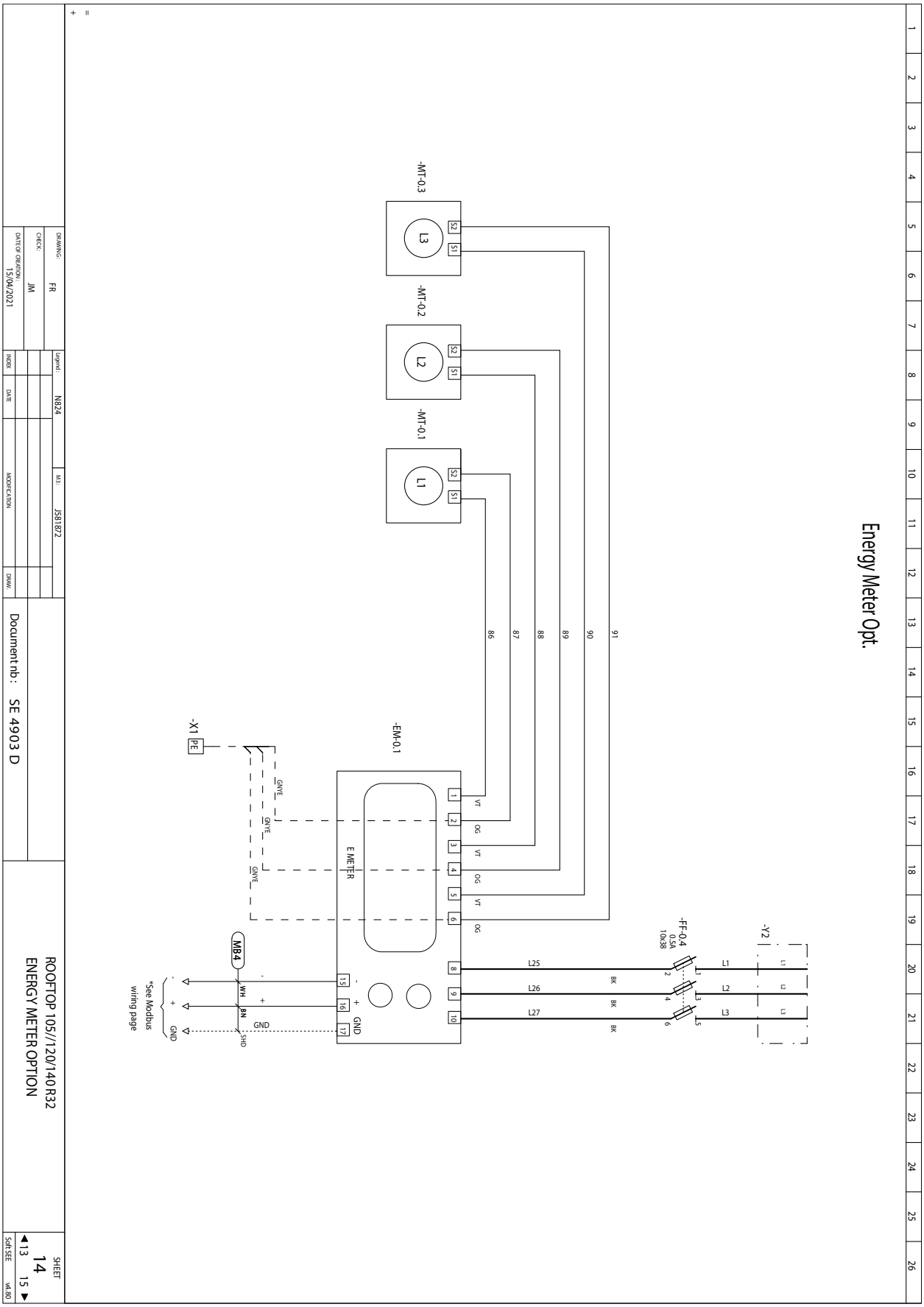
2 CLOGGED FILTERS SENSORS OPT.

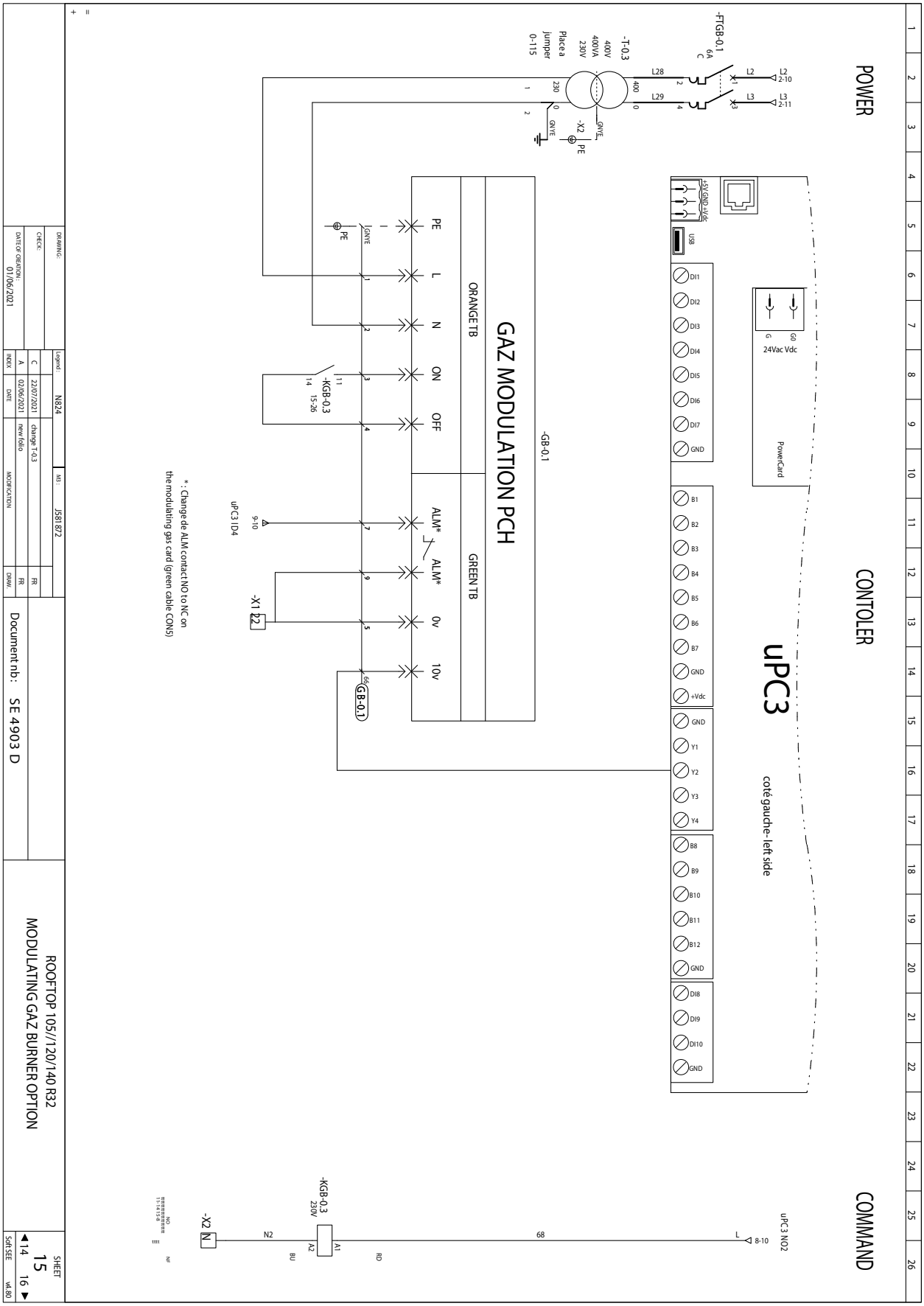


For 1 clogged sensor
X3-13&14 are jumped

DRAWING: FR	Legend: N824	M3: J581872			SHEET 12 ◄11 13►
CHECK: JM					
DATE OF CREATION: 25/03/2021	INDEX	DATE	MODIFICATION	DRAW.	Soft SEE v4.80
			Document nb : SE 4903 D		ROOFTOP 105//120/140 R32 RAH-OAH-2D/3D-PSAF OPTIONS


PCOe & CO2 AIR QUALITY OPT.
PE
-X3
CO2*
-CO2-0.1
*CO2: customer cable, 3x0.5 + SHLD
-X3
TBX
-X1
24Vac
-PCOE
pCOe
J2 - ANALOG OUTPUTS
J4 - DIGITAL INPUTS
J5 - RELAY OUTPUTS
J9 - ANALOG INPUTS
J6 - RELAY OUTPUTS
J7 - RELAY OUTPUTS
J10 - ANALOG INPUTS
J8 - RELAY OUTPUTS
MB3
*See Modbus wiring page
DRAWING: FR
CHECK: JM
DATE OF CREATION: 26/03/2021
Legend:
N824
M1: J581 872
INDEX
D 27/09/2021 PE customer
C 29/07/2021 RAQ become CO2 + new sensor
MODIFICATION
DRAW. FR FR
Document nb: SE 4903 D
ROOFTOP 105//120/140 R32
PCOe & CO2 OPTION
SHEET 13
◄12 14►
Soft SEE v4.80


Energy Meter Opt.
-MT-0.3
-MT-0.2
-MT-0.1
L3
L2
L1
S2
S1
86
87
88
89
90
91
-EM-0.1
E METER
-X1
PE
-FF-0.4
0.5A
10x38
-Y2
L25
L26
L27
BK
VT
OG
GNYE
MB4
WH
BN
SHD
GND
*See Modbus wiring page
DRAWING: FR
CHECK: JM
DATE OF CREATION: 15/04/2021
Legend
N824
M3
J5810872
INDEX
DATE
MODIFICATION
DRAW
Document nb : SE 4903 D
ROOFTOP 105//120/140 R32
ENERGY METER OPTION
SHEET
14
13
15
Soft SEE
v4.80



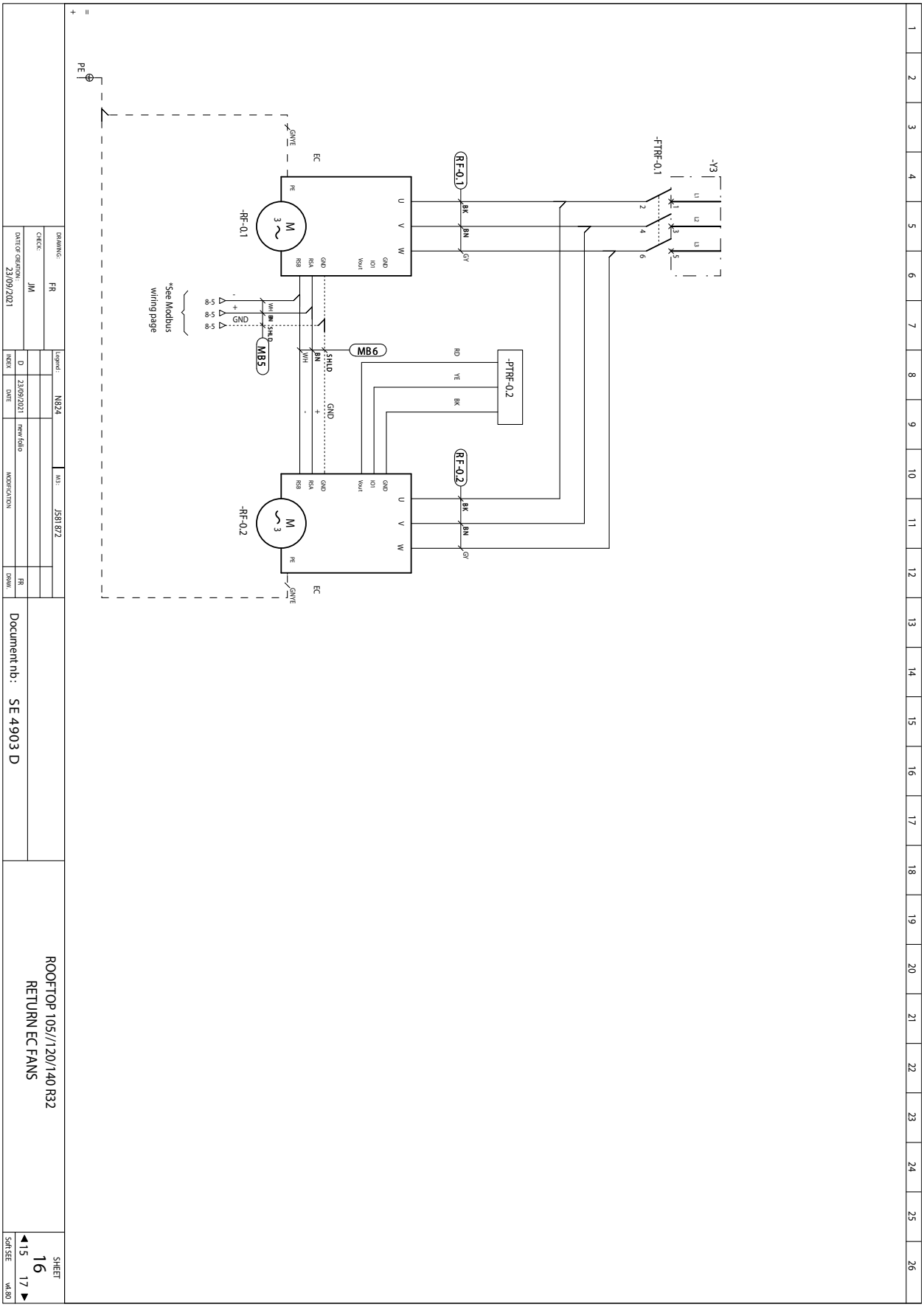
DRAWING:	Legend:	N824	M1:	J581 872
CHECK:				
DATE OF CREATION: 01/06/2021	C	22/07/2021	change T-0.3	FR
	A	02/06/2021	new folio	FR
	INDEX	DATE	MODIFICATION	DRAW.

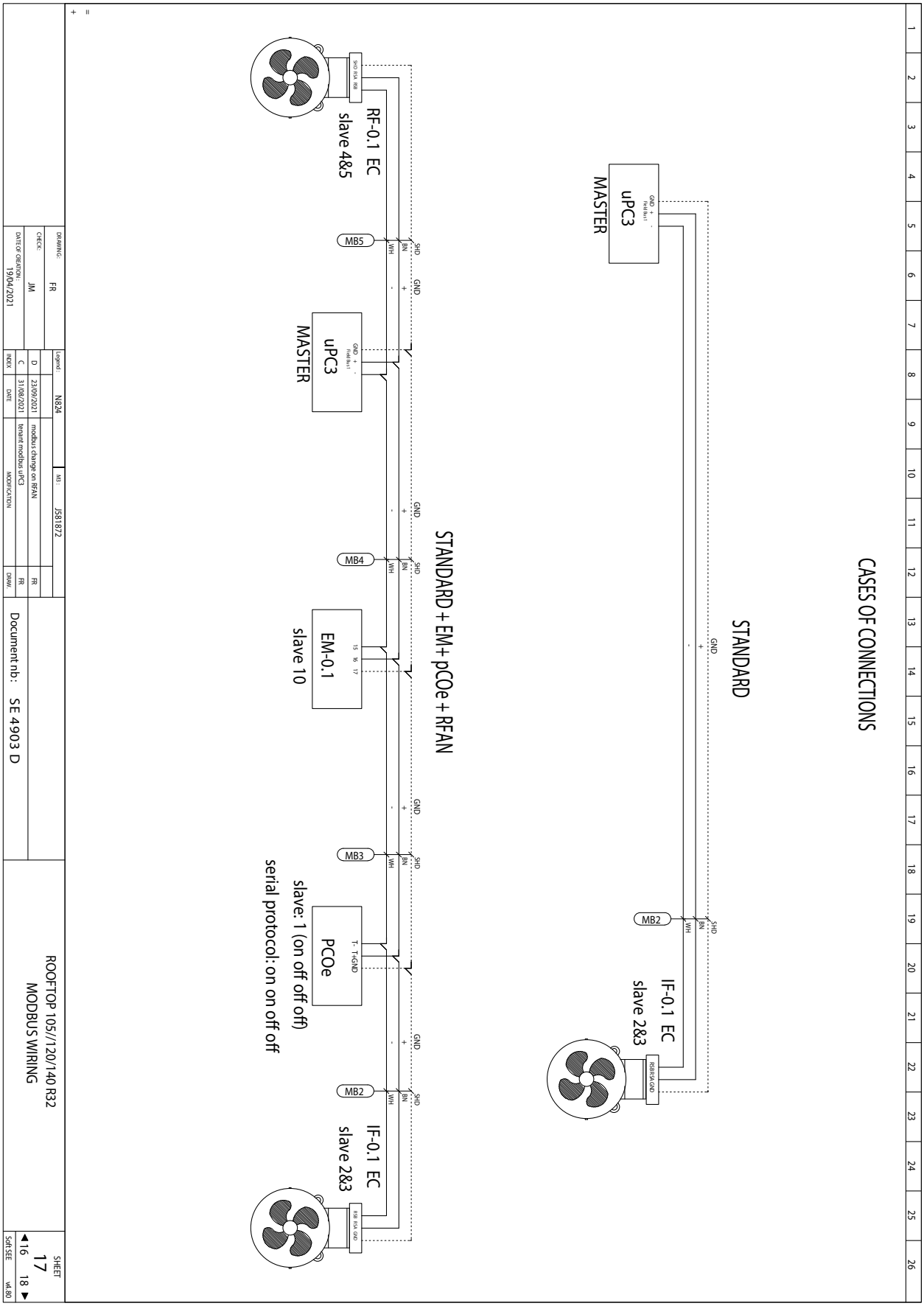
Document nb: SE 4903 D

ROOFTOP 105//120/140 R32
MODULATING GAZ BURNER OPTION

SHEET 15 ◀14 16 ▶

Soft SEE v4.80

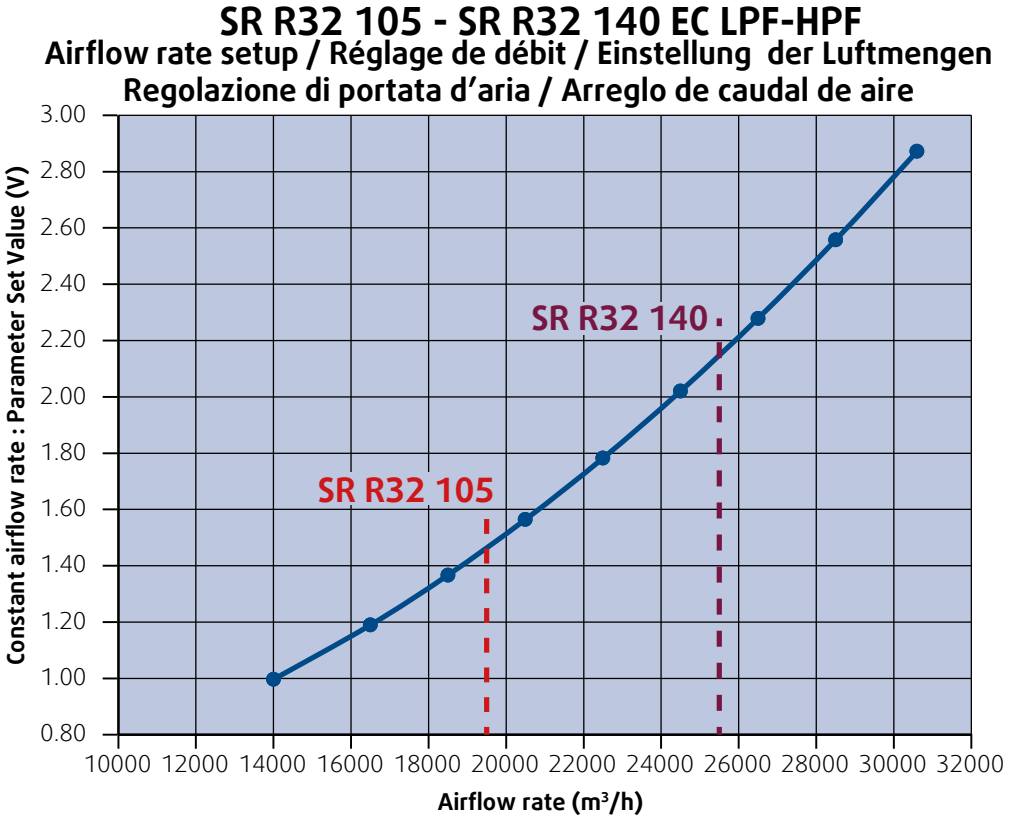

-Y3
-FTRF-0.1
RF-0.1
-RF-0.1
RF-0.2
-RF-0.2
-PTRF-0.2
MB5
MB6
*See Modbus wiring page
GND
SHLD
BK
BN
GY
RD
YE
WH
EC
GNYE
PE
DRAWING: FR
CHECK: JM
DATE OF CREATION: 23/09/2021
Legend
N824
M3: J581872
INDEX D
DATE 23/09/2021
MODIFICATION new folio
DRAW FR
Document nb: SE 4903 D
ROOFTOP 105//120/140 R32
RETURN EC FANS
SHEET 16
◄15 17►
Soft SEE
v4.80


CASES OF CONNECTIONS
STANDARD
GND
+
-
uPC3
MASTER
GND + - Fieldbus1
MB2
SHD
BN
WH
IF-0.1 EC
slave 2&3
RS485 A GND
STANDARD + EM+ pCOe + RFAN
RF-0.1 EC
slave 4&5
MB5
MB4
EM-0.1
slave 10
15 16 17
MB3
PCOe
T- T+ GND
slave: 1 (on off off)
serial protocol: on on off
MB2
IF-0.1 EC
slave 2&3
RS485 A GND
DRAWING: FR
CHECK: JM
DATE OF CREATION: 19/04/2021
Legend: N824
M3: J581872
INDEX
DATE
MODIFICATION
DRAW.
D 23/09/2021 modbus change on RFAN FR
C 31/08/2021 tenant modbus uPC3 FR
Document nb: SE 4903 D
ROOFTOP 105//120/140 R32
MODBUS WIRING
SHEET 17
◄16 18 ►
Soft SEE v4.80

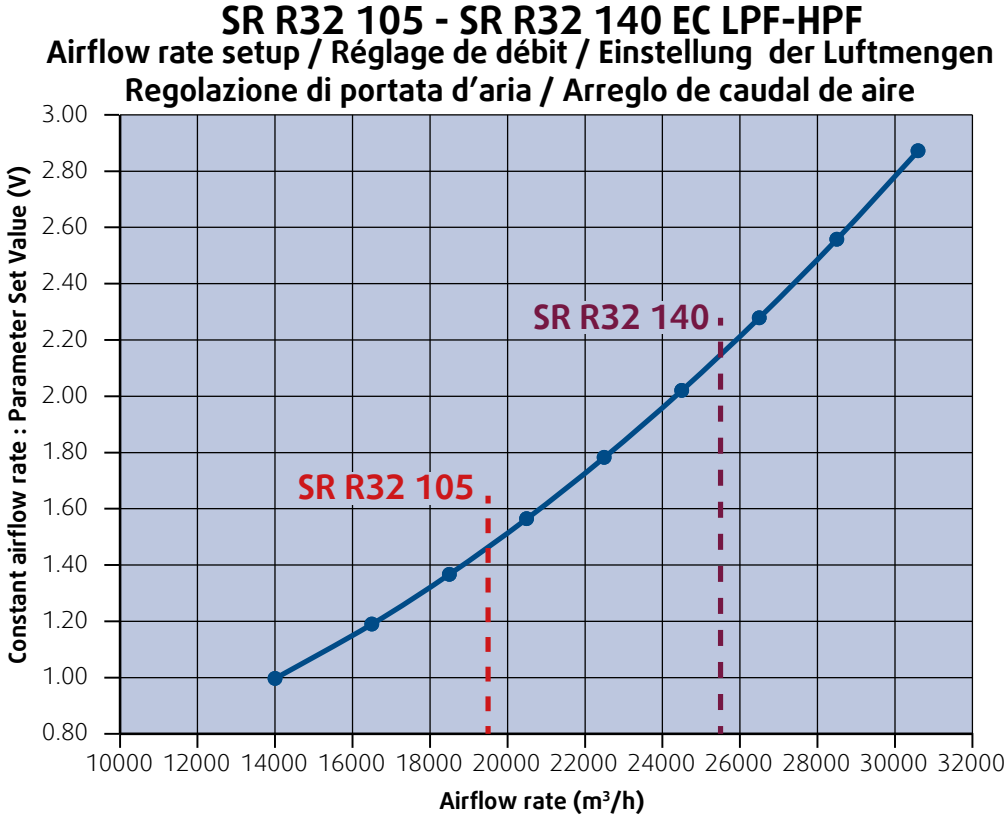
AERAULIC ADJUSTMENT (WITHOUT OPTION)
CARACTERISTIQUES AERAULIQUES (SANS OPTION)
REGELUNG DES LÜFTERSYSTEMS (OHNE OPTION)
REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'ARIA (SENZA OPZIONE)
AJUSTE DEL ISTEMA AEROLICO (SIN OPCIÓN)

SYSAER SR R32 105 - SR R32 120 - SR R32 140

IFAN EC



RFAN EC



As part of our ongoing product improvement programme, our products are subject to change without prior notice. Non contractual photos.

Systemair AC SAS
Route de Verneuil
27570 Tillières-sur-Avre
FRANCE
✆ : +33 (0)2 32 60 61 00
🖷 : +33 (0)2 32 32 55 13

J581855GB

IOM SYSAER R32 01-N-2GB
Part number : **J581855GB**
Supersedes : **IOM SYSAER R32 01-N-1GB**