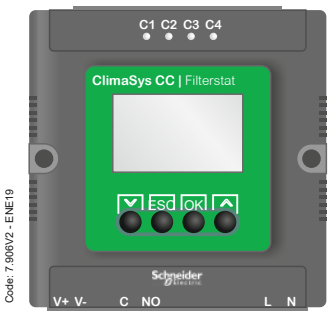
en Filterstat - Control Monitor for Status of Enclosures



Code: 7.906V2 - ENE19

NSYCCOFST●●●●V

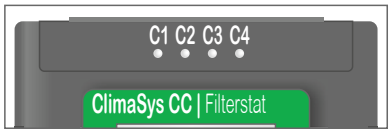
Controls and monitors the status of ventilation systems in cabinets to help prevent breakdowns or interruptions.
Equipped with ports to connect up to 4 devices (sensors for filters or fans, hubs or additional Filterstat controller). Through these ports the controller receives the data and feeds the connected devices.

A relay output (5 A) is linked to the state of the alarms. An analog output (0-10 V) is linked to the dirtiness of the filter (reading from filter with highest level of detected dirt).

Connection

V+ V- = 0-10 V analog output
C NO = Relay SPST 5 A
L N = Power according to model
C1, C2, C3, C4 = Connection devices (sensor, hub, Filterstat ...)

LEDs



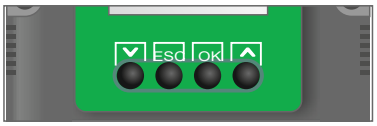
Equipped with 8 LEDs, 2 per channel (1 green & 1 orange)
- Green flashing, receiving data
- Orange flashing, sending data
- Fixed orange, problems with the channel

Characteristics

Power:
- NSYCCOFST30V: **20 to 28 Vac / 20 30 Vdc**
- NSYCCOFST90250V: **90 to 250 Vac 50/60 Hz**

Relay breaking power: **5 A SPST**
(Potential-free relay contact)
Analog output: **0 to 10V**
Dimensions: **80x80x41 mm**
Operating temperature: **-40 to +70 °C**
Storage temperature: **-45 to +75 °C**
Operating relative humidity: **20 to 85%**
Memory of settings without power

Keyboard

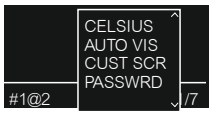


- ^ - Go to next data screen / Increase value
- v - Go back to previous data screen / Decrease value
- v ^ - Enter menu to configure the Filterstat
- OK - Access to modify setting / Confirm value, OK
- ESC - Inside menu, exit without saving data / In normal operation, it shows the list of connected devices

Filterstat Menu

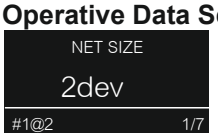
From the control screen you can configure the devices one by one, read the information registered by each of them and reset them. With the option **HIDE** you can filter the data you want to see on the screen and leave only the necessary information, defining from the menu of each screen of each device whether or not it is shown in **CUST SCR** operation. In the **ALL SCR** operation, you can view all screens even if they have the **HIDE ON** option, and consult or configure them. In the menu you can configure the data screens.

Press v ^ together, and menu appears:



Temperature: Allows to define the temperature units
CELSIUS (degrees Centigrade)
FAHREN (degrees Farenheit)
Screen display: The way to teach the data screens, pass automatically
AUTO VIS (passes screen every 4 seconds)
MAN VIS (passes screen by pressing arrows)
Data screens: Show all screens or only those enabled.
CUST SCR (shows only those enabled)
ALL SCR (shows all)
Password: Activated, you need to enter the code to access the menu
PASSWRD (from factory 0000, deactivated)

Operative Data Screens



Data screen

Next screen

OK

Menu for that screen

OK

Configured value

^

Change

OK

Saves change

v

When it reaches the last data screen of that device, it goes to the first of the next device.
If the screen display is in **AUTO** and you press a key, the display changes to fixed for 10 minutes, then returns to **AUTO** mode.
To see a specific device, press **ESC** to display a list of the devices, and use the arrows to select the required device.(the alarm screen is listed as one more device).

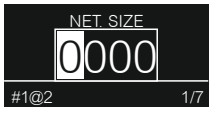
ESC

Leave without saving change

Access With the Password Activated

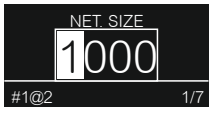
Data screen

OK



Asks password to access

^ v



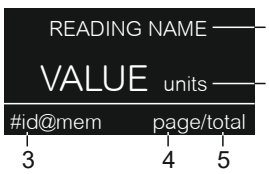
Insert configured value

OK

Menu for that screen

Once the correct password is entered, it gives access to the menu. After 15 minutes without touching the keys, the password is requested again.

Screen



1 - Definition of the parameter
2 - Value of the reading and its units
3 - Identification of the origin of this data:
device to which this data belongs
@ memory location where the data is recorded
4 - Display number shown
5 - Total screens to be displayed of that device depends on the **CUST SCR or ALL SCR mode**

Quick Access Menu to Devices

From any screen you can access the menu by pressing ESC.
A list of all devices is displayed.
Use the arrows to select the required device

ESC

v

Next device

OK

first screen

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Screens Available for the Filterstat

1/7 Network devices

Total number of devices that are connected in the network, including itself.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

2/7 Devices connected to the control

Identification of the devices that are directly connected to the control ports. When showing #0, no device is connected to that port.

Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) H**IDE OFF** (always seen)

Assignment of channels according to example

#2	#4	#5	#0
C1	**C2**	**C3**	**C4**

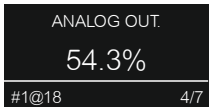
3/7 Relay Output

Relay output (5 A) that is linked to the alarms. When an alarm is activated in the network, the relay turns on.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation) **HIDE OFF** (always shown)
Operation: **REG** (when an alarm is detected it is activated until it disappears)
ON (steady on) **OFF** (fixed off)

4/7 Analog Output

0-10 V output, linked to the filter dirtiness sensor. Configure to show either percentage (REG) or fixed value (FIX) of dirtiest filter.
Example: shows 54.3% and leaves 5.43 V.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Operation: **REG (**% of the dirtiest filter) **FIX (**fixed value)

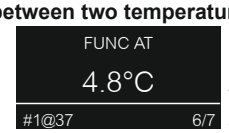
5/7 Active alarm

Shows if the controller has an active alarm. Temperature differential alarm exceeded or communication broken with any of the devices involved in the calculation of ΔT. See next point.
AL1: Broken ref AL2: AT deviation

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

6/7 Configuration ΔT Delta temperature and alarm between two temperature readings

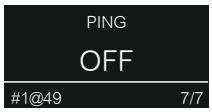
Calculates the temperature differential (or Delta-T) of two sensors, to measure the efficiency of the cooling system. Adjusted to -0.6 ºC below the alarm, disables the alarm (acts through hysteresis).
Used to set the temperature probe of the inlet and outlet. Activates alarm if it reaches the set point.



Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Alarm differential: Adjusted to -0.6 ºC below the alarm, disables the alarm (acts through hysteresis).
Temperature reading 1: **# id @ mem**
Reading temperature 2: **# id @ mem**

7/7 PING function

Activates a visual indication by inverting colors of the screen (white background and black letters) to be able to identify it. On the screen the countdown of the time defined for PING. Option to restart the device with the factory parameters.



Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Time: **0 sec** (off), **30 sec**, **60 sec** (seconds), **5 min**, **15 min** (minutes)
Version: **v1.1 (s**oftware version, press **OK**, **t**o see device description **(HUB H.OLED v1.1)**
RESET: **RESET DEV** (Returns the device to the factory settings)

Screens Available for the Filterstat Hub Extension Module (NSYCCOFSEM8U2)

1/5 Network devices

Total number of devices that are connected in the network, including itself.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

2/5 Devices connected to the control

Identification of the devices that are directly connected to the control ports. When showing # 0, no device is connected to that port.

Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)

Assignment of channels according to example

#2	#4	#5	#8	#0	#1	#7	#6
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**

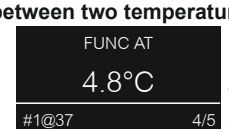
3/5 Active alarm

Shows if the control has an active alarm. Temperature differential alarm exceeded or communication broken with any of the devices involved in the calculation of ΔT. See next point.
AL1: Broken ref AL2: AT deviation

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

4/5 Configuration ΔT Delta temperature and alarm between two temperature readings

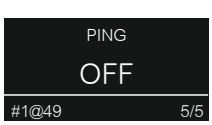
Calculates the temperature differential (or Delta-T) of two sensors, to measure the efficiency of the cooling system. Adjusted to -0.6 ºC below the alarm, disables the alarm (acts through hysteresis).
Used to set the temperature probe of the inlet and outlet. Activates alarm if it reaches the set point.



Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Alarm differential: Adjusted to -0.6 ºC below the alarm, disables the alarm (acts through hysteresis).
Temperature reading 1: **# id @ mem**
Reading temperature 2: **# id @ mem**

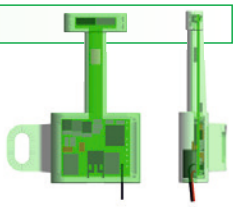
5/5 PING function

Activate a visual indication by inverting colors of the screen (white background and black letters) to be able to identify it. On the screen the countdown of the time defined for PING. Option to restart the device with the factory parameters.



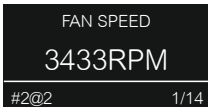
Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Time: **0 sec** (off), **30 sec, 60 sec** (seconds), **5 min, 15 min** (minutes)
Version: **v1.1** (software version, press **OK**, **t**o see device description **(HUB HUB8 v1.1)**
RESET: **RESET DEV** (Returns the device to the factory settings)

Screens Available for the Fan Sensor (NSYCCARPM)



1/14 Fan speed

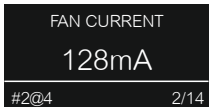
Speed at which the fan blades rotate in revolutions per minute.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

2/14 Current consumption

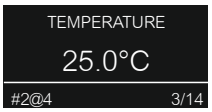
Current consumption of the fan when the power is AC. If the power supply is DC, deactivate the toroidal reading to not activate alarm (screen 6/14).



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

3/14 Air temperature

Measures the temperature of the air that passes through the fan. Scale from -40°C to + 70°C.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

4/14 Operating hours

Indicates number of hours fan is running since last reset, in 10 hour increments. Can be erased and reset.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET (**delete the data)

5/14 Alarms

Alarms active in the sensor, see **Alarm screen**

AL1: Temp high
AL2: Temp low
AL3: Fan blocked
AL4: RPM out (slow/fast)
AL5: Lack current
AL6: Lifetime over

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

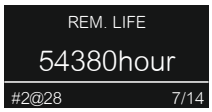
6/14 Configuration alarms and status of the Fan

Shows status of alarms and allows you to configure current and RPM alarms.
Speed alarm: continuous reading below set value.
Current alarm: RPM is detected but no energy consumption or inverse. Disable "Lack of current alarm" on fans powered with DC.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Power alarm: **AL. CUR ON (**alarm when reading RPM and 0mA)
AL. CUR OFF (alarm disabled)
Speed alarm: **1000 RPM (va**lue defined for the alarm)
0 RPM (alarm deactivated)

7/14 Fan life

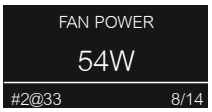
Remaining useful life of the fan taking into account the historical use and the working temperatures thereof. It will signal an alarm when it reaches the target.



Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Lifetime: **100000hour** (value defined for alarm, adjustable)
Notification point: indicated by LED in **PURPLE**

8/14 Current Consumption Fan

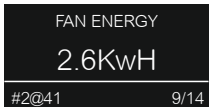
Calculates the fan consumption, specifying the type of power, the voltage and the phi coefficient (specific to each fan).



Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Power type: **SINGLE** (two-phase line)
THREE L-L (three-phase connected Line to Line)
THREE L-N (three-phase connected Line to Neuter)
OFF (disables consumption calculation)
Supply voltage: **230 VAC** (two-phase line)
Phi coefficient: **0.700 phi** (0.2 to 1 scale)

9/14 Total Consumption Fan

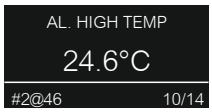
Total fan consumption, can be erased and reset to zero.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET (**delete the data)

10/14 High Temperature Alarm

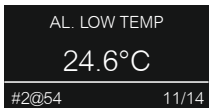
Reports an alarm if the temperature sensor reads higher than the defined setting, factory setting 60 °C.
The current temperature reading is displayed on the screen.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Alarm temperature: **60.0 °C** (scale from +10 °C to +70 °C)

11/14 Low Temperature Alarm

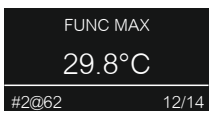
Reports an alarm if the temperature sensor reads lower than the defined setting, factory -5 °C.
The current temperature reading is displayed on the screen.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Alarm temperature: **-5.0°C** (scale from -40 °C to +30°C)

12/14 Maximum Registered Temperature

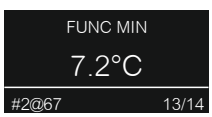
The highest temperature reading recorded by that sensor.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET** (delete the data)

13/14 Minimum Registered Temperature

The lowest temperature reading recorded by that sensor.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET** (delete the data)

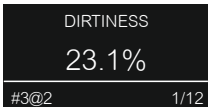
14/14 PING function

Activate a visual indication by inverting colors of the screen (white background and black letters) to be able to identify it. On the screen the countdown of the time defined for PING. Option to restart the device with the factory parameters.

Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Time: **0 sec** (off), **30 sec, 60 sec** (seconds), **5 min, 15 min** (minutes)
Version: **v1.1** (software version, press **OK**, **t**o see device description **(SLV FAN v1.1)**
RESET: **RESET DEV** (Returns the device to the factory settings)

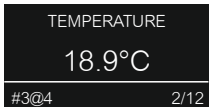
Screens Available for the Filter Dirt Sensor (NSYCCAFSDUST)

1/12 Degree of dirtiness
0% clean filter
100% Filter completely clogged by dirt



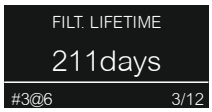
Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

2/12 Air temperature
Measures the temperature of air passing through the filter. -40 °C to +70 °C / -40 °F to +158 °F



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

3/12 Filter renewal
Days since the last filter renewal



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET** (delete the data)

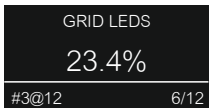
4/12 Filter changes
Total number of times the filter has been changed.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

5/12 Active alarm
Alarms in the filter sensor.
AL1: Temp high AL3: Filter alarm
AL2: Temp low.

Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)

6/12 Output configuration LEDs
Set when the notification LEDs are activated:
Filter status: Green -> 0% to 60% filter dirtiness
Yellow -> 60% to 80% filter dirtiness
Red -> 80% to 100% filter dirtiness
Alarms: Flashing red -> Alarm in the system
Demo: Activates the color % of the LEDs randomly to display the entire available color range.
Brightness: Brightness intensity of the LEDs

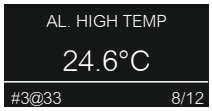


Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
LEDs are activated: **FILTER + AL** (for filter status and alarms)
ALARM (only for alarms)
FILTER (only for filter status)
OFF (disables notification LEDs)
DEMO (color of the LEDs random, not indicative)
Brightness: **BRIGHT** (25%, 50%, 75% or 100%)

7/12 Filter change
Remaining life until next filter change.
Indicates when to change the filter. Activates an alarm when it reaches the target.

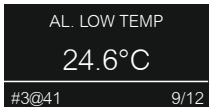
Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Lifetime: **80%** (value defined for alarm, adjustable)
Notification point: marked with the LED in **RED**

8/12 High Temperature Alarm
Reports an alarm if the temperature sensor reads higher than the defined setting, factory setting 60 °C. The current temperature reading is displayed on the screen



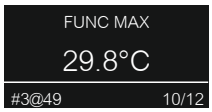
Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Alarm temperature: **60.0 °C** (scale from +10 °C to +70 °C)

9/12 Low Temperature Alarm
Reports an alarm if the temperature sensor reads lower than the defined setting, factory -5 °C. The current temperature reading is displayed on the screen



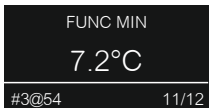
Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
Alarm temperature: **-5.0 °C** (scale from -40 °C to +30 °C)

10/12 Maximum Registered Temperature
The highest temperature reading recorded by that sensor.



Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET** (delete the data)

11/12 Minimum Registered Temperature
The lowest temperature reading recorded by that sensor.



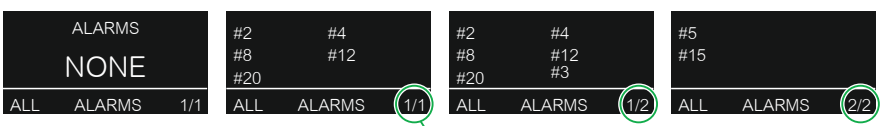
Menu
Show: **HIDE ON** (not shown in **CUST SCR** operation)
HIDE OFF (always shown)
RESET: **RESET** (delete the data)

12/12 PING function
Activates a visual indication by inverting colors of the screen (white background and black letters) to be able to identify it. On the screen the countdown of the time defined for PING. Option to restart the device with the factory parameters.

Menu
Show: **HIDE ON** (not seen in **CUST SCR** operation) **HIDE OFF** (always seen)
Time: **0sec** (off), **30sec**, **60sec** (seconds), **5 min**, **15 min** (minutes)
Version: **v1.1** (software version, press **OK** to see device description
(SLV FILTER v1.1)
RESET: **RESET DEV** (Returns the device to the factory settings)

Alarms Screen

1/1 Active alarms in the network
This screen is listed as one more device, at the end of the devices in the network. If an alarm is activated, this screen is fixed and if the on-screen option 6/12 is activated (FILTER + AL or ALARM) a flashing red light will be shown on the filter sensor.



Screen without alarms with active alarms the number of screens increases according to need

Filter alarm (dirty filter alarm) - Activated when it detects that the dirt in of the filter exceeds the value defined in the **Filter changes** screen, adjustable by the user.
Temp high (Overheating alarm) - Activated when the temperature reading exceeds the value defined in the **High Temperature Alarm** screen, adjustable by the user.
Temp low (Freezing alarm) - Activated when the temperature reading is below the value defined in the **Low Temperature Alarm** screen, adjustableby the user.
RPM slow (Slow speed fan alarm) - Activated when the fan speed is below the level defined in the **Configuration alarms and status of the Fan**, adjustable by the user.
Fan blocked (Blocked blades alarm)- Activated when it detects current consumption in the fan, but it does not detect the fan turning (energy consumption detected, no RPM readings).

Lack current - Activated when the fan sensor detects that the fan is turning but does not consume current (RPM readings detected, no energy consumption detected, 0mA).
Lifetime over - Activated when the monitored device is older than its life expectancy and can be replaced by a new one. Violet LED flashing on the sensor.
AT deviation (Deviation of Δt) - Activated when the deviation Δt is greater than the value defined in the **Configuration ΔT Delta temperature and alarm between two temperature readings**, adjustable by the user.
Broken ref (broken device link) - Occurs when a device in the network is disconnected and is part of a calculation, for example: you disconnect (from the bus cable) a device that is using Filterstat in the temperature readings for temperature delta .