

Thermal control

Overview



Adjustable thermostats

- NO (blue button) with normally open contact to control the starting of a fan when the temperature exceeds the displayed maximum value.
- NC (red button) with normally closed contact to control the stopping of a resistance heater when the temperature exceeds the displayed value.
- Large range of temperature control.
- Small dimensions.
- Easily accessible terminals.
- High connection power.
- 4 types of fixings (novelty).

Double-adjustable thermostat

- Double temperature control with a resistance heater and a fan with separate operation.
- Red button: with normally closed contact (NC) for controlling the resistance heaters.
- Blue button: with normally open contact (NO) for controlling the fans.
- A double thermostat with separate adjustments and operations within the same device.
- Easily accessible terminals.
- Different installation methods.

The new quick-fixing systems:

- On 35-mm DIN rail.

- On Spacial upright.

- On cross-rail.

- On mounting plate.

Thermal control

Overview



Thermostat with NO/NC contact

- NO/NC inverter for controlling the resistance heaters or the fans.
- Switching by means of two NO/NC contacts.
- Easily accessible terminals.
- High connection power.
- 4 types of quick-fixing systems.
- Versions in °C and °F.



Electronic thermostat with LCD screen

- Three thermostats for different input voltages (9-30 V, 110-127 V, 220-240 V).
- Operating temperature: 0 °C...+50 °C.
- Simple programming.
- Option of installing an external sensor, ref. **NSYCCAST** for remotely reading the temperature (operating temperature: -30 °C...+80 °C).
- Ventilation and heating function (2 separate relays).
- High switching power.
- Hysteresis: 2 K (+/-0.1 K).
- 7 different operating modes.
- Additional operating mode with 1 external sensor: Reads and compares the internal and external temperatures in order to control the ventilation, heating or the alarm.
- Temperature adjustment range: +5 °C...+50 °C.



Electronic hygrotherms

- Electronic hygrotherms for different input voltages (9-30 V, 110-127 V, 220-240 V).
- Operating temperature: 0 °C...+ 50 °C.
- Option of installing an external sensor, ref. **NSYCCAST** for remotely reading the temperature (operating temperature: -30 °C...+80 °C).
- Simple programming.
- 3 different operating modes.
- High switching power.
- T hysteresis: 2 K (+/-0.1 K).
- RH hysteresis: 3%.
- Temperature adjustment range: +5 °C...+50 °C.
- Humidity adjustment range: 20%...80%.



Electronic hygrometer

- Electronic hygrometer for different input voltages (110-240 V).
- Operating temperature: 0 °C...+50 °C.
- Simple programming.
- 2 different operating modes.
- High switching power.
- RH hysteresis: 3%.
- Humidity adjustment range: 20%...80% RH.

Thermal control

Selection guide mechanical version

Control temperature

Control a resistance heater or an alarm



NC thermostat

| Setting range | Display | Contact | Application | Control element | Interrupting capacity (resistive load) | Reference |
|---------------|---------|---------|-------------|-----------------|---|------------|
| 0...+60 °C | °C | O | Heat | Bimetal | 30 W DC 120 V AC; 15 A 250 V AC; 10 A | NSYCCOTHC |
| +32...+140 °F | °F | | | | | NSYCCOTHCF |

Control a fan or an alarm



NO thermostat

| Setting range | Display | Contact | Application | Control element | Interrupting capacity (resistive load) | Reference |
|---------------|---------|---------|-------------|-----------------|---|------------|
| 0...+60 °C | °C | NO | Ventilate | Bimetal | 30 W DC 120 V AC; 15 A 250 V AC; 10 A | NSYCCOTH0 |
| +32...+140 °F | °F | | | | | NSYCCOTH0F |

Control a resistance heater and a fan



Double thermostat

| Setting range | Display | Contact | Application | Control element | Interrupting capacity (resistive load) | Reference |
|---------------|---------|---------|---------------------|-----------------|---|-----------|
| 0...+60 °C | °C | NC + | Heat / Ventilate | Bimetal | 30 W DC 120 V AC; 15 A 250 V AC; 10 A | NSYCCOTHD |
| +32...+140 °F | °F | | | | | NO |

Control a resistance heater or a fan



Thermostat with inverse contact

| Setting range | Display | Contact | Application | Control element | Interrupting capacity (resistive load) | Reference |
|---------------|---------|---------|----------------------|-----------------|---|------------|
| 0...+60 °C | °C | Inverse | Heat or ventilate | Bimetal | Closing: 30 W DC 250 V AC; 5 A Opening: 30 W DC 250 V AC; 10 A | NSYCCOTH1 |
| +32...+140 °F | °F | | | | | NSYCCOTH1F |

Thermal control

Selection guide electronic version

Control temperature

Control a resistance heater or a fan



Electronic thermostat

| Setting range | Display | Power input | Application | Control element | No. of relays | Interrupting capacity (resistive load) | Reference |
|----------------|----------|--------------|-------------------|-----------------|---------------|--|----------------|
| +5 °C...+50 °C | °C or °F | 9-30 V AC/DC | Heat or ventilate | Electronic | 2 | 8 (5) A 230 V AC 5 A 30 V DC | NSYCCOTH30VID |
| | | 110-127 V AC | | | | | NSYCCOTH120VID |
| | | 220-240 V AC | | | | | NSYCCOTH230VID |

7 different operating modes.
Option of installing one or two external sensors.

Control temperature and relative humidity



Electronic hygrotherm

| Setting range | Display | Power input | Application | Control element | No. of relays | Interrupting capacity (resistive load) | Reference |
|----------------|----------|--------------|-------------------|-----------------|---------------|--|----------------|
| +5 °C...+50 °C | °C or °F | 9-30 V AC/DC | Heat or ventilate | Electronic | 2 | 8 (5) A 230 V AC 5 A 30 V DC | NSYCCOHT30VID |
| | | 110-127 V AC | | | | | NSYCCOHT120VID |
| | | 220-240 V AC | | | | | NSYCCOHT230VID |

3 different operating modes.
Option of installing an external sensor.

Control relative humidity



Electronic hygrostat

| Setting range | Display | Power input | Application | Control element | No. of relays | Interrupting capacity (resistive load) | Reference |
|---------------|---------|--------------|-------------------|-----------------|---------------|--|----------------|
| 20%...80% | % RH | 110-240 V AC | Heat or ventilate | Electronic | 2 | 8 (5) A 230 V AC 5 A 30 V DC | NSYCCOHT230VID |

2 different operating modes.

PTC external temperature sensor (double insulation)

- Length: 3 metres.
- Several types of fixings (on DIN rail, on Spacial SF profile, on VDI cross-rail, on mounting plate).
- Sensor operation or reading range: -30 °C...+80 °C.
- Protection rating: IP 67.

Reference
NSYCCAST



Temperature sensor

Thermostat installation tips:

The thermostat should be installed at the top of the enclosure (the hottest place). See the various operating modes of each thermostat to choose the one that best meets your needs.

Hygrostat installation tips:

The hygrostat should be installed at the bottom of the enclosure. 60% RH is the optimum value in the enclosure.

Thermal control

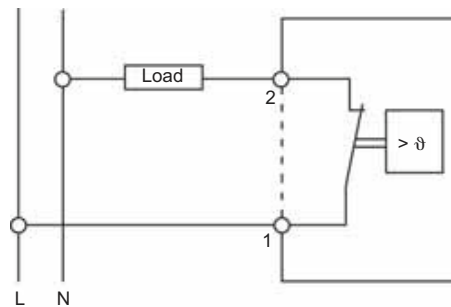
Thermostat with NC contact



- Thermostat with NC contact to control the stopping of a resistance heater when the temperature exceeds the displayed value.
- This considerably lengthens the service life of the resistance heaters since they are used less frequently.
- Protection rating: IP 20.
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Temperature adjustment range: 0...+60 °C
- Connection: four 2.5-mm² terminals.
- Multiple fixing systems.
- UL certification.

| Display | Max. command I. | Reference |
|---------|-----------------|-------------------|
| °C | 10 A 250 V | NSYCCOTHC |
| °F | 10 A 250 V | NSYCCOTHCF |

| Technical features | |
|---------------------------|---|
| Sensor element | Bimetal |
| Contact | NC, forced rupture |
| Contact resistance | < 10 m Ω |
| Service life | > 100000 cycles |
| Switching capacity | 250 V AC; 10 A (resistive load) 120 V AC; 15 A (resistive load) 250 V AC/120 V AC 2 A (inductive load cos φ = 0.6) 30 W DC |
| Connection | Four 2.5-mm ² terminals |
| Mounting | By clip on 35-mm DIN rail |
| Enclosure | UL94 V0 plastic, light grey |
| Dimensions | 60 × 33 × 43 mm |
| Weight | 40 g |
| Mounting position | Indifferent |
| Operating temperature | -20...+80 °C (-4...+176 °F) |
| Protection rating | IP 20 |
| Hysteresis | 7 °K |
| Temperature setting range | 0...+60 °C |



Load = resistance

Thermal control

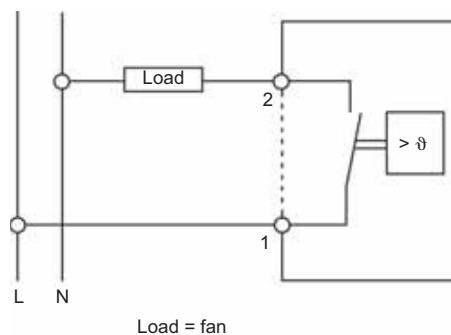
Thermostat with NO contact



- Thermostat with NO contact to control the starting up of a fan when the temperature exceeds the displayed maximum value.
- It can control the temperature inside the enclosure by only starting up the fan when necessary, thus increasing the service life of the fan and reducing the clogging of the filter.
- Protection rating: IP 20.
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Temperature setting range: 0...+60 °C
- Connection: four 2.5-mm² terminals.
- Multiple fixing systems.
- UL certification.

| Display | Max. command I. | Reference |
|---------|-----------------|-------------------|
| °C | 10 A 250 V | NSYCCOTH0 |
| °F | 10 A 250 V | NSYCCOTH0F |

| Technical features | |
|------------------------|--|
| Sensor element | Bimetal |
| Contact | NO, forced rupture |
| Contact resistance | < 10 m Ω |
| Service life | > 100000 cycles |
| Switching capacity | 250 V AC; 10 A (resistive load) |
| | 120 V AC; 15 A (resistive load) |
| | 250 V AC/120 V AC 2 A (inductive load cos φ = 0.6) |
| Connection | Four 2.5 mm ² terminals |
| Mounting | Clip on 35-mm DIN rail |
| Enclosure | UL94 V0 plastic, light grey |
| Dimensions | 60 × 33 × 43 mm |
| Weight | 40 g |
| Mounting position | Indifferent |
| Operating temperature | -20...+80 °C (-4...+176 °F) |
| Protection rating | IP 20 |
| Hysteresis | 7 °K |
| Temperature adjustment | 0...+60 °C |



Thermal control

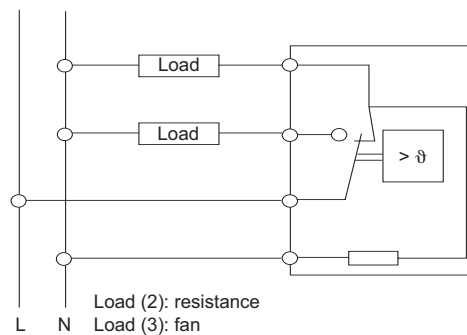
Thermostat with NO/NC contact



- Thermostat (contact adapted to control fans, resistance heaters, ventilation drawers, heat exchangers, etc).
- Signals and controls the temperature inside the enclosure.
- Fixing on a DIN rail.
- Protection rating: IP 20.
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Temperature setting range: 0...+60 °C.
- Connection: four 2.5-mm² terminals.

| Display | Max. command I. | Reference |
|---------|--------------------|-------------------|
| °C | (NO) 5 A (NC) 10 A | NSYCCOTHI |
| °F | | NSYCCOTHIF |

| Technical features | |
|---|--|
| Sensor element | Bimetal |
| Contact | Inverse, forced rupture |
| Contact resistance | < 10 m Ω |
| Service life | > 100000 cycles |
| Switching capacity | 250 V AC; 10 A (resistive load) |
| Maximum interrupting capacity with direct current | 250 V AC 4 A (inductive load cos φ = 0.6) 30 W DC |
| Connection | Four 2.5-mm ² terminals |
| Mounting | By clip on 35-mm DIN rail |
| Enclosure | UL94 V0 plastic, light grey |
| Dimensions | 67 × 50 × 44 mm |
| Weight | 100 g |
| Mounting position | Indifferent |
| Operating temperature | -20...+80 °C (-4...+176 °F) |
| Protection rating | IP 20 |
| Hysteresis | 7 °K |
| Temperature setting range | +5...+60 °C |



Thermal control

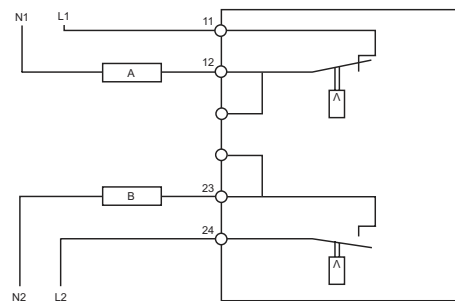
Double thermostat



- Double thermostat: two thermostats in a single device with separate adjustment and operation.
 - Red button: with normally closed contact (NC) for controlling the resistance heaters.
 - Blue button: with normally open contact (NO) for controlling the fans, signalling systems or alarms.
- This thermostat can control the activation of a fan and a heater controlling the temperature independently.
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Multiple fixing systems.
- UL certification.

| Display | Max. command I. | Reference |
|---------|--------------------|-------------------|
| °C | (NO) 5 A (NC) 10 A | NSYCCOTH |
| °F | | NSYCCOTHDF |

| Technical features | |
|---------------------------|--|
| Sensor element | Bimetal |
| Contact | NO / NC, forced rupture |
| Contact resistance | < 10 m Ω |
| Service life | > 100000 cycles |
| Switching capacity | 250 V AC; 10 A (resistive load) |
| | 120 V AC; 15 A (resistive load) |
| | 250 V AC/120 V AC 2 A (inductive load cos φ = 0.6) |
| Connection | Four 2.5-mm ⁶ terminals |
| Mounting | Clip on 35-mm DIN rail |
| Enclosure | UL94 V0 plastic, light grey |
| Dimensions | 60 × 33 × 43 mm |
| Weight | 40 g |
| Mounting position | Indifferent |
| Operating temperature | –20...+80 °C (–4...+176 °F) |
| Protection rating | IP 20 |
| Hysteresis | 7 °K |
| Temperature setting range | 0...+60 °C |



Thermal control

Electronic thermostat with LCD screen



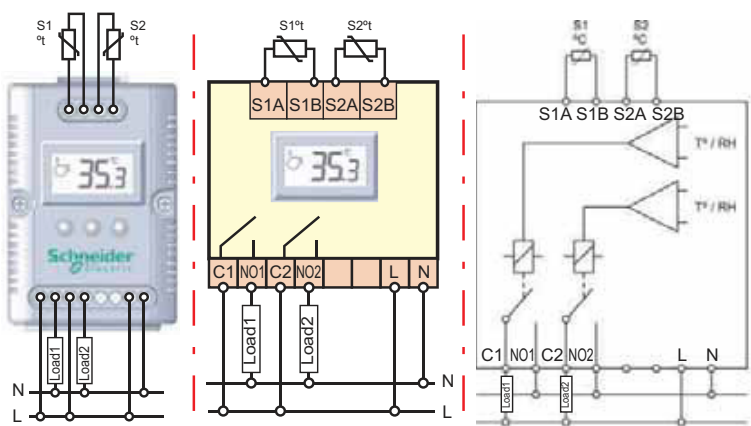
- Electronic temperature controller.
- Input voltages: 9-30 V, 110-127 V and 220-240 V.
- Thermostats with 2 independent switching relays (ventilation / heating function).
- Thermostat precision: +/-1.5 °C.
- Option of installing external PTC sensors, ref. **NSYCCAST**, for remote reading (L = 3 m).
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Option of displaying degrees Celsius °C or Fahrenheit °F in the same thermostat.

| Display | Voltage | Type of current | Max. command intensity | Reference |
|----------|-----------|-----------------|-----------------------------------|-----------------------|
| °C or °F | 9-30 V | AC DC | 8 (5) A 230 V AC / 5 A 30 V DC | NSYCCOTH30VID |
| | 110-127 V | AC | | NSYCCOTH120VID |
| | 220-240 V | | NSYCCOTH230VID | |

| Technical features | |
|---------------------------|---|
| Operating temperature | 0 °C...+50 °C |
| Temperature setting range | +5 °C...+50 °C |
| Hysteresis | Programmed 2 °K |
| Internal sensor element | Internal temperature sensor |
| Connection | 2 × 2.5 mm ² (input voltage) + 2 relays (2 × 2.5 mm ² + 2 × 2.5 mm ²) |
| Contact | Free with zero potential |
| Mounting | 4 different methods: by DIN rail, Spacial SF profile, on VDI cross-rail or on mounting plate |
| Enclosure | UL94-V0 plastic, light grey |
| Certification | UL / UR |

| 7 different operating modes in the same thermostat | |
|--|--|
| 1 | Ventilation (the addition of an external sensor inhibits the inner sensor and the reading is that of the external sensor) (activate 1st relay) |
| 2 | Heating (activate 2nd relay) |
| 3 | Ventilation / Heating (2 relays) |
| 4 | Double ventilation (2 relays) |
| 5 | Double heating (2 relays) |
| 6 | Comparison function (1 or 2 external sensors required). Compares the readings from the external sensor and the internal sensor in order to start up a fan or a heating element |
| 7 | Readings of max./min. temperature. |

The thermostat automatically detects any connected sensors.



Load (1) = fan/resistance
Load (2) = fan/resistance/alarm

Thermal control

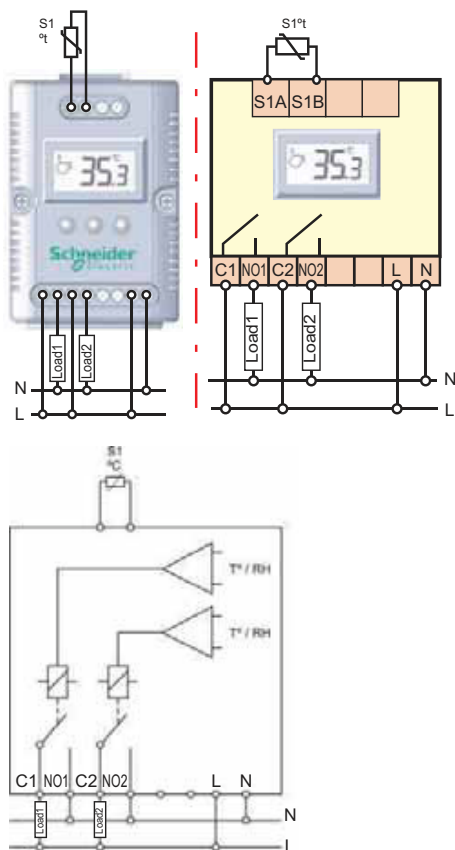
Electronic hygrotherm with LCD screen



- Electronic temperature and humidity controller.
- Input voltages: 9-30 V, 110-127 V and 220-240 V.
- Hygrotherm with 2 independent switching relays (ventilation / heating function).
- Thermostat precision: +/-1.5 °C.
- Hygrostat precision: +/-5% RH, relative humidity.
- Option of installing external PTC sensors, ref. **NSYCCAST**, for remote reading (L = 3 m).
- PC plastic material, self-extinguishing according to standard UL94 V0.
- Option of displaying the temperature in degrees Celsius °C or Fahrenheit °F.

| Display | Voltage | Type of current | Max. command intensity | Reference |
|------------------|-----------|-----------------|-----------------------------------|------------------------|
| °C or °F % RH | 9-30 V | AC DC | 8 (5) A 230 V AC / 5 A 30 V DC | NSYCCOHYT30VID |
| | 110-127 V | AC | | NSYCCOHYT120VID |
| | 220-240 V | | | NSYCCOHYT230VID |

| Technical features | |
|---------------------------|---|
| Operating temperature | 0 °C...+50 °C |
| Temperature setting range | +5 °C...+50 °C |
| Humidity setting range | 20%...80% |
| RH hysteresis | 3% |
| Connection | 2 x 2.5 mm ² (input voltage) + 2 relays (2 x 2.5 mm ² + 2 x 2.5 mm ²) |
| Contact | Free with zero potential |
| Mounting | 4 different methods: by DIN rail, Spacial SF profile, on VDI cross-rail or on mounting plate |
| Enclosure | UL94-V0 plastic, light grey |
| Certification | UL / UR |



Load (1) = fan/resistance
Load (2) = fan/resistance/alarm

Operating modes

| Mode 1 | Relay 1 | Relay 2 |
|--------------------------|-------------------------|-----------------------------|
| Controlled device | Fan | Resistance heater |
| Measured variables | Temperature | Temp. (T) and humidity (RH) |
| Control type | Avoid high temperatures | Avoid low temperatures |

| Mode 2 | Relay 1 | Relay 2 |
|--------------------------|--------------------------|------------------------------------|
| Controlled device | Resistance heater | Alarm by switching |
| Measured variables | Control of the dew point | Temperature and humidity |
| Control type | Avoid high humidity | High humidity or temperature alert |

| Mode 3 | Relay 1 | Relay 2 |
|--------------------------|--|-----------------------------------|
| Controlled device | Fan | Resistance heater |
| Measured variables | External temperature - Internal temperature* | Temperature (T) and humidity (RH) |
| Control type | Heating by ventilation | Avoid low temperatures |

*Comparison mode in relay 2: an external sensor is required for the comparison function (Text - Tint). Example of mode 3: Decides whether the external temperature is favourable and controls the ventilation (Relay 1) or heating (Relay 2). Advantage of mode 3: Energy efficiency. Option of efficiently heating the enclosure by ventilation (using hot external air) before bringing the resistance heater into operation. The thermostat automatically detects any connected sensors.

Thermal control

Electronic hygrostat with LCD screen



- Electronic humidity controller.
- Input voltages: 110-240 V.
- Precision: +/- 5% RH, relative humidity.
- Hygrostat with 2 independent switching relays (ventilation / heating function).
- PC plastic material, self-extinguishing according to standard UL94 V0.
- 2 operating modes for RH %: relative humidity control and dew point control.

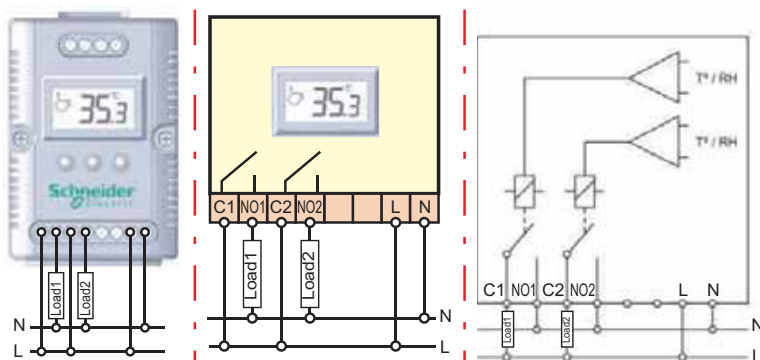
| Display | Voltage | Type of current | Max. command intensity | Reference |
|---------|-----------|-----------------|-----------------------------------|----------------|
| % RH | 110-240 V | AC | 8 (5) A 230 V AC / 5 A 30 V DC | NSYCCOHY230VID |

| Technical features | |
|-------------------------|--|
| Humidity setting range | 20%...80% |
| RH hysteresis | 3% |
| Internal sensor element | Internal humidity sensor |
| Connection | 2 × 2.5 mm ² (input voltage) + 1 relay (2 × 2.5 mm ²) |
| Contact | Free with zero potential |
| Mounting | 4 different methods: by DIN rail, Spacial SF profile, on VDI cross-rail or on mounting plate |
| Enclosure | UL94-V0 plastic, light grey |
| Certification | UL / UR |

Operating modes

| Mode 1 | Relay 1 | Relay 2 |
|--------------------|-------------------|---------|
| Controlled device | Resistance | - |
| Measured variables | Humidity | - |
| Control type | Dehumidify RH (%) | - |

| Mode 2 | Relay 1 | Relay 2 |
|--------------------|-------------------|----------------------------------|
| Controlled device | Resistance | Alarm by switching or resistance |
| Measured variables | Humidity | Humidity |
| Control type | Dehumidify RH (%) | High humidity warning |



Load (1) = fan/resistance
 Load (2) = fan/resistance/alarm

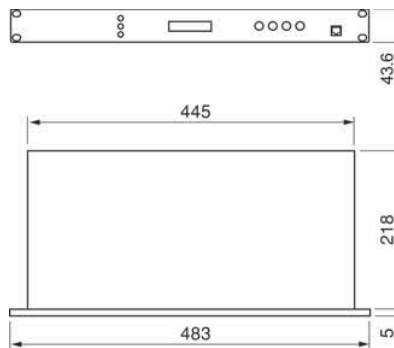


- The enclosure monitor checks and protects all the equipment in the distribution, network and server racks as well as their environment.
- Ambient parameters and operating states can be measured using various sensors and several inputs.
- Signalling and display: on the unit, serial interface, Ethernet network.
- Digital inputs and switching outputs enable permanent monitoring and adapted actions.

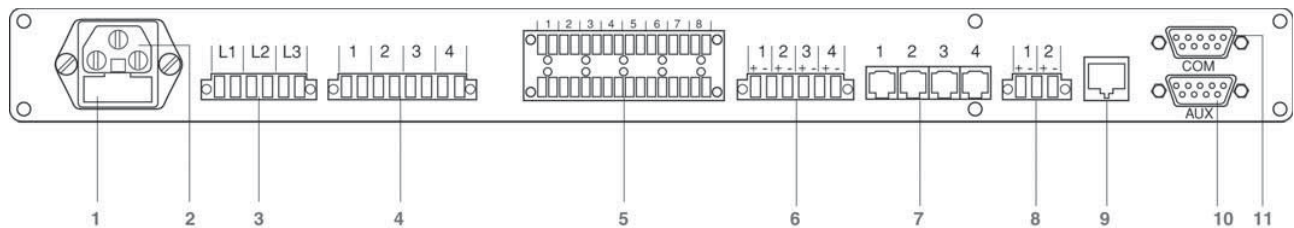
Reference
NSY11950

Possibilities for connection to the enclosure monitor:

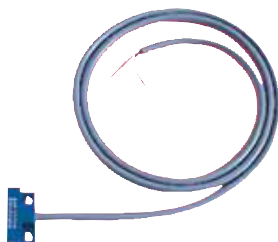
- 4 sensors ref. **NSY11951**, **NSY11952** and/or **NSY11953**.
- 4 sensors ref. **NSY11954** or **NSY11956**.
- 8 insulated digital inputs (free potential).
- 2 digital inputs.
- 1 series input used for monitoring devices with a communication protocol.



Connections and cabling diagram



- 1 Contact pin circuit breaker.
- 2 Connection to the network.
- 3 Connection of phase surveillance.
- 4 Digital switching outputs.
- 5 Digital inputs (ref. **NSY11955** and **NSY11958**).
- 6 Alarm inputs (ref. **NSY11954** and **NSY11956**).
- 7 Connection of a sensor, references **NSY11951**, **NSY11952** and **NSY11953**.
- 8 Connection of uninterruptible power supply.
- 9 Connection to Ethernet network RJ45.
- 10 Series interface for external devices.
- 11 Series interface for connection to a terminal.



Door contact

- Monitors door access by means of a magnetic sensor that reacts to any material conducting magnetic flow.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

Reference

NSY11955

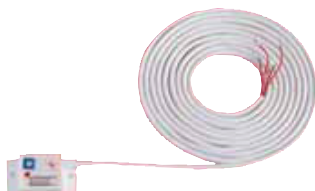


Smoke detector

- Visible smoke detector with VdS approval for rapid fire detection, even with light smoke.
- Usable in temperature range from -20 to $+60$ °C.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

Reference

NSY11954



Vibration sensor

- Detects movements and vibrations of varying intensity.
- Adjustable sensitivity.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

Reference

NSY11956



Movement sensor

- Indicates movements in the area by infrared system.
- Adjustable sensitivity.
- Anti-sabotage protection
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

Reference

NSY11958

Thermal control Sensors

Water sensor

- Detects all liquids that conduct electricity.
- Sensor covered in araldite, 100% sealed.
- Usable in temperature range from -20 to $+60$ °C.
- Length of cable supplied: 5 m.
- Dimensions: $70 \times 50 \times 39$ mm.

| Weight (kg) | Reference |
|-------------|-----------------|
| 0.400 | NSY11957 |



Extension cables

- 4 strand cable for sensors.
- Four lengths available: 5, 10, 15 and 20 metres.
- RJ11 connections.

| Length (m) | Reference |
|------------|-----------------|
| 5 | NSY11959 |
| 10 | NSY11960 |
| 15 | NSY11961 |
| 20 | NSY11962 |



Temperature sensor

- Temperature value range: 0° ... $+60^{\circ}$.
- Measurement accuracy: ± 1 °C.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

| Reference |
|-----------------|
| NSY11951 |



Humidity sensor

- Humidity value range: 10 ... 90% relative humidity between 0° and $+60^{\circ}$.
- Measurement accuracy: $\pm 3\%$ relative humidity.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

| Reference |
|-----------------|
| NSY11952 |

Thermal control Sensors



Combined temperature/humidity sensor

- Combines temperature and air humidity sensor functions.
- Temperature value range: 0° ... +60°.
- Measurement accuracy: ± 1 °C.
- Humidity value range: 10 ... 90% relative humidity between 0° and +60°.
- Measurement accuracy: $\pm 3\%$ relative humidity.
- Length of cable supplied: 4 m.
- Maximum cable length: 20 m.
- Supplied with fixings.

Reference

NSY11953