

COOL DX COOLING UNIT, version D

Installation and Maintenance Instructions

Sizes 08-80



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1. GENERAL SURVEY

1.1. General

Cooling unit COOL DX

Cooling unit COOL DX is a complete cooling unit for comfort cooling in air handling systems. All the components are fully wired, have fully connected refrigeration circuits and are collected inside a common casing. The panels are of sandwich design and consist of a 0.7 mm thick galvanized sheet steel outer skin with painted visible surfaces (colour: NCS S2005-Y30R), 1 mm thick aluminium-zinc plated sheet steel inner skin and 50 mm thick intervening expanded polyurethane isolation.

The cooling coil and condenser are fabricated of copper tubes and profiled aluminium fins; the casing is made of galvanized sheet steel.

The cooling units are tested prior to delivery.

The COOL DX is available in 19 capacity variants spread on nine physical sizes, designed for use with the size 08 - 80 GOLD air handling units.

Compressors

The compressor in the COOL DX cooling unit is of scroll compressor type and/or rotary compressors.

Completely direct-acting system

The COOL DX has a completely direct-acting system. It has an evaporation coil for direct-evaporating refrigerant on the cold side and a condenser coil on the hot side.

Refrigerant

The COOL DX has double refrigerant circuits separated from each other. Type R410A refrigerant is used. The refrigerant circuits are charged on the delivery. At present, this refrigerant has no known influence on the ozone layer and no known future restrictions are anticipated.

Refrigerant volume

See section 10. General technical data.

Duty to report

If the total volumetric weight of the refrigerant filled into the cooling system exceeds 10 kg, a report must be submitted to the local supervisory authority.

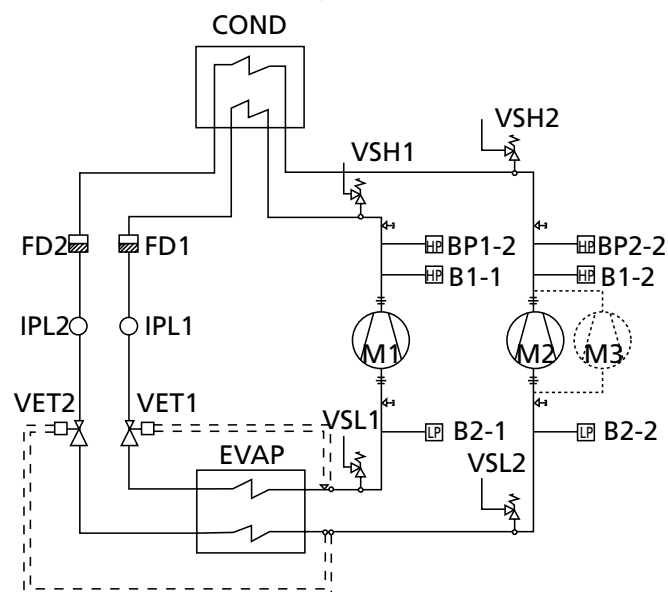
Annual inspection

If the volumetric weight of the refrigerant in the cooling unit exceeds 3 kg, an annual inspection by an accredited inspectorate is required. All the COOL DX units (except size 8, output variant 1) should be checked once a year.

ISO 9001 Quality Management and ISO 14001 Environmental Management Systems

We at Swegon are deeply involved in the maintenance of our certified quality management system defined by ISO 9001 and our certified environmental management system defined by ISO 14001.

1.2 Basic function diagram



COND	Condenser
VSH1	Overpressure protection
VSH2	Overpressure protection
B1-1	High pressure sensor
B2-1	Low pressure sensor
B1-2	High pressure sensor
B2-2	Low pressure sensor
BP1-2	Alarm pressure switch for high pressure
BP2-2	Alarm pressure switch for high pressure
M1	Compressor
M2	Compressor
M3	Compressor (size 80 cap.var. 3 only)
VSL1	Underpressure protection
VSL2	Underpressure protection
EVAP	Evaporator
VET1	Expansion valve with thermostat
VET2	Expansion valve with thermostat
IPL1	Sight glass, refrigerant circuit 1
IPL2	Sight glass, refrigerant circuit 2
FD1	Filter drier
FD2	Filter drier

Operation

There are two refrigerant circuits in the cooling unit. The circuits are separate from one another.

Each circuit is equipped with a finned condenser, a finned evaporator and a compressor.

The two compressors have different capacity, which enables control in 3 steps.

The gaseous refrigerant is compressed by compressors M1 and M2 and from there moves on to condenser COND, where it is chilled by the extract air and is condensed to liquid form.

The pressure and the temperature decrease as the refrigerant in fluid form flows through expansion valves VET1

and VET2.

From the expansion valves the refrigerant moves on to evaporator EVAP, where the refrigerant evaporates and chills the outdoor air.

From evaporator EVAP, the evaporated refrigerant is conveyed further to the suction side of the compressors where it is again compressed.

Control

The cooling capacity is regulated in three binary steps by having one or two compressors in operation.

The cooling compressors are controlled from the GOLD unit via relays on the IQnomic Plus module mounted in the COOL DX.

Step 1: When cooling is needed, Compressor M1 is started.

Step 2: If more cooling is needed, Compressor M2 starts and at the same time Compressor M1 stops. An adjustable time delay (a step duration of 300 seconds) ensures that Compressor M2 will not start until Compressor M1 is operating at full capacity.

Step 3: If even more cooling is needed, Compressor M1 is restarted and is run at the same time as Compressor M2. This third cooling step is also delayed by a preset time delay setting. In addition, the restarting time (300 seconds) for Compressor M1 shall have expired.

If less cooling is needed and the compressors are subsequently switched out step-by-step, there will be no delay between compressors. The restarting time (300 seconds) for Compressor M1 shall have expired to enable it to start again in Step 1 after it has been operated in Step 3.

If any compressor is stopped, the restarting time must expire before a restart can take place. The restart time is calculated from one start to the next start.

Low/high pressure sensors B1/B2 measure the pressure conditions in the system and transmit readings to the control system to ensure that these are within stipulated limits.

If the pressure in the cooling circuit becomes too low, or if the pressure in the condenser circuit becomes too high, the compressor is stopped and the text PRESSURE LIMITING is displayed alternately in the hand-held micro terminal of the GOLD air handling unit.

When the restart time has expired, the compressors will try to restart.

If the pressure increases more, high pressure switches BP1-2 and BP2-2 will trip and stop the GOLD unit and the COOL DX cooling unit.

Alarms 164 and 165 will be displayed in the hand-held micro terminal of the GOLD unit.

Pressure switches BP1-2 and BP2-2 can be manually reset by pressing a button under each protective sock on the upper side of the pressure switch. This can be done without removing the protective sock.

2 SAFETY INSTRUCTIONS

2.1 Safety switch/mains power switch

The safety isolating switch is positioned on the inspection side of the cooling unit.

The safety isolating switch should not be used for starting or stopping of the cooling unit.

To ensure that the COOL DX is switched off: stop the air handling unit or briefly switch off the cooling unit via the hand-held micro terminal. See the GOLD Operation and Maintenance Instructions.

On completing the above, the safety isolating switch can be used for switching off the power supply. The safety switch must be switched off in order to make it possible to open the inspection door.

Caution!

Always switch off the safety switch whenever you service the unit, unless otherwise stated in relevant instructions

2.2 Risks

Warning

Always isolate the power supply before starting any work in the refrigerant circuit or the electrical system.

Warning

Under no circumstances may the refrigerant circuits be opened by unauthorised personnel, since they contain gas under high pressure.

Risk areas where exposure to refrigerant could occur

Practically the whole area inside the cooling unit is a risk area. For particulars on how to deal with leakage, see Section 7.2. Type R 410A refrigerant is used.

Warning

The inspection door of the GOLD unit may not be opened while the unit is in operation. Positive pressure inside the unit will cause the door to fly open and possibly cause personal injury.
(The safety switch on the COOL DX must be switched off in order to make it possible to open the inspection door of the cooling unit).

2.3 Electrical equipment

The electrical equipment of the cooling unit is housed in a separate cubicle located behind one of the inspection doors.

2.4 Authorisation

Only qualified and authorised electricians shall be permitted to install electrical wiring in the unit.

Only an accredited refrigeration company shall be permitted to modify or repair the refrigeration circuits.

Other modifications in the unit should only be made by service personnel trained by Swegon.

2.5 Identification decals

The unit identification decal indicating type designation, serial number, refrigerant volume, etc. is affixed to the door of the cooling unit.

Type designation: **COOL DX-aa-D-c-d-e-f-g**

GOLD size |

Capacity variant |

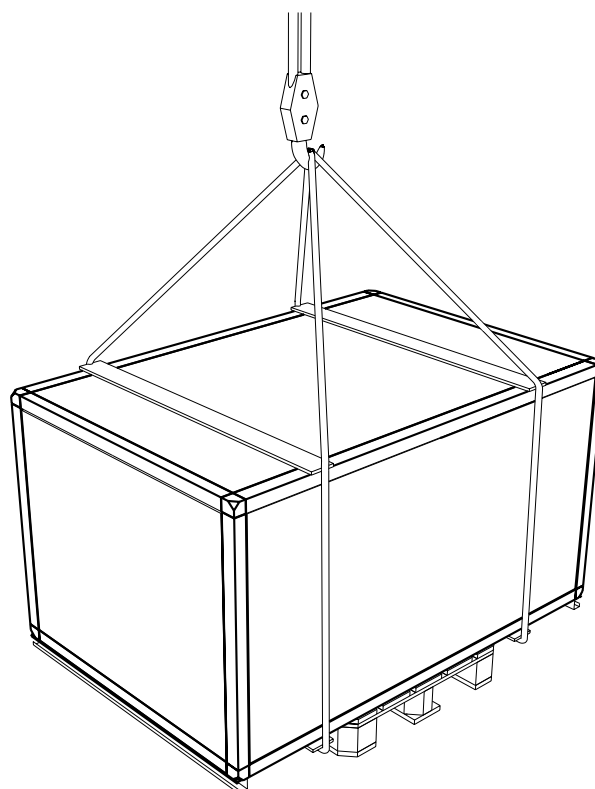
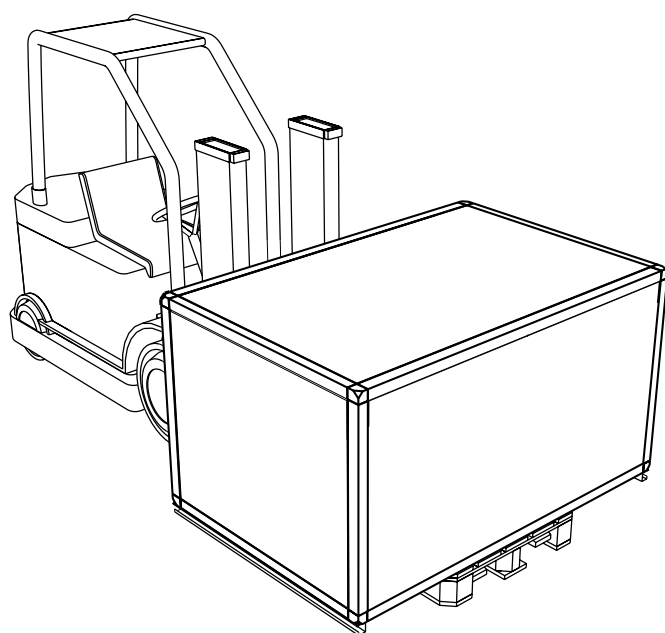
3 INSTALLATION

3.1 Unloading/transport within the building site

Important!

All transport should be carried out with the cooling unit in the horizontal position.

3.1.1 Lifting using a forklift truck



3.2 Arrangement

Place the COOL DX at a suitable location.

Allow an open space around the safety isolating switch/ mains power switch for servicing in accordance with applicable electrical safety regulations.

The unit can be positioned with its backside against a wall; however it is advisable to position it at a distance of approx. 1 metre away from a wall to make it easier to service the rear compressor.

Warning

The unit has a high centre of gravity! Carefully lift the cooling unit!

3.1.2 Lifting using a crane

Position two line spreaders at the upper side of the cooling unit and two under the underside of the pallet or under the cooling unit and lift in the pallet (or in the base frame of the cooling unit if the unit is not delivered on a pallet).

See sketch.

3.3 Docking configurations

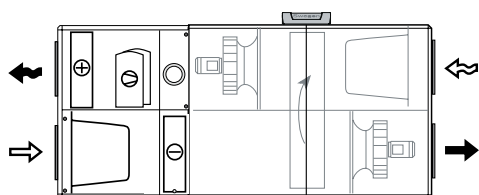
Locate the COOL DX cooling unit against the outdoor air and exhaust air side of the GOLD unit. The COOL DX can also be installed as a stand-alone unit. If you order a stand-alone COOL DX, select the variant with end connection panels.

The dimensions and capacities of the COOL DX are designed for connection to size 08-80 GOLD air handling units.

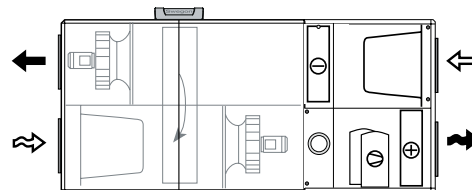
For a list of the cooling unit sizes and capacities that match a given size of GOLD unit, see Section 10. General Technical Data.

COOL DX 08

Right hand version

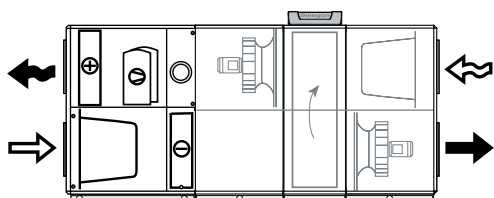


Left hand version

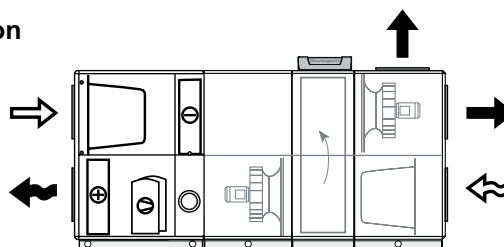


COOL DX 12-80

Right hand version

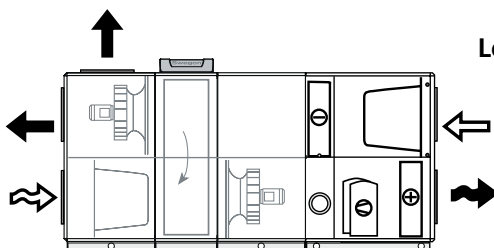


Cooling coil in lower level/GOLD fan arrangement 1

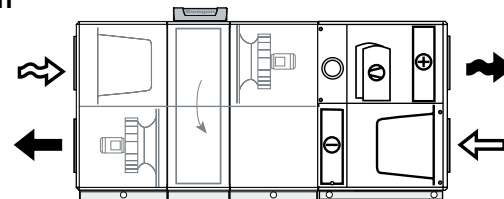


Cooling coil in upper level/GOLD fan arrangement 2

Left hand version



Cooling coil in upper level/GOLD fan arrangement 1



Cooling coil in lower level/GOLD fan arrangement 2



Outdoor air Supply air Extract air Exhaust air

3.3.1 Height adjustment to height of GOLD/ water trap

COOL DX, size 08

In combination with GOLD RX 08

The design of the GOLD unit makes it necessary to mount it on a stand or some other form of support, so that its inspection doors can be opened. The stand is available as an accessory.

A corresponding stand is also available as accessory for the COOL DX.

The heights of the stands are matched to one another and also provide space for a water trap, if required, for connection at the lower section (right-hand version).

In combination with the GOLD PX 08

The air handling unit is supplied on a 180 mm high base frame.

A corresponding base frame is also available as an accessory for the COOL DX. The heights of the base frames are matched to one another and also provide space for a water trap, if required, for connection at the lower section (right-hand version).

COOL DX, sizes 12-40

The GOLD air handling unit and the cooling unit COOL DX are supplied with 100 mm high base beams.

Applicable to cooling coil in lower level:

If a water trap (accessory) is fitted, the GOLD unit and the cooling unit must be raised at least 50 mm to provide space for the water trap. Adjustable support feet (accessories) can be appropriately fitted to the base beams for this purpose.

COOL DX, sizes 60-80

The GOLD air handling unit and the cooling unit COOL DX are supplied with 100 mm high support feet. The support feet can be removed or left on the unit.

Applicable when cooling coil in lower level:

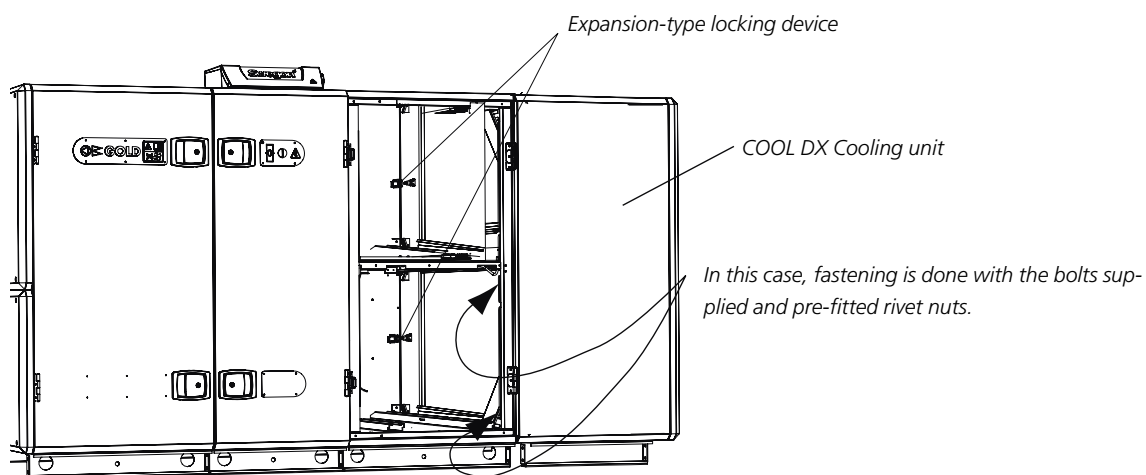
If a water trap (accessory) is fitted, the GOLD unit and the cooling unit must be raised at least 50 mm above the base beams to provide space for the water trap. This can appropriately be done by leaving the factory-fitted support feet on the base beams. Or you can replace them with adjustable feet (accessory).

3.3.2 Connection to the GOLD unit, COOL DX, sizes 08-12

The sealing strips are factory-fitted to the unit.

Connect the cooling unit directly to the air handling unit by means of the screws supplied + pre-fitted rivet nuts and 2 expansion locking devices. See figure.

Secure the cooling unit to the air handling unit from the air handling unit's inspection door. It may be necessary to remove the fan assembly or filter cassettes in order to reach the expansion-type locking device.



3.3.3 Connection to the GOLD unit, COOL DX, sizes 20-40

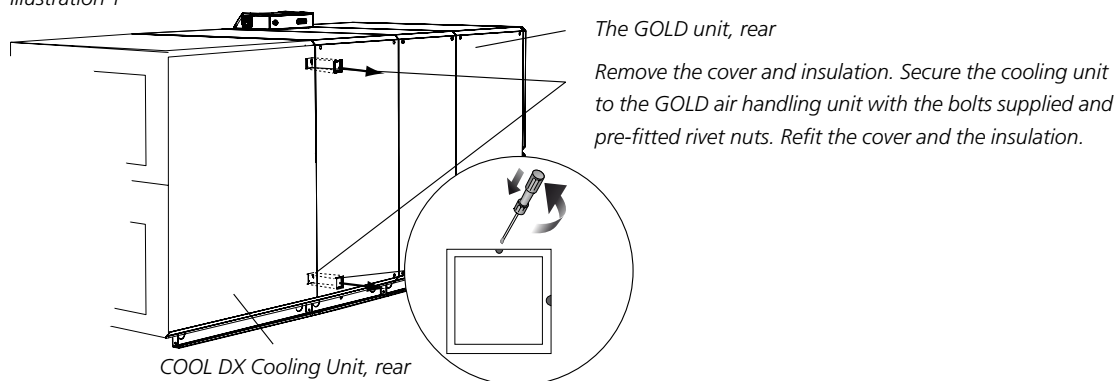
The sealing strips are factory-fitted to the unit.

Dock the cooling unit directly to the GOLD air handling unit by means of the supplied bolts (4 bolts) + pre-fitted rivet nuts.

To secure accessories to the rear edge

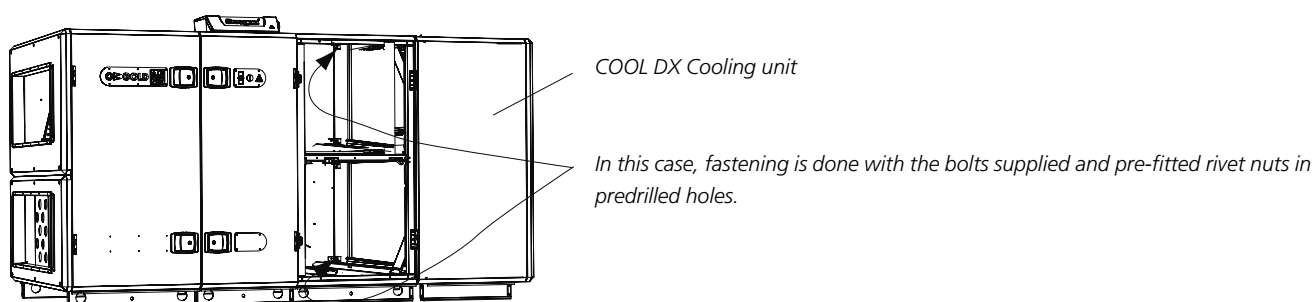
Alternative 1, External installation

Illustration 1



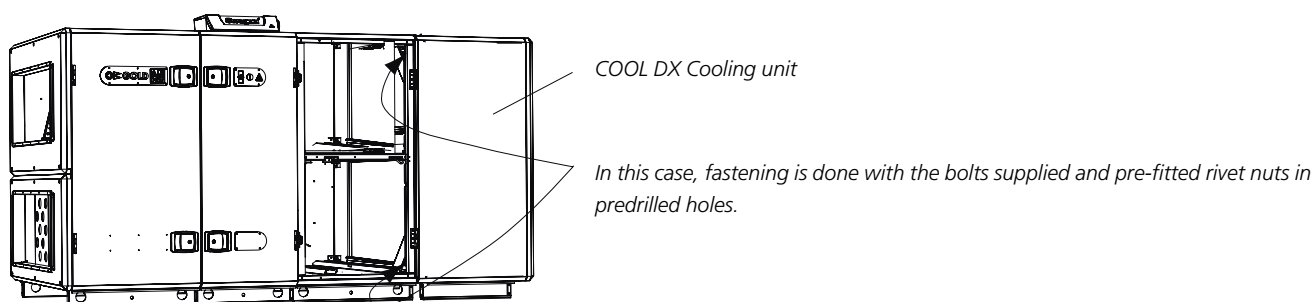
Alternative 2, Internal installation

Illustration 2



To secure accessories to the front edge

Illustration 3

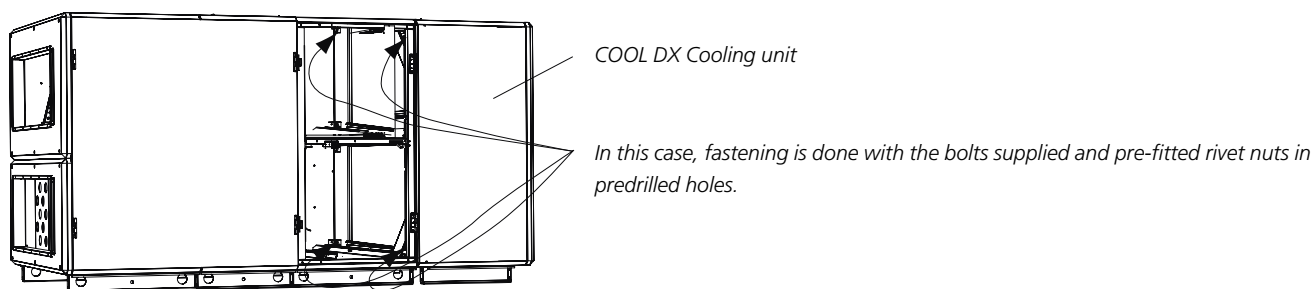


3.3.4 Connection to GOLD units, COOL DX, sizes 60-80

The sealing strips are factory-fitted to the unit.

Dock the cooling unit directly to the GOLD air handling unit by means of the supplied bolts (4 bolts) + pre-fitted rivet nuts, see illustration.

You may need to remove the filter cassettes.

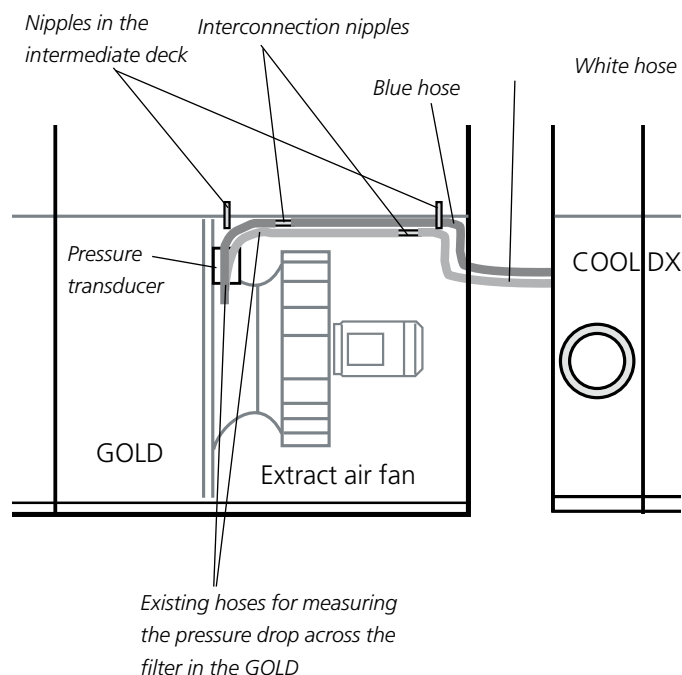


3.3.5 Stand-alone COOL DX

The variant with end connection panel should be selected.

Connect the ducts between the GOLD unit and the COOL DX unit, see Section 3.3 Installation principle.

It may be necessary to lengthen the communication cable and the tubes (not included in the supply) depending on the distance between the GOLD unit and the COOL DX unit.



3.3.6 Supply air filter

The supply air filter in the GOLD unit should be dismantled and moved to the COOL DX unit.

The hoses for measuring air pressure drop across the supply air filter are supplied in the COOL DX and are connected inside the COOL DX at the factory. These hoses must however be connected to supply air filter pressure drop measurement hoses inside the GOLD unit. To do this, proceed as follows:

Run hoses from the COOL DX unit to the extract air fan of the GOLD air handling unit. Disconnect the existing filter pressure drop hoses from the pressure drop measurement nipples in the intermediate deck of the GOLD. To prevent leakage, use an appropriate sealant to seal the nipples in the intermediate deck.

IMPORTANT! Do not disconnect the hoses from the pressure transducer as doing so is likely to damage the hose connections on the pressure transducer.

Connect the blue hose from the COOL DX to the blue hose from the pressure transducer of the GOLD unit using the interconnection nipples supplied. Connect the white hoses in the same way. See above sketch.

IMPORTANT! There are other variants besides those shown in the sketch. See Section 3.3 Docking Configurations.

Position and secure the hoses by means of bundling straps, for example.

4 ELECTRICAL CONNECTIONS

Important

Electrical installations must be carried out by an authorised electrician.

4.1 Power connection

The incoming power supply should be a 4-wire system (size 60-3, 80-2 and 80-3) or a 5-wire system (other sizes), 400 V.

The cross sectional dimension of the power supply cable should take into consideration the ambient temperature and way the cable is run.

Sizes 08-40, 60-1/2

Open the inspection door in front of the electrical equipment cubicle.

Open the inspection door of the electrical equipment cubicle.

Pull the incoming cable for power supply through pre-drilled hole in the cover panel of the cooling unit (supplied cable gland is mounted), through the space for compressors and through the cable gland of the electrical equipment cubicle. Locate the cable in a safe way. Make sure that the cable does not touch the compressors or other components, since surfaces could be hot or vibrate.

Connect the incoming power supply to the safety switch situated in the electrical equipment cubicle, see the illustration. The wiring terminal for incoming earth is situated right next to the safety switch.

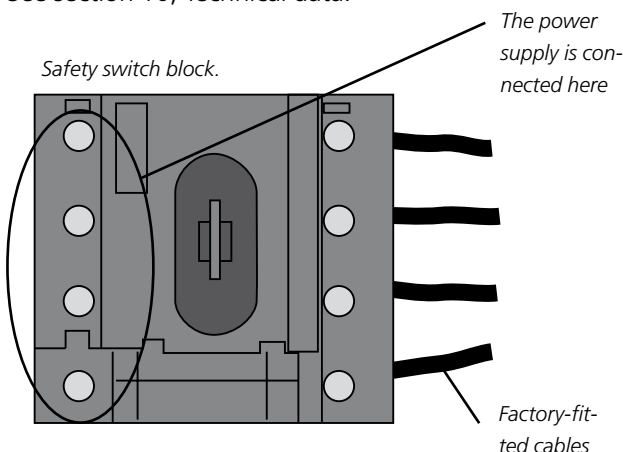
See section 10, Technical data.

Sizes 60-3, 80

Remove the cover on the external safety switch.

Connect the incoming power supply to the safety switch, see the illustration. The wiring terminal for incoming earth is situated right next to the safety switch.

See section 10, Technical data.



4.2 To connect the communication cable

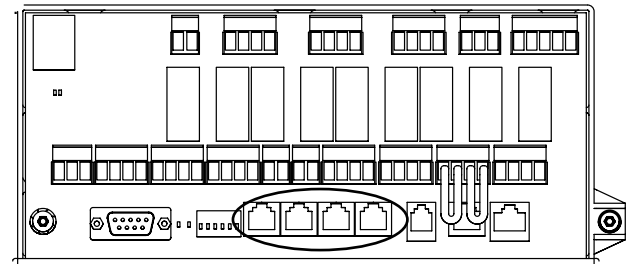
Only one communication cable is required for transferring information between the controls of COOL DX and the GOLD.

All operating status and other information can be accessed and read in the hand-held micro terminal of the GOLD unit.

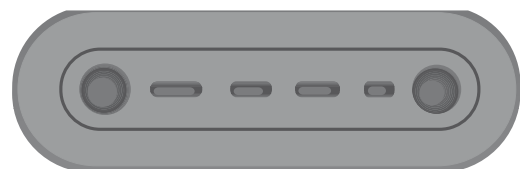
The communication cable is wired to the electric equipment of the COOL DX cooling unit and run to the outside of the COOL DX unit, where it is rolled up and secured. Then lead the communication cable in a secure manner through the rubber sleeve and from the COOL DX to the junction (wiring) hood of the GOLD.

To connect the cable to the GOLD

Connect the communication cable to any of the bus connections on the control unit. See encircled area in sketch.



Use one of the holes in the oblong rubber clad cable gland on the back side of the junction hood of the electrical cubicle, to extend the cable to control unit. See sketch.



Push aside part of the cable gland to insert the communication cable through it. Connect the cable to an optional bus connection on the control unit. Adjust the length of cable inside the electrical cubicle and adjust its position through the cable gland. Refit the cable gland back to its correct position.

Temperature sensors are installed as standard for the outdoor compensation, cooling stop blocking, boosted cooling, summer night cooling, COOL DX comfort control and pump control functions for heating coils.

5 COMMISSIONING

5.1 Preparations

5.1.1 Before initial start up

- The power supply must be connected.
- The communication cable to the GOLD air handling unit should be connected to one of the connections marked Internal EIA-485.
- Check that all the safety switches and motor protection switches are switched on.
- Check that the function selector switch on the IQnomic Plus module is set as described in Section 13. Commissioning Record.

The control system of the GOLD has a pre-programmed factory setting, which makes the cooling unit ready to use after basic settings have been entered. The COOL DX function should be activated. See the Operation and Maintenance Instructions for the GOLD dealing with managing the menus in the hand-held micro terminal.

5.1.2 Starting up

- Check that light-emitting diode L2 on the IQnomic Plus module steadily shines (24 V supply), and that light-emitting diode L1 is flashing (communication).
- Check in the hand-held micro terminal of the GOLD unit that Auto Operation has been selected as the air handling unit's cooling function (under Operation Mode), and that COOL DX Economy or COOL DX Comfort has been selected under Cooling Regulation.
- Go to the Manual Test Menu in the hand-held micro terminal of the GOLD unit. See the Operation and Maintenance Instructions for the GOLD unit. Navigate to COOL DX.
- Check: Start one compressor at a time. If any compressor doesn't start, an alarm will be initiated. The direction of rotation in the COOL DX compressors is important, see Section 5.1.4 Phase sequence guard.
- Set the compressors to 0 (stop).
- Go back to the main menu.
- COOL DX is now ready for operation and will start when there is a cooling load.

5.1.3 Pressure Sensor

The cooling unit has two in-service pressure switches in each cooling circuit, one for low pressure and one for high pressure. If the operating pressure, in any of the circuits, exceeds or drops below a limit value, the relevant compressor is switched off. The text COOL DX PRESSURE LIMITING is displayed in the hand-held terminal until the pressure comes within the limit values again. The compressor is permitted to restart when the restart delay has expired.

Pressure sensor settings:

Value	Setting range	Factory setting
Compressor 1		
Low pressure limitation	1-10 bar	7 bar
Low pressure alarm limit	1-10 bar	3.5 bar
High pressure limitation	25-50 bar	37 bar
High pressure alarm limit	25-50 bar	40 bar

Compressor 2

Low pressure limitation	1-10 bar	7 bar
Low pressure alarm limit	1-10 bar	3.5 bar
High pressure limitation	25-50 bar	37 bar
High pressure alarm limit	25-50 bar	40 bar

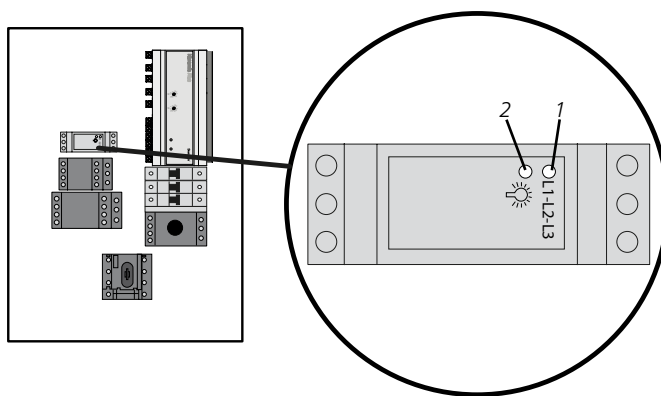
5.1.4 Phase-sequence monitor

The COOL DX unit is equipped with phase sequence guard for compressors (Not applicable to sizes 08, capacity variant 1).

The phase sequence monitor for capacity variant 2 is installed in the electrical equipment cubicle, see illustration.

Alarm no. 171 is initiated if the phase sequence is faulty.

Electrical equipment in the COOL DX



The phase sequence is correct when LED 1 is lit.

The voltage is connected when LED 2 is lit.

5.1.5 Remedial action if wrong phase sequence

Warning

May only be carried out by an authorised electrician or trained service personnel.

- Stop the COOL DX by selecting SHUT OFF in the menu SETTINGS.
- Set the safety switch to position OFF on the COOL DX.
- Isolate the power supply to the COOL DX.

Important

Check that the incoming power supply to the COOL DX is isolated by measuring.

- Transpose the two phase wires on the incoming power supply cable in order to obtain correct phase sequence (direction of rotation).
- Reconnect on power supply to the COOL DX.
- Set the safety isolating switch to the ON position.
- Start the COOL DX as described in Section 5.1.2 Starting up.

6 ALARMS

For a description of the alarms, see the Operation and Maintenance Instructions for the GOLD.

7 MAINTENANCE

7.1 Cleaning


Use a vacuum cleaner and a damp cloth to clean the interior of the cooling unit, if needed.

Inspect the unit at least twice a year.


7.2 Handling refrigerant

Type R 410A refrigerant is used.

The refrigerant circuit is already charged when the unit is delivered.

 Warning
<p>Under no circumstances shall unauthorised personnel be permitted to open the refrigerant circuits, as long as gas under high pressure is present in the circuits. Only the technicians of an accredited refrigeration company shall be permitted to modify or repair the refrigerant circuit s.</p> <p>The COOL DX is equipped with a safety valve to prevent excessively high pressure in the system if high temperatures caused by a fire, for example.</p>

Important
<p>Contact Swegon Service if you detect any refrigerant leakage.</p>

 Warning
<p>If refrigerant is exposed to fire or in some other way becomes superheated in the atmosphere, poisonous gases can form.</p>

Important

Charging with refrigerant must be carried out according to the recommendations of the refrigerant producer.

Avoid direct skin contact with refrigerant and lubricant.

Use close-fitting protective eyeglasses, protective gloves and protective work clothing that cover the whole body.

Provide adequate ventilation/local extraction.

In the event of eye contact

Flush the eyes using an emergency eye-wash shower (alternating with lukewarm water) for 20 minutes. Seek a doctor.

In the event of skin contact

Thoroughly wash with soap and lukewarm water.

In the event of frostbite

Seek a doctor.

7.3 Annual inspection

An annual check carried out by an accredited inspectorate is required if the volume of refrigerant in the cooling unit exceeds 3 kg. See 10, General technical data.

Obligation to report

You are obligated to file a report with the local supervisory authorities only if the total volume of refrigerant charged in refrigerating units at a given company exceeds 10 kg.

7.4 Servicing

Only service personnel trained by Swegon shall be permitted to modify the cooling unit.

8 TROUBLESHOOTING AND LEAKAGE TRACING

8.1 Troubleshooting Schedule

Symptom	Possible cause	Remedial measure
Compressor is not operating	The voltage has been isolated. Incorrect phase sequence. The compressor safety circuit has been broken. Defective compressor.	Check the operating/safety switch. Check the condition of the fuses. Check and change the phase sequence. Check, reset if needed. Replace the compressor.
Too low cooling capacity	The voltage has been isolated. Incorrect phase sequence. No airflow or too low airflow across the evaporator. Thermostat/control equipment incorrectly set or defective.	Check the operating/safety switch. Check the condition of the fuses. . Check and change the phase sequence. Check the airflow. Adjust the setting or replace faulty components.
The compressor switches off because the low pressure sensor has measured an excessively low value.	Inadequate refrigerant. No airflow or too low airflow across the evaporator. The expansion valve is defective. The low sensor switch is defective.	The cooling system is leaking. Tighten the leak and charge with refrigerant. Check the airflow. Check, replace. Check, replace.
The compressor switches off because the high pressure sensor has measured an excessively high value.	No airflow or too low airflow across the condensor. Excessively high exhaust air temperature The high pressure sensor is defective.	Check the airflow. Check the exhaust air temperature. Check. replace.
Significant freezing on the evaporator.	The expansion valve is defective or incorrectly set. No airflow or too low airflow across the evaporator.	Check. Replace or adjust setting Check the airflow.

8.2 Leakage Tracing

As a preventive measure, the cooling system should be inspected at least once per year to detect possible leakage. The leakage tracing inspection must be documented.

If the cooling system is leaking, this will become apparent firstly by impaired cooling performance, or if the leakage is substantial, when the cooling unit does not operate at all.

If you suspect that the cooling system is leaking refrigerant, check the level of refrigerant in the sight glass located on the liquid line of the cooling unit.

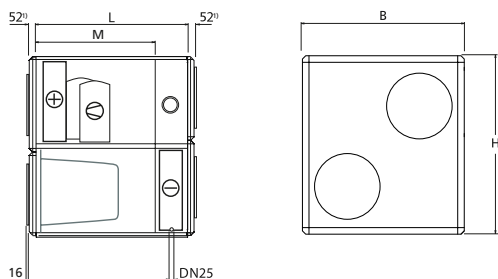
If you see continuous and a substantial amount of bubbling in the sight glass and the cooling unit operates at appreciably lower capacity than normal, the system is probably leaking. One or several bubbles appearing when the cooling unit is started up, operation at reduced capacity or normal operation need not necessarily indicate a refrigerant deficiency.

If it is bubbling in the sight glass and the cooling unit operates at appreciably lower capacity, call for qualified service help.

N.B.! Maintenance work in the refrigerant system is permitted to be carried out only by an accredited inspectorate (a company with requisite authorisation).

9 DIMENSIONS

COOL DX 08

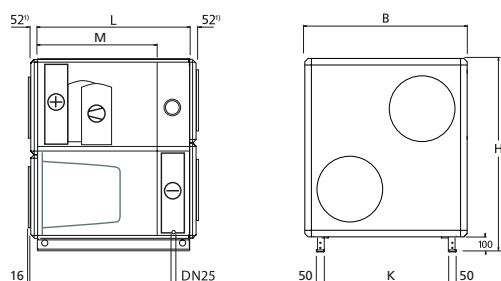


¹⁾ End connection panel, optional.

Size	L	B	H	M	Duct connection ²⁾
08	900	995	1085	709	Ø 400

²⁾ For the locations of the duct connections, see the corresponding GOLD air handling unit

COOL DX 12

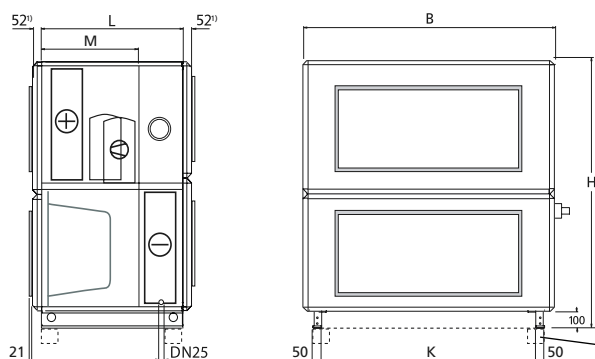


¹⁾ End connection panel, optional.

Size	L	B	H	K	M	Duct connection ²⁾
12	900	1199	1395	935	709	Ø 500

²⁾ For the locations of the duct connections, see the corresponding GOLD air handling unit

COOL DX 20, 30, 40, 60, 80



¹⁾ End connection panel, optional.

Size	L	B	H	K	M	Duct connection ²⁾
20	900	1400	1495	1136	709	1000 x 400
30	900	1600	1695	1336	709	1200 x 500
40	1100	1990	2085	1726	884	1400 x 600
60	1100	2318	2353	2075	884	1600 x 800
80	1100	2637	2740	2395	884	1800 x 1000

²⁾ For the locations of the duct connections, see the corresponding GOLD air handling unit

Sizes 60 and 80: Supplied on 100 mm high support feet. The feet can be removed or kept as they are when the unit is at its final location. There are sockets for the adjustable support feet.

10 GENERAL TECHNICAL DATA

Cooling system COOL DX

COOL DX Size	Capacity var.	Nom. air-flow (m ³ /s)	Min. air-flow (m ³ /s)	Nom. cooling capacity ¹⁾ (kW)	Nom. power required (kW)	Refrigerant (kg)		Power supply	Weight excl. end conn. panel (kg)	Weight/pc. - end conn. panel, if required ³⁾ (kg)
						Circuit 1	Circuit 2			
08	1	0.55	0.22	9.8	2.39	1.29	1.33	3-ph., 400 V, 16 A	194	8
	2	0.70	0.3	13.9	4.33	1.29	1.33	3-ph., 400 V, 20 A	215	8
12	1	0.85	0.35	15.4	3.95	1.52	1.80	3-ph., 400 V, 20 A	260	10
	2	1.05	0.4	20.9	6.53	1.52	1.80	3-ph., 400 V, 32 A	287	10
20	1	1.1	0.45	15.4	4.06	1.18	1.80	3-ph., 400 V, 25 A	243	10/13
	2	1.3	0.5	23.3	5.73	2.28	2.57	3-ph., 400 V, 32 A	283	10/13
	3	1.6	0.6	31.0	9.15	2.15	2.80	3-ph., 400 V, 40 A	314	10/13
30	1	1.8	0.7	25.0	6.33	1.80	2.45	3-ph., 400 V, 32 A	322	11/17
	2	2.0	0.8	35.8	9.34	3.48	3.74	3-ph., 400 V, 32 A	374	11/17
	3	2.4	1.0	46.2	13.5	3.48	3.85	3-ph., 400 V, 50 A	414	11/17
40	1	2.9	1.1	38.6	8.40	3.34	4.51	3-ph., 400 V, 32 A	468	18/22
	2	3.1	1.3	48.4	12.3	3.40	4.72	3-ph., 400 V, 50 A	476	18/22
	3	3.6	1.5	67.0	17.5	5.85	5.08	3-ph., 400 V, 63 A	529	18/22
60	1	3.9	1.5	56.2	11.8	5.14	6.03	3-ph., 400 V, 50 A	708	31
	2	4.1	1.6	66.7	17.1	5.38 ²⁾	6.30 ²⁾	3-ph., 400 V, 63 A	779	31
	3	5.0	2.0	97.5	26.3	6.60	8.11	3-ph., 400 V, 80 A	852	31
80	1	5,2	2.0	67.0	13.3	6.60 ²⁾	8.11 ²⁾	3-ph., 400 V, 50 A	852	38
	2	6,0	2.4	96.5	24.8	6.49 ²⁾	9.00 ²⁾	3-ph., 400 V, 80 A	979	38
	3	7.0	2.8	134.0	36.4	9.11	11.84	3-ph., 400 V, 110 A	1035	38

¹⁾ For an outdoor temperature of 26°C, 50% RH (capacity variant 1), 27°C, 50% RH (capacity variant 2) or 28°C, 50% RH (capacity variant 3), and an extract air temperature of 26°C.

²⁾ Preliminary data.

³⁾ The first weight applies to a small end connection panel; the second weight applies to a large end connection panel. COOL DX can be supplied completely without end connection panels or with a maximum of 2 small and two large end connection panels depending on the variant selected.

Sizing

There are many factors that influence what size of cooling unit is required.

The COOL DX units have been designed to enable them to meet many different prerequisites.

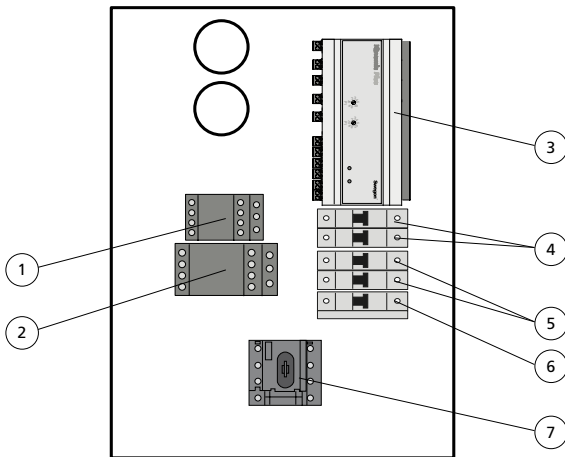
For correct sizing we refer to our ProUnit unit selection program.

11 ELECTRICAL EQUIPMENT

The electric equipment in the COOL DX is located behind the inspection door.

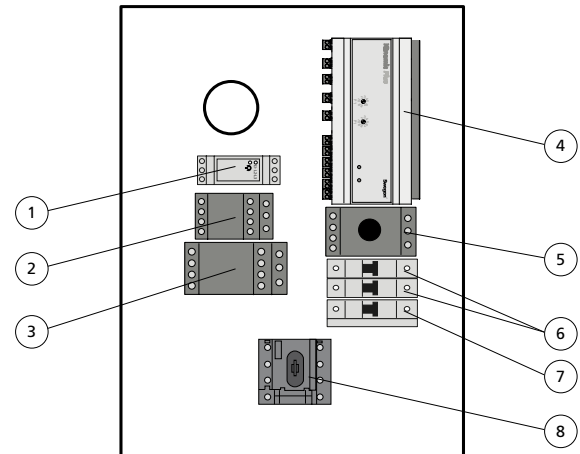
For a diagrammatic description, see the wiring diagram.

GOLD 08, capacity variant 1



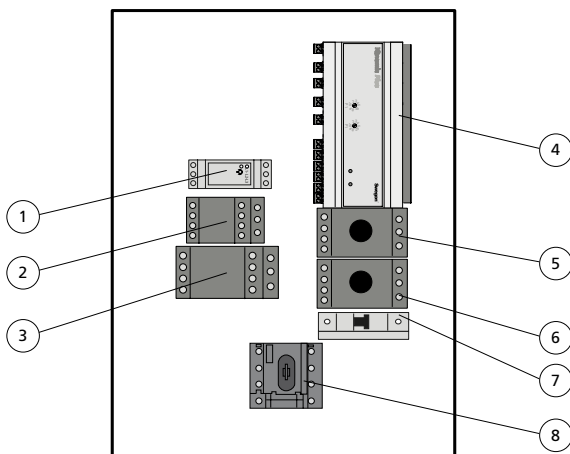
1. Contactor with auxiliary contact for compressor 1.
2. Contactor with auxiliary contact for compressor 2.
3. IQnomic Plus, control unit.
4. Safety fuses, compressor 2.
5. Safety fuses, compressor 1.
6. Control circuit fuse.
7. Safety isolating switch

Size 08, capacity variant 2; sizes 12 and 20, all capacity variants and size 30, capacity variant 1



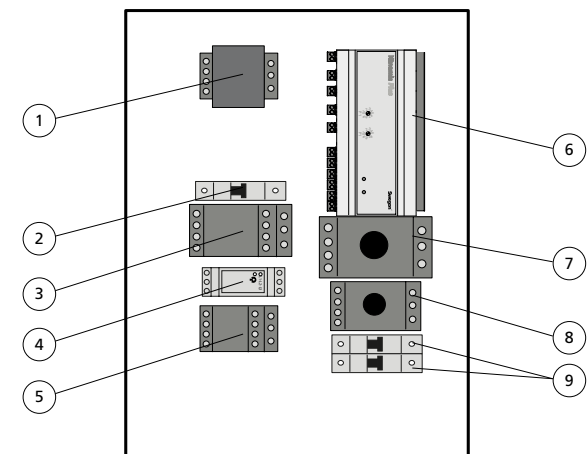
1. Phase sequence monitor.
2. Contactor with auxiliary contact for compressor 1.
3. Contactor with auxiliary contact for compressor 2.
4. IQnomic Plus, control unit.
5. Protective motor switch, Compressor 2
6. Safety fuses, compressor 1.
7. Control circuit fuse.
8. Safety isolating switch

Size 30, capacity variants 2 and 3; size 40, all capacity variants; size 60, capacity variants 1 and 2; size 80, capacity variant 1



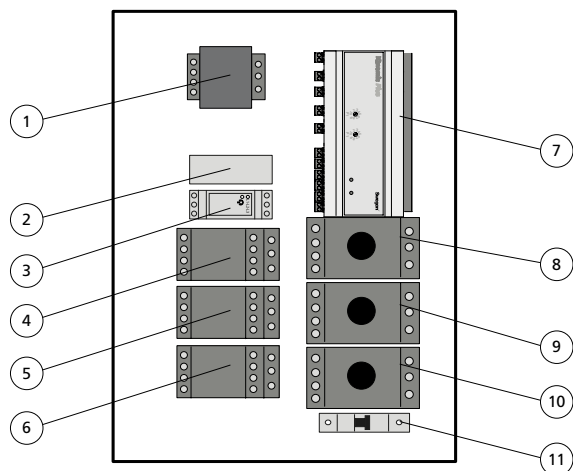
1. Phase sequence monitor.
2. Contactor with auxiliary contact for compressor 1.
3. Contactor with auxiliary contact for compressor 2.
4. IQnomic Plus, control unit.
5. Protective motor switch, Compressor 2
6. Protective motor switch, Compressor 1
7. Control circuit fuse.
8. Safety switch (not applicable to sizes 60-1/2 and 80-1).

Size 60, capacity variant 3 to size 80, capacity variant 2



1. Transformer.
2. Control circuit fuse.
3. Contactor with auxiliary contact for compressor 2.
4. Phase sequence monitor.
5. Contactor with auxiliary contact for compressor 1.
6. IQnomic Plus, control unit.
7. Protective motor switch, Compressor 2
8. Protective motor switch, Compressor 1
9. Safety fuses, compressor 1.

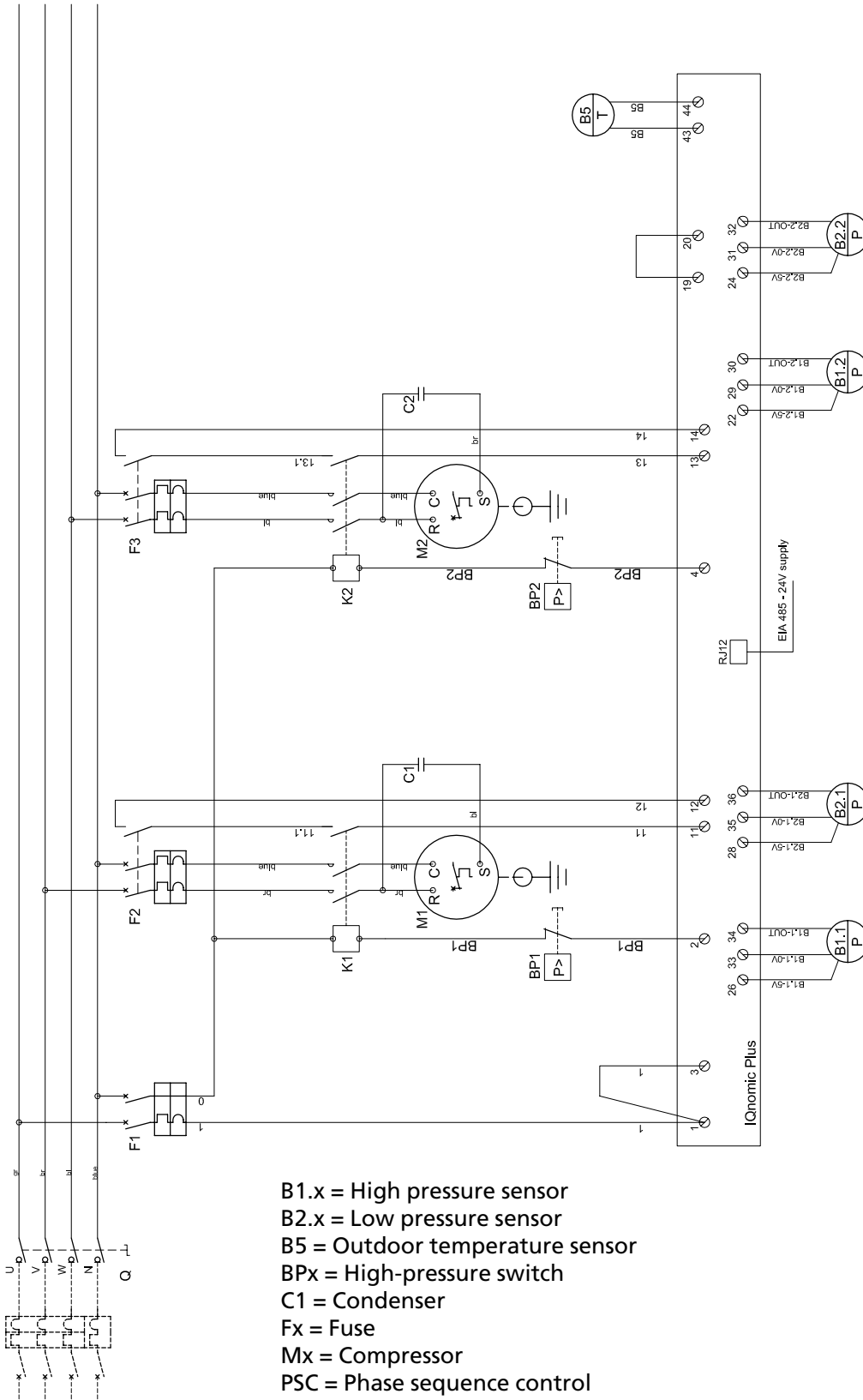
Size 80, capacity variant 3



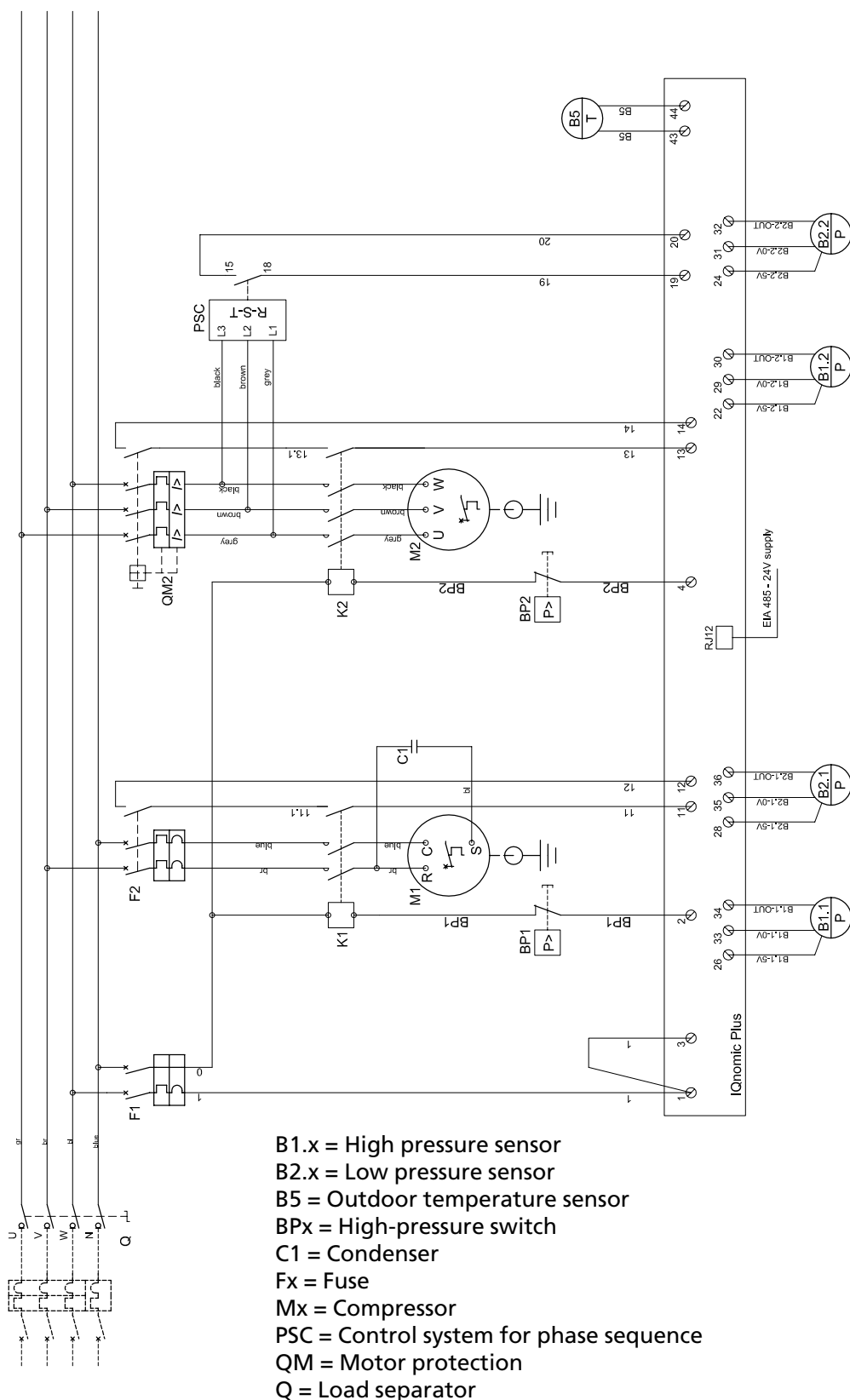
1. Transformer.
2. Time relay.
3. Phase sequence monitor.
4. Contactor with auxiliary contact for compressor 1.
5. Contactor with auxiliary contact for compressor 2.
6. Contactor with auxiliary contact for compressor 3.
7. IQnomic Plus, control unit.
8. Protective motor switch, Compressor 1
9. Protective motor switch, Compressor 2
10. Protective motor switch, Compressor 3
11. Control circuit fuse.

12 INTERNAL WIRING DIAGRAM

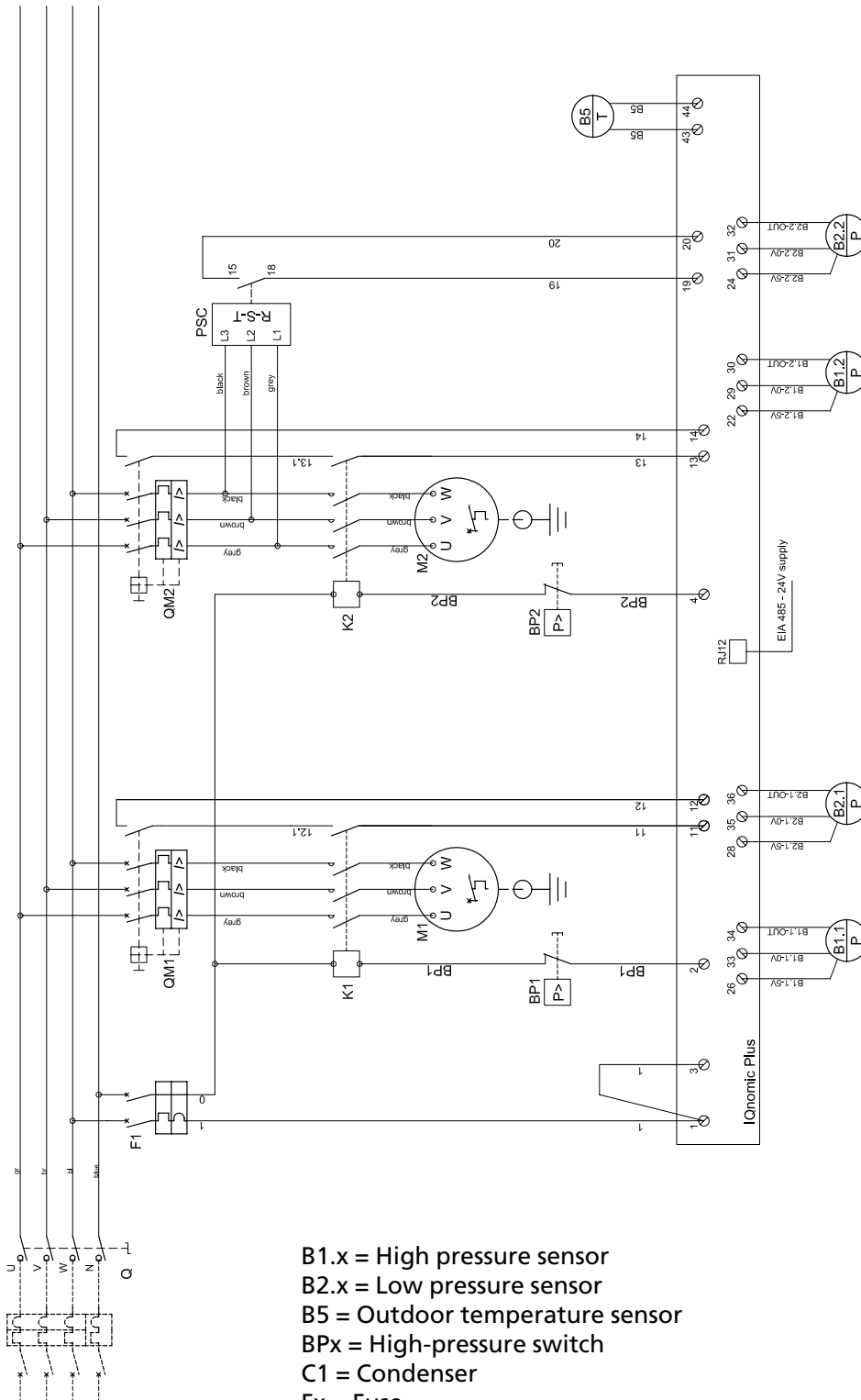
12.1 COOL DX, size 08, capacity variant 1



12.2 The COOL DX size 08, capacity variants 2, size 12 and 20, all capacity variants and size 30, capacity variant 1

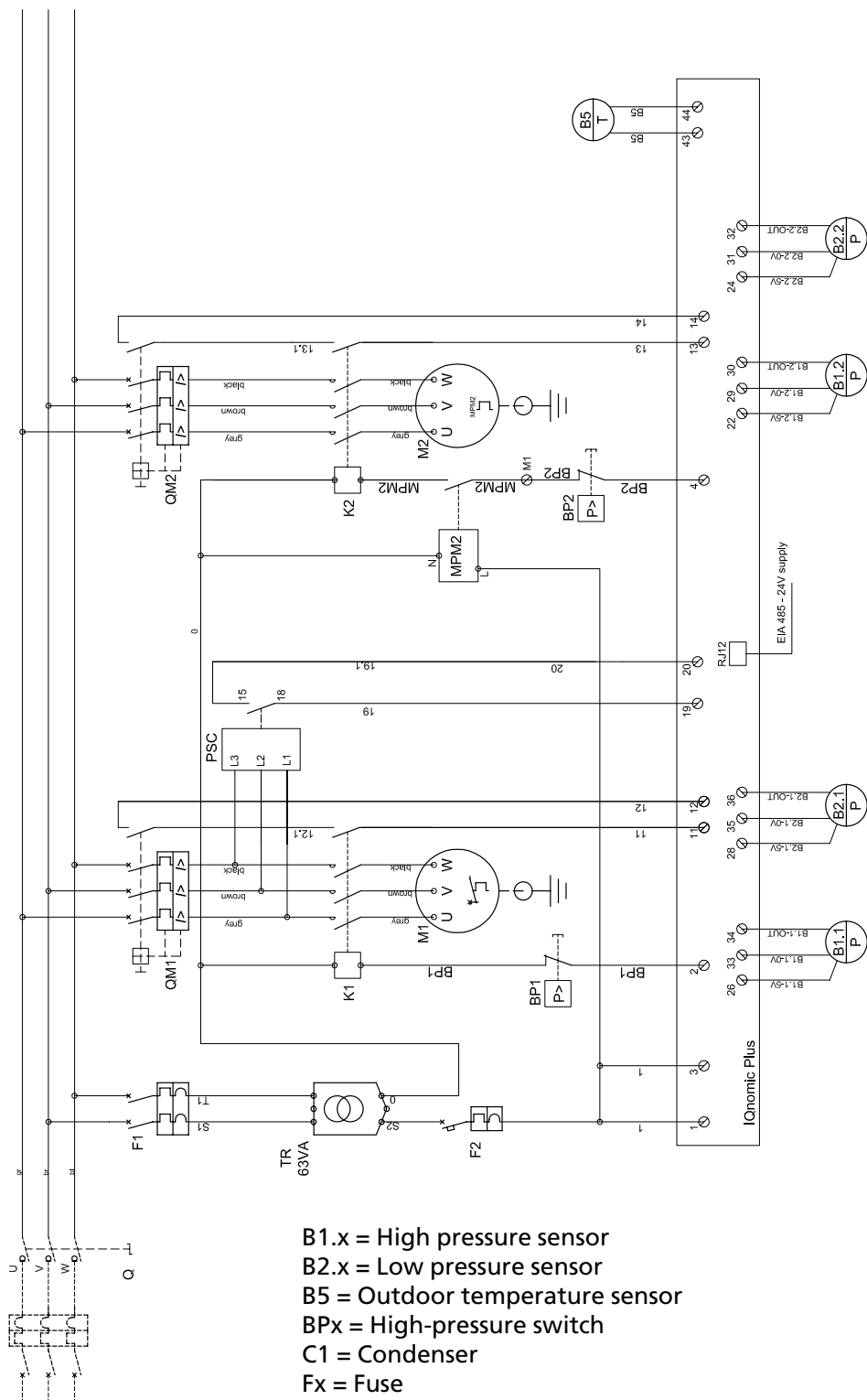


12.3 COOL DX, size 30, capacity variants 2 and 3, size 40, all capacity variants and size 60, capacity variants 1 and 2



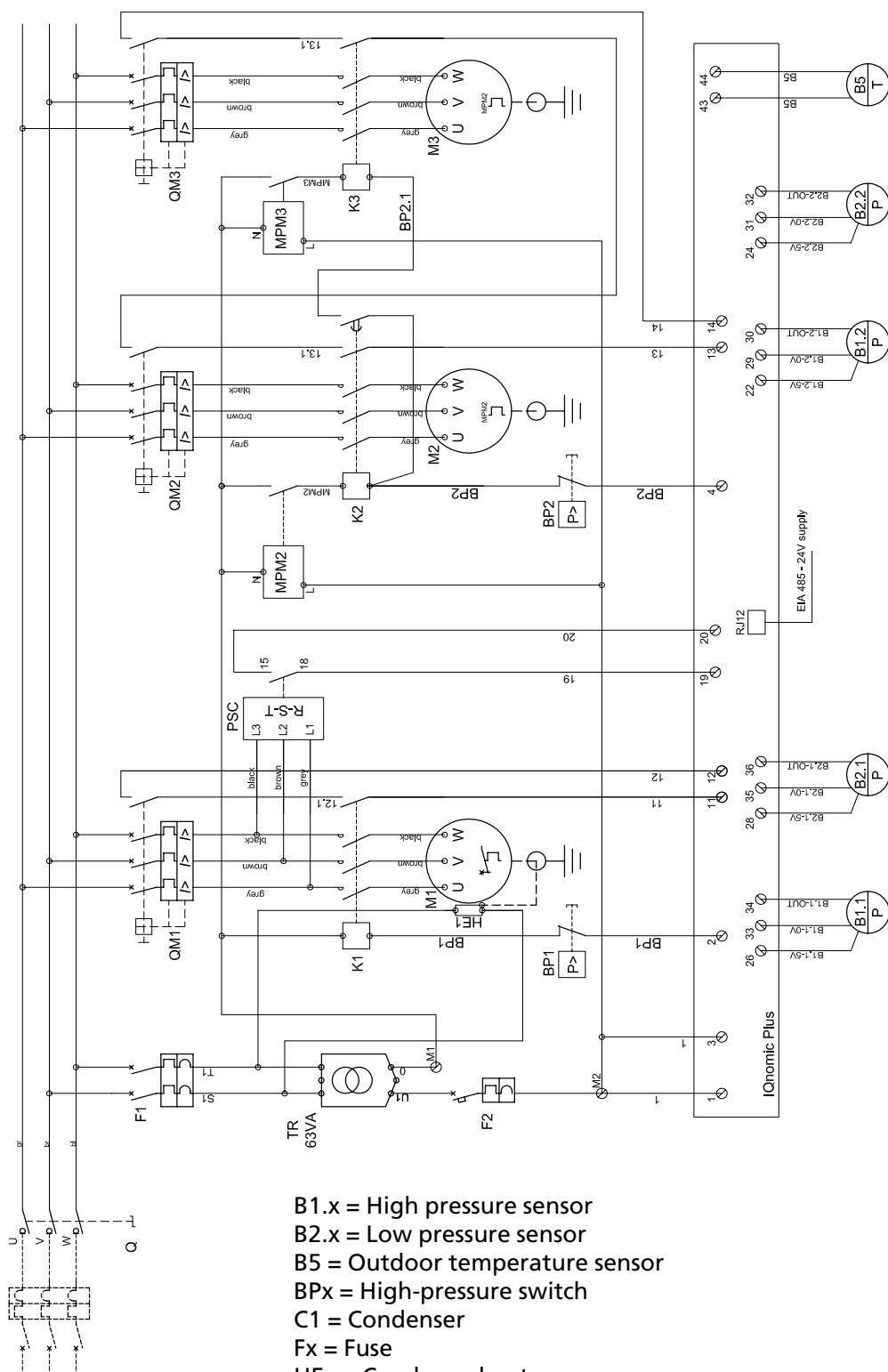
- B1.x = High pressure sensor
- B2.x = Low pressure sensor
- B5 = Outdoor temperature sensor
- BPx = High-pressure switch
- C1 = Condenser
- Fx = Fuse
- Mx = Compressor
- PSC = Control system for phase sequence
- QM = Motor protection
- Q = Load separator

12.4 COOL DX, size 60, capacity variant 3 and size 80, capacity variant 2



- B1.x = High pressure sensor
- B2.x = Low pressure sensor
- B5 = Outdoor temperature sensor
- BPx = High-pressure switch
- C1 = Condenser
- Fx = Fuse
- HEx = Crankcase heater
- Mx = Compressor
- MPM = Motor protection module
- PSC = Control system for phase sequence
- QM = Motor protection
- Q = Load separator

12.6 COOL DX, size 80, capacity variant 3



13 Commissioning Record

Company

Our reference

Client	Date	SO No.
Plant	Project/Air handling unit	Subject No.
Plant address	Type/Size	

Installation/Connections

Inspection measure	Approved/ Done	Remarks
Installation according to instructions	<input type="checkbox"/>	
Condensate drain correctly connected, water trap filled with water	<input type="checkbox"/>	
The supply air filter in the GOLD unit has been moved to the COOL DX unit.	<input type="checkbox"/>	
Air hoses for filter in COOL DX fitted according to instructions	<input type="checkbox"/>	
Electrical connections installed according to instructions	<input type="checkbox"/>	
Control cable from COOL DX to GOLD connected according to instructions	<input type="checkbox"/>	

Item inspected	COOL DX, size	Factory-preset value	Checked value
Safety switch, Compressor 1 Safety switch, Compressor 2	<input type="checkbox"/> 08-1	D10 D16	
Safety switch, Compressor 1 Prot. motor switch, Compressor 2	<input type="checkbox"/> 08-2	D10 8.5 A	
	<input type="checkbox"/> 12-1	D10 8.5 A	
	<input type="checkbox"/> 12-2	D16 15.0 A	
	<input type="checkbox"/> 20-1	D10 13.0 A	
	<input type="checkbox"/> 20-2	D16 15.0 A	
	<input type="checkbox"/> 20-3	D16 20.0 A	
	<input type="checkbox"/> 30-1	D16 15.0 A	
Prot. motor switch, Compressor 1 Prot. motor switch, Compressor 2	<input type="checkbox"/> 30-2	13.0 A 20.0 A	
	<input type="checkbox"/> 30-3	15.0 A 29.0 A	
	<input type="checkbox"/> 40-1	13.0 A 20.0 A	
	<input type="checkbox"/> 40-2	15.0 A 29.0 A	
	<input type="checkbox"/> 40-3	20.0 A 33.0 A	
	<input type="checkbox"/> 60-1	15.0 A 29.0 A	
	<input type="checkbox"/> 60-2	20.0 A 33.0 A	
	<input type="checkbox"/> 60-3	29.0 A 50.0 A	
	<input type="checkbox"/> 80-1	15.0 A 33.0 A	
	<input type="checkbox"/> 80-2	29.0 A 50.0 A	
	<input type="checkbox"/> 80-3	33.0 A 38.0 + 38.0 A	

Item inspected	COOL DX, size	Factory-preset value	Checked value
IQnomic+, Function selector switch 1 IQnomic+, Function selector switch 2	<input type="checkbox"/> 08-1	2	
		1	
	<input type="checkbox"/> 08-2	2	
		2	
	<input type="checkbox"/> 12-1	2	
		1	
	<input type="checkbox"/> 12-2	2	
		2	
	<input type="checkbox"/> 20-1	2	
		1	
	<input type="checkbox"/> 20-2	2	
		2	
	<input type="checkbox"/> 20-3	2	
		3	
	<input type="checkbox"/> 30-1	2	
		1	
	<input type="checkbox"/> 30-2	2	
		2	
	<input type="checkbox"/> 30-3	2	
		3	
	<input type="checkbox"/> 40-1	2	
		1	
	<input type="checkbox"/> 40-2	2	
		2	
	<input type="checkbox"/> 40-3	2	
		3	
	<input type="checkbox"/> 60-1	2	
		1	
	<input type="checkbox"/> 60-2	2	
		2	
	<input type="checkbox"/> 60-3	2	
		3	
	<input type="checkbox"/> 80-1	2	
		1	
	<input type="checkbox"/> 80-2	2	
		2	
	<input type="checkbox"/> 80-3	2	
		3	

