APPLICATION NOTE

Intelligent Distribution for EV Charging in Passenger Station

With over 70 years' experience and global presence in more than 100 countries, ABB helps to keep the world moving with new, innovative and sustainable solutions targeted on creating a low-carbon rail industry able to operate with maximum efficiency, reliability and safety.

What is intelligent distribution?

Intelligent distribution means leveraging on new digital technologies to transform traditional electrical installations into smart connected architecture for 24/7 comprehensive monitoring, insights and analysis. The aim is to improve energy consumption and asset performance targeted on sustainability, energy efficiency, cost savings and continuous operation.

Why you need intelligent distribution

Reliability is a major concern in the rail industry. Last year, reliability issues increased by 64% causing delays amounting to 8612 hours in the UK alone. And as the demand is growing for rail as a sustainable form of transportation, ABB intelligent distribution applications offer solutions able to ensure safe, smooth rail operation, maximize energy efficiency, reduce carbon footprint, minimize running costs and downtime while ensuring 24/7 continuous service.

Main benefits
Energy Efficiency

Maximizes energy efficiency up to 30%, reduces carbon footprint and complies with LEED & ISO 50001 certification requirements.

Reliability

Maximizes reliability and avoids downtime thanks to 24/7 real time monitoring, smart analytics, predictive maintenance and instantaneous alerts.

Flexibility

Modular, scalable solutions that can be applied to both greenfield and brownfield installations.
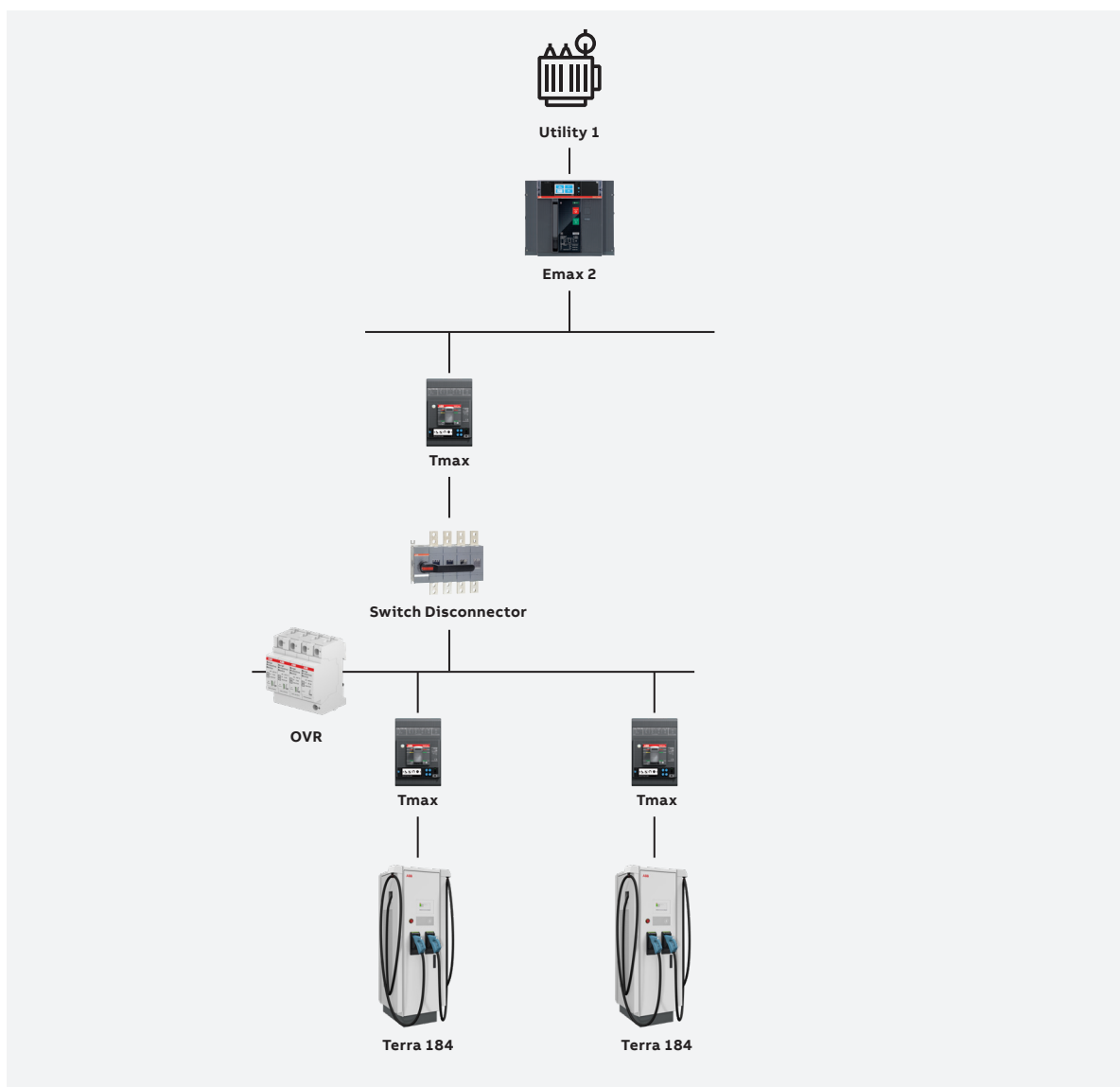
Integrable

Ready for complex integration, also when several systems are involved; BMS, SCADA or facility management with 3rd party integration.
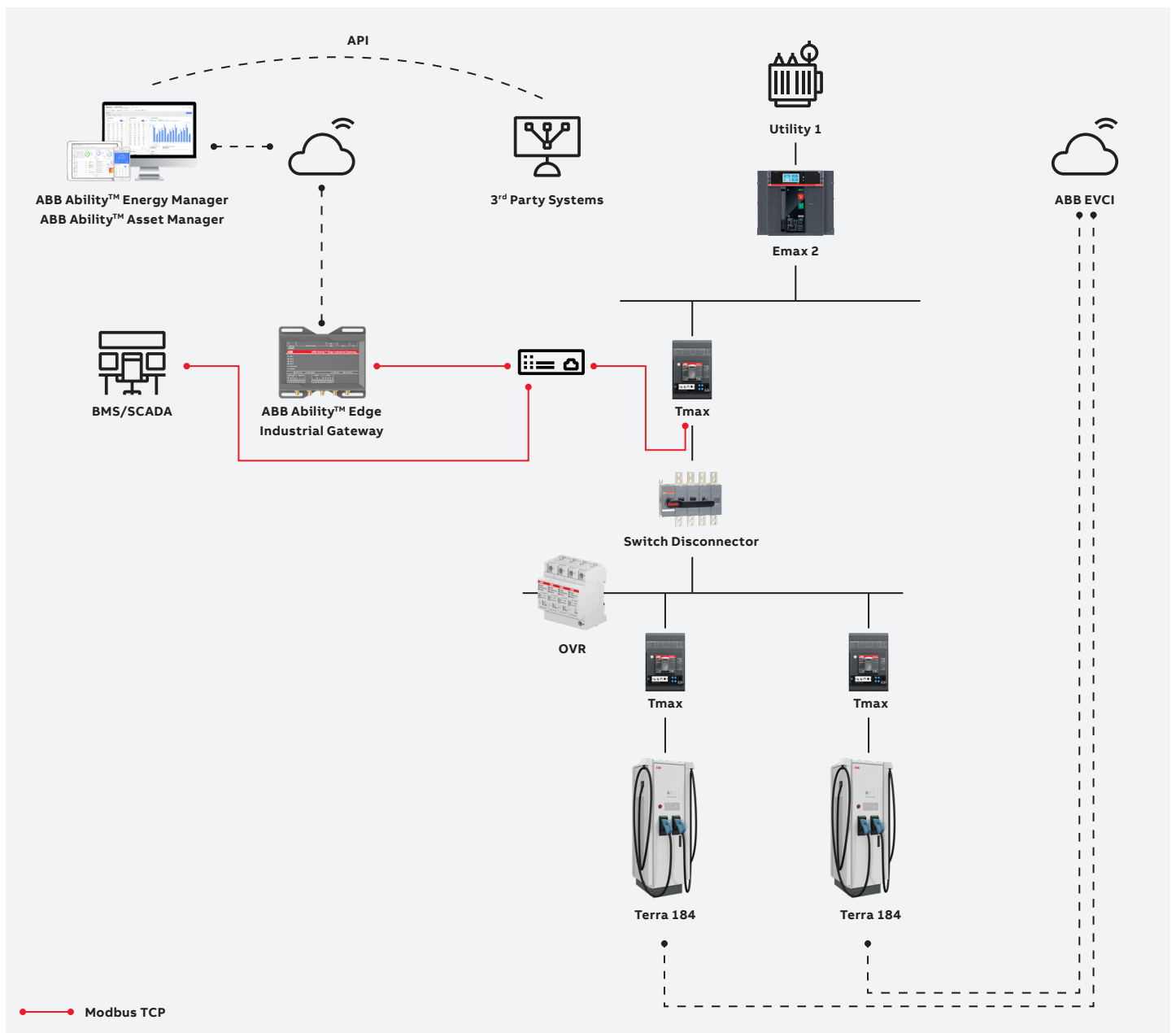
EV Charging Station

If smarter, reliable and emission-free mobility is to be ensured, an electric vehicle charging service, accessible to everyone, everywhere is crucial. Get ahead with the Terra 184 all-in-one fast charger. Then add protection devices, branch and energy monitoring systems, all easily connected to ABB Ability™ Energy Manager & ABB Ability™ Asset Manager and integrate the architecture with BMS, SCADA or 3rd party systems via API.

Include further insights on customer payments, statistics and access management, as well as troubleshooting and service tools, all of which come with the ABB Ability™ EVCI platform [11]. The single-line diagram, typical communication architecture and main components for EV charging points are illustrated in the example below.

Utility 1

Emax 2

Tmax

Switch Disconnector

OVR

Tmax

Tmax

Terra 184

Terra 184

11. For more information about ABB Ability™ EVCI platform

API

ABB Ability™ Energy Manager
ABB Ability™ Asset Manager

3rd Party Systems

Utility 1

Emax 2

ABB EVCI

BMS/SCADA

ABB Ability™ Edge
Industrial Gateway

Tmax

Switch Disconnector

OVR

Tmax

Tmax

Terra 184

Terra 184

Modbus TCP

**Main
Components**

Terra 184 Charger

Tmax XT Molded Case Circuit Breaker

ABB Ability™ EVCI

ABB Ability™ Edge Industrial
Gateway

ABB Ability™ Energy Manager

ABB Ability™ Asset Manager

Bill of materials

Considered Parameters	
Standard	IEC
Monitoring System	ABB Ability™ Energy Manager
Communication Protocol	Modbus TCP
Measuring Points	4 connected devices
EV Charger Connectivity	- Connected directly to ABB Ability™ EVCI platform via 4G connectivity - Direct communication between the charger and the customer back-office via Open Charge Point Protocol (OCPP)
Network switch	Ethernet 8 Ports Switch requires 110 - 240V AC power supply
IoT Gateway	ABB Ability™ Edge industrial gateway requires power supply with nominal input 12 or 24 V DC and maximum current 2 A (15 W maximum consumption)

Product	Part Number	Quantity	Description
Tmax XT MCCB 4P	1SDA100552R1	1	Incoming for EV charging (XT5N 400 breaker)
	1SDA100685R1	1	Ekip Touch Measuring LSIG In=400
	1SDA105189R1	1	Ekip Com Modbus TCP communication module
Tmax XT MCCB 4P 200 A	1SDA068065R1	2	Outgoing breakers (XT3N 250 TMD)
OVR QuickSafe®	2CTB803873R5600	2	Surge Protection Device SPD Class II
Terra 184 Charger	ABB6AGC085472	2	With CC2-2 and CCS-1 DC Connector and One AC Connector (22kw)
Payment kit	6AGC072870	2	Payment kit CCV Europe (CardProcess)
Charger Connect	6AGC064781	2	4G connectivity, SW protocol updates, 24/7 NOC monitoring
Driver & Charger Care Web tool Packages	6AGC064980	2	Driver Care: Tool for network mangement and call center support. Allows CPOs to monitor/be notified about charger status and to configure/report. Notifications, solutions & cases support efficient customer support. Charger Care: Advanced service tool for CPOs with certified own or 3rd party service provider which is performing extensive service work on the charger. (max. of 5 persons to access all webtools is included)
Web tool Payment	4EPY450060R1	2	Tool for configuration of the payment terminal and reporting of transactions (reconciliation, receipts) (max. of 5 persons to access all webtools is included)
Web Tool HMI Styling	6AGC102376	2	Web tool to communicate your brand image on the display of the EV charger. Contains: Look & Feel,Text, Screensaver (max. of 5 persons to access all webtools is included in the price)
OCPP 1.5 API (via ABB Cloud)	4EPY450053-1	2	API to support OCPP 1.5 based communication between CPO back-office and charger via the ABB Ability Cloud
OCPP 1.6 Connectivity (for Dual Uplink)	6AGC073898	2	Supports OCPP 1.6 for a direct communication between the charger and the customer back-office
ABB Ability™	1SDA116751R1	1	Edge Industrial Gateway (Cloud view)
	2CDG120082R0011	1	8 Ports Fast Ethernet Switch
	ABB Ability Marketplace™	1	Energy Manager (Watching Edition - 5 Devices - 1 Year)

Note : ABB Ability Marketplace™ one-stop online portal for ABB Ability™ solutions subscriptions and services.
For Tmax XT MCCB with communication modules, it should be supplied by means of a galvanically isolated 24V DC auxiliary voltage with the following characteristics (tolerlance ±10% , maximum wave ±5%, maximum surge current 10A for 5ms and maximum rated power 4W @24V)

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APPLICATION FINDER

We've made it simpler for you to set up your project!
Click here to find the reference architecture that best fits your needs and download the Bill of Materials.

Product offering

Terra 184:

🌐 **WEB PAGE**

📖 **BROCHURE**

Tmax XT:

🌐 **WEB PAGE**

📖 **CATALOG**

ABB Ability™ Connected Services:
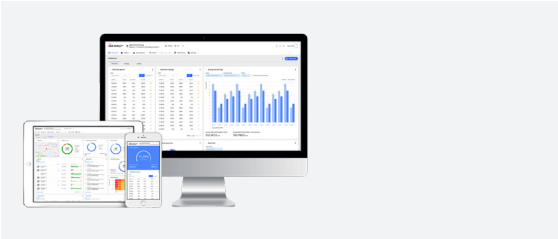
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ABB Ability™ Edge Industrial Gateway:

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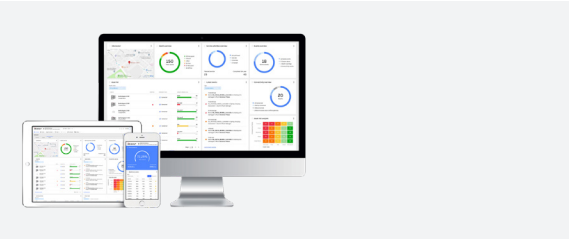**ABB Ability™ Energy Manager:**

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ABB Ability™ Asset Manager:

🌐 **WEB PAGE**

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more

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APPLICATION FINDER

Find the reference architecture tailored to your needs and speed up your project thanks to our new Application Finder Tool!

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