Ekip Connect

User Manual

ABB

Contents

1 - About this manual

Intended users of this instruction manual

This manual presents the functions and related instructions specifically for User and Digital User profiles.

Warranty and liability limitations

- There are no expressed or implied agreements, understandings or warranty statements, including warranties of merchantability or fitness for a particular purpose, beyond those specifically established by an existing contract between the parties. This type of contract establishes all the seller's obligations. The contents of this document will not become a part of, neither will they modify any previous or existing agreement, commitment or relationship.

- The information, indications, descriptions and safety notes in this document are based on ABB's experience. This information must not be considered as comprehensive or inclusive of all possible cases.

2 - Safety information

General information

⚠️ WARNING! Dangerous voltage that can cause electric shock, burns or death. Do not handle, install, use or service this product until you have read the instructions.

⚠️ WARNING! PLEASE READ THIS DOCUMENT CAREFULLY BEFORE INSTALLING AND USING THIS SOFTWARE WITH THE DEVICES THAT CAN BE CONFIGURED AND MONITORED.

These instructions must be archived along with any other instructions, drawings and descriptive documents. Keep this document in an accessible place for consultation when required.

Consult the manuals of the connected devices when installing the software. This software is designed to function in accordance with the compatibility specifications. Consult the relative section before use.

The software must be used by qualified personnel who have read all the installation instructions. Follow the safety procedures indicated by your company and make sure that the devices are in safe conditions according to regulations.

Do not touch covers, open doors or work on the apparatus connected to the software unless the power supplied to the switchboard in which it is housed has been disconnected and before all the circuits have been de-energized.

Before carrying out checks, visual inspections and tests on the device, disconnect all power and voltage supplies.

Information for circuit breakers

⚠️ DANGER! The following operations are mandatory before proceeding with any work on a circuit-breaker:

1. Open the circuit breaker and make sure that the springs of the operating mechanism are not loaded (if applicable).
2. Disconnect the circuit breaker (power circuit and auxiliary circuits) from the electric power source and earth the terminals in a visible way, on both the supply side and load side.
3. Detach the circuit breaker from the installation. Remove it from the switchgear if possible.
4. Put equipment in a safe condition as established by the standards and laws in force.

⚠️ CAUTION!

- This document does not contain the detailed descriptions of each page available when each compatible device is connected, the safety regulations or the possible interactions with the maintenance operations. Please note that this document contains warnings and precautionary instructions, but does not envisage all the possible modes in which the software can be used and that may or may not be recommended by ABB, nor the possible risks that each of these modes implies, neither can ABB investigate these issues. Anyone who implements procedures or uses equipment that may or may not be recommended by ABB must make very sure that neither the safety of the personnel nor that of the installation is endangered by the chosen procedures or equipment. Please contact ABB if further information is required or if specific problems arise that have not been explained sufficiently.
- This document is designed for use by qualified personnel. It is not intended as a substitute for an adequate training course or adequate experience with the safety procedures of this software connected to the equipment.
- It is the responsibility of the Customer, the installer or the end user to make sure that warning signs are affixed and that all the access doors and operating handles are closed in safety conditions when the equipment connected to the software is left even only momentarily unattended.
- All information in this document is based on the latest product data available at the time of printing. ABB reserves the right to make changes at any time and without prior notice.

3 - Introduction to Ekip Connect

3.1 - ABB Ekip Connect

Presentation

Ekip Connect is ABB's software for interfacing ABB-compatible low-voltage devices via computer. It allows you to configure, monitor, control and test devices.

Ekip Connect can connect to devices via USB, serial network or Ethernet network. Connection is made via the front test connector, or via communication modules installed on the device.

ℹ️ **Note**: *Some device models can only be configured with Ekip Connect.*

Ekip Connect functions

Ekip Connect, depending on the device, can perform the following main functions:

- Monitor the status of the connected device and record information.
- Execute the operation, reset, signalling commands, etc.
- Configure protection releases and devices with customised parameters and logic.
- Download information from releases equipped with Data logger.
- Create communication reports.
- Save and restore configurations.
- Perform tests on releases.
- Update firmware of connected devices, modules and accessories.
- View, manage and activate software packages from ABB Marketplace to enable new functionality on devices.
- Manage provisioning of devices on the ABB Ability cloud platform (legacy functionality).

Interface

Area	Description
A	**Scanning**: page to scan devices ("Introduction" on page 9). **Devices**: list of devices detected by the scan allowing you to select another device to communicate with without moving from the current page.
B	Summary information of the communicating device: • Customised device name (parameter **CB Tag name** editable in **Classic view** > **Unit configuration** > **Customisable information**) • Device type (parameter **CB Type** also visible in **Classic view** > **Information** > **General parameters**) • Device family identifier • Device status: ◦ 💤 : found but connection not yet established ◦ ⊘/⊘ (alternately): connected and operating normally ◦ ⚠/⚠ (alternately): connected but with active alarms ◦ ⊗ : disconnected
C	Pages available for the communicating device ("Communication with devices" on page 17). ⓘ *Note: the pages are displayed only if there is a device communicating.*
D	**Marketplace**: page to purchase, view and install software packages for the device ("Marketplace" on page 98). **Tools**: page for access to Ekip Connect tools ("Functions of Ekip Connect (Tools)" on page 56).
E	Top bar with buttons: • 💡 : to access the Idea Tank page to provide product suggestions and feedback. • 👤 : to authenticate yourself, find out the enabled role and duration, request a role and disconnect. • 🔔 : to open the notification area for updates, news, bug fixing, discounts and marketplace opportunities. • ⋮ : to open the software settings menu, in particular: ◦ Change language and interface theme. ◦ Display the message area ("Message area" below). ◦ Update the software and download the latest firmware for devices. ◦ Find out the software version, user licence, legal notes and list of open source components.
F	Work area that is populated according to the page selected.

Message area

🖱 *To display the message area, in ⋮ click on **View** and enable **Lower area**.*

The message area displays messages sent to devices.
The following operations are possible:

Button	Function
Clear All	Deletes the message list.
⊗ **Errors**	Shows/conceals the error messages.
ⓘ **Warnings**	Shows/conceals the warning messages.
ⓘ **Messages**	Shows/conceals the information messages.

Connection to Internet

Ekip Connect can also be used in offline mode.
The PC only needs to be connected to the Internet for the following functions:

• Perform authentication for Ekip Connect, after which the user remains authenticated for 30 days, even without an Internet connection.
• Purchase a package in Marketplace.

- Activate a package on the device from Marketplace.
- View the licences available to the user and related to the connected device.
- Manage provisioning of devices on the ABB Ability cloud platform (legacy functionality).

3.2 - Users and roles

Introduction	To access advanced functions of Ekip Connect you need to have an ABB account. Each registered user can perform the functions enabled for the associated role.

Request an ABB user	In the top bar, click on 👤 and then **Register**.

Request a new role	ℹ️ **Note**: *to find out the functions available for each role, please refer to document 9AKK108467A9236 available* [here](.).
	It is possible to request association with a role for specific, even temporary, needs. Perform the following procedure:
	1. Click on 👤 : the **My account** area appears.
	2. Click on **New role**, fill in the requested information and click on **Submit Request**: the request is submitted.
	ℹ️ **Note**: *association with the role requires evaluation times that vary depending on the role and the duration of validity requested.*

Update the role	1. Click on 👤 : the **My account** area appears.
	2. Click on **Update role**: role privileges are updated to the latest role configuration.

3.3 - Installation of Ekip Connect

System requirements

	Minimum requirements	Recommended requirements
Processor	• Intel core i3 CPU (from 6th generation) or equivalent • 2.3 GHz / 3.33 GHz processor upwards (32 or 64 bit)	• Intel core i5 CPU (from 6th generation) or equivalent • 2.3 GHz / 3.33 GHz processor upwards (32 or 64 bit)
Memory	2 GB RAM	4 GB RAM
Storage	1GB	2GB
Screen resolution	1280 x 720 or better	1920 x 1080 or better
Operating System	Win7 (with Admin rights)	Win10 (with Admin rights)
Internet connectivity	-	Required for: • Performing authentication. • Accessing advanced features (Ekip Connect updating, Marketplace, firmware updating, etc.)
Physical connection ports	-	1 Ethernet
Libraries/Dependencies	Microsoft .Net Framework 4.8	Microsoft .Net Framework 4.8

Obtain the installation file

To download the latest available version of Ekip Connect, click here.

3.4 - First steps

Start up Ekip Connect	At startup, Ekip Connect opens its interface and may display a message for managing the automatic software updating.
	>> For details on automatic updates, see "Automatic updating" on page 96.
Authenticate yourself in Ekip Connect	In the top bar, click on ⛒ and enter your username and password to authenticate yourself or to register.
	ⓘ **Note**: *to perform authentication for Ekip Connect an Internet connection is required. After that, the user remains authenticated even without an Internet connection.*
Disconnect from Ekip Connect	In the top bar, click on ⛒ and then on **Logout**.

4 - Connection with devices

4.1 - Introduction

Foreword Ekip Connect can connect to several devices simultaneously but only communicate with one device at a time.

Available scans From the **Scanning** page, it is possible to connect with devices through the following types of scanning:
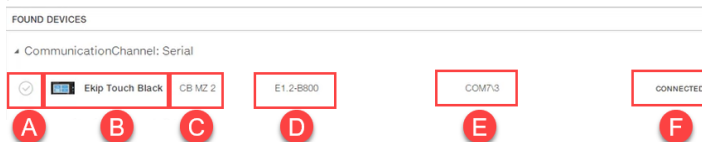
Connection type	Description	Procedure
T&P	Scan via USB Flash Drive by means of the Ekip T&P or Ekip Programming converter.	"Scanning via ABB key" on page 11
Serial	Scan that looks for devices connected via serial network.	"Serial bus scan" on page 12
network	Scan that searches for devices connected via an Ethernet network. Each device is recognised via an IP address.	"Ethernet network scan" on page 14
Manual	Scan with manual definition of parameters and Modbus connection method. Especially useful for devices without SlaveID (identifier for communication between devices ABB S.p.A)	"Manual scanning" on page 16

i **Note**: *when using the software for the first time, it is recommended to use a connection via USB (Ekip T&P or Ekip Programming).*

i **Note**: *devices can be connected via BLE (Bluetooth Low Energy) through the EPiC app. For more information, please refer to the app documentation available* here.

Device information on page Scanning In section **Devices found**, the devices found after scanning are listed. The following information is provided for each device:

| Part	Description
A	Device status: • Zz : found but connection not yet established • ⊘/⊘ (alternately): connected and operating normally • ⚠/⚠ (alternately): connected but with active alarms • ⊗ : disconnected *i* **Note**: *a disconnected device remains visible until the next scan or a restart of Ekip Connect.*
B	Device family identifier and corresponding image, if available
C	Customised device name (parameter **CB Tag name** editable in **Classic view** > **Unit configuration** > **Customisable information**)
D	Device type (parameter **CB Type** also visible in **Classic view** > **Information** > **General parameters**)
E	IP address and/or port used for connection
F	• **CONNECTED**: device connected and communicating • **SELECT**: button to enable communication with the selected device *i* **Note**: *Ekip Connect can only configure and monitor one device at a time. Enabling communication with the selected device inhibits communication with the previously enabled device.*

4.2 - Connection modes

Possible connections between device and Ekip Connect

It is possible to connect Ekip Connect to a device via:

- connections via USB (Ekip Test & Programming and Ekip Programming)
- connections via serial network (Modbus RS485)
- connections via Ethernet network (Modbus TCP, Ekip Link)

! **IMPORTANT**: *when connecting via USB, using accessories other than those from ABB may damage the device.*

Connection via Ekip T&P and Ekip Programming
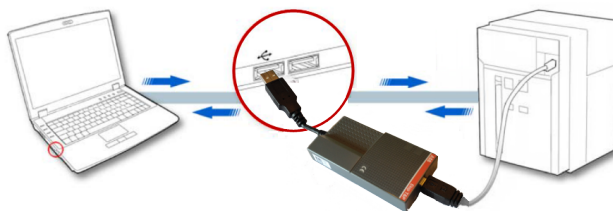
This architecture is for connection via Ekip T&P and Ekip Programming converters. For test functions, it is necessary to connect via Ekip T&P. Connect the converter to a USB port on the computer on one side and to the front connector on the device on the other side.

! **IMPORTANT**: *only use the cables supplied with the converter to connect to the device. Do not use cables other than those supplied.*

Connection via serial line

Use system communication modules (e.g.: PR122/P with PR120/D-M module) or integrated systems (e.g.: PR223EF).

You need a serial line converter to convert the RS485 line (device side) to the line available on the computer (e.g.: RS232, USB, Ethernet). The communication protocol used is Modbus RTU.

Connection to the system bus is required. Connection to the system bus is indicated by W1 and W2 on the circuit diagram of the devices.

>> For details about network configuration, please refer to the document "Communication via bus with ABB circuit-breakers", available [here](#)*.*

Connection via Ethernet

! **IMPORTANT**: *to connect to the device, Ekip Connect must be connected to the same Ethernet network to which the device is connected.*

For circuit breakers, use the Ekip Com communication module for the relevant network protocol (e.g. Ekip Com Modbus TCP/IP and Ekip Com Ethernet/IP).

>> For details about network configuration, please refer to the document "Communication via bus with ABB circuit-breakers", available [here](#)*.*

For other devices equipped with an Ethernet port, connect the Ethernet cable directly to the device.

4.3 - Scanning via ABB key

Starting the ABB key scan

The procedure for scanning to search for connected devices (Ekip T&P or Ekip Programming) by means of ABB key is described below.

1. On page **Scanning** in **Connection to devices**, click on **SCANNING** next to **T&P**: Ekip Connect starts the scan.
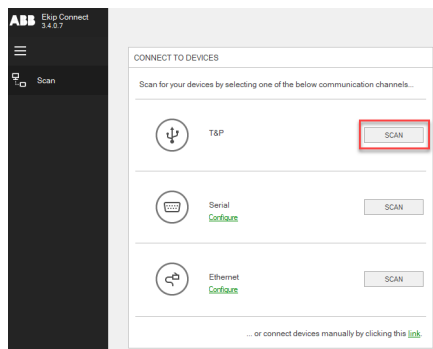
> ⚠ **IMPORTANT**: if the software fails to find the drivers when scanning is started, a window will appear asking for them to be installed. See "Installing drivers for ABB key scanning" below.

> ⓘ **Note**: while scanning is in progress, it is possible to use Ekip Connect. However, it is not possible to launch another scan.

2. When the scan is finished, the menu items for the device found will appear and the page **Scanning** is updated with information about the device. The main page of the device also opens.
3. Check that the device status is CONNECTED.
4. Select the required page and start configuring and monitoring the device.

> ⓘ **Note**: if the scan terminates and no device has been found, consult ""Troubleshooting" on page 100".

Installing drivers for ABB key scanning

When ABB key scanning starts, the respective drivers must already be present. If the system is unable to install them on its own, follow the procedure below and install them manually:

> ⚠ **IMPORTANT**: to install the drivers, you must have administrator rights.

Step	Action
1	If the software fails to find the drivers when scanning is started, a window will appear asking for them to be installed. In the window displayed, click on **OK** or **Install**: the folder containing the executable x.x.x_Driver_Setup.exe opens.
2	Right-click on the executable and select **Run as administrator**: a window for automatic installation will appear momentarily, after which it will close automatically.
3	To make sure all the drivers are installed, repeat the cation in step 2.
4	Close and restart Ekip Connect.

> ⓘ **Note**: if difficulties are encountered when the drivers are installed, consult the indications available at http://www.ftdichip.com/Support/Documents/InstallGuides.htm.

4.4 - Serial bus scan

> **Note**: communication with the serial module (Ekip Com modbus RTU) is only possible if the "Local bus" parameter is enabled. Please refer to the device manual for information on enabling it.

How to start scanning via Serial Bus

The procedure for scanning to search for devices connected via Modbus RS485 serial network is described below.

1. On page **Scanning** in **Connection to devices**, to configure the serial bus parameters, click on **Configure** next to **Serial**.
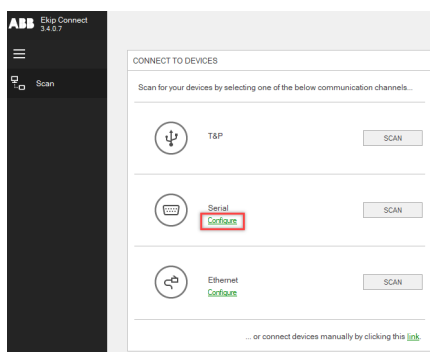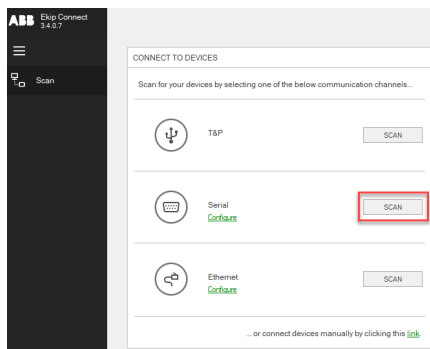

2. Set the parameters and click on **OK**.

   IMPORTANT: the values set must match those set on the device.

   >> For details about the parameters for serial communication via Bus, see "Serial scan parameters" on the next page.

3. Click on **SCANNING** next to **Serial**: Ekip Connect starts the scan.

> **Note**: while scanning is in progress, it is possible to use Ekip Connect. However, it is not possible to launch another scan.

4. When scanning is finished, proceed as follows:

If it found...	Then...	And then...
only one device	• The menu items for the device are shown. • The page **Scanning** is updated with information on the device found.	1. Check that the device status is CONNECTED. 2. Select the required page and start configuring and monitoring the device.
more than one device	• The menu items for which Ekip Connect automatically activated communication appear. • The page **Scanning** is updated with information on the device found.	1. Click on **SELECT** corresponding to the device in question. 2. Check that the device status is CONNECTED. 3. Select the required page to start configuring and monitoring the device.

> **Note**: if the scan terminates and no device has been found, consult ""Troubleshooting" on page 100".

Serial scan parameters   The parameters for the serial scanning are described below.

ⓘ **Note**: *where provided, if you are not certain about the values to be selected, choose* **Select all** *in the list box.*

| Parameter	Description	Default value for ABB devices
COM	List of available communication ports on start-up of Ekip Connect. ❗ **IMPORTANT**: *if a new adapter has become available while performing Ekip Connect, click on* **Update ports**. ⓘ **Note**: *select* **Show only ABB keys** *to show only ports with Ekip T&P communication units.*	-
Baudrate	Communication speed (baud rate).	19200 bits/second
Parity	Information package error monitoring modes.	EVEN
Timeout	Maximum wait time for a response from the devices being searched for.	100 ms
Addresses	Addresses to search for compatible devices. • Select 1...31: limits scanning to addresses from 1 to 31 • Scan reserved parameters: extends scanning to addresses from 248 to 254.	3, 4 and 247

4.5 - Ethernet network scan

ⓘ Note: *communication with the Ethernet module (Ekip Com modbus TCP) is only possible if the "Local bus" parameter is enabled. Please refer to the device manual for information on enabling it.*

How to start scanning via Ethernet

The procedure for scanning to search for devices connected by Ethernet network is described below.

1. On page **Scanning** in **Connection to devices**, to configure Ethernet network parameters, click on **Configure** next to **network**.
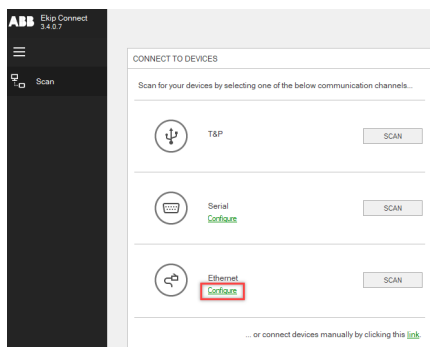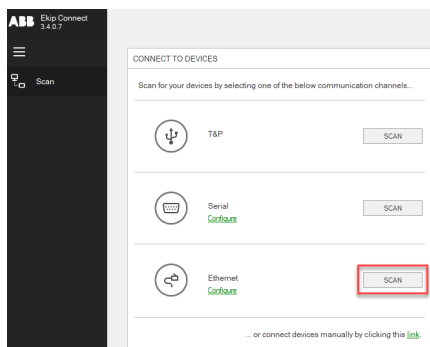

2. Set the parameters and click on OK.

   IMPORTANT: *the values set must match those set on the device.*

   >> For details on the network communication parameters, see "Ethernet scan parameters" on the next page.

3. Click on **SCANNING** next to **network**: Ekip Connect starts the scan.

ⓘ Note: *while scanning is in progress, it is possible to use Ekip Connect. However, it is not possible to launch another scan.*

4. When scanning is finished, proceed as follows:

If it found...	Then...	And then...
only one device	• The menu items for the device are shown. • The page **Scanning** is updated with information on the device found.	1. Check that the device status is CONNECTED. 2. Select the required page and start configuring and monitoring the device.
more than one device	• The menu items for which Ekip Connect automatically activated communication appear. • The page **Scanning** is updated with information on the device found.	1. Click on **SELECT** corresponding to the device in question. 2. Check that the device status is CONNECTED. 3. Select the required page to start configuring and monitoring the device.

ⓘ Note: *if the scan terminates and no device has been found, consult ""Troubleshooting" on page 100".*

Ethernet scan parameters   The parameters for the Ethernet scan are described below.

Parameter	Description
Network adapters	Allows you to select the network adapter. **IMPORTANT**: *if a new adapter has become available while performing Ekip Connect, click on* **Refresh**. • Intercept unsolicited ARP packets: enables broadcast communication search for automatic network scanning.
Timeout	Maximum wait time for a response from the devices being searched for.
IP Addresses	• **Use IP address list**: search for the device in the entered address list. • **Use IP address range**: search for the device in the entered address range.
Slave Addresses	Slave address of the device.

4.6 - Manual scanning

Starting manual scanning

The procedure to search for a device manually is described below.

1. On page **Scanning** in **Connection to devices**, click on **Link**.
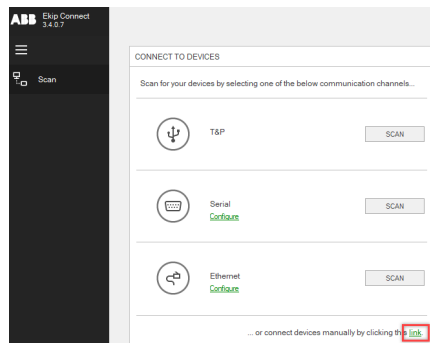
2. Select the device type, device slave address and communication protocol.
3. Set the Modbus communication parameters of the device to be searched and click on **OK**.

   IMPORTANT: the values set must match those set on the device.

   >> For details about the parameters for serial communication via Bus, see ""Manual scanning parameters" below" .

4. When scanning is finished, the available menu items for the device appear and the page **Scanning** is updated with information about the device found. The main page of the device also opens.
5. Check that the device status is **CONNECTED**.
6. Select the required page to start configuring and monitoring the device.

   Note: if the scan terminates and no device has been found, consult ""Troubleshooting" on page 100".

Manual scanning parameters

The main parameters for manual scanning are described below.

Parameter	Description
RTU Modbus	
Port name	Port to be used for scanning. : updates the list of available ports.
Timeout	Maximum wait time for a response from the devices being searched for (default 100 ms).
Modbus TCP	
Timeout	Maximum wait time for a response from the devices being searched for (default 300 ms).

5 - Communication with devices

5.1 - Introduction

Device pages

For the communicating device, Ekip Connect displays pages for configuring and monitoring the device. The pages contain information and commands specific to each device. Where applicable, please refer to the device documentation.

The pages display parameters and values graphically. The **Classic view** page shows the parameters and values from the other pages and, for some devices, also additional parameters, in list mode.

Note on the images

The images of Ekip Connect shown on the following pages are examples for the device category.

Overview

For each page, the following table shows the categories of devices that require that page. If it is not required for all devices, a number of devices are shown by way of example. To find out which devices belong to each category, see "List of devices per category" below.

>> For details on the pages enabled for each individual device, please refer to document 9AKK108467A9237 available here.

Page	External unit for circuit breakers	Circuit breakers	Energy meters	Station	Fuse-disconnectors, change-over switches
Dashboard	x	x	M4M	x	-
Information	x	x	-	x	-
Configuration	x	x	M4M	x	-
Monitoring	x	x	M4M	E-Hub 1.0	-
IO setup	-	-	-	E-Hub 1.0	-
Protections	x	x	-	-	-
Communication	-	-	-	E-Hub 1.0	-
Connectivity	-	-	-	E-Hub 2.0	-
Modules	x	x	-	E-Hub 2.0	TrueOne Touch
IO	-	-	M4M	-	-
Notifications	-	-	M4M	-	-
Classic view	x	x	x	x	x

List of devices per category

Category	Devices
External unit for circuit breakers	Ekip UP Ekip UP+
Circuit breakers	XT Emax2 CSU-2 TVOC-2
Energy meters	EQmeter InSiteProM M2M M4M EQmatic IM300-U IM300-I IM301 IM302 IM303 EM400 CMS700

Category	Devices
Station	E-Hub 1.0 E-Hub 2.0
Fuse-disconnectors, change-over switches	Slim line XR ITS 2.1 TrueOne

6 - Communication with external units and circuit breakers

6.1 - Useful information

Operating mode

The device can be in one of the following operating modes:

- local: configuration via Ekip T&P or Ekip Programming is enabled. In general, this is the mode for the first configuration of the device, which also includes the configuration of the device in relation to the installation in which it is installed.
- remote: configuration via Ekip T&P or Ekip Programming is disabled. In general, this is the mode that allows remote control and configuration of the release and protection function parameters.

The current operating mode is shown on page Information.
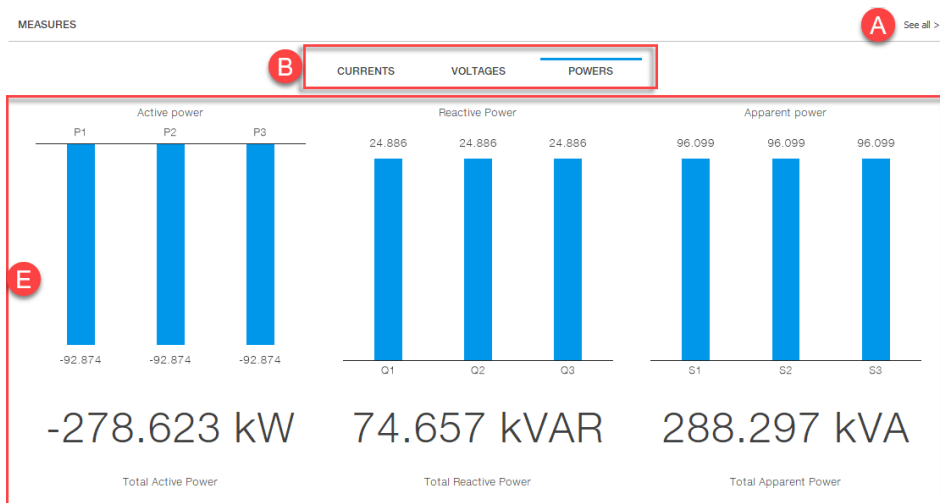
6.2 - Dashboard

Page functions

- Display the summary or most critical information for the device
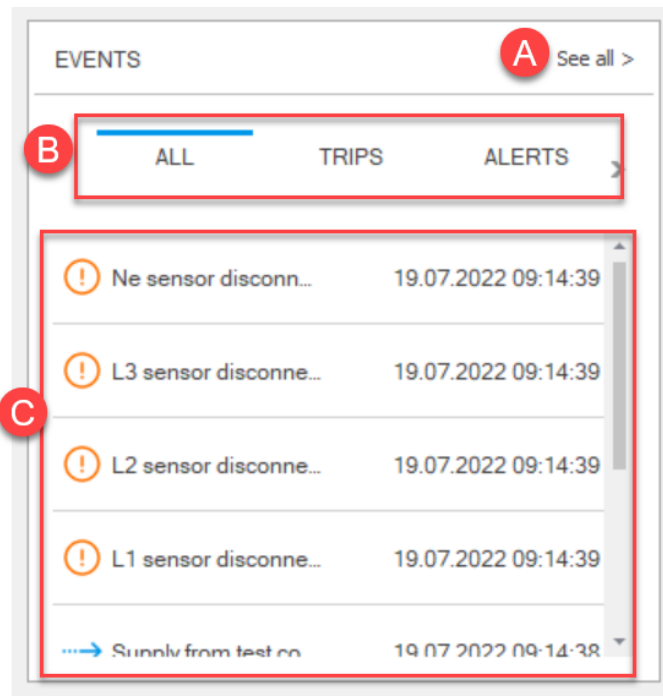- Access pages with more detailed information.

What it looks like

Area Measurements

Part	Description
A	Button to access the **Measurements** section of page "Monitoring" on page 26
B	Measurements menu
C	Current measurement display area • **Current RMS**: measurements acquired: ○ Current of each phase ○ **Ine**: neutral current ○ **IGnd**: internal earth fault current ○ **IGndEx1**: external earth fault current • **Max. current value**: maximum phase current measured. Value calculated since power was supplied to the device or since the last manual reset. • **Min. current value**: minimum phase current measured. Value calculated since power was supplied to the device or since the last manual reset. • **Reset**: button to reset minimum and maximum values
D	Voltage measurements display area • **Voltages RMS**: measurements acquired: ○ voltage of each phase (single and line-to-line) ○ **U0**: neutral voltage • **Max. voltage value**: maximum phase voltage measured. Value calculated since power was supplied to the device or since the last manual reset. • **Min. voltage value**: minimum phase voltage measured. Value calculated since power was supplied to the device or since the last manual reset. • **Reset**: button to reset minimum and maximum values
E	Power measurements display area: • phase and total active power • phase and total reactive power • phase and total apparent power

Area Events

Part	Description
A	Button to access the Events section of page "Monitoring" on page 26.
B	Events menu: • **All**: displays the last six events recorded, excluding trips and alarms • **Interventions**: displays the last six trips recorded. • **Alarms** : displays the last six alarms recorded.
C	Area that displays the events selected in **[B]**: • ⤍ : status change • ⊕ / ⊝ : warning • ⊗ : error • ⓘ : information • ✎ : change

Area States

Part	Description
Circuit-breaker state	• o–o : closed • o⁄o : open • o?o : undefined
Circuit-breaker trip	• ⋀ : tripped • ⫴ : not tripped
Contact wear	0% = no wear 100% = completely worn
# Operations	Total number of manual operations, interventions, failed interventions and test interventions.

Area Information

INFORMATION   Ⓐ See all >

Circuit Breaker   Trip unit

Ⓑ EmaxM3 WE1   Ⓔ 2000 A

Ⓒ E2.2N2000   Ⓕ 400 V

Ⓓ 3 Poles   Ⓖ 50 Hz

Part	Description
A	Button to access the "Information" on page 45 page
B	Customised device name (parameter **CB Tag name** editable in **Classic view** > **Unit configuration** > **Customisable information**)
C	Device type (parameter **CB Type** also visible in **Classic view** > **Information** > **General parameters**)
D	Number of poles
E	Rated current (In)
F	Rated voltage (Un)
G	Frequency

Reset the minimum and maximum recorded values

ⓘ *Note*: *function only available if the device is connected to Ekip Connect via a point-to-point connection.*

1. In **Measurements**, click on the measurement type (**Currents** or **Voltages**) for which you want to reset the minimum and maximum values.
2. Click on **Reset**.

6.3 - Information

Page functions

- View device status information, general parameters and other information specific to the device and/or the installation where it is installed.

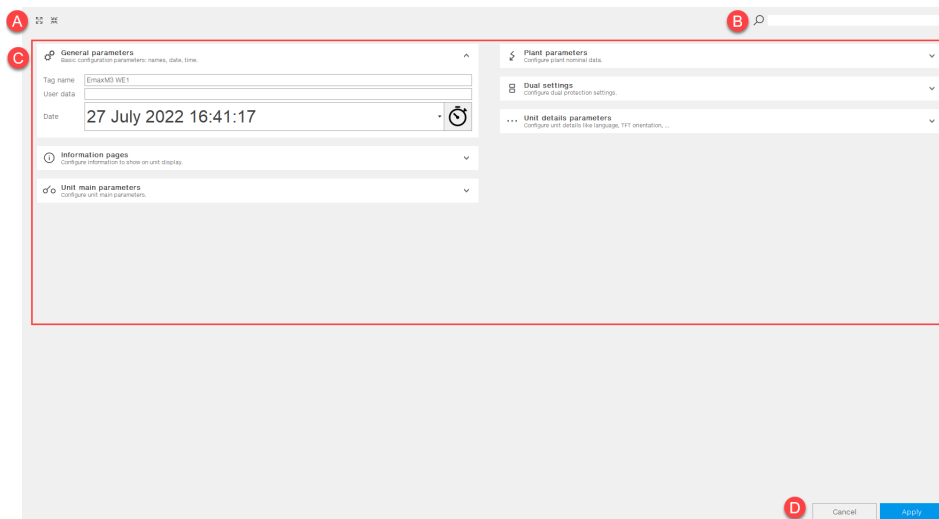**What it looks like**

| Part	Description
Rated data	- Device type - Serial number and software version of the release - Serial number and software version of the mainboard - Serial number and type of the device - Rated current (In) - Rated voltage (Un) - Number of poles - Reference standards - Circuit breaker last maintenance date - Cyclic direction of the phases
Circuit-breaker state	Circuit breaker status information including: - the information provided in section **States** of page Dashboard ("Area States" on page 22) - details of the number of operations recorded - the operating mode that determines whether or not certain configuration parameters can be changed ("Operating mode" on page 19)
A	Descriptor file in use
B	Link to view all the installed descriptor files

6.4 - Configuration

Page functions

- View and edit device parameters in relation to the installation where the device is installed.
- View and edit some internal configuration parameters of the device.

What it looks like

Part	Description
A	• ⤢ : expands all parameter sections. • ⤡ : collapses all parameter sections.
B	Text search area for parameters
C	Parameters section • ⌄ : expands the parameters section. • ⌃ : collapses the parameters section.
D	Button to apply or cancel changes

Edit a parameter

1. To view all parameters, click on ⤢ .
2. Set the desired value or option.
3. To transfer the change to the device, click on **Apply**: a message appears with the result of the operation.
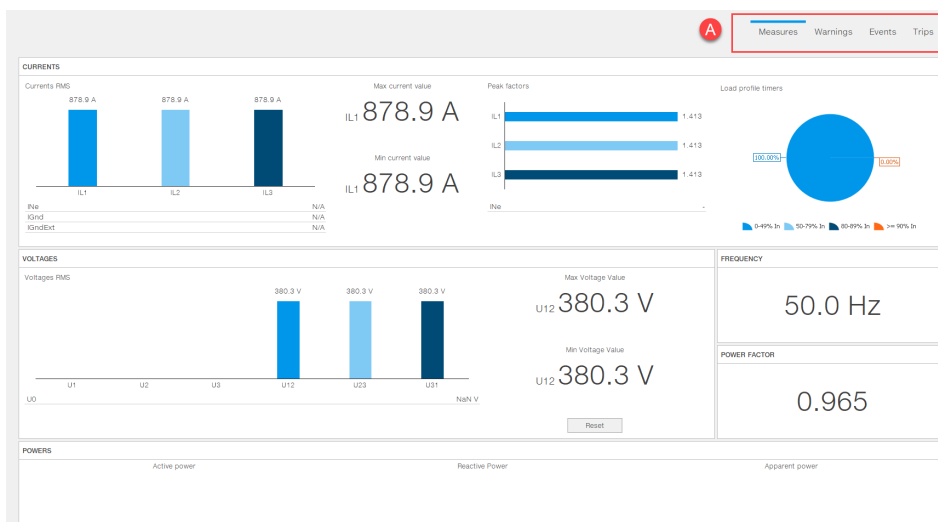
   ⓘ **Note**: *if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*
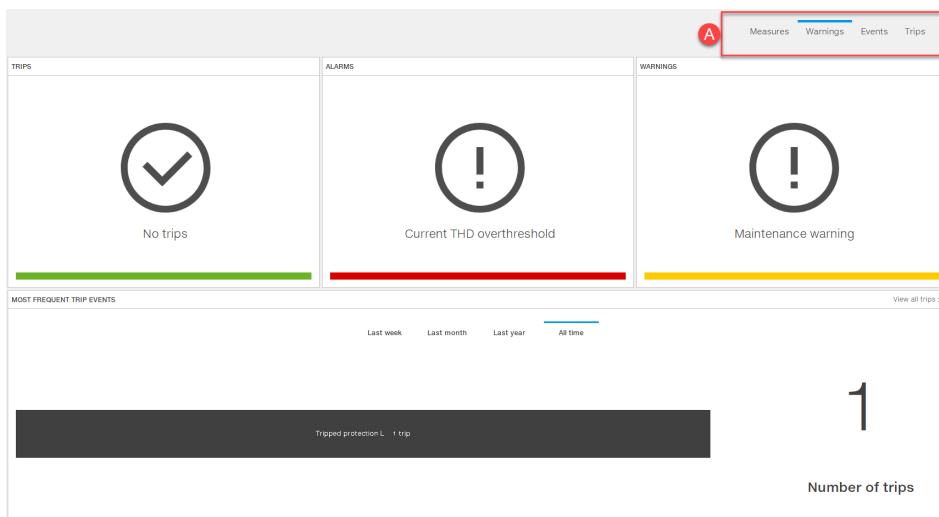
6.5 - Monitoring

Monitoring page functions
- View the measured data
- Display recorded events, alarms and trips of the protections.
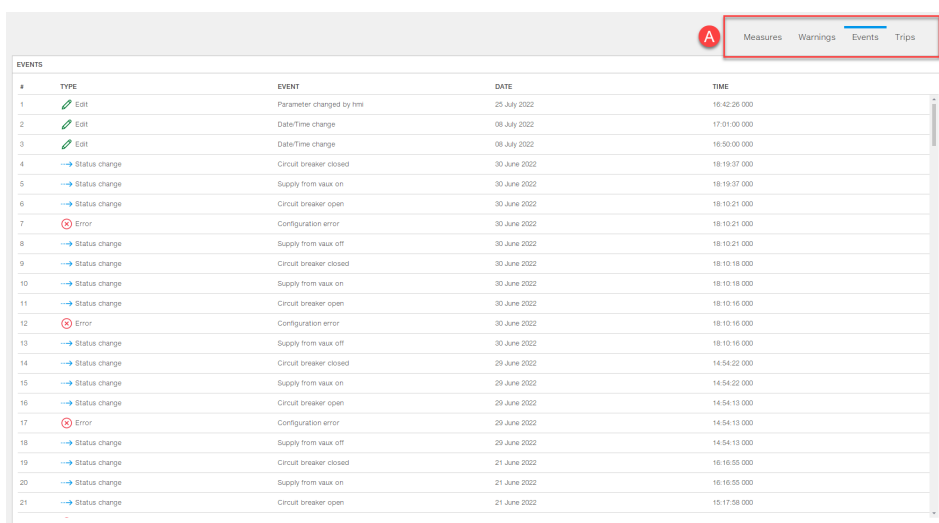
Page Measurements

Part	Description
A	Monitoring pages menu

Currents	Current measurement display area
	
	• **Current RMS**: measurements acquired:
	  ○ Current of each phase
	  ○ **Ine**: neutral current
	  ○ **IGnd**: internal earth fault current
	  ○ **IGndEx1**: external earth fault current
	• **Max. current value**: maximum phase current measured. Value calculated since power was supplied to the device or since the last manual reset.
	• **Min. current value**: minimum phase current measured. Value calculated since power was supplied to the device or since the last manual reset.
	• peak factors of each phase and neutral
	• graph of load profiles

Voltages	Voltage measurements display area
	
	• **Voltages RMS**: measurements acquired:
	  ○ voltage of each phase (single and line-to-line)
	  ○ **U0**: neutral voltage
	• **Max. voltage value**: maximum phase voltage measured. Value calculated since power was supplied to the device or since the last manual reset.
	• **Min. voltage value**: minimum phase voltage measured. Value calculated since power was supplied to the device or since the last manual reset.
	• **Reset**: button to reset minimum and maximum values

Frequency	Frequency measurement
Power factor	Power factor measurement
Power	Power measurements display area • phase and total active power • phase and total reactive power • phase and total apparent power
Energies	Energy measurements display area • total active energy, positive and negative • total reactive energy, positive and negative • total apparent energy, positive and negative

Page Alerts

Part	Description
A	Monitoring pages menu
Interventions	Display of the last five recorded trips in a continuous sequence
Alarms	Display of the last five recorded alarms in a continuous sequence
Alerts	Display of the last five recorded warnings in a continuous sequence
Most frequent trip events	Display of trips by type of protection that caused the trip during a given period (last week, last month, last year, all) **Number of trips**: total trips in the selected period **Shows all trips**: link to page Trip ("Page Interventions" on the facing page)

Page Events

Part	Description
A	Monitoring pages menu
Events	List of all recorded events, including alarms and trips. The following information is shown for each event: • type • name • recording date and time • duration

Page Interventions

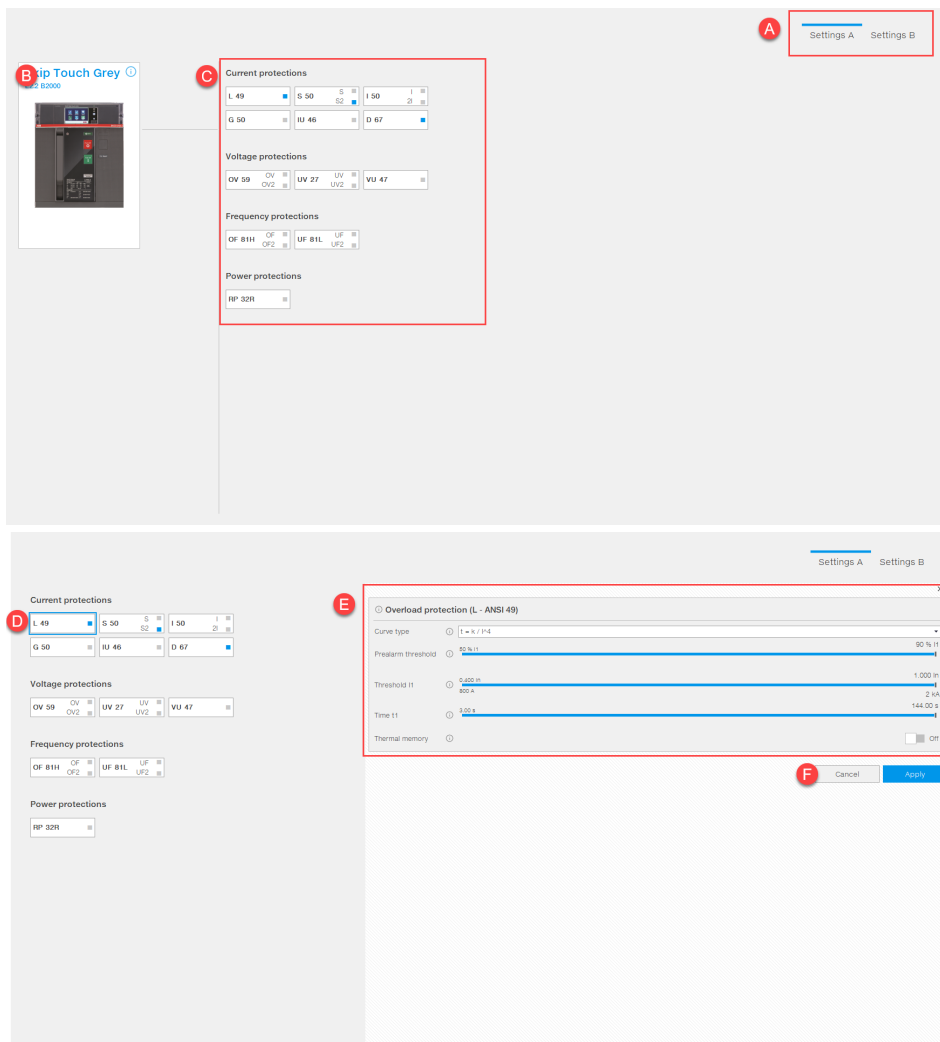| Part	Description
A	Monitoring pages menu
Interventions	List of trips recorded The following information is provided for each trip: • the protection that caused the trip • date and time of the trip • the measurements associated with the tripped protection • state of wear of the contacts (0% = no wear, 100% = completely worn)

6.6 - Protections

Page functions

- Enable and configure two protection configuration sets.

What it looks like

Part	Description
A	Menu to select the set of protections to be configured - **Settings A** - **Settings B**
B	Trade-name of device Customised device name (parameter **CB Tag name** editable in **Classic view** > **Unit configuration** > **Customisable information**) Photo of the device ⓘ : if available, opens a document with a sales presentation of the device.
C	List of available device protections. The following data are shown for each protection: - protection name - protection status - ▣ : active - ▢ : inactive
D	Protection selected for the configuration
E	Configuration parameters for the selected protection
F	Button to apply or cancel changes

Configure a protection

1. To configure a protection of set B, click on **Settings B**.
2. Click on the protection to be configured: the area containing the protection parameters appears.
3. Enter the parameters.
4. To transfer the configuration to the device, click on **Apply**: a message appears with the result of the operation.

   Note: *if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*
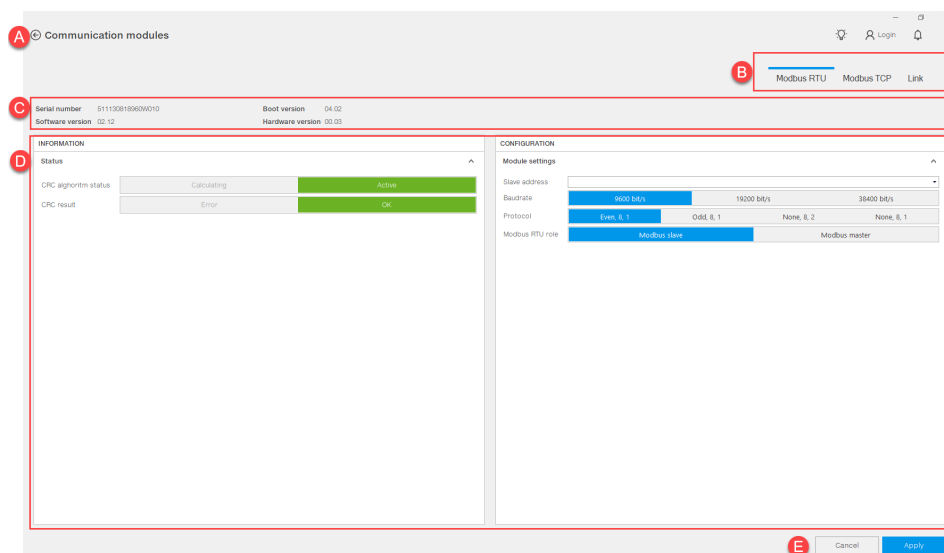
6.7 - Modules

Page functions

- Configure additional modules of the device.
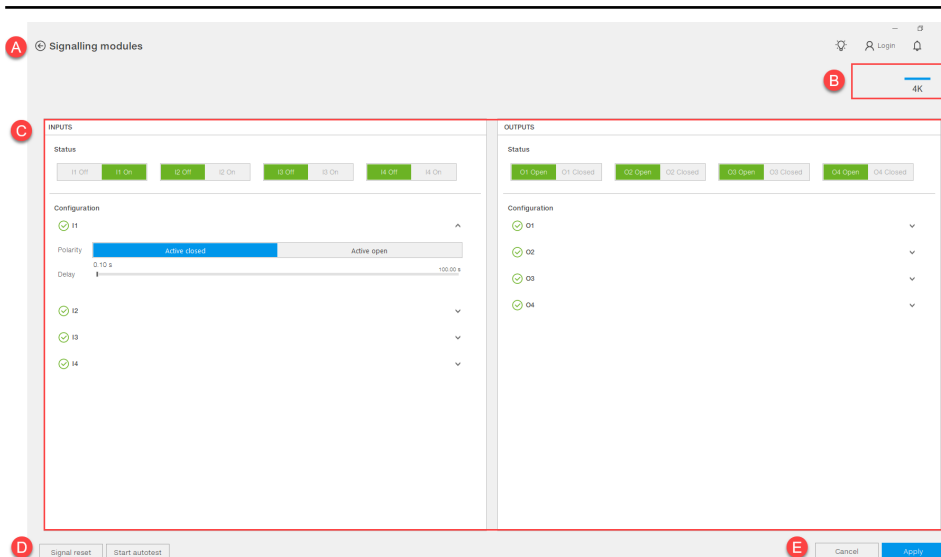
What it looks like (communication modules)

ⓘ **Note**: the page that appears after selecting the **Communication** button is described below.

Part	Description
A	Button to return to the main page with the additional module types
B	Menu with the available modules of the type selected ⓘ **Note**: the modules appear if the auxiliary power supply is present on the Ekip Supply module and if the "Local bus" parameter is enabled. Please refer to the device manual for information on enabling it.
C	Module data
D	**Status**: module status information **Configuration**: module configuration parameters
E	Button to confirm or cancel the change

What it looks like (signalling modules)

ⓘ **Note**: the page that appears after selecting the **Signal** button is described below.

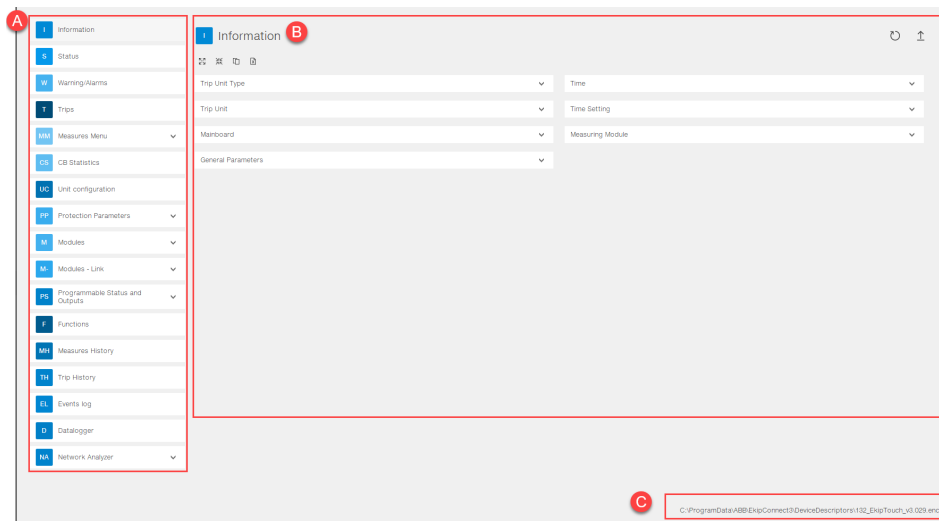| Part	Description
A	Button to return to the main page with the additional module types
B	Menu with the available modules of the type selected
C	Area for input and output parameters • **Status**: commands to enable or disable an input/output • **Configuration**: parameters to configure an input/output
D	• **Signal reset**: button to reset the signal • **Start autotest**: button to start lighting up the LEDs on the module to check whether the inputs/outputs are enabled ⓘ *Note*: *function only available if the operating mode status is **Local** ("Information" on page 24).*
E	Button to confirm or cancel the change

Configure an additional module

1. Click on the button corresponding to the type of module to be configured (**Communication** or **Signal**).

   ⓘ *Note*: *only buttons corresponding to module types physically installed on the device are enabled.*

2. If there are several modules, select the module you want to configure.
3. Enter the parameters.
4. To transfer the configuration to the device, click on **Apply**: a message appears with the result of the operation.

   ⓘ *Note*: *if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*

6.8 - Classic view

Page functions
- View and configure device parameters.
- View and configure device information.

What it looks like

Part	Description
A	Parameter pages menu
B	Area of parameter specific to the parameter category selected in **A** • ⤢ : expands all parameter sections. • ⤡ : collapses all parameter sections. • ▢ : copies parameters and values to the clipboard. • ⊠ : exports parameters and values to .xls. • ↻ : reads the saved values from the device. • ↥ : writes the set values to the device.
C	Descriptor file in use

Edit a parameter
1. To view all parameters, click on ⤢.
2. To read the saved values from the device, click on ↻.
3. Set the desired value or option.
4. To transfer the set values to the device, click on ↧ : a message appears with the result of the operation.

   ⓘ *Note: if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*

7 - Communication with energy meters

7.1 - Dashboard

Page functions

- Display the summary or most critical information for the device
- Access pages with more detailed information.

ℹ️ **Note**: *for the Insite Pro M device, the dashboard page allows direct access to the integrated web server of the device.*

What it looks like
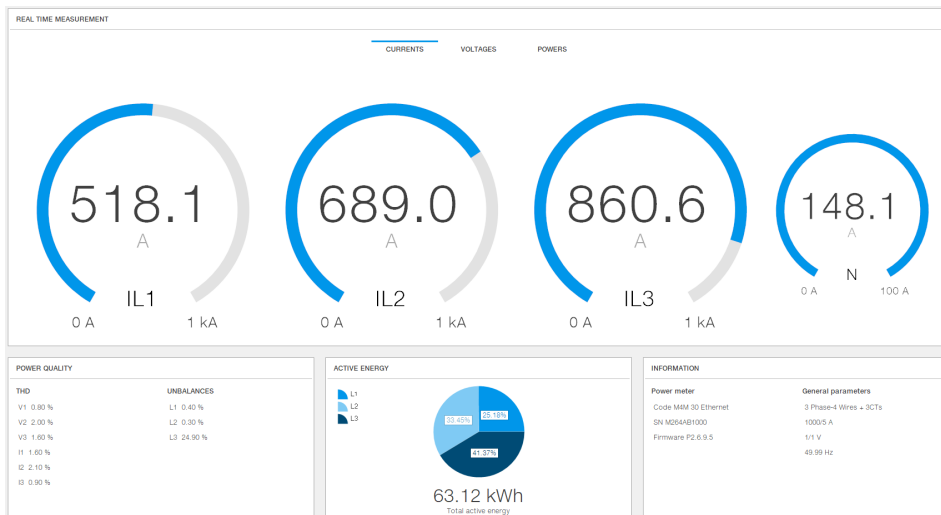
Area Real-time measurement
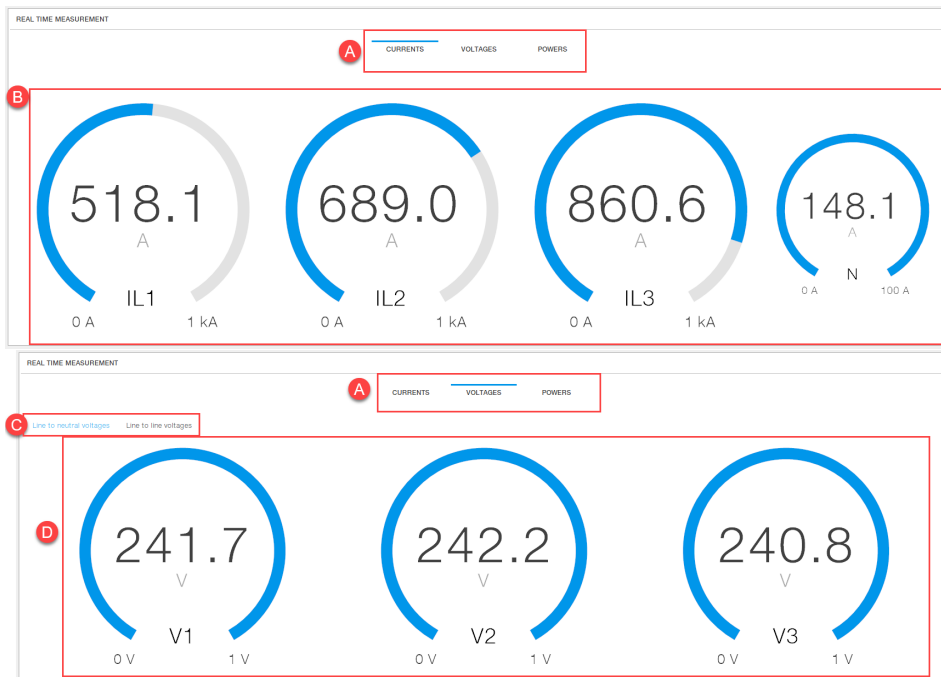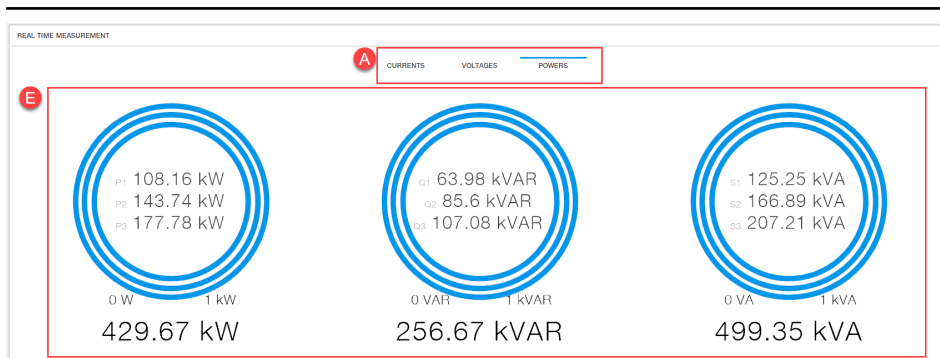
Part	Description
A	Measurements menu
B	Current measurement display area Real-time current measurements for each phase and the neutral.
C	Voltage measurements menu: • line voltage • phase voltage
D	Area for displaying voltage measurements selected in [C]. Real-time voltage measurements for each phase.
E	Power measurements display area • phase and total active power • phase and total reactive power • phase and total apparent power

Area Power quality

This area shows the THD values and the unbalance of the loads.

Area Active energy

This area shows per-phase and total active power values.

Area Information
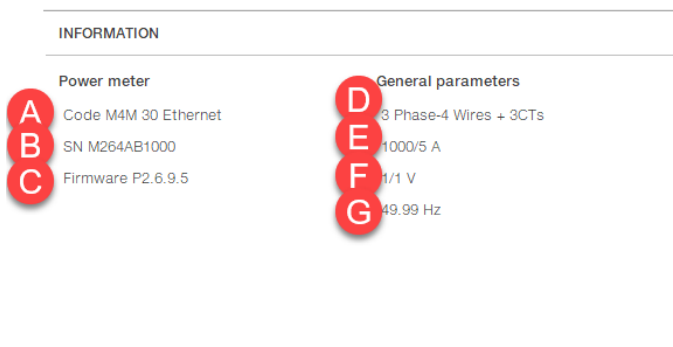
Part	Description
A	Device model
B	Device serial number
C	Device firmware version
D	Network configuration type
E	Current transformation ratio
F	Voltage transformation ratio
G	Frequency

7.2 - Configuration

Page functions
- View and edit device parameters in relation to the installation where the device is installed.
- View and edit some internal configuration parameters of the device.

What it looks like
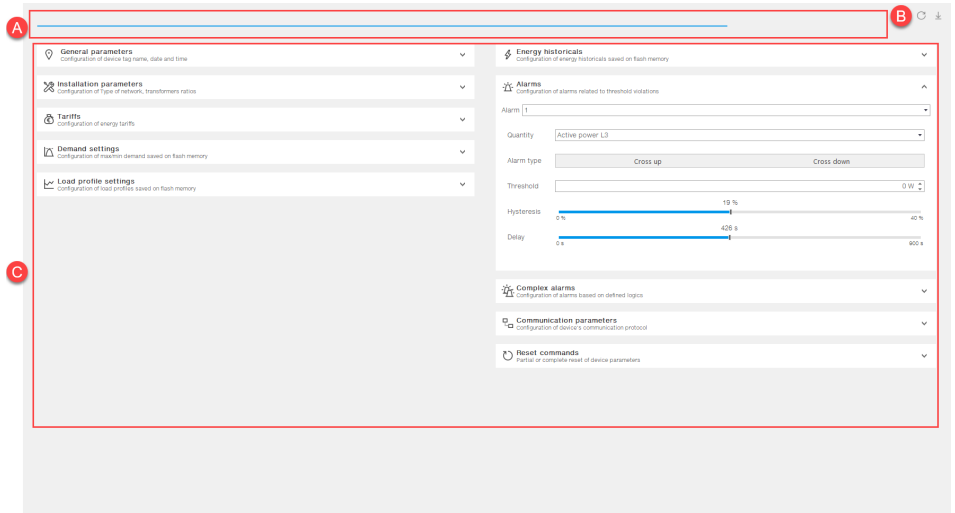
Part	Description
A	Progress bar for reading values from the device. Appears while values are being read.
B	• ↻ : reads values from the device • ↓ : writes values to the device
C	Parameters section • ⌄ : expands the parameters section. • ⌃ : collapses the parameters section.

Edit a parameter
1. Expand the parameters section to be set: Ekip Connect reads the values from the device, the progress status bar appears.
2. Set the desired value or option.
3. To transfer the set values to the device, click on ↓ : a message appears with the result of the operation.

7.3 - Monitoring

Monitoring page functions

- View historical data measured.
- View data measured in real time.
- View power quality data.
- Reset imported and exported energy meters.

What it looks like
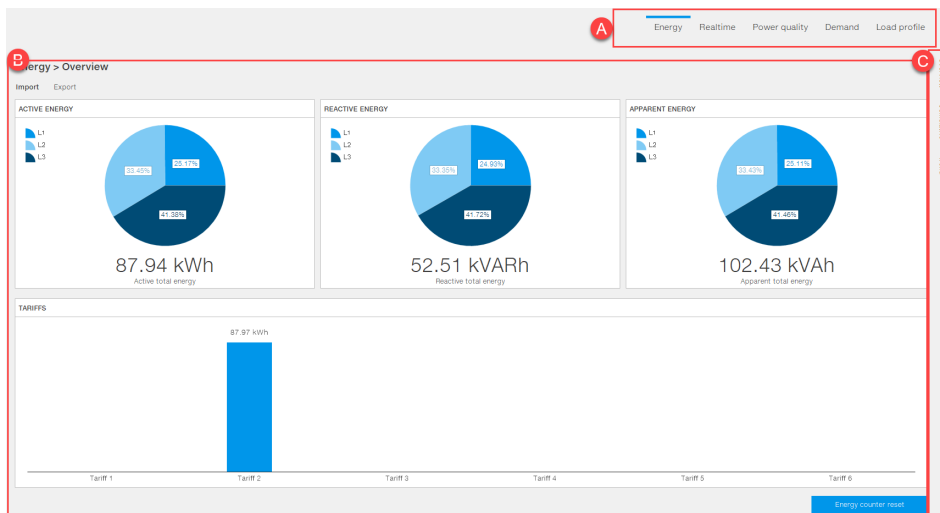
Part	Description
A	Monitoring pages menu
B	Page-specific data
C	Page-specific menu

Page Energy > Overview
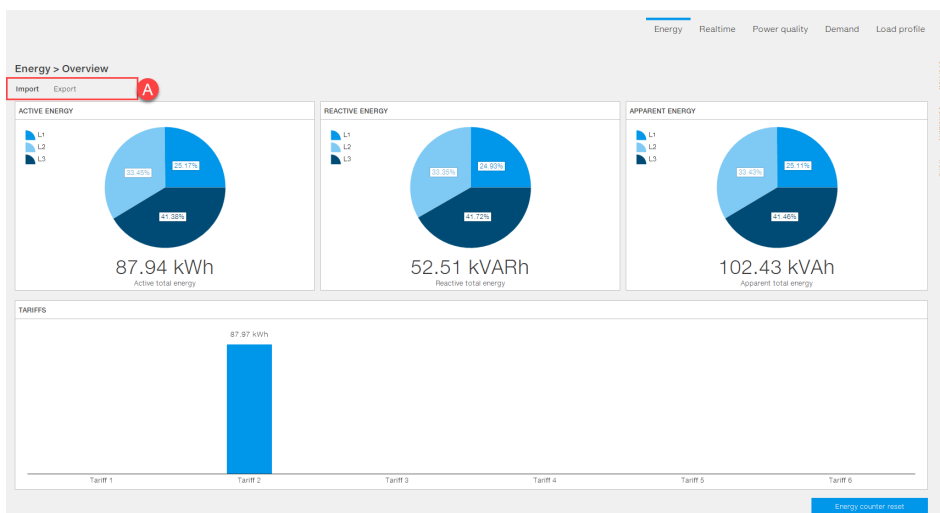
Part	Description
A	Menu to display imported and exported energy values
Active energy	Active energy values per phase and totals, imported or exported, depending on what is selected in [A]
Reactive energy	Reactive energy values per phase and totals, imported or exported, depending on what is selected in [A]

Part	Description
Apparent energy	Apparent energy values per phase and totals, imported or exported, depending on what is selected in **[A]**
Tariffs	Active energy values, imported or exported, depending on what is selected in **[A]**, broken down by tariff
Reset energy counters	Button to reset energy meters

Reset energy meters

1. From the menu, select the type of energy (imported or exported) you want to display.
2. Click on **Reset energy counters**: the selected energy meters are reset.

Page Energy > Cumulative
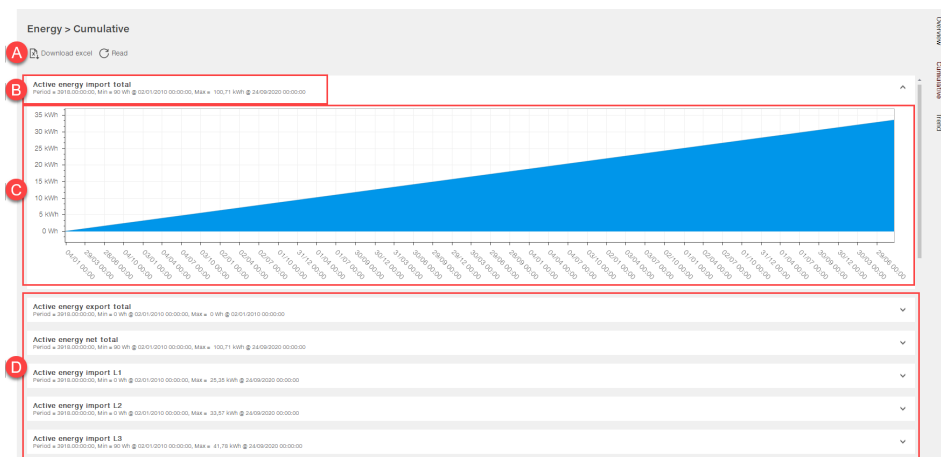
Part	Description
A	- : downloads all cumulative energy data stored in the device memory in Excel format. - : reads the data from the device memory
B	Reference period, minimum and maximum value with the timestamp of the selected parameter
C	Graph with the energy consumption curve for the selected parameter
D	List of available parameters

Page Energy > Trend

Part	Description
A	• ⬚ : downloads all energy data stored in the device memory in Excel format. • ↻ : reads the data from the device memory VCLA.
B	Reference period, minimum and maximum value with the timestamp of the selected parameter
C	Graph of energy values stored during the defined time period (difference between the value at the beginning and end of the interval)
D	List of available parameters

Page Power quality > Overview
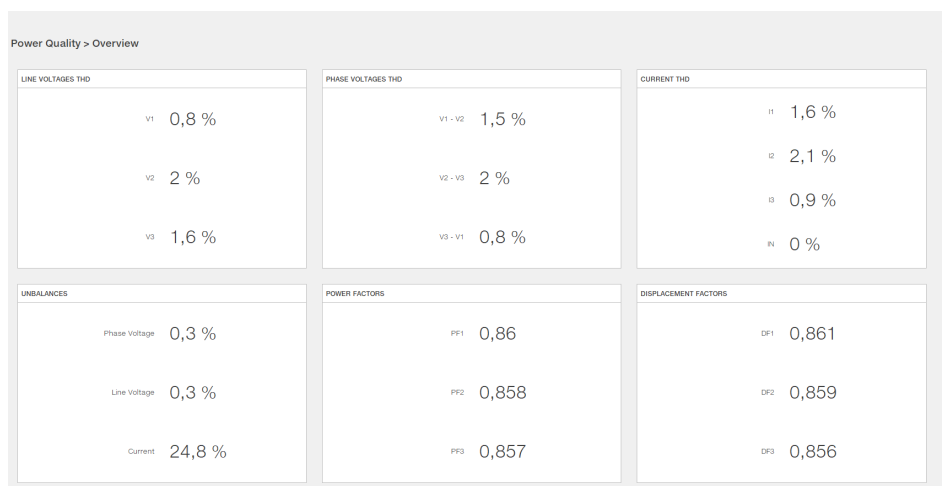
This area shows the following values:

- Line voltage THD
- Phase voltage THD
- Current THD
- load unbalance
- power factor
- phase-shifting factor

Page Power quality > Harmonics
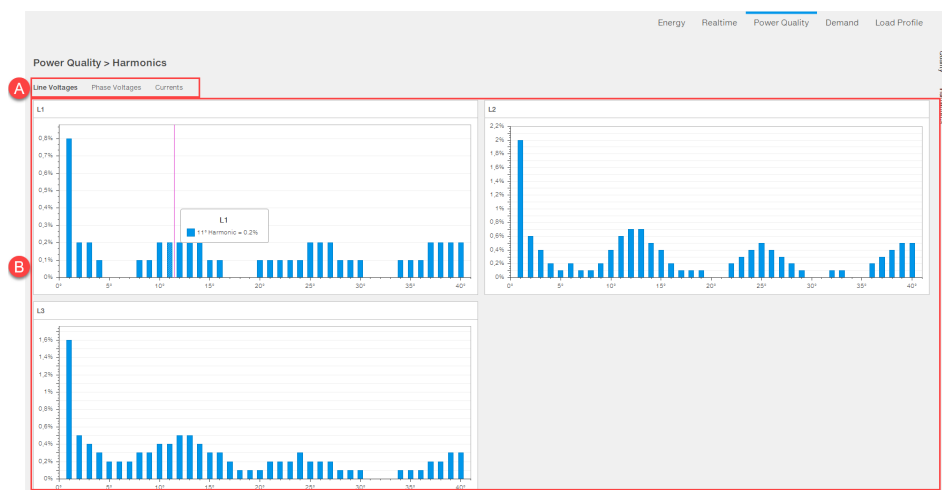
Part	Description
A	Harmonic type menu: • line voltage • phase voltage • currents
B	Graph up to the 40th harmonic of the type selected in [A]. The vertical axis indicates the amplitude of the harmonic expressed as a percentage of the fundamental harmonic. By clicking on the graph, the value of the specific harmonic can be read.

Page Request
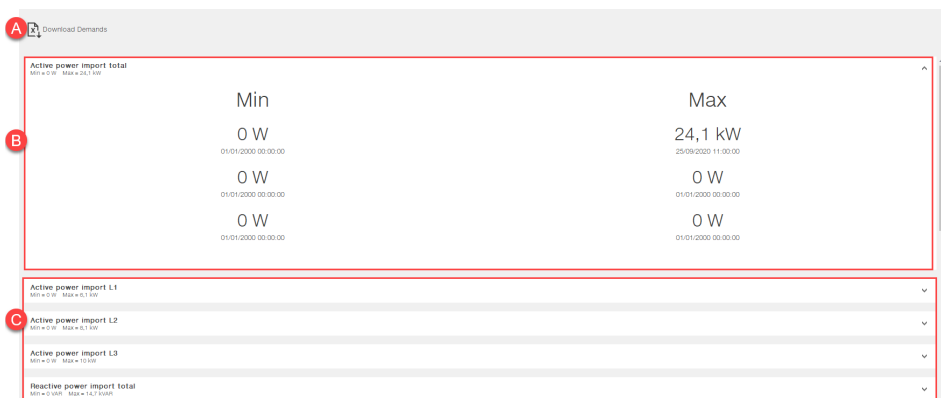
Part	Description
A	: downloads all minimum and maximum values stored in the device memory in Excel format.
B	Minimum and maximum values of the selectable parameter. Depending on the device configuration, up to three levels of minimum and maximum values are available.
C	List of available parameters

Page Load profile
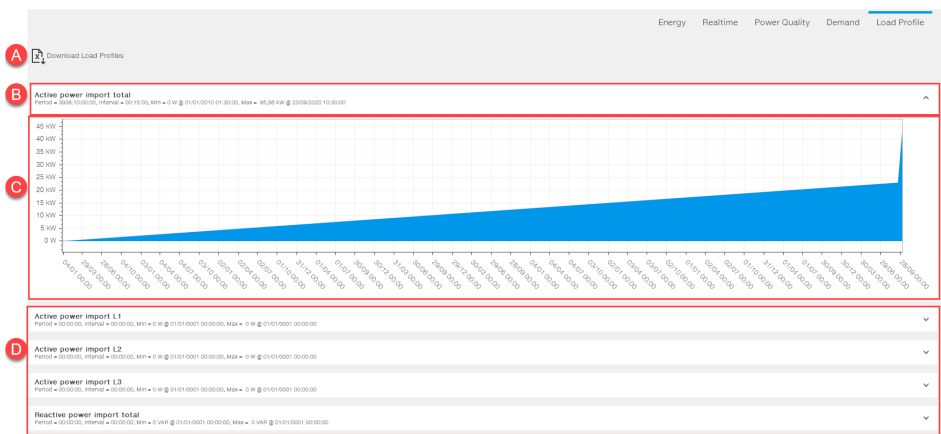
Part	Description
A	: downloads all load profiles stored in the device memory in Excel format.
B	Reference period, minimum and maximum value with the timestamp of the selected parameter
C	Graph with load profile curve for the selected parameter
D	List of available parameters

7.4 - IO

Page functions
- Configure the inputs and outputs of the device.

What it looks like
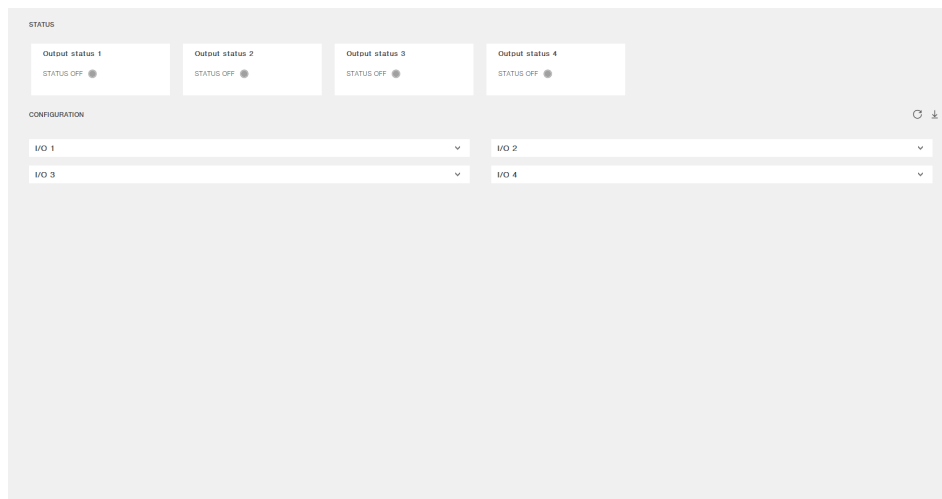
Part	Description
Status	Status of inputs/outputs 🟢 : enabled ⚪ : disabled
Configuration	Input/output configuration parameters
↻	Button to read the configuration from the device
↓	Button to transfer the configuration to the device

Edit a parameter
1. Expand the set of input/output parameters to be set.
2. To read the saved values from the device, click on ↻.
3. Set the desired value/option.
4. To transfer the set values to the device, click on ↓ : a message appears with the result of the operation.

7.5 - Notifications

Page functions
- Check the status of the device.
- View the alarms, warnings and errors recorded.

Page All
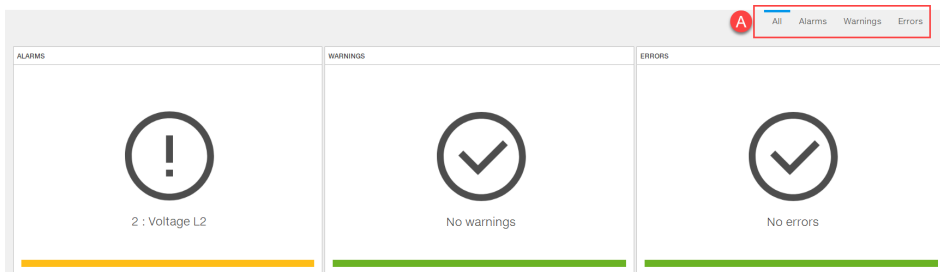
Part	Description
A	Pages menu
Alarms	Active alarm messages
Alerts	Active warning messages
Errors	Active error messages

Page Alarms

This page shows the user-configured alarm messages in chronological order. For each alarm, the description, date and time of recording and duration are shown.

#	Description	Type	Date	Time	Duration
1	2 : Voltage L2	Alarm	27/11/2020	09:29:35	1549 s
2	2 : Voltage L2	Alarm	26/11/2020	15:15:29	3399 s
3	2 : Voltage L2	Alarm	26/11/2020	15:09:09	0 s
4	2 : Voltage L2	Alarm	26/11/2020	11:49:58	4551 s
5	2 : Voltage L2	Alarm	26/11/2020	10:54:59	0 s
6	2 : Voltage L2	Alarm	26/11/2020	10:50:41	0 s

Page Alerts

This page shows the warning messages relating to system conditions or device settings in chronological order. For each warning, the description, date and time of recording and duration are shown.

#	Description	Type	Date	Time	Duration
1	Time not set	Warning	01/01/2000	00:00:00	0 s
2	Data not set	Warning	01/01/2000	00:00:00	0 s
3	Time not set	Warning	01/01/2000	00:00:00	0 s
4	Data not set	Warning	01/01/2000	00:00:00	0 s
5	Time not set	Warning	01/01/2000	00:00:00	0 s
6	Data not set	Warning	01/01/2000	00:00:00	0 s

Page Errors

This page shows the error messages relating to device diagnostics in chronological order. For each error, the description, date and time of recording and duration are shown.

#	Description	Type	Date	Time	Duration
1	Audit log full	Error	27/11/2020	11:34:12	34 s
2	Error in the data storage error	Error	26/11/2020	10:02:54	843 s
3	FW CRC error	Error	23/10/2020	12:56:03	2 s
4	Hardware problem with RTC	Error	02/10/2020	11:34:05	2345 s
5	Audit log full	Error	02/10/2020	03:02:47	59 s

7.6 - Classic view

Page functions
- View and configure device parameters.
- View and configure device information.

What it looks like

Part	Description
A	Parameter pages menu
B	Area of parameter specific to the parameter category selected in **A** • ⤢ : expands all parameter sections. • ⤡ : collapses all parameter sections. • ▭ : copies parameters and values to the clipboard. • ▤ : exports parameters and values to .xls. • ↻ : reads the saved values from the device. • ↑ : writes the set values to the device.
C	Descriptor file in use

Edit a parameter

1. To view all parameters, click on ⤢.
2. To read the saved values from the device, click on ↻.
3. Set the desired value or option.
4. To transfer the set values to the device, click on ↓ : a message appears with the result of the operation.

   ⓘ **Note**: *if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*

8 - Communication with gateways

8.1 - Dashboard

Page functions
- Display the summary or most critical information for the device
- Access pages with more detailed information.

What it looks like
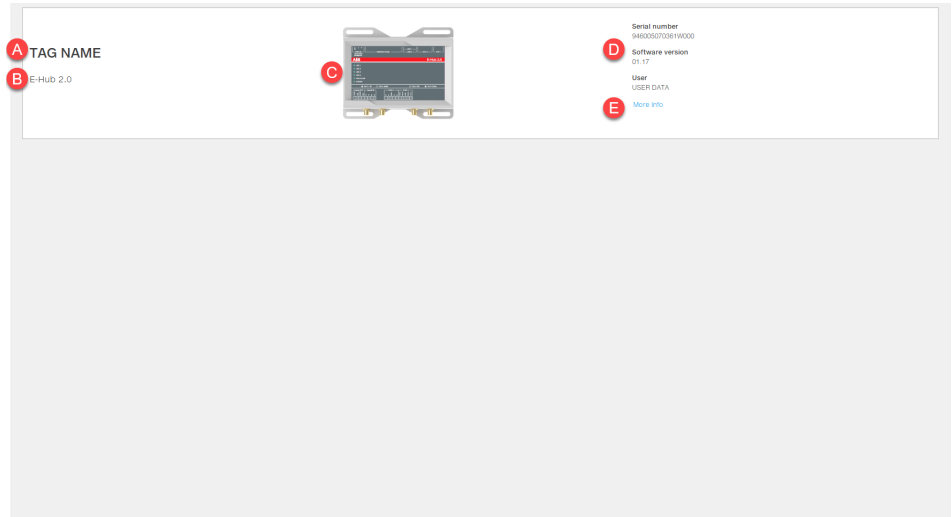
Part	Description
A	Customised device name (parameter **CB Tag name** editable in **Classic view** > **Unit configuration** > **Customisable information**)
B	Device type
C	Image of the device
D	Device data: • serial number • software version • user
E	Button to access the "Information" on the next page page

8.2 - Information

Page functions

- View device status information, general parameters and other information specific to the device and/or the installation where it is installed.

What it looks like

TAG NAME Edit

Device type	Time
E-Hub 2.0	7/27/2022 5:04:38 PM
Serial number	User data
946005070361W000	USER DATA Edit
Software version	Date of installation
01.17	12/31/1999 12:00:00 AM Edit

STATUS		GENERAL PARAMETERS		PUBLISH STATUS	
TFTP enabled	Disable	Parser error code	Ok	Data publishing	No
IP forward enable	Disable	Configuration file	dataGathering_0x61911A75.csv	Number of publish success	221
SNTP error	No error	Security file	dataPublish_0xE5A48F80.txt	Number of publish failed	13
SNTP synchronized	Ok	Firmware update	New FW version absent	Last publish time	7/27/2022 5:04:09 PM
New firmware available	Absent	Firmware downloading progress	100%		

8.3 - Configuration

Page functions
- View and edit device parameters in relation to the installation where the device is installed.
- View and edit some internal configuration parameters of the device.

What it looks like

Part	Description
A	- ⤢ : expands all parameter sections. - ⤧ : collapses all parameter sections.
B	Text search area for parameters
C	Parameters section - ⌄ : expands the parameters section. - ⌃ : collapses the parameters section.
D	Button to apply or cancel changes

Edit a parameter
1. To view all parameters, click on ⤢.
2. Set the desired value or option.
3. To transfer the change to the device, click on **Apply**: a message appears with the result of the operation.

8.4 - Monitoring

Page functions

- Monitor the status of the analog and digital inputs of the device.

What it looks like
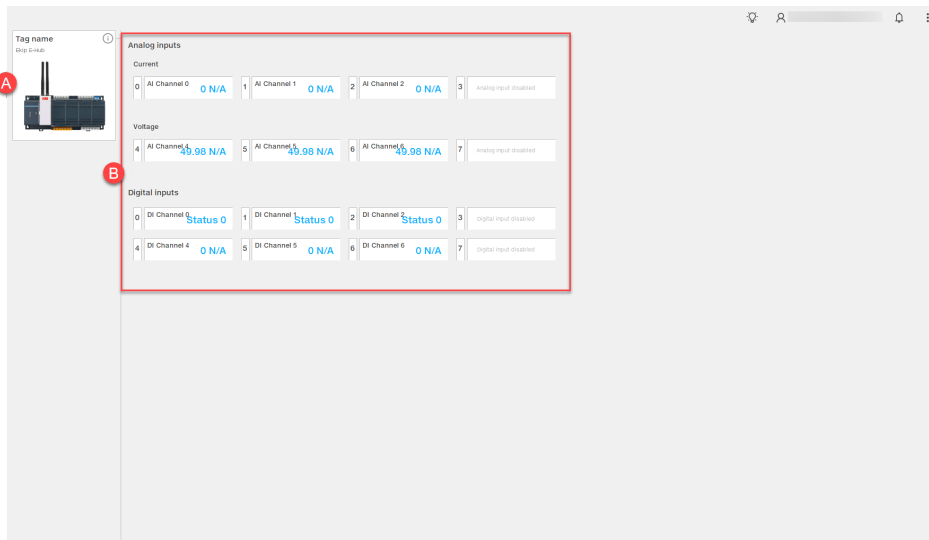
Part	Description
A	Image and device information
B	Analog and digital inputs
	The following data are shown for each input:
	• Input number
	• Customisable name
	• Unit of measurement

8.5 - IO setup

Page functions
- Configure the analogue and digital input parameters of the device.

What it looks like

Part	Description
A	Image and device information
B	Pages menu: • **Analog**: page for configuring analog inputs • **Digital**: page for configuring digital inputs
C	Inputs area. The following data are shown for each input: • Customisable name • Input type • Sensor data that have been set (minimum and maximum value and unit of measurement). • ✕ : Removes the sensor from the input. • **Modification**: changes the input and sensor parameters. • **Add sensor**: displays area **[D]** to configure the input and the associated sensor.
D	Parameters area. The following are the most significant parameters: • **Unit**: sensor measurement unit • **Pulse amplitude**: increment value

Associate a sensor with an input

1. Select **Analog** or **Digital**: the relevant input configuration page opens.
2. Click on **Add sensor**: the input is populated with default values.
3. Click on **Modification** and in the editing area, set the parameters.
4. To save the changes, click on **Save**: a message appears with the result of the operation. Or to cancel, click on **Discard**.

8.6 - Communication

Page functions

- Configure Internet connection parameters.
- Configure the parameters for Ethernet or Modbus communication with the devices.
- Monitor the list of clients connected to the device.

What it looks like
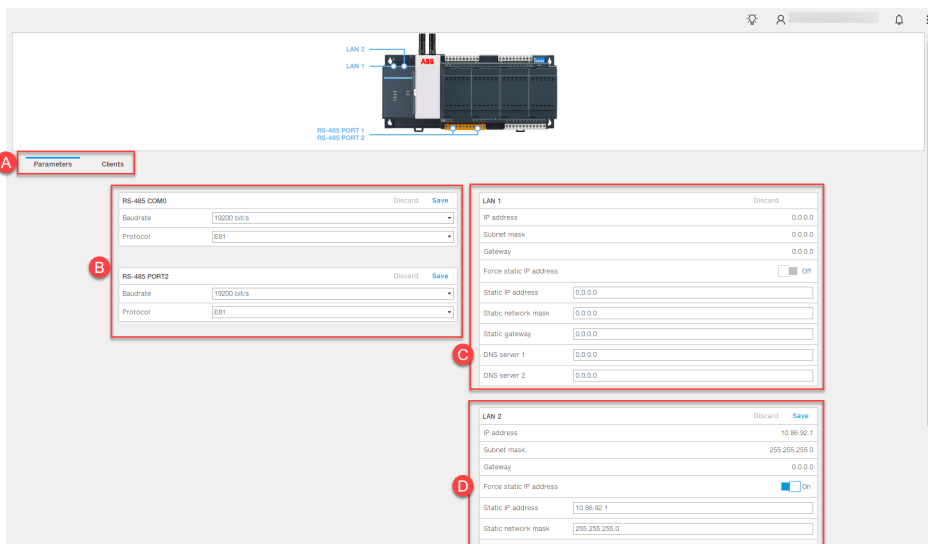
Part	Description
A	Communication pages menu: • **Parameters**: displays the parameters for communication with the Internet and for Ethernet or Modbus communication with the devices. • **Clients**: displays the list of clients connected to the gateway.
B	Modbus communication parameters
C	Internet connection parameters
D	Ethernet communication parameters

Actions on the page

Button	Action
Discard	Cancels the changes
Save	Transfers configuration to the device

Configure communication with the Internet

In the **Parameters** tab, set the Ethernet parameters in **LAN 1**: the parameters are saved automatically.

Configure communication with devices

1. In the **Parameters** tab, set the parameters for the Modbus or Ethernet ports in **LAN 2**.
2. To transfer the configuration to the device, click on the relevant button **Save**.

8.7 - Connectivity

Connectivity page functions

- Enable/Disable gateway Ethernet/Wi-Fi communication.

Page To Internet
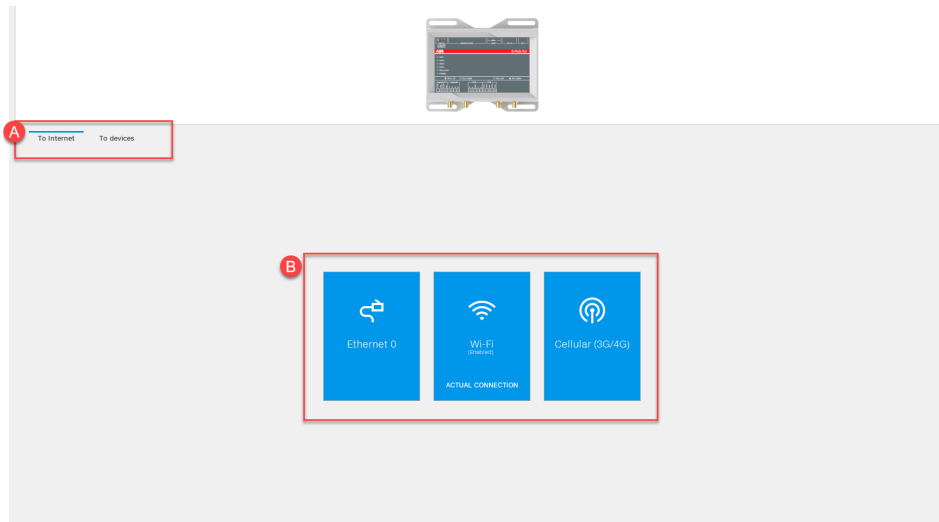
Part	Description
A	Pages menu
B	Internet connection type buttons available

Page To Internet > network
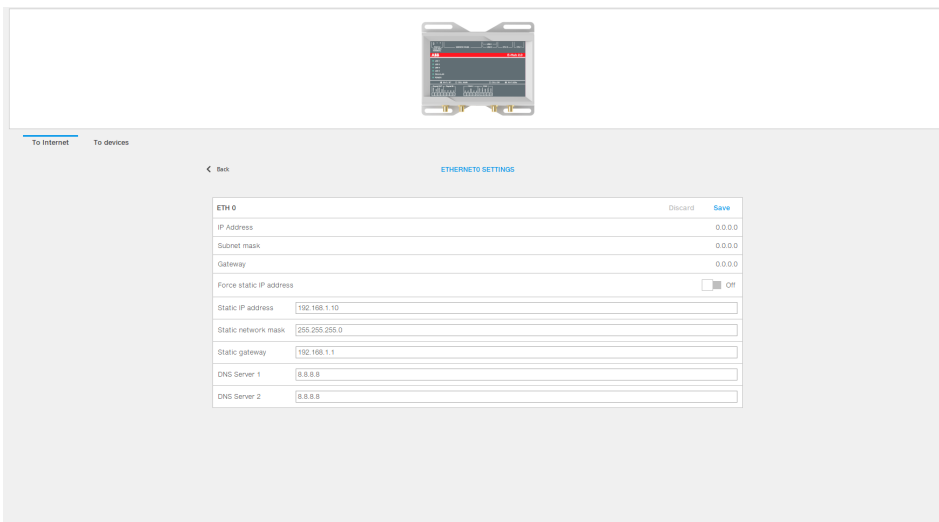
Part	Function
Back	Returns to the page with the connection type buttons.
Discard	Cancels the changes.
Save	Transfers the configuration to the device.

Page To Internet > Wi-Fi
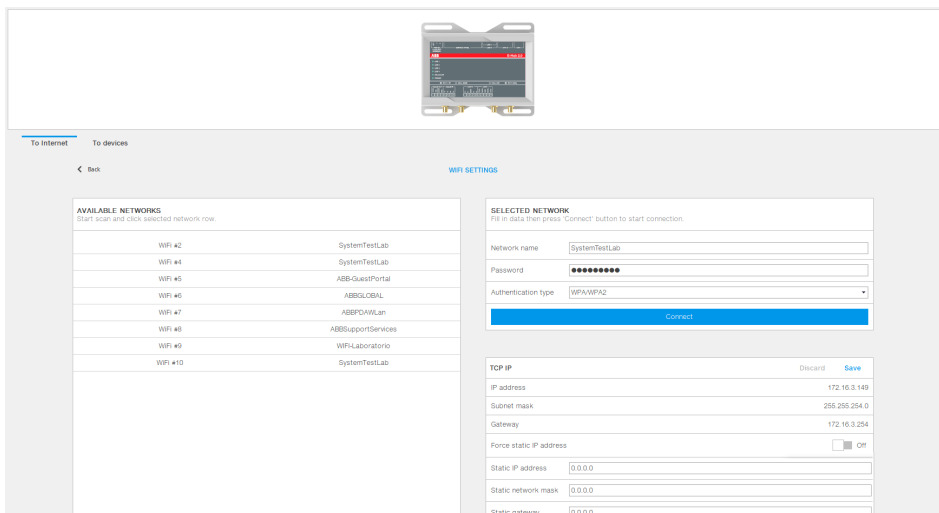
Part	Function
Back	Returns to the page with the connection type buttons.
Discard	Cancels the changes.
Save	Transfers the configuration to the device.

Page To Internet > Cellular
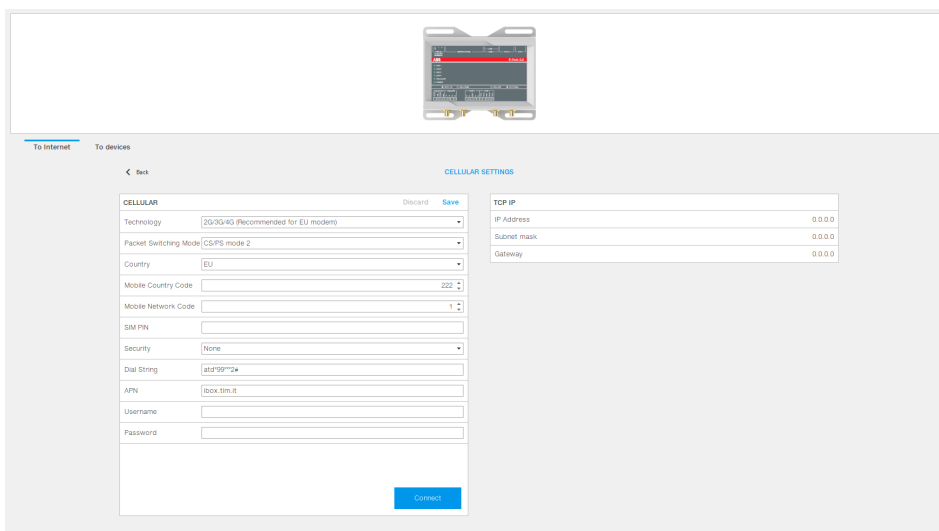
Part	Function
Back	Returns to the page with the connection type buttons.
Discard	Cancels the changes.
Save	Transfers the configuration to the device.

Page To devices
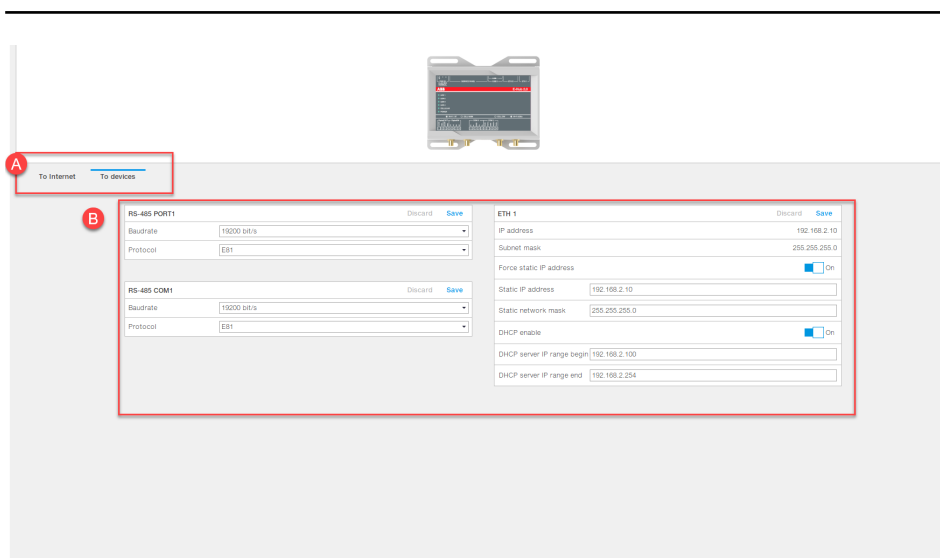
Part	Function
A	Connectivity pages menu:
B	Configuration parameters: **Discard**: cancels the changes. **Save**: transfers the configuration to the device.

Enable and configure an Internet communication type

1. In the **To Internet** tab, click on the button for the communication type to be enabled.
2. Proceed as follows:

To communicate via...	Then...
network	1. Set the communication parameters. 2. To transfer the configuration to the device, click on **Save**.
Wi-Fi	1. Select the desired Wi-Fi network from the list. 2. Enter the password and type of authentication. 3. Click on **Connect**. 4. Click on **Back**: the message **Actual connection** appears at the bottom of the button relating to the type of communication enabled.
Cellular (3G/4G)	1. Set the communication parameters. 2. To transfer the configuration to the device, click on **Save**. 3. To enable the connection, click on **Connect**. 4. Click on **Back**: the message **Actual connection** appears at the bottom of the button relating to the type of communication enabled.

Disable an Internet communication type

1. In the **To Internet** tab, position the cursor on the button relating to the type of communication to be disabled: the **Disable** button appears at the top right of the button.
2. Click on **Disable**.

Enable and configure communication with devices

1. Click on **To devices**.
2. Set the communication parameters.
3. To transfer the configuration to the device, click on **Save**.

8.8 - Modules

Page functions	• Configure additional modules of the device.

What it looks like (IO module)

Part	Description
A	Image and device information
B	Pages menu: • **Analog**: page for configuring analog inputs • **Digital**: page for configuring digital inputs
C	Inputs area. The following data are shown for each input: • Customisable name • Input type • Sensor data that have been set (minimum and maximum value and unit of measurement). • ✕ : Removes the sensor from the input. • **Modification**: changes the input and sensor parameters. • **Add sensor**: displays area **[D]** to configure the input and the associated sensor.
D	Parameters area. The following are the most significant parameters: • **Unit**: sensor measurement unit • **Pulse amplitude**: increment value

Associate a sensor with an input	1. Select **Analog** or **Digital**: the relevant input configuration page opens. 2. Click on **Add sensor**: the input is populated with default values. 3. Click on **Modification** and in the editing area, set the parameters. 4. To save the changes, click on **Save**: a message appears with the result of the operation. Or to cancel, click on **Discard**.

8.9 - Classic view

Page functions	• View and configure device parameters. • View and configure device information.

What it looks like

Part	Description
A	Parameter pages menu
B	Area of parameter specific to the parameter category selected in **A** • ⤢ : expands all parameter sections. • ⤧ : collapses all parameter sections. • ▯ : copies parameters and values to the clipboard. • ⊠ : exports parameters and values to .xls. • ↻ : reads the saved values from the device. • ⬆ : writes the set values to the device.
C	Descriptor file in use

Edit a parameter

1. To view all parameters, click on ⤢.
2. To read the saved values from the device, click on ↻.
3. Set the desired value or option.
4. To transfer the set values to the device, click on ⬇ : a message appears with the result of the operation.

   ⓘ *Note: if the operation fails, check the status of the operating mode ("Operating mode" on page 19).*

9 - Communication with fuse-disconnectors and change-over switches

9.1 - Classic view

Page functions
- View and configure device parameters.
- View and configure device information.

What it looks like

Part	Description
A	Parameter pages menu
B	Area of parameter specific to the parameter category selected in **A** • ⤢ : expands all parameter sections. • ⤡ : collapses all parameter sections. • ⧉ : copies parameters and values to the clipboard. • ⊠ : exports parameters and values to .xls. • ↻ : reads the saved values from the device. • ↥ : writes the set values to the device.
C	Descriptor file in use

Edit a parameter
1. To view all parameters, click on ⤢.
2. To read the saved values from the device, click on ↻.
3. Set the desired value or option.
4. To transfer the set values to the device, click on ↧ : a message appears with the result of the operation.

> ⓘ **Note**: if the operation fails, check the status of the operating mode ("Operating mode" on page 19).

10 - Functions of Ekip Connect (Tools)

Introduction

All the available functions can be accessed from the menu item **Tools** of Ekip Connect.
The following functions are available:

- Load Shedding
- Power Controller
- Embedded ATS
- Interface Protection System
- Data Viewer
- Data Logger
- Firmware Upgrade
- Test area
- Customised logic
- Reports
- File management
- Diagnostics

10.1 - Load Shedding: useful information

Description of the function

Load Shedding is an optional function integrated in the release that allows faults to be managed in installations that can function with energy produced by renewable and local energy sources, especially the absence of power supply caused, for example, by a fault on the MV voltage side.

Load Shedding checks up to fifteen loads in real time.

If a solar system is configured, an algorithm calculates the approximate value of the system when the loads are disconnected. According to the regulations, in the event of disconnection from the network, the photovoltaic system must also be disconnected.

Load Shedding can also include the power of any ATS present in the algorithm.

Versions of the function

This function is available in two versions:

- **Basic load shedding**
- **Adaptive load shedding**: also manages the presence of a photovoltaic system and/or ATS with generator

Load Shedding in Ekip Connect

From Ekip Connect the following operations can be performed:

- quickly configure both the function and the loads
- configure optional elements such as solar system and ATS
- monitor the status of the loads and the values measured

Requirements

Access to the function	Basic load shedding: unrestricted
	Adaptive load shedding: unrestricted For transfer to the device, package Adaptive Load Shedding is required, which can be purchased and activated from Marketplace.
Type of devices that support the function	- External unit for circuit breakers (e.g. Ekip Up) - Circuit breakers
Device status	Any to configure the function and save the configuration.
	Connected and communicating to transfer the configuration to the device and to monitor the function.
	*ⓘ **Note**: during the transfer, it is recommended to keep the circuit breaker and contactors that control the loads downstream of the circuit breakers in the open state.*
Type of connection with the device	Any

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

10.2 - Load Shedding: what it looks like

Page Design

Part	Description
A	Function Load Shedding area. It contains the following elements: • command to enable and disable the Load Shedding function • button **Configure** to display and change function parameters in Load Shedding in **[C]**. • (only for Adaptive load shedding) button **Configure** to display the parameters of the solar system in **[C]**. • (only for Adaptive load shedding) button **Configure** to view the parameters of the Automatic Transfer Switch in **[C]**.
B	Loads area. It contains the following elements: • graphical representation of each load ("Graphical representation of the load" below) • (only for Adaptive load shedding) button **Supervision** to access the **Supervision** page ("Page Supervision" on the next page) • button **Add new load** to add a load • button **Breakdown** to open another project or create a new project • button **Reset alarms** to reset the alarms of all loads, visible on the page **Supervision**. • button **Save project** to save the project on the PC in .lds format. ⓘ *Note: the .lds format is a proprietary format that can only be read with Ekip Connect.* • button **Transfer** to transfer the configuration to the device
C	Area for the parameters of the element selected in **[A]** or in **[B]** ("Load Shedding: parameters" on page 60).

Graphical representation of the load

Part	Description
A	Assigned disconnection priority
B	Icon selected for the load
C	Name assigned to the load
D	Load configuration status: • Completed: all necessary parameters have been configured • Not completed: one or more necessary parameters not configured
⚙	Button for customising the load icon 💡 *To display the button, position the mouse pointer over the graphic representation of the load.*
✕	Button to delete the load 💡 *To display the button, position the mouse pointer over the graphic representation of the load.*

Page Supervision

ⓘ **Note**: *page only available for* ***Adaptive load shedding***.
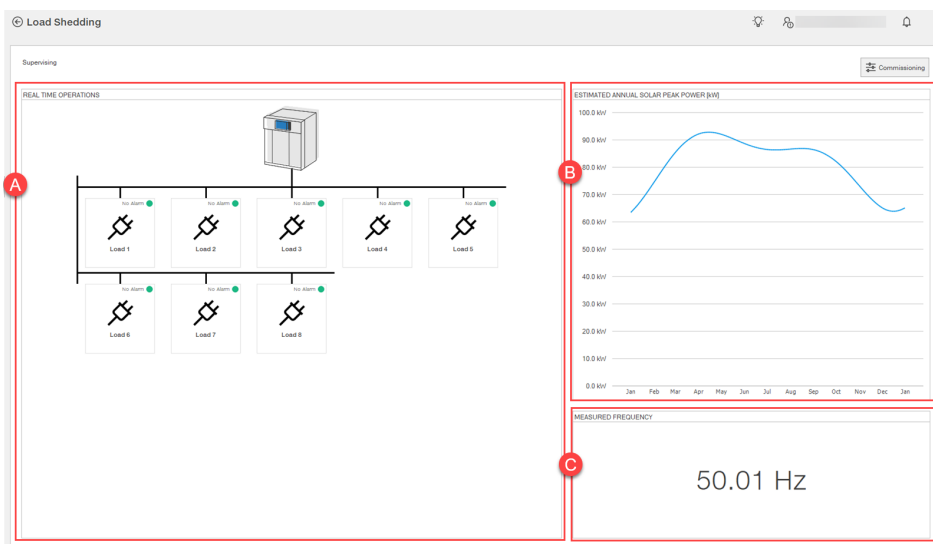
Part	Description
Commissioning	Button to access the Design page ("Page Design" on the previous page)
A	Load status area. The following information is provided for each load: • presence of alarms • signal status • load status
B	Graph: time (X-axis) and power (Y-axis). Displays the estimated power generated by the photovoltaic system during the year.
C	Frequency measured in real time

10.3 - Load Shedding: parameters

Load parameters (General)

Element	Description
Enabled	Includes/excludes the load from the function algorithm
Name	Name assigned to the load
Power consumption	Rated power of the load
Disconnection priority	Position of the load in the load disconnection sequence. Priority 1 corresponds to the first load to be disconnected. 💡 *To change the disconnection priority, use the mouse to select and drag the graphical representation of the load to the chosen disconnection position (e.g. drag the load to the first place to assign priority 1).*

Load parameters (Signals)

Element	Description
Signal status/Commands > Contact	Device cable used for signal. • ⊘ : available • ⊗ : not available • ⊙ : selected for a signal
Signal status > Meaning	(only if the device used for the signal is a circuit breaker and the optional status signal is activated). Meaning of the status signal: • Enabled/Disabled • Tripped/Not tripped
Signal status > Polarity	• **Active open**: if the input contact is open, the function interprets the load as active (closed). • **Active Closed**: if the input contact is closed, the logic interprets the load as active (closed).
Signal status > Delay	Delay in seconds before the signal is processed after reception

10.4 - Load Shedding: procedure

Configure the function Load Shedding

1. Click on **Tools** > Load Shedding.
2. To start a new project, select the chosen version of Load Shedding or select the button to read the configuration Load Shedding active on the device.
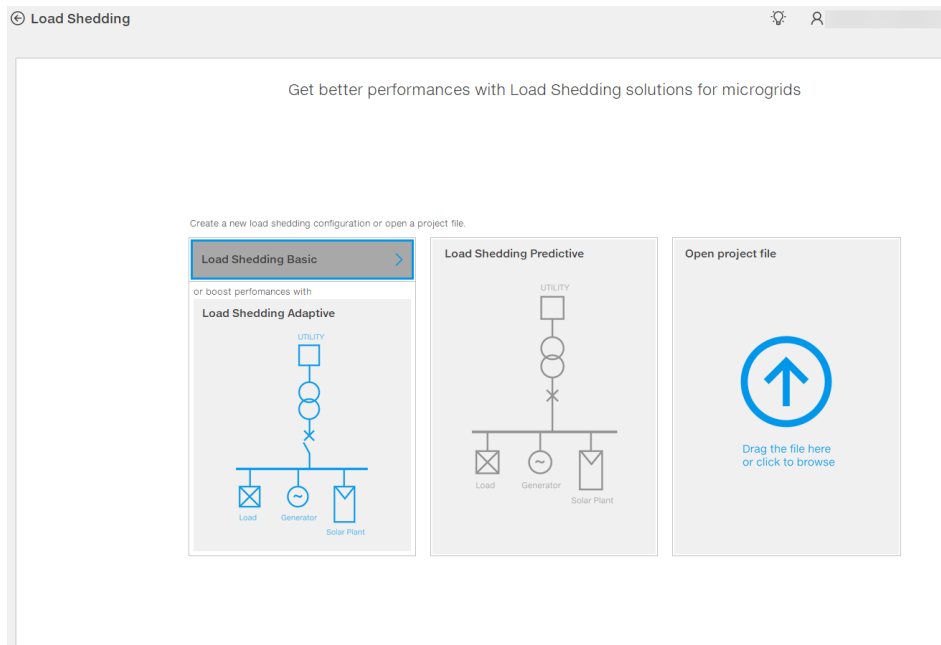
3. Enable the Load Shedding function and click on **Configure** to configure the function parameters.
4. If there is a solar system and/or ATS, click on **Configure** corresponding to the element in order to configure the necessary parameters.
5. Add as many loads as there are loads in the system to be monitored.
6. Set the parameters for each load ("Load Shedding: parameters" on the previous page).
7. To save the project, click on **Save project**.
8. To transfer the configuration to the device, check that the device is connected and communicating with Ekip Connect and click on **Transfer**: at the end of the transfer, a .pdf file containing the configuration report can be downloaded.

   i **Note**: *to transfer the configuration to the device, you must have activated the purchased package on Marketplace.*

Monitor the function

1. With the device connected and communicating with Ekip Connect, click on **Tools** > Load Shedding.
2. Open a project or select the button to read the configuration Load Shedding active on the device.
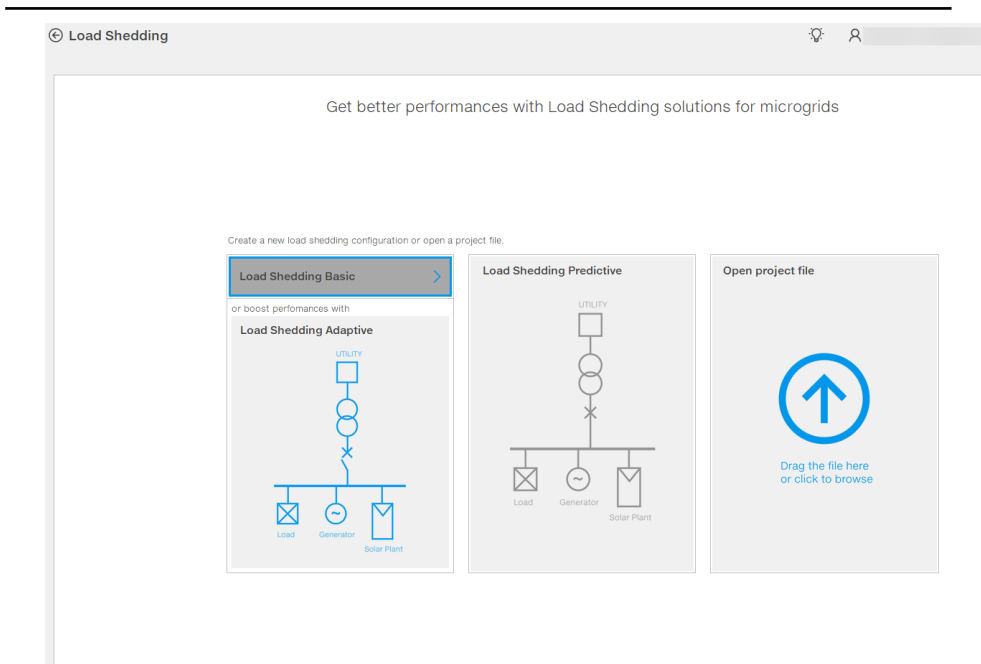
3. Click on **Supervision**.

10.5 - Power Controller: useful information

Description of the function

The Power Controller function is an optional function integrated in the release that allows the loads of an installation to be managed according to power consumption, for the purpose of reducing consumption and optimizing energy efficiency. Power Controller controls the loads and generators in real time (up to fifteen loads) and correlates the average power consumption during a time frame preset by the user, to the power established in the supply contract.

This function prevents the contractual power consumption limit from being exceeded by the following evaluation factors:

- the cumulative measurement of the energy consumed by the installation
- estimation of the energy consumed at the end of the monitoring periods into which the electric power billing period is divided
- automatic load control, i.e. temporary disconnection of lower priority loads if the power exceeds the monitoring thresholds derived from the set parameters (power limit and monitoring period)
- automatic recognition of the monitoring periods on the basis of the internal clock of the unit or of an external synchronization signal, with reset and restart of the power meters at the end of each period.

Operating principle

The operating principle is that of Master (device) – Slave (auxiliary generators or loads). The Master is either wired or connected via dedicated bus (Link bus) to the apparatuses on the supply side of the connection circuits of the Slaves. The Master quantifies the energy consumed at regular intervals (measurement time) and performs the following actions at the end of each period:

If...	Then...
the average value is above the set high consumption threshold	it commands the disconnection of a load or the connection of a generator
the average value is below the set low consumption threshold	it commands the connection of a load or the disconnection of a generator
if the estimation is within the acceptable consumption limits	no action is performed

>> For details on the Power Controller function, consult the white paper "Load management Ekip Power Controller for SACE Emax 2" available here.

Power Controller in Ekip Connect

From Ekip Connect the following operations can be performed:

- quickly configure both the function and the loads
- monitor the status of the loads and the values measured

Requirements

Access to the function	Unrestricted for devices on which the function has been activated.
Type of devices that support the function	- External unit for circuit breakers (e.g. Ekip Up) - Circuit breakers
Device status	Any to configure the function and save the configuration. Connected and communicating to transfer the configuration to the device. ⓘ **Note**: *during the transfer, it is recommended to keep the circuit breaker and contactors that control the loads downstream of the circuit breakers in the open state.*
Type of connection with the device	Any

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

10.6 - Power Controller: what it looks like

Page Design

Part	Description
A	Function Power Controller area. It contains the following elements: • command to enable and disable the function • button **Configure** to display and edit configuration parameters in **[C]**.
B	Loads area. It contains the following elements: • graphical representation of each load ("Graphical representation of the load" below) • button **Monitoring** to access the Monitoring page ("Page Monitoring" on page 66) • button **Add new load** to add a load • button **Breakdown** to open another project or create a new project • button **Save project** to save the project on the PC in .pwc format. ⓘ **Note**: *the .pwc format is a proprietary format that can only be read with Ekip Connect.* • button **Transfer** to transfer the configuration to the device
C	Area for the parameters of the element selected in **[A]** or in **[B]** ("Power Controller: parameters" on page 67). (only if selected Power Controller in **[A]**) Button to open the "Window Power Controller programming" on the next page window.

Graphical representation of the load
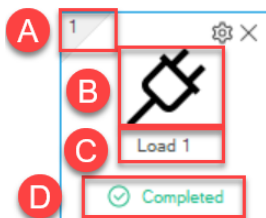
Part	Description
A	Assigned disconnection priority
B	Icon selected for the load
C	Name assigned to the load

Part	Description
D	Load configuration status: • Completed: all necessary parameters have been configured • Not completed: one or more necessary parameters not configured
⚙	Button for customising the load icon 💡 *To display the button, position the mouse pointer over the graphic representation of the load.*
✕	Button to delete the load 💡 *To display the button, position the mouse pointer over the graphic representation of the load.*

Window Power Controller programming
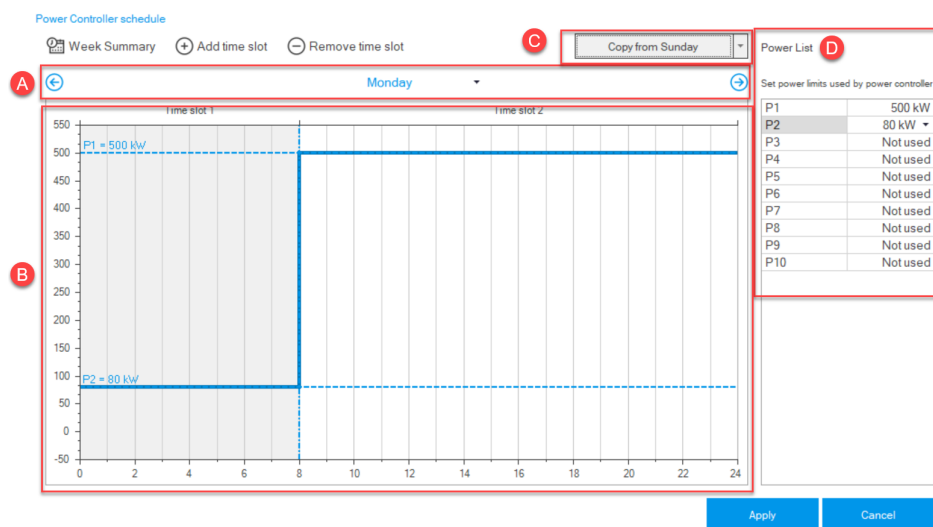
Part	Description
Week summary	Button to show/hide in **[B]** the programming of the entire week. In this view, programming cannot be changed.
Add time slots	Button to add a time slot to the programming. 💡 *To define a slot, select and drag the blue line at the chosen power value (Y-axis) and time value (X-axis) with the mouse.*
Remove time slot	Button to remove the last added time slot from the programming.
A	Commands to select the day of the week to be displayed and buttons to scroll through the days.
B	Programming display area. • X-axis: hours of the day. The dotted line indicates a power limit set in **[D]**. • Y-axis: power limit value. The dotted line indicates the start/end of a time slot. • Blue line: programming of the Power Controller
C	Command to define the programming of a day based on the programming of another day. 💡 *To perform the command, select the day from which to copy the programming from the list and then click the button.*
D	List of defined power limits. Up to 10 power limits can be set.

Page Monitoring
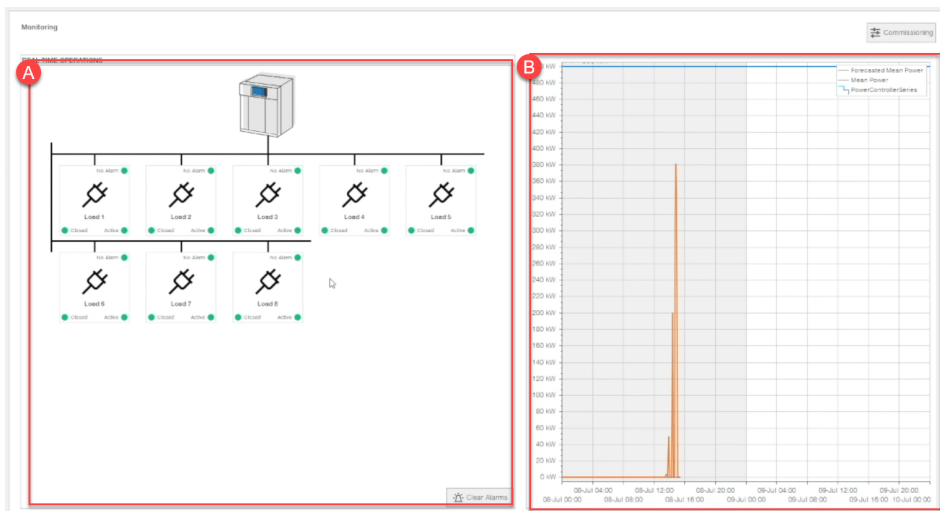
Part	Description
Commissioning	Button to access the Design page ("Page Design" on page 64)
A	Load status area. The following information is provided for each load: • presence of alarms • signal status • load status Button **Clear Alarms** to rest the alarms of all the loads.
B	Graph: time (X-axis) and power (Y-axis). Displays the power limit value set for that period, the average power value recorded and the estimated average power value.

10.7 - Power Controller: parameters

Function parameters

Element	Description
Average power limit	Active power limit defining whether to disconnect/reconnect loads.
Measurement time	Time interval during which power consumption is recorded and the average value calculated. The average value is compared with the set average power limit.
Number of loads/generators monitored	Number of loads/generators monitored. The system checks that the number of configured loads is consistent with this value...
External synchronisation signal	Signal defining when to start the measurement time.

Load parameters (General)

Element	Description
User type	Load type. If set as generator, the load is excluded from the function algorithm.
Enabled	Includes/excludes the load from the function algorithm
Name	Name assigned to the load
Power consumption	Rated power of the load
Disconnection priority	Position of the load in the load disconnection sequence. Priority 1 corresponds to the first load to be disconnected. *To change the disconnection priority, use the mouse to select and drag the graphical representation of the load to the chosen disconnection position (e.g. drag the load to the first place to assign priority 1).*
Minimum reconnection time	Minimum load connection time to avoid power-on/power-off too close together.
Disconnection time	Minimum disconnection time to avoid frequent power-on and off. Maximum disconnection time to avoid prolonged disconnections.
Time window	Period of the day during which the load cannot be disconnected. During that period the function algorithm excludes the load.

Load parameters (Signals)

Element	Description
Signal status/Commands > Contact	Device cable used for signal. • ⊘ : available • ⊗ : not available • ⊙ : selected for a signal
Signal status > Meaning	(only if the device used for the signal is a circuit breaker and the optional status signal is activated). Meaning of the status signal: • Enabled/Disabled • Tripped/Not tripped
Signal status > Polarity	• **Active open**: if the input contact is open, the function interprets the load as active (closed). • **Active Closed**: if the input contact is closed, the logic interprets the load as active (closed).
Signal status > Delay	Delay in seconds before the signal is processed after reception

10.8 - Power Controller: procedure

Configure the function Power Controller

1. Click on **Tools** > **Power Controller**.

2. Start a new project or select the button to read the active configuration Power Controller on the device.
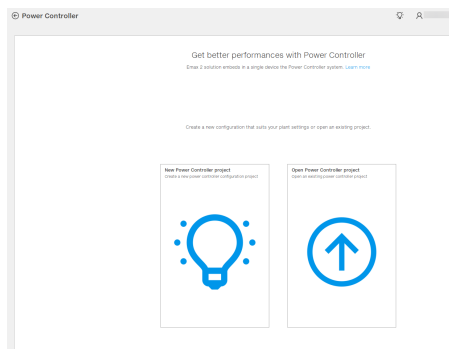
3. Enable the **Power Controller** function and click on **Configure** to configure the function parameters ("Function parameters" on the previous page).

4. To define daily programming of the function, click on **Power Controller programming**. Define the power limits to be observed and in which time slots of each day of the week. Click on **Apply**.

5. Add as many loads as there are loads in the system to be monitored.

6. Set the parameters for each load ("Load parameters (General)" on the previous page, "Load parameters (Signals)" on the previous page.

7. To save the project, click on **Save project**.

8. To transfer the configuration to the device, check that the device is connected and communicating with Ekip Connect and click on **Transfer**: at the end of the transfer, a .pdf file containing the configuration report can be downloaded.

> ℹ️ **Note**: to transfer the configuration to the circuit breaker, it is recommended for the circuit breaker to be in an open state.

Monitor the function

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Power Controller**.

2. Open a project or select the button to read the configuration Power Controller active on the device.

3. Click on **Monitoring**.

10.9 - Embedded ATS

Description of the function

Embedded ATS is a function that monitors the system in real time and if there are malfunctions in the electrical network, it changes the power source of the installation.

Two scenarios are handled:

- Main-tie-main closed transition: if there is a malfunction on one electrical network, the function makes it possible to keep the loads powered using another electrical network as a source.

- Main-generator open transition: if there is a malfunction on the electrical network, the function makes it possible to keep the loads powered using a generator as a source.

>> For details on the Embedded ATS function, please refer to the document "SACE Emax 2 and Tmax XT, the All-In-One innovation: Embedded ATS system", available [here](#) or watch the video https://www.youtube.com/watch?v=NBw4c2kEyTA.

Embedded ATS in Ekip Connect

From Ekip Connect the following operations can be performed:

- quickly configure the function and circuit breakers involved

Requirements

Access to the function	Unrestricted. For transfer to the device, package ATS Main-Tie-Main Closed or ATS Main-Gen Open is required, which can be purchased and activated on Marketplace.
Type of devices that support the function	• Circuit breakers (Emax 2 and XT)
Device status	Any to configure the function and save the configuration. Connected and communicating to transfer the configuration to the device. ⓘ ***Note***: *it is recommended to keep the circuit breaker in the open state during the transfer.*
Type of connection with the device	Local connection: connection via Ekip T&P Remote connection: Ekip COM TCP/Ekip COM RTU communication module

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available [here](#).

What it looks like

ⓘ ***Note***: *the following image refers to the page Main-generator open transition.*

Part	Description
A	Graphical representation of the elements
B	Area for the parameters of the element selected in [**A**].
Breakdown	Button to open another project or create a new project.
Save project	Button to save the project on the PC in .ats format. ⓘ ***Note***: *the .ats format is a proprietary format that can only be read with Ekip Connect.*
Transfer	Button to transfer the configuration to the device.

Configure the function Embedded ATS - Main-tie-main closed transition

1. Click on **Tools** > **Embedded ATS**.

2. To start a new project, select Main-tie-main closed transition or click on **Open project** to open a previously saved project

3. In the graphic representation, click on the label Main-tie-main closed transition and set the parameters.

4. For each circuit breaker, click on its label and set the parameters in Role parameters.
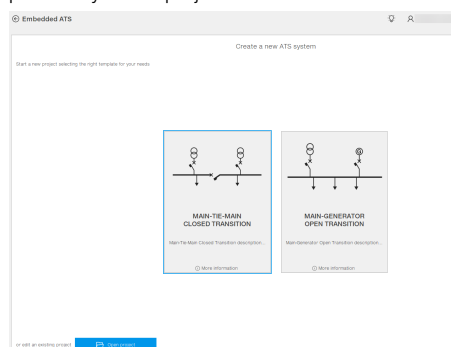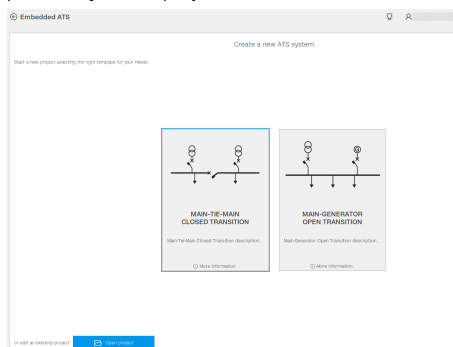
5. In the Ekip Connect main menu, click on **Scanning** and connect the first circuit breaker of the system with Ekip Connect ("Connection with devices" on page 9).

6. In **Tools** > **Embedded ATS**, in the graphic representation, click on the label representing the connected circuit breaker.

7. In **Role association**, select the circuit breaker: in the graphical representation, the name and serial number of the selected circuit breaker appears below the selected label.

8. In **Role conditions** perform the following actions:

   ○ check that the hardware modules listed in **Manual conditions** are present on the circuit breaker and select them in the list.

   ○ Check that Ekip Connect has correctly detected the hardware modules present on the circuit breaker and listed in **Automatic conditions** (✓). To update the list, click on **Reload**.

   NOTICE: *all the hardware modules listed both in **Manual conditions** and in **Automatic conditions** are necessary for the function.*

9. To transfer the configuration to the circuit breaker, click on **Transfer**: when the transfer is complete, a message reports the transfers performed.

   ⓘ ***Note***: *to transfer the configuration to the circuit breaker, it is recommended for the circuit breaker to be in an open state.*

   ⓘ ***Note***: *to transfer the configuration to the circuit breaker, you must have activated the purchased package on Marketplace. If an ATS configuration already exists on the circuit breaker, the transfer replaces the previous configuration.*

10. Repeat steps 5 to 9 for all circuit breakers.

    NOTICE: *do not make any changes to the configuration after you have already transferred the configuration to at least one circuit breaker.*

    ⓘ ***Note***: *if communication with the circuit breakers is via a Modbus network (RTU/TCP), it is possible to connect multiple circuit breakers at the same time, configure the function parameters Embedded ATS of each one and then transfer the configuration to all devices simultaneously*

Configure the function Embedded ATS - Main-generator open transition

1. Click on **Tools** > **Embedded ATS**.

2. To start a new project, select Main-generator open transition or click on **Open project** to open a previously saved project

3. In the graphic representation, click on the label Main-generator open transition and set the parameters.

4. In the Ekip Connect main menu, click on **Scanning** and connect the first circuit breaker of the system with Ekip Connect ("Connection with devices" on page 9).

5. In **Tools** > **Embedded ATS**, in the graphic representation, click on the label representing the connected circuit breaker.

6. In **Role association**, select the circuit breaker: in the graphical representation, the name and serial number of the selected circuit breaker appears below the selected label.

7. In **Role conditions** perform the following actions:

   ○ check that the hardware modules listed in **Manual conditions** are present on the circuit breaker and select them in the list.

   ○ Check that Ekip Connect has correctly detected the hardware modules present on the circuit breaker and listed in **Automatic conditions** (✓). To update the list, click on **Reload**.

   *NOTICE: all the hardware modules listed both in **Manual conditions** and in **Automatic conditions** are necessary for the function.*

8. To transfer the configuration to the circuit breaker, click on **Transfer**: when the transfer is complete, a message reports the transfers performed.

   ⓘ *Note: to transfer the configuration to the circuit breaker, it is recommended for the circuit breaker to be in an open state.*

   ⓘ *Note: to transfer the configuration to the circuit breaker, you must have activated the purchased package on Marketplace. If an ATS configuration already exists on the circuit breaker, the transfer replaces the previous configuration.*

9. Repeat steps 5 to 9 for all circuit breakers.

   NOTICE: do not make any changes to the configuration after you have already transferred the configuration to at least one circuit breaker.

   ⓘ *Note: if communication with the circuit breakers is via a Modbus network (RTU/TCP), it is possible to connect multiple circuit breakers at the same time, configure the function parameters Embedded ATS of each one and then transfer the configuration to all devices simultaneously*

10.10 - Interface Protection System

Description of the tool

The IPS Interface Protection System function allows faults to be managed in installations which are able to function thanks to the energy produced by renewable and local energy sources, especially the absence of power supply, e.g. due to a fault on the MV voltage side.

The function conforms to standard CEI 0-16.

Description of the function

Interface Protection System is a function that monitors installations in real time that can operate with energy from renewable and local energy sources. If there is a malfunction in the electrical network, in particular a power failure, the function protects the installation.

Two scenarios are handled:

- device as main grid circuit breaker (relay auto-reclosing configuration not available).
- device as local generator circuit breaker (relay auto-reclosing configuration available).

The function conforms to standard CEI 0-16.

>> *For details on the Interface Protection System function, please refer to documents 1SDH002043A1001-C available* here *and 1SDH002129A1002 available* here.

Interface Protection System in Ekip Connect

From Ekip Connect the following operations can be performed:

- quickly configure the function, i.e. installation settings, settings for protection devices, inputs and outputs

Requirements

Access to the function	Unrestricted
Type of devices that support the function	Ekip UP, EkipUP+
Device status	Any to configure the function and save the configuration.
	Connected and communicating to transfer the configuration to the device.
	ℹ️ **Note**: *it is recommended to keep the circuit breaker in the open state during the transfer.*
Type of connection with the device	Local connection: connection via Ekip T&P
	Remote connection: Ekip COM TCP/Ekip COM RTU communication module

>> *For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available* here.

What it looks like

ℹ️ **Note**: *the following image refers to the page that is visible with an open/new project. See "Configure the function Interface Protection System" on the next page.*
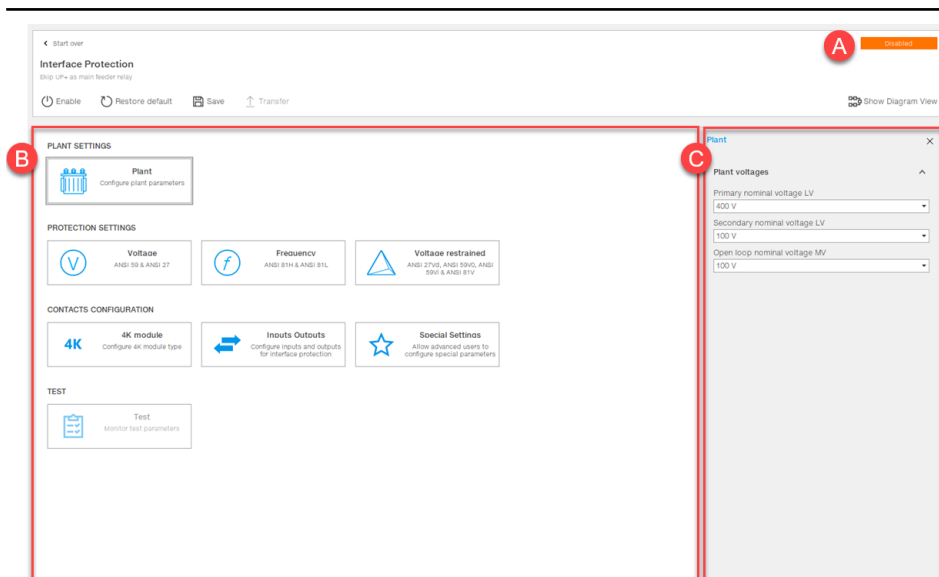
Part	Description
Breakdown	Button to open another project or create a new project.
Enable/	Button to enable/disable the function. The current status is displayed in [A].
Reset default	Button to reset parameters to factory settings.
Save	Button to save the project on the PC in .ips format. ℹ **Note**: *the .ips format is a proprietary format that can only be read with Ekip Connect.*
Transfer	Button to transfer the configuration to the device
Show diagram view/Show tile view	Button to change the view of the area [B].
A	Function status
B	Elements area to be configured in tile view (default) or in diagram view.
C	Area for the parameters of the element selected in [B].

Configure the function Interface Protection System

1. Click on **Tools** > Interface Protection System.

2. To start a new project, select the device type and then the button for the function that the device performs, or click on **Open project** to open a previously saved project.

3. On the page displayed, in the area of the elements to be configured (see "What it looks like" on the previous page), select the element to be configured and set the parameters.

4. Click on **Enable** to enable the function.

5. To transfer the configuration to the device, click on **Transfer**.

   ℹ **Note**: *to transfer the configuration to the circuit breaker, it is recommended for the circuit breaker to be in an open state.*

6. As also stated in the message that appears on the page, check that the device is receiving the status of the circuit breaker correctly, i.e. that in the absence of voltage, input 01 of the Ekip Signaling 4k module is on, and click on **Yes**: at the end of the transfer, a .pdf file containing the configuration report can be downloaded.

10.11 - Data Viewer

Description of the function

The Data Viewer function allows you to view the Data Logger files downloaded from the device and analyse the data.

Data Viewer in Ekip Connect

The following actions can be performed from the Ekip Connect tool:

- Open a recording created with the Datalogger function.
- Analyse data with reference to time or frequency of individual current and voltage phases.
- Print a report.
- Export the data.

Requirements

Access to the function	Unrestricted with the correct datalogger file.
Type of devices that support the function	• External unit for circuit breakers (e.g. Ekip Up) • Circuit breakers
Device status	Any
Type of connection with the device	Any

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

What it looks like

Part	Description
A	Open file path
Open	Button to open a file previously downloaded through the Data Logger function.
Information	Button to display file information ("File information" on page 76)
Options	Button to customise how the graph is displayed
B	Menu to select the type of graphic to be displayed: • "Time Domain" on the next page • "Frequency Domain" on page 76

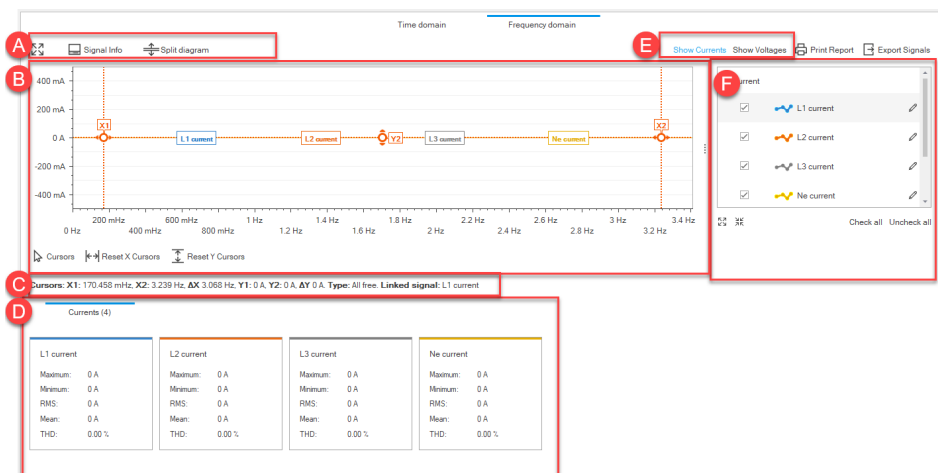| Part	Description
C	Data display area. The content depends on the type of graph selected in **[B]**.
D	Action buttons: • **Print Report**: generates the file report with file information, the graph with the currently displayed signals and detailed current and voltage values. The report can be saved in .pdf format or printed. • **Export Signals**: exports selected current, voltage and digital signals in .csv format.

Time Domain

Part	Description
A	Action buttons: • ⤢ : expands the graph display area on the page. • **Signal info**: displays/hides the information in **[D]**. • **Split diagram**: separates/merges current and voltage signal graphs. • **Digital**: allows you to select which types of digital events to display on the graph.
B	Graph with voltage and current waveforms recorded over time. If set, it also displays digital event signals.
C	Buttons to set the cursor and reset the position of the axes
D	Detailed values of currents and voltages displayed in the graph
E	Menu to display/hide current, voltage and digital signals in the graph: • ✎ : allows you to change how the signal is displayed in the graph • ⓪ : allows offsets to be reset

Frequency Domain

Part	Description
A	Action buttons: • ⤢ : expands the graph display area on the page. • **Signal info**: displays/hides the information in **[D]**. • **Split diagram**: separates/merges current and voltage signal graphs.
B	Graph with the recorded voltage and current harmonic spectrum. It depends on what is selected in **[E]**.
C	Buttons to set the cursor.
D	Detailed values of currents/voltages displayed in the graph
E	Buttons to display currents or voltages in the graph.
F	Menu to display/hide current/voltage signals in the graph: • ✎ : allows you to change how the signal is displayed in the graph

File information

Element	Description
Unit name	Device type
Circuit-breaker tag name	Customised name of the device:
Date	Date and time the file was recorded on the device
Sampling frequency	Sampling frequency
Network frequency	Standard frequency of the electrical network
Active test session	• **True**: indicates that the event was recorded during a test session • **False**: indicates that the event was recorded with the device in operating mode
Open file	Path where the open file is saved
Slave ID	Device identification code

10.12 - Data Logger

Path in Classic view: Classic view > Datalogger

Description of the function

The function Datalogger allows the recording of data associated with a trigger event. The data recorded are:

- analog measurements, i.e. phase currents and line-to-line voltages
- digital events, i.e. protection events or alarms, circuit-breaker status signals, protection trips.

IMPORTANT: *the function Datalogger requires an auxiliary voltage supply.*

Operating principle

When Data Logger is enabled and activated, the device continuously acquires data by filling and emptying an internal buffer (**B**).

If the trigger event is encountered (**A**), the device interrupts the acquisition immediately or after a user-definable time called the stop delay (**C**). Next, it saves all the data in the window (**D**), which can then be downloaded to a PC for reading and analysis.

A subsequent recording overwrites the previous one in the device memory.
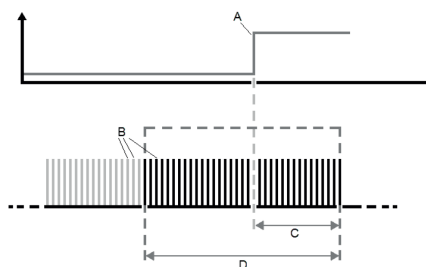
Datalogger in Ekip Connect

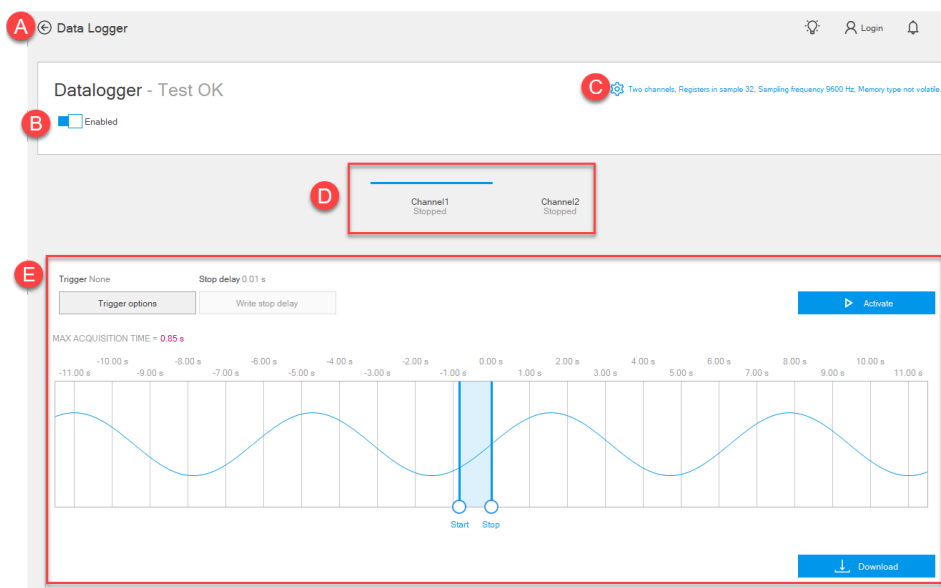From Ekip Connect the following actions can be performed:

- enable/disable the function
- activate/deactivate recording
- configure recording parameters
- download the recording to analyse it with function Data Viewer

Requirements

Access to the function	Unrestricted for devices on which the function has been activated. Activation on some devices requires the purchase of a package on Marketplace.
Type of devices that support the function	• External unit for circuit breakers (e.g. Ekip Up) • Circuit breakers
Device status	Connected and communicating
Type of connection with the device	Connection via Ekip T&P and Ekip Programming to download the recording Connection to serial network (Modbus RS485) and Ethernet (Modbus TCP) to set up, start, stop and download the recording

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

What it looks like

Part	Description
A	Button to go back to the menu **Tools**
B	Command to enable the function
C	Button to set the function ("Settings Data Logger" below). Display the current settings.
D	Menu for selecting the channel to be configured
E	Work area with graphic representation of the recording **Trigger**: trigger event set **Trigger options**: button to set trigger event (default or custom) **Stop Delay**: duration, in seconds, of the recording after the trigger event **Write stop delay**: button to overwrite the current **Stop Delay** value with the value set in the graphic **Active**/**Stop**: button to activate/stop Datalogger **Download**: button to save the recording in .abb format. It also allows you to set the recording interval to be downloaded. *Note: the **Download** button is not visible if there is no data, if there are not enough samples or if the recording is still in progress.*

Settings Data Logger

Element	Description
Number of channels	Set the number of recording channels. Each channel has a configuration independent of the others.
Sampling frequency	Frequency of data collection. The higher the sampling frequency, the shorter the recording duration.
Type of memory	• **Non-volatile** (default): the device keeps recording even if it is switched off. The life of the device's internal battery may decrease significantly compared to the declared value in the absence of the auxiliary power supply. • **Volatile**: the device keeps recording even if it is switched off. When the device is switched on again, it Data Logger reboots automatically, losing all previously stored data.

Start recording

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Data Logger**.
2. Check that the status of the command to enable the function is **Enabled**.
3. Click on ⚙ and configure recording.
4. To cancel the changes, click on **Cancel**. To save the configuration, click on **OK** : the settings are automatically saved and transmitted to the device.
5. Click on **Trigger options** and set the trigger event.

6. To cancel the changes, click on **Cancel**. To save the configuration, click on **OK**: the settings are automatically saved and transmitted to the device.

7. To record also after the trigger event, in the graphic representation of the recording drag the recording interval until the desired stop delay is displayed. To save the setting and transmit it to the device, click on **Write stop delay**.

8. Click on **Active**: the function is active and available for recording.

IMPORTANT: once activated, the function remains active on the device regardless of the status of the connection and communication with Ekip Connect.

Download a recording

1. With the device connected and communicating, click on **Download**.

*Note: the **Download** button is available only if there is a recording.*

2. Select where to save the file and the interval of the recording you want to download: Ekip Connect saves an .abb file named according to the following syntax: *datalogger_YYYYMMDD_Tag_name*.

Note: if communication with the device is via a point-to-point connection, it can take up to 5-10 minutes to download the file. With a bus network connection, the operation is faster.

Download only the recording interval with useful data to reduce download times.

10.13 - Firmware Upgrade

Description of the function

The function Firmware Upgrade allows certain devices, such as M4M network analysers, to be updated,

Requirements

Access to the function	Unrestricted
Type of devices that support the function	M4M network analyser ℹ **Note**: *With additional permissions, this function is also supported by other devices (e.g. circuit breakers).*
Device status	Connected and communicating
Type of connection with the device	Communication via serial network (Modbus RS485) and Ethernet (Modbus TCP)

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

Reference documentation

For more information, please refer to the document M4M - Desktop software 1.2.pdf available here.

10.14 - Test area: useful information

Description of the function

The Test area function allows you to observe the behaviour of the device in conditions that are difficult to reproduce in reality, and to check and confirm the following:

- the installation choices made
- the value of the parameters configured on the device

The tripping time displayed by Ekip Connect is merely simulated, with different tolerances compared to the real situation. The test is not a real current injection test. The purpose of this function is to check whether, in the case of a particular fault event, a trip occurs according to a certain set of parameters.

Types of tests

The following types of tests are available.

- **Test**: simulates manually customised current and/or voltage values ("Test area: Test" on page 83).
- **Test sequence**: runs a sequence of predefined tests that cover the widest possible range of abnormal current and voltage values. Customized test sequences can be created ("Test area: Test sequence" on page 85).
- **Trip test**: checks the operation of the opening solenoid. In particular, it verifies that, after a trip command, the circuit breaker switches from the closed to the open state ("Test area: Trip test" on page 88).

Test session

It is possible to define a test session and then add supplementary information useful when managing test reports, such as:

- session name
- place
- client
- operator performing the tests

Test report

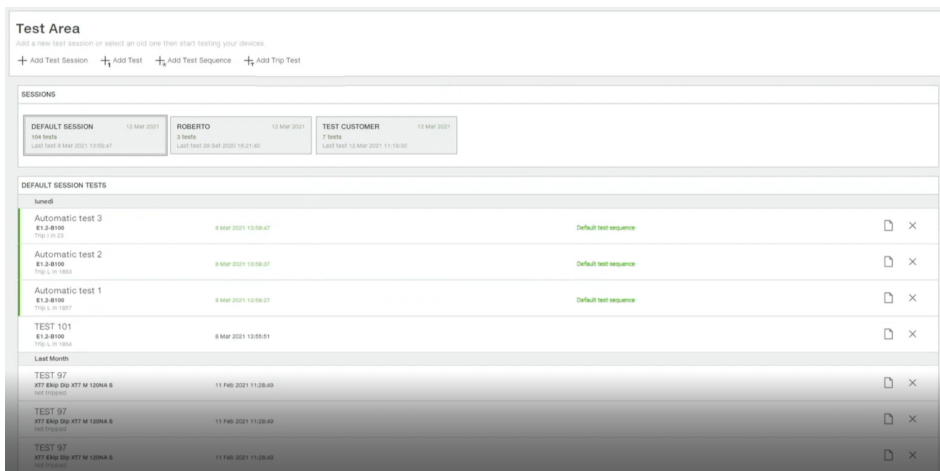A report can be displayed for each test performed. The report contains the following information:

- session name and operator
- test name
- test date and time
- current and voltage values generated during the test, represented in a phasor diagram
- settings of the device tested
- test result
- descriptor file in use
- Ekip Connect version

Requirements

Access to the function	Unrestricted
Type of devices that support the function	- External unit for circuit breakers (e.g. Ekip Up) - Circuit breakers
Device status	Connected and communicating *(i)* **Note**: *during the test, the currents must be at 0.*
Type of connection with the device	Connection via Ekip T&P

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

What it looks like

| Part	Description
Test area	Buttons to run the various tests and add test sessions.
Test sessions	Available test sessions: • **Default session**: session created automatically by Ekip Connect to collect the generated tests without additional information. • Customised sessions: sessions created by the user to collect tests with the same additional information.

Session Tests	List of tests performed in the session selected in **Test sessions**. The following details are provided for each test:
	
	• Result: Tripped/Not tripped
	
	• Test name
	
	• Type and customised name of the device
	
	• Test generation date and time
	
	• Any test sequence to which the test belongs
	
	• Action buttons:
	
	    ○ : view test report
	
	    ○ ✕ : deletes a test
	
	    ○ : add/edit notes

Create a test session

1. In **Tools** > **Test area**, click on **Add test session**.

2. Fill in all additional information for the tests in the session and click on **OK**: the button of the session created appears in **Test sessions**.

3. To delete the session, place the cursor over the session button and click the ✕ button that appears.

4. To start a session, select the session button: the tests performed are saved in the selected session.

5. To perform a test, see "Test area: Test" on the next page, "Test area: Test sequence" on page 85, "Test area: Trip test" on page 88.
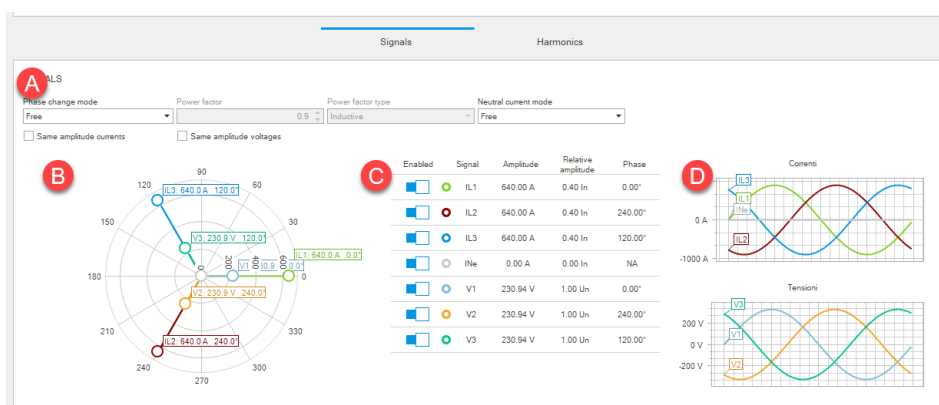
10.15 - Test area: Test

Description

The test allows you to simulate manually customised current and/or voltage values.

What it looks like
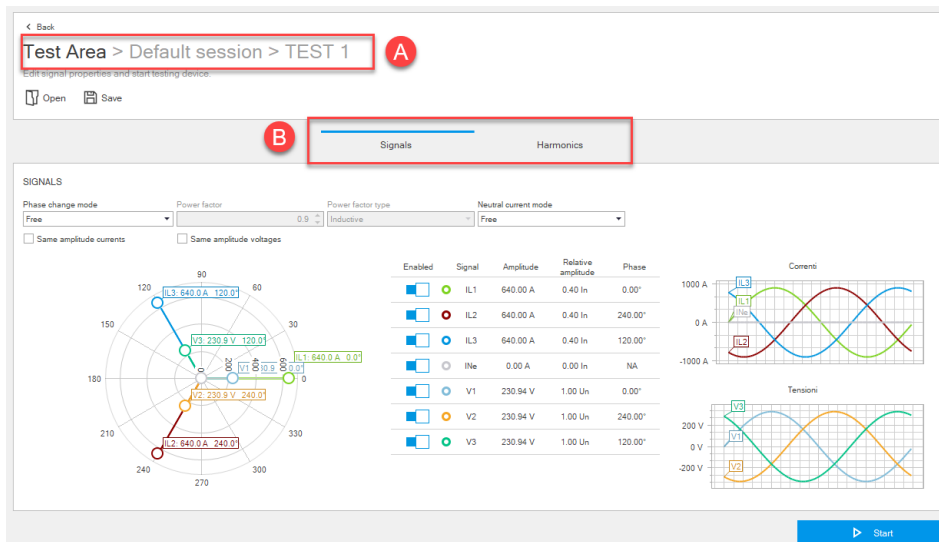
Part	Function
Back	Returns to the main page of the **Test area** function.
Open	Opens a test on the page that was previously downloaded and saved on the PC.
Save	Saves the test to the PC in .test format. ⓘ **Note**: the .test format is a proprietary format that can only be read with Ekip Connect.
A	Indicates the session and title of the open test
B	Select the tab **Signals** or **Harmonics**
Start	Starts the test

Tab Signals

Part	Description
A	Signal settings, e.g. load type (inductive or capacitive), power factor.
B	Phasor diagram: displays and allows changes to be made to the phase shift and amplitude of the phasors of the signals to be simulated during the test. 💡 *Just drag the end of a phasor to modify the diagram.*
C	Signals table: displays and allows you to change the numerical value of the amplitude and phase difference of the fundamental component of the test signals. Amplitude can be expressed both in relative (rated current/voltage) and absolute terms (Amperes/Volts).
D	Graphs of currents and voltages based on the settings in the phasor diagram or signal table.

Tab Harmonics
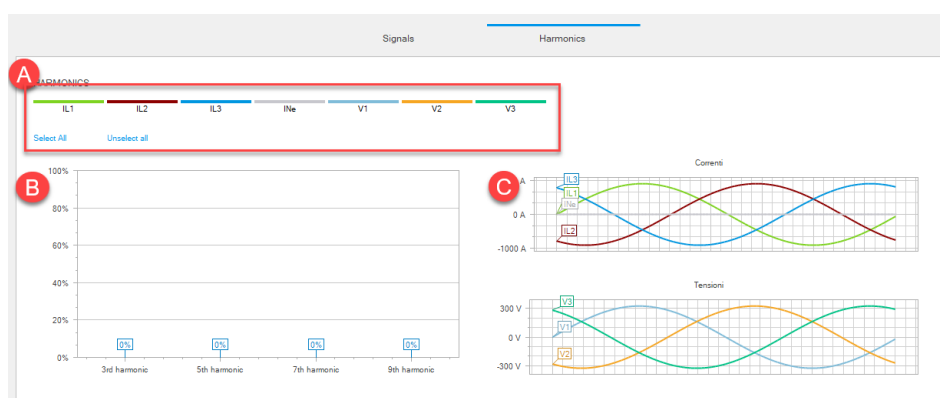
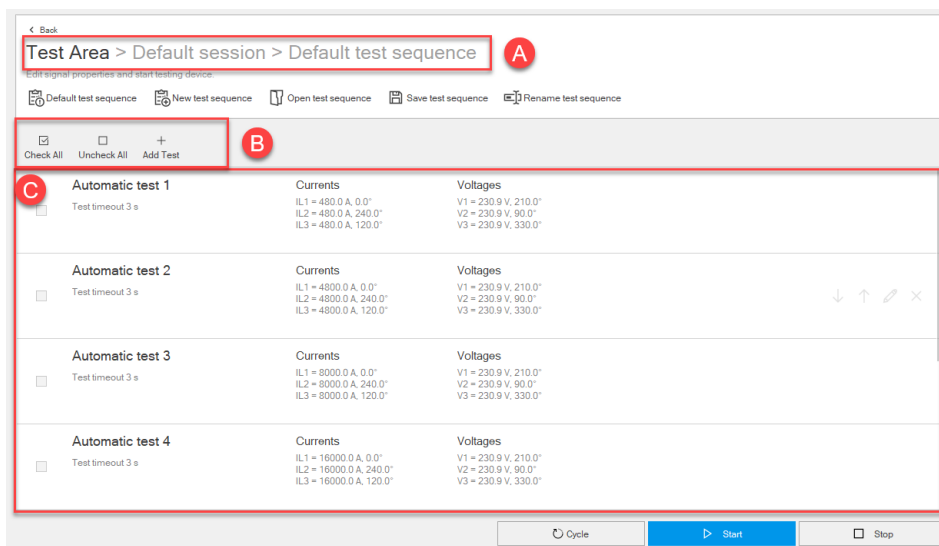| Part	Description
A	Area for selecting/deselecting the current phase or voltage for which the amplitude of the harmonic components is to be changed
B	Harmonics diagram: displays and modifies the amplitude of the 3rd, 5th, 7th, and 9^{the} harmonic component of the AC test signals. 💡 *Just drag a point of the harmonic to modify the diagram.*
C	Graphs of currents and voltages based on the settings in the harmonics diagram.

Start manual test

⚠️ **CAUTION!** Perform the test with no current flowing

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Test area**.
2. If required, create or select the session in which to perform the test ("Create a test session" on page 82).
3. Click on **Run test**: the test page opens.
4. Customise the values in tabs **Signals** and **Harmonics** according to the device configuration and the conditions to be tested.
5. Click on **Start**: the signals are sent to the protection release and a window showing the progressive status of the test opens.
6. The release may generate a trip, depending on how it has been configured.

   ℹ️ *Note: none of the parameters can be edited during the test.*

7. To interrupt the test, click on **Stop**.
8. To view the report, click on **View test report**: the test report appears.
9. If required, export the data in .xlsx format, download in .pdf format or print the report.

10.16 - Test area: Test sequence

Description

Tests can be run in series in the form of a test sequence. ABB provides a sequence of predefined tests that covers the widest possible range of abnormal current and voltage values. Customized test sequences can be created.

What it looks like

Part	Function
Back	Returns to the main page of the **Test area** function.
Default test sequence	Opens the default test sequence in the page.
New test sequence	Opens and displays a new sequence test. Test sequences are empty by default
Open test sequence	Opens a test sequence in .tsq format previously downloaded and saved on the PC.
Save test sequence	Saves the test sequence on the PC in .tsq format. ℹ️ *Note: the .tsq format is a proprietary format that can only be read with Ekip Connect*
Rename test sequence	Renames the open test sequence.
A	Indicates the session and title of the open test sequence
B	Buttons to manage the tests in the sequence. • **Select all**/**Unselect all**: selects the tests to be performed. • **Add test**: adds a test to the sequence.

Part	Function

C	List of tests in the sequence. The following information is provided for each test:
	
	• Check box to include/exclude the test in the sequence execution
	• Test name
	• Timeout set
	• Current and voltage values set
	• Action buttons:
	   ○ ↓ : moves the test down in the order of execution
	   ○ ↑ : moves the test up in the order of execution
	   ○ ✎ : shows the tabs to edit the test ("Test editing tabs" below)
	   ○ ✕ : deletes a test

Cycle	Repeats the test sequence until it is manually interrupted.
Start	Start the test sequence.
Stop	Interrupt the test sequence.

Test editing tabs

Tab	Content
Property	• Test name • Timeout : maximum time that Ekip Connect will wait for a trip signal from the device. • Enabling of checking the trip time against set limits • Minimum and maximum limit for trip times
Signals	See "Tab Signals" on page 83
Harmonics	See "Tab Harmonics" on page 84

Start a test sequence.

⚠ **CAUTION!** Perform the test with no current flowing

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Test area**.
2. If required, create or select the session in which to perform the test ("Create a test session" on page 82).
3. Proceed as follows:

To perform...	Then...
the default test sequence	click on **Default test sequence**
a previously saved sequence	click on **Open test sequence** and select the .tsq file of the sequence to be opened
a new sequence	see "Create a test sequence." on the next page.

4. To customise the current and voltage settings and values of a test, place the cursor on the relevant test row: the test action buttons appear.
5. Click on ✎, customise the settings according to the device configuration and the conditions you want to test.
6. Click on **OK**.
7. Select the tests you want to run in the sequence.
8. To start the sequence, click on **Start**: the signals are sent to the protection release. The line corresponding to the running test shows the progressive test status and, when the test is finished, the test result. At the end of a test, the next selected test in the sequence is automatically executed. At the end of the last test, the test sequence is terminated automatically.

ⓘ *Note: none of the parameters can be edited during the test.*

The release may generate a trip, depending on how it has been configured.

9. To interrupt the test manually, click on **Stop**.

10. From the sequence completion window, click on **Yes** to generate the test sequence report. Otherwise, select **No**. It will also be possible to view the report later from the main test page ("What it looks like" on page 82).

Create a test sequence.

1. In **Tools** > **Test area** click on **New test sequence**.

2. Click on **Rename test sequence** and assign a name to the sequence.

3. Click on **Add test**: the **test 1** row appears.

4. To customise test settings and the current and voltage values of a test, place the cursor on relevant test row: the test action buttons appear.

5. Click on , customise the settings in the test edit tabs according to the device configuration and the conditions you want to test, and click on **OK**.

6. Repeat steps 3, 4, 5 for all the tests to be added to the sequence.

7. To save the sequence, click on **Save test sequence**.

10.17 - Test area: Trip test

Description The trip test allows you to check the operation of the opening solenoid. The purpose of the test is to check that the circuit-breaker switches from closed to open after a tripping command.

Start trip test ⚠ **DANGER!** Risk of electric shock. Make sure that the circuit-breaker is closed but not under service conditions before performing the test.

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Test area**.
2. If required, create or select the session in which to perform the test ("Create a test session" on page 82).
3. Click on **Run trip test**.
4. After reading the message in the **Warning** window, if all the conditions have been met, click on **Next**: the trip command is sent to the opening solenoid. A window requesting a test result notification will open at the end of the test:
5. If tripping has occurred (the opening solenoid tripped and the circuit-breaker opened), click on **Yes**. Otherwise, click on **No**: the result of the test notified in this way is shown in the report that can be viewed on the main test page ("What it looks like" on page 82).

10.18 - Customised logic

Requirements   Function only available for advanced users.

10.19 - Reports

Description of the function

The Reports function allows you to generate, print and download the report with all the information contained the device memory, and thus also to find out the value of all the parameters set and measurements recorded.
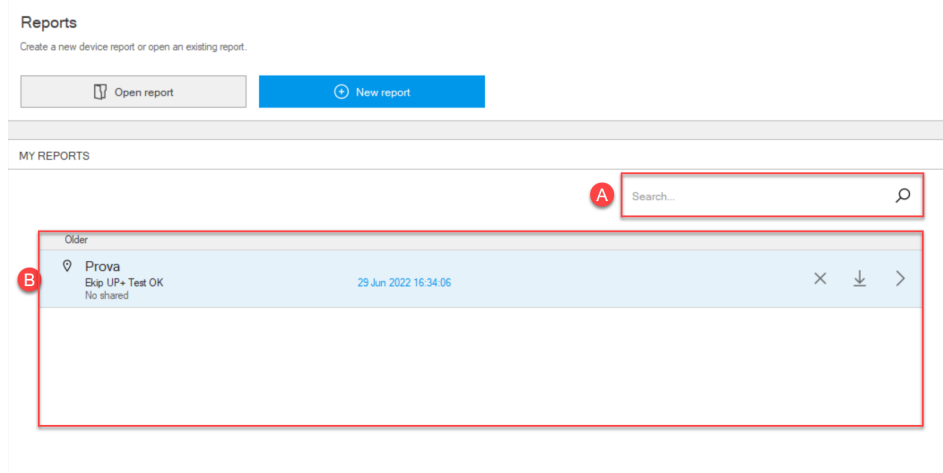
🛈 *IMPORTANT: the data visible in the report depends on the role of the user viewing it*

Requirements

Access to the function	Unrestricted
Type of devices that support the function	• External unit for circuit breakers (e.g. Ekip Up) • Circuit breakers • Energy meters • Station • Fuse-disconnectors, change-over switches
Device status	Connected and communicating
Type of connection with the device	Connection via Ekip T&P, serial network (Modbus RS485) and Ethernet (Modbus TCP)

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

What it looks like

Part	Description
Open report	Opens a report previously downloaded and saved on the PC.
New report	Generates a report
A	Field to search for a report by name

B	List of reports generated The following information is provided for each report:
	 • Report name
	 • Type and customised name of the device
	 • Report generation date and time
	 • Action buttons:
	     ○ ✕ : deletes the reports
	     ○ ↓ : downloads the report in .pdf format
	     ○ ＞ : displays the report

Generate a report

1. With the device connected and communicating with Ekip Connect, click on **Tools** > **Reports**.
2. Click on **New report**.
3. Enter the name of the report, for example, the name assigned to the device in the installation.
4. Click on **Save report**: Ekip Connect generates and displays the report of the information in the device memory.
5. If required, download or print the report.

View a report

1. In **Tools** > **Reports**, identify the required report. If necessary, use the search field
2. Position the cursor on the relevant line of the report: the report action buttons appear.
3. Click on $>$: the report opens.

Open a report saved on the PC

In **Tools** > **Reports**, click on **Open report** and select the .pdf file of a report previously generated and downloaded with Ekip Connect: the report opens.

10.20 - File management

Description of the function

The File management function makes it possible to export the parameters configured on a device, save them on the PC and then import them into another device of the same type to facilitate configuration.

> **IMPORTANT**: *this is only guaranteed to work between devices with the same configuration (release, protection devices, functions and packages). Otherwise, some configurations/parameters may not be transferred. The transfer does not include enabling of packages Marketplace.*

> **Note**: *the exported file cannot be consulted. To export and view configuration parameters, use the Reports function (see "Reports" on page 90).*

It is also possible to import a configuration file generated with DocWeb to set certain device parameters also managed by Ekip Connect.

Requirements

Access to the function	Unrestricted
Type of devices that support the function	• External unit for circuit breakers (e.g. Ekip Up) • Circuit breakers • Energy meters (only M4M) • Station • Fuse-disconnectors, change-over switches
Device status	Connected and communicating
Type of connection with the device	Connection via Ekip T&P and Ekip Programming

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available here.

What it looks like
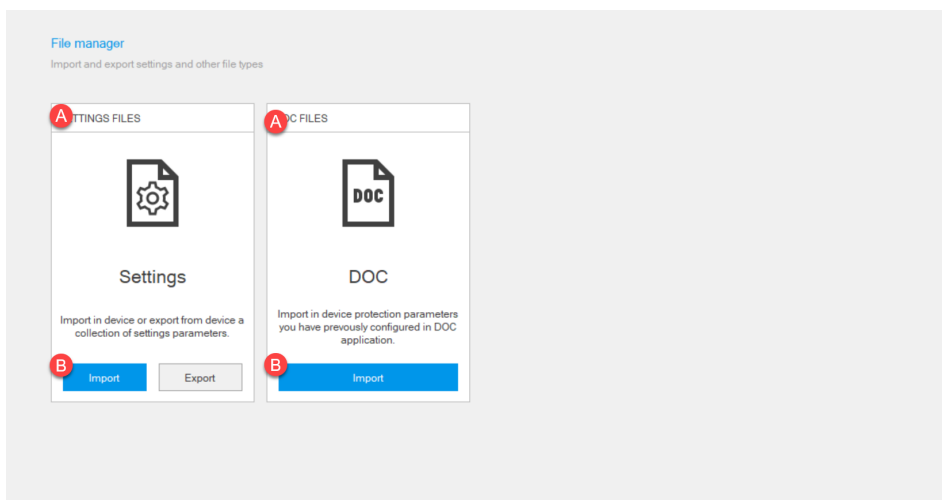
Part	Description
A	File management mode
B	Action buttons

Export the settings file

1. With the device already configured, connected and communicating with Ekip Connect, click on **Tools** > **File management**.

2. In **Settings file**, click on **Export**.

3. Select where to save the file: Ekip Connect generates and saves an .enc file named according to the following syntax *Product_name_Tag_name_Settings_YYMMDDHHMMSS*.

Note: the .enc format is a proprietary format that can only be read with Ekip Connect.

Export a settings file

1. With the device to be configured connected and communicating with Ekip Connect, click on **Tools > File management**.

2. In **Settings file**, click on **Import**.

3. Select the .enc file to be imported.

4. To select which settings to import, click on **Filter**, uncheck the settings you do not wish to import and click on **Import**. Otherwise, to import all settings, click on **Import all**: Ekip Connect displays all settings involved in the import, with the imported value and the value on the device before and after the import

5. Check that each setting is imported correctly. If the setting is imported correctly, the ⊘ icon appears in the **In Sync** column.

6. Click on **Next**.

7. If any settings were not imported correctly, repeat the procedure by importing only those settings that were not imported. If the import fails, contact ABB.

Import a DOC file

1. With the device to be configured connected and communicating with Ekip Connect, click on **Tools > File management**.

2. In **DOC file**, click on **Import**.

3. Select the .doc file to be imported.

4. To select which settings to import, click on **Filter**, uncheck the settings you do not wish to import and click on **Import**. Otherwise, to import all settings, click on **Import all**: Ekip Connect displays all imported settings, with the imported value and the value on the device before and after the import.

5. To interrupt the setting, click X to close the window, otherwise click on **Next**: Ekip Connect writes the values of the settings to the communicating device.
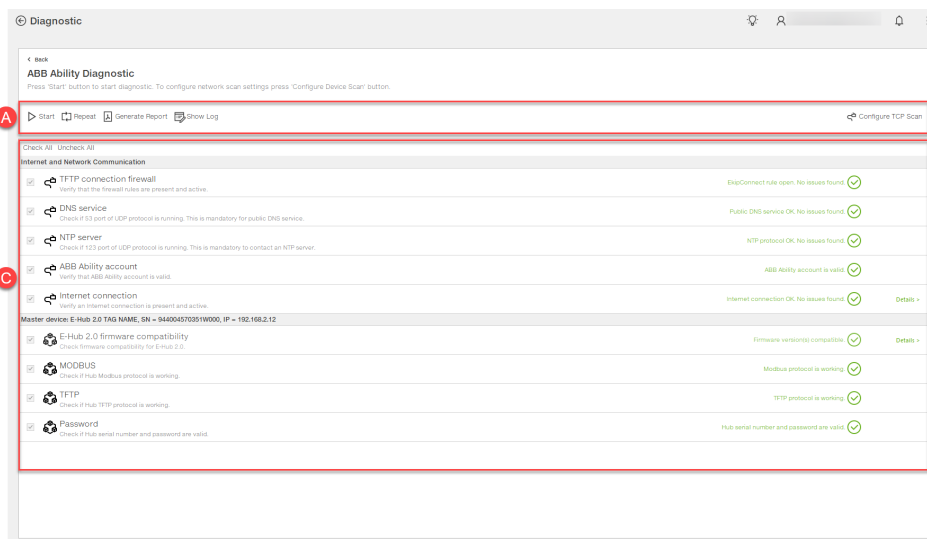
10.21 - Diagnostics

Description of the function	The Diagnostics function allows you to check the flow that the device performs to collect data from the field and transmit it to the cloud.

Requirements

Access to the function	Unrestricted
Type of devices that support the function	Gateways, External units for circuit breakers, Fuse-disconnectors, change-over switches, Circuit breakers (with Ekip Com Hub communication module installed)
Device status	Any
Type of connection with the device	Connection to Ethernet network (Modbus TCP)

>> For more details on supported devices and requirements for each, please refer to document 9AKK108467A9238 available [here](#)*.*

What it looks like

Part	Description
A	Buttons on the page • **Start**/**Stop**: starts/stops the diagnostics session. • **Repeat Selected Tests**: repeats the selected tests. • **Generate Report**: allows the session report to be saved in .pdf format • **Show Log**: displays the diagnostics session logs. • **Configure TCP Scan**: opens the window to set the Ethernet TCP network scanning parameters
C	Session test list: • ⟳ : test running • ⊘ : test completed successfully • ⚠ : test completed with problems • **Details**: shows additional information about the test.

Perform a diagnostic session

1. Click on **Configure TCP Scan**: the **Device scan settings** window opens.

2. Set the parameters of the Ethernet TCP network to which the device to be tested is connected and click on **OK**.

3. Click on **Start**: a window appears asking you to enable the configuration session on the device.

4. Manually enable the session on the device, then click on **OK**.

5. If requested, in the **Select Hub** window, select the device to be tested.

6. In the **ABB Ability ENVIRONMENT** window, select the usage environment, then click on **OK**: the **Log in** window appears.

7. Log in: the **Hub Password** window appears with the serial number of the device already filled in.

8. Enter the 16-digit password of the device, then click on **OK**: the results of the tests performed appear.

9. If necessary, do the following:

To...	Then...
repeat the tests	select them, then click on **Repeat Selected Tests**.
save the session report	click on **Generate Report**.
view the session logs	click on **Show Log**.

11 - Other functions

11.1 - Update Ekip Connect

Automatic updating

At each start-up, Ekip Connect connects to the network and searches for updates. If any are available, you can download them immediately or postpone the download. If you postpone the download, the next time Ekip Connect starts up, an available update notification will appear again.

If you download the update but do not install it immediately, the available update notification Ekip Connect will appear again at the next start-up and you can download it again.

Manual updating

1. In the top bar, click on ⋮ and then on **Download**.
2. To download the new version of Ekip Connect, click on **Ekip Connect**: Ekip Connect connects to the network and searches for updates.
3. To download new versions of the descriptor files, click on **Firmware collection**: Ekip Connect connects to the network and searches for updates.

🛈 **IMPORTANT**: *manual software installation is only allowed if Ekip Connect is not in use and if the version is the same or more recent than the one installed. Manual installation of an older version is not possible and is signalled by a warning window.*

🛈 **IMPORTANT**: *manual updating is disabled during an automatic update.*

ℹ **Note**: *during manual updating of software and descriptors, the same or newer versions than those installed may be found: downloading is allowed in both cases.*

11.2 - Customising Ekip Connect

Changing the interface language	1. Click on ⋮ and then **Language**. 2. Select the desired language. 3. To make the change effective, restart Ekip Connect.

Changing the interface colours   Click on ⋮ and then **Themes**.
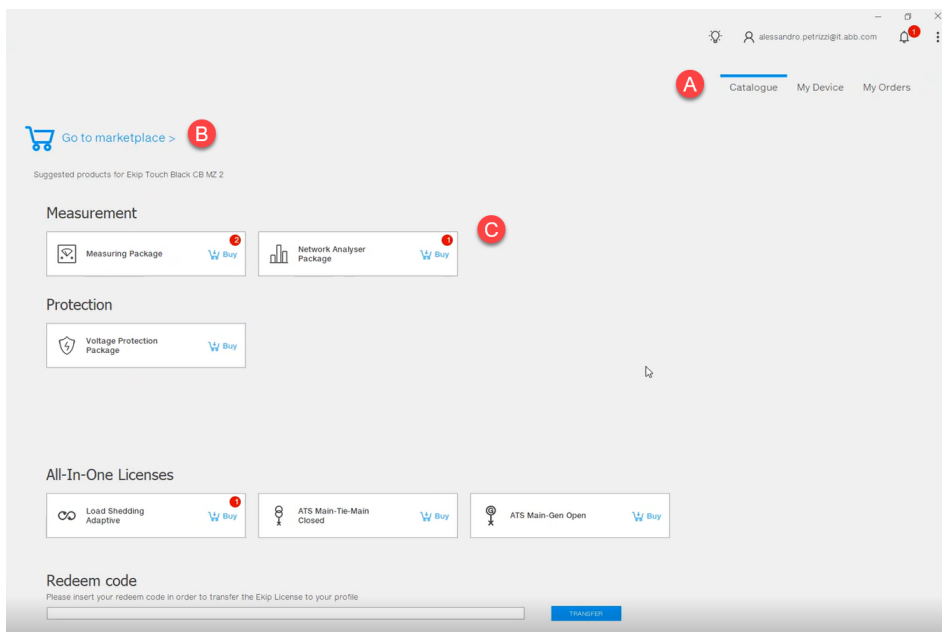
11.3 - Marketplace

Marketplace

Page functions

The page allows you to perform the following operations:

- Access the marketplace to purchase product software packages.
- Activate licences of purchased software packages.
- Discover the activation status of software packages.

Note: *these functions are only accessible if you are connected to the Internet and are only available for circuit breakers.*

What it looks like

Area	Description
A	- Catalogue: catalogue containing the software packages for the communicating device - My Device: active or activatable packages for the communicating device - My orders: software packages and their licence status for the registered user
B	Link to the full marketplace
C	Software package details area containing status information and action button. 🔴 : indicates the number of available packages

Install the packages

To install the software packages purchased, refer to document 9AKK107680A8746 available here.

11.4 - Information on Ekip Connect

Section Information   From the menu ⋮ > **Information** you can find out the following data:

- software version
- copyright year
- open source libraries used for Ekip Connect
- end user licence agreement (EULA)
- suggestions and best practices to ensure the security of data processed with Ekip Connect

11 - Troubleshooting

The solutions to potential problems that may arise when Ekip Connect is used are listed below.

Problem	Cause	Solution
"Device not found" is displayed after a Serial scan.	• Device not connected • Device off. • Drivers not installed.	• Connect the device and repeat the scan. • If connected, make sure that the device is on, then repeat the scan. • If the device is connected and on, see ""Installing drivers for ABB key scanning" on page 11".
"Ekip T&P not present" or "Ekip Programming not present" appear after an ABB key T&P scan.		You are asked to connect the connector or reinstall the driver. Check that the connector is connected: if it is not, connect it, click on Cancel, then shut-down and rerun Ekip Connect. Otherwise, if it is connected, se ""Installing drivers for ABB key scanning" on page 11.

For an updated list of problem solving FAQs, please refer to document 9AKK108467A9239 available [here](#).

ABB