

# ClimaSys Cooling Units for Electrical Enclosures

## User Guide

GEX8258701EN-00

06/2023



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As part of a group of responsible, inclusive companies, we are updating our communications that contain non-inclusive terminology. Until we complete this process, however, our content may still contain standardized industry terms that may be deemed inappropriate by our customers.

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# Safety Information

## Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

### **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

### **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

### **NOTICE**

**NOTICE** is used to address practices not related to physical injury.

## Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

# About the Book

## Document Scope

The aim of this document is to provide users, installers, and maintenance personnel with the technical information needed to install and operate ClimaSys™ cooling units for electrical enclosures..

ClimaSys cooling units exist in the following configurations:

- Indoor side-mounted cooling units
- Indoor roof-mounted cooling units
- Outdoor side-mounted cooling units

## Online Information

The information contained in this guide is likely to be updated at any time. Schneider Electric strongly recommends that you have the most recent and up-to-date version available on [www.se.com/ww/en/download](http://www.se.com/ww/en/download).

The technical characteristics of the devices described in this guide also appear online. To access the information online, go to the Schneider Electric home page at [www.se.com](http://www.se.com).

## Related Documents

Title of documentation	Publication date	Reference number
Universal Enclosures Catalogue	2022	UEMKCAT012EN
Control Panel - Technical Guide - How to reduce damage to components through effective thermal management	2017	CPTG001_EN

You can download these technical publications and other technical information from our website at [www.se.com/ww/en/download](http://www.se.com/ww/en/download).

# Offer Presentation

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## Intended Purpose

The ClimaSys cooling units are air/air conditioners intended as complementary accessories for the temperature control of electrical and electronic enclosures with non-explosive atmospheres and non-conductive dusts. A temperature of 35 °C (95 °F) is recommended inside the electrical panel. These cooling units are self-contained and are AC single, bi or three phases powered, less than 600 Vac. All cooling units are intended to be installed and maintained only by technically competent and qualified electrical personnel using only the material provided and according to the instructions provided.

The ClimaSys cooling units have two completely separate air circuits which helps ensure that the clean enclosure air does not come in contact with the ambient air which may be dirty or polluted. These cooling units can dissipate large quantities of heat from sealed enclosures into the ambient air and can additionally reduce the internal temperature of the enclosure to below that of the ambient air. They are fit for purpose within the rated ambient conditions, and the declared allowable ingress from the environment.

The ClimaSys cooling units must be protected externally from overload and electrical faults via suitable protective devices. The supplied instructions determine what type of circuit breaker or fuse, and which ground fault protection rating is required. Each rating is the maximum for which the equipment has been investigated and found acceptable. Further explanation of the electrical system internal to the cooling unit is assisted with the wiring diagram accompanying each unit, see section *Internal Wiring Diagrams*, page 56.

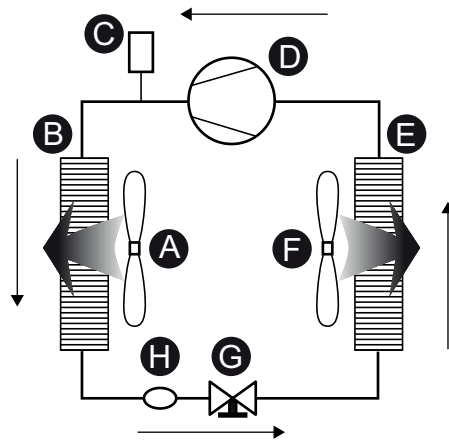
The ClimaSys cooling units are provided with R134a refrigerant having a load amount indicated on the product marking label. R134a (C<sub>2</sub>H<sub>2</sub>F<sub>4</sub>) is chlorine-free and has an ozone destruction potential (ODP) of 0 and a Global Warming Potential (GWP) of 1430.



# Operating Principle

The cooling unit works based on a refrigeration circuit consisting of the following components:

- Compressor: pump that increases the pressure and temperature of the refrigerant gas.
- Evaporator: heat exchanger that collects the heat generated inside the electrical enclosure.
- Condenser: heat exchanger that delivers the heat collected inside the electrical enclosure to the ambient air.
- Expansion device: device that regulates the flow of refrigerant between the condenser and the evaporator.
- Dehydrator filter: filter that helps to protect the refrigeration circuit by capturing impurities, acid, and moisture from the circuit.



- A. Condenser fan
- B. Condenser
- C. Pressostat
- D. Compressor
- E. Evaporator
- F. Evaporator fan
- G. Expansion device
- H. Dehydrator filter

The circuit is sealed and the refrigerant circulates inside it. The refrigerant used is R134a, free from chlorine, and not damaging to atmospheric ozone. The cooling unit is divided into two sections, hermetically separated, where the environmental air and the enclosure air are both treated, without meeting each other.

The enclosure temperature is lowered as follows: The compressor (D) compresses the refrigerant (thus taking it to high pressure and high temperature), and pushes it through the condenser (B). In the condenser, the refrigerant is cooled by the ambient air; resulting in the change of state from gas to liquid. When in the liquid state, the refrigerant passes through the expansion device (G), where the pressure difference makes the refrigerant spray out. Then the refrigerant reaches the evaporator (E). In the evaporator, the refrigerant absorbs the heat from the enclosure air, resulting in the change of state from liquid to gas. The gas is then redirected to the condenser by the compressor, and the cycle is repeated.

## Reference Coding Principle

The following table indicates how to interpret the ClimaSys cooling unit reference number.

# NSY A B C D E DG

Item		Code	Description
<b>A</b>	Family range	CU	Cooling unit
<b>B</b>	Cover material	–	Galvanized steel painted
		X	Stainless steel
		HD	Outdoor use galvanized steel painted (heavy duty)
<b>C</b>	Power	***	The power of each commercial reference is given in the tables of references, page 11.
<b>D</b>	Voltage	–	1 x 230 Vac 50/60 Hz
		2P4	2 x 400 Vac 50 Hz or 2 x 460 Vac 60 Hz
		3P4	3 x 380-415 Vac 50 Hz or 3 x 420-460 Vac 60 Hz
<b>E</b>	Mounting	–	Side mounted
		R	Roof mounted

## List of References

For detailed information on the ClimaSys cooling units references, refer to UEMKCAT012EN *Universal Enclosures Catalogue*.

### Indoor Side-Mounted Cooling Units

Commercial reference	Cover materials	Cooling capacity L35-L35 according to EN14511	Supply voltage
NSYCU350DG	Galvanized steel painted	350 W	230 Vac 50/60 Hz
NSYCUX350DG	Stainless steel	350 W	230 Vac 50/60 Hz
NSYCU600DG	Galvanized steel painted	650 W	230 Vac 50/60 Hz
NSYCUX600DG	Stainless steel	650 W	230 Vac 50/60 Hz
NSYCU800DG	Galvanized steel painted	900 W	230 Vac 50/60 Hz
NSYCU8002P4DG	Galvanized steel painted	900 W	400/460 Vac 2P 50/60 Hz
NSYCU1KDG	Galvanized steel painted	1000 W	230 Vac 50/60 Hz
NSYCUX1KDG	Stainless steel	1000 W	230 Vac 50/60 Hz
NSYCU1K2P4DG	Galvanized steel painted	1000 W	400/460 Vac 2P 50/60 Hz
NSYCUX1K2P4DG	Stainless steel	1000 W	400/460 Vac 2P 50/60 Hz
NSYCU1K2DG	Galvanized steel painted	1200 W	230 Vac 50/60 Hz
NSYCU1K22P4DG	Galvanized steel painted	1200 W	400/460 Vac 2P 50/60 Hz
NSYCU1K6DG	Galvanized steel painted	1650 W	230 Vac 50/60 Hz
NSYCUX1K6DG	Stainless steel	1650 W	230 Vac 50/60 Hz
NSYCU1K62P4DG	Galvanized steel painted	1650 W	400/460 Vac 2P 50/60 Hz
NSYCU2KDG	Galvanized steel painted	2000 W	230 Vac 50/60 Hz
NSYCU2K3P4DG	Galvanized steel painted	2000 W	380/460 Vac 3P 50/60 Hz
NSYCUX2K3P4DG	Stainless steel	2000 W	380/460 Vac 3P 50/60 Hz
NSYCU3K2DG	Galvanized steel painted	3200 W	230 Vac 50/60 Hz
NSYCU3K23P4DG	Galvanized steel painted	3200 W	380/460 Vac 3P 50/60 Hz
NSYCU4K3P4DG	Galvanized steel painted	4000 W	380/460 Vac 3P 50/60 Hz

Cooling capacity L35-L35 refers to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F).

### Indoor Roof-Mounted Cooling Units

Commercial reference	Cover materials	Cooling Capacity L35-L35 according to EN14511	Supply voltage
NSYCU600RDG	Galvanized steel painted	650 W	230 Vac 50/60 Hz
NSYCU800RDG	Galvanized steel painted	850 W	230 Vac 50/60 Hz
NSYCU8002P4RDG	Galvanized steel painted	850 W	400/460 Vac 2P 50/60 Hz
NSYCU1K2RDG	Galvanized steel painted	1250 W	230 Vac 50/60 Hz
NSYCU1K22P4RDG	Galvanized steel painted	1250 W	400/460 Vac 2P 50/60 Hz
NSYCU1K5RDG	Galvanized steel painted	1550 W	230 Vac 50/60 Hz
NSYCU1K52P4RDG	Galvanized steel painted	1550 W	400/460 Vac 2P 50/60 Hz

Commercial reference	Cover materials	Cooling Capacity L35-L35 according to EN14511	Supply voltage
NSYCU2KRDG	Galvanized steel painted	2100 W	230 Vac 50/60 Hz
NSYCU2K3P4RDG	Galvanized steel painted	2100 W	400/460 Vac 3P 50/60 Hz
NSYCU3K3P4RDG	Galvanized steel painted	3200 W	400/460 Vac 3P 50/60 Hz
NSYCU4K3P4RDG	Galvanized steel painted	4000 W	400/460 Vac 3P 50/60 Hz

Cooling capacity L35-L35 refers to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F).

## Outdoor Side-Mounted Cooling Units

Commercial reference	Cover materials	Cooling capacity L35-L35 according to EN14511	Supply voltage
NSYCUHD350DG	Galvanized steel painted	350 W	230 Vac 50/60 Hz
NSYCUHD600DG	Galvanized steel painted	650 W	230 Vac 50/60 Hz
NSYCUHD800DG	Galvanized steel painted	900 W	230 Vac 50/60 Hz
NSYCUHD1KDG	Galvanized steel painted	1000 W	230 Vac 50/60Hz
NSYCUHD1K2P4DG	Galvanized steel painted	1000 W	400/460 Vac 2P 50/60 Hz
NSYCUHD1K6DG	Galvanized steel painted	1650 W	230 Vac 50/60 Hz
NSYCUHD1K62P4DG	Galvanized steel painted	1650 W	400/460 Vac 2P 50/60 Hz
NSYCUHD2K3P4DG	Galvanized steel painted	2000 W	400/460 Vac 3P 50/60 Hz

Cooling capacity L35-L35 refers to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F).

## Accessories

Commercial Reference	Accessory Description	Compatible with...
NSYCUACC001DG	Fiber filter	Side-mounted ClimaSys cooling units, 350 - 600 W
NSYCUACC002DG	Fiber filter	Side-mounted ClimaSys cooling units, 800 - 1000 W
NSYCUACC003DG	Fiber filter	Side-mounted ClimaSys cooling units, 1200 - 1600 - 2000 W
NSYCUACC004DG	Fiber filter	Side-mounted ClimaSys cooling units, 3000 - 3200 - 4000 W
NSYCUACC005DG	Aluminum filter	Side-mounted ClimaSys cooling units, 350 - 600 W
NSYCUACC006DG	Aluminum filter	Side-mounted ClimaSys cooling units, 800 - 1000 W
NSYCUACC007DG	Aluminum filter	Side-mounted ClimaSys cooling units, 1200 - 1600 - 2000 W
NSYCUACC008DG	Aluminum filter	Side-mounted ClimaSys cooling units, 3000 - 3200 - 4000 W
NSYCUACC009DG	External condensate evaporator	All ClimaSys cooling units
NSYCUACC010DG	Fiber filter	Roof-mounted ClimaSys cooling units, 600 W
NSYCUACC011DG	Fiber filter	Roof-mounted ClimaSys cooling units, 800 - 1200 - 1500 - 2000 W
NSYCUACC013DG	Fiber filter	Roof-mounted ClimaSys cooling units, 3000 - 4000 W
NSYCUACC014DG	Aluminum filter	Roof-mounted ClimaSys cooling units, 600 W
NSYCUACC015DG	Aluminum filter	Roof-mounted ClimaSys cooling units, 800 - 1200 - 1500 - 2000 W

Commercial Reference	Accessory Description	Compatible with...
NSYCUACC017DG	Aluminum filter	Roof-mounted ClimaSys cooling units, 3000 - 4000 W
NSYCUACC018DG	Retrofit kit	Roof-mounted ClimaSys connected cooling units, 800 W
NSYCUACC019DG	Retrofit kit	Roof-mounted ClimaSys connected cooling units, 1200 - 1500 W
NSYCUACC020DG	Retrofit kit	Roof-mounted ClimaSys connected cooling units, 2000 W
NSYCUACC021DG	Retrofit kit	Roof-mounted ClimaSys connected cooling units, 3000 - 4000 W
NSYCUACC022DG	Retrofit kit	Side-mounted ClimaSys connected cooling units in Stainless steel, 600 W
NSYCUACC023DG	Retrofit kit	Flush-mounted ClimaSys Slim connected cooling unit 1100 - 1500 - 2000 W
NSYCUACC024DG	Retrofit kit	Half-flush-mounted ClimaSys Slim connected cooling unit 1100 - 1500 - 2000 W
NSYCUACC025DG	Retrofit kit	Surface-mounted ClimaSys Slim connected cooling unit 1100 - 1500 - 2000 W
NSYCUACC026DG	Retrofit kit	Flush-mounted ClimaSys Slim connected cooling unit 3200 W
NSYCUACC027DG	Retrofit kit	Half-flush-mounted ClimaSys Slim connected cooling unit 3200 W
NSYCUACC028DG	Retrofit kit	Surface-mounted ClimaSys Slim connected cooling unit 3200 W
NSYCUACC029DG	Retrofit kit	Flush-mounted ClimaSys Slim connected cooling unit in Stainless steel 1100 - 1500 W
NSYCUACC030DG	Retrofit kit	Half-flush-mounted ClimaSys Slim connected cooling unit in Stainless steel 1100 - 1500 W
NSYCUACC031DG	Retrofit kit	Surface-mounted ClimaSys Slim connected cooling unit in Stainless steel 1100 - 1500 W
NSYCUACC032DG	Retrofit kit	Side-mounted ClimaSys connected cooling units, 600 W
NSYCUACC033DG	Retrofit kit	Roof-mounted ClimaSys connected cooling units, 400 - 600 W
NSYCUACC034DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units, 350 - 600 W
NSYCUACC035DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units, 800 - 1000 W
NSYCUACC036DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units, 1200 - 1600 - 2100 W
NSYCUACC037DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units, 3200 - 4000 W
NSYCUACC038DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units in Stainless steel, 350 - 600 W
NSYCUACC039DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units in Stainless steel, 800 - 1000 W
NSYCUACC040DG	Half-flush mounting kit	Side-mounted ClimaSys cooling units in Stainless steel, 1200 - 1600 - 2100 W

# Performance

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# Performance of Indoor and Outdoor Side-Mounted Cooling Units

- Ti: Internal temperature of the enclosure
- Ta: Ambient temperature

Commercial reference	Cooling capacity	Cooling capacity	Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU••350DG	350 (1193.5)	186 (634.6)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU••600DG	650 (2216.5)	500 (1705)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>

Commercial reference	Cooling capacity L35-L35	Cooling capacity L35-L50	Performance
NSYCU••800••DG	900 (3070.9)	700 (2388.5)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU••1K•••DG	1000 (3410)	870 (2968.5)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU••1K2•••DG	1200 (4094.6)	1050 (3580.5)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>



Commercial reference	Cooling capacity	Cooling capacity	Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU••1K6••DG	1650 (5626.5)	1400 (4774)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>25 (77)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>45 (113)</li> <li>50 (122)</li> <li>55 (131)</li> </ul>
NSYCU••2K•••DG	2000 (6820)	1900 (6583.1)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>25 (77)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>45 (113)</li> <li>50 (122)</li> <li>55 (131)</li> </ul>

Commercial reference	Cooling capacity		Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU••3K2•••DG	3200 (10912)	2600 (8871.6)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU••4K•••DG	4000 (13640)	3200 (10918.9)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>

# Performance of Indoor Roof-Mounted Cooling Units

- Ti: Internal temperature of the enclosure
- Ta: Ambient temperature

Commercial reference	Cooling capacity	Cooling capacity	Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU600RDG	650 (2216.5)	580 (1977.8)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <p>20 (68) 25 (77) 30 (86) 35 (95) 40 (104) 45 (113) 50 (122) 55 (131)</p>
NSYCU800***RDG	850 (2898.5)	600 (2046)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <p>20 (68) 25 (77) 30 (86) 35 (95) 40 (104) 45 (113) 50 (122) 55 (131)</p>

Commercial reference	Cooling capacity	Cooling capacity	Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU1K2...RDG	1250 (4262.5)	800 (2728)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU1K5...RDG	1550 (5285.5)	1200 (4092)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>
NSYCU2K...RDG	2100 (7161)	1600 (5456)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p>

Commercial reference	Cooling capacity	Cooling capacity	Performance
	L35-L35	L35-L50	
	W (BTU/h)	W (BTU/h)	
NSYCU3K3P4RDG	3200 (10912)	2640 (9008)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <p>20 (68) 25 (77) 30 (86) 35 (95) 40 (104) 45 (113) 50 (122) 55 (131)</p>
NSYCU4K3P4RDG	4000 (13640)	3300 (11260)	<p><b>P</b> W (BTU/h)</p> <p><b>Ti</b> °C (°F)</p> <ul style="list-style-type: none"> <li>20 (68)</li> <li>30 (86)</li> <li>35 (95)</li> <li>40 (104)</li> <li>50 (122)</li> </ul> <p><b>Ta</b> °C (°F)</p> <p>20 (68) 25 (77) 30 (86) 35 (95) 40 (104) 45 (113) 50 (122) 55 (131)</p>

# Technical Data

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## Conformity to Standards

The table indicates conformity to standards.

Standard	Title
EN 14511	Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling
EN 60204-1	Safety of machinery – linked to 2006/42/EC Machinery directive
EN/ISO 12100	Safety of machinery – linked to 2006/42/EC Machinery directive
EN 60335-1	Safety of household and similar electrical appliances
EN 60335-2-40	Household and similar electrical appliances – Safety Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers
EN 378-2	Refrigerating systems and heat pumps - Safety and environmental requirements Part 2: Design, construction, testing, marking and documentation
EN 61000-3-2 EN 61000-3-3 EN 61000-6-2 EN 61000-6-3	Electromagnetic Compatibility (EMC)
IEC 63000	RoHS
IEC 62443-3-3 IEC 62443-4-2	Industrial communication networks – Network and system security Part 3-3: System security requirements and security levels Part 4-2: Technical security requirements for IACS components
CE, UL, UKCA	Declaration, certification and marking

# Indoor Side-Mounted Cooling Units

## Cooling Data

Characteristics that apply to each commercial reference:

- Enclosure temperature: +20 °C to +50 °C (+68 °F to +122 °F).
- Ambient temperature: +5 °C to +55 °C (+41 °F to +131 °F).

Commercial reference	Cooling capacity	Cooling capacity	Refrigerant	Maximum pressure
	L35-L35	L35-L50	R134a	
	W (BTU/h)	W (BTU/h)	kg (lb)	MPa (psi)
NSYCU350DG	350 (1193.5)	186 (634.6)	0.126 (0.27)	2.8 (416.1)
NSYCUX350DG				
NSYCU600DG	650 (2216.5)	500 (1705)	0.11 (0.24)	2.8 (416.1)
NSYCUX600DG				
NSYCU800DG	900 (3070.9)	700 (2388.5)	0.12 (0.26)	2.8 (416.1)
NSYCU8002P4DG	900 (3070.9)	700 (2388.5)	0.12 (0.26)	2.8 (416.1)
NSYCU1KDG	1000 (3410)	870 (2968.5)	0.145 (0.32)	2.8 (416.1)
NSYCUX1KDG				
NSYCU1K2P4DG	1000 (3410)	870 (2968.5)	0.145 (0.32)	2.8 (416.1)
NSYCUX1K2P4DG				
NSYCU1K2DG	1200 (4094.6)	1050 (3580.5)	0.26 (0.57)	2.8 (416.1)
NSYCU1K22P4DG	1200 (4094.6)	1050 (3580.5)	0.26 (0.57)	2.8 (416.1)
NSYCU1K6DG	1650 (5626.5)	1400 (4774)	0.32 (0.7)	2.8 (416.1)
NSYCUX1K6DG				
NSYCU1K62P4DG	1650 (5626.5)	1400 (4774)	0.32 (0.7)	2.8 (416.1)
NSYCU2KDG	2000 (6820)	1900 (6483)	0.41 (0.9)	2.8 (416.1)
NSYCU2K3P4DG	2000 (6820)	1900 (6483)	0.39 (0.86)	2.8 (416.1)
NSYCUX2K3P4DG				
NSYCU3K2DG	3200 (10912)	2600 (8872)	0.48 (1.1)	3.2 (464.1)
NSYCU3K23P4DG	3200 (10912)	2600 (8872)	0.48 (1.1)	3.2 (464.1)
NSYCU4K3P4DG	4000 (13640)	3200 (10919)	0.67 (1.5)	3.2 (464.1)

Cooling capacity L35-L35 and L35-L50 refer to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 or L50 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F), and L50 refers to 50 °C (122 °F).



## Mechanical Data

Characteristics that apply to each commercial reference:

- Ingress protection internal circuit: IP55.

Commercial reference	Dimensions		Weight	Noise
	mm	in	kg (lb)	dB(A)
NSYCU350DG	460 x 290 x 190	18.1 x 11.4 x 7.5	11.7 (25.8)	55
NSYCUX350DG				
NSYCU600DG	460 x 290 x 190	18.1 x 11.4 x 7.5	11.7 (25.8)	55
NSYCUX600DG				
NSYCU800DG	780 x 345 x 215	30.7 x 13.6 x 8.5	22.4 (49.3)	70
NSYCU8002P4DG	780 x 345 x 215	30.7 x 13.6 x 8.5	27.4 (60.4)	70
NSYCU1KDG	780 x 345 x 215	30.7 x 13.6 x 8.5	22.4 (49.3)	70
NSYCUX1KDG				
NSYCU1K2P4DG	780 x 345 x 215	30.7 x 13.6 x 8.5	27.4 (60.4)	70
NSYCUX1K2P4DG				
NSYCU1K2DG	1000 x 405 x 225	39.4 x 16 x 8.9	39 (86)	72
NSYCU1K22P4DG	1000 x 405 x 225	39.4 x 16 x 8.9	44.5 (98.1)	72
NSYCU1K6DG	1000 x 405 x 225	39.4 x 16 x 8.9	39 (86)	72
NSYCUX1K6DG				
NSYCU1K62P4DG	1000 x 405 x 225	39.4 x 16 x 8.9	44.5 (98.1)	72
NSYCU2KDG	1000 x 405 x 225	39.4 x 16 x 8.9	40.4 (89.1)	72
NSYCU2K3P4DG	1000 x 405 x 225	39.4 x 16 x 8.9	40.4 (89.1)	72
NSYCUX2K3P4DG				
NSYCU3K2DG	1300 x 490 x 250	51.2 x 19.23 x 9.8	59.6 (131.4)	72
NSYCU3K23P4DG	1300 x 490 x 250	51.2 x 19.23 x 9.8	59 (130)	72
NSYCU4K3P4DG	1300 x 490 x 250	51.2 x 19.23 x 9.8	62.2 (137.1)	72

## Electrical Data

Characteristics that apply to each commercial reference:

- Recommended fuse T 15 A.

Commercial reference	Supply voltage	Maximum current	Starting current	Electrical power L35-L35	Electrical power L35-L50	Recommended circuit breaker
	Vac 50-60 Hz	A	A	W	W	–
NSYCU350DG	1 x 230	1.4	3.8	240	270	M9F22116
NSYCUX350DG						
NSYCU600DG	1 x 230	2.3	6.0	350	410	M9F22116
NSYCUX600DG						
NSYCU800DG	1 x 230	3	6.0	480	530	M9F22116
NSYCU8002P4DG	2 x 400/460	3	4.0	500	530	M9F22216
NSYCU1KDG	1 x 230	3	6.0	480	530	M9F22116
NSYCUX1KDG						
NSYCU1K2P4DG	2 x 400/460	3	4.0	480	530	M9F22216
NSYCUX1K2P4DG						
NSYCU1K2DG	1 x 230	6	16.0	700	790	M9F22116
NSYCU1K22P4DG	2 x 400/460	2.8	8.0	700	790	M9F22216
NSYCU1K6DG	1 x 230	6	16.0	770	880	M9F22116
NSYCUX1K6DG						
NSYCU1K62P4DG	2 x 400/460	2.8	8.0	770	880	M9F22216
NSYCU2KDG	1 x 230	7.5	22.0	900	1100	M9F22116
NSYCU2K3P4DG	3 x 400/460	2.5	13.0	900	1100	M9F22316
NSYCUX2K3P4DG						
NSYCU3K2DG	1 x 230	9	30.0	1200	1400	M9F22116
NSYCU3K23P4DG	3 x 400/460	3.5	20.0	1200	1400	M9F22316
NSYCU4K3P4DG	3 x 400/460	5	15.0	1700	2800	M9F22316

# Indoor Roof-Mounted Cooling Units

## Cooling Data

Characteristics that apply to each commercial reference:

- Enclosure temperature: +20 °C to +50 °C (+68 °F to +122 °F).
- Ambient temperature: +5 °C to +55 °C (+41 °F to +131 °F).

Commercial reference	Cooling capacity	Cooling capacity	Refrigerant	Maximum pressure
	L35-L35	L35-L50	R134a	
	W (BTU/h)	W (BTU/h)	kg (lb)	MPa (psi)
NSYCU600RDG	650 (2216.5)	580 (1977.8)	0.12 (0.26)	2.8 (416.1)
NSYCU800RDG	850 (2898.5)	600 (2046)	0.13 (0.3)	2.8 (416.1)
NSYCU8002P4RDG	850 (2898.5)	600 (2046)	0.13 (0.3)	2.8 (416.1)
NSYCU1K2RDG	1250 (4262.5)	800 (2728)	0.15 (0.3)	3.2 (464.1)
NSYCU1K22P4RDG	1250 (4262.5)	800 (2728)	0.15 (0.3)	3.2 (464.1)
NSYCU1K5RDG	1550 (5285.5)	1200 (4092)	0.27 (0.6)	3.2 (464.1)
NSYCU1K52P4RDG	1550 (5285.5)	1200 (4092)	0.27 (0.6)	3.2 (464.1)
NSYCU2KRDG	2100 (7161)	1600 (5456)	0.32 (0.7)	3.2 (464.1)
NSYCU2K3P4RDG	2100 (7161)	1600 (5456)	0.42 (0.93)	3.2 (464.1)
NSYCU3K3P4RDG	3200 (10912)	2640 (9008)	0.48 (1.1)	3.2 (464.1)
NSYCU4K3P4RDG	4000 (13640)	3300 (11260)	0.55 (1.2)	3.2 (464.1)

Cooling capacity L35-L35 and L35-L50 refer to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 or L50 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F), and L50 refers to 50 °C (122 °F).

## Mechanical Data

Characteristics that apply to each commercial reference:

- Ingress protection internal circuit: IP54

Commercial reference	Dimensions		Weight	Noise
	mm	in	kg (lb)	dB(A)
NSYCU600RDG	368 x 400 x 325	14.5 x 14.8 x 12.8	16.8 (37.04)	55
NSYCU800RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	27.5 (60.6)	70
NSYCU8002P4RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	32 (70.5)	70
NSYCU1K2RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	34.5 (76.0)	70
NSYCU1K22P4RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	39.0 (86)	70
NSYCU1K5RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	34.5 (76.1)	70
NSYCU1K52P4RDG	412 x 595 x 395	16.2 x 23.4 x 15.6	39.0 (86)	70
NSYCU2KRDG	435 x 595 x 475	17.1 x 23.4 x 18.7	38.1 (84)	72
NSYCU2K3P4RDG	435 x 595 x 475	17.1 x 23.4 x 18.7	40.1 (88.4)	72
NSYCU3K3P4RDG	456 x 795 x 575	18 x 31.3 x 22.6	54.2 (119.5)	72
NSYCU4K3P4RDG	456 x 795 x 575	18 x 31.3 x 22.6	57.2 (126.1)	72

## Electrical Data

Characteristics that apply to each commercial reference:

- Recommended fuse T 15 A.

Commercial reference	Supply voltage	Maximum current	Starting current	Electrical power L35-L35	Electrical power L35-L50	Recommended circuit breaker
	Vac 50–60 Hz	A	A	W	W	
NSYCU600RDG	1 x 230	2.2	6.0	340	390	M9F22116
NSYCU800RDG	1 x 230	3.0	6.0	490	550	M9F22116
NSYCU8002P4RDG	2 x 400/460	1.9	4.0	530	580	M9F22216
NSYCU1K2RDG	1 x 230	4.3	16.0	650	700	M9F22116
NSYCU1K22P4RDG	2 x 400/460	2.2	8.0	700	750	M9F22216
NSYCU1K5RDG	1 x 230	6.1	16.0	700	800	M9F22116
NSYCU1K52P4RDG	2 x 400/460	3.0	8.0	760	860	M9F22216
NSYCU2KRDG	1 x 230	6.4	22.0	870	1030	M9F22116
NSYCU2K3P4RDG	3 x 400/460	2.4	13.0	840	1010	M9F22316
NSYCU3K3P4RDG	3 x 400/460	3.2	20.0	1170	1400	M9F22316
NSYCU4K3P4RDG	3 x 400/460	4.1	28.0	1480	1770	M9F22316

# Outdoor Side-Mounted Cooling Units

## Cooling Data

Characteristics that apply to each commercial reference:

- Enclosure temperature: +20 °C to +50 °C (+68 °F to +122 °F).
- Ambient temperature: -20 °C to +55 °C (-4 °F to +131 °F).

Commercial reference	Cooling capacity	Cooling capacity	Refrigerant	Maximum pressure
	L35-L35	L35-L50	R134a	
	W (BTU/h)	W (BTU/h)	kg (lb)	MPa (psi)
NSYCUHD350DG	350 (1193.5)	186 (634.6)	0.12 (0.3)	2.8 (416.1)
NSYCUHD600DG	650 (2216.5)	500 (1705)	0.11 (0.24)	2.8 (416.1)
NSYCUHD800DG	900 (3070.9)	700 (2388.5)	0.12 (0.26)	2.8 (416.1)
NSYCUHD1KDG	1000 (3410)	870 (2968.5)	0.18 (0.4)	2.8 (416.1)
NSYCUHD1K2P4DG	1000 (3410)	870 (2968.5)	0.18 (0.4)	2.8 (416.1)
NSYCUHD1K6DG	1650 (5626.5)	1400 (4774)	0.32 (0.7)	2.8 (416.1)
NSYCUHD1K62P4DG	1650 (5626.5)	1400 (4774)	0.32 (0.7)	2.8 (416.1)
NSYCUHD2K3P4DG	2000 (6820)	1900 (6483)	0.39 (0.86)	2.8 (416.1)

Cooling capacity L35-L35 and L35-L50 refer to the standard rating condition defined in the European Standard EN14511.

The first number L35 refers to the dry temperature of 35 °C (95 °F) inside the enclosure, which is the temperature setpoint set in the electronic thermostat.

The second number L35 or L50 refers to the dry temperature outside the enclosure, also called ambient temperature. L35 refers to 35 °C (95 °F), and L50 refers to 50 °C (122 °F).

## Mechanical Data

Characteristics that apply to each commercial reference:

- Ingress protection internal circuit: IP55.

Commercial reference	Dimensions		Weight	Noise
	mm	in	Kg (lb)	dB(A)
NSYCUHD350DG	460 x 290 x 190	18.11 x 11.41 x 7.48	11.7 (25.8)	55
NSYCUHD600DG	460 x 290 x 190	18.11 x 11.41 x 7.48	11.7 (25.8)	55
NSYCUHD800DG	780 x 345 x 215	30.71 x 13.58 x 8.46	22.4 (49.3)	70
NSYCUHD1KDG	780 x 345 x 215	30.71 x 13.58 x 8.46	22.4 (60.4)	70
NSYCUHD1K2P4DG	780 x 345 x 215	30.71 x 13.58 x 8.46	27.4 (60.4)	70
NSYCUHD1K6DG	1000 x 405 x 225	39.37 x 15.95 x 8.86	39 (86)	72
NSYCUHD1K62P4DG	1000 x 405 x 225	39.37 x 15.95 x 8.86	44.5 (98.1)	72
NSYCUHD2K3P4DG	1000 x 405 x 225	39.37 x 15.95 x 8.86	40.4 (89.1)	72

## Electrical Data

Recommended fuse T 15 A.

Commercial reference	Supply voltage	Maximum current	Starting current	Electrical power L35-L35	Electrical power L35-L50	Recommended circuit breaker
	Vac 50–60 Hz	A	A	W	W	
NSYCUHD350DG	1 x 230	1.4	3.8	240	270	M9F22116
NSYCUHD600DG	1 x 230	2.3	6.0	350	410	M9F22116
NSYCUHD800DG	1 x 230	3	6.0	480	530	M9F22116
NSYCUHD1KDG	1 x 230	3	6.0	480	530	M9F22116
NSYCUHD1K2P4DG	2 x 400/460	2	4.0	480	530	M9F22216
NSYCUHD1K6DG	1 x 230	6	16.0	770	880	M9F22116
NSYCUHD1K62P4DG	2 x 400/460	2.8	8.0	770	880	M9F22216
NSYCUHD2K3P4DG	3 x 400/460	2.5	13.0	900	1100	M9F22316

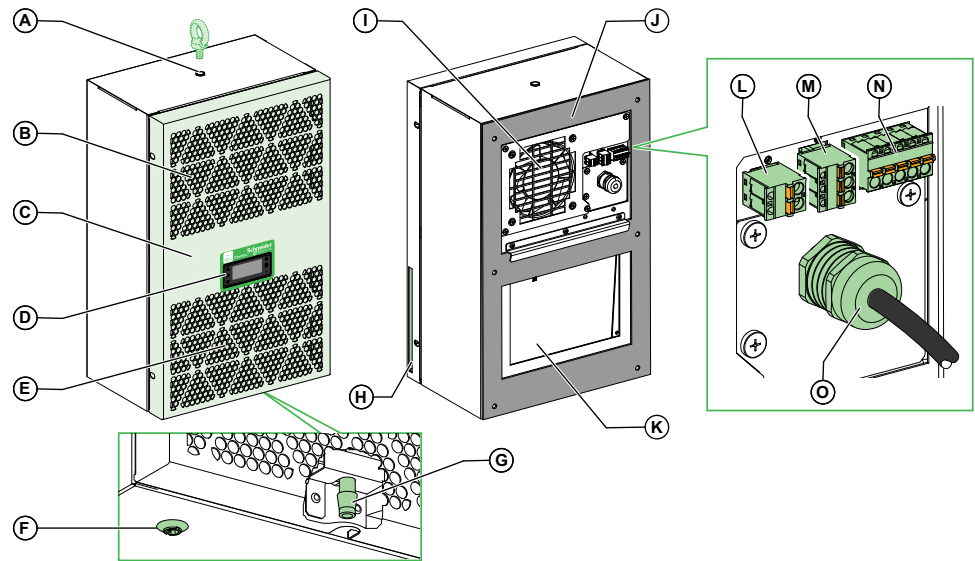
# Cooling Unit Installation

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# Cooling Unit Description

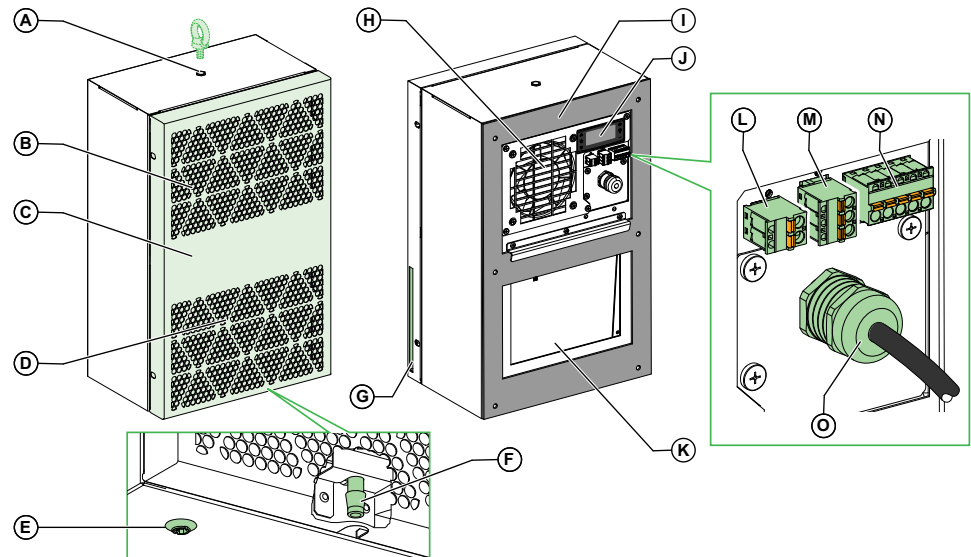
## Indoor Side-Mounted Cooling Units



- A. Lifting ring fastener
- B. Hot air outlet
- C. Cover
- D. Electronic thermostat
- E. Cool air inlet
- F. Overflow drain cap
- G. Water condensate drain connection
- H. Air inlet filter slot
- I. Hot air inlet
- J. Self adhesive sealing gasket
- K. Cool air outlet
- L. Synchronization mode terminal
- M. Modbus terminal
- N. Signal cables terminal
- O. Power supply connection

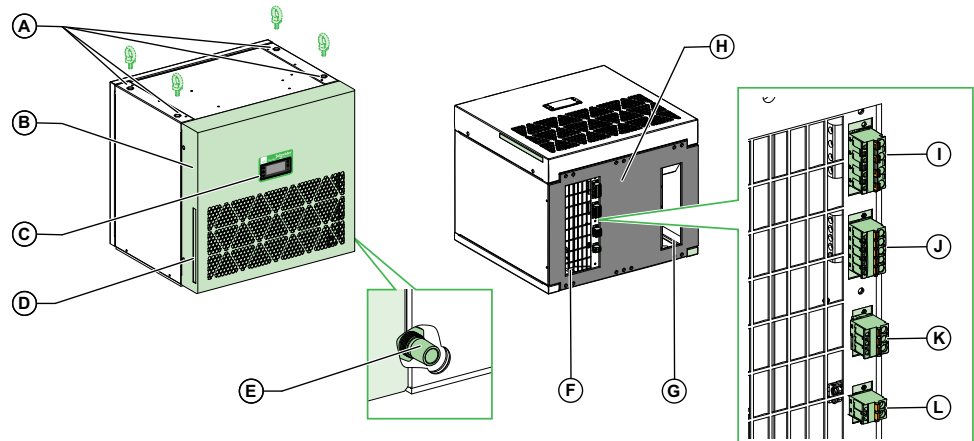


## Outdoor Side-Mounted Cooling Units



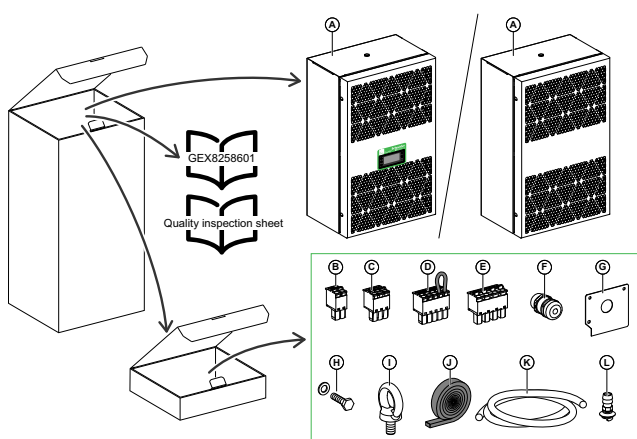
- A. Lifting ring fastener
- B. Hot air outlet
- C. Cover
- D. Cool air inlet
- E. Overflow drain cap
- F. Water condensate drain connection
- G. Air inlet filter slot
- H. Hot air inlet
- I. Self adhesive sealing gasket
- J. Electronic thermostat
- K. Cool air outlet
- L. Synchronization mode terminal
- M. Modbus terminal
- N. Signal cables terminal
- O. Power supply connection

## Inside Roof-Mounted Cooling Units



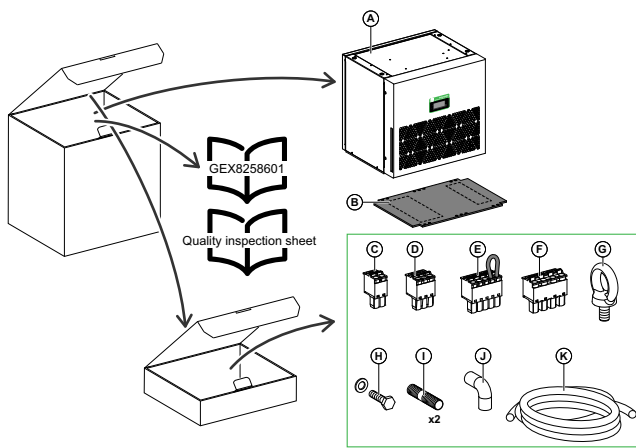
- A. Lifting ring fasteners
- B. Cover
- C. Electronic thermostat
- D. Air inlet filter slot
- E. Water condensate drain connection
- F. Hot air inlet
- G. Cool air outlet
- H. Self adhesive sealing gasket
- I. Power supply terminal
- J. Signal cables terminal
- K. Modbus terminal
- L. Synchronization mode terminal

## Contents of Side-Mounted Cooling Unit Box



- A. Indoor or outdoor side-mounted cooling unit
- B. Synchronization mode terminal
- C. Modbus connection terminal
- D. Signal cables terminal
- E. Power supply terminal
- F. Cable gland
- G. Cable gland support-plate
- H. Screws and washers
- I. Lifting ring
- J. Sealing tape
- K. Plastic hose (1 m (3.28 ft))
- L. Permanent aperture plug

## Contents of Roof-Mounted Cooling Unit Box



- A. Roof-mounted cooling unit
- B. Pre-cut sealing gasket
- C. Synchronization mode terminal
- D. Modbus connection terminal
- E. Signal cables terminal
- F. Power supply terminal
- G. Lifting ring
- H. Screws and washers
- I. Threaded stud
- J. Plastic elbow
- K. Plastic hose (2.5 m (8.2 ft))

# Pre-Mounting Operations

## What's in This Chapter

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## Transport and Storage

### NOTICE

#### COMPRESSOR AND SEAL DAMAGE

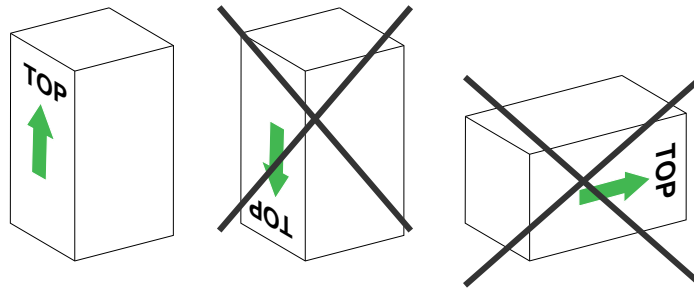
During transport and storage:

- Keep the cooling unit in the proper orientation indicated on the packaging during shipping and storage.
- Do not expose the cooling unit to temperatures above 70 °C (158 °F) or below -20 °C (-4 °F), and/or relative humidity greater than 95%.

**Failure to follow these instructions can result in equipment damage.**

During transport and storage, the cooling unit must be kept in the position clearly stated on the kit:

- vertically for side-mounted cooling units
- horizontally for roof-mounted cooling units



## Reception

Upon receipt, check that the packaging does not have shipping damage (for example, deterioration, cracks, scratches, or oil marks).

If there is any shipping damage, make a note of it on the acceptance receipt and notify the carrier.

## Installation Recommendations

### **⚠️⚠️ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Read and understand all safety messages before performing installation, start up, and maintenance of the equipment.
- Under no circumstances should the characteristics of the apparatus itself be altered or modified.
- Disconnect power to the cooling unit before opening the enclosure, and ensure that the enclosure is closed before reconnecting power.
- Follow all national and local electrical codes applicable in the country of use.
- Comply with all instructions and prohibitions set forth in this manual.
- Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.
- No responsibility is assumed by Schneider Electric for any consequences arising from the use of this material.
- The supply voltage must not exceed the value on the product nameplate.

**Failure to follow these instructions will result in death or serious injury.**

### **NOTICE**

#### **COMPRESSOR AND SEAL DAMAGE**

- Improper sealing of the enclosure (minimum IP55 for side-mounted cooling units or IP54 for roof-mounted cooling units) may result in excessive condensation.
- Use the air inlet filters if the cooling unit is exposed to airborne contaminants and/or aggressive chemicals.
- Allow sufficient external and internal clearance for air flow into, within, and out of the cooling unit.

**Failure to follow these instructions can result in equipment damage.**

### **⚠️ CAUTION**

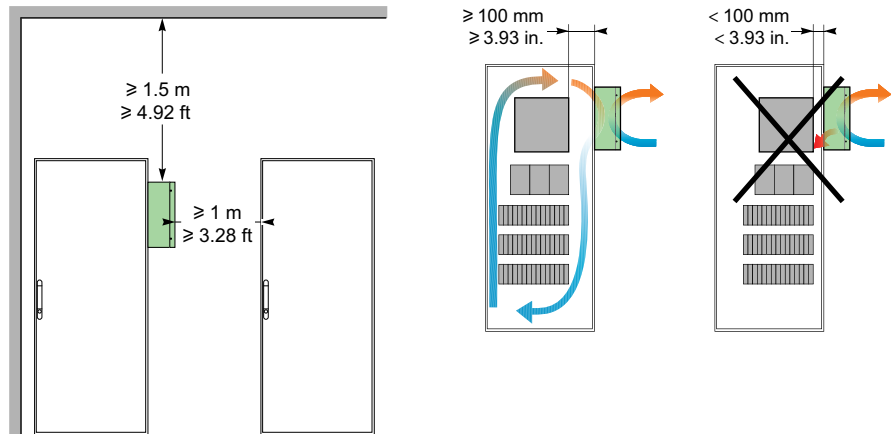
#### **HAZARD OF ENCLOSURE COLLAPSE**

Check that the side, the door or the roof of the enclosure can support the weight of the cooling unit. Install supports if necessary.

**Failure to follow these instructions can result in injury or equipment damage.**

- Check that the external environment does not show any concentration of solid contaminants and/or excessive amounts of aggressive chemicals, according to IEC 62208. If there is a concentration of solid contaminants and/or excessive amounts of aggressive chemicals, use the air inlet protection filters.

- Check that the air flow inlet and outlet are not blocked by walls or objects that are too close.
  - Maintain at least 1 m (3.26 ft) between the cooling unit and walls or adjacent enclosures.
  - Maintain at least 1.5 m (4.92 ft) between the cooling unit and ceiling.
  - Maintain at least 100 mm (3.93 in) between the cooling unit and any device mounted on the inside of the enclosure.



- Before drilling or cutting the enclosure, check that the fasteners and coupling do not impede or interfere with the switch gear located on the enclosure.
- Install the cooling unit with the air intake from the enclosure located at the highest possible point.
- For indoor cooling units, check that the ambient temperature in the area of the enclosure installation is not above 55 °C (131 °F) or below 5 °C (41 °F).

For outdoor cooling units, check that the ambient temperature in the area of the enclosure installation is not above 55 °C (131 °F) or below -20 °C (-4 °F). In any case, respect the ambient temperature specified in the technical data, page 22.

For indoor and the outdoor cooling units, check that the relative humidity does not exceed +95 %.

- Place the cooling unit away from sources of heat and hot airflows.
- Check that the sealing of the enclosure is IP55 or higher for side-mounted cooling units and IP54 or higher for roof-mounted cooling units to avoid excessive condensation.
- Seal properly the cable holes and other openings in the enclosure, especially the floor and cable entrances.
- Install the cooling unit in the correct position. The maximum deviation from the perpendicular is 2°.
- Any modifications to the cooling unit that are not listed in this guide or in other Schneider Electric documentation are prohibited.

# Installation Procedures

## What's in This Part

Installation of Indoor Side-Mounted Cooling Units .....	40
Installation of Indoor Roof-Mounted Cooling Units .....	46
Installation of Outdoor Side-Mounted Cooling Units .....	49

### **DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462, NOM-029-STPS or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm the power is off.
- Put back all devices, doors, and covers before turning on power to this equipment.

**Failure to follow these instructions will result in death or serious injury.**

### **CAUTION**

#### **HAZARD OF COOLING UNIT FALLING**

- Use a crane with the lifting rings provided for positioning the cooling unit during mounting.
- Use care to maintain control during lifting operations, and to avoid collisions.

**Failure to follow these instructions can result in injury or equipment damage.**

# Installation of Indoor Side-Mounted Cooling Units

## What's in This Chapter

Surface Mounting Installation Procedure ..... 41  
 Half-Flush Mounting Installation Procedure ..... 42  
 Flush Mounting Installation Procedure ..... 44

## Dimensions and Cutouts

The overall dimensions, position of the fixing points and cutout of the indoor side-mounted cooling units can be downloaded from our website at [www.se.com/ww/en/download](http://www.se.com/ww/en/download).

The table below gives links to open the dimensions file for each commercial reference:

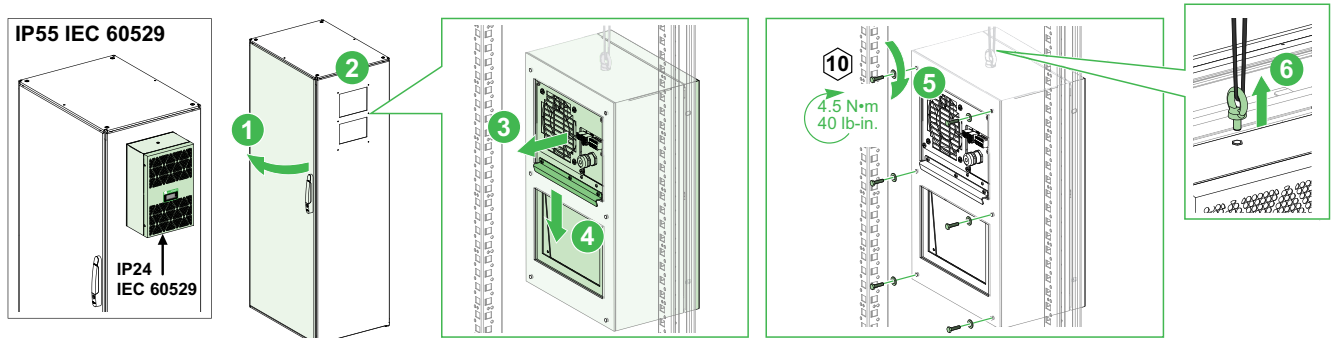
Commercial reference	Dimension file name
NSYCU350DG NSYCUX350DG NSYCU600DG NSYCUX600DG	GEX8130602
NSYCU800DG NSYCU8002P4DG NSYCU1KDG NSYCUX1KDG	GEX8136102
NSYCU1K2P4DG NSYCUX1K2P4DG NSYCU1K2DG NSYCU1K22P4DG NSYCU1K6DG NSYCUX1K6DG NSYCU1K62P4DG NSYCU2KDG NSYCU2K3P4DG NSYCUX2K3P4DG	GEX8215402
NSYCU3K2DG NSYCU3K23P4DG NSYCU4K3P4DG	GEX8218002



## Surface Mounting Installation Procedure

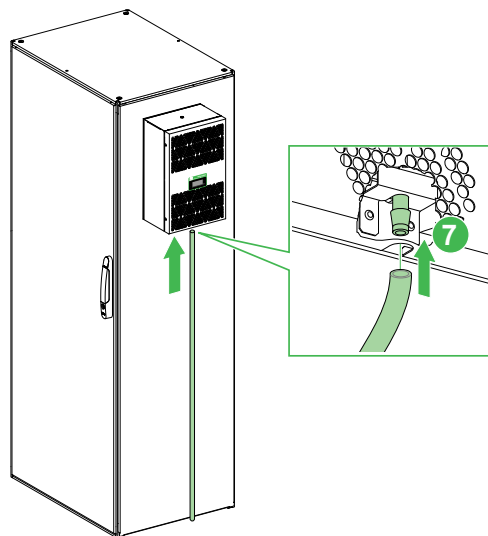
Follow this procedure to install a surface-mounted cooling unit.

1. Open the enclosure door.
2. Make the necessary cutouts in the door or side panel of the enclosure.
3. Use a crane to position the cooling unit against the cutouts, with the bar bracket above the bottom edge of the top cutout.
4. Slide the cooling unit down to fix it in position.
5. Use a size 10 hexagonal key and the bolts and washers provided to fix the cooling unit in place. Tighten to a torque of 4.5 N•m (40 lb-in).
6. Remove the lifting ring.



7. Connect the water condensate removal hose provided (1 m (3.28 ft)) to the drain connection.

**NOTE:** An external water condensate evaporator, page 62 can be connected to the drain connection.



# Half-Flush Mounting Installation Procedure

## Half-Flush Mounting Kit

Use the half-flush mounting kit suitable for your cooling unit to install the cooling unit. Check the table below for compatibility.

Cooling unit commercial reference	Half-flush mounting kit
NSYCU350DG NSYCU600DG	NSYCUACC034DG
NSYCUX350DG NSYCUX600DG	NSYCUACC038DG
NSYCU800DG NSYCU8002P4DG NSYCU1KDG	NSYCUACC035DG
NSYCUX1KDG	NSYCUACC039DG
NSYCU1K2P4DG NSYCU1K2DG NSYCU1K22P4DG NSYCU1K6DG NSYCU1K62P4DG NSYCU2KDG NSYCU2K3P4DG	NSYCUACC036DG
NSYCUX1K2P4DG NSYCUX1K6DG NSYCUX2K3P4DG	NSYCUACC040DG
NSYCU3K2DG NSYCU3K23P4DG NSYCU4K3P4DG	NSYCUACC037DG

## Installation Procedure

Follow this procedure to install the cooling unit with a half-flush mounting.

1. Open the enclosure door.
2. Make the necessary cutout in the door or side panel of the enclosure.
 

**NOTE:** To install the cooling unit in the side panel using a half-flush mounting, the side panel must be taken off.
3. Install sealing tape around the front face of the mounting kit. Check that the ends of the tape meet without leaving a gap.

### **NOTICE**

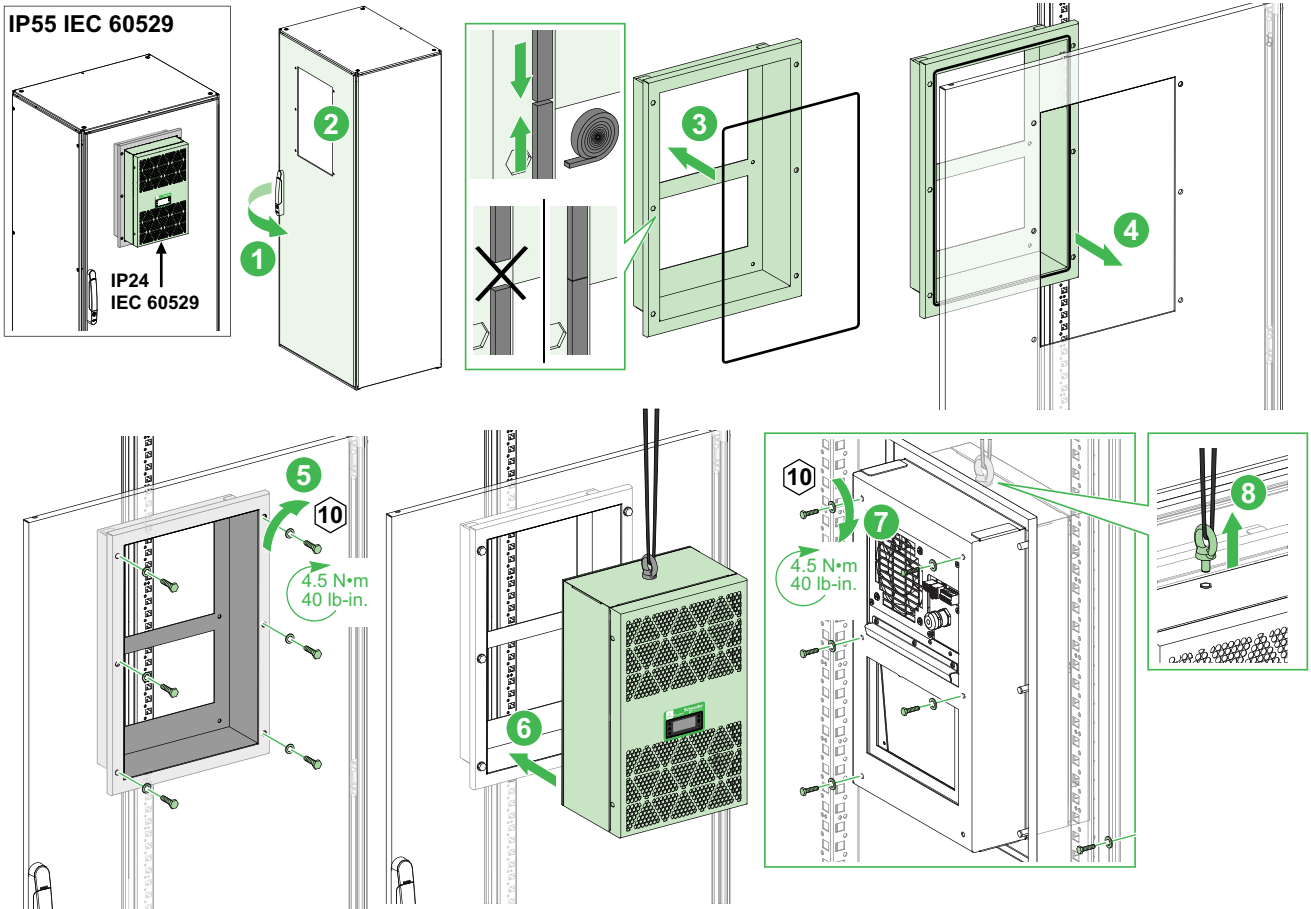
#### **HAZARD OF LOSS OF IP55 PROTECTION**

When installing the cooling unit, check that the ends of the sealing tape meet without leaving a gap.

**Failure to follow these instructions can result in equipment damage.**

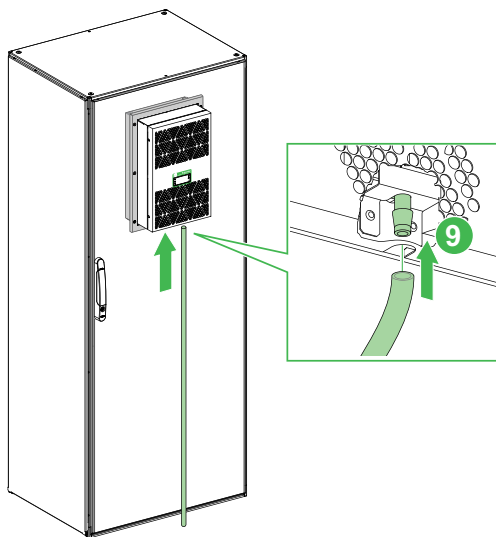
4. Position the mounting kit on the back of the door or side panel against the cutout.

5. Screw into place using size 10 hexagonal key and the bolts and washers provided. Tighten to a torque of 4.5 N•m (40 lb-in).
6. Use a crane to position the cooling unit in the mount.
7. Use a size 10 hexagonal key and the bolts and washers provided to fix the cooling unit in place. Tighten to a torque of 4.5 N•m (40 lb-in).
8. Remove the lifting ring.



9. Connect the water condensate removal hose provided (1 m (3.28 ft)) to the drain connection.

**NOTE:** An external water condensate evaporator, page 62 can be connected to the drain connection.



## Flush Mounting Installation Procedure

Follow this procedure to install the cooling unit with a flush mounting.

1. Loosen the four screws of the cooling unit cover by turning them anticlockwise through 90° using a PZ2 screwdriver. The screws remain in their housing.
2. Remove the cover of the cooling unit.
3. Install sealing tape around the flange. Check that the ends of the tape meet without leaving a gap.

### NOTICE

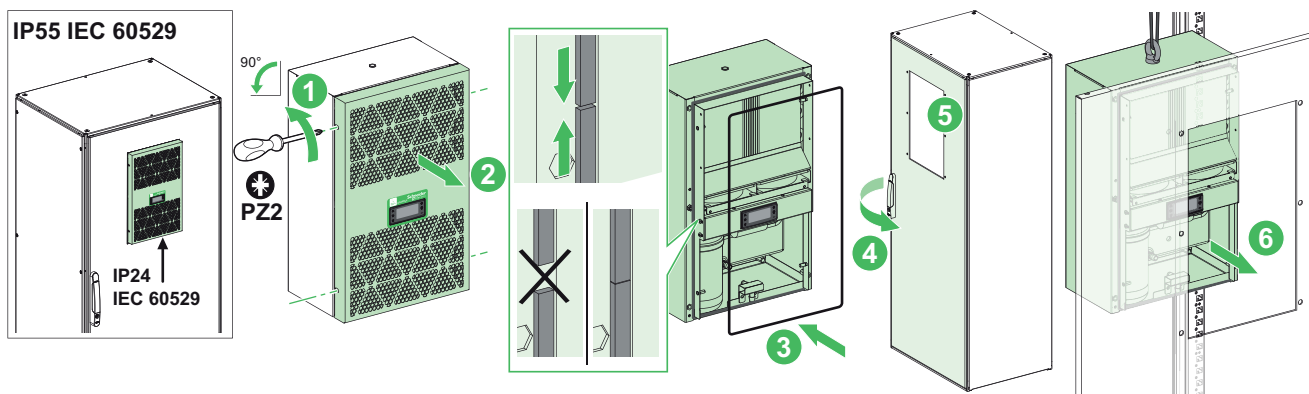
#### HAZARD OF LOSS OF IP55 PROTECTION

When installing the cooling unit, check that the ends of the sealing tape meet without leaving a gap.

**Failure to follow these instructions can result in equipment damage.**

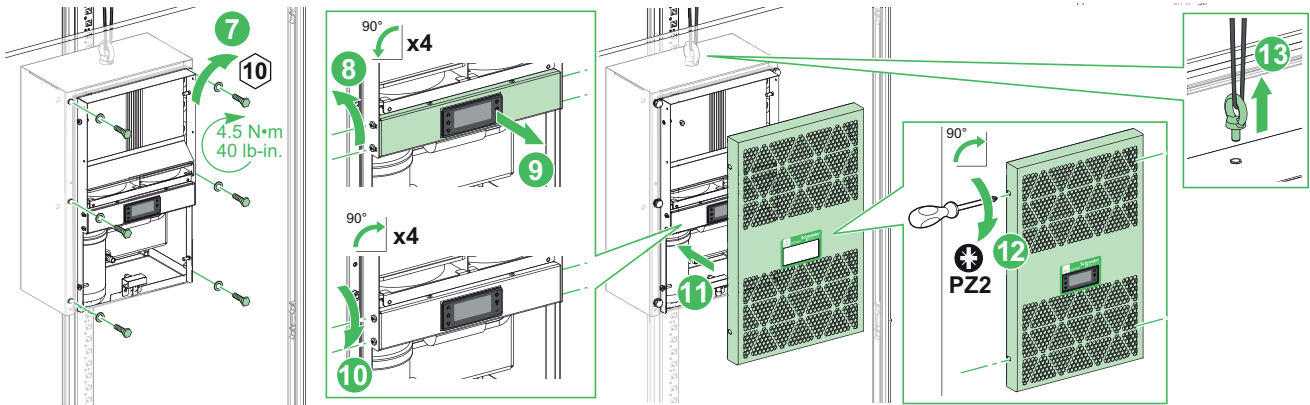
4. Open the enclosure door.
5. Make the necessary cutout in the door or side panel of the enclosure.
 

**NOTE:** To install the cooling unit in the side panel using a flush mounting, the side panel must be taken off.
6. Use a crane to position the cooling unit on the back of the door or side panel with the flange protruding through the cutout.



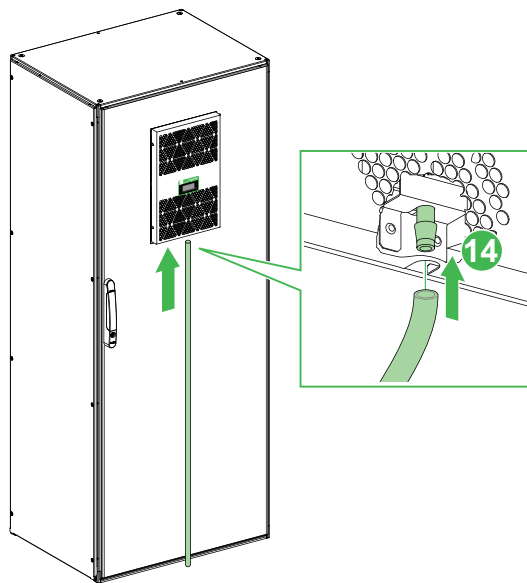
7. Screw into place using size 10 hexagonal key and the bolts and washers provided. Tighten to a torque of 4.5 N•m (40 lb-in).
8. Loosen the 4 screws holding the thermostat mounting by turning them anti-clockwise through 90°.
9. Slide forward the thermostat mounting to the maximum. The final position allows the thermostat and the protection plate to align.
10. Tighten the 4 screws by turning them clockwise through 90°.
11. Place the cooling unit cover on to the front of the cooling unit.
12. Tighten the four screws clockwise through 90° using a PZ2 screwdriver.

13. Remove the lifting ring.



14. Connect the water condensate removal hose provided (1 m (3.28 ft)) to the drain connection.

**NOTE:** An external water condensate evaporator, page 62 can be connected to the drain connection.



# Installation of Indoor Roof-Mounted Cooling Units

## Dimensions and Cutouts

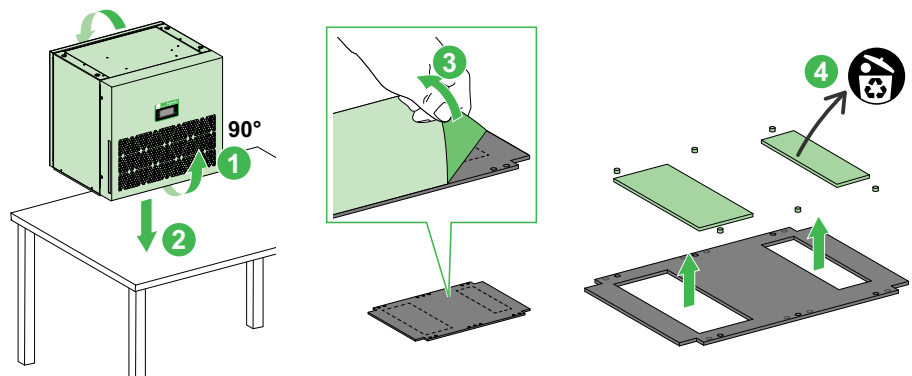
The overall dimensions, position of the fixing points and cutout of the roof-mounted cooling units can be downloaded from our website at [www.se.com/ww/en/download](http://www.se.com/ww/en/download).

The table below gives links to open the dimensions file for each commercial reference:

Commercial reference	Dimension file name
NSYCU600RDG	GEX8218802
NSYCU800RDG NSYCU8002P4RDG NSYCU1K2RDG NSYCU1K22P4RDG NSYCU1K5RDG NSYCU1K52P4RDG	GEX8219002
NSYCU2KRDG NSYCU2K3P4RDG	GEX8219902
NSYCU3K3P4RDG NSYCU4K3P4RDG	GEX8220101

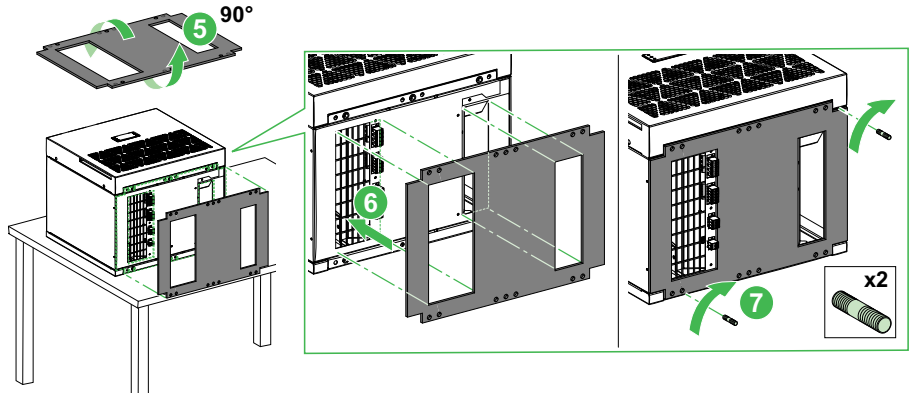
## Roof Mounting Installation Procedure

1. Turn the cooling unit through 90° so that the front face is at the top.
2. Place the cooling unit onto a solid flat surface.
3. Remove the protective film from the self-adhesive sealing gasket.
4. Remove the two rectangular cutouts and six circular cutouts and dispose of them.



5. Turn the gasket through 90°, with the sticky side in, and position it in front of the base of the cooling unit.
6. Align the cutouts with the terminal block and holes and stick in position.

7. Screw in the two threaded alignment studs.

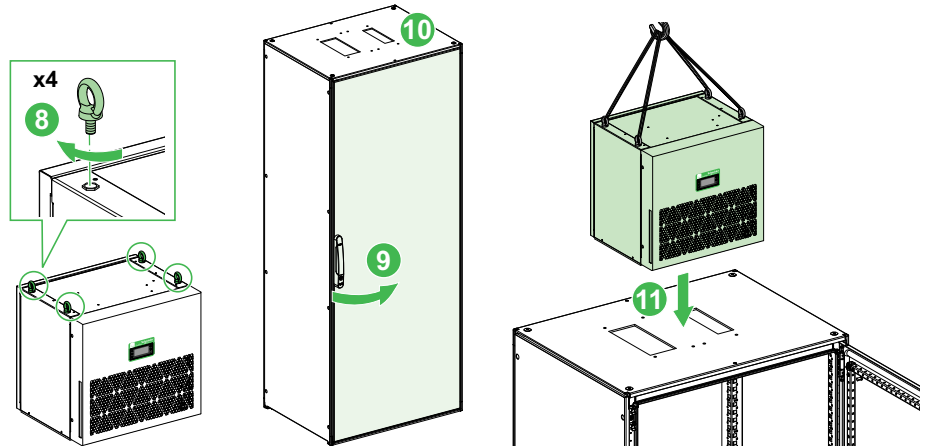


8. Install the lifting rings in the top of the cooling unit.

9. Open the enclosure door.

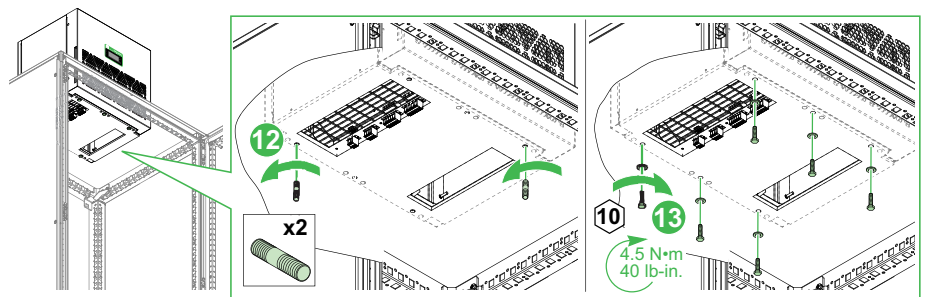
10. Make the necessary cutouts in the roof of the enclosure.

11. Use a crane to position the cooling unit on top of the cutouts, using the two alignment studs to ensure correct alignment.



12. Remove the two threaded alignment studs.

13. Use a size 10 hexagonal key and the bolts and washers provided to fix the cooling unit in place. Tighten to a torque of 4.5 N•m (40 lb-in).

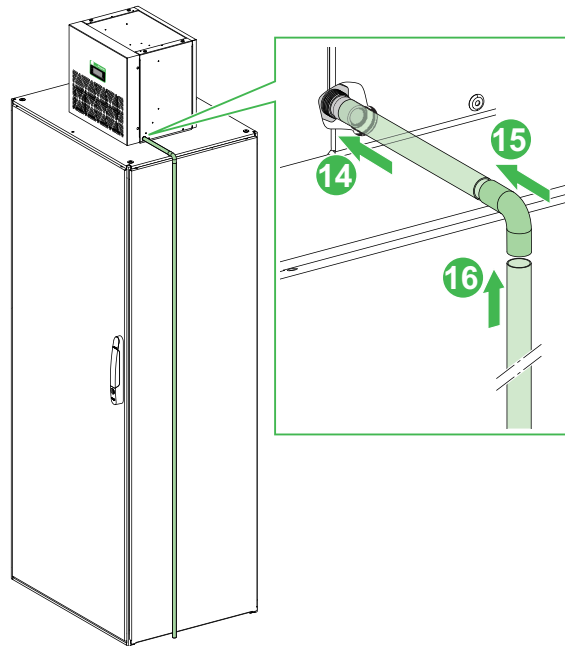


14. Measure and cut a short section of the water condensate removal hose provided (2.5 m (8.2 ft)) and connect it to the drain connection on the side of the cooling unit.

15. Connect the elbow joint of the water condensate removal hose.

16. Connect the remaining section of the water condensate removal hose to the elbow joint.

**NOTE:** An external water condensate evaporator, page 62 can be connected to the drain connection.





# Installation of Outdoor Side-Mounted Cooling Units

## Dimensions and Cutouts

The overall dimensions, position of the fixing points and cutouts of the outdoor side-mounted cooling units can be downloaded from our website at [www.se.com/ww/en/download](http://www.se.com/ww/en/download).

The table below gives links to open the dimensions file for each commercial reference:

Commercial reference	Dimension file name
NSYCUHD350DG NSYCUHD600DG	GEX8222702
NSYCUHD800DG NSYCUHD1KDG NSYCUHD1K2P4DG	GEX8222803
NSYCUHD1K6DG NSYCUHD1K62P4DG NSYCUHD2K3P4DG	GEX8223102

## Outdoor Mounting Installation Procedure

Outdoor side-mounted cooling units must be surface mounted in the same way as for indoor surface-mounted units, page 41. Half-flush and flush mounting are not suitable for outdoor side-mounted cooling units.

## Removal of Water Condensate

<b><i>NOTICE</i></b>
<b>DAMAGE DUE TO FORMATION OF CONDENSATE</b> <ul style="list-style-type: none"><li>• Follow instructions to allow free drainage of condensate.</li><li>• Operate the cooling unit with the enclosure door closed.</li></ul> <b>Failure to follow these instructions can result in equipment damage.</b>



Water condensate that forms in the heat exchanger as a function of ambient humidity and temperature is a feature of normal operation of the cooling unit.

In all side-mounted and roof-mounted cooling units, the condensate exits the cooling unit through one drain tube located on the bottom part of the cooling unit. Connect the transparent plastic hose (provided with the cooling unit) to the outlet.

All side-mounted cooling units with a cooling capacity above 800 W (commercial references from NSYCU•800DG) are fitted with an internal water condensate evaporator which operates via the hot (outlet) tube of the compressor.

These cooling units nevertheless have an overflow condensate outlet which can be carried outside. This plastic tube can be coupled to another tube of the same diameter to carry the condensate to another position, to an area where there is no risk of slipping.


The use of a tripper switch in the door is recommended to stop the cooling unit if the door is open to avoid excessive generation of water condensate.

# Electric Connection

## What's in This Part

Wiring Procedure and Characteristics ..... 52  
 Wiring Diagrams ..... 54  
 Modbus Daisy Chain ..... 55  
 Internal Wiring Diagrams ..... 56

## Safety Information

 <b>DANGER</b>
<p><b>HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH</b></p> <ul style="list-style-type: none"> <li>• Electrical connections must be carried out by qualified personnel.</li> <li>• Follow all national and local electrical codes and regulations in the country of use.</li> <li>• Disconnect all power to the enclosure before making electrical connections.</li> <li>• The available mains voltage must match the values noted on the nameplate of the cooling unit.</li> <li>• The power of the cooling unit must be protected (serial connection) by a fuse or a circuit breaker with a contact gap of at least 3 mm (0.11 in) when open, according to the recommended settings.</li> <li>• Connect the wires to the terminal strips as indicated in the wiring diagrams, with special attention to the correct connection of the terminals.</li> <li>• If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons.</li> </ul> <p><b>Failure to follow these instructions will result in death or serious injury.</b></p>

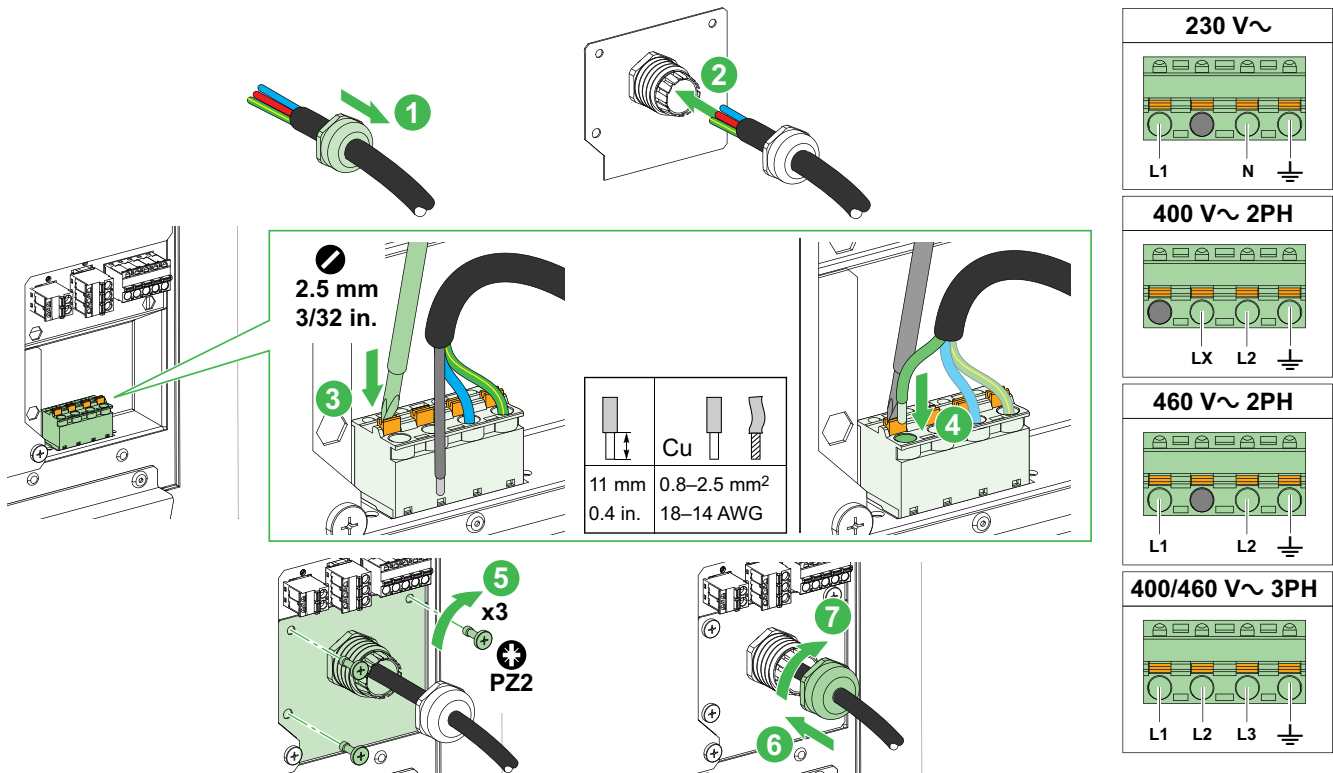
There must be no temperature control system in a serial connection to the cooling unit.

<b>NOTICE</b>
<p><b>DAMAGE TO COMPRESSOR</b></p> <p>Do not immediately turn on the cooling unit following a shutdown. Use of a 3 minute timing control to delay activation is recommended.</p> <p><b>Failure to follow these instructions can result in equipment damage.</b></p>

# Wiring Procedure and Characteristics

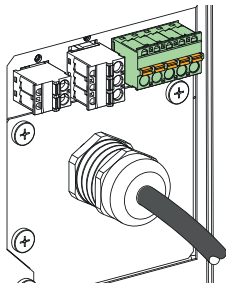
## Power Supply Connection

1. Slide the cable-gland nut on the cable and away from the wires.
2. Pass the wires through the cable-gland plate.
3. Use a flat screwdriver to push the spring-clamp opener.
4. While pushing the spring-clamp opener, place the wire in the open spring-clamp.
5. Screw in place the cable-gland plate.
6. Slide the cable-gland nut toward the cable-gland plate.
7. Screw the cable-gland nut to the cable-gland plate.



## Signal Cables

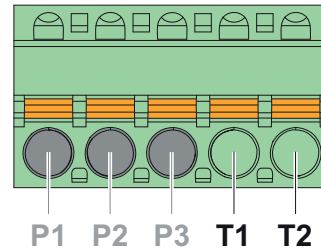
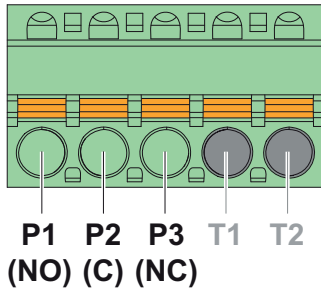
The maximum length of the signal cable is 10 m (32.8 ft).



Alarm output

		<b>Cu</b>
11 mm 0.4 in.	0.8 mm <sup>2</sup> 18 AWG	

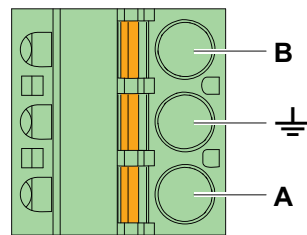
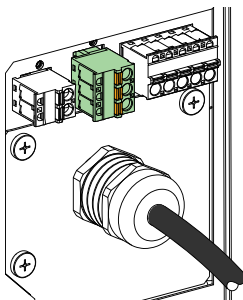
Door contact input



### Modbus Connection

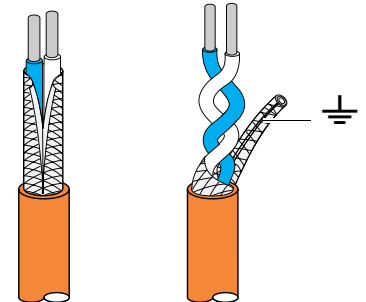
The maximum length of the RS-485 cable is 10 m (32.8 ft).

For RS-485 cables, use BELDEN shielded and twisted cable, model 8762.



Modbus RS485

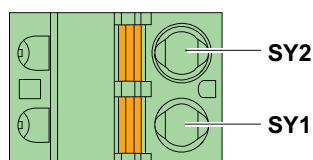
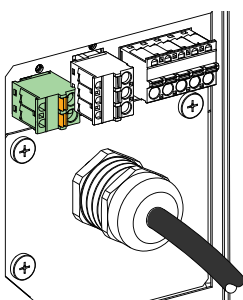
		<b>Cu</b>
11 mm 0.4 in.	0.5 mm <sup>2</sup> 20 AWG	



### Synchronization Mode Connection

The maximum length of the synchronization cable is 10 m (32.8 ft).

For synchronization cables, use BELDEN shielded and twisted cable, model 8762.



		<b>Cu</b>
11 mm 0.4 in.	0.5 mm <sup>2</sup> 20 AWG	

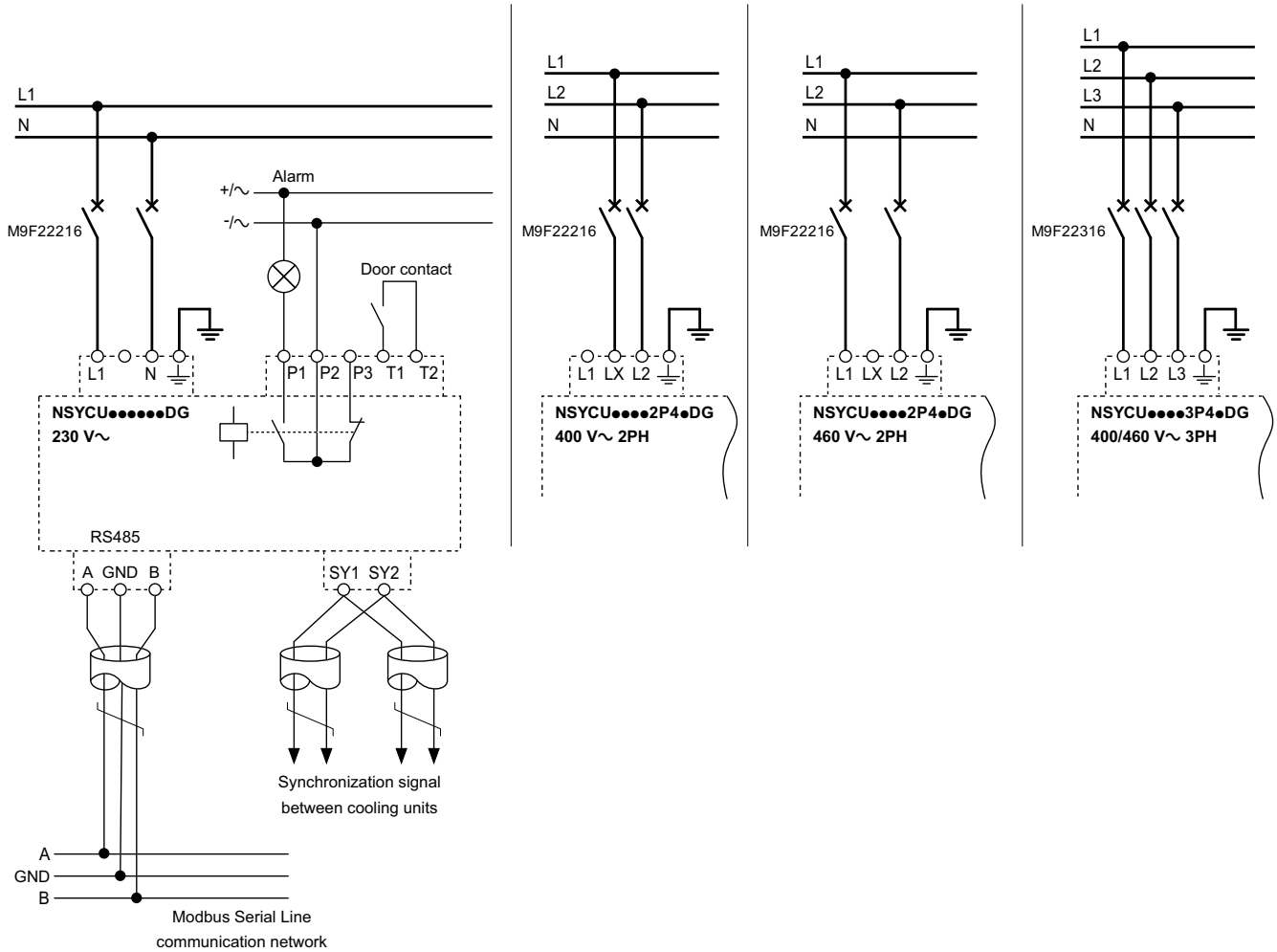
# Wiring Diagrams

See cooling unit typeplate for correct operating voltage and frequency.

Suitable protective devices should be installed on the supply line.

Use copper conductors only.

Use supply wires suitable for 75 °C (167 °F).



GND: Ground

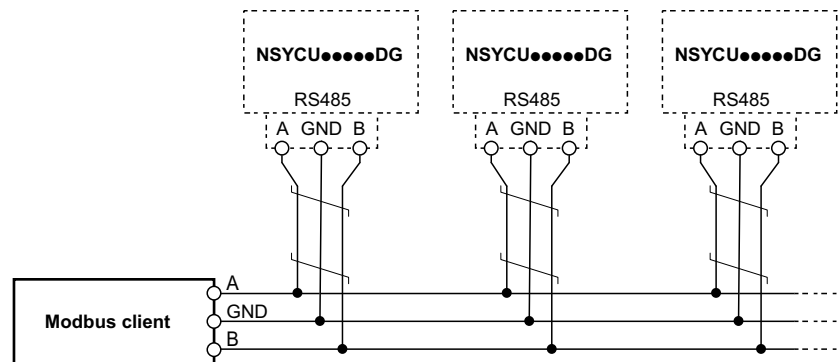
# Modbus Daisy Chain

## NOTICE

### UNINTENDED EQUIPMENT OPERATION

- Disconnect all the equipment before installing/dismantling cables or wires.
- Seal the connections in compliance with the technical specifications relating to the tightening torque.
- Correctly position and adequately secure the converter inside the equipment to avoid disconnection.
- The load equivalent to the entire RS-485 bus should not exceed 8 Unit Load (Refer to standard TIA/EIA-485-A for the definition of a Unit Load.)
- Do not fit the termination resistors inside the RS-485 network.
- For the connection with the supervision system, use specific data-cable such as BELDEN cable model 8762 that are shielded and twisted.
- The RS-485 communication cables must be routed separately from the power cables.

**Failure to follow these instructions can result in equipment damage.**



GND: Ground

# Internal Wiring Diagrams

This section shows in a table the internal wiring diagrams according to the supply voltage and the commercial reference of the cooling unit.

Legend of the symbols used in the internal wiring diagrams:

**Si:** Internal temperature sensor

**Hcc:** Compressor with case heater (for outdoor cooling units)

**Cc:** Compressor capacitor

**Ps:** DC power supply

**Ci:** Internal fan capacitor

**Ca:** Ambient fan capacitor

**Mc:** Compressor

**Ma:** Ambient fans

**Mi:** Internal fan

**CC:** Contactor



Supply voltage	Commercial reference	Diagram
<p>1 x 230 Vac +N</p>	<p>NSYCU350DG                      NSYCUX350DG                      NSYCU600DG                      NSYCUX600DG                      NSYCUHD350DG                      NSYCUHD600DG                      NSYCU600RDG</p>	
<p>1 x 230 Vac +N</p>	<p>NSYCU800DG                      NSYCU1KDG                      NSYCUX1KDG                      NSYCU1K2DG                      NSYCU1K6DG                      NSYCU1K6DG                      NSYCU2KDG                      NSYCU3K2DG                      NSYCUHD800DG                      NSYCUHD1KDG                      NSYCUHD1K6DG                      NSYCU800RDG                      NSYCU1K2RDG                      NSYCU1K5RDG                      NSYCU2KRDG</p>	

Supply voltage	Commercial reference	Diagram
2 x 400/460 Vac	NSYCU.....2P4...	
3 x 400/460 Vac	NSYCU.....3P4...	

# Accessory Installation

## What's in This Part

Filter Replacement .....	60
External Water Condensate Evaporator .....	62

# Filter Replacement

The table below describes which filter to use according to the cooling unit environment.

Cooling unit environment	Filter recommendation
Office (no dust, no grease)	No filter required
Industrial (dust, grease, non-explosive atmosphere)	Filter required
Outdoor	Aluminum filter required

No filter is delivered with indoor cooling units.

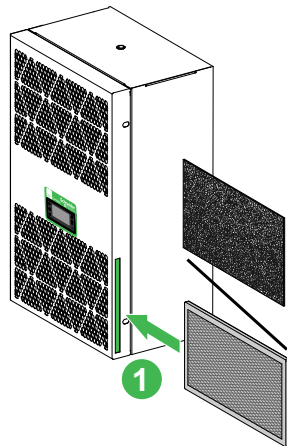
An aluminum filter is delivered with outdoor cooling units.

For more information about filters, refer to *Accessories*, page 12.

## Installing a Filter in an Indoor Cooling Unit

No filter is delivered with the indoor cooling unit. To install or replace a filter in an indoor cooling unit, follow this procedure:

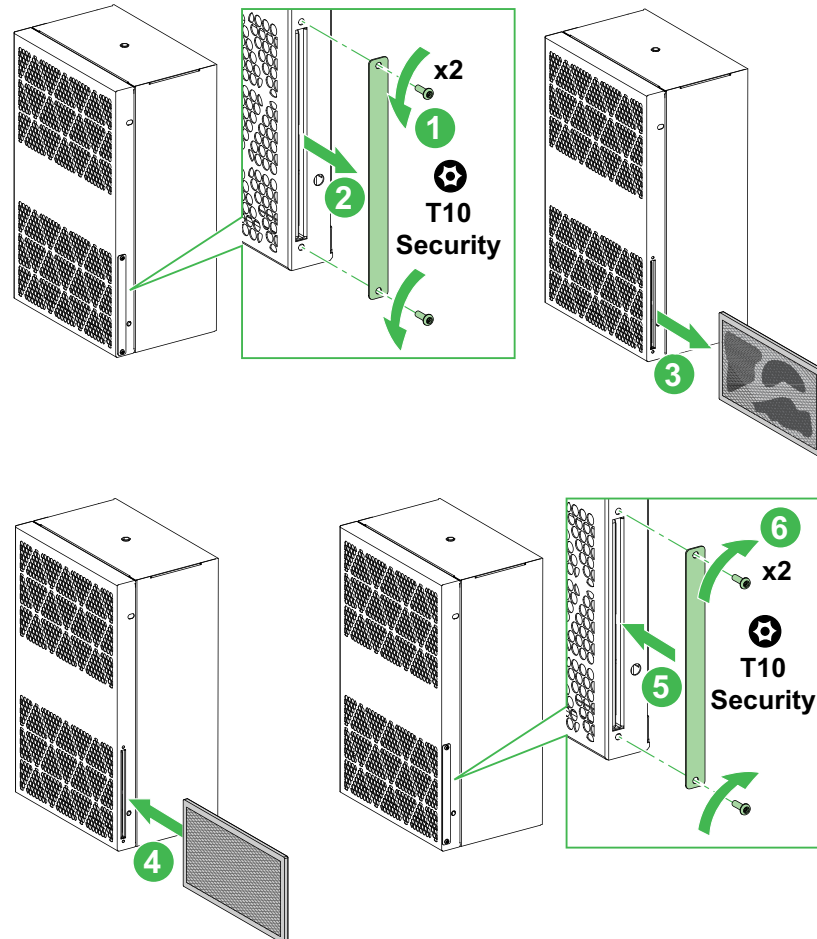
1. Slide the filter through the cutout in the lateral side of the cooling unit.



## Replacing Filter in an Outdoor Cooling Unit

Outdoor cooling units are delivered with an aluminum filter fitted. To replace an aluminum filter in an outdoor cooling unit follow this procedure:

1. Locate the slot cover at the bottom of the cooling unit and unscrew the 2 screws with a T10 Torx screwdriver.
2. Remove the slot cover.
3. Slide out the used filter.
4. Insert the new filter in the slot.
5. Reposition the slot cover.
6. Screw the 2 screws back into place with a T10 Torx screwdriver.



# External Water Condensate Evaporator

## **⚡⚠ DANGER**

### **HAZARD OF ELECTRIC SHOCK**

Only specialized personnel are allowed to maintain and clean the external evaporator. The personnel must ensure that for the duration of the maintenance and cleaning, the external evaporator is disconnected from the electrical supply.

**Failure to follow these instructions will result in death or serious injury.**

## **⚠ CAUTION**

### **HAZARD OF BURNING FROM HOT SURFACES**

- Do not touch external and internal surfaces during operation.
- Let the external surfaces cool after the cooling unit has been switched off.
- Do not try to touch water tray during operation

**Failure to follow these instructions can result in injury or equipment damage.**

## Presentation

The external condensate water evaporator is compatible with indoor side and roof-mounted cooling units. It helps to ensure that the condensate water is actively evaporated with an electrical resistance.

The external evaporator is particularly recommended for cooling units with a cooling capacity less than 800 W as they are not equipped with a passive evaporator.

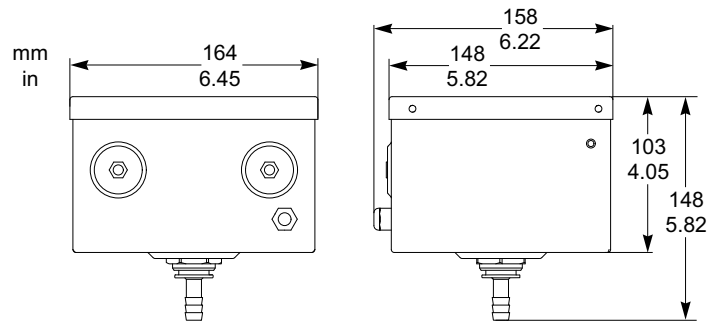


## Technical Data

Characteristics	Value
Height x width x depth	103 x 164 x 148 mm (4.1 x 6.5 x 5.8 in)
Implementation	External mounting
Weight	1.2 kg (2.6 lb)
Material	Powder-coated mild steel
Color	RAL 7035
<b>Electrical data</b>	
Voltage	230 Vac

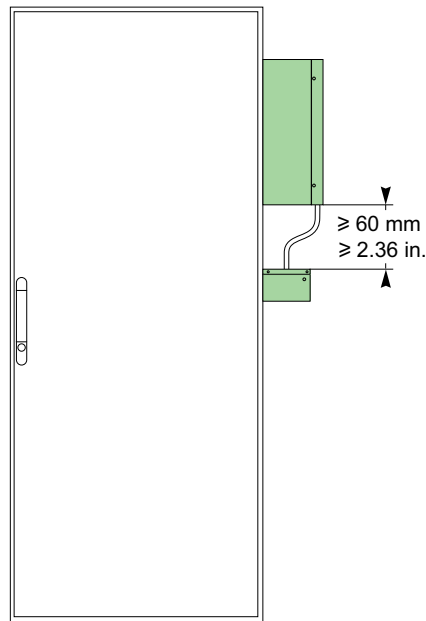
Characteristics	Value
Frequency	50/60 Hz
Starting current	2 A
Power consumption <ul style="list-style-type: none"> <li>• During operation (max. heater fully immersed)</li> <li>• Standby (dry)</li> </ul>	<ul style="list-style-type: none"> <li>• 230 W</li> <li>• 25 W</li> </ul>
<b>Performance</b>	
Evaporation rate	0.25 l/h

## Dimensions



## Installation Instructions

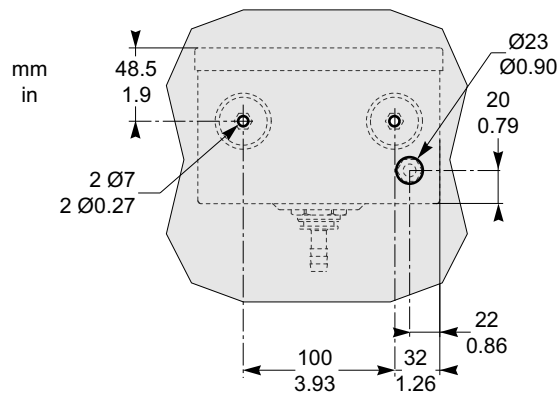
Install the external evaporator at a minimum distance of 60 mm (2.36 in) below the cooling unit.



Condensate will form on the bottom of the cooling unit. To minimize the amount of condensate, maximize the distance between the cooling unit and the evaporator, and provide adequate ventilation.

## Installation Procedure

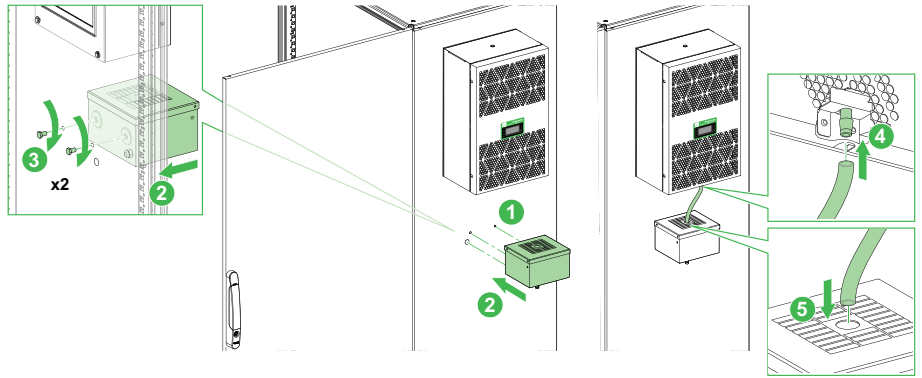
1. Drill the necessary holes in the side of the enclosure, below the cooling unit.



2. Position the external evaporator on the side of the enclosure, aligning holes.
3. Insert and tighten the screws provided.
4. Connect the hose to the water condensate drain connection of the cooling unit.

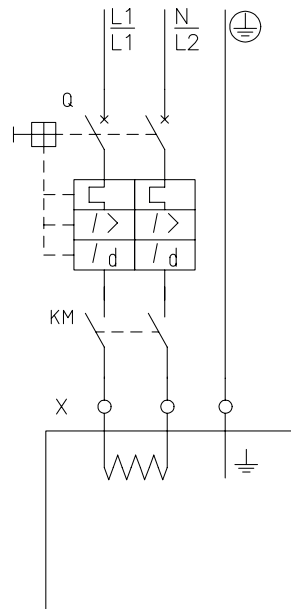


5. Insert the hose into the hole in the top of the external evaporator.



6. Connect the power supply for the external evaporator.

## Wiring Diagram



# Enclosure Transportation With Cooling Unit Mounted

<b><i>NOTICE</i></b>
<b>TEMPERATURE, HUMIDITY, DROPPING, AND IMPACT DAMAGE</b> <ul style="list-style-type: none"><li>• Do not expose the cooling unit to temperatures above 70 °C (158 °F) or below -20 °C (-4 °F), and/or relative humidity above 95%.</li><li>• Use adequate packing for shipping, and avoid shocks and impacts.</li></ul> <b>Failure to follow these instructions can result in equipment damage.</b>



- To transport the enclosure with the cooling unit installed, place it on a pallet with dimensions greater than the assembly. Protect the cooling unit with its own container during transport.
- Always transport the enclosure in a vertical position.
- Before connecting the cooling unit, wait 30 minutes for the lubricant oil to accumulate in the compressor.

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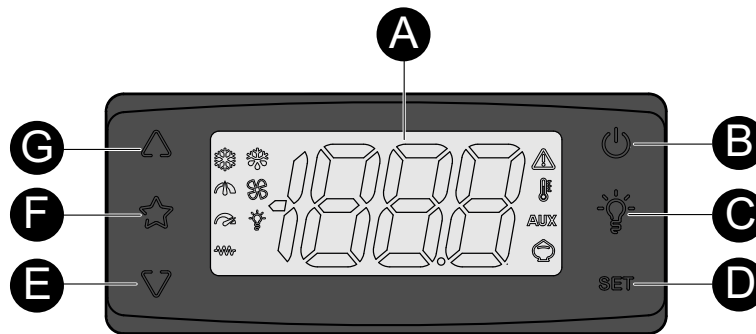
# Electronic Thermostat

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# Description

## User Interface







- A. Display
- B. Esc/Standby key
- C. Not applicable
- D. Confirm key
- E. Down key
- F. Not applicable
- G. Up key

## Keys

Keys	Function
	<ul style="list-style-type: none"> <li>Go back (up one level) in the menu</li> <li>Confirm the parameter value</li> </ul>
	Not applicable
<b>SET</b>	<p>Press and release:</p> <ul style="list-style-type: none"> <li>Access the ClimaSys status menu</li> <li>Display alarms (if present)</li> <li>During device power-on, access selection mode for the application to be loaded</li> <li>Access to Firmware version and Alarm type</li> <li>Acknowledge alarm</li> </ul> <p>Press and hold for 5 seconds:</p> <ul style="list-style-type: none"> <li>Access the programming menu</li> <li>Confirm commands</li> </ul>
	<ul style="list-style-type: none"> <li>Scroll through the menu options</li> <li>Decrease the values</li> </ul>
	Not applicable
	<ul style="list-style-type: none"> <li>Scroll through the menu options</li> <li>Increase the values</li> </ul>

## Icons

Icon	Function	Description
	Compressor	<ul style="list-style-type: none"><li>• On steadily: compressor active</li><li>• Flashing: delay, protection or activation inhibited</li><li>• Off: compressor off</li></ul>
	Condenser fan	<ul style="list-style-type: none"><li>• On steadily: fans active</li><li>• Off: fans off</li></ul>
	Alarm	<ul style="list-style-type: none"><li>• On steadily: alarm present</li><li>• Flashing: alarm silenced</li><li>• Off: no alarm active</li></ul>
	Temperature	<ul style="list-style-type: none"><li>• On steadily: a temperature is displayed (°C or °F)</li><li>• Off: a value not relating to temperature or a label is displayed</li></ul>

## Technical Data

The electronic thermostat embedded in ClimaSys cooling units complies with the EN 60730-1 harmonized standard.

Characteristic	Value
Purpose of thermostat	Local and remote control of ClimaSys cooling units
Ambient operating temperature	-20 °C to +60 °C (+23 °C to +131 °F)
Ambient storage temperature	-30 °C to +85 °C (-22 °F to +185 °F)
Ambient operating humidity (non-condensing)	10–90 % relative humidity
Ambient storage humidity (non-condensing)	10–90 % relative humidity

The electronic thermostat firmware version is: 832.01. It can be displayed in the ClimaSys cooling unit status menu, page 71.

# Use Procedures

## NOTICE

### DAMAGE FROM UNAUTHORIZED PROGRAMMING

Schneider Electric will not be held responsible if the user modifies the programmed parameters without due authorization.

**Failure to follow these instructions can result in equipment damage.**

## Setting the Temperature Setpoint

1. Press and release **SET** to access the ClimaSys cooling unit status menu.
2. Scroll through the folders using the keys  $\Delta$  and  $\nabla$  until you find the folder **SEt**
3. Press **SET** to view the current setpoint value.

**NOTE:** The default value of the setpoint is 35 °C (95 °F)

4. Change the setpoint value using the keys  $\Delta$  and  $\nabla$  within 15 seconds.
5. To confirm the value press **SET** or  $\text{⏏}$ , or wait for the 15 seconds timeout.

**NOTE:**

- The compressor has a minimum ON time of 3 minutes. If the temperature setpoint is set below the enclosure temperature and the compressor has been ON for less than 3 minutes, then the compressor will continue running until the minimum ON time is respected.
- The compressor has a minimum OFF time of 4 minutes. If the temperature setpoint is set above the enclosure temperature and the compressor has been OFF for less than 4 minutes, then the compressor will start only after the minimum OFF time has elapsed.

## ClimaSys Cooling Unit Status Menu

To enter the ClimaSys cooling unit status menu:

1. Press and release **SET**.
2. Scroll through the folders using the keys  $\Delta$  and  $\nabla$  and until you find the label for the desired folder.
3. Press and release **SET**.
4. View the value reading.
5. To exit press **SET** or  $\text{⏏}$ , or wait for the 15 seconds timeout.

The folders shown are as follows:

**SEt:** Setpoint setting folder

**ALr:** Alarms folder (only visible if there are active alarms )

**rtC:** Clock parameters folder

- **dAy:** Day
- **h:** Hour
- **' :** Minutes

**Pb1:** Pb1 probe value folder

**idF:** Firmware mask value folder

**rEL:** Firmware release value folder

**nAM:** Product name folder

## Programming Menu

To enter the **Programming** menu and access the user parameters:

1. Press and hold **SET** for at least 5 seconds .
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Upon access the first parameter (**HAL**) will be shown.
4. Scroll through the parameters using the keys  $\Delta$  and  $\nabla$  until you find the label for the parameter you want to change.
5. Press and release **SET**.
6. Set the desired value using the keys  $\Delta$  and  $\nabla$ .
7. To confirm the value press **SET** or  $\text{O}$ , or wait for the 15 seconds timeout.

**NOTE:** Switch the device off and on again every time you change the parameter configuration.

## Viewing Measured Temperature Value

1. Press and release **SET** to access the ClimaSys cooling unit status menu.
2. Scroll through the folders using the keys  $\Delta$  and  $\nabla$  until you find the folder **Pb1**.
3. Press **SET** to view the value measured by the corresponding probe.

**NOTE:** The displayed value cannot be changed.

## Passwords

PA1 password: **5**


PA2 password: Not available for user. Please contact the Customer Care team.



# Alarms and Indications

All alarms are deactivated automatically when their cause is removed.

## Detecting an Alarm Condition

If there is an alarm condition, the alarm icon  comes on steadily and the alarm code is displayed. If present and enabled, the alarm relay is also activated.

**NOTE:** If alarm exclusion timings are in progress, the alarm is not signaled.



All active alarms, except those relating to probe error, are listed in the **ALr** folder within the ClimaSys cooling unit status menu.

## Silencing an Alarm








Press any key or use the menu function: the alarm icon flashes, and the alarm relay is de-energized.

The alarm icon goes off when the alarm condition disappears.

## Alarms Legend

Code	Description	Alarm relay	Cause	Effects	Solutions
E1	Probe Pb1 error	Active	<ul style="list-style-type: none"> <li>Reading of values outside the operating interval.</li> <li>Probe or corresponding wiring in short-circuit or open circuit.</li> </ul>	<ul style="list-style-type: none"> <li><b>E1</b> code displayed</li> <li>Steady alarm icon</li> <li></li> <li>Compressor operation based on parameters <b>Ont</b> and <b>Oft</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Check the probe wiring.</li> <li>Replace the probe.</li> </ul>
AH1	Alarm due to Pb1 HIGH temperature	Active	Value read by probe Pb1 > <b>HAL</b>	<ul style="list-style-type: none"> <li>Alarm <b>AH1</b> added to folder <b>ALr</b>.</li> <li>No effect on regulation.</li> </ul>	Wait for the temperature read by Pb1 to drop below the alarm threshold ( <b>HAL – AFd</b> ).
AL1	Alarm due to Pb1 LOW temperature	Active	Value read by probe Pb1 < <b>LAL</b>	<ul style="list-style-type: none"> <li>Alarm <b>AL1</b> added to folder <b>ALr</b>.</li> <li>No effect on regulation.</li> </ul>	Wait for the temperature read by Pb1 to rise above the alarm threshold ( <b>LAL + AFd</b> ).
oPd	Open door alarm	Active	Digital input activation ( <b>H1x = ±4</b> ).	<ul style="list-style-type: none"> <li>Alarm <b>oPd</b> added to folder <b>ALr</b>.</li> <li>Steady alarm icon</li> <li></li> </ul>	Close the door.

## Setting the High Temperature Alarm (HAL)

- Press **SET** and hold for at least 5 seconds. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  and . Press **SET** to confirm.
- Scroll using the keys  and  to **HAL** and press **SET**. **Default value 50**.
- Change value using the keys  and . Press **SET** to confirm or  to cancel.

## Setting the Low Temperature Alarm (LAL)

1. Press **SET** and hold for at least 5 seconds. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
2. Scroll using the keys  $\Delta$  and  $\nabla$  to **LAL** and press **SET**. **Default value 0.**
3. Change value using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm or  $\text{⏏}$  to cancel.

# Synchronization and Redundancy Modes

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# Serial Mode

## Description

Serial mode allows the propagation of the door contact alarm between connected cooling units. Up to 10 cooling units can be connected in this mode with a maximum length of 10 m (33 ft).

Several cooling units can be installed in a large panel, with one cooling unit per compartment. If the compartments are not segregated, all the cooling units can work simultaneously in parallel, with the risk that one open compartment door allows all the cooling capacity to be wasted. Serial mode helps to mitigate this risk by stopping all the cooling units in the case of one open door, and sending one alarm signal for the cooling system.

The door contact is connected only in the first cooling unit. The alarm output is wired only in last cooling unit.

When the door is open, the door contact connected to the door contact input of cooling unit 1 is used to deliver the synchronization signal. Other connected cooling units receive the same information and act accordingly.

## Setting Procedure

Follow this procedure to put the cooling units into serial mode:

### Enter the Programming menu:

1. Press and hold **SET** for at least 5 seconds.
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.

### Set the first cooling unit:

1. Scroll to **H11** and press **SET**.
  2. Change value to **16** (door contact propagation) using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm. The default value is **0**.
  3. Scroll to **H13** and press **SET**
  4. Use the keys  $\Delta$  and  $\nabla$  to change the value to:
    - **-4** if the door contact is an NC contact (contact closed when door is closed). Default value.
    - **+4** if the door contact is an NO contact (contact open when door is closed).
- . Press **SET** to confirm.

### Set the other cooling units:

1. Scroll to **H11** and press **SET**.
2. Change value to **+4** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Scroll to **H13** and press **SET**.
4. Change value to **0** (disabled door contact) and press **SET** to confirm.

The changes made to the parameters are taken into account after powering Off and On the cooling units.

# Sequential Mode

## Description

The SY1 SY2 contacts of the synchronization mode terminal of two cooling units with the same commercial reference are connected in parallel.

At start-up, regulation is managed by cooling unit 1. Cooling unit 2 is in standby.

When cooling unit 1 reaches the **t01** compressor working hours (h\*10), it closes the synchronization output and goes into standby. Cooling unit 2 reads the synchronization signal and becomes operative for **t01** compressor working hours. When cooling unit 2 reaches **t01** compressor working hours, it goes into standby and cooling unit 1 starts again.

In case of High Temperature Alarm **HAL** for any of the cooling units, the alarm starts without waiting for the sequential time.

## Setting Procedure

### Enter the Programming menu:

1. Press and hold **SET** for at least 5 seconds.
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.

### Set cooling unit 1:

1. Scroll to **H11** and press **SET**.
2. Change value to **+15** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Scroll to **t01** and press **SET**.
4. Change value for working hours (h\*10) using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm. The default value is **1** (10 hours).

### Set cooling unit 2:

1. Scroll to **H11** and press **SET**.
2. Change value to **-15** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Scroll to **t01** and press **SET**.
4. Change value for working hours (h\*10) using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm. The default value is **1** (10 hours).

The changes made to the parameters are taken into account after powering Off and On the cooling units.

# Backup Mode

## Description

The synchronization ports of two cooling units with the same commercial reference are connected in parallel.

One cooling unit is the main cooling unit, the other is the backup cooling unit.

Normally the main cooling unit is operative, and the backup cooling unit is in standby.

When the main cooling unit goes in Pb1 error or High temperature alarm (HAL), it permanently closes the synchronization output and makes the backup cooling unit operative. The main cooling unit behavior depends on the alarm type as follows:

Alarm type on main cooling unit	Main synchronization output	Main cooling unit	Backup cooling unit
Pb1 error	Closed	Standby	Operative
External alarm	Open	Standby	Standby
High temperature alarm	Closed	Operative	Operative
Low temperature alarm	Open	Operative	Standby
No alarm	Open	Operative	Standby

When the Pb1 error or High temperature alarm (HAL) condition terminates, the main cooling unit releases the synchronization output to make the backup cooling unit go back into standby.

Low temperature alarm (LAL) is managed as a No alarm condition.

## Setting Procedure

### Enter the Programming menu:

1. Press and hold **SET** for at least 5 seconds .
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.

### Set the main cooling unit:

1. Scroll to H11 and press SET
2. Change value to +14 using the keys  $\Delta$  and  $\nabla$ . Press SET to confirm.

### Set the backup cooling unit:

1. Scroll to H11 and press SET
2. Change value to -14 using the keys  $\Delta$  and  $\nabla$ . Press SET to confirm.

The changes made to the parameters are taken into account after powering Off and On the cooling units.

# Stand-alone Mode

## Description

Follow this procedure to return back to normal mode (stand-alone). Check that the cooling unit is On before returning to normal mode.

## Setting Procedure

### Enter the Programming menu:

1. Press and hold **SET** for at least 5 seconds.
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.

### Set the cooling units:

1. Scroll to **H13** and press **SET**.
2. Change value to **-4** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Scroll to **H11** and press **SET**.
4. Change value to **0** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.

The changes made to the parameters are taken into account after powering Off and On the cooling units.

# Modbus Communication

## Description

Modbus is a client/server protocol for communication between devices connected in a network. Modbus devices communicate using a client/server technique in which only one device (client) can send request messages. The other devices in the network (server) respond, returning the data requested by the client or executing the action contained in the message sent. A server is a device connected to a network that processes information and sends the results to the client using the Modbus protocol.

The client device can send messages to individual servers, or to all the servers connected to the network (broadcast), whilst server devices can only respond to messages individually and to the client device. The Modbus standard employs the RTU code for data transmission.

## Data Format (RTU)

The coding type used defines the structure of messages transmitted on the network and the way in which this information is deciphered. The coding type is usually chosen according to specific parameters (baudrate, parity, stop), plus certain devices only support specific coding types. Use the same coding type for all devices connected to a Modbus network.

The protocol uses the RTU binary method with the serial frame configured as follows:

- 8 bits for data
- Parity bits: none (configurable)
- 2 stop bits

Parameters can be changed by:

- Thermostat user interface
- Sending data via Modbus protocol directly to an individual device or in a broadcast using the address 0 (broadcast)

## Modbus Commands Available and Data Areas

The following commands are implemented:

Modbus command	Description
03 (hex 0x03)	Read resources
16 (hex 0x10)	Write resources
43 (hex 0x2B)	Read device ID. The following 3 fields can be read: <ul style="list-style-type: none"> <li>• 0 = Manufacturer ID</li> <li>• 1 = Model ID</li> <li>• 2 = Family ID / device version</li> </ul>

**NOTE:** Maximum length of transmitted/received messages equal to 50 bytes.

## Configuration

The address of a device within a Modbus message is set via parameter **Adr**.

The address 0 is used to broadcast messages that all servers recognize. The server only responds to the individual requests.



The device configuration parameters are as follows:

Parameter	Description
<b>Adr</b>	Modbus protocol server address
<b>bAU</b>	Baud rate selection
<b>Pty</b>	Sets the Modbus protocol parity BIT and the number of stop BITS: <ul style="list-style-type: none"> <li>• <b>n</b> = NONE parity bit + 2 stop BITS</li> <li>• <b>E</b> = EVEN parity bit + 1 stop BIT</li> <li>• <b>o</b> = ODD parity bit + 1 stop BIT</li> </ul>

The changes made to the parameters are taken into account after powering Off and On the cooling units.

## Setting the Modbus Parameters from the User Interface

1. Press and hold **SET** for at least 5 seconds.
2. Scroll to **PA1**. Press **SET** to enter **PA1 password** using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm.
3. Scroll to **Adr** using the keys  $\Delta$  and  $\nabla$  and press **SET**. The default value is **1**. Change the address value using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm or press  $\odot$  to cancel.
4. Scroll to **PtY** and press **SET**. The default value is **E**. Change the value using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm or press  $\odot$  to cancel.
5. Scroll to **bAU**. The default value is 96 (9600 bauds). Change the value using the keys  $\Delta$  and  $\nabla$ . Press **SET** to confirm or press  $\odot$  to cancel the List of Modbus Resources.

## List of Modbus Resources

Data description	Parameter	Modbus address	R/W	Data size	Range	Unit
Temperature measured by Pb1 probe	Pb1 (*10)	4109	R	1 word (INT16)	-67...302	0.1 °C / 0.1 °F
Digital input: Open enclosure door	DI	4118, bit 0	R	1 bit	0...1	Flag
Compressor status output	RL1	4120, bit 0	R	1 bit	0...1	Flag
External alarm signaling output	RL2	4120, bit 1	R	1 bit	0...1	Flag
Fan status output	RL3	4120, bit 2	R	1 bit	0...1	Flag
Temperature setpoint	SEt (*10)	32769	R/W	1 word (INT16)	20...50	0.1 °C / 0.1 °F
Probe Pb1 error	E1	4121, bit 0	R	1 bit	0...1	Flag
Open door status (alarm)	oPd	4121, bit 3	R	1 bit	0...1	Flag
Low temperature alarm	AL1	4121, bit 5	R	1 bit	0...1	Flag
High temperature alarm	AH1	4121, bit 6	R	1 bit	0...1	Flag
Maximum alarm threshold	HAL	32779	R/W	1 word (INT16)	0...302	0.1 °C / 0.1 °F
Minimum alarm threshold	LAL	32781	R/W	1 word (INT16)	-67...50	0.1 °C / 0.1 °F
Working hours of the condenser fan	tim_DEF2 (*10)	4179	R	1 word (INT16)	0...65535	Hour/10
Number of cycles of the compressor	cnt_CP1	4172	R	1 word (INT16)	0...65535	Num
Cooling unit standby status	STD-BY	4115, bit 0	R	1 bit	0...1	Flag
Compressor status	CP1	4115, bit 1	R	1 bit	0...1	Flag
Fan status	FAN_C	4115, bit 7	R	1 bit	0...1	Flag

<b>Data description</b>	<b>Parameter</b>	<b>Modbus address</b>	<b>R/W</b>	<b>Data size</b>	<b>Range</b>	<b>Unit</b>
Cooling unit start command	Ronon	4123, bit 2	R/W	1 bit	0...1	Flag
Cooling unit stop command	RoFFoFF	4123, bit 3	R/W	1 bit	0...1	Flag
Unit of measure (0 = °C, 1 = °F)	Dro	32969, bit 8	R/W	1 bit	0...1	Flag

# Commissioning and Maintenance

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### **DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Disconnect all sources of power from the cooling unit before performing any maintenance.
- Maintenance must be carried out by qualified personnel using original spare parts.
- Use appropriate personal protective equipment (PPE) when performing maintenance.
- Some tubes may be hot and can cause burns.
- After performing maintenance, check that the ground wire of the cooling cover is still connected.

**Failure to follow these instructions will result in death or serious injury.**

# Commissioning

## **NOTICE**

### **HAZARD OF LACK OF LUBRICANT**

Before connecting the cooling unit, let the cooling unit stand for a minimum of 30 minutes to allow the lubricant to flow into the compressor.

**Failure to follow these instructions can result in equipment damage.**

When the cooling unit is connected, the evaporator fan starts.

If the temperature inside the enclosure is higher than the set value of the thermostat, the compressor and the condenser fan also start.

Once the air inside the enclosure reaches the set temperature, the compressor and condenser fan stop.

For more information about commissioning procedures, refer to *Electronic Thermostat*, page 67.

## Preventive Maintenance

### **NOTICE**

#### **HAZARD OF CORROSION AND COMPRESSED AIR DAMAGE**

- Do not use flammable and/or corrosive chemicals during cleaning operations.
- Only clean with compressed air at a maximum pressure of 4 bar.

**Failure to follow these instructions can result in equipment damage.**

The required maintenance is checking and cleaning the internal components (fans, heat exchangers, and filters), with periodic monitoring as indicated below:

<b>Intervention</b>	<b>Frequency</b>
Check and, if necessary, clean the condenser heat exchanger and filters	Every 3 months
Check the water condensate draining hoses are not blocked and let the water condensate flow.	Every 3 months
Check the evaporator fan is running when power supply is on.	Every 3 months
Check the condenser fan is running when compressor is on.	Every 3 months

In case a problem is detected during the intervention, refer to [Troubleshooting](#), page 87.

## Corrective Maintenance

### ***NOTICE***

#### **HAZARD OF INCORRECT MAINTENANCE OPERATIONS**

- Repair work on the cooling unit must be carried out by qualified electrical personnel.
- Only use original replacement parts when repairing the cooling unit.
- Do not carry out repair work on the refrigerant circuit.

**Failure to follow these instructions can result in equipment damage.**

# Troubleshooting

Anomaly	Conditions	Causes	Solution
Does not cool	What works: <ul style="list-style-type: none"> <li>Evaporator fan</li> </ul> What does not work: <ul style="list-style-type: none"> <li>Condenser fan</li> <li>Compressor</li> </ul>	Enclosure temperature lower than that set in the control thermostat	It is not an anomaly of the cooling unit. <ul style="list-style-type: none"> <li>Set the thermostat to a lower value until the compressor and the condenser fan start up</li> <li>Reset to the original value</li> </ul>
		Inoperable electronic thermostat	Replace the regulation thermostat
	What does not work: <ul style="list-style-type: none"> <li>All the components</li> </ul>	No voltage to the cooling unit	It is not an anomaly of the cooling unit: <ul style="list-style-type: none"> <li>Check that the power cable is securely connected to the terminals</li> <li>Check that the enclosure doors and switches are closed</li> </ul>
	What works: <ul style="list-style-type: none"> <li>Evaporator fan</li> <li>Condenser fan</li> <li>Compressor</li> </ul>	Cooling unit without refrigerant Inoperable compressor	Call a specialized technician or Schneider Electric Technical Support
	What works: <ul style="list-style-type: none"> <li>Compressor</li> <li>Condenser fan</li> </ul> What does not work: <ul style="list-style-type: none"> <li>Evaporator fan</li> </ul>	Inoperable evaporator fan electric capacitor Inoperable evaporator fan	Replace the evaporator fan electric capacitor Replace the evaporator fan
	What works: <ul style="list-style-type: none"> <li>Evaporator fan</li> <li>Condenser fan</li> </ul> What does not work: <ul style="list-style-type: none"> <li>Compressor</li> </ul>	Inoperable compressor	Call a specialized technician or Schneider Electric Technical Support
Does not sufficiently cool	What works continuously: <ul style="list-style-type: none"> <li>Evaporator fan</li> <li>Condenser fan</li> </ul>	Cooling unit undersized relative to the heat dissipated in the enclosure Air intakes and outlets clogged or blocked	Replace the cooling unit with a more powerful one Check that the air intakes and outlets are not clogged or blocked
	What works continuously: <ul style="list-style-type: none"> <li>Evaporator fan</li> </ul> What works intermittently: <ul style="list-style-type: none"> <li>Condenser fan</li> <li>Compressor</li> </ul>	Insufficient refrigerant in the cooling unit	Call a specialized technician or Schneider Electric Technical Support
	What works continuously: <ul style="list-style-type: none"> <li>Evaporator fan</li> <li>Condenser fan</li> </ul> What works intermittently: <ul style="list-style-type: none"> <li>Compressor</li> </ul>	Internal thermal protection compressor activated: <ul style="list-style-type: none"> <li>Ambient temperature higher than the maximum operating limit</li> <li>Condenser dirty or obstructed</li> </ul>	<ul style="list-style-type: none"> <li>Lower the temperature of the environment by ventilating the area of the enclosure</li> <li>Clean the condenser with compressed air</li> </ul>
	Excessive formation of water condensation	Enclosure door open	Too much ambient air in the enclosure
Excessive formation of water condensation	Enclosure door closed	Enclosure with protection level lower than IP54	It is not an anomaly of the cooling unit. Seal the openings of the enclosure for example, the cable access openings
		Enclosure and cooling unit coupling poorly sealed	Check the seals and repair if necessary
		Setpoint temperature on the thermostat is very low	Raise the setpoint temperature on the thermostat

Anomaly	Conditions	Causes	Solution
		The condenser is not working or is stuck	Drain condenser and check that the tubing is not blocked



# Disposal and Recycling

## NOTICE

### HAZARD OF ENVIRONMENTAL HARM

- The cooling unit contains refrigerant fluid R134a as well as small amounts of lubricating oil. These components are pollutants and may not be disposed of in the environment.
- Replacement, repair, and final disposal must be performed by qualified personnel.

**Failure to follow these instructions can result in equipment damage.**

When the life cycle of the cooling unit comes to an end, proceed as follows:

- Drain the refrigerant contained in the cooling system.
- Drain the lubricant oil contained in the compressor.
- Draining fluids and oils should be carried out by trained personnel with the necessary means to collect oils and gases so they do not spill into the external environment.
- Disassemble and subdivide the internal elements to carry out a diverse collection for the recovery of materials (steel, copper, aluminum, plastic, etc.).

During disassembly, keep the cooling unit:

- Vertical for side-mounted cooling units
- Horizontal for roof-mounted cooling units

In all cases, take into account the existing regulations in the country where it is being used.



Dispose of the device separately from household waste at an official collection point.

Professional recycling helps to protect people and the environment against potential negative effects.



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As standards, specifications, and design change from time to time,  
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GEX8258701-00