TECHNICAL PAPER

ABB Ability™:
System - EDCS

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Abstract
Today we live in a digital era, our data usage is increasing rapidly as more and more devices are connected to the internet.

This Internet of Things (IoT) includes everything from your home thermostat, appliances and security systems, all of these devices are intended to make our lives better, more convenient, and safer.
Why shouldn't your electrical distribution control system have all of these same advantages?

Introduction
ABB Ability™ represents our complete portfolio of digital solutions.
The ABB Ability™ Electrical Distribution Control System (EDCS) is a simple and intuitive cloud based platform used for energy and asset management. It is built on a state of the art cloud architecture for data collection, processing and storage.

The cloud architecture has been developed together with Microsoft in order to enhance the performance and guarantee the highest reliability and security.

Benefits
By implementing the ABB Ability™ EDCS it will give users the ability to monitor in real time, from virtually anywhere and anytime via smart phone, tablet, or their computer the energy consumption, power demand, peak trends, and power quality information of their facility or multiple facilities if they have them.

At a glance they will be able to get load knowledge from the main feeder all the way down to the lowest consumption branch of their electrical systems.

Once they have this information they can use it to optimize their system which is where they really start seeing the benefits of the platform. By analyzing this information they can use it to make informed business decisions. We make this process easy by providing a variety of reports that can be pre-scheduled for the decision makers to receive. This information will help to provide solutions for reducing energy consumption during peak demand times or help to prevent system outages due to malfunctioning equipment.

ABB Ability™ also puts control back into the customer's hands.

Using the electrical distribution control system (EDCS) data, the user will be able to control how quickly they choose to react to system alarms and faults. The personnel responsible for the electrical equipment can be notified with real time alerts as well as allowing them to control when they schedule downtimes through predictive maintenance. Users can set remotely the power demand they want to target with weekly, daily or hourly resolution. Savings and penalty avoidance are guaranteed by simply cutting down demand through a non-priority load shedding / reinsertion routine enabling the customer to shutdown non-priority loads during peak demand times automatically or even turn on a solar system to offset the increased energy demand and reduce electrical power consumed from the utility.

Innovative Features

The key value of this innovative platform is its design simplicity. With our digital solutions users can take advantage of our preconfigured software widget that doesn't require the user to perform any complex engineering design. Traditional energy management systems require complicated software programming and design while ours is ready to go. We even make the installation easy, there is no intricate wiring or additional hardware architecture needed. For embedded installations simply snap the Ekip Com hub into the Emax 2 circuit breaker or the Ekip UP multifunctional relay unit, connect it via Ethernet cable to the communications port and connect to the cloud using the free Ekip Connect software, all in about 10 minutes.

Cloud Platform

Ekip Com Hub

Modbus RS-485

Modbus TCP
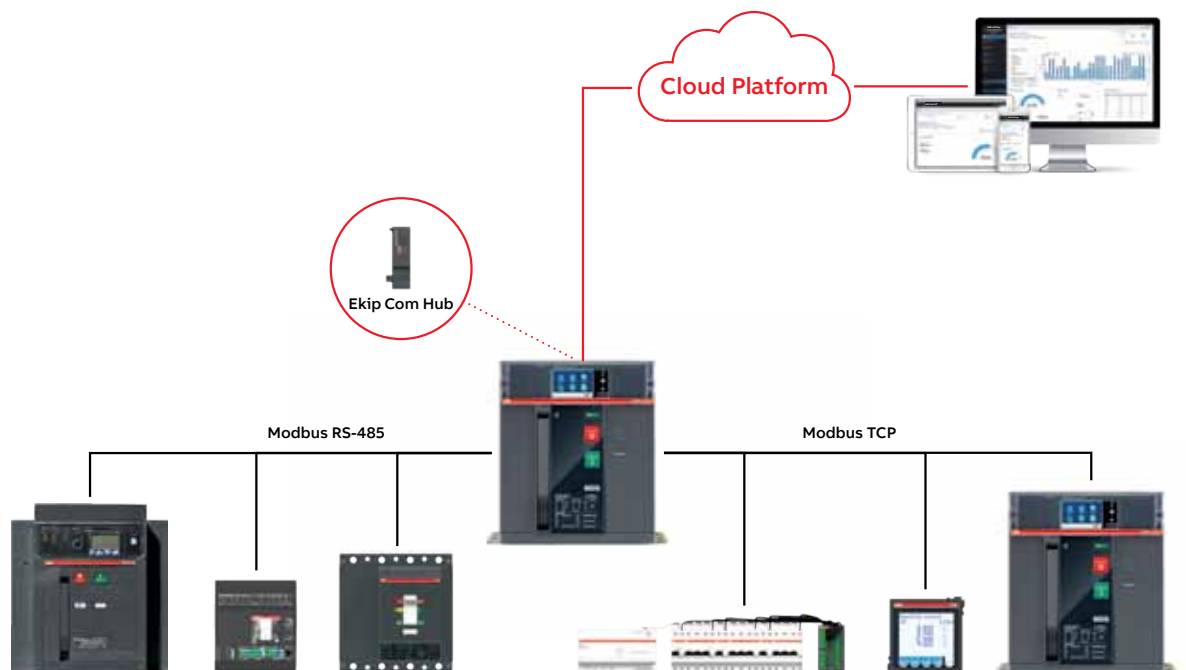
The Ekip Up can be used in existing installations, without the need to replace the existing switching device but still giving the capability to supervise from the cloud.
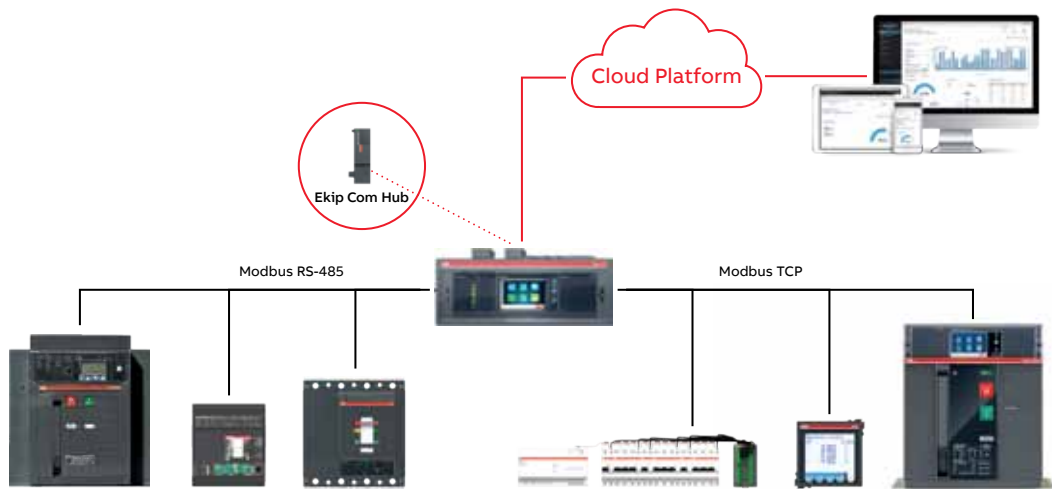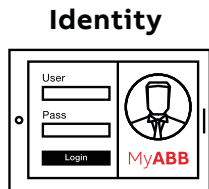

There is also an external din-rail mounted Ekip E-Hub module that is just as simple to install, using this module it is possible to connect external sensors for environmental parameters (temperature, water, gas) via both analog and digital I/O. This solution provides extended flexibility with the possibility to connect to MV equipment and all the way down to the sub-metering level. Modules for Wi-Fi or GPRS connection are provided as optional features.
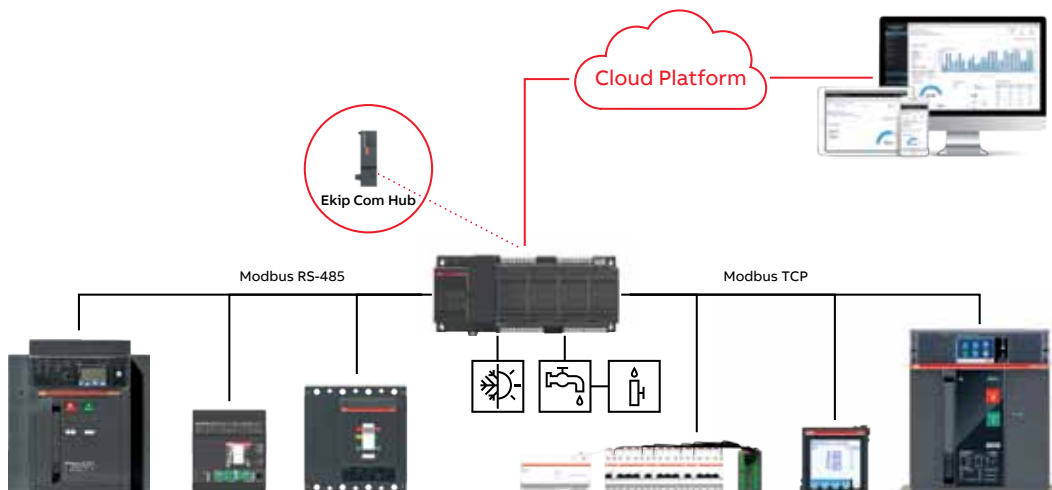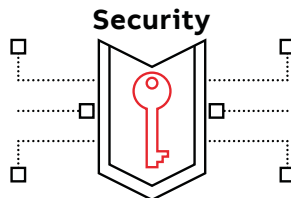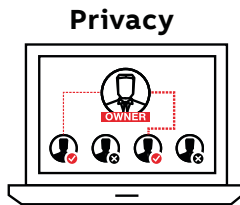
Cybersecurity

Even the cybersecurity is ready to go. ABB, Microsoft and a partner with expertise in IT security have come together to offer state-of-the-art cybersecurity when using ABB Ability EDCS to supervise a facility. There are 4 embedded characteristics that help to achieve this:

Designed according to potential threats analysis

Developed according to security guidelines and recurring code review

Validated by penetration tests to verify robustness

Relayed on Microsoft Azure cloud platform security policy

Continuously under assessment to always implement the best standards and innovations

Identity

Authentication via unique **MyABB account**

Security

Encrypted communication channel, using the same protocol as banking and other important applications

Privacy

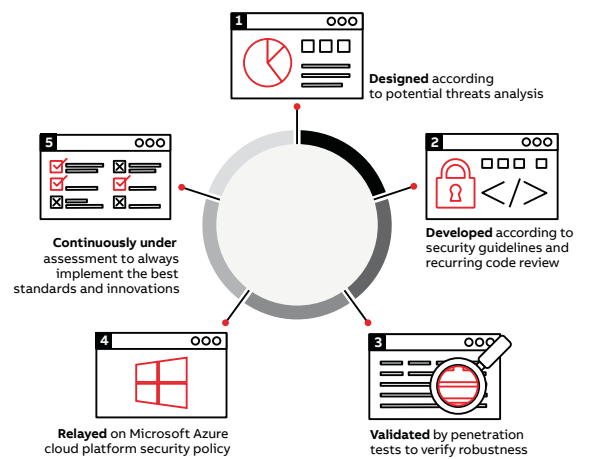Only the owner has initial access to data and can profile other users' role

Digital Signature

Each connected device is **uniquely identified**

With this solution, the message we are giving to the market is, we are ABB and we have the best products in terms of reliability, quality, intelligence and connectivity. Thanks to these very products we are now able to deliver digital solutions that are simple, flexible and scalable. ABB Ability™ EDCS is the first big step on this path, it will help users improve energy management and maintenance operations. But there's so much more that we can do the journey has just begun.

Using the four security measures; Identity, Security, Privacy and Digital Signature you can rest assured that your information is completely protected. Whether the data is being uploaded to the cloud or being downloaded from the cloud the data is transmitted on encrypted communication channels. While the data is in the cloud it is stored in certified data centers with state of the art cyber security standards. Moreover your data and intellectual property is your own, ABB does not share any data without your consent.

Conclusion

ABB has a complete portfolio of digital solutions with over 70 million connected devices, 70K digital control systems, and 6K enterprise software solutions. ABB can leverage the information from this Internet of Things (IoT) to improve value for our customers. The electrical industry is heading in this direction and ABB is at the forefront of this 4th industrial revolution, the digital revolution.

References
[ABB Ability™ Electrical Distribution Control System, Understanding Power, 1SDC200061B0202.](#)