

EcoStruxure™ Transformer Expert

Fleet-wide transformer monitoring, predictive analytics, and reporting service

IT and Security Guide

ETE-TBD 7EN02-0483-01

05/2024

For internal use





Transformer Expert

version 5.9.6

Email *

Next

Create trial account

[GO TO DISTRIBUTOR LOGIN](#)

[FORGOT YOUR PASSWORD?](#)

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Life Is On 

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1. Introduction

1.1. About this guide

This guide shows how EcoStruxure Transformer Expert (ETE) manages the security and privacy of the data that it collects. It describes how Transformer Expert is integrated with your transformer.

This guide is written for:

- IT departments who need to understand the IT and security of EcoStruxure Transformer Expert into their IT environments.
- Engineers and technicians who need to deploy EcoStruxure Transformer Expert into their facilities.

1.2. About EcoStruxure Transformer Expert

EcoStruxure Transformer Expert is a cloud-based monitoring and predictive analytics service for oil-filled transformers. The EcoStruxure Transformer Expert Probe, the ETE Probe herein, consists of an all-in-one device with integrated sensors, data acquisition gateway, cellular modem and control power. The ETE Probe is inserted into the transformer oil through its valve and connects to the EcoStruxure Transformer Expert service through AT&T or T-Mobile cellular service. All transformer data is collected, organized and analyzed to deliver a fleet-wide transformer monitoring, predictive analytics and reporting service for users.

1.3. About Schneider Electric data confidentiality and security

EcoStruxure Transformer Expert collects oil data regularly and a small amount of personally identifiable information (PII). PII information includes the user's names and email addresses that users enter at the time of registration. For more details on what data is collected, see the EcoStruxure Transformer Expert Terms of Use.

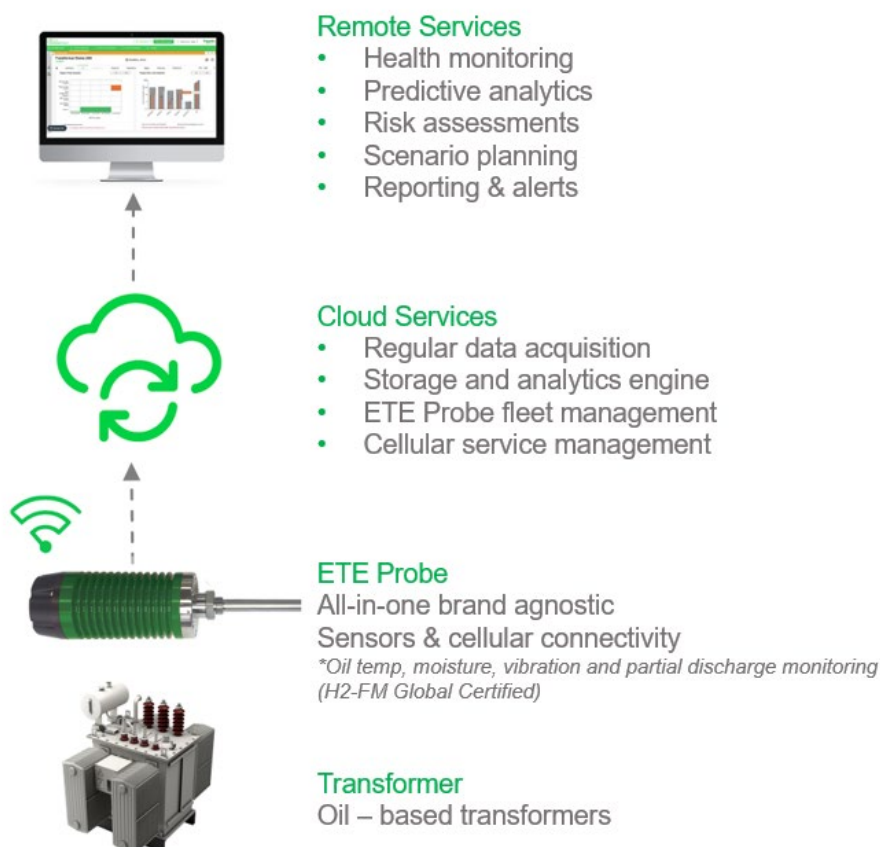
Schneider Electric is committed to help protecting the confidentiality and security of customer data. EcoStruxure Transformer Expert complies with the Schneider Electric global policies and procedures on cybersecurity and data protection.

For more information on the Schneider Electric cybersecurity and data protection policies and procedures, see the [Resources](#) section in this guide.

2.Design

2.1 System architecture

The following shows a high-level conceptual view of an EcoStruxure Transformer Expert system.



3. Cybersecurity

Cybersecurity is intended to help protect your communication network and all equipment connected to it from attacks that could disrupt operations (availability), modify information (integrity), or give away confidential information (confidentiality). The objective of cybersecurity is to provide increased levels of protection for information and physical assets from theft, corruption, misuse, or accidents while maintaining access for their intended users. There are many aspects to cybersecurity including designing secure systems, restricting access using physical and digital methods, identifying users, as well as implementing security procedures and good practice policies.

3.1. Secure Development Lifecycle

We use Secure Development Lifecycle practices for building EcoStruxure Transformer Expert & ETE Probe that are based on the ISA/IEC 62443-4-1 - series standards for information security. That means we are designing security into EcoStruxure Transformer Expert & ETE Probe right from the beginning and not as an afterthought.

Schneider Electric cybersecurity measures integrated into every stage of the software development lifecycle.

The following are examples of the Secure Development Lifecycle practices that we use:

- Periodic authorized simulated cyberattacks (penetration tests) on EcoStruxure Transformer Expert, performed by Schneider Electric cybersecurity specialists to evaluate the security of the system. Pen test team is an independent, internal, CREST-certified penetration testing team within Schneider Electric
- Ongoing cybersecurity threat modeling and analysis by development teams for EcoStruxure Transformer Expert & ETE Probe.
- Ongoing cybersecurity and data privacy training for all EcoStruxure Transformer Expert & ETE Probe designers and developers.
- Constant use of code scanning tool & 3rd party vulnerability scanning tool are integrated in the pipeline which runs whenever there are changes pushed to repository.
- Every major release is reviewed by BU Security officer before it is deployed.

3.2. Application Security

3.2.1. Security Training

Schneider Electric recommends the establishment of a two-phase training program for employees and other agents. The first training phase is a cybersecurity awareness program that educates stakeholders on the organization's security policies, procedures, and standards. Schneider Electric offers an online academy that will help close the knowledge gap. This is an ongoing program that is updated regularly. The second training phase includes job- and role-based training classes that detail the relevant security policies, procedures, and standards that pertain to a particular job or function. These classes provide specific steps for applying the security policies and procedures. They also include specific instructions to follow if a cyberattack or accident has occurred.

3.2.2. Peer Review

Any change to the EcoStruxure Transformer Expert is subjected to a mandatory peer review where code and infrastructure changes are reviewed by at least one other engineer in order to validate code quality, security and performance.

All changes are tracked using a version control system to help ensure history, traceability and audit tracking.

3.2.3. Separate Environment

EcoStruxure Transformer Expert testing environments are physically isolated from the Production environment.

3.2.4. Dynamic Vulnerability Scanning

EcoStruxure Transformer Expert & ETE Probe uses several third-party security tools to continuously dynamically scan for vulnerabilities. Schneider Electric maintains a committed security team to handle results and work with engineering teams to remediate issues.

3.2.5. Static Code Analysis

All changes to source code are continuously scanned for bugs, security and license issues via static analysis tooling. Any source code change which doesn't meet the standards will be returned to the development team for improvement.

3.2.6. Penetration Testing

Schneider Electric's Global Security Labs performs pen-test at least once annually or based on the risk level of the release. Schneider Electric's Global Security Lab is CREST accredited.

3.2.7. Incident Response

The Schneider Electric Corporate Product Cyber Emergency Response Team (CPCERT) has defined vulnerability management processes to ensure efficient incident response.

To report an incident, please contact your local Customer Care Center.

All vulnerability disclosures are reported on the Schneider Electric Cybersecurity Support Portal.

3.3. Product Security Features

3.3.1. Authentication Security

To log in to EcoStruxure Transformer Expert, users need a Schneider Electric ID. A Schneider Electric ID is a unique identifier that is used across multiple Schneider Electric products and services. The Schneider Electric ID is part of the Schneider Electric Customer Identity and Access Management System, a centralized set of policies and technologies for authentication and authorization.

3.3.2. Password Policy

The EcoStruxure Transformer Expert password policy requires:

- At least 8 characters in length

- At least 3 of the following 4 types of characters:
- Lower case letters (a-z),
- Upper case letters (A-Z),
- Numbers (i.e., 0-9),
- Special characters (e.g. !@#\$%^&*)

3.3.3. RBAC (Role Based Access Control)

In EcoStruxure Transformer Expert, each user is assigned a role and access permissions that determine what this user can do and which data they can access. The following shows a list of user roles that determine what a user can do:

Name	Role	Description
User	Viewer	A viewer can only view information (all data can be viewed)
Admin	Administrator	An Admin can view information, configure transformers, and manage user.

3.3.4. MFA (Multi factor Authentication)

Multifactor authentication provides another layer of security to your EcoStruxure Transformer Expert account, making it more challenging for somebody else to sign in as you. Multifactor authentication is turned on for all logins, whether you are a customer, partner or Schneider Electric employee.

3.3.5. Multi tenancy

EcoStruxure Transformer Expert is a multi-tenant application, which means all customers' data is stored in the same database, but it is segregated based on the customer unique identifier. This helps ensure users have access only to their organization data. Before being committed to storage, your data is tagged as yours. In addition, the cloud engine keeps a complete audit trail of the data received and the data processing, so we can always retrace our steps and see where your data has been and what it has been used for.

3.3.6. Session timeout

EcoStruxure Transformer Expert (ETE) automatically ends inactive sessions after a certain time interval. If they continue the session, the timeout counter resets. The timeout interval is not configurable.

3.3.7. Secure Credential Storage

Schneider Electric follows secure credential storage good practices by not storing ETE passwords in clear text format.

3.3.8. Failed Login Attempts

Schneider Electric enforces brute force protection for ETE. You will be blocked from logging in to your account if you have entered a wrong password for more than 10 times from the same IP address. You will then receive instructions on how to unblock the IP address via email.

Schneider Electric enforces rate limits as well. If you attempt to log in 20 times per minute as the same user from the same location, regardless of having the correct credentials, the rate limit will apply. You will then only be able to make 10 attempts per minute.

3.4. Gateway Security

3.4.1 Outbound Connection

Schneider Electric is committed to keeping your data secure and private, even before it leaves your site. All data for EcoStruxure Transformer Expert is sent through its integrated cellular gateway. This end-to-end cybersecurity, from gateway to cloud, makes sure that all data sent to EcoStruxure Transformer Expert is from a trusted source. The gateways use only secure protocols for data transmission. The communication from this outbound connection is always initiated by the gateway.

3.4.2. Inbound Connection

Transformer operational data flow is unidirectional. It flows only from gateway to our ETE cloud services. Data can be pushed from platform to the ETE probe for remote firmware update.

3.5. Data collection and transmission

All data for EcoStruxure Transformer Expert is sent through its integrated cellular gateway. EcoStruxure Transformer Expert cellular gateway follows the globally recognized ISA/ANSI/IEC 62443 cybersecurity standards. This end-to-end cybersecurity, from gateway to cloud, helps to make sure that all data sent to EcoStruxure Transformer Expert is from a trusted source. The gateways use secure protocols for data transmission. The following are some of the characteristics of the secure data collection:

- Only device measurement data and events are sent to the cloud service.
- Only the gateway can start the connection with the cloud services. Data flow is unidirectional. A crypto chip onboard generates a unique Serial number when the logger is provisioned and we use that to authenticate it over a https connection. A logger is provisioned at each site.
- Data transmission from the probe to cloud is through HTTPS on TLS 1.2/1.3
- The 3G/4G interface is on-line for few minutes or few hours per day for uploading data depending on the size of data and it can be on for longer if it is downloading an OTA update
- The 3G/4G interface is powered down when not uploading. In normal operation data upload happens once a day. If it is in an alerting state it can upload more frequently.

3.5.1. Data Encryption in Transit

Data transmission between the onsite probe and the Schneider Electric cloud services is using TLS (Transport Layer Security) 1.2 & 1.3 (HTTPS) protocol with only strong cipher suites. Data is transmitted only on HTTPS (Hypertext Transfer Protocol Secure) protocol.

3.5.2. Data Encryption at Rest

EcoStruxure Transformer Expert data is encrypted at rest as per Schneider policy.

3.5.3. Data center

The EcoStruxure Transformer Expert data is hosted in France on Microsoft Azure Cloud. Certifications for this data center include ISO 22301, ISO 27001, ISO 9001, PCI DSS, SOC 1, SOC 2, SOC 3, Health Data Hosting (HDS).

You can find information about Microsoft cloud services security on the [Microsoft Trust Portal](#).

3.5.4 Data Backup

Database backup is maintained in Azure daily & the restoration process is documented and is performed at least every 6 months. Azure triggers an alarm in case of failed backup.

3.6. Data Privacy

3.6.1. Privacy Policy

Refer [Data Privacy Statement | Schneider Electric Global \(se.com\)](#)

3.6.2. GDPR

The General Data Protection Regulation ("GDPR") addresses the processing of personal data and the free movement of that data. Its goal is to strengthen the security and protection of personal data in the EU and to harmonize EU data protection law. This regulation sets out a number of data protection principles and requirements which must be adhered to when personal data is processed.

Schneider Electric is committed to complying with its obligations under the GDPR. Schneider Electric shares personal information with 3rd party data processors on a need-to-know basis.

3.6.3. Personal Data Use

Firstly, Schneider Electric processes and stores data for you, so it's available to you anywhere in the world through the ETE app. But more importantly, sharing your data with Schneider Electric allows us to optimize the services and products we provide.

3.6.4. Data Retention

We will retain personal information for as long as the information is needed for the purposes set forth in this Privacy Policy and for any additional period that may be required or permitted by law. More precise information is provided in privacy notices applicable to specific digital content. In general data retention periods are determined taking into consideration:

- The duration of our relationship (e.g., contract performance duration, account de-activation, your legitimate need to be recognized when contacted by us)
- Legal requirements for keeping data
- Statute of limitations

For marketing purposes, we keep relevant customer data for three years after the end of our relationship or since the last interaction with us.

3.6.5. Cookie Policy

Schneider Electric takes privacy and the protection of your personal data seriously. This includes providing transparency about the techniques and technology we use to enhance and personalize your browsing experience. Among these are the placement of cookies on your devices when you visit our websites and the processing activities performed.

This notice explains Schneider Electric 's approach to cookies and similar technologies. When you visit our websites, use our mobile apps, engage with our online ads or emails, we collect information, using technologies such as cookies, pixel tags (also called web beacons), browser analysis tools, and server logs.

Refer [Cookie Notice | Schneider Electric Global \(se.com\)](#)

3.6.6. Terms of use

Refer [ETE Terms of Use](#)

3.6.7. Customer Data

Customer retains all right, title, and interest in the Customer Data. Customer grants Schneider

Electric a non-exclusive, perpetual, irrevocable, worldwide, free of charge, royalty-free and sublicensable license right to use, host, store, upload, import, collect, create, translate, copy, modify, distribute modifications of, perform, create and distribute derivative works of, and display Customer Data for the purpose of and in conjunction only with the following limited purposes: (i) providing the Solution to Customer, (ii) improving, modifying or testing the Solution, and, as applicable, (iii) creating additional or other Solution.

3.6.8. Disclosure of Customer Data

Schneider Electric shall not disclose Customer Data and Customer's Clients Data to any third party without Customer's prior express consent, except for (i) disclosure to any third-party subcontractors

acting on behalf of Schneider Electric and involved in the performance of the activities authorized under the license granted to Schneider Electric under Section 6.1 above, or (ii) when disclosure of Customer Data and/or Customer's Clients Data is the sole reasonably available manner for Schneider Electric to comply with any legal obligation applicable to Schneider Electric or any valid order by a court or other competent jurisdiction or governmental agency, or to help prevent fraud, abuse

or security threat of the Solution or to enforce or defend Schneider Electric's rights under these Terms of Use such as but not limited in the frame of any litigation or other proceeding. In case Customer is not the legal owner of Customer Data and/or Customer's Clients Data, Customer shall be solely and fully responsible to obtain from the legal owner of such Customer Data and/or Customer's Clients Data its express consent that Schneider Electric is entitled to disclose the same under any of the exceptions

3.7. Cloud Security

3.7.1 Web Application Firewall

All inbound and outbound traffic from the cloud environment is protected through an enterprise grade firewall that is centrally managed, centrally monitored and has a consistent set of policies applied.

3.7.2 API Security

EcoStruxure Transformer Expert provides a REST-based API that returns structured data. Session based authentication and RBAC is used to help ensure your data is only available to the correct users.

3.7.2 Auto Updates

Regular security updates are automatically applied to the EcoStruxure Transformer Expert cloud servers without user interaction.

3.7.3 Malware Protection

All the servers have Schneider's corporate malware protection software & end point protection installed, which is the corporate standard solution.

3.7.4 Scanning

Our Digital Assets are frequently scanned by our infrastructure scan team to keep our externally exposed domains free from security issues.

3.7.5 Network Security

Access to the EcoStruxure Transformer Expert Cloud Production Network is restricted by an explicit need-to-know basis, utilizes least privilege, is monitored, and is controlled by our Operations Team. Employees accessing the Production Network are required to use multiple factors of authentication.

3.7.6 DDoS

As EcoStruxure Transformer Expert web application is running on Microsoft Azure, Schneider Electric leverages their always-on traffic monitoring, and real-time mitigation of common network-level attacks, providing the same defenses utilized by Microsoft's online services.

3.7.7 Ports

All the ports are closed except port 443, which is used only for HTTPS communication.

3.7.8 Privilege Accounts

Process of conducting a full review of all access rights for each privileged and administrative account holder is documented and executed annually. Process owner responsible for the identity access management system of privilege and administrative accounts.

3.7.9 Log Management

EcoStruxure Transformer Expert will have access to all logs produced by Azure Resources with read access on for 90 days. To help ensure compliancy with Schneider Electric Logs policy, logs are also sent to a cold storage and kept for one year. In case those logs need to be investigated. All security related events are logged and audit table in the database is logged with >1 year retention.

3.7.10 Schneider Electric Hub & Spoke network

EcoStruxure Transformer Expert is hosted on a Schneider Electric hub & spoke network on Azure, which has strict compliance to [Schneider Electric Global Cybersecurity Policies](#). The Schneider Electric team has implemented guardrails to help teams reach security and compliance goals. Adhering to a DevSecOps model, guardrails and reinforcements are continuously added, modified, and improved to decrease risk, and increase security confidence for all teams leveraging the SE hub & spoke network environments. Any changes to the policies are automatically deployed without any manual intervention.

3.7.11 Business Continuity

An approved Disaster Recovery Plan is in place, and it is tested once annually. The disaster recovery plan consists natural disasters and cyber threats that cause mass damage and the inability of the primary systems to remain functioning.

3.8. Legal

These Terms of Use and the Solution shall be governed by and construed in accordance with the laws on both federal and state levels, when applicable) of New South Wales, Australia to the exclusion of its conflict of law rules and without prejudice to the subsequent provisions of this. In any country where Customer will access and use the Solution, mandatory or public order laws or regulations may impose statutory rights and/or obligations between Customer and Schneider Electric or Schneider Electric Affiliate issuing the related Order Confirmation in relation with the supply, the access or the use of the Solution. These Terms of Use shall apply to the extent they do not affect or prejudice such statutory rights and obligations.

3.9. Schneider Electric Cybersecurity Support

3.9.1 Overview

- The Schneider Electric cybersecurity support portal outlines the Schneider Electric vulnerability management policy.
- The aim of the Schneider Electric vulnerability management policy is to address vulnerabilities in cybersecurity affecting Schneider Electric products and systems, to help protect installed solutions, customers, and the environment.
- Schneider Electric works collaboratively with researchers, Cyber Emergency Response Teams (CERTs), and asset owners to help ensure that accurate information is provided in a timely fashion to help protect their installations.
- Schneider Electric's Corporate Product CERT (CPCERT) is responsible for managing and issuing alerts on vulnerabilities and mitigations affecting products and solutions.
- The CPCERT coordinates communications between relevant CERTs, independent researchers, product managers, and all affected customers.

3.9.2 Schneider Electric Cybersecurity Support Portal

The support portal provides the following information:

- Cybersecurity vulnerabilities of products.
- Cybersecurity incidents.
- An interface that enables users to declare cybersecurity incidents or vulnerabilities.

3.9.3 Security Notification

Product security notification posted can be viewed via Schneider Electric website:

<http://www.se.com>

3.9.4 Vulnerability Reporting and Management

Cybersecurity incidents and potential vulnerabilities can be reported via the Schneider Electric website: [Report a Vulnerability](#)

4. Installation

The EcoStruxure Transformer Expert application is cloud-based, and you can access it in a web browser without any software installation. The all-in-one ETE Probe includes everything required in a single package including integrated sensors, data gateway and cellular service that are providing the data from the transformer oil. For EcoStruxure Transformer Expert to receive the data, the ETE Probe must be able to connect to the Schneider Electric cloud services via local cellular network.

IoT data transmission

All data transmission to the cloud uses HTTPS with encryption.

Connectivity considerations

The all-in-one ETE Probe provides everything you need in a single unified package: the required sensors, data acquisition and cellular gateway are integrated into the ETE Probe. It utilizes the local cellular network to connect to the EcoStruxure cloud service. This makes the ETE Probe easy to integrate and connects seamlessly.

System Description

- The ETE probe communicates with the Cloud platform via 3G/4G signals. This is done by a plug and play dongle that is configured by the Schneider Electric before the probe is dispatched.
- The ETE probe comes with full provision telecommunications functions requiring no configuration at installation time.
- The ETE probe uses a local 3G/4G network. Contact Schneider Electric Support in your respective country to identify the local network used by the probe.
- The 3G/4G interface is powered down when not uploading.

Type of Dongle

Two different types of dongles are available, depending on geographic location:

- Europe and Asia Pacific: IK41VE modem (commercial reference includes EU)
- North America: 1K41US modem (commercial reference includes NA)

Powering the EcoStruxure Transformer Expert Probe

- After the sensor is fully installed, power on the device. The black end cap on the probe body has an LED indicator.
- Wait for 5 to 10 minutes for the probe to complete its first upload.

Connecting to the Website

- On a phone, laptop, or tablet, go to <https://ecostruxure-transformer-expert.se.app/#/install-check> and enter the seven-digit log-on ID, to check the status of the probe through the website.
- The <https://ecostruxure-transformer-expert.se.app/#/install-check> website confirms if the unit has successfully uploaded and displays the initial temperature and moisture readings from the probe.
- If the installation is successful, data is available on the Schneider Electric website <https://ecostruxure-transformer-expert.se.app/#/install-check> within 30 hours of powering the ETE Probe unit.
- Authorized users receive an email containing their account information, which can be used to login and view data pertaining to the transformer.

5. Operation

Operational monitoring and incident response

Our global operations team continuously monitors EcoStruxure Transformer Expert for security threats. Automated intrusion detection systems monitor data traffic and log all inbound and outbound activity. We do penetration testing regularly and are ready to manage vulnerabilities effectively in case of a cybersecurity incident. We have documented and tested procedures for a quick system recovery.

User Data & Dashboard

- Use of encrypted upload from the back-end processing service to the user-accessible website
- Secure password and HTTPS encrypted access for users
- Benchmark password security including password hardness management.
- User interface only holds and displays processed plot-based data and outputs i.e., no raw data.

User authentication and authorization

To log in to EcoStruxure Transformer Expert, users need a Schneider Electric ID. A Schneider Electric ID is a unique identifier that is used across multiple Schneider Electric products and services. The Schneider Electric ID is part of the Schneider Electric Customer Identity and Access Management System, a centralized set of policies and technologies for authentication and authorization.

In EcoStruxure Transformer Expert, each user is assigned a role and access permissions that determine what this user can do and which data they can access. The following shows a list of user roles that determine what a user can do:

Name	Role	Description
User	Viewer	A viewer can only view information (all data can be viewed)
Admin	Administrator	An Admin can view information, configure transformers, and manage user.

6. Frequently Asked Questions

Q: Where is EcoStruxure Transformer Expert hosted? Where is my data stored?

A: EcoStruxure Transformer Expert is hosted in a Microsoft Azure data center.

Q: What protocol is used to send data to EcoStruxure Transformer Expert?

A: All data is sent using Secure HTTP (HTTPS).

Q: Is multi-factor authentication supported?

A: Yes.

7. Resources

General resources:

- [Schneider Electric Data Privacy Policy](#) (Opens the policy webpage)
- [Schneider Electric Cybersecurity and Data Protection Posture](#) (Opens the posture webpage)
- [Microsoft Service Trust Portal](#) (Opens the portal webpage)



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Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison – France

Phone: +33 (0) 1 41 70 00
www.se.com

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

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