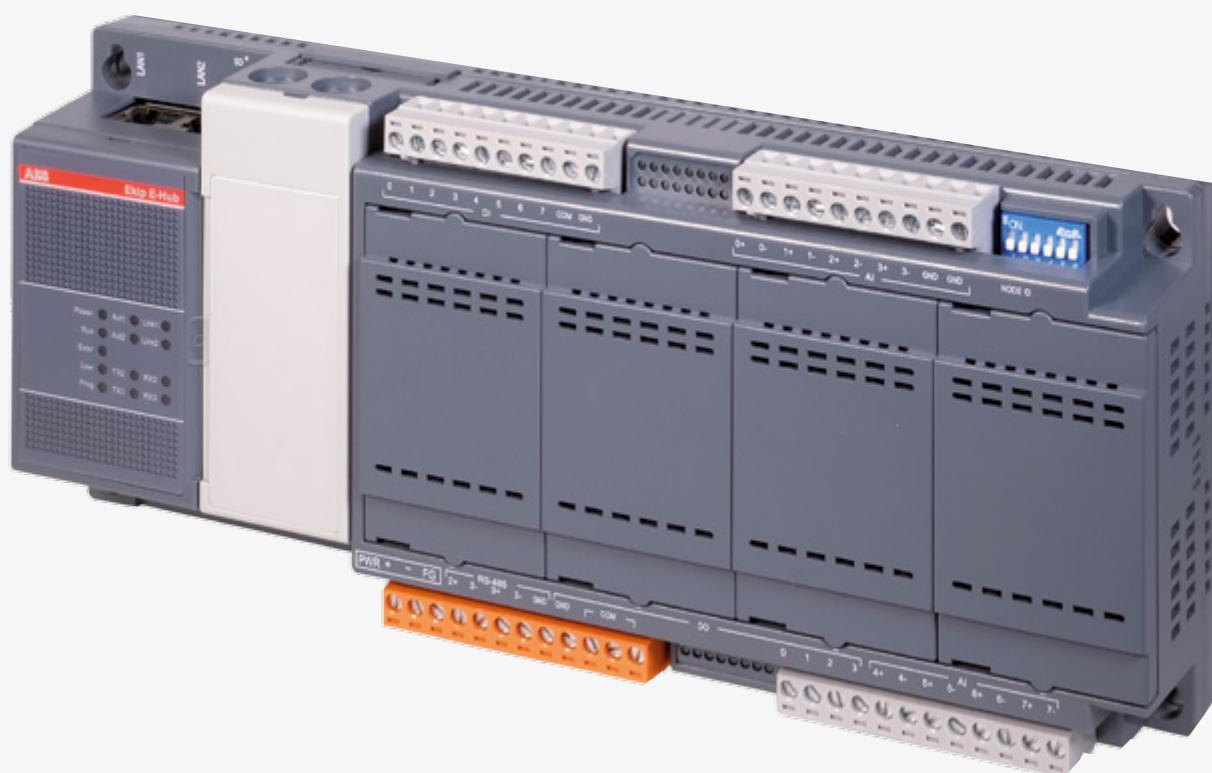


LOW VOLTAGE

Ekip E-Hub

Getting started



- Independent internet-of things (IOT) gateway
- Up to 15 Modbus RS-485 devices can be connected
- Up to 8 channels of digital input are supported
- Up to 8 channels of analog input are supported.

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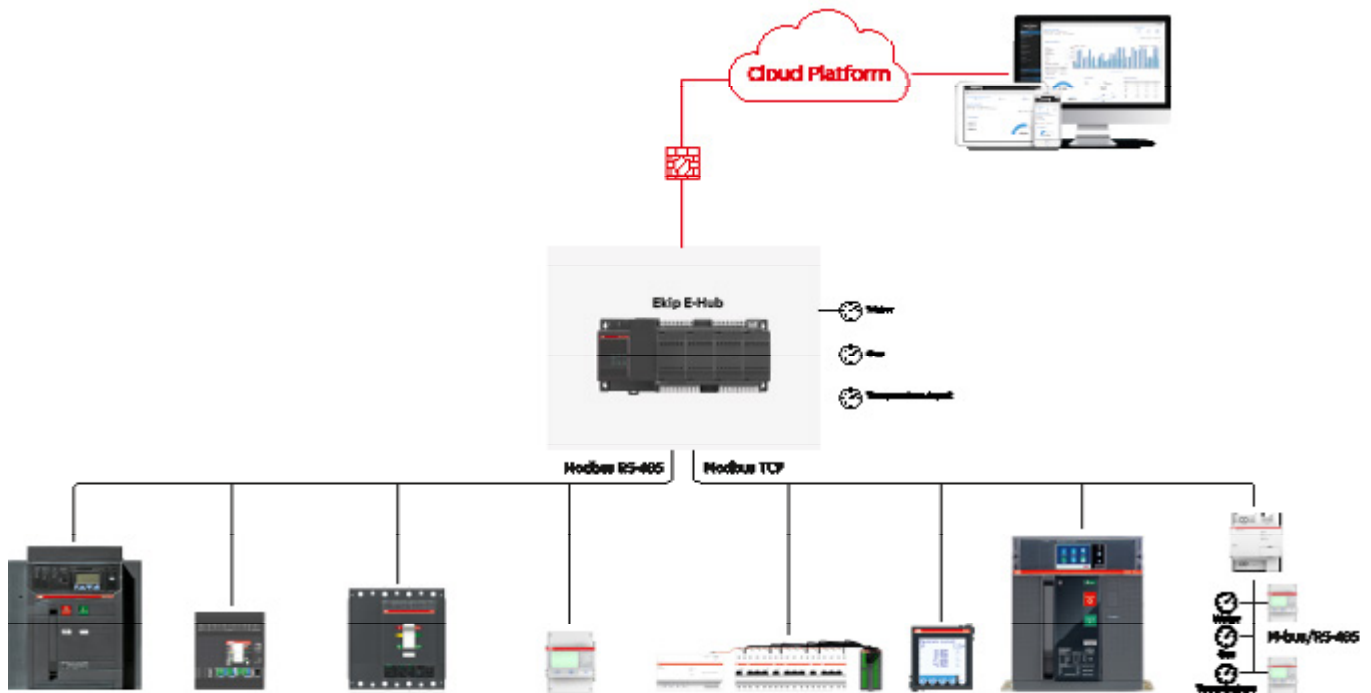
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Ekip E-Hub

Architecture

Ekip E-Hub is an independent internet-of things (IOT) gateway that can gather data relating to field devices and the consumption of water, gas, etc., then upload this data to the ABB Ability™ Electrical Distribution Control System (EDCS). As a result, all downstream field devices can be monitored via the cloud.

Below is an example of a typical Ekip E-Hub architecture:

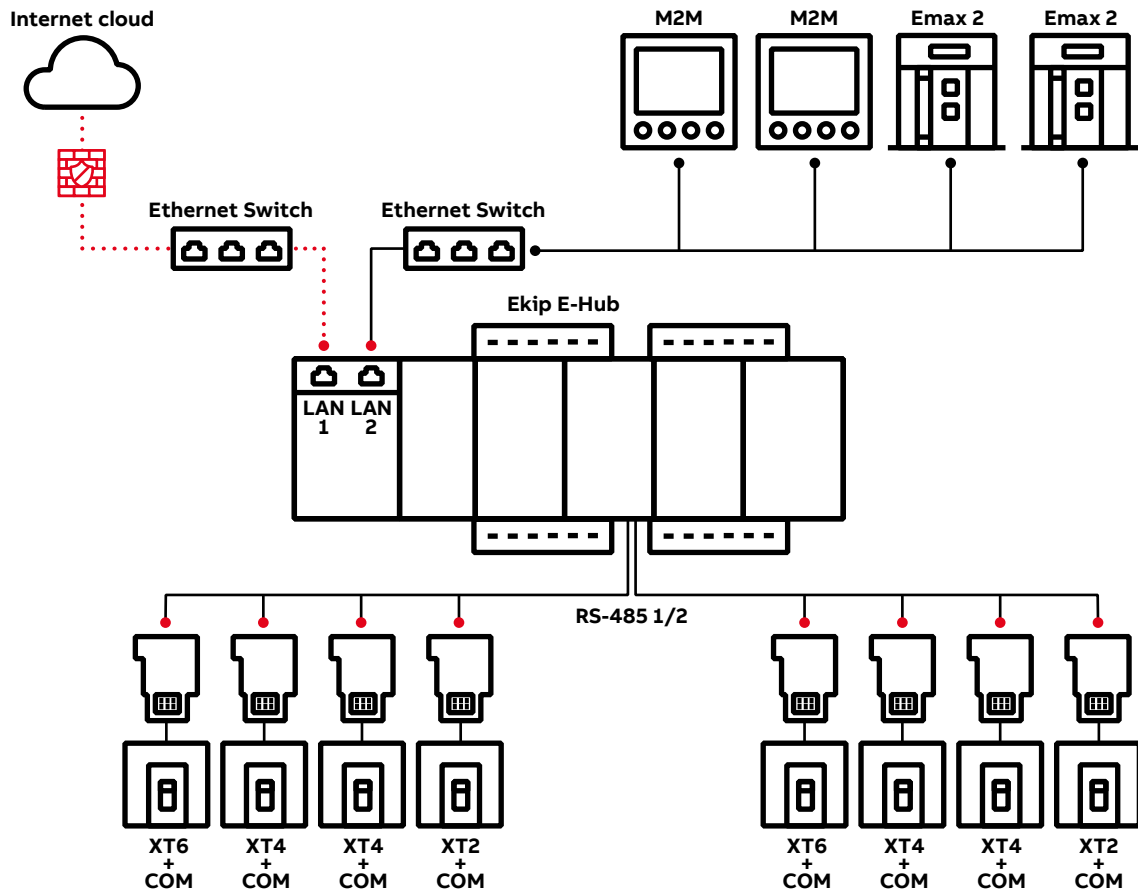


A complete two-item shopping list of the technologies required:

- Ekip E- Hub
- Ekip Connect 3.0.346.0 and above

As an example, the illustration below shows how to wire the system separating interfaces between field devices and an internet connection.

LAN1 should be connected to the internet; LAN2 should be connected to LAN (field devices).



Note:

Although E-Hub has a built-in firewall feature to block initiative access from the internet and allows only initiative-to-internet access from E-Hub, ABB still recommends deploying a dedicated firewall between E-Hub and the internet. A rate limiter should be configured at either the device level or the net work level, depending on the requirement.

For further details on network connections and requirements for system provisioning, please refer to the following instructions available in the ABB library.

Reference Architecture ABB Ability EDCS with:

- [Ekip UP →](#)
- [Ekip E-Hub →](#)
- [Emax 2 →](#)

Disclaimer

It is the sole responsibility of the customer to provide and continuously ensure a secure connection between the product and the customer network or any other network.

The customer is required to establish and maintain any appropriate measures (including, but not limited to, the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.)

to protect the product, the network, its system and the interface against any kind of security breach, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB and its affiliates are not liable for damage and/or losses related to such security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Ekip E-Hub Hub performance

Each Ekip E-Hub can connect up to 30 devices (total for Modbus TCP/IP and Modbus RS-485 devices). More than 30 devices in total can decrease the performance of the data logging (30 seconds).

- Up to 15 Modbus RS-485 devices can be connected to each RS-485 interface. Devices with a Modbus address between 2 and 127 must be connected to RS-485 interface 1. Devices with a Modbus address between 128 and 247 must be connected to RS-485 interface 2.

Note that a total of 15 Modbus RS-485 devices ensures optimal data logging (30 seconds).

- Up to 8 channels of analog input are supported. Channels 0 to 3 are for current input, and channel 4 to 7 are for voltage input. The channel type can be set according to different current/voltage ranges.
- Up to 8 channels of digital input are supported. Pulse meter and O/C contact can be selected for different DI types.
- All the AI and DI are set to OFF as default.
- It is possible to provide multiple Ekip E-Hubs in one installation
- Data logging time and data refresh on the web app is 30 seconds.
However, performance could decrease if a large number of devices (typically more than 30 devices, including Modbus TCP connected devices) are connected to ABB Ability EDCS by means of a single Ekip E-Hub.

Also, the type of devices that are connected and the communication protocol used can affect performance. To ensure high data logging performance, ABB suggests using more than one Ekip E-Hub when more than 15 devices are to be connected via Modbus RS-485.

Internet connection and data traffic

The Ekip E-Hub module must be provided with an internet connection via the site network (i.e., LAN) or a dedicated router with SIM card. For an internet connection via router with SIM card, please consider the following suggestions on the router:

- ABB ARG600 wireless gateway
- ABB ARP600 wireless gateway

Regarding internet data traffic via mobile network, it depends on the number of connected devices as well as on the telecom operator.

The estimated data traffic per connected device amounts to 20GB per year.

Configuring the system

The system configurations before provisioning consist of four parts: Ekip E-Hub configuration, field device configuration, network configuration and laptop configuration.

Ekip E-Hub Configuration:

- Ekip E-Hub LAN1 does not need a static IP address. The default configuration is DHCP client.
- The Ekip E-Hub LAN2 default configuration is DHCP server with the following parameters:
 - Force Static IP Address: ON
 - Static IP address: 10.86.92.1
 - Static Subnet mask: 255.255.255.0
 - DHCP Server IP Begin: 10.86.92.100
 - DHCP Server IP Range End: 10.86.92.255

- Enable DHCP Server: ON

Note:

If there is already one DHCP server on the LAN2, please be sure to disable the existing DHCP server or disable the option "Enable DHCP Server of Ekip E-Hub" via Ekip Connect 3 to avoid conflict. If you connect LAN2 to an existing DHCP server, internet connection should be guaranteed during the provisioning procedure. Contact your network administrator to confirm.

- For the configuration of the digital input and analog input of Ekip E-Hub, please refer to the Ekip Connect 3 – Wizard section

Field Device Configuration:

- For connection via Modbus TCP, the downstream devices in the TCP network must be configured with the following parameters:
 - Static IP address: ON
 - Static IP address: select an address in the 10.86.92.2 ... 10.86.92.99 range
 - Subnet mask: 255.255.255.0
 - Gateway: 10.86.92.1

Network Configuration:

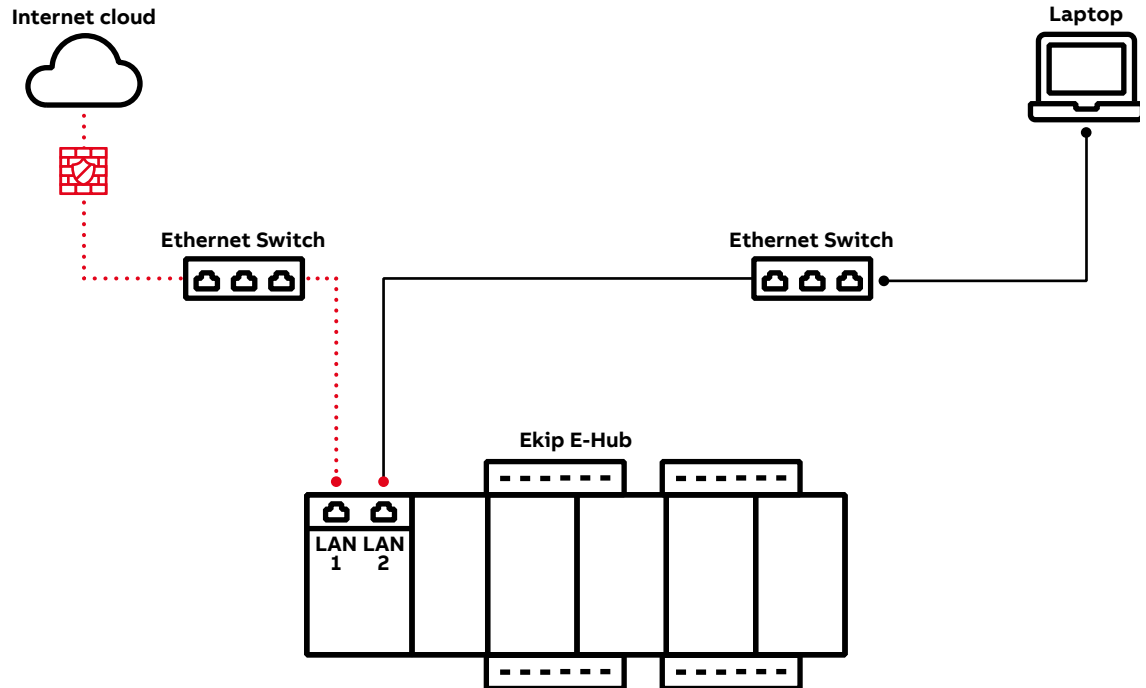
- Ekip E-Hub must be provided with an internet connection via either a site network or a dedicated router with SIM card.
- For internet connectivity, you must ensure that the following ports are open: needed for the upload of the data via HTTPS
 - 53/UDP: needed for public DNS if needed to use NTP server synchronization time
- Ekip Connect uses some local ports for data communication with the device:
 - Port 502 TCP, Modbus TCP Communication
 - Port 69 UDP, TFTP Communication

Laptop Configuration:

- Register on [MyABB](https://myabb.com) to activate an account.
- The user is not blocked by any Firewall, Device or Software from reaching <https://stsint.abb.com> on port 443
- The user also will need access on port 443 to the application or service being accessed.
- Ensure that the user is generally able to connect to the internet and reach other internal (if connected to ABB Network) or external internet websites.
- Ensure that the user has cookies enabled in the browser.

Now follow the steps below:

Connect your laptop via Ethernet cable to the same Ethernet network where the Ekip E-Hub LAN2 is connected;



Note:

Before provisioning, please synchronize the time of Ekip E-Hub manually or by switching on SNTP in EC3. For SNTP, you should choose accessible servers available in your region.

Performing a second provisioning on an Ekip E-Hub module already provisioned to an ABB Ability EDCS plant is allowed only for updating the plant's devices configuration (e.g. when you need to add a new device to the EDCS plant).

To create a new plant, you will need to delete all the devices and the Ekip E-Hub connected to the specific plant directly from the ABB Ability EDCS web app. (Select the plant, then Devices > Delete device) This will remove the association of the devices and the Ekip E-Hub from a plant and make them available for a provisioning on a new plant.

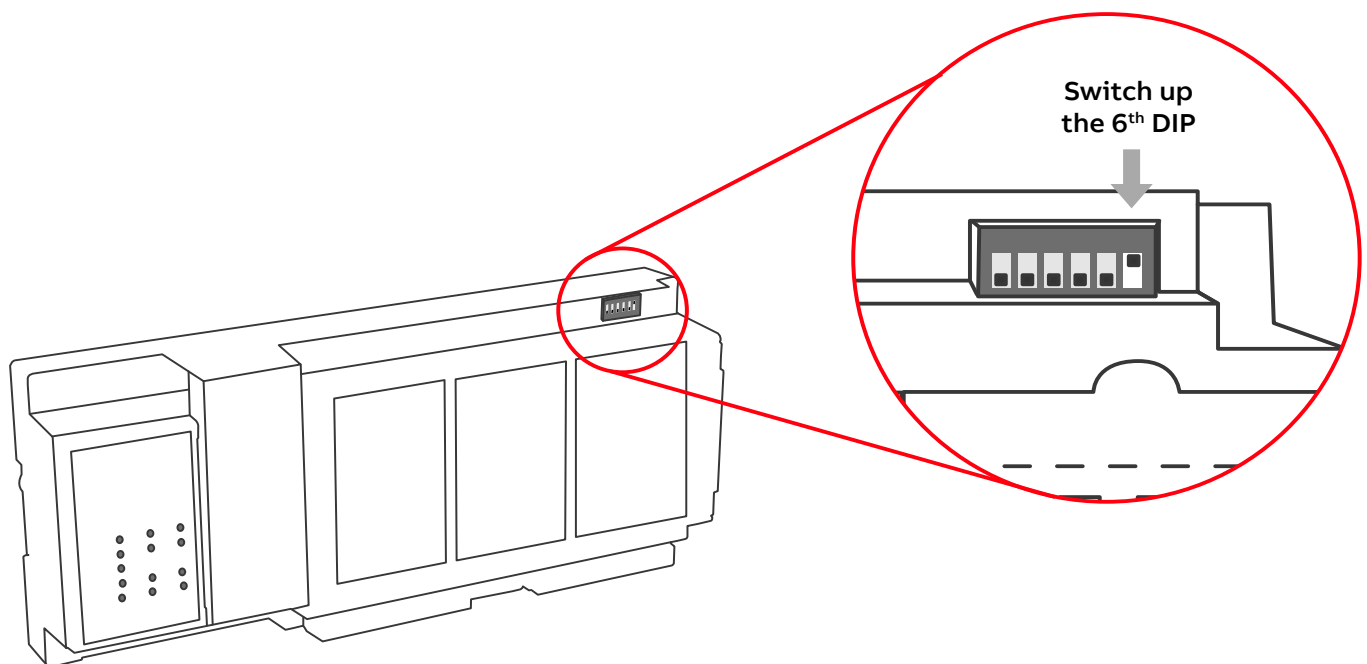
Ekip Connect 3 Wizard

Initial activities

A) Update Ekip Connect 3 to the latest version.

B) To simplify the identification of devices for Ekip Connect during configuration, ABB strongly suggests that each device in the system be provided with a Tag Name.

C) Enable TFTP upload setting by dip-switch.



Ekip Connect uses some local ports for data communication with the device:

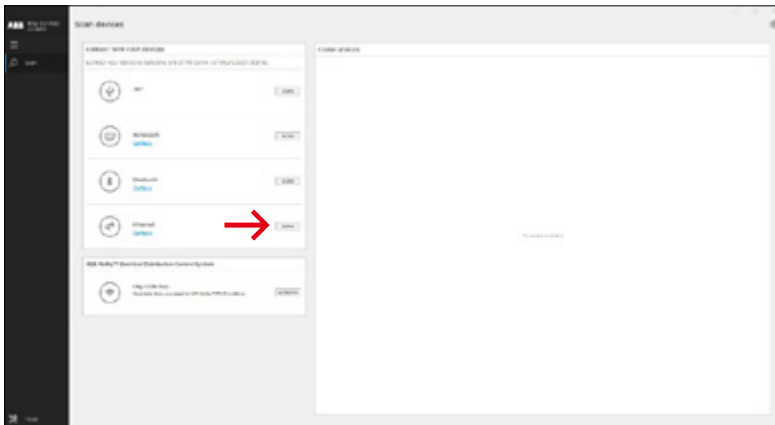
- Port 502 TCP, Modbus TCP Communication
- Port 69 UDP, TFTP Communication

Note:

While the devices provisioning process is running into ABB Ability EDCS, be sure your firewall is properly configured, according to active ports reported above. If you encounter communication issues, try to disable your firewall temporarily, enabling it again at the end of the provisioning process.

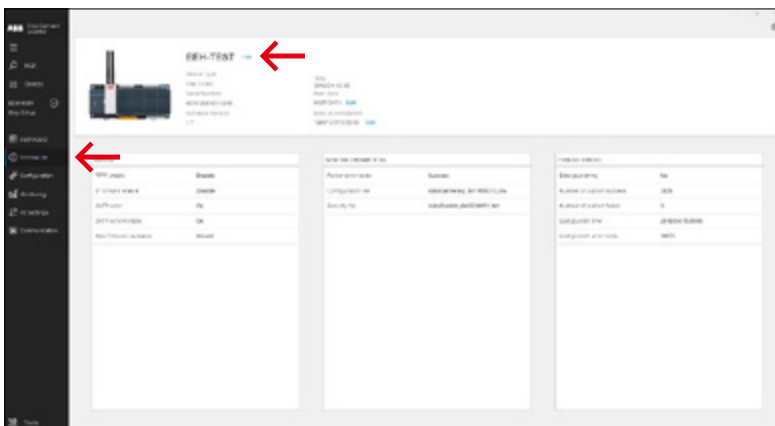
For the internet connection you must ensure that the following ports are open:

- 443/TCP: needed for the upload of the data via HTTPS
- 53/UDP: needed for public DNS
- 123/UDP: if needed to use NTP server synchronization time



Ekip E-Hub Connect

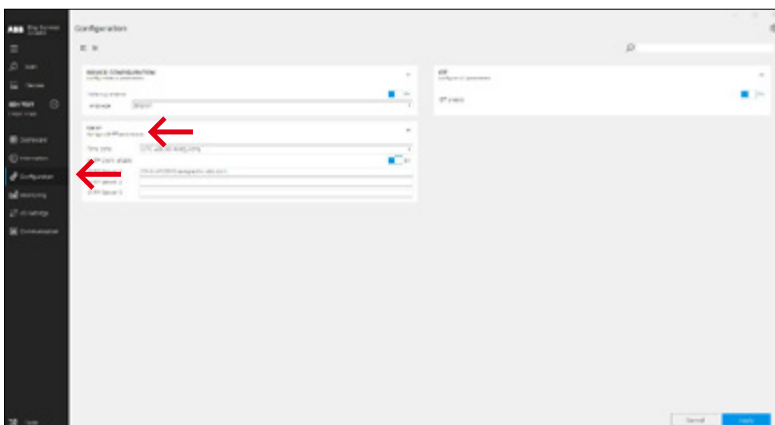
Configure the Ethernet option in the Scan devices section and press Scan, as shown by the arrow, to discover Ekip E-Hub.



Edit Tag Name

Click “Information” and you can edit the device tag name, as shown by the arrow.

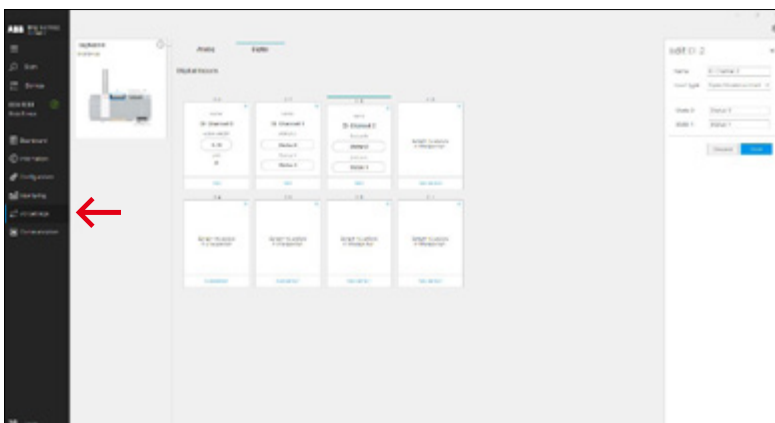
Click “Save” after editing the device tag name.



Ekip E-Hub Configuration

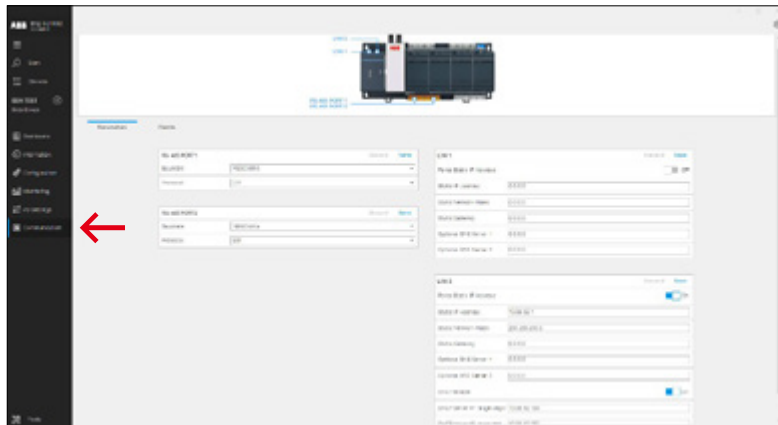
Click “Configuration,” then click the SNTP tab to configure the SNTP client and enable the SNTP client.

Click “Apply” and continue.



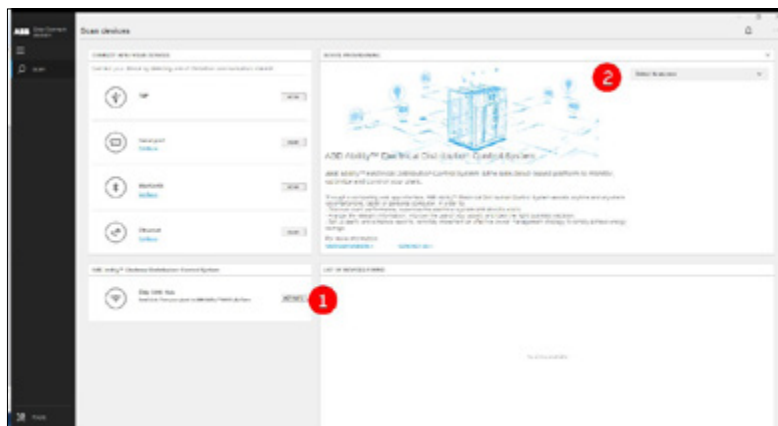
Ekip E-Hub I/O Settings

Click the “I/O settings” tab to configure the digital input and the analog input of Ekip E-Hub.



Ekip E-Hub Communication

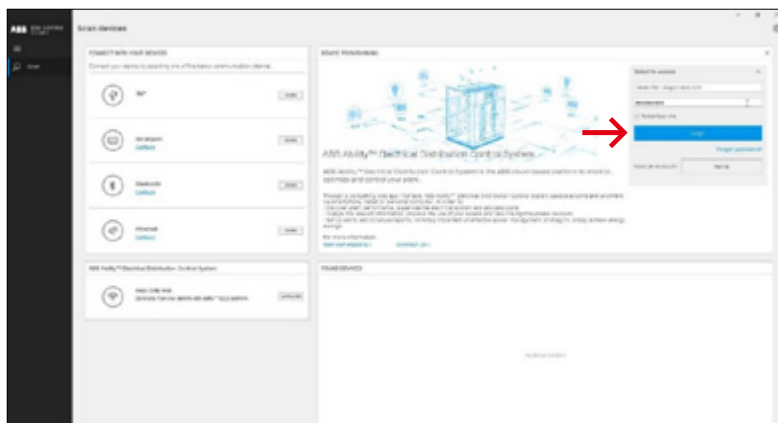
Click the “Communication” tab to configure the Modbus 485 ports and the LAN1/LAN2 parameters of Ekip E-Hub.



Ekip E-Hub Provisioning

Go to the Ekip Connect 3 home page.

1. Click Activate.
2. Click “Select to access” to ABB Ability™ EDCS.

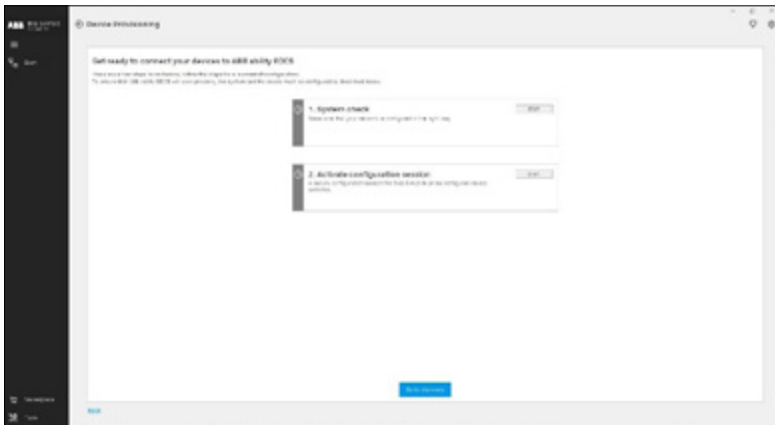


Insert your myABB credentials or the login credentials you initially created on page 5 and click continue. A green strip will appear at the top of the screen if your login is successful.

Select “Start” to begin the configuration.



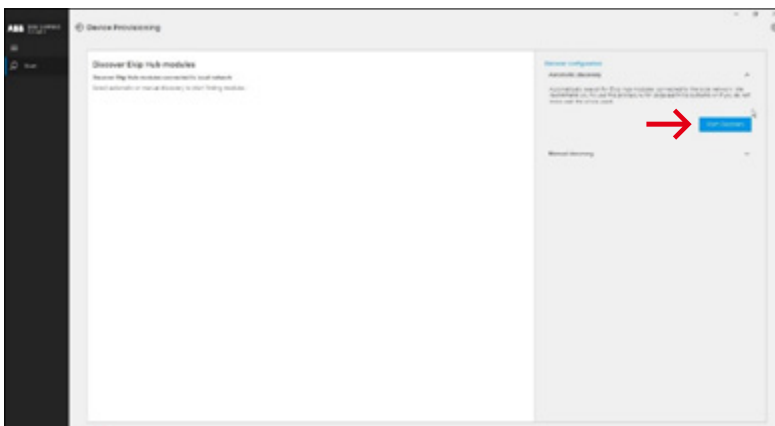
Select the tab “Ekip E-Hub” to start the configuration of the unit.



To ensure that ABB Ability EDCS will work properly, follow these two steps to verify that the system and the device are properly configured:

- System check
- Activate configuration session

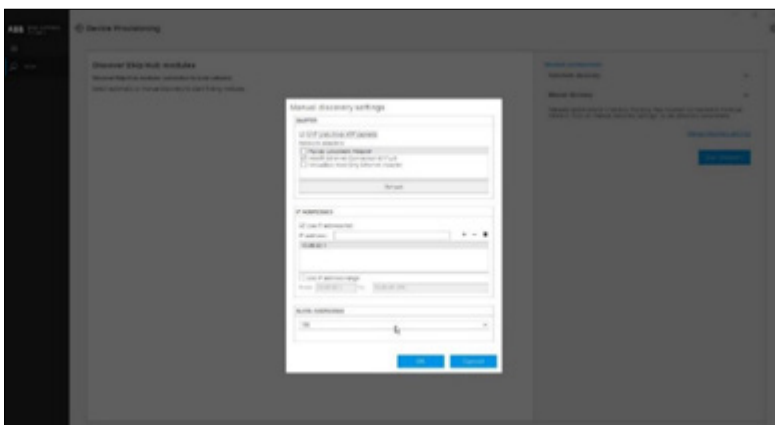
Click “Go to discovery.” With Automatic Discovery



Ekip Connect will scan the whole Modbus network, looking for devices to provision.

With Manual Discovery, it is possible either to provide the list of specific Modbus RTU or IP addresses or to narrow the scan to a particular range of addresses.

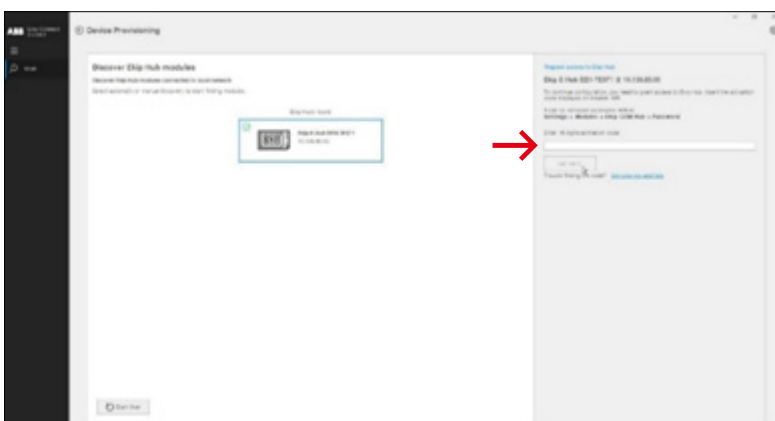
Manual Discovery is recommended. On the new page, select “Manual Discovery settings”



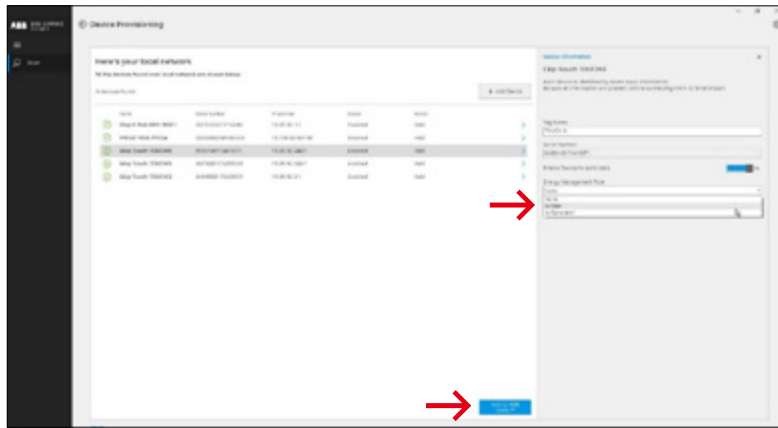
Click on the “Sniff gratuitous ARP packets” box. Key in the device IP address of the Ekip E-Hub Module and click on the plus symbol.

For each device connected via Modbus TCP, enter the device IP address and click on the plus symbol. Alternatively, input the IP address range indicating where to scan those devices. In the slave address drop-down menu, it is possible to select the addresses of the slaves connected with Modbus RTU communication protocol.

Then press “OK.”
Select “Start Discovery.”



Once the Ekip E-Hub module has been found, enter the 16-character password code printed on the left side of the devices, and click on “Let me in.”



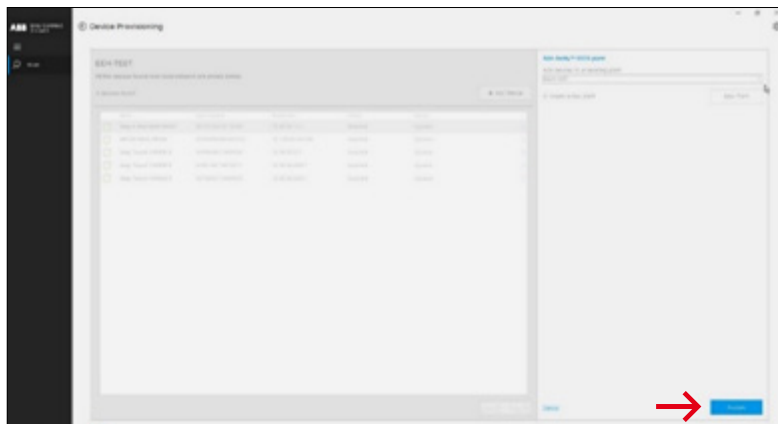
Now you will be able to see all the devices connected with the Ekip E-Hub.

For each device, you can:

- Set Tag Name, if not already present
- Set it to be on one of the main feed lines (e.g., an incoming breaker)
- Set it to be on a generator line (e.g., diesel generator, PV system, turbine)
- Indicate if it needs to send data to the ABB Ability EDMS

Note: at least one Main or Generator device must be set inside a plant.

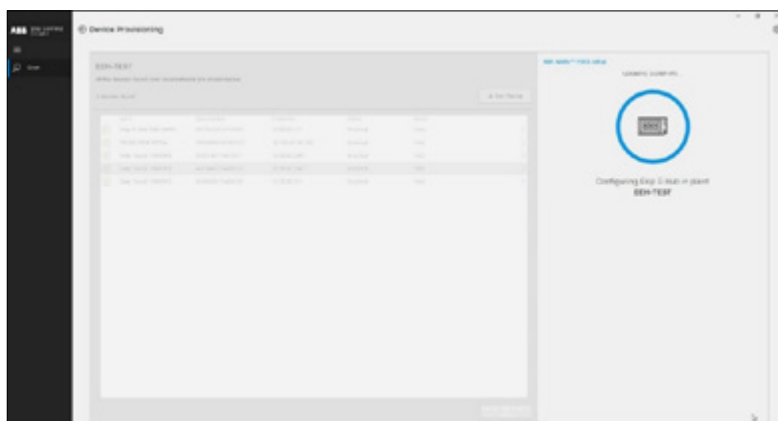
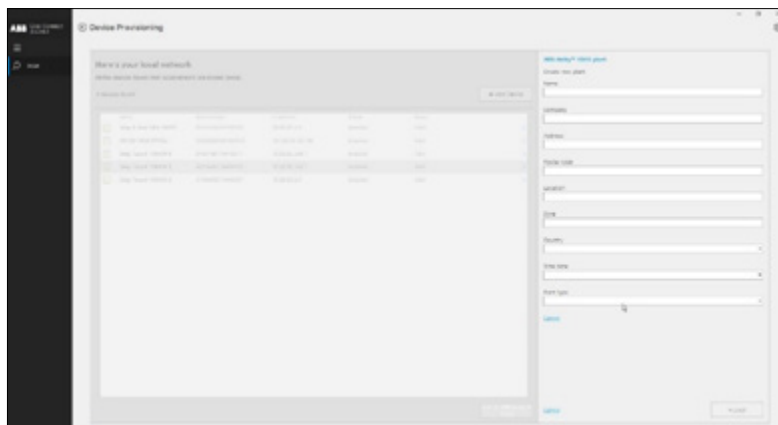
Once all the settings on each device have been completed, click on “Add to ABB Ability EDMS.”



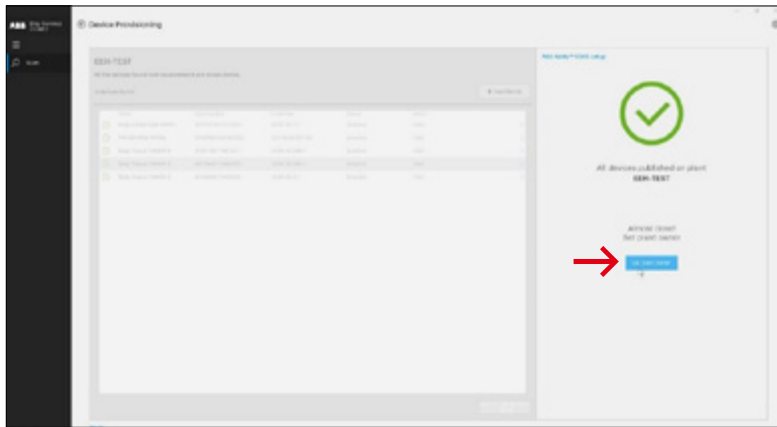
You can add devices to an existing plant or to a new one.

- To add to an existing plant, select the desired plant from the menu.
- For a new plant, insert all the data for the new plant.

Then click “Publish.”

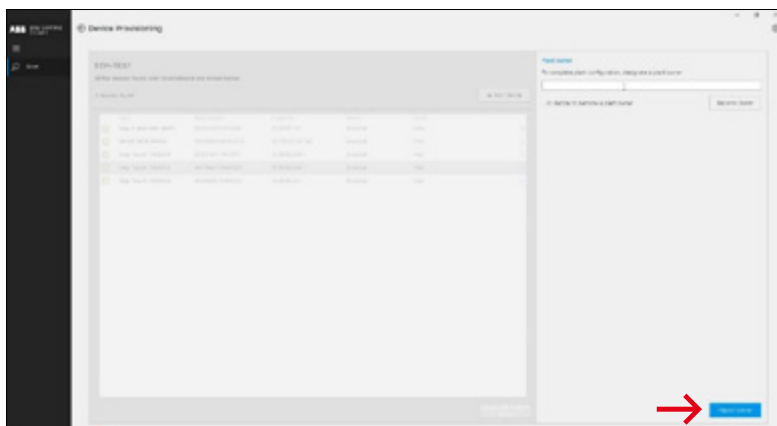


The publishing of the plant is now complete. A green stripe will appear at the top of the screen as soon as the configuration has been completed.



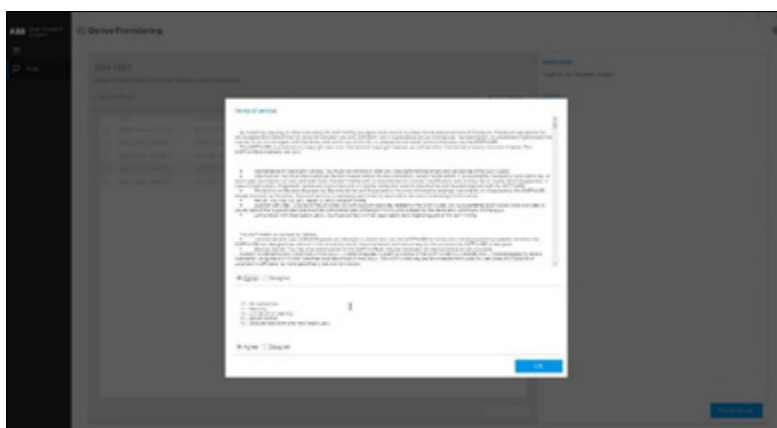
Now you need to set the plant owner.

The plant owner is the one who accepts the EULA and renews the license. Moreover, this individual can edit and view everything inside ABB Ability™ EDCS.

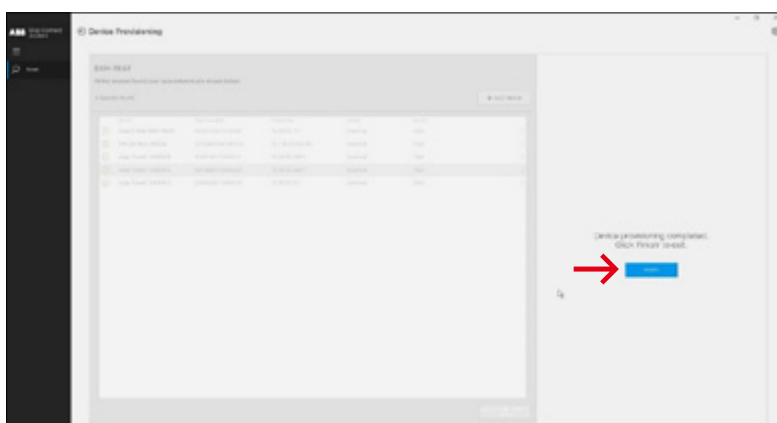


If you are the owner of the plant, select “Become Owner”; otherwise, insert the email address of the person who will be the owner.

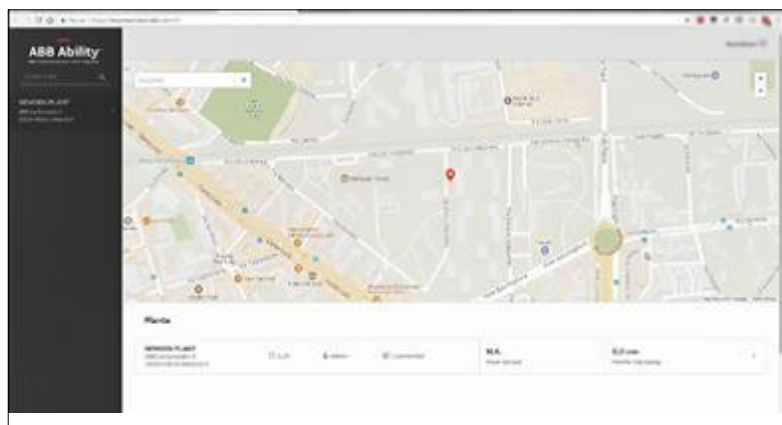
Then click “Publish Owner”.



Click “Ok” to agree to the terms of service.



Click “Finish”.



Ekip Connect will open the default internet browser automatically and access the ABB Ability EDCS page.

From the home page, you can access all the functions and the plants for which you have access. From each plant, it is possible to browse to Settings, then Profiles. In the Profiles section, it is possible to manage the users' access to the selected plant, (e.g., user role or access removal).

Note:

During the first 15 minutes after completing the provisioning, you may not be able to see any data on the ABB Ability EDCS web app. This is a normal situation as security checks are occurring between the module and the platform.

If you still cannot see the provisioned devices after a quarter hour, communication issues may exist between the field network and the cloud platform (i.e., the UDP 53 port is not open).

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