Indoor Air Conditioners
Or outdoor with no low ambient temperature needs or requirement
Features

- Cooling capacities from 1,200 BTU/Hr up to 14,300 BTU/Hr
- Micro channel condenser allows a significant reduction of refrigerant charge, resulting in a lower CO2 footprint
- Built in electrical condensate evaporation
- UL Type 12 (type 3R and 4 optional)
- Extended temperature range +50°F - +140°F
- Suitable for US enclosures 10”, 12”, 16”
- Built in ModBus for remote monitoring and optional ethernet communication
• Fast and easy installation, simplified cut outs.

• A single family suitable for external and recess installation.

• Slim design, narrow profile avoiding big protrusions from enclosure or taking excessive space inside the enclosure.

• Worldwide compatibility with certifications and approvals to be shipped / installed to most of the industrial areas globally.

• Limited models with multiple cooling capacities per size to facilitate cut-out standardization
Internal Blower
Internal Heater (Optional)
Evaporator
Compressor
Condensate Evaporator
Mounting Support Bracket
Transformer (see note below)
Aluminum Mesh Filter (Optional)
Ambient Blower
Digital temperature controller
Micro-Channel Condenser
Power cable Gland
Alarm & door switch cable Gland
Evaporator Duct (Optional)

Note: Transformers are used on 120 V and 400/460 V single phase units with cooling capacities of 2700 BTU/hr and above, in these units all components operate at 230 VAC.
Filter Installation

- The aluminum mesh filter is easily replaced or removed by removing the air inlet cover located on the front of the unit.
Functions of the Controller

Temperature Control

The electronic controller insures a stable operation of the cabinet air conditioner:

- Internal temperature of the enclosure
- Run time of the compressor
- Downtime of the compressor
- Hysteresis of temperature:
  - to control the accuracy of the temperature setting at a tolerance of 3°F
The cooling unit is intended to be used as a complementary accessory to larger industrial equipment. The unit is used where heat needs to be dissipated from electrical control cabinets or similar enclosures in order to protect heat sensitive components. It is not intended for household use. The unit has two completely separate air circuits which ensure that the clean cabinet air does not come into contact with the ambient air which may well be dirty or polluted. Enclosure cooling units can dissipate large quantities of heat from sealed enclosures such as electrical enclosures into the ambient air and at the same time reduce the cabinet internal temperature to below that of the ambient air.

The unit can function without problems in extreme ambient conditions (e.g. dusty and oily air) with a standard operating temperature ranging between +10°C (50°F) and +60°C (131°F). Units can be ordered with an additional electrical cabinet heater. For the cooling capacities and environmental ratings please refer to the type plate data.
Controller function

Display icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compressor relay active</td>
<td>Flashes when activation is delayed or inhibited by protection times, external disabling or other procedures in progress</td>
</tr>
<tr>
<td>2</td>
<td>Alarm relay active</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Heater relay active</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ambient blower relay active</td>
<td></td>
</tr>
<tr>
<td>⚠</td>
<td>Alarm</td>
<td>Flashes when alarms are active</td>
</tr>
<tr>
<td>🔥</td>
<td>Heating mode</td>
<td>Signals operation of unit in heating mode</td>
</tr>
<tr>
<td>🔥</td>
<td>Cooling mode</td>
<td>Signals operation of unit in cooling mode</td>
</tr>
<tr>
<td>TEST</td>
<td>Text mode in progress</td>
<td>Activated only by manual procedure</td>
</tr>
</tbody>
</table>
Controller function

Under normal working conditions the display shows the temperature inside the enclosure. The controller “set point” for the interior of the enclosure is pre-set at 95°F and can be adjusted between 68°F and 122°F.

The High temperature alarm (parameter AH) is preset at 131°F. The High Temperature Alarm relay is delivered as “normally closed” (H1=1). If you need to change it to “normally open”, please modify value of parameter H1 (H1=2).
Controller function

Setting cooling set point, St1:

1. Press “SET” and display should show St1 and then the pre-set value of St1. (default: +35°C / +95°F)
2. Reach the desired value by using ▲ or ▼.
3. Press “SET” again to save the new value of St1.
Controller function

Setting temperature units (°C / °F), low temperature alarm and high temperature alarm:

1. Press “PRG” button for 5 seconds to reach the modifiable parameter list.
2. Use ▲ or ▼ to reach the desired parameter:
   - C18 for temperature unit of measure
   - °C = 0
   - °F = 1
   - P25 for low temperature alarm threshold (default -10°C / +14°F)
   - P26 for high temperature alarm threshold (default +55°C / +131°F)
   - c68 for door contact NO/NC logic change (0=ON if closed, 1=ON if open)
   - Controller firmware rev. 1.2 or higher.
3. Press “SET” on the desired parameter to display the current value.
4. Use ▲ or ▼ to reach the desired value.
5. Pressing “SET” temporarily saves the new value and returns to the parameters list.
6. Repeat steps 2-5 to set other parameters.
7. Press “PRG” for 5 seconds to permanently save the new values.
Test function

Different test functions can be used depending on the combination of keys pressed. Such tests run for the duration of 4 minutes.

- “SET+ ▲” tests Compressor and Ambient Blower relays.
- “SET+ ▼” tests Alarms and Heater relays

Alarm Relay Operation

Both normally closed (NC) and normally open (NO) alarm contacts are provided. Under normal conditions, the NC contact is closed and the NO contact is open. When an alarm condition is present, the NC contact will open and the NO contact will close.

1. System power OFF

2. System powered ON
   - NO ALARM
   - Door Contact Closed

3. System Powered ON

4. System powered ON
   - ALARM STATE
Controller function

Failure table:

The display shows either “OFF” or “EXX” with an icon flashing (triangle), alternating with the standard display. If more than one error occurs, these are shown in sequence on the display.

<table>
<thead>
<tr>
<th>Failure Code</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Door open</td>
<td>Close the enclosure door and check the door contact switch. If no door contact switch is used and c68=0, bridge terminals on power connector.</td>
</tr>
<tr>
<td></td>
<td>Incorrect phase sequence (3-phase units)</td>
<td>Displayed on power-up. Check phase sequence.</td>
</tr>
<tr>
<td>E01</td>
<td>Failure internal temperature sensor</td>
<td>Check probe connections.</td>
</tr>
<tr>
<td>E02</td>
<td>Failure ambient temperature sensor</td>
<td>Check probe connections.</td>
</tr>
<tr>
<td>E04</td>
<td>High temperature alarm</td>
<td>The measured temperature has exceeded the threshold P26. Check rating of the cooling unit. Clean air filters, condenser; check fans’ and compressor’s correct operation. Contact your service partner.</td>
</tr>
<tr>
<td>E05</td>
<td>Low temperature alarm</td>
<td>The measured temperature has fallen below the threshold P25.</td>
</tr>
<tr>
<td>E07 / E08</td>
<td>Controller error</td>
<td>Contact your service partner.</td>
</tr>
</tbody>
</table>
Important Notes

• Whilst programming, if no button is pressed for 10 seconds, the display starts flashing, and after 1 minute returns to the main display without saving changes.
• To increase scrolling speed, press and hold the ▲ or ▼ button for at least 5 seconds.
• When pressing “PRG” for 3 seconds, the firmware revision code is displayed for 2 seconds.
• When cleaning the controller panel, do not use ethanol, hydrocarbons, ammonia or their by-products. Use neutral detergents and water.
• In order to protect the unit’s components, minimum relay output on (3 or 7 minutes) and off (4 minutes) times and minimum time (7 or 11 minutes) between activation of the same relay output are applied.
• In case of digital inputs not configured, probes not fitted or configured, or St2 not enabled on the controller the display shows ‘nO’
Controller function

**Door Switch**

The unit can be turned on and off via a door contact switch. When a new unit is delivered the door contact terminals are bridged on the female connector. In order to connect the door contact switch remove the bridge and connect the door contact switch. The contact must be closed when the cabinet door is closed.
Assembling of cables assemblies

Connect the cooling device according to the instructions below

Connector A: alarm and door switch signals
Connector B: Power supply

1. M16 cable gland with lock nut
2. Five pole terminal block
3. M20 cable gland with lock nut
4. Supply plate
5. M4x12 screws

four pole terminal block
**Parts List**

Sa: Ambient Temperature Sensor (Optional)
Si: Internal temperature Sensor
Hcc: Compressor c/case heater (Optional)
Hce: Condensate evaporator heater
Hi: Internal heater
Cc: Compressor capacitor
Ps: DC power supply
Mc: Compressor
Ma: Ambient fan
Mi: Internal fan

**A** RS495 – connection
**GND** GND connection

**B** RS485 - B connection

**Notes**

1. Connector for units with internal heater (optional)

**Notes**

High temp alarm can be wired NC or NO
When wires:
P1 P2 – NO
When wires:
P2 P3 - NC
SCE-NG2970B120/230/400/460V
SCE-NG4095B120/230V
SCE-NG5100B120/230V
SCE-NG5290B120V
SCE-NG6800B120/230V
SCE-NG8500B120/230V
SCE-NG4095B120/230V

NOTES:
See unit typeplate for correct voltage and frequency. Suitable protection devices should be installed on supply line. Use copper conductors only. Use supply wires suitable for 75 °C (167 °F).

1. X1 uses for 230 V units, X2 used for 115/400-460 V units (Plugged into X3)
2. Connected for units with internal heater

PARTS LIST:
Mc Compressor
Mi Internal fan
Ca Ambient fan capacitor
Hi Internal heater
Hcc Compressor crank case heater (Optional)
Si Internal temperature sensor
Ma Ambient fan
Cc Compressor capacitor
Ci Internal fab capacitor
Hce Condensate evaporator heater
Sa Ambient temperature sensor (Optional)
A RS495 – connection
GND GND connection
B RS485 - B connection

X4 ELECTRICAL SUPPLY CONNECTION
(see unit type plate for unit voltage)
230 V - 1:L1 (230V), 3:N
115 V - 1:L1 (115V), 3:N
400 V - 2: LX(400V), 3:L2(400 V)
460 V - 1:L1(460V), 3:L2(460 V)
Notes

High temp alarm can be wired NC or NO

When wires:
P1 P2 – NO
P2 P3 - NC
PARTS LIST:

- **Mc**: Compressor
- **Ma**: Ambient fan
- **Mi1**: Internal fan 1
- **Cc**: Compressor capacitor
- **Hce**: Condensate evaporator heater
- **Hin**: Internal heater (Optional)
- **Hcc**: Heater, compressor crankcase (Optional)
- **Si**: Internal temperature sensor
- **Sa**: Ambient temperature sensor (Option)
- **Ps**: DC Power supply
- **A**: RS495 – connection
- **GND**: GND connection
- **B**: RS485 - B connection

**SCE-NG1870B120/230V**

Notes:
- See 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).

**Notes**
- High temp alarm can be wired NC or NO
  - When wires: P1 P2 – NO
  - When wires: P2 P3 - NC
**PARTS LIST:**

- **Mc**: Compressor
- **Ma**: Ambient fan
- **Mi**: Internal fan 1
- **Cc**: Compressor capacitor
- **Ci**: Internal capacitor
- **Cis**: Internal Slow-down Capacitor (optional)
- **Ca**: Ambient Fan Capacitor
- **Hce**: Condensate evaporator heater
- **Hin**: Internal heater (Optional)
- **Hcc**: Heater, compressor crankcase (Optional)
- **Si**: Internal temperature sensor
- **Sa**: Ambient temperature sensor (Optional)
- **A**: RS495 – connection
- **GND**: GND connection
- **B**: RS485 - B connection

**NOTES:**

- Use copper conductors only.
- Use supply wires suitable for 75 °C (167 °F).
- See Unit typeplate for correct operating voltage and frequency.
- Suitable protective devices should be installed on the supply line.

**Notes**

- High temp alarm can be wired NC or NO
- When wires:
  - P1 P2 – NO
  - P2 P3 - NC
PARTS LIST:
Sa  Ambient Temperature Sensor (Optional)
Si  Internal Temperature Sensor
Hcc Compressor c/case heater (Optional)
Hce Condensate evaporator heater
Hi  Internal heater (Optional)
Cc  Compressor capacitor
Ps  DC Power Supply
Mc  Compressor
Ma  Ambient fan
Mi  Internal fan
At  Autotransformer
A  RS495 – connection
GND GND connection
B  RS485 - B connection

SCE-NG1195B460V,
SCE-NG2320B460V,
SCE-NG1870B460V

NOTES
See 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).

ELECTRICAL SUPPLY CONNECTION (see typeplate for correct voltage)
400V: 2-Lx(400V) 3-L2(400V) 460V: 1-L1(460V) 3-L2(460V)

Notes
High temp alarm can be wired NC or NO
When wires:
P1 P2 – NO
When wires:
P2 P3 - NC
Parts list:

L1  Live Phase 1  
L2  Live Phase 2  
L3  Live Phase 3  
PE  Protective Earth  
P1  High Temperature Alarm NC  
P3  High Temperature Alarm NO  
P3  High Temperature Alarm COM  
T1-T2 Door contact  
A   RS495 – connection  
GND GND connection  
B   RS485 - B connection  
Si  Internal Temperature Sensor  
HI  Internal Heater (Option)  
FB  Fuse Board  
TFI  Thermal Fuse f/ HI  
MI  Internal Blower  
MA  Ambient Blower  
MC  Compressor  
CE  Condensate Evaporator  
HC  Crankcase Heater (Optional)  
TPC  Thermal Cutout f/ HC  
CC  Contactor  
MOP  Overload Protector  
SPD  Surge Arrestor (Optional)  
CMP  Compressor Motor Protector  
Sa  Ambient Temperature Sensor (Optional)  
TPI  Thermal Protector f/HI  

SCE-NG4095B460V3, SCE-NG5290B460V3,  
SCE-NG6800B460V3, SCE-NG8500B460V3,  
SCE-NG14300B460V3  

NOTES: Use copper conductors only. Use supply wires suitable for 75 °C (167 °F). *1: Used only for units with cooling capacity higher than 4 kW (13,600 BTU/hr). *2: Connected for units with internal heater (optional). *3: Compressor with internal TOP used for units with cooling capacity higher than 6 kW (20,000 BTU/hr).
Three phase wiring

Wiring of three phase units to 400/460 V power

- High temp alarm can be wired NC or NO
- When wires:
  - P1 P2 – NO
  - P2 P3 – NC

3 Phase 400/460 V units are available with cooling capacities of 4,300, 5,100, 5,800, 8,500 and 14,300 BTU/hr
MODBUS connection

Three pole Modbus connector

All Enviro-therm units are offered standard with a Modbus connection

SCE-NG1195B / SCE-NG2320

SCE-NG5100B / SCE-NG6800B / SCE-NG8500B / SCE-NG14300B

KG4808/KG-KG8412

Modbus connector included
Attention!
The unit must be stood up for at least **30 min** prior to operation

**Recessed mounting**

1. M6 screws
2. M6 toothed washers
3. M6 flat washers
4. Enclosure
5. Mounting gasket
6. Lifting sling
7. Cover
8. M4 screws

**External mounting**

During transport and storage the air conditioner unit must be kept in the position marked on the box and at a temperature between -40 °F and 158°F and a relative humidity of max. 95% (at 77 °F ). Check the packaging has not been damaged during transport.
Installation and storage instructions

If the unit is mounted in a recessed position, the controller bracket can be pulled according to the wall thickness of the enclosure outwards as per steps below.
Safety

Take care!

General danger
Indicates compulsory safety regulations which are not covered by a specific pictogram such as one of the following.

High electric voltage
Indicates electric shock danger.

Important safety instruction
Indicates instructions for safe maintenance and operation of the unit.

Attention
Indicates possible burns from hot components.

Attention
Indicates possible damage to the unit.

Instruction
Indicates possible danger to the environment.
Attention

The unit can be damaged by lack of lubricant. To ensure that the compressor is adequately lubricated the oil, which has been displaced during transport, must be allowed to flow back into it. The unit must therefore be allowed to stand for at least 30 min. before being connected to the mains and taken into operation.

The unit / system must be protected with a MCB Type D or K. Upon connection the internal fan will start working. If the temperature inside the enclosure is higher than the set value of the controller both the compressor and external air fan start working. The cooling cycle will either stop once the air inside the enclosure reaches the set temperature minus hysteresis or once the minimum On-time is reached.

The hysteresis is 3K, the minimum ON-time is 4 minutes, the minimum OFF-time is 3 minutes, for units with a cooling capacity of more than 1 kW is it usually 7 minutes.

The setpoint for the internal enclosure temperature is pre-set at 95°F.
## What to do if air conditioner does NOT cool

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal fan does not work</td>
<td>Power not connected.</td>
<td>Verify power supply</td>
</tr>
<tr>
<td>Internal fan works, external fan and compressor don't work</td>
<td>Enclosure temperature is below setting temperature (St1)</td>
<td>Verify values of parameter &quot;St1&quot;</td>
</tr>
<tr>
<td></td>
<td>Door switch contact is open</td>
<td>Verify door switch</td>
</tr>
<tr>
<td></td>
<td>Controller doesn't work</td>
<td>Replace controller</td>
</tr>
<tr>
<td>Internal fan works, external fan and compressor don't work. Display</td>
<td>The sequence of the phases inside the power supply connector is</td>
<td>Change phases inside power supply connector</td>
</tr>
<tr>
<td>shows alternating OFF and temperature</td>
<td>incorrect</td>
<td></td>
</tr>
<tr>
<td>External and internal fan work, compressor does not work</td>
<td>Compressor motor electrical failure</td>
<td>Have compressor replaced by qualified service technician</td>
</tr>
<tr>
<td></td>
<td>Capacitor for compressor failed (single phase units)</td>
<td>Replace capacitor</td>
</tr>
<tr>
<td>Compressor works, external fan doesn't work</td>
<td>External fan needs to be replaced</td>
<td>Replace external fan</td>
</tr>
</tbody>
</table>
# What to do in case of Overtemperature

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor and fans (external and internal) work all the time</td>
<td>Cooling unit undersized</td>
<td>Enclosure needs a cooling unit with higher capacity</td>
</tr>
<tr>
<td>Compressor and external fan work in alternating mode (ON / OFF)</td>
<td>Thermal compressor protector triggered</td>
<td>Verify if ambient temperature is too high, clean condenser</td>
</tr>
<tr>
<td></td>
<td>Refrigerant leakage</td>
<td>Contact dealer/service center</td>
</tr>
</tbody>
</table>
What to do in case of excessive condensate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure door open</td>
<td>Ambient air gets into the enclosure</td>
<td>Seal all openings of the enclosure</td>
</tr>
<tr>
<td>Enclosure door closed</td>
<td>Enclosure IP protection class is below IP54</td>
<td>Seal all openings of the enclosure</td>
</tr>
<tr>
<td></td>
<td>Damaged or misplaced sealing strip</td>
<td>Repair sealing strip accordingly</td>
</tr>
</tbody>
</table>
Installation manual index

NextGen AC - SCE-NG1195B120V
NextGen AC - SCE-NG1195B230V
NextGen AC - SCE-NG14300B230V
NextGen AC - SCE-NG14300B460V3
NextGen AC - SCE-NG1870B120V
NextGen AC - SCE-NG1870B230V
NextGen AC - SCE-NG2320B120V
NextGen AC - SCE-NG2320B230V
NextGen AC - SCE-NG2320B460V
NextGen AC - SCE-NG2970B120V
NextGen AC - SCE-NG2970B230V
NextGen AC - SCE-NG2970B460V
NextGen AC - SCE-NG4095B120V
NextGen AC - SCE-NG4095B230V
NextGen AC - SCE-NG4095B460V3
NextGen AC - SCE-NG5290B120V
NextGen AC - SCE-NG5290B230V
NextGen AC - SCE-NG5290B460V3
NextGen AC - SCE-NG6800B120V
NextGen AC - SCE-NG6800B230V
NextGen AC - SCE-NG6800B460V3
NextGen AC - SCE-NG8500B120V
NextGen AC - SCE-NG8500B230V
NextGen AC - SCE-NG8500B460V3
AIR CONDITIONERS: Heat removed from the enclosure is discharged by circulating the ambient air through the condenser coil and returning the heated air to the ambient.

AMBIENT The environment surrounding the product. The word Ambient is typically used to describe the temperature, humidity, air cleanliness or quality including dust and possibly any other harsh weather condition.

CAPILLARY A copper tube with a very small inside diameter. Its function in the refrigerant system is to separate the High Pressure (condenser) side from the Low Pressure (evaporator) side, by providing a calibrated restriction and a resulting pressure drop.

EXPANSION VALVE A refrigerant metering device that provides the same function as a capillary tube (See Capillary), but can provide a variable flow rate to match different load conditions.

BLOWER An air moving device typically used to move air against medium to high static pressure systems. Blowers are designed to operate against higher static pressures than fans.

BTU/H British Thermal Unit per Hour is a unit of measure for heat. Heat is also commonly measured in watts: (1 BTU/H = .29 watts)

CLOSED LOOP COOLING An industry term used to describe a cooling process that reconditions (reuses) the air inside a chamber. The purpose of this system is to prevent contamination from entering the chamber.

COMPRESSOR is the main component in a refrigerant system. Inside compressors there is a motor and a pump that circulates the refrigerant through the rest of the system.

CONDENSATION The process in nature that causes water (condensate) to be removed from the air, and form on a cold surface. This is commonly seen on the outside of a glass of ice water, or dew on grass in the morning.
CONDENSER The hot section of the refrigerant system that removes the waste heat away from the refrigerant system. This is commonly accomplished with either air or water to carry away the heat. This component is called a condenser, because the refrigerant inside is changing state from a gas to a liquid (condensing).

CORROSIVE ATMOSPHERES Corrosive environments, such as those found in chemical plants and in industries where processes result in harsh chemical by-products, usually preclude the use of filtered ambient air for forced convection cooling.

DEW POINT The surface temperature at which condensate (water) will form as related to the air temperature and air humidity. (See Condensation)

HYSTERESIS A property of a system such that an output value is not a strict function of the corresponding input, but also incorporates some delay, or history dependence, and in particular when the response for a decrease in the input variable is different from the response for an increase. For example, a thermostat with a nominal setpoint of 95°F might switch the controlled cooling source on when the temperature rises above 99°F, and off when it drops below 92°F.

EVAPORATOR The section of a refrigerant system that operates colder than the ambient. This component is called an evaporator, because the refrigerant inside is changing state from a liquid to a gas (evaporating).

FILTERS Filters used with typical electronic equipment cooling devices are usually the viscous-impingement type. They utilize fibers that have been coated with a nondrying, tacky substance which traps particulates as air is drawn through. Usually constructed of aluminum foil, the filters can be cleaned, recoated and re-used indefinitely.

WATT A unit of measure for electrical power. Watts are also used to quantify the amount of heat in a system, because 1 watt will convert to 3.413 BTU’s.