

24/7 ASSET MONITORING SOLUTION

AMS01 CONFIGURATION TOOL USER MANUAL

SENSeOR (head office)

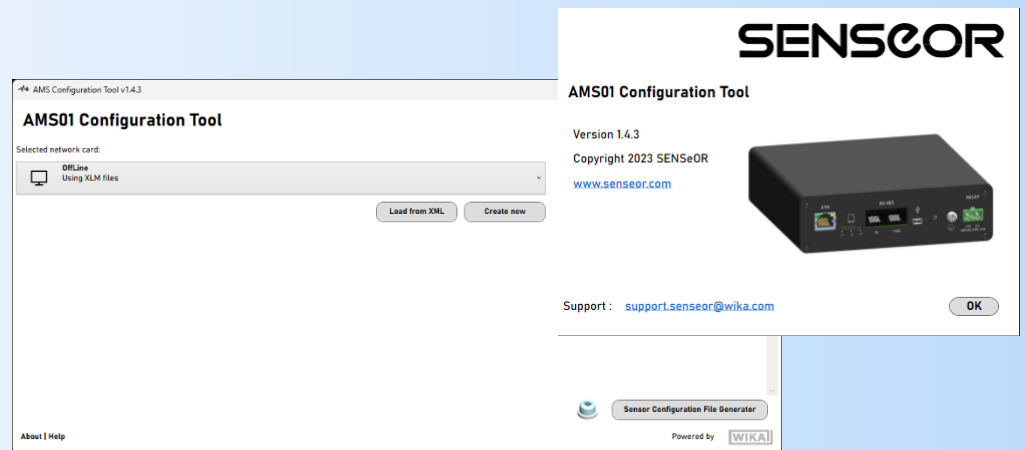
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Regional distributors

Visit www.senseor.com for
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locations.



WARRANTY

These products are warranted to be free from functional defects in material and in workmanship at the time of the manufacturing and to conform at that time to the specifications set forth in the relevant instruction manuals or in the data sheets, for such products for a period of one year.

Reference SENSEOR terms and conditions provided at time of purchase for complete warranty details.



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SAFETY INFORMATION

IT IS IMPORTANT TO READ THIS MANUAL BEFORE INSTALLING OR COMMISSIONING SENSEOR CRITICAL ASSET MONITORING SYSTEMS.

DANGER

DANGER INDICATES AN IMMINENTLY HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

FAILURE TO FOLLOW THE INSTRUCTIONS GIVEN WILL RESULT IN DEATH OR SERIOUS INJURY.

WARNING

WARNING INDICATES A POTENTIALLY HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

FAILURE TO FOLLOW THE GIVEN INSTRUCTIONS CAN RESULT IN DEATH OR IN SERIOUS INJURY.

CAUTION

CAUTION INDICATES A POTENTIALLY HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN PERSONAL INJURY.

NOTICE

NOTICE PROVIDES GUIDANCE ON DAMAGE UNRELATED TO PERSONAL INJURY, SUCH AS THOSE THAT CAN CAUSE DETERIORATED PROPERTY.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN PROPERTY DAMAGE.

IMPORTANT

IMPORTANT INDICATES ADDITIONAL INFORMATION ABOUT MAKING EFFECTIVE USE OF THIS PRODUCT.

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OVERVIEW

This user manual describes how to use the *AMS01 Configuration Tool* software applicable with **AMS01-T**, **AMS01-P** and **AMS01-TP** readers.

The following guidelines are applicable from **version 1.4.3**.

RELATED DOCUMENTS

- UM00403-EN_AMS01 User Manual.
- UM00417-EN_AMS01 Modbus table.
- UM00418-EN_AMS01 Modbus table with HTR02 compatibility mode.
- UM00419-EN_AMS01 SD card file management.

For additional related documentation and file downloads see support website at senseor.com/downloads.

SYSTEM HARDWARE INSTALLATION

This manual provides details on the software installation and its configuration **only**, please refer to the '[AMS01 User Manual](#)' for specific hardware details.

WARNING

PROFESSIONAL INSTALLATION REQUIRED.

INSTALLATION AND CONFIGURATION SHOULD BE PERFORMED ONLY BY USERS WHO ARE TECHNICALLY COMPETENT AND AUTHORIZED TO DO SO.

LOCAL REGULATIONS REGARDING ELECTRICAL INSTALLATION AND SAFETY MUST BE OBSERVED.

FAILURE TO FOLLOW THE GIVEN INSTRUCTIONS CAN RESULT IN DEATH OR IN SERIOUS INJURY.

CONFIGURATION TOOL INSTALLATION

OPERATING SYSTEM

The *AMS01 Configuration Tool* operates only on Microsoft Windows operating system, with at least Windows 10 **64-bit**.

AMS01 CONFIGURATION TOOL INSTALLER

To install *AMS01 Configuration Tool*, double-click on the '*Setup AMS01 Configuration Tool vX.Y.Z.msi*'.

NOTE

THE LAST REVISION OF THE AMS01 CONFIGURATION TOOL IS AVAILABLE ON WWW.SENSEOR.COM/DOWNLOADS.

Follow the Setup instructions to complete the installation.

OTHER REQUIRED INSTALLATION

NOTE

ADMINISTRATOR RIGHTS ARE REQUIRED TO INSTALL AND TO MANAGE THE NETWORK FIREWALL SECURITY SETTINGS.

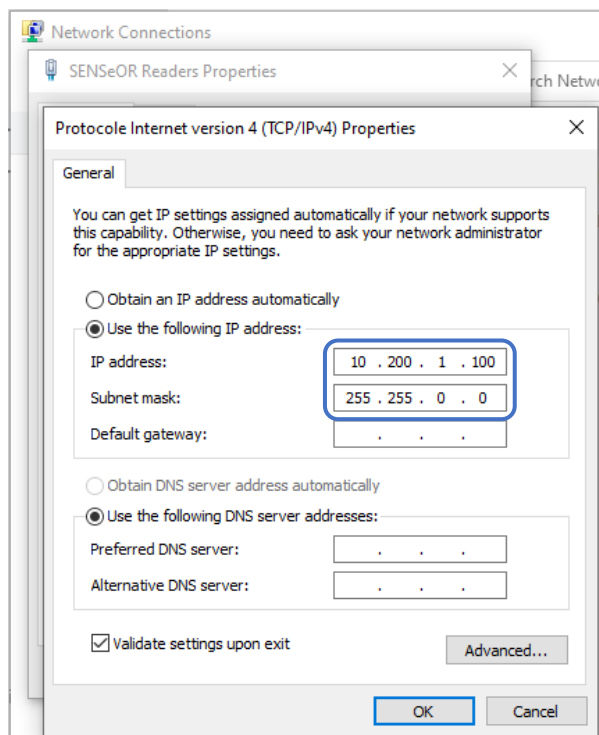
The *AMS01 Configuration Tool* requires **Microsoft .NET 6.0**. If the machine does not have Microsoft .NET 6.0 installed, the installer can be found on the Microsoft website.

CONFIGURATION OF THE CONNECTION

The default IP address is printed on the serialization label on the back of the reader. This IP address can be modified using the software (see [‘Settings’ tab](#))



To connect a computer to the reader, the Ethernet card must be configured as follows:



- IP address = 10.200.1.100
- Subnet mask = 255.255.0.0

NOTE

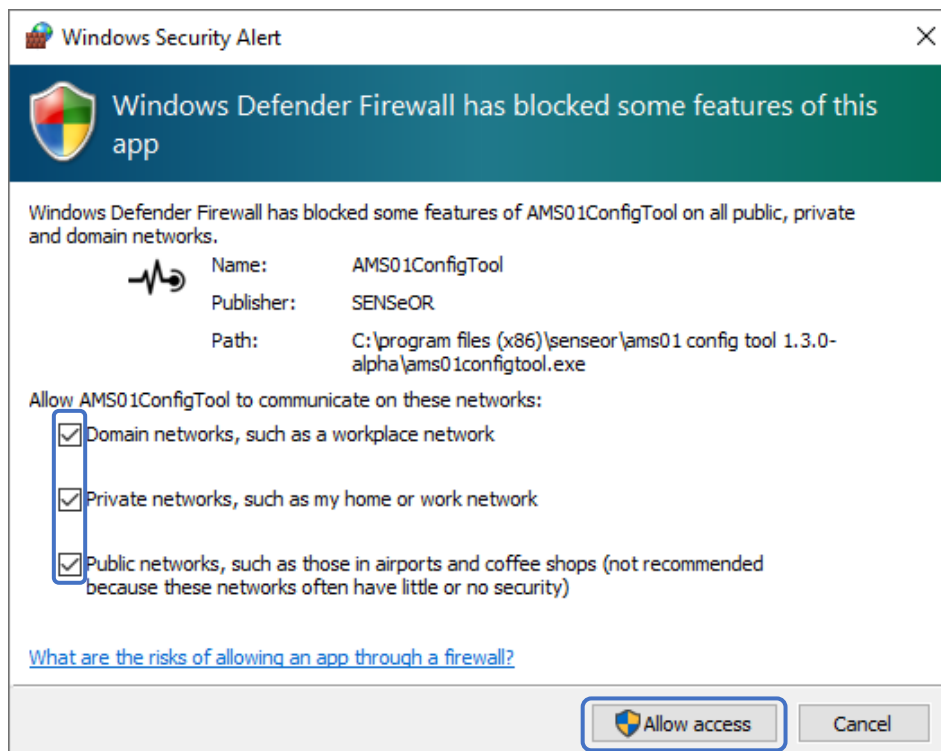
TO RESET IP OF THE AMS01 READER, HOLD THE RESET BUTTON UNTIL ALL LEDS ARE FLASHING GREEN. THIS CAN TAKE UP TO 15 SECONDS.

APPLICATION LAUNCH

FIRST LAUNCH AND WINDOWS FIREWALL

At the first use of 'Scan' button, the Windows firewall will ask for you about security notice.

You must allow the *AMS01 Configuration Tool* software to communicate using your networks.



MAIN WINDOW DESCRIPTION

READER DETECTION


At start-up, the application scans and lists **available and active** network adapters.

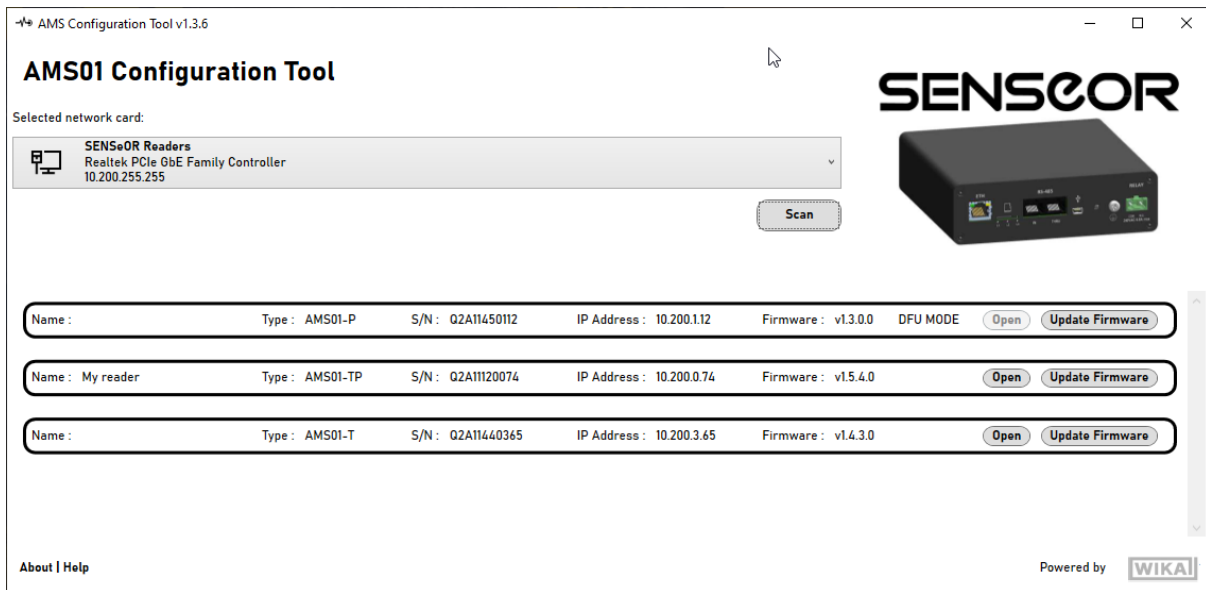
Select the network card associated with the readers IP address.




If the network card is not detected:

- *Close the application,*
- *Check connection and configuration of the card in Windows settings,*
- *Restart the application.*

Click on  button to list readers connected to the selected card:



 : Open reader window (see [next chapter](#)).

 : Update firmware by loading firmware file (*.senseor) from file explorer.

DFU MODE : This label appears if the reader is in '*Device Firmware Update (DFU)*' mode.

NOTE

THE LATEST FIRMWARE VERSION IS AVAILABLE ON THE WEBSITE [SENSEOR.COM/DOWNLOADS](https://www.senseor.com/downloads).

If a reader is not found:

- *Reset the reader.*
- *Reset the reader's Ethernet settings.*
- *Disable all VPN services on the computer.*

READER WINDOW DESCRIPTION

SETTINGS TAB

This tab shows the reader information and could be used to configure the following settings:

- READER NAME (max 19 digits)
- SYSTEM
 - Mains power frequency ('50 Hz' or '60 Hz')¹
 - System temperature unit (*Celsius* or *Fahrenheit*)
 - Compatibility mode selection ('AMS01' or 'HTR02')²
- ETHERNET
 - IP address (IPv4 format)
 - Subnet mask (IPv4 format)
 - Default gateway (IPv4 format)
- RS485 MODBUS (RTU)
 - Modbus address (from '1' to '247' – default value is printed on the reader label)
 - Speed (default value is '19 200' bauds)
 - Parity (default value is 'None')
 - Stop bits (default value is '1')
- TIME ZONE

¹ Select the mains frequency of the measured electric system depending of your installation region (incorrect selection could result in no detection of partial discharge).

² Selecting HTR02 compatibility mode results in limitation of reader capacity as only antenna pairs 1 to 3. A maximum of 6 sensors per antenna pairs are available for measurement. Compatibility mode could be used in case of addition / replacement of existing HTR02 systems in order to keep the same Modbus table interface.

- CONFIGURATION FILE
 - Save the full reader configuration (all tabs) into a file.
 - Load full reader configuration (all tabs) from a specified file.

WARNING

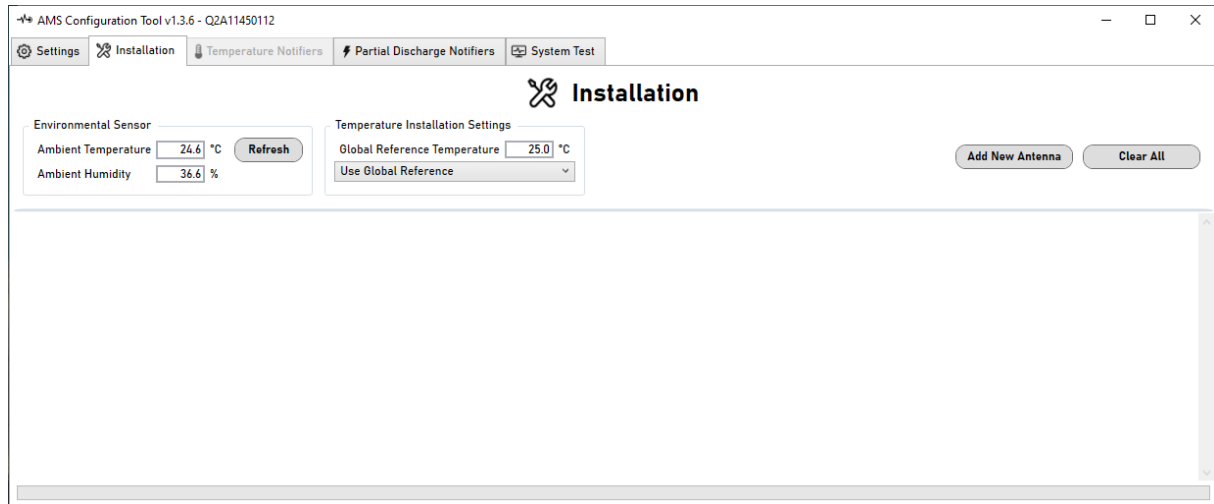
ONCE THE READER IS FULLY COMMISSIONED, ENSURE TO SAVE THE FULL READER CONFIGURATION.
NEEDED FOR FACTORY/SITE ACCEPTANCE TEST WITH THE FINAL CUSTOMER.

Apply: **Apply modifications.****Cancel**

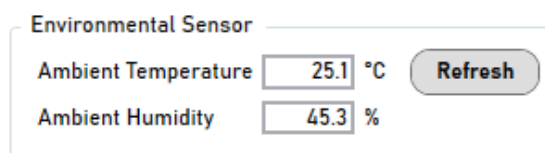
: Cancel modifications.

INSTALLATION TAB

This tab is used to configure temperature sensors and partial discharge detection probes installation. For installation details, please refer to the '[UM00403-AMS01 User Manual](#)'.



ENVIRONMENTAL SENSOR



This location shows the information from the external humidity and temperature sensor if connected.

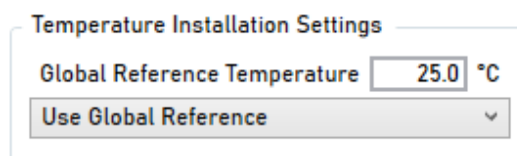
Data are obtain by click on the refresh button **Refresh**.

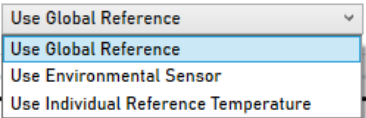
TEMPERATURE INSTALLATION SETTINGS

Only applicable for 'AMS01-T' and 'AMS01-TP' readers.

The AMS01 system needs a reference temperature for sensor validation.

This section allows use of different sources for temperature selection.





: Select which temperature reference must be used for sensor installation.

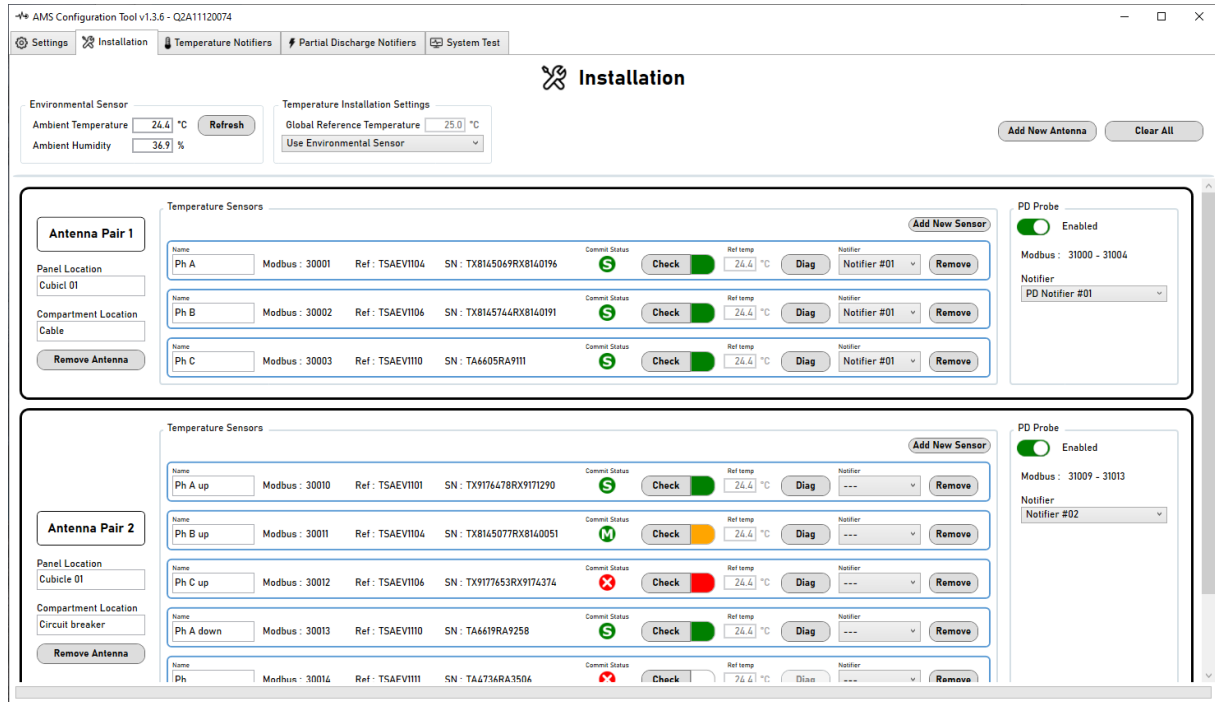
Use Global Reference	Manually set temperature is used as reference temperature.
Use Environmental Sensor	Environmental sensor temperature is used as reference temperature.
Use Individual Reference Temperature	The reference temperature must be manually set for each sensor.

NOTE

THE LOCAL TEMPERATURE INFORMATION MUST BE ADJUSTED TO REFLECT SENSOR TEMPERATURE.

ANTENNA PAIRS

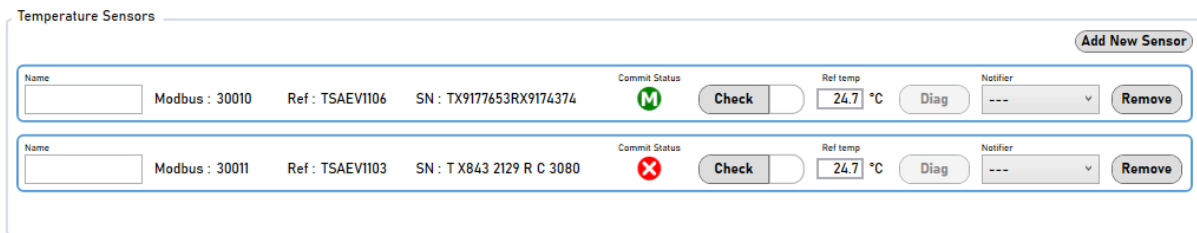
The AMS01 reader support up to five antenna pairs. Temperature sensors and partial discharge probes needs to be configured for each antenna pair.



- Add New Antenna** : Add new antenna to the reader configuration.
- Clear All** : Clear all antennas from the reader configuration.
- Remove Antenna** : Remove the antenna from the reader configuration.
- Panel Location** : Enter a panel location name (max 19 digits).
- Compartment Location** : Enter a compartment location (max 19 digits).

TEMPERATURE SENSORS

The following picture shows the temperature sensor configuration section in antenna pair.



Add New Sensor : Add sensor(s) by selecting XML file(s) into the antenna pair (see [‘Sensor Configuration File Generator’](#) chapter).

Name : Name of the sensor (max 19 digits).

Check : Check the sensor.

Ref temp : Enter the reference temperature (only available when *Individual reference temperature* use is selected in *Temperature installation settings* space).

Diag : Open diagnostic window (see next section – only available when check has been made).

Notifier : Select a temperature Notifier to associate with the sensor (see [‘Temperature monitoring notifiers’](#) chapter).

Remove : Remove the sensor from the antenna pair.

Modbus addresses are assigned to sensors following order of configuration. In case of you need respect a specific Modbus mapping, please take care of the order while you add sensors to the antenna pair.

Check status

The Check button, will perform an interrogation of the sensor. This operation could take up to 20 seconds. Check status Led indicates if sensor installation permit correct interrogation by the reader.

Check : No check has been performed.




Check : The sensor does not meet measurement criteria and cannot be commissioned.

Check : The sensor does not meet minimal measurement criteria and requires manual commissioning.

Check : The sensor meets all measurement criteria and is automatically commissioned by the system.

Commissioning status

The commissioning status information reflects the status of the sensor view by the reader. A non-commissioned sensor will not be interrogated by the reader.

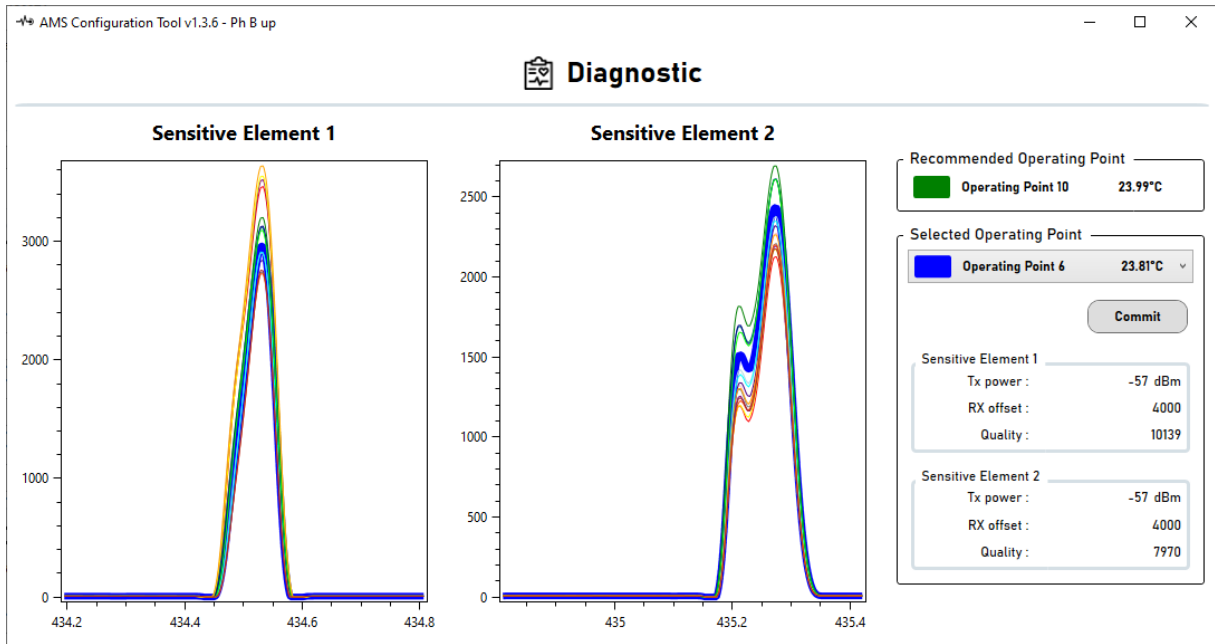
- Commit Status :  : The sensor is commissioned by the **system** on the best RF signal available.
- Commit Status :  : The sensor is commissioned **manually** from the diagnostic page.
- Commit Status :  : The sensor is **not** commissioned.

DIAGNOSTIC WINDOW

Only applicable for 'AMS01-T' and 'AMS01-TP' readers.

This window shows the spectrum view of the sensitive elements of a temperature sensor and more precise information about sensor interrogation result.

The system will suggest an operating point validating most of its criteria. If needed you can select an other operating point.



Selected Operating Point
Operating Point 6 23.81°C

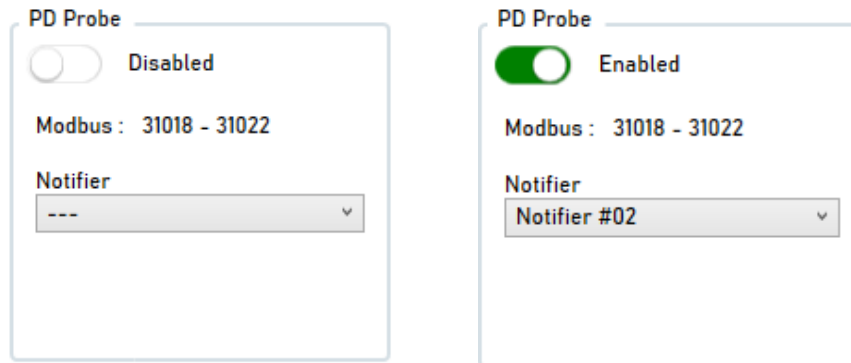
: Select desired operating point.

Commit

: Commission the sensor with selected operating point.

PARTIAL DISCHARGE PROBES

Only applicable for 'AMS01-P' and 'AMS01-TP' readers.



: Click to enable/disable the PD probe for this antenna pair.



: Select a PD Notifier to associate with the probe (see '[Partial discharge monitoring notifiers](#)' chapter).

TEMPERATURE NOTIFIERS

Only applicable for 'AMS01-T' and 'AMS01-TP' readers.

NOTIFIER OPERATION

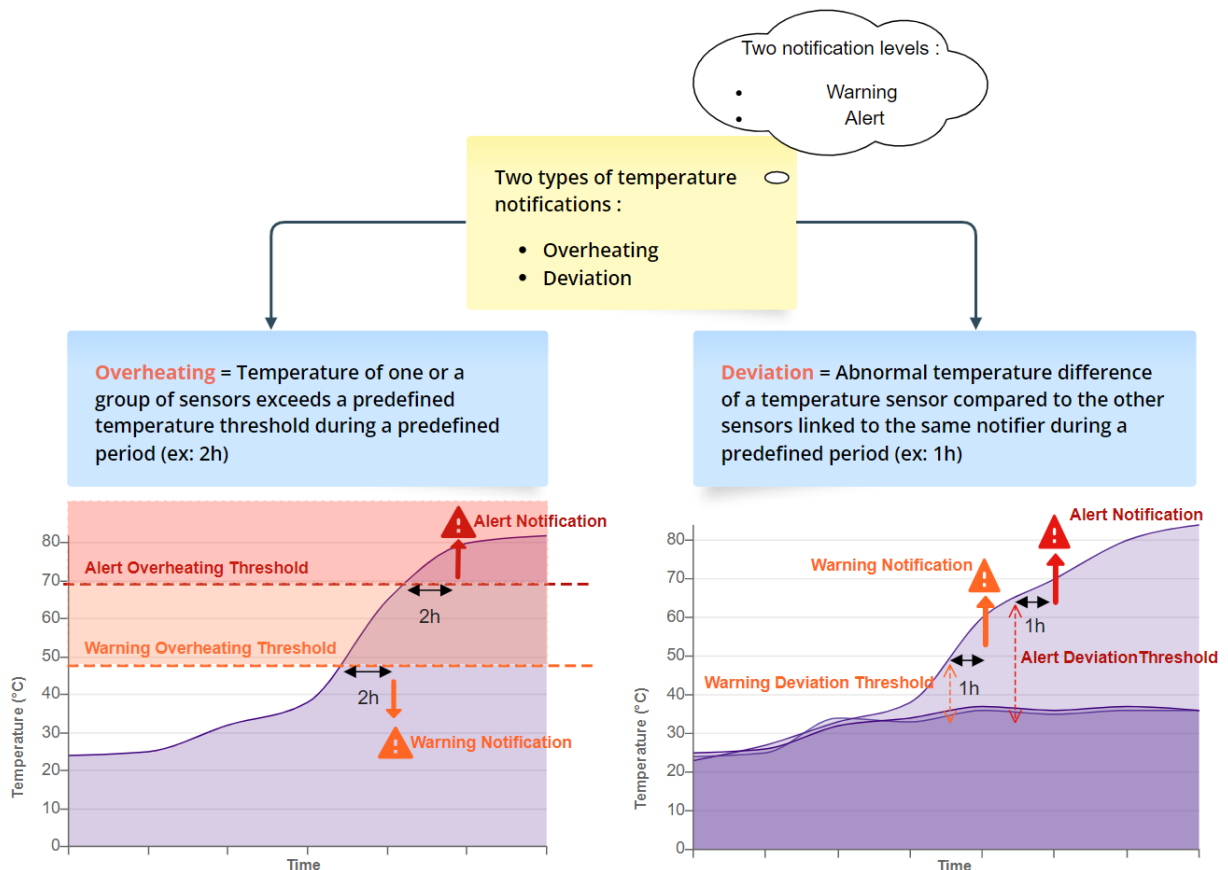
Temperature notifiers is an information system based on predefined temperature threshold values and duration time.

A notifier could be linked to one or several sensors (see [Installation tab](#)).

Two temperature notification **types** can be activated for the same notifier: '**Overheating**' and '**Deviation**'.

Each notification type has two **levels** of severity : '**Warning**' and '**Alert**'.

Up to 10 notifiers could be configured and assigned in the system.



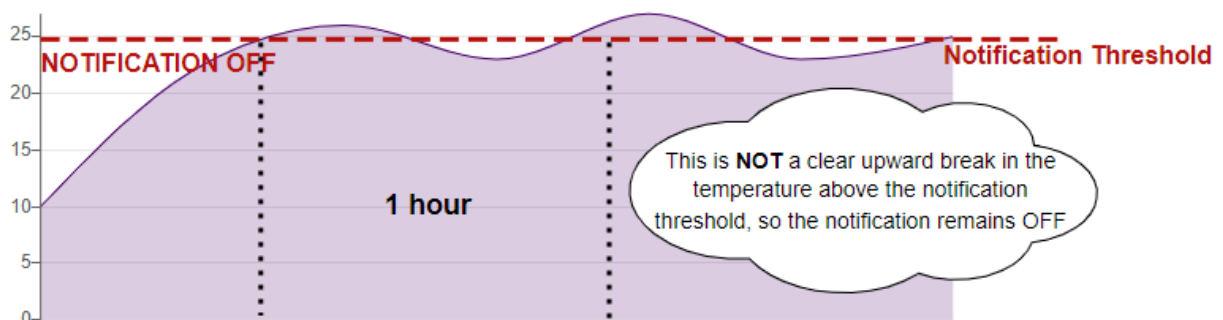
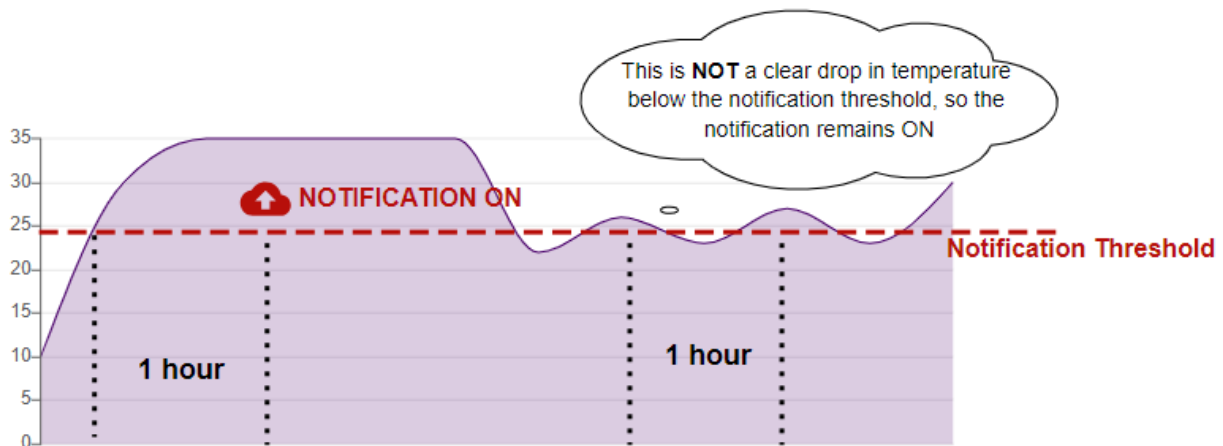
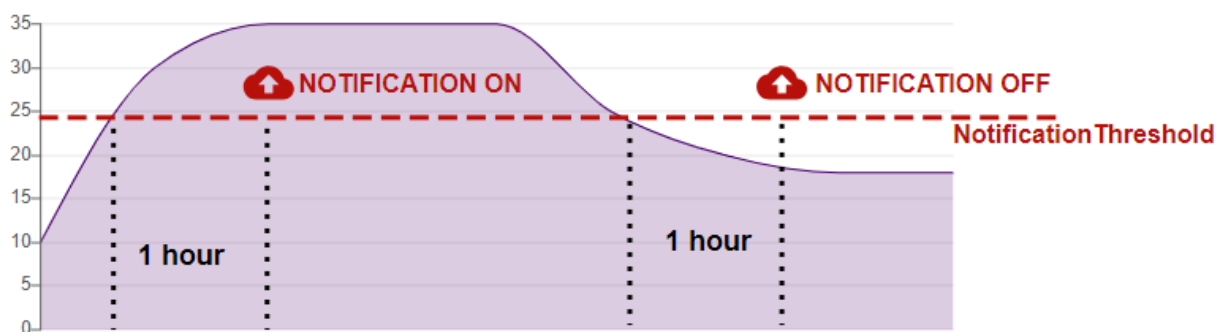
Temperature notifiers provide feedback on following levels:

- Led indication (see AMS01 reader manual)
- File on μ SD card.
- Modbus registers.
- Relay switch (if activated).

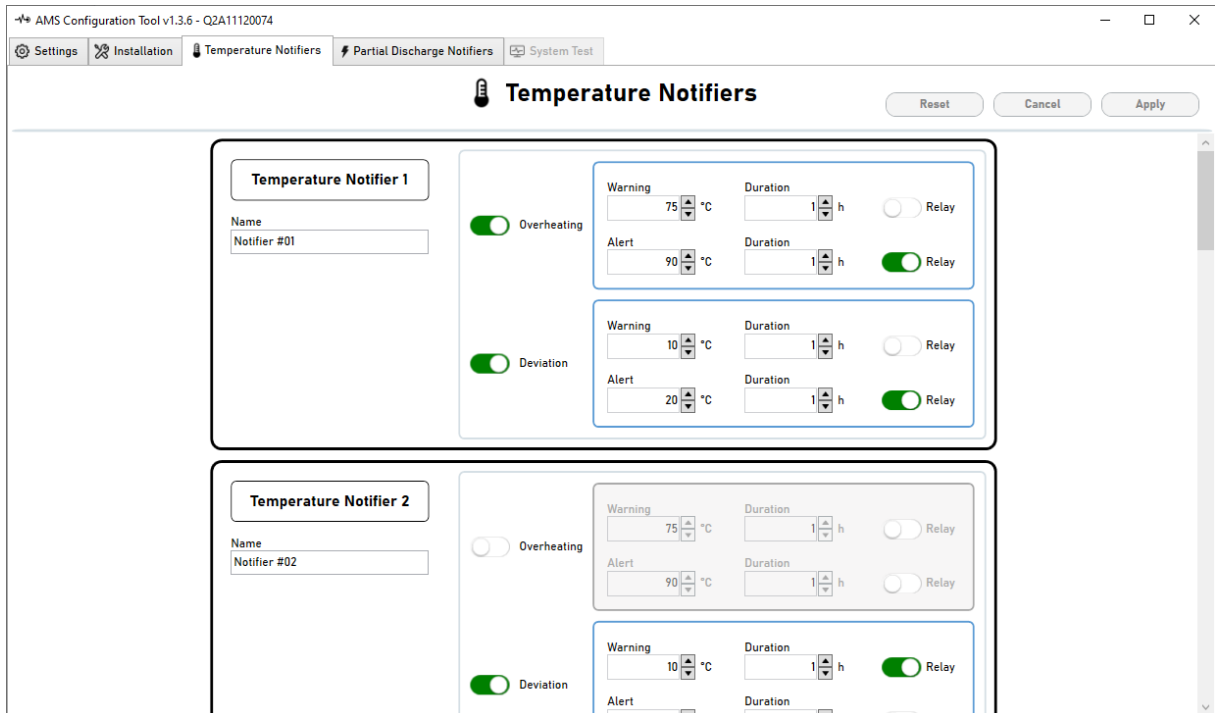
WARNING

ALERT OR WARNING NOTIFICATION SWITCHES ON WHEN TEMPERATURE MEASURED EXCEED THE ALERT THRESHOLD FOR A PREDEFINED PERIOD (EX: 1 HOUR).

ALERT OR WARNING NOTIFICATION SWITCHES OFF WHEN TEMPERATURE MEASURED BREAK DOWN THE ALERT THRESHOLD FOR A PREDEFINED PERIOD (EX: 1 HOUR).



TAB DESCRIPTION



Name

Notifier #01

: Enter temperature notifier name (be reflected in other tabs).



Overheating

: Activate Overheating notification for this notifier.



Deviation

: Activate Deviation notification for this notifier.

Warning

75 °C

: Choose Warning threshold value.

Alert

20 °C

: Choose Alert threshold value.

Duration

1 h

: Choose period above the threshold value for notification activation³.



Relay

: Activate relay switch on corresponding notification level.

Reset

: Restore default values for all notifiers.

Cancel

: Cancel modifications.

Apply

: Apply modifications.

³ Duration minimum is 1h. Value '0' corresponding to one cycle of measurement, approximatively 15 minutes and could be used only for tests.

PARTIAL DISCHARGE NOTIFIERS

Only applicable for 'AMS01-P' and 'AMS01-TP' readers.

NOTIFIER OPERATION

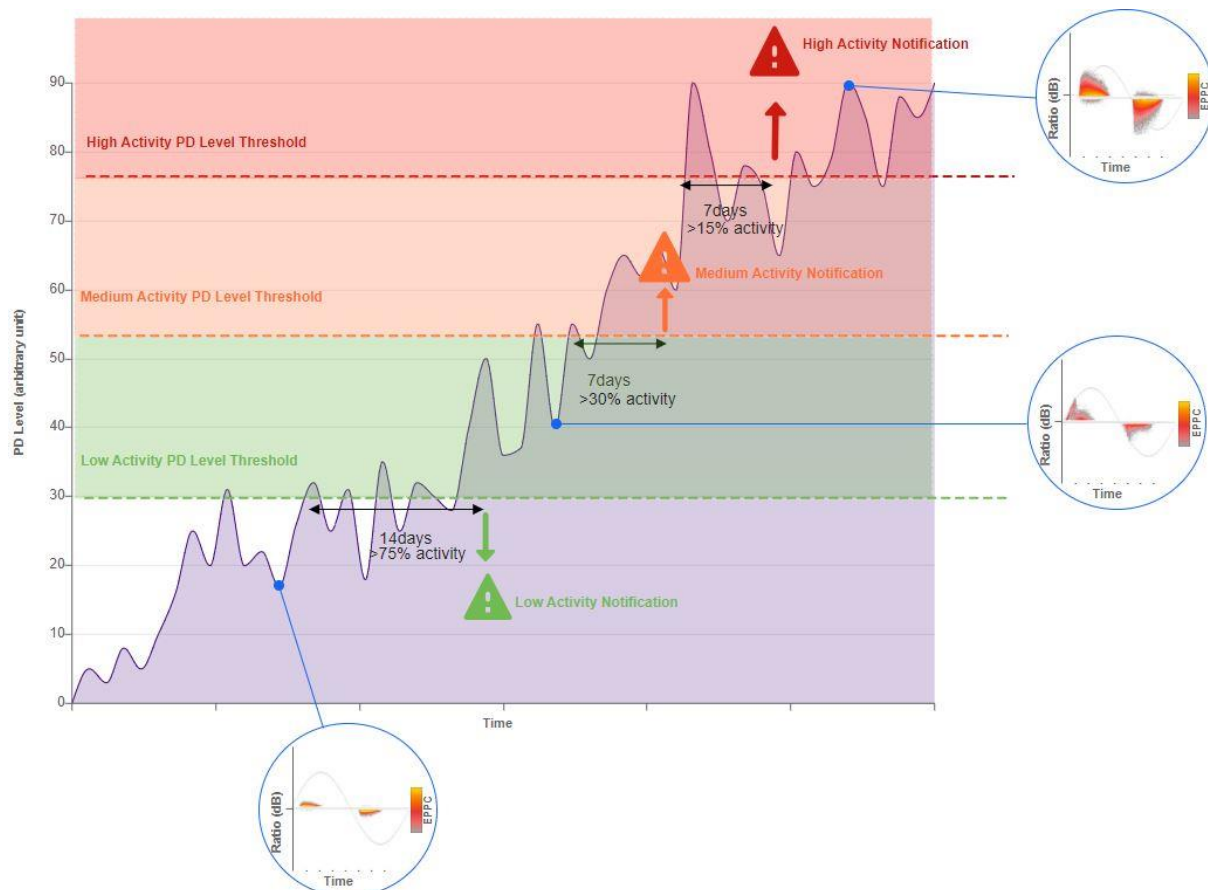
Partial discharge notifiers are information systems that use predefined **PD level threshold** values to monitor a **percentage of PD activity** over a **specific period**.

The system calculate a *PD level* who is proportional to the *Ratio* (dB) and the Estimated Pulse Per Cycle (*EPPC*) measured at each cycle.

A notifier could be linked to one or several PD probes (see [Installation tab](#)).

Up to 10 notifiers could be configured and assigned in the system.

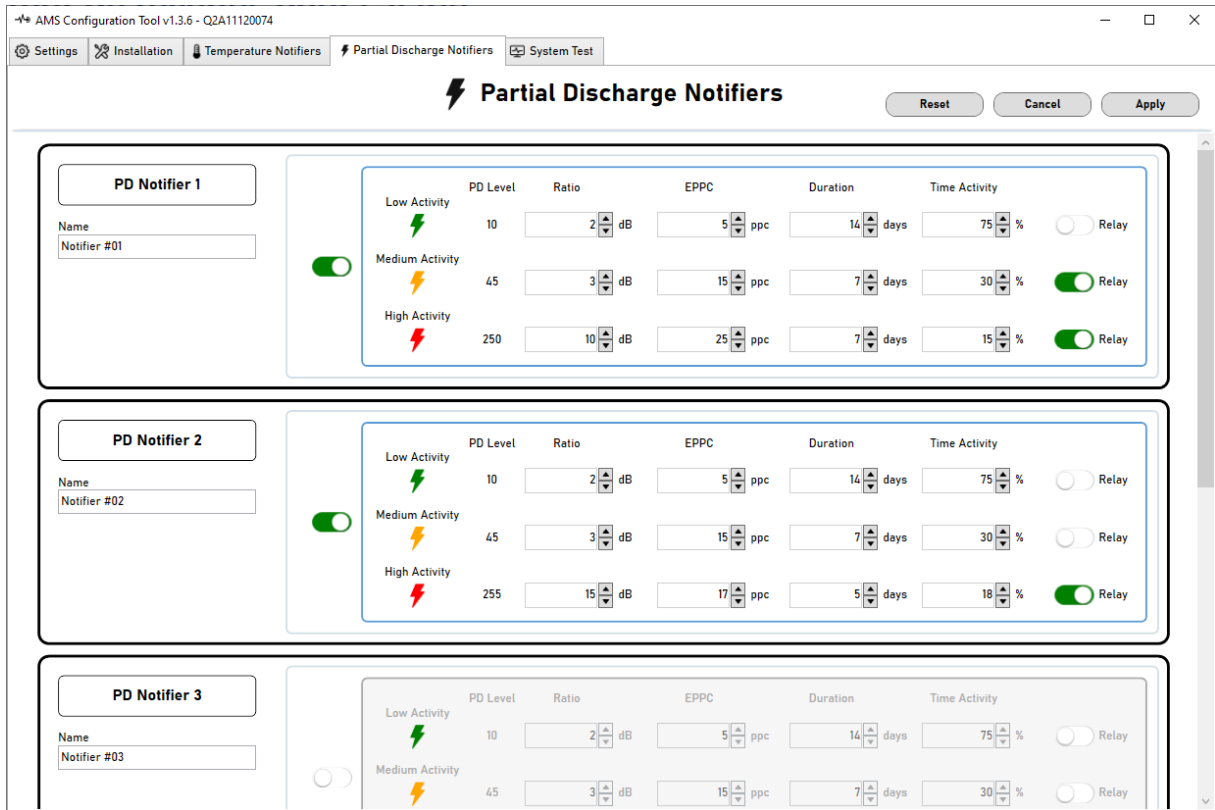
Three notification levels are defined of Partial Discharge notification: 'Low activity', 'Medium activity' and 'High activity'.



Partial Discharge notifiers provide feedback on followings levels:

- Led indication (see AMS01 reader manual)
- File on μ SD card.
- Modbus registers.
- Relay switch (if activated).

TAB DESCRIPTION



: Activate/Deactivate the PD Notifier.

PD Level

10

: This value is the notification threshold level, obtained by multiplying *Ratio* by *EPPC*.

Ratio

2 dB

: Choose a Ratio level for PD triggered level calculation.

EPPC

5 ppc

: Choose an EPPC level for PD triggered level calculation.

Duration

14 days

: Choose the period above the PD level threshold value for notification activation.

Time Activity

75 %

: Choose the percentage of activity required to activate notification.



Relay

: Activate relay switch on corresponding notifier level.

Reset

: Restore default values for all notifiers.

Cancel

: Cancel modifications.

Apply


: Apply modifications.

SYSTEM TEST TAB

This window allow to check the system installation by performing the measurement of selected elements (temperature sensors and partial discharge probes).

The screenshot displays the 'System Test' configuration window. At the top, there are navigation tabs: Settings, Installation, Temperature Notifiers, Partial Discharge Notifiers, and System Test. Below the tabs, a 'Relay Test' section contains a play button and a toggle switch labeled 'Available only when FAT is running'. The main area is divided into two sections for 'Antenna Pair 1' and 'Antenna Pair 2'. Each section includes a 'Temperature Sensors' table and a 'PD Probe' configuration panel. The 'Temperature Sensors' table lists sensor names, Modbus addresses, TSNs, SNs, and current readings. The 'PD Probe' panel shows the probe's status (Enabled), Modbus range, offset level, and calculated values for PD Level, Ratio, and EPPC.

Antenna Pair	Sensor Name	Modbus	TSN	SN	Status	Reading
Antenna Pair 1	Ph A	30001	TSAEV1104	TX8145069RX8140196	✗	---
	Ph B	30002	TSAEV1106	TX8145744RX8140191	---	---
	Ph C	30003	TSAEV1110	TA6605RA9111	✓	22.1 °C
Antenna Pair 2	Ph A up	30010	TSAEV1101	TX9176478RX9171290	✓	22.9 °C
	Ph B up	30011	TSAEV1104	TX8145077RX8140051	✓	26.8 °C
	Ph A down	30013	TSAEV1110	TA6619RA9258	---	---

This test is activated with the 'Play' button 

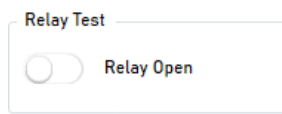
Uncheck the toggle buttons in front of temperature sensor or PD probe to not run a measurement on this elements.

Data from this test mode are also available on Modbus registers and in μ SD card.

NOTE

DURING THE SYSTEM TEST IT IS NO LONGER POSSIBLE TO ACTIVATE OR DEACTIVATE MEASUREMENT ELEMENTS (TEMPERATURE SENSORS AND PD PROBES).




TEST OF RELAY



: When the test is running, click on the toggle button to open/close the relay.

TEST OF THE TEMPERATURE SENSORS

For each enabled temperature sensor, the system will check the sensor and return **temperature** with one of the following test result icons:

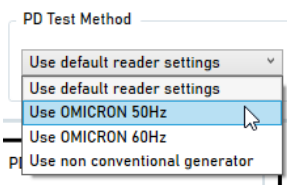
-  : The sensor is correctly interrogated.
-  : The system failed to interrogate the sensor.
-  : The sensor is being evaluated.

TEST OF THE PARTIAL DISCHARGE PROBES

AMS01 partial discharge detection system use specific filters to monitor partial discharge. In system test mode, you can select the configuration of this filter depending on your method to generate partial discharge. An incorrect selection will result in no detection of partial discharge.





Possible configuration for AMS01 system:


- Use the reader actual settings (50 Hz or 60 Hz).
- Use of *OMICRON* generator configured on 50 Hz.
- Use of *OMICRON* generator configured on 60 Hz.
- Use of a non-conventional generator, in this case filters are totally deactivated and external noise could perturbate calculation of PD values.



: Choose the corresponding test method.

For each enabled PD probe, the system will evaluate the partial discharge levels (based on default values of PD notifiers) and the '*PD Indicator*' icon can take one of the following values:

-  : The system has detected no partial discharge activity.
-  : The system has detected low partial discharge activity.
-  : The system has detected a medium partial discharge activity.
-  : The system has detected a high partial discharge activity.

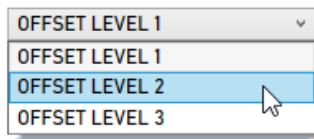
 : The partial discharge activity is being evaluated.

During the system test it is possible to change offset level to show the partial discharge activity measurements depending on the different offset levels.

The offset level is used to vary the sensitivity of partial discharge activity detection.

A low offset level allows detection of a partial discharge in a nearby zone, or detection of a low intensity partial discharge.

Conversely, a high offset allows detection of a partial discharge in a large area zone, or detection of a high intensity partial discharge.

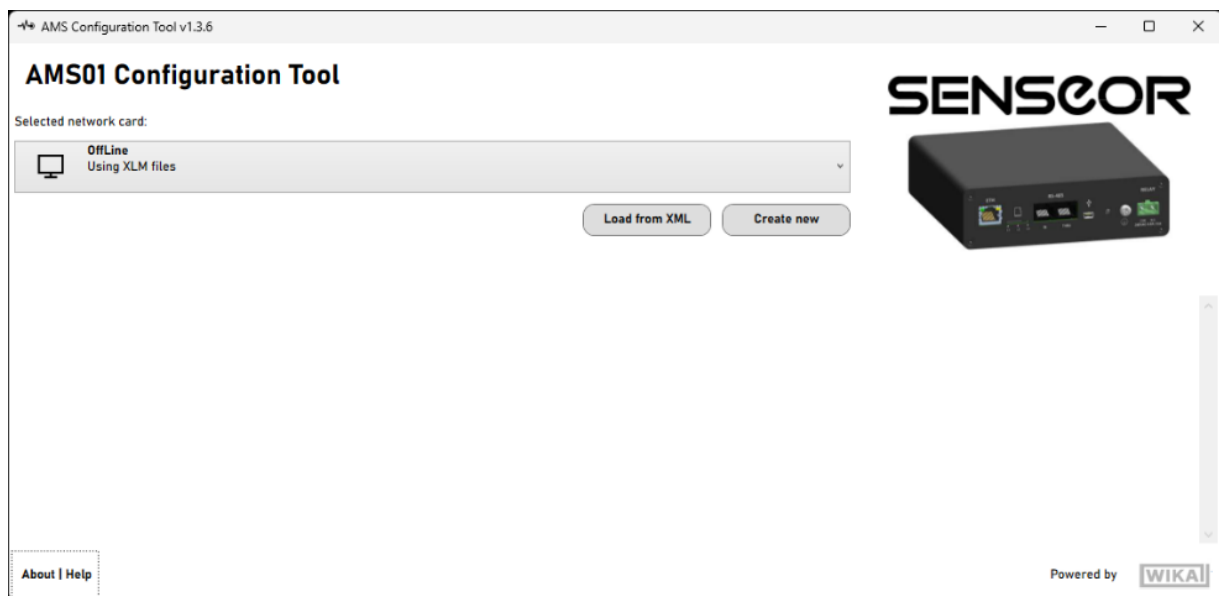


: Choose the offset level.

OFFLINE MODE

This configuration tool software allow user to prepare configuration of a reader without the need of this reader.

To start an offline configuration, select '*Offline*' in network card.



In '*Offline*' mode you can load an existing configuration with '*Load from XML*' or start a new configuration using the button '*Create new*'.

All the functions seen previously are available except:

- **Installation tab:** Environmental sensor, Temperature sensor check, commissioning and diagnostic.
- **System test tab**

SENSOR CONFIGURATION FILE GENERATOR

This tool is used to generate XML configuration files for TSAEV11 sensors from their top Datamatrix.

To launch it, click on the '*Sensor Configuration File Generator*' button from the main page.



If a Datamatrix-compatible USB scanner (handle unit) is connected to the computer:



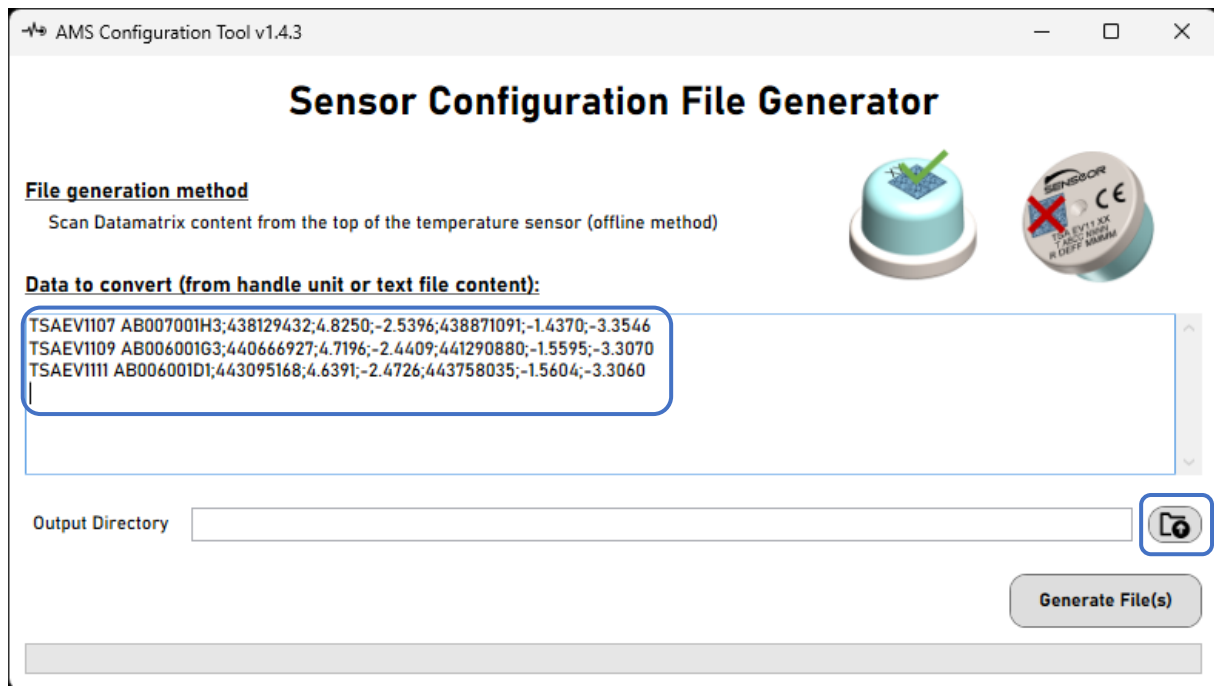
- Connect it to the computer.
- Ensure the input cursor is in the '*Data to convert*' field.
- Scan the Datamatrix **on top** of sensors to get data. Text content data is added and line wrap is automatic after each scan.


WARNING

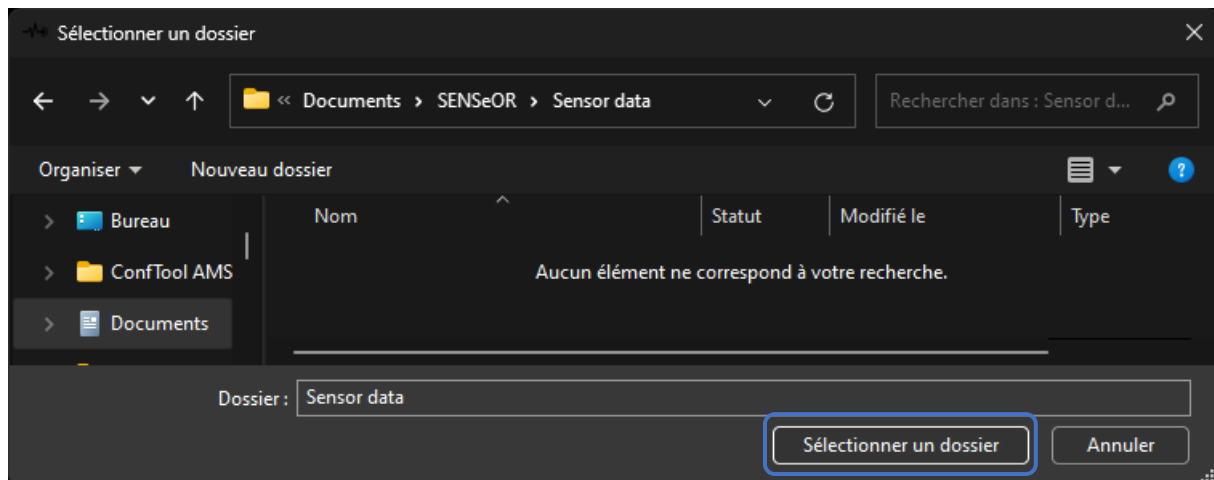
DO NOT SCAN THE DATAMATRIX UNDER THE SENSOR.

Else (without handle unit):

- Use free mobile apps such as '*CortexScan*' or '*QRbot*' (available from '*App Store*' and '*Google Play*') to scan the Datamatrix of the top of sensors.
- Copy the generated data into the '*Data to convert*' field.

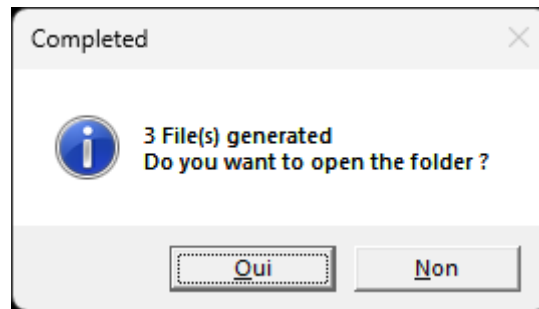


When all the sensors data is set, select the output directory  .



Click on the 'Generate File(s)' button to start the conversion.

Once data conversion is done, a message indicates how many XML files have been generated.



Click 'Yes' to open the output folder if necessary.