Document revision: UM00400EN-AE
Date: 2025-04

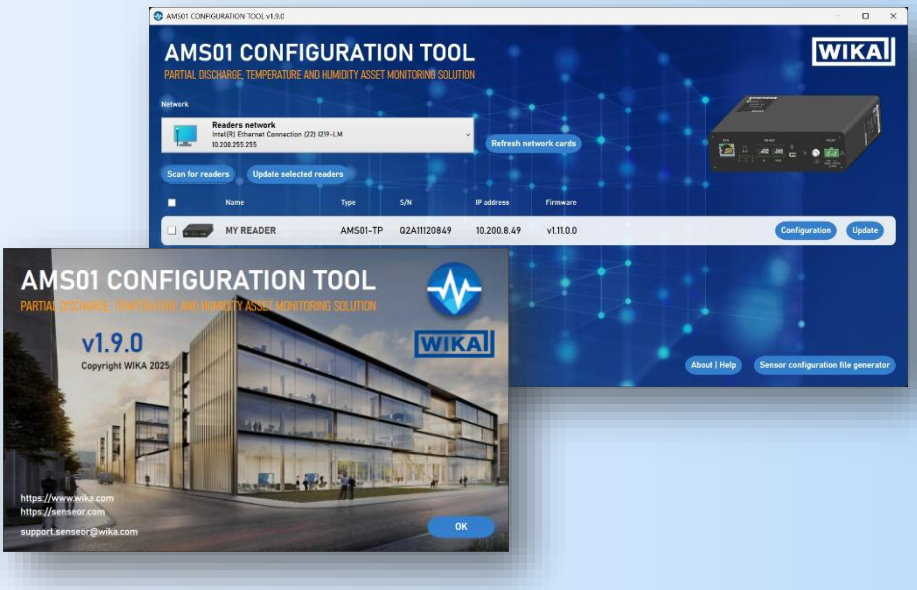
24/7 ASSET MONITORING SOLUTION

AMS01 CONFIGURATION TOOL USER MANUAL

SENSeOR (head office)

Bâtiment Natura 2
1198, avenue du Docteur
Maurice Donat
06250 Mougins
France

Contact address:
support.senseor@wika.com



ISO 9001:2015
BUREAU VERITAS
Certification

Regional distributors

Visit www.senseor.com for the latest distribution 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.

SENSeOR (head office)
Bâtiment Natura 2
1198, avenue du Docteur Maurice Donat
06250 Mougins
France

SENSeOR reserves the right to make technical changes or to modify the content of this document without prior notice.

SENSeOR is not responsible for errors or for possible lack of information in this document.

All rights reserved. No part of this document may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of *SENSeOR*, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law.

Copyright © 2025, SENSeOR

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.

TABLE OF CONTENTS

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 1.9.0**.

RELATED DOCUMENTS

- UM00403EN_AMS01 User Manual.
- UM00417EN_AMS01 Modbus table.
- UM00418EN_AMS01 Modbus table with HTR02 compatibility mode.
- UM00419EN_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 'UM00403EN_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 v1.9.0.msi*'.

NOTE

WE STRONGLY RECOMMEND DOWNLOADING AND INSTALLING THE LATEST REVISION OF THE AMS01 CONFIGURATION TOOL AVAILABLE ON SENSEOR.COM/DOWNLOADS.

Follow the Setup instructions to complete the installation.

OTHER REQUIRED INSTALLATION

NOTE

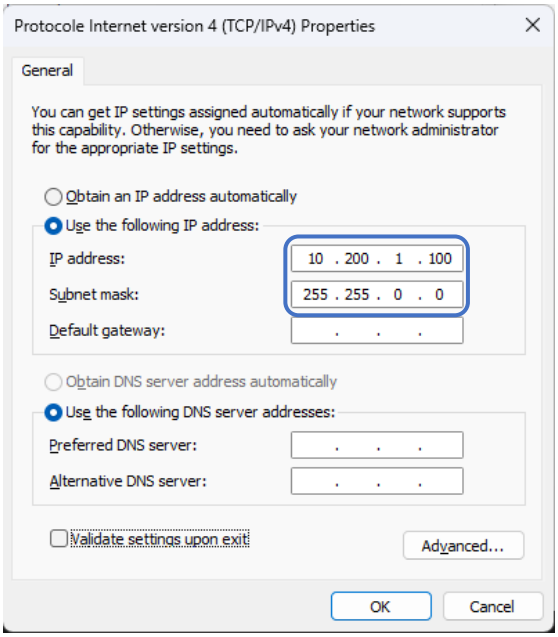
ADMINISTRATOR RIGHTS ARE REQUIRED TO INSTALL AND TO MANAGE THE NETWORK FIREWALL SECURITY SETTINGS.

The *AMS01 Configuration Tool* requires **Microsoft Framework .NET 8.0 runtime**. If the machine does not have it installed, you can download it from 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 'Reader settings' chapter)

To connect a computer to the reader, the Ethernet card (also called network adapter) must be configured as follows:



- **IP address = 10.200.1.100**
- Subnet mask = 255.255.0.0

NOTE

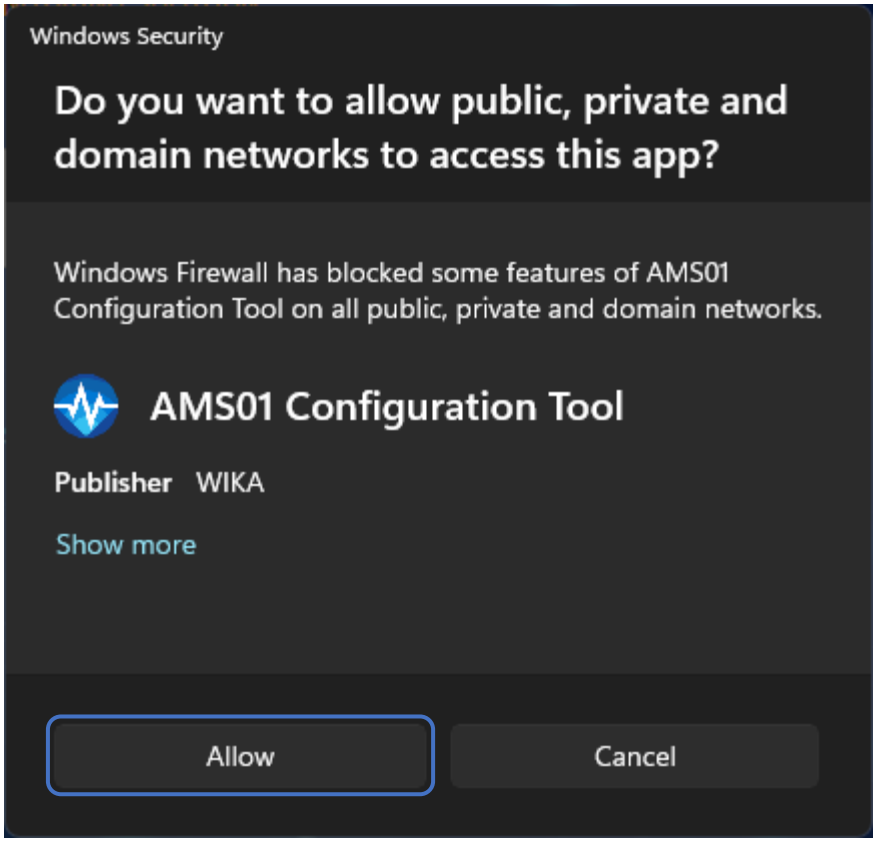
TO RESET IP SETTINGS OF THE AMS01 READER, HOLD THE RESET BUTTON UNTIL ALL LEDS ARE FLASHING GREEN. THIS CAN TAKE UP TO 15 SECONDS.

APPLICATION LAUNCH

FIRST LAUNCH AND WINDOWS FIREWALL

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

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

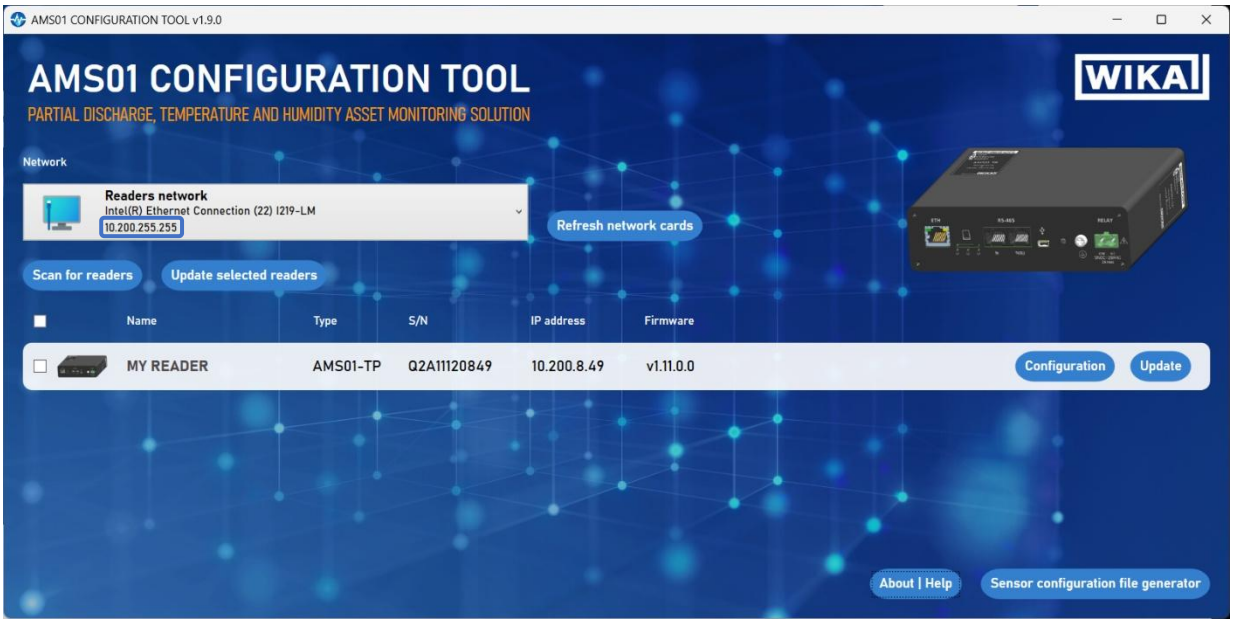


MAIN WINDOW DESCRIPTION

READER DETECTION

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

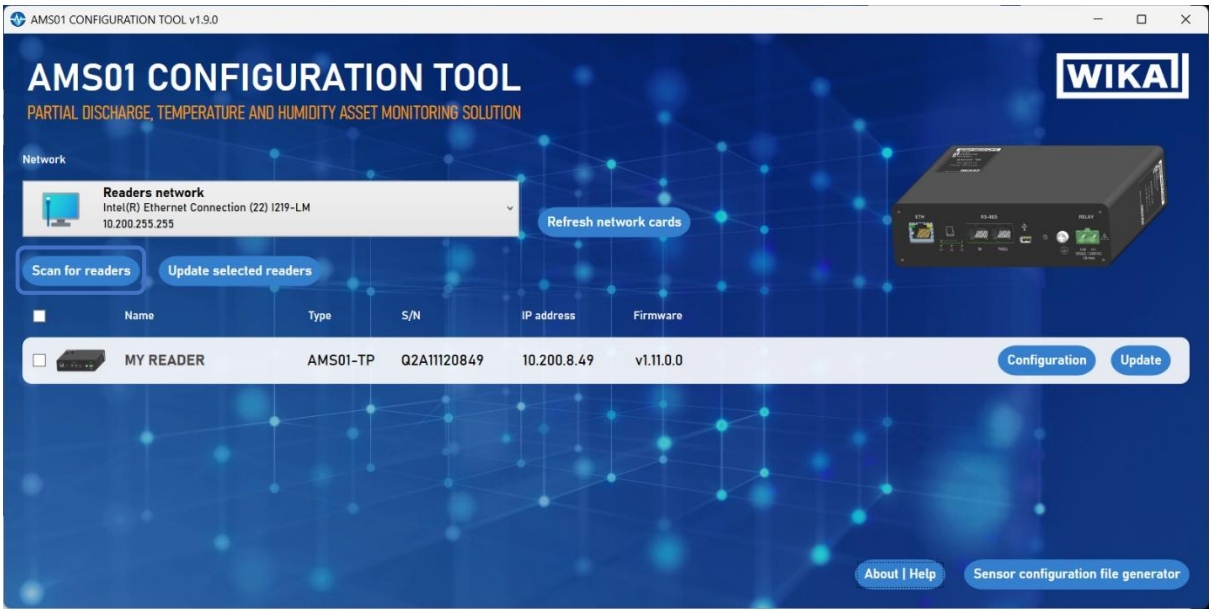
Select the network card associated with the readers IP address.

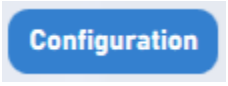


If the network card is not detected:

- *Check connection and ensure card is enabled in Windows settings,*
- *Click on 'Refresh network cards' button.*

Click on '*Scan for readers*' button to list readers connected to the selected card:





: Open reader window to configure its settings, sensors, partial discharge and show reader's overview (see next chapter).

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

: This icon appears if '*Device Firmware Update (DFU)*' mode is activated.

NOTE

WE STRONGLY RECOMMEND DOWNLOADING AND INSTALLING THE LATEST AVAILABLE FIRMWARE VERSION ON SENSEOR.COM/DOWNLOADS.

NOTE

ALL DETECTED READERS ARE LISTED IN ASCENDING ORDER OF IP ADDRESS.

NOTE

USE '*UPDATE SELECTED READERS*' BUTTON TO UPDATE FIRMWARE OF SEVERAL (CHECKED) READERS AT THE SAME TIME.

WARNING

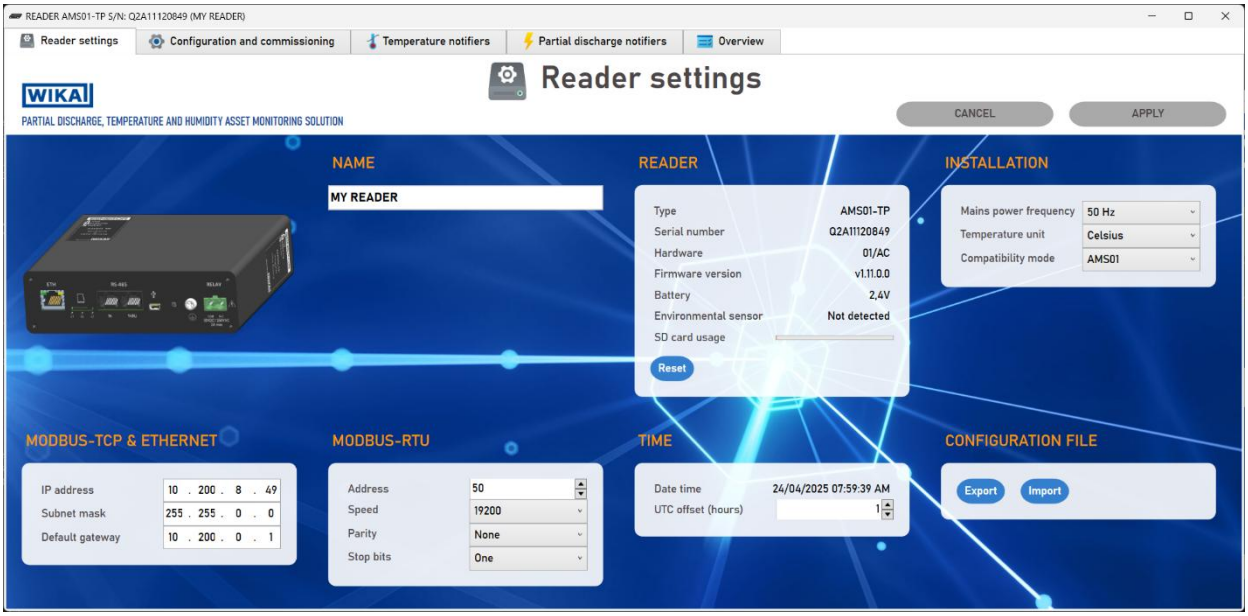
ELECTRICALLY RESTART THE READER ONCE FIRMWARE UPDATE PROCEDURE IS COMPLETE.

If a reader is not found:

- *Reset the reader and reader's Ethernet settings (see 'Reset Ethernet settings' chapter in* 'UM00403EN_AMS01 User Manual').
- *Disable all VPN services on the computer.*

READER WINDOW DESCRIPTION

READER SETTINGS TAB



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

- NAME (the reader's name with 19-digit maximum)

- INSTALLATION (default values in bold)
  - Mains power frequency ('***50 Hz***' or '*60 Hz*')[1]
  - System temperature unit (***Celsius*** or *Fahrenheit)*
  - Compatibility mode selection ('***AMS01***' or '*HTR02*')[2]

- MODBUS-TCP & ETHERNET
  - IP address (IPv4 format)
  - Subnet mask (IPv4 format)
  - Default gateway (IPv4 format)

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

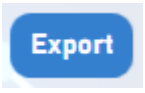
[2] Selecting HTR02 compatibility mode results in limitation of reader capacity as only antenna pairs 1 to 3. A maximum of 6 sensors per antenna pairs are available for measurement. Compatibility mode could be used in case of addition / replacement of existing HTR02 systems to keep the same Modbus table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

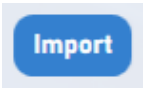
- MODBUS-RTU
  - Modbus address (from '*1*' to '*247*' – default value is printed on the reader label)
  - Speed (default value is '***19200***' bauds)
  - Parity (default value is '***None***')
  - Stop bits (default value is '***One***')

WARNING

ENSURE THAT EACH MODBUS ADDRESS IS USED BY ONLY ONE READER ON THE SAME NETWORK.

- TIME
  - Set UTC offset.

- CONFIGURATION FILE
  - 

: Save the full reader configuration (all pages) into a file.
  - 

: Load full reader configuration (all pages) from a specified file.

WARNING

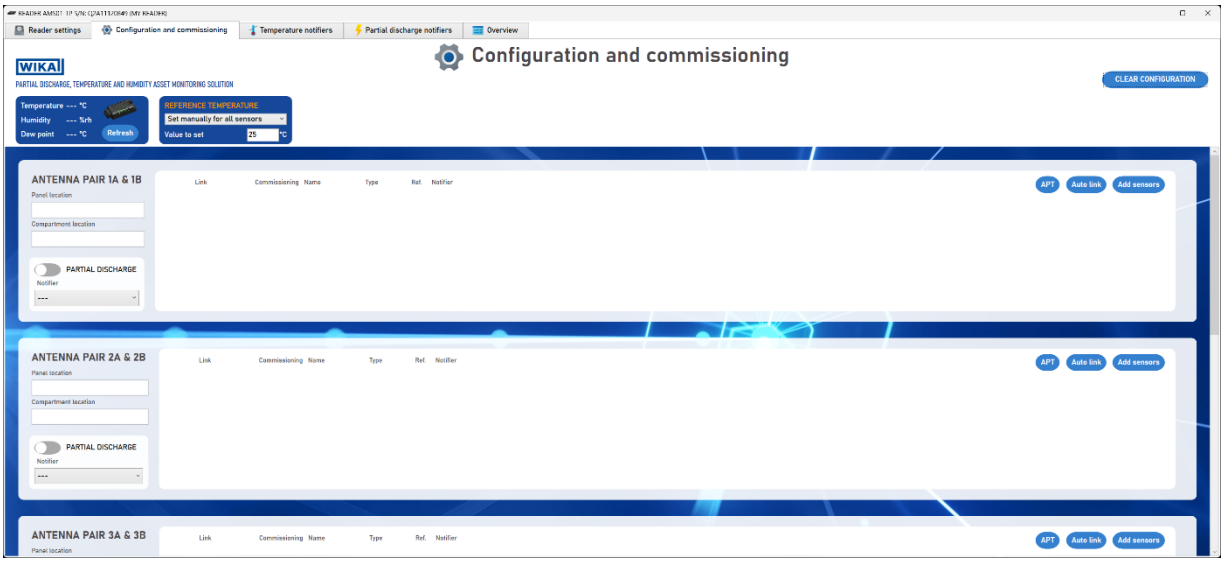
ONCE THE READER IS FULLY COMMISSIONED, ENSURE TO SAVE THE FULL READER CONFIGURATION. NEEDED FOR FACTORY/SITE ACCEPTANCE TEST WITH THE FINAL CUSTOMER.

Apply modifications.

Cancel modifications.

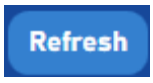
CONFIGURATION AND COMMISSIONING TAB

This tab is used to configure temperature sensors and partial discharge detection probes installation. For installation details, please refer to the '[UM00403EN_ AMS01 User Manual]'.



ENVIRONMENTAL SENSOR

This panel shows the information from the external humidity and temperature sensor (product reference *'EXT-ENV-SENS'*), if connected.



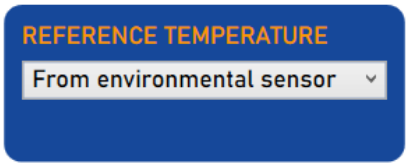
: Data are refreshed by clicking on this button.

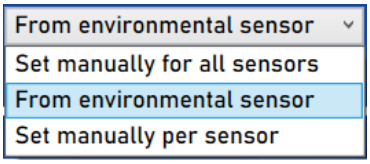
REFERENCE TEMPERATURE

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

The AMS01 system needs a reference temperature for sensors validation.

This section allows use of different sources for temperature selection.





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

Set manually for all sensors	Reference temperature is set manually and applied to all sensors.
From environmental sensor	Environmental sensor (product reference *'EXT-ENV-SENS'*) is used as reference temperature for all sensors (default setting).
Set manually per sensor	Reference temperature is set manually for each sensor.

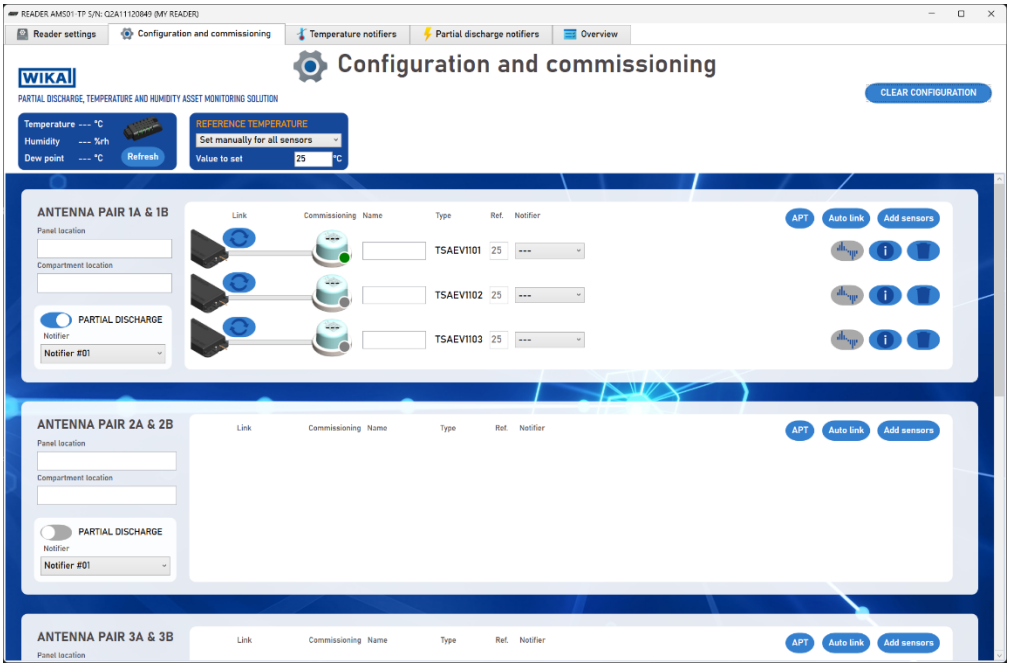
NOTE

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

IF ENVIRONMENTAL SENSOR IS DETECTED BY THE SYSTEM, REFERENCE TEMPERATURE SWITCHES AUTOMATICALLY TO 'FROM ENVIRONMENTAL SENSOR'.

ANTENNA PAIRS

The AMS01 reader supports natively up to five antenna pairs. Depending on the product type, temperature sensors and partial discharge probes needs to be configured for each antenna pair.



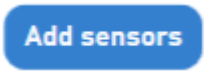
CLEAR CONFIGURATION : Clear configuration of all antennas (sensors, partial discharge activation and locations).

Panel location : Set a panel location name (19-digit maximum).

Compartment location : Set a compartment location (19-digit maximum).

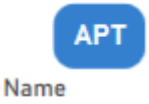
TEMPERATURE SENSORS

The following picture shows the *'TEMPERATURE SENSORS'* panel from an antenna pair.



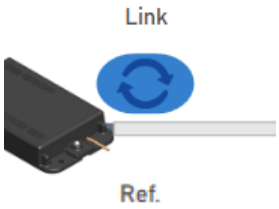
: Add sensors by selecting their configuration files into the corresponding antenna pair (see 'Sensor configuration file generator' chapter).

: Check link automatically for all sensors configured on the antenna pair.



: Open Antenna Positioning Tool window (see next section).

: Name of the sensor (19-digit maximum).



: Check the sensor link.

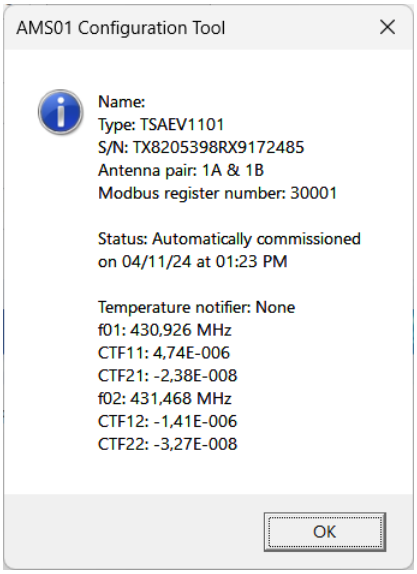
: Enter the reference temperature in current temperature unit (only available when *'Set manually per sensor'* option is selected in *'REFERENCE TEMPERATURE'* panel).

: Open sensor advanced view window (see next section – only available when *'Check link'* has been performed).

: Select a temperature Notifier to associate with the sensor (see 'Temperature notifiers' chapter).

: Delete sensor from the antenna pair.

: Open the sensor information window:



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.

Sensor link status

Click on the *'Check sensor link'* button will perform an interrogation of the sensor. This operation could take up to 20 seconds. Once done, the status led indicates if sensor was correctly interrogated by the reader.

: No check link has been performed.

: Error icon means the sensor must be commissioned manually, 3 green bars indicate RF link budget is quite good.

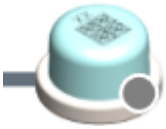
: Exclamation icon means the sensor automatically commissioned by the system despite warning measurement criteria. 2 green bars indicate RF link budget is correct.

: The sensor is automatically commissioned by the system and meets all measurement criteria. 4 green bars indicate RF link budget is optimal.

Commissioning status

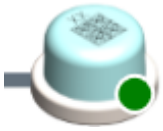
The commissioning status icon reflects the status of the sensor view by the reader. **A non-commissioned sensor will not be interrogated by the reader.**

Commissioning



: The sensor is not commissioned.

Commissioning



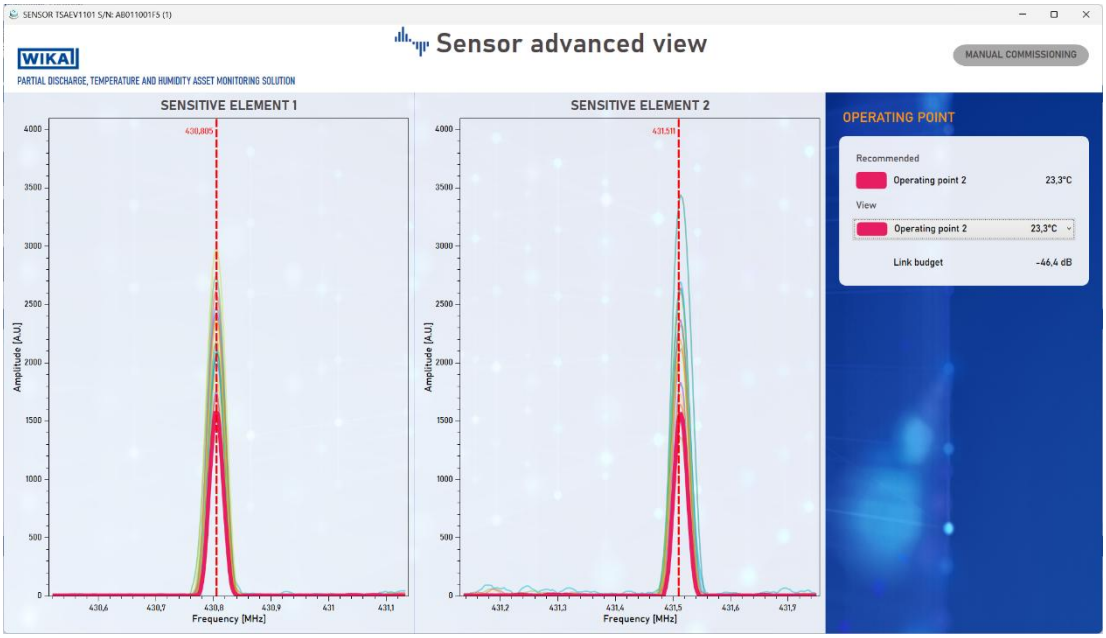
: The sensor is commissioned.

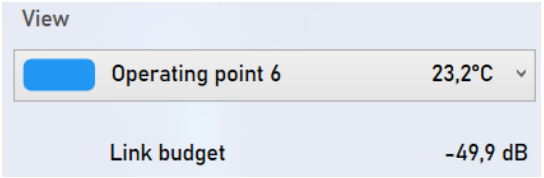
SENSOR ADVANCED VIEW WINDOW

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 (*'Recommended'*). If needed, you can select another operating point (*'View'*).





: Select desired operating point with corresponding measured temperature and link budget values.

: Commission the sensor with selected operating point (*'View'*).

ANTENNA POSITIONING TOOL WINDOW

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

This feature is designed to assist with the optimization of A & B antenna pair installation, ensuring optimal communication with temperature sensors. Page represents data of all the configured sensors per antenna (A & B). The goal is to have *'OK'* indicator for all the sensors on each antenna (A & B).

'*Selected room temperature*' value corresponds to reference temperature set in '*Configuration and commissioning*' page (see 'Reference temperature' chapter).

'*Estimated compartment temperature*' value represent median temperature of sensors.

'*Last measurement*' value indicates date and time of last measurement.

1. If '*Estimated compartment temperature*' value label is red, that means '*Selected room temperature*' value and estimated compartment temperature value differ significantly:
    a. Check selected room temperature value.
    b. Check antenna positioning to ensure sensors are being read from the correct compartment.

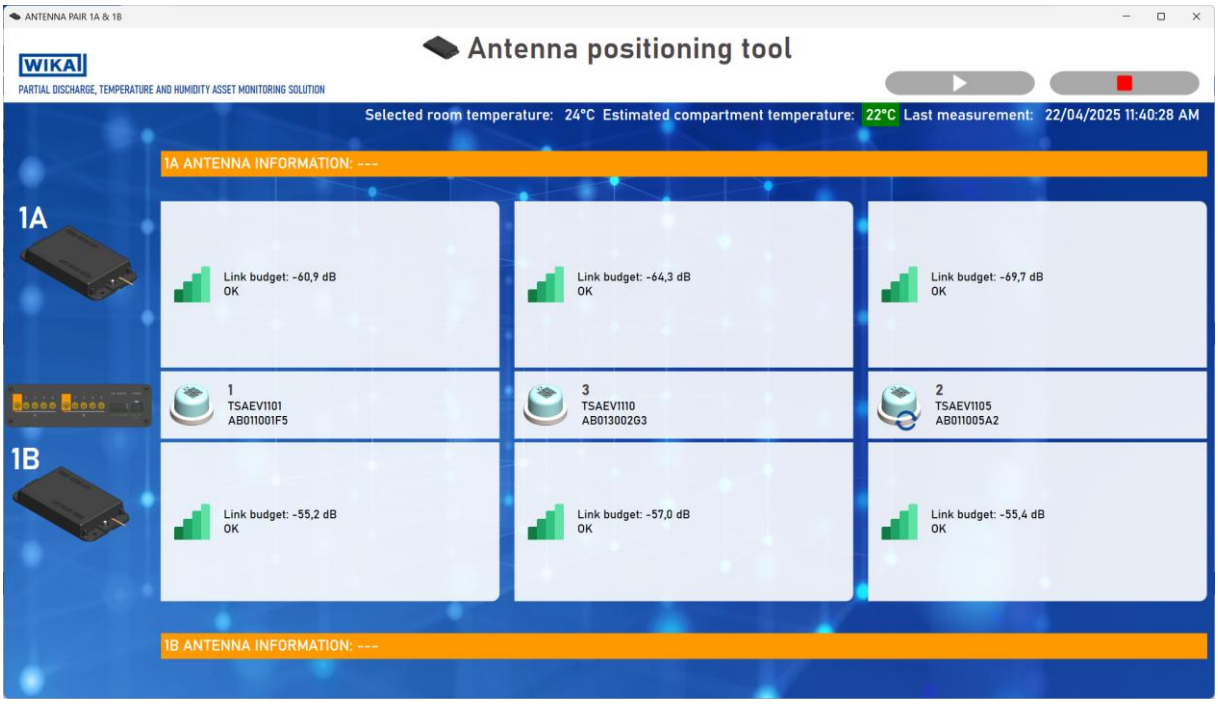
2. Start to install the antenna on each side of the compartment, ensuring a direct line of sight to the sensor. It is essential to ensure that the longest dimension of the antenna is colinear/aligned with the longest dimension of the sensor. It is recommended that the shortest possible interrogation distance be achieved by following the clearance distance - guidelines set forth in the *'*UM00403EN_AMS01 User Manual*' Chapter 1.12.1 Antenna Positioning*.

3. If another indication than *'OK'* is observed, follow the recommendation indicated on *'ANTENNA INFORMATION'* orange label.


: Optimal communication with the sensor.


: Communication with sensor can be improved.


: Sensor not detected. Communication must be improved by following the '*ANTENNA INFORMATION*' recommendation.



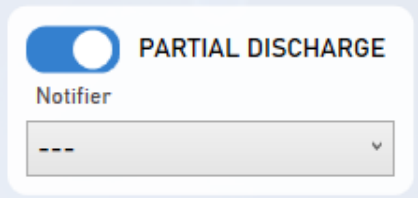
In this example, all sensors have '*OK*' status meaning that antennas are well positioned.

NOTE

TEST STARTS AUTOMATICALLY WHEN PAGE IS OPEN. SENSOR DATA ARE REFRESHED ONE BY ONE AND LOOPS AUTOMATICALLY. TESTS HAS TO BE STOPPED TO CLOSE PAGE. THIS PROCESS CAN TAKE SOME SECONDS.

PARTIAL DISCHARGE PROBES

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



: Enable/disable 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

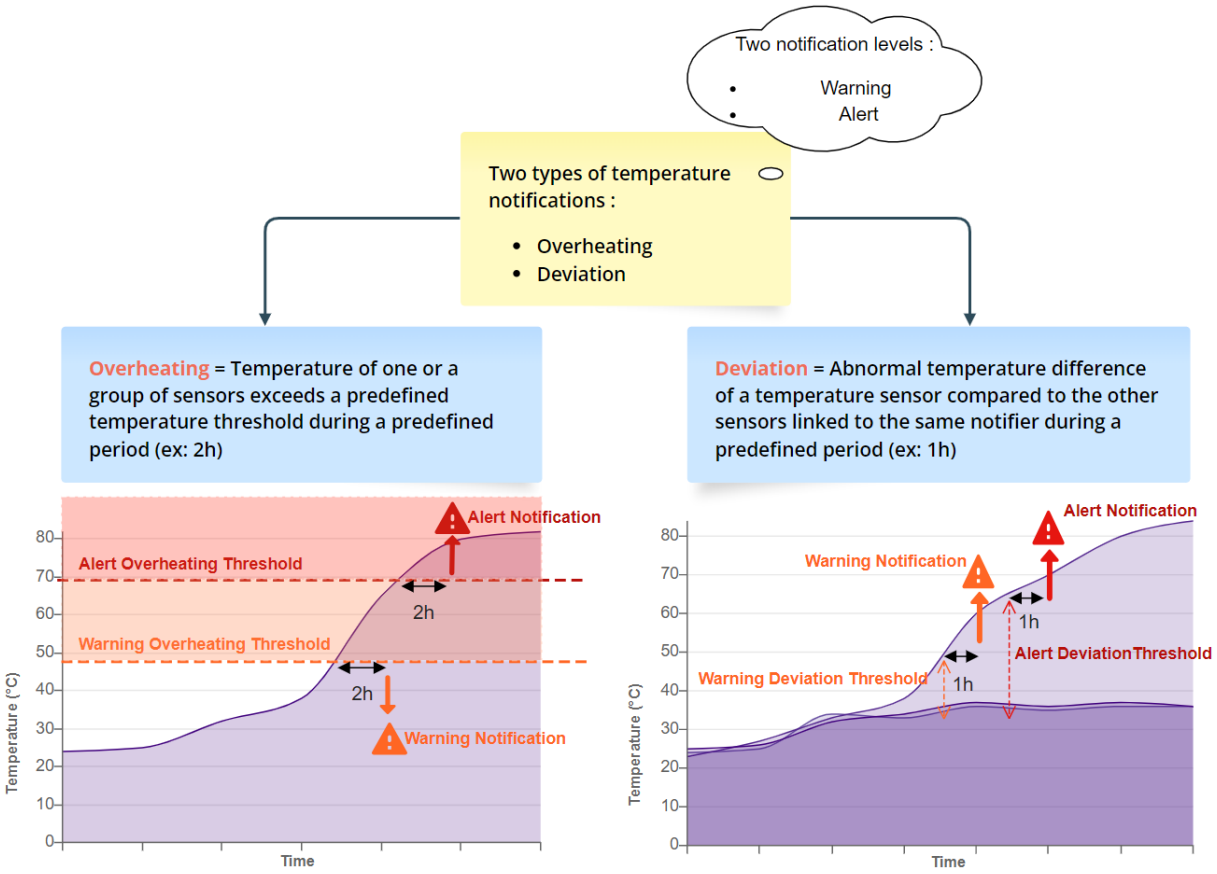
Temperature notifiers is an information system based on predefined temperature threshold values and duration time.

A notifier could be linked to one or several sensors (see 'Configuration and commissioning' chapter).

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 temperature notifiers could be configured and assigned in the system.

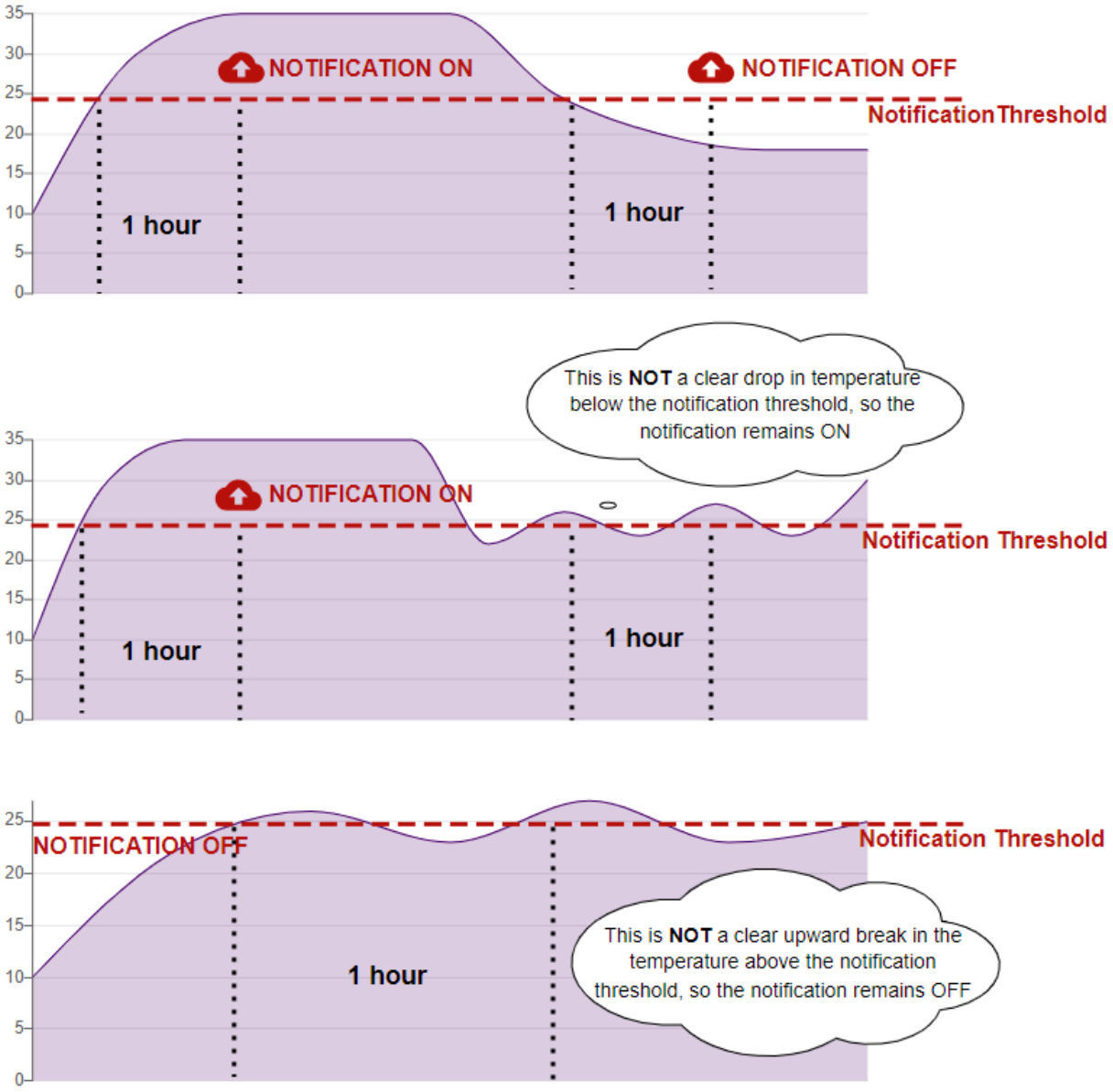


Temperature notifiers provide feedback on following levels:

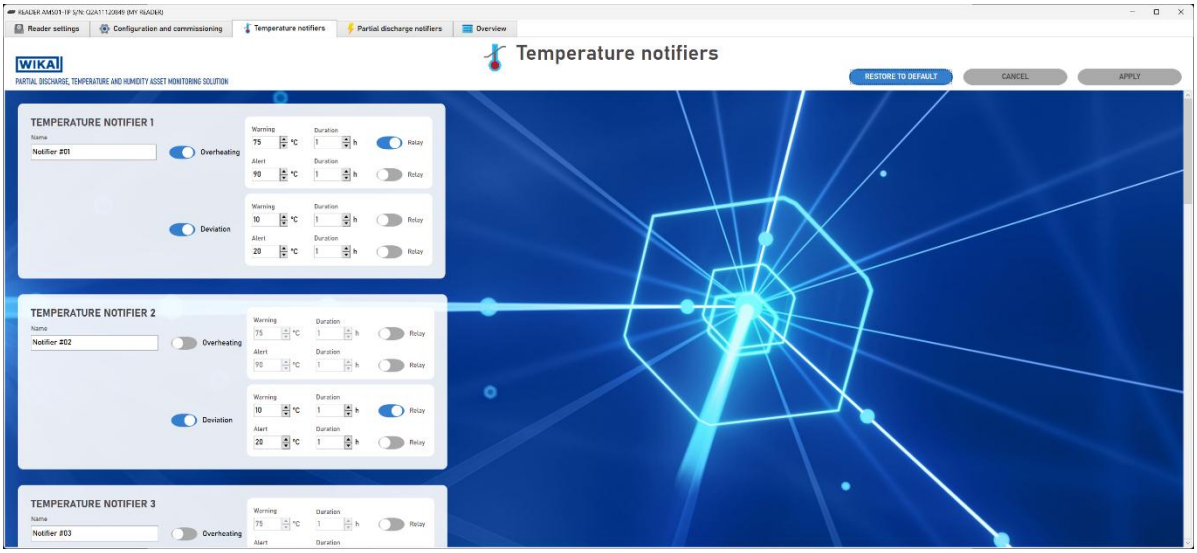
- Led indication (see 'UM00403EN_AMS01 User Manual').
- File on µSD card.
- Modbus registers.
- Relay switch (if activated).

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 : Set temperature notifier name.

Overheating : Activate/deactivate overheating notification for this notifier.

Deviation : Activate/deactivate deviation notification for this notifier.

Warning
75 °C : Set the warning threshold value (default value is **75°C**).

Alert
90 °C : Set the alert threshold value (default value is **90°C**).

Duration
1 h : Set period above threshold for activation[3] (default value is **1h**).

Relay : Activate/deactivate output relay switch on corresponding level.

RESTORE TO DEFAULT : Restore default values for all temperature notifiers.

CANCEL : Cancel modifications.

APPLY : **Apply modifications**.

[3] Minimum duration is 1h. Value of '0' corresponds to one cycle of measurement (approximatively 15 minutes) and could be used for tests only.

PARTIAL DISCHARGE NOTIFIERS

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

NOTIFIER OPERATION

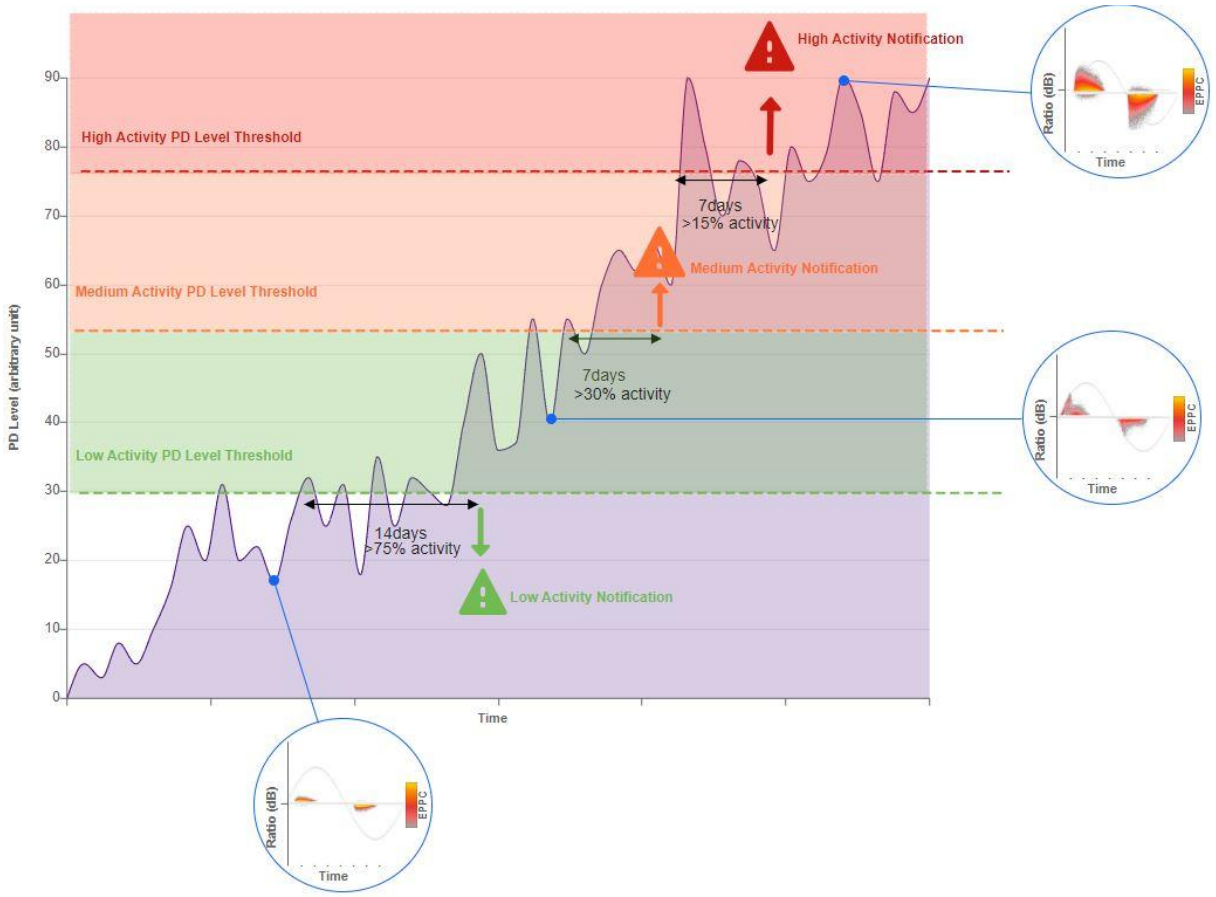
Partial discharge notifiers are information systems that use predefined PD level threshold values to monitor a percentage of PD activity over a specific period.

The system calculates 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 'Configuration and commissioning' chapter).

Up to 5 notifiers could be configured and assigned in the system.

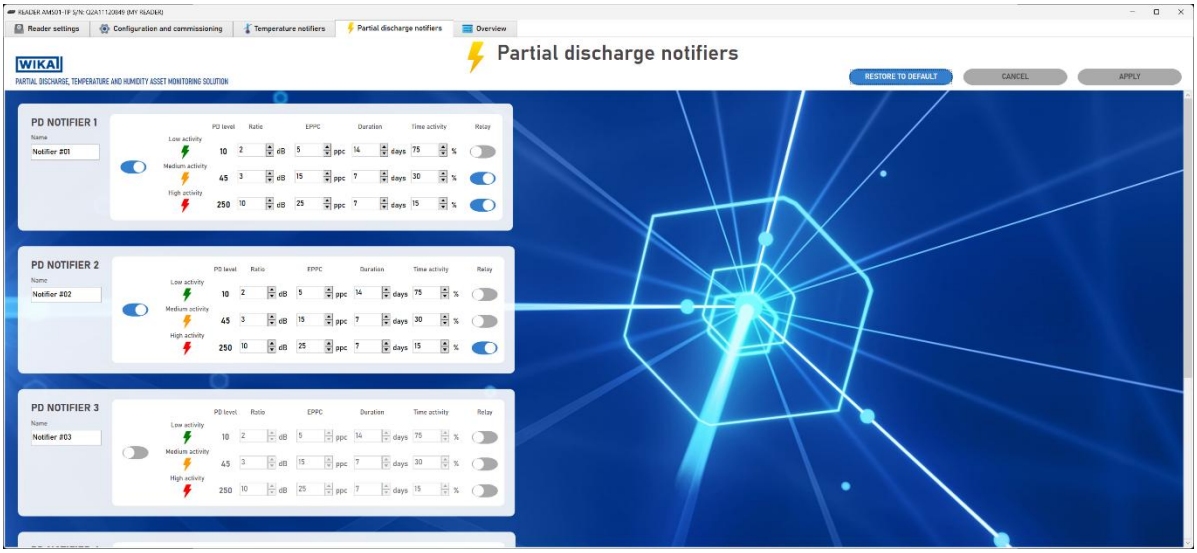
Three notification levels are defined of Partial Discharge notification: *'Low activity'*, *'Medium activity'* and '*High activity'.*



Partial Discharge notifiers provide feedback on followings levels:

- Led indication (see 'UM00403EN_AMS01 User Manual').
- File on µSD card.
- Modbus registers.
- Relay switch (if activated).

TAB DESCRIPTION



: Activate/deactivate the PD notifier.

PD level

: This value represents the notification threshold level (= *Ratio* x *EPPC*).

10

Ratio

: Set a ratio level for PD triggered level calculation (in dB).

2 dB

EPPC

: Set an EPPC level for PD triggered level calculation (in peaks per cycle).

5 ppc

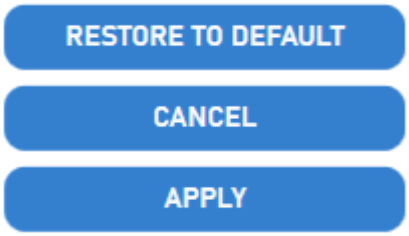
Duration

: Set period above the PD level threshold for activation (in days).

14 days

: Set the percentage of activity required to activate notification.

: Activate/deactivate output relay switch on corresponding notification level.



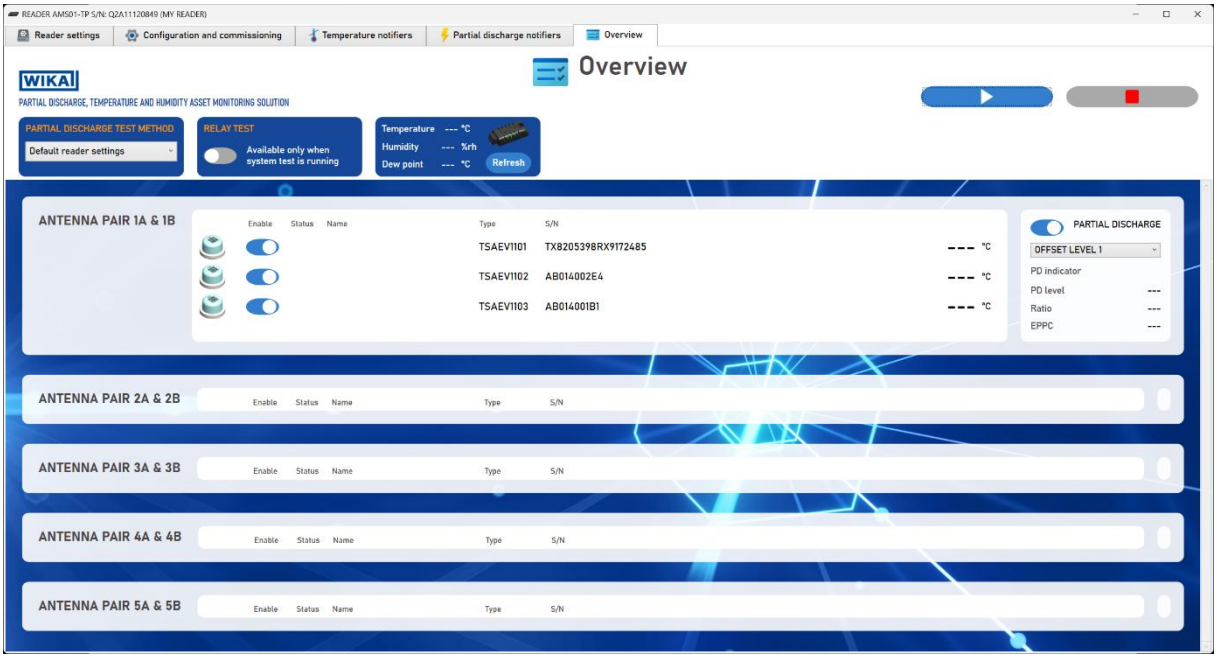
: Restore default values for all partial discharge notifiers.

: Cancel modifications.

: **Apply modifications**.

OVERVIEW TAB

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



This full test is manually activated with the *'Play'* button  .

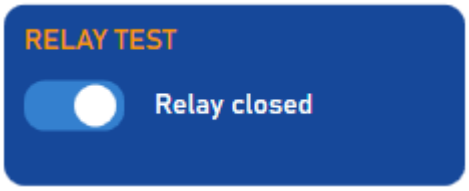
Uncheck the toggle buttons in front of temperature sensor or PD probe to not run a measurement on this element.

Data from this test mode are also available on Modbus registers and in µSD 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.

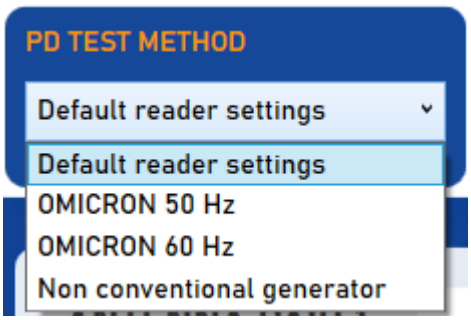
: The sensor is being evaluated.

TEST OF THE PARTIAL DISCHARGE PROBES

AMS01 partial discharge detection system uses 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 default reader settings.
- 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.

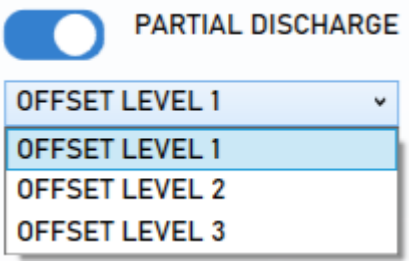

: The partial discharge activity is being evaluated.

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.

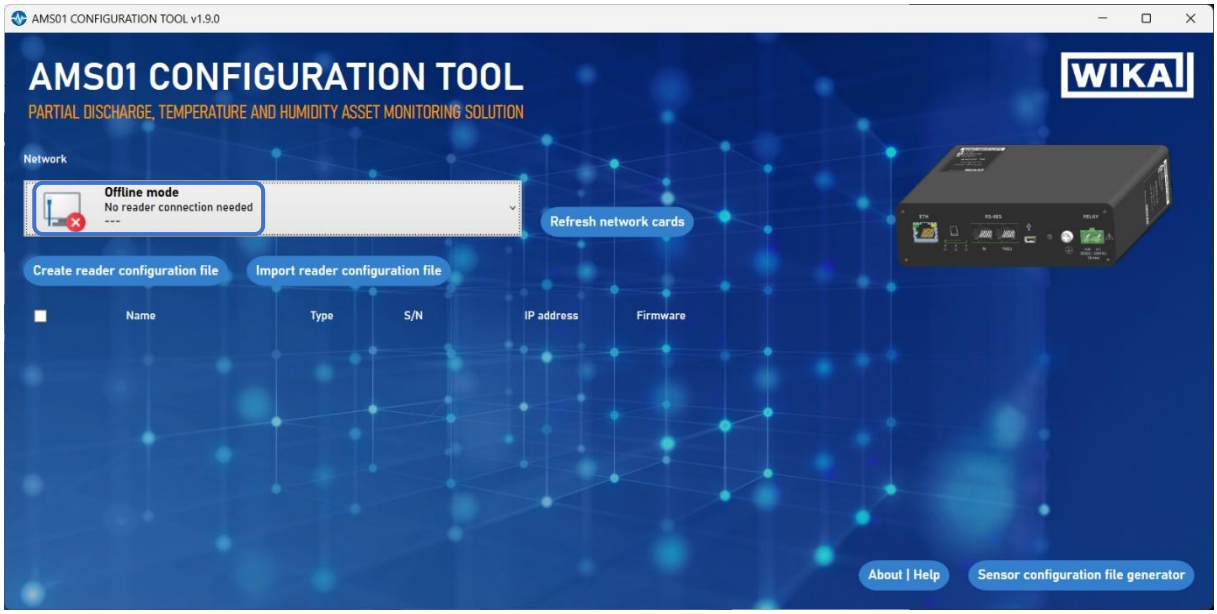


: Choose the offset level (default value is '*Level 1*').

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 mode*' as Network.



In '*Offline mode*' you can start a new configuration using the button '*Create reader configuration file'* or load an existing configuration with '*Import reader configuration file*'.

All the functions seen previously are available except:

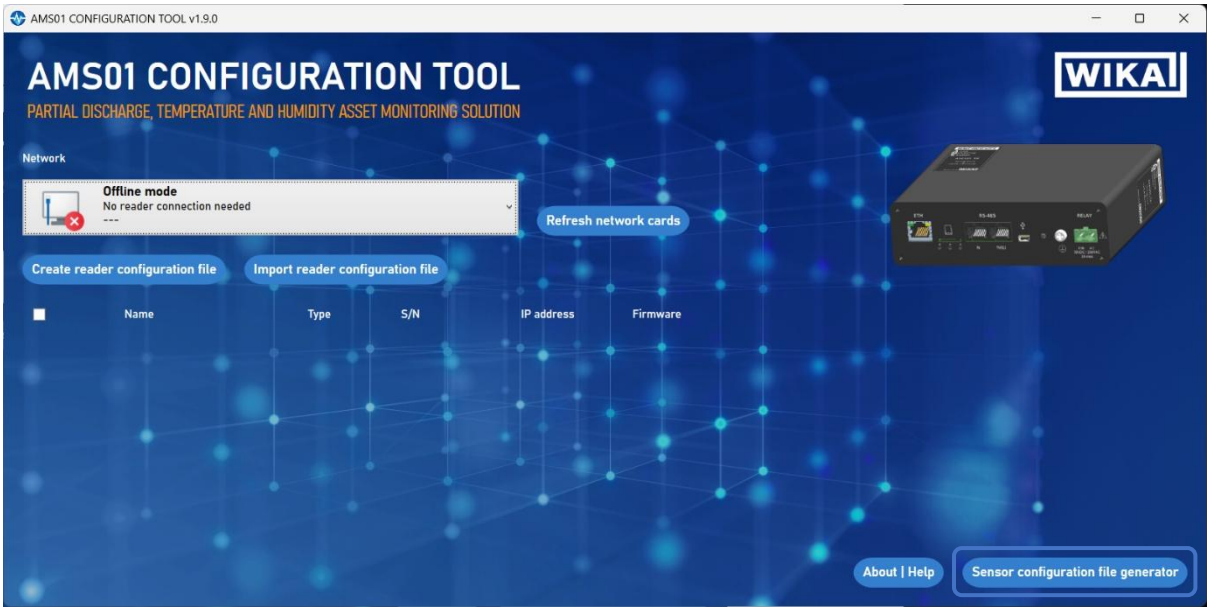
- 'Configuration and commissioning' tab: Environmental sensor, Temperature sensor check link, commissioning, and advanced view.

- 'Overview' tab.

SENSOR CONFIGURATION FILE GENERATOR

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

To launch it, click on the *'Sensor configuration file generator'* button from the main page.



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

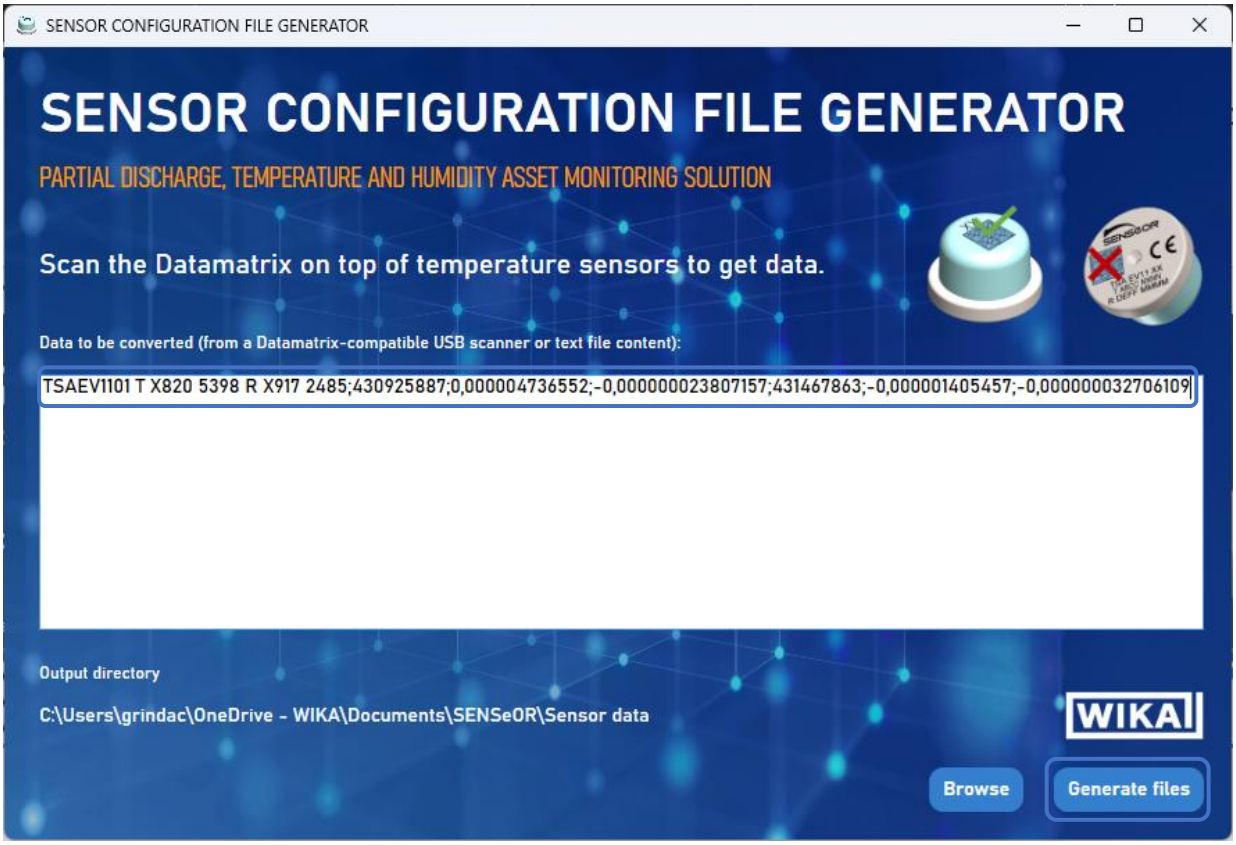
- Connect it to the computer.
- Ensure the input cursor is in the *'Data to be converted'* field.
- Scan the Data matrix **on top** of sensors to get data. Text content data is added, and line wrap is automatic after each scan.

WARNING

DO NOT SCAN THE DATAMATRIX UNDER THE SENSOR.

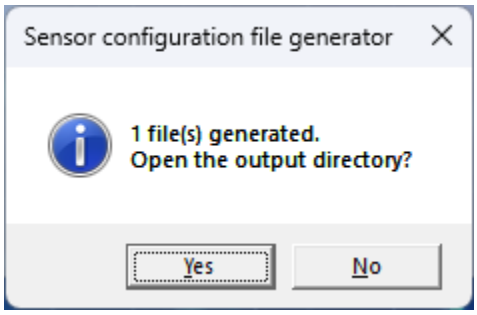
Else (without handle unit):

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



When all the sensors' data is set, click on the *'Generate files'* 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.