
SMARTER BUILDING

Give your buildings a new dimension

Scalable solutions for energy
and asset management



**“Give your buildings a new dimension”,
ABB’s holistic new energy and asset
management concept for commercial and
industrial buildings uses digital solutions
and services to deliver energy and
operating cost savings.**

Table of contents

004–005	Introduction
006–007	Value propositions
008–011	Architecture
012–015	Software solutions
016	Applications

Give your buildings a new dimension

Scalable solutions for energy and asset management

The spread of connectivity is driving digitalization as the Internet of Things brings together devices and people to help businesses become more competitive. A fundamental aspect of this is that technology is making it easier to collect useful data and to use it for analysis.

Connectivity-based solutions increase awareness of resources and process behaviors: asset management can then be optimized through the control and monitoring of operations and costs. It fosters a more conscious utilization of resources that improves energy efficiency and aligns with challenging sustainability targets.

The ABB Ability™ cloud platform and the company's "Give your buildings a new dimension" program is supporting the digital transformation of public, commercial and industrial buildings and their power technologies. It provides a fully scalable portfolio with both embedded and external plug & play connectivity.

Services range from on-site monitoring to cloud-based solutions, with hardware and software tailored to the specific needs of each customer.

ABB's portfolio scales to suit a range of small to medium sized businesses, enabling electrical installers, building owners, facility and energy managers to collect and visualize their data – both on-site and remotely. That means optimum energy consumption and allocation, continuous operations, and simplified maintenance. The benefits of connectivity and data availability can result in savings up to 30%.

"Give your buildings a new dimension" uses two proven energy monitoring solutions – the CMS-700 circuit-monitoring system and the EQmatic energy analyser – and integrates their functionality with the company's Electrical Distribution Control System (EDCS) via the ABB Ability cloud. To set up the network and cloud connectivity in a new installation – or to upgrade existing facilities – just "plug & play" modules or devices are needed.



**Save up to 30%
on operating costs**



**Upgrade
in 1 day**



**Save up to 20%
on energy bill**



Value propositions

Your added value from design to operations

“Give your buildings a new dimension” brings advantages to customers from the design to the operations stage.

The digital solution adds value to facilities, meeting customer demands and enabling them to comply with higher energy efficiency standards.

Real time analysis of valuable data from field devices enables customers to closely monitor the performance of multiple installations with a single supervision system.

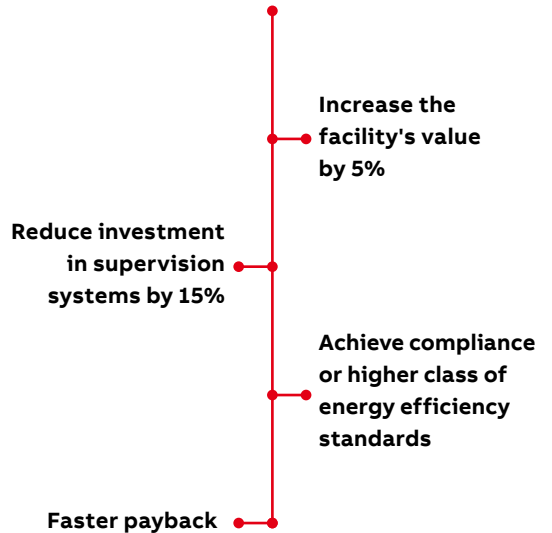
Clear information about consumption and improvement opportunities makes cutting waste and improving energy efficiency simple. Customers also benefit from lower energy bills and reductions in unplanned downtime.

ABB’s “plug and play” devices make installation quick and easy. Customers can make existing installations smart with no need to replace components. New and retrofitted solutions are up and running in no time, immediately starting to collect data.

Design and Specification



Speed up your project



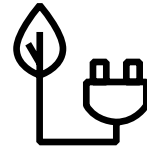
OWNER
DESIGN CONSULTANT
ENGINEERING COMPANY

Installation

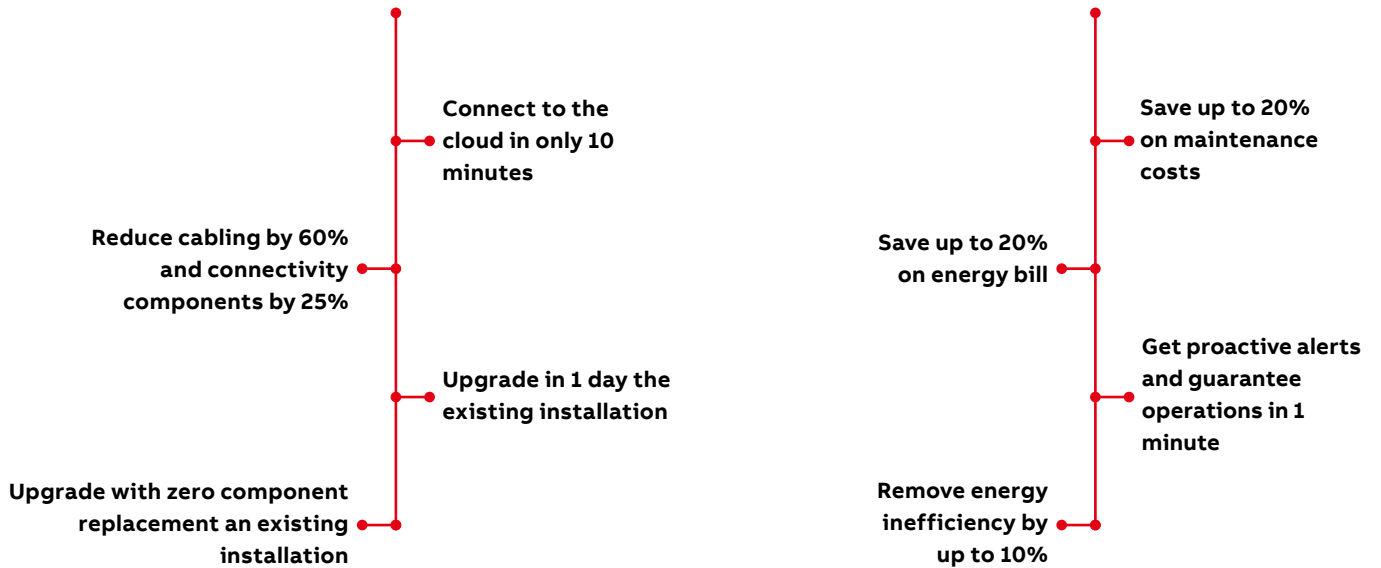


Easy to install

Operations



Energy efficiency



INSTALLER
PANEL BUILDER
SYSTEM INTEGRATOR



OWNER
ENERGY MANAGER
MAINTENANCE PROVIDER
FACILITY MANAGER

Architecture

Scalability for every need

01 ABB Ability Electrical Distribution Control System, CMS-700 and EQmatic allow users to forget about the cost and time-consuming setup for both new and retrofit existing installations.

The “Give your buildings a new dimension” program highlights the further evolution in ABB’s digitalization of its low-voltage distribution technologies, setting new benchmarks for performance and ease of use.

The ABB Ability Electrical Distribution Control System collects information and measurements to make asset monitoring, control and optimization simple. Data is gathered from the devices installed in the power distribution system, ranging from the medium-voltage substation to the smallest loads.

“Plug & Play” devices make connecting to the cloud-computing platform quick and easy. In the most advanced version, data sharing is performed with an Emax 2 air circuit breaker equipped with Ekip Com Hub or with the Ekip E-Hub via Modbus RS-485, Modbus TCP and Ekip Link.

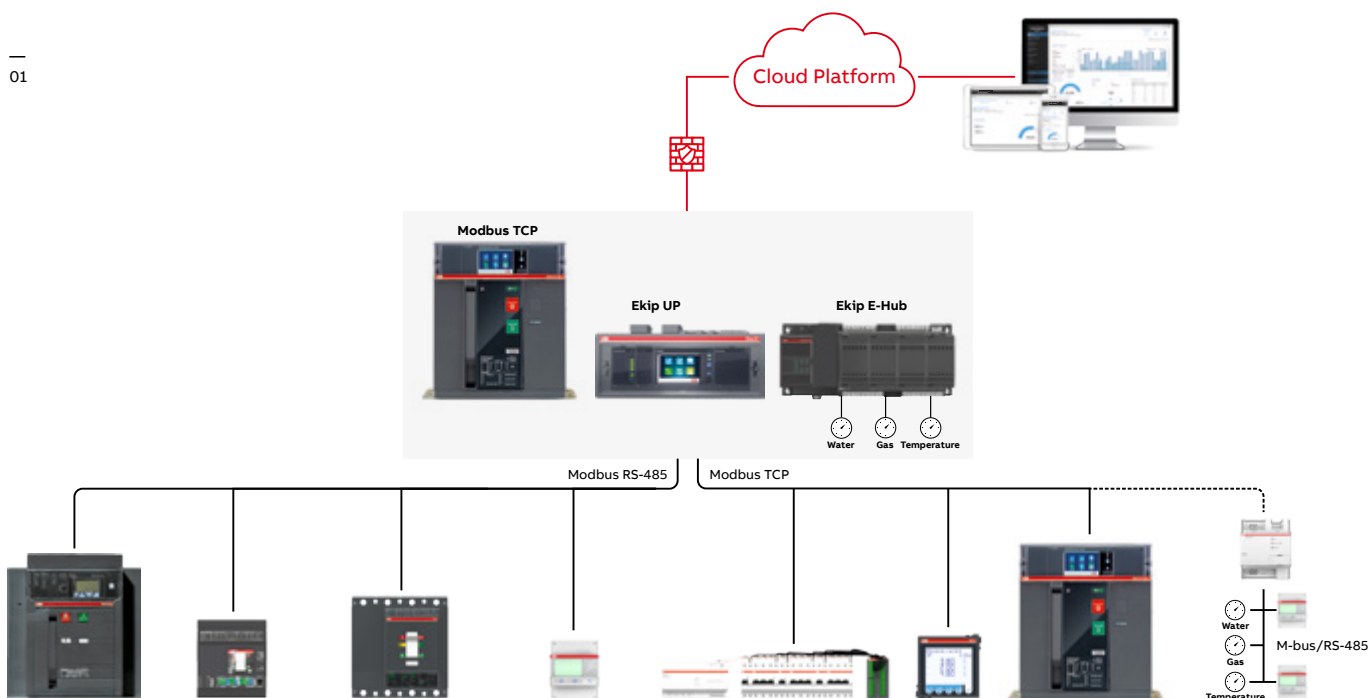
Completing the portfolio, EQmatic and CMS-700 can scale down functionalities to suit any customer requirements for measurements, monitoring and reporting.

Scalable architecture offers both embedded and external plug & play connectivity.

For small and mid-size industrial plants to meet more stringent environmental targets, a solution that enables them to monitor and control process operations is essential. Commercial and public buildings must also meet energy efficiency standards and reduce waste.

For multi-site applications, it is important to have effective remote access to data collected from devices at multiple locations brought together in one point. In this way, the benefits of data aggregation and analysis are quickly achieved and benchmark analyses are straightforward. ABB makes the implementation of connectivity solutions, in both new and existing installations easy to commission with as few components as possible. When retrofitting updates, the “Give your buildings a new dimension” program, with its plug and play devices and fewer hardware components, keeps disruption to an absolute minimum and operations online.

01



System Access Points



Embedded solution with Ekip Com Hub

Emax 2 and Ekip UP equipped with the new Ekip Com Hub establish the cloud connection for the whole switchboard. This dedicated cartridge-type communication module just needs to be inserted into the terminal box and connected to the internet.



Solution with EQmatic

EQmatic is a new range of compact, web-based DIN rail devices for energy management applications. They are used for monitoring, logging, displaying and analyzing consumption data from electricity, gas, water or heat meters.



Solution with Ekip E-Hub

The Ekip E-Hub module can be mounted on the DIN rail to collect data from throughout the system. It is also possible to connect sensors to measure environmental parameters such as temperature, water, gas, via both analog and digital I/O. Modules for Wi-Fi or GPRS connection are available as optional features.



Solution with CMS-700

The CMS is a compact AC and DC multichannel branch monitoring system. The measurement system consists of a control unit and sensors. The components are simple to install, arranging clearly inside control and distribution cabinets. The built-in web server offers easy access to live and historical measurement data as well as to the system volumes, allowing constant monitoring of the main electrical parameters to improve energy efficiency and optimize processes.

Software solutions

ABB Ability™ Electrical Distribution Control System

The ABB Ability Electrical Distribution Control System is an innovative cloud-computing platform designed to monitor, optimize and control the electrical system. It is built on a state-of-the-art cloud architecture that collects, processes and stores data.

ABB developed this cloud architecture with Microsoft to deliver high performance and to guarantee the highest reliability and security.

The ABB Ability Electrical Distribution Control System also provides access on a multi-site level, simultaneously monitoring and comparing the performance of different facilities. In addition, it can provide personal user profiles depending on the level of access they require.

An intuitive web app interface means the ABB Ability Electrical Distribution Control System can assist anytime and anywhere via smartphone, tablet or personal computer. With ABB's power intelligence in their pocket, users can monitor, optimize and control their energy resources more effectively.

Monitor

Stay up to date on the information most relevant to the facility and understand power loads at a glance – from the main feeder all the way down to the lowest branch of the electrical system. Users can access any information they need about the devices they are monitoring, checking their status, setting alerts of devices and watching for any abnormal operation.

Optimize

Collect and export data and historical trend analysis with on-demand queries or scheduled automatic reports. A complete picture of the electrical systems makes it possible to set more effective benchmarks and to establish best practices. It is also possible to file service operations digitally, leveraging the power of the data for predictive maintenance strategies.

The ABB Ability Electrical Distribution Control System's analytics simplify and enhance power factor compensation analysis, energy management and cost allocation.

Comprehensive data collection, at single or multiple sites, makes taking the right decisions easier than ever.

Control

Identify improvement areas and remotely implement effective strategies for power peak control, energy management and demand-response applications.

The Power Controller feature makes load management simple, accurate and remote by





- 01 Dashboard
- 02 Assets
- 03 Alerts
- 04 Diagnostics

combining the ABB Ability Electrical Distribution Control System and Emax 2 Power Manager. Users are able to remotely set the power demand they want to target with a weekly, daily or hourly resolution. Savings and penalty avoidance are guaranteed by cutting down demand with a routine that sheds non-priority loads, automatically reinserting them when appropriate. The Alert Center gives users a plant watchdog. Users can customize alert settings to suit their needs and intervention plan. They can also prompt key personnel to take swift action at any time: notifications are sent to the chosen recipients via text messages and/or email. Depending on the specific needs and application, users can choose between two configurations to connect the system to the ABB Ability Electrical Distribution Control System: embedded or external. With just a cartridge-type module, the innovative Ekip Com

Hub, upgrades the Emax 2 circuit breaker or Ekip UP digital units. Alternatively, the Ekip E-Hub module can be mounted on the DIN-rail.

The ABB Ability Electrical Distribution Control System features an intuitive graphic interface that guides the users through each task, presenting relevant information, derived from thousands of parameters collected from the field. The plug and play devices that can be connected include air circuit breakers, molded case circuit breakers, miniature circuit breakers, metering devices, switches and fusegears, arc-guard devices and soft starters.

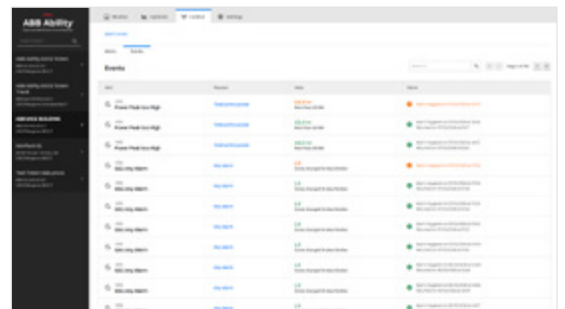
Predict

Supervise through algorithms the operating conditions of the system and predict the status in order to move toward need-based maintenance and actions.

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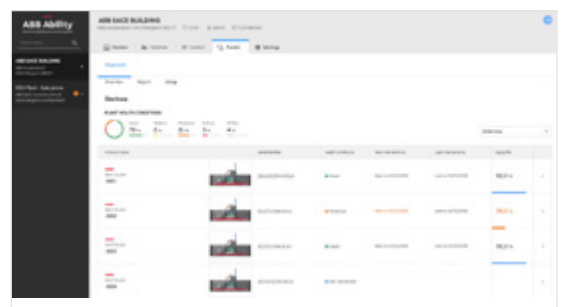
— 03



— 02



— 04



Software solutions

EQmatic

The EQmatic is a compact modular device designed to monitor and display consumption and measured values. Often used in stand-alone applications, it also integrates easily into super ordinate systems.

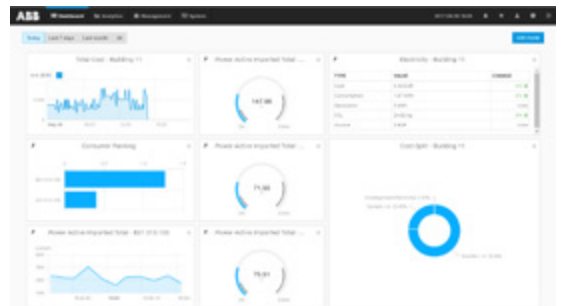
The device has a plug and play system for commissioning that automatically detects any connected meters.

It is accessed via a web browser, with the user interface providing basic analytics functions

such as a dashboard, historical data, instantaneous values, comparison functions and cost allocation by consumer group. As a result, building energy flows and costs are transparent. The solution is suitable for energy management and energy cost allocation applications seeking energy efficiency improvements and cost reductions.

An additional function performs benchmark and comparison analysis by periods and consumers, highlighting opportunities to improve and any non-optimal behaviors.

Data can be collected from field devices including ABB EQmeters; third party gas, water and heat meters; as well as pulse meters with external adapters or converters.



Software solutions

CMS-700

The CMS is a compact AC and DC multichannel branch monitoring system. The heart of the system is a control unit that collects measurement data from sensors, making it available via a built-in web server.

The sensors are universal and can measure all types of current. They can also be mounted wherever they are exactly needed, taking just a matter of minutes to install with no special tools needed for any part of the connection process.

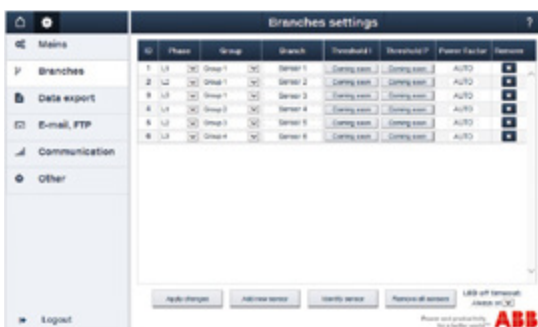
The device makes energy consumption immediately transparent at branch level. It helps identify potential savings, which in turn

leads to savings and better allocation of costs. With early warnings, risky situations are detected before they lead to service interruptions or load failures, improving system reliability and supporting continuous operations.

Depending on the application, different mounting options can be chosen to integrate the open-core CMS sensors into any existing system.

There are two sets of sensors available. The first set is designed for ABB installation devices and includes sensors that can be mounted on all ABB installation devices with twin terminals and on S800 high performance circuit breakers with cage terminals.

The second set is a universal design and can be mounted on any DIN rail or can be directly secured to any cables that are to be measured.



Applications

High flexibility

The “Give your buildings a new dimension” program offers users the scalability they need for their business to take advantage of customized solutions.

The digital services respond to the specific needs of each customer.

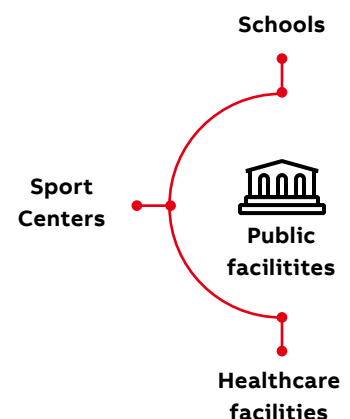
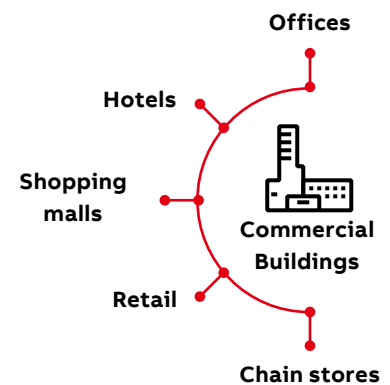
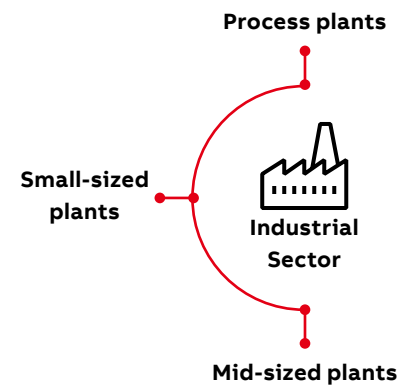
The program is based on a simple, integrated architecture with self-configuring connections and guided commissioning. It guarantees high levels of flexibility, making it suitable for applications in different sectors.

In the **industrial sector**, solutions can be installed in small to mid-sized plants, in infrastructure facilities and process plants to monitor operations, using data analysis to minimize downtime.

Optimized management of assets creates a competitive advantage that enables customers to maximize business opportunities.

Commercial and public buildings can also leverage the scalable solution to achieve higher energy efficiency and to have more detailed monitoring and control of their facility. Offices, shopping malls, hotels, retail or chain stores can increase their awareness of energy consumption and cost allocation to improve performance.

Public facilities, such as schools, sport centers and healthcare facilities, can secure service continuity and develop predictive maintenance forecasts.





Applications

Multi-site supervision for chain stores

Stores can be situated as single locations or as a shop in a shopping mall.

Current solutions gather data from all the different stores in order to analyze energy management, monitor energy consumption and improve energy efficiency. To aggregate and compare data from multiple locations, a cloud-based solution is essential.

Monitoring any store requires only an analogue installation. Water and gas consumption data

are gathered from dedicated meters and sent digitally to the E-Hub.

Electrical data and measurements are collected from energy meters, breakers and CMS-700 devices and transmitted to the E-Hub via Modbus RTU. At the core of the solution, the Ekip E-Hub mounted on the DIN rail gathers all the incoming data.

Data from all the stores then goes to the cloud via Ethernet or wireless connections for further analysis.



Design and Specification

While guaranteeing fast payback, this solution can ensure compliance or higher class on efficiency standards.



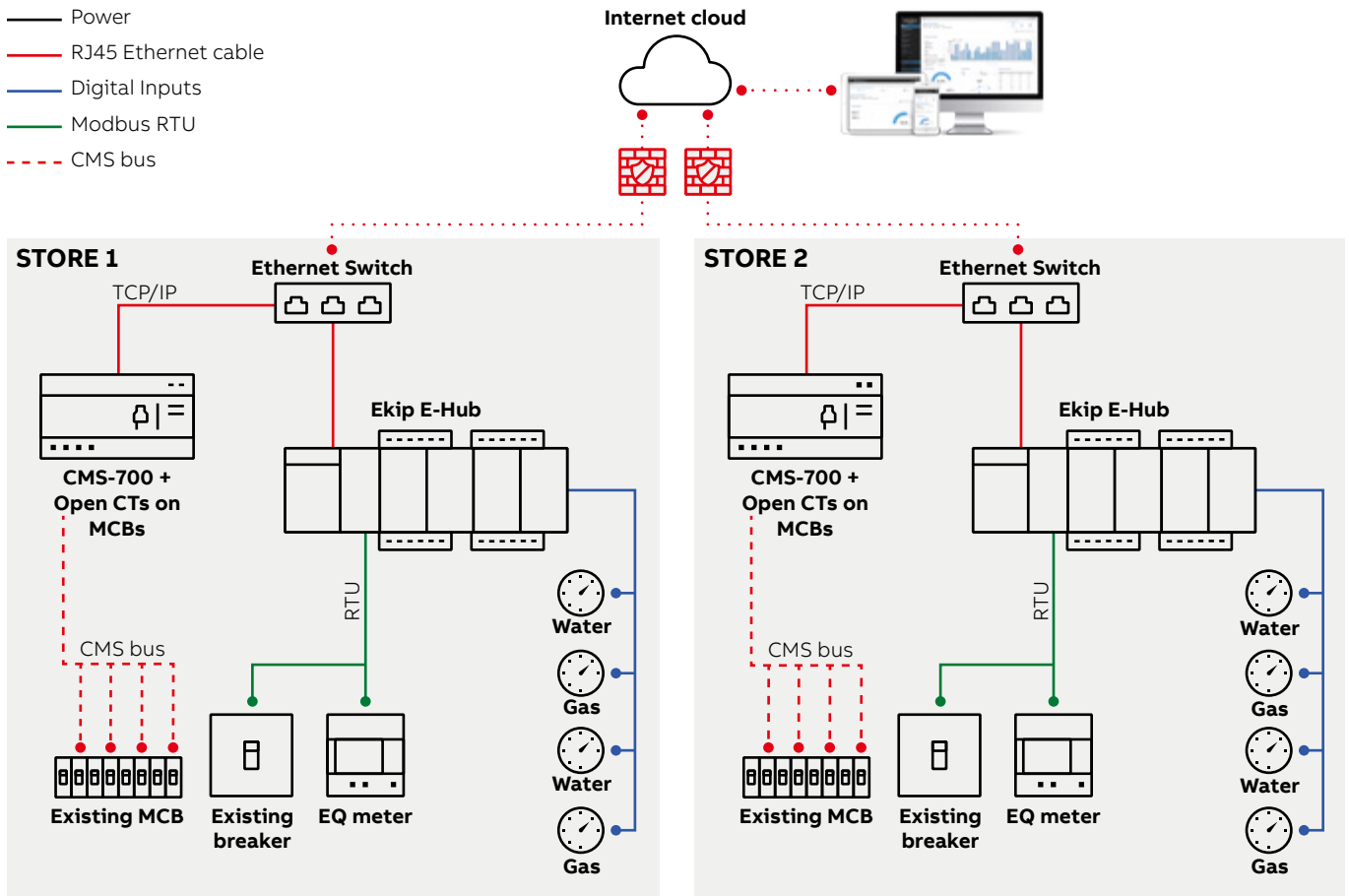
Installation

Deploying a multi-site monitoring solution, I can reduce installation time and components.



Operation

Introducing a single intuitive digital solution, I can guarantee continuous operation and allocate effectively energy consumptions.



Applications

Retrofitting and upgrading public buildings

For public buildings such as schools, a retrofit solution can bring rapid benefits without replacing existing components.

With accurate performance monitoring of the installation, devices can be managed more efficiently, producing savings in maintenance and energy costs.

In this scenario, the Ekip UP and the Ekip E-Hub collect data from field devices.

The Ekip UP is connected to the breakers and, via an Ethernet switch, to the Ekip Signalling.

The breakers measure energy and power quality, while Ekip Signalling modules send information about status, alarms and the number of operations.

The CMS-700 in the panel is responsible for branch monitoring and is connected to the Ekip UP via Modbus TCP/IP. In order to monitor consumption, another panel is provided with the Ekip E-Hub to gather data from gas, water and energy meters and from breakers.

This data, together with information collected by the Ekip UP, then goes to the cloud and is made available on ABB Ability EDCS for further analysis.



Design and Specification

I will easily upgrade the existing facilities, ensuring a very fast payback.



Installation

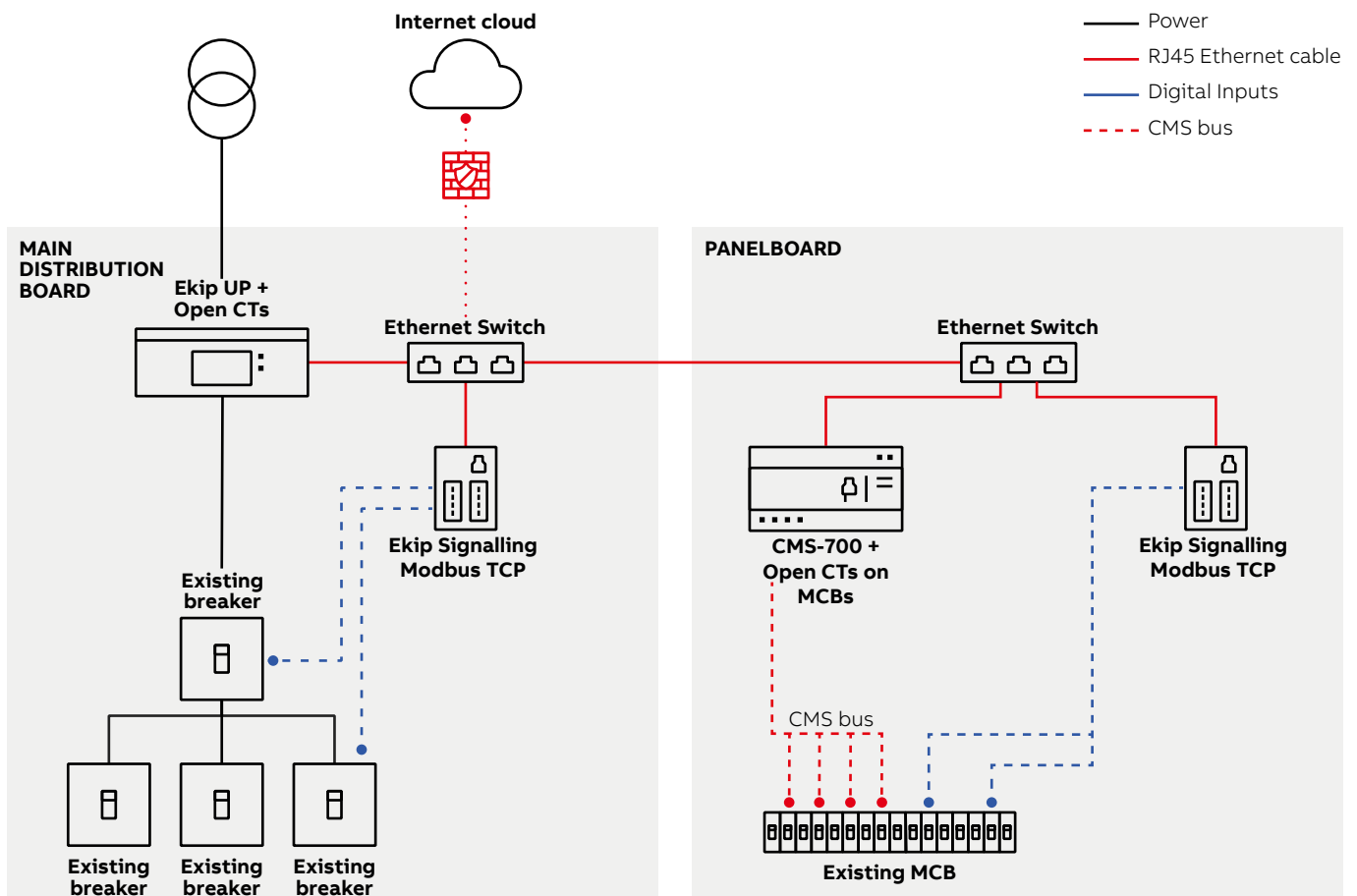
Through plug&play components and commissioning, I can upgrade the existing distribution and panel boards. I don't have to replace anything.



Operation

With this solution I can start saving on operating costs, also on multi-site, through an intuitive and simple solution while catching up with efficiency standards and regulations.





Applications

Sub-metering and branch monitoring in small commercial building

This example shows clearly the scalability of the portfolio. When small commercial buildings are considered, for example a supermarket, the installation of the CMS-700 alone provides the user with several advantages.

It is an effective solution to save energy costs and to remove inefficiencies by closely monitoring all branches.

The proposed solution includes CMS-700 and EQmatic. On the one hand, CMS-700 measures electrical parameters from all branches

through the sensors and the dedicated CMS bus ensuring proactive notifications of abnormal situations. Data of up to 96 sensors can be captured simultaneously.

On the other hand, EQmatic collects measurements from energy, water and gas meters via M-bus, providing explicit identification of the different consumptions. All pieces of information are then transmitted to an Ethernet switch and are displayed on the dedicated web server. Both real time and historical values are available.



Design and Specification

Designing this solution for my facility, the customer can simply and easily monitor costs and energy needs.



Installation

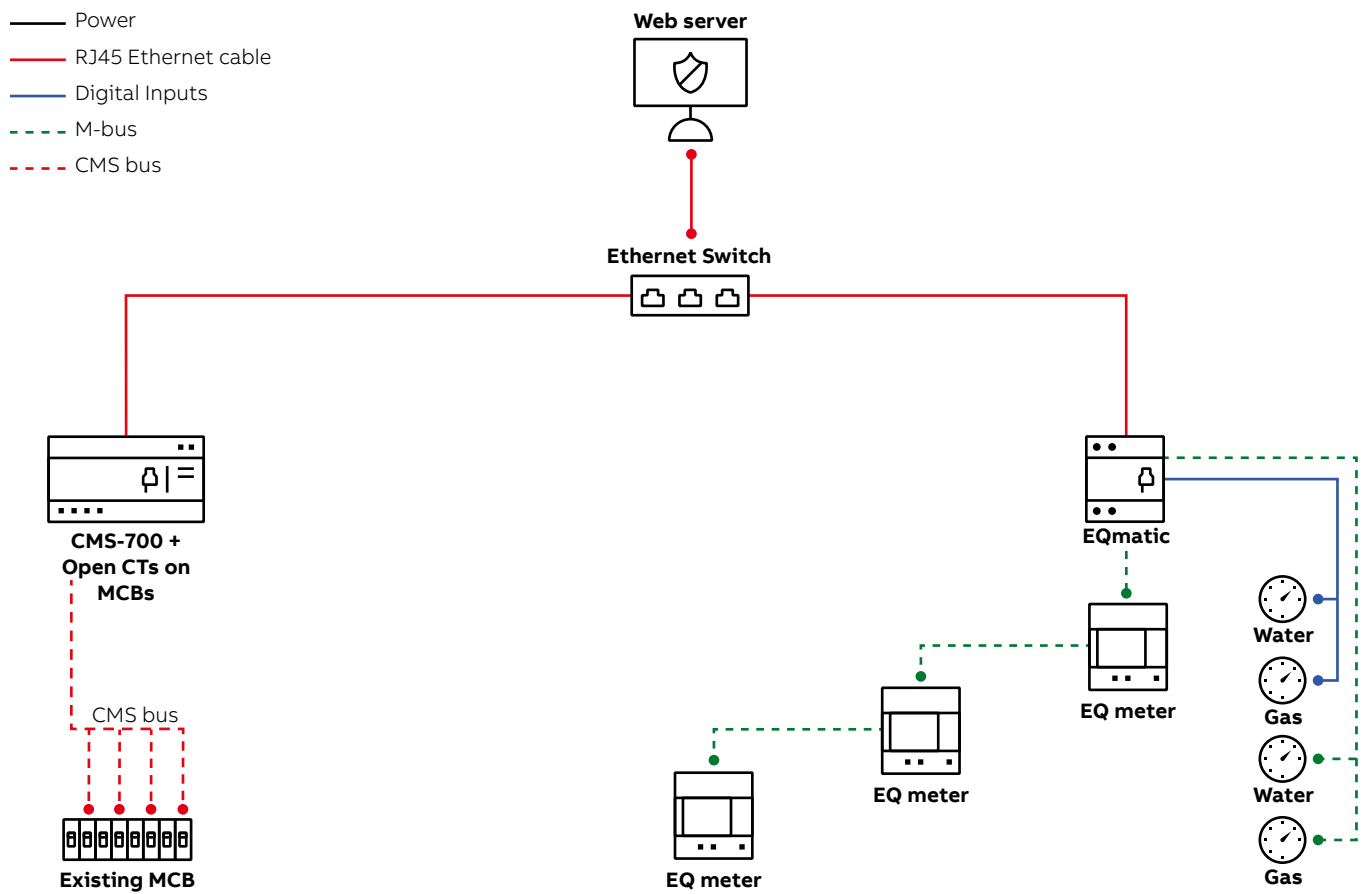
This solution provides me an intuitive cabling that perfectly fit the electrical distribution board design.



Operation

I can simply keep an eye on energy flow inside the facility and reduce its costs.





Additional information

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