DISTRIBUTION SOLUTIONS

UniGear Digital

Innovative solution for medium-voltage switchgear

ABB's medium-voltage switchgear platform UniGear is well established around the world. The design is based on the fundamental principles of safety, reliability, modularity and scalability. With the increasing demand of digital transformation, the platform is evolving further with UniGear Digital including latest digital technologies, communication and data analytics.

UniGear Digital takes full advantage of new technologies such as current and voltage sensors, protection relays on IEC 61850. Online condition monitoring and diagnostics provide a new way of working for the electrical system.

The solution is available for the latest UniGear family with wide coverage of ratings:

- Up to 12/17.5kV, 4000A, 63kA
- Up to 24kV, 3150A, 31.5kA
- Up to 36kV, 2500A, 31.5kA

ABB's current and voltage sensors offer the future-oriented way of measuring primary current and voltage. Its linear characteristic and dynamic range outperform conventional instrument transformers.

Relion® protection relays provide native IEC 61850 support, including GOOSE (Generic Object-Oriented Substation Event) and sample values on the process bus for a fast and reliable data/information exchange.

The condition monitoring system allows secure access to condition and operational data. Data analysis on-site ensure optimal switchgear operation and minimized maintenance costs.

UniGear Digital is ready for cloud connectivity offering further data analysis and predictive maintenance.

Benefits

Adaptive and flexible

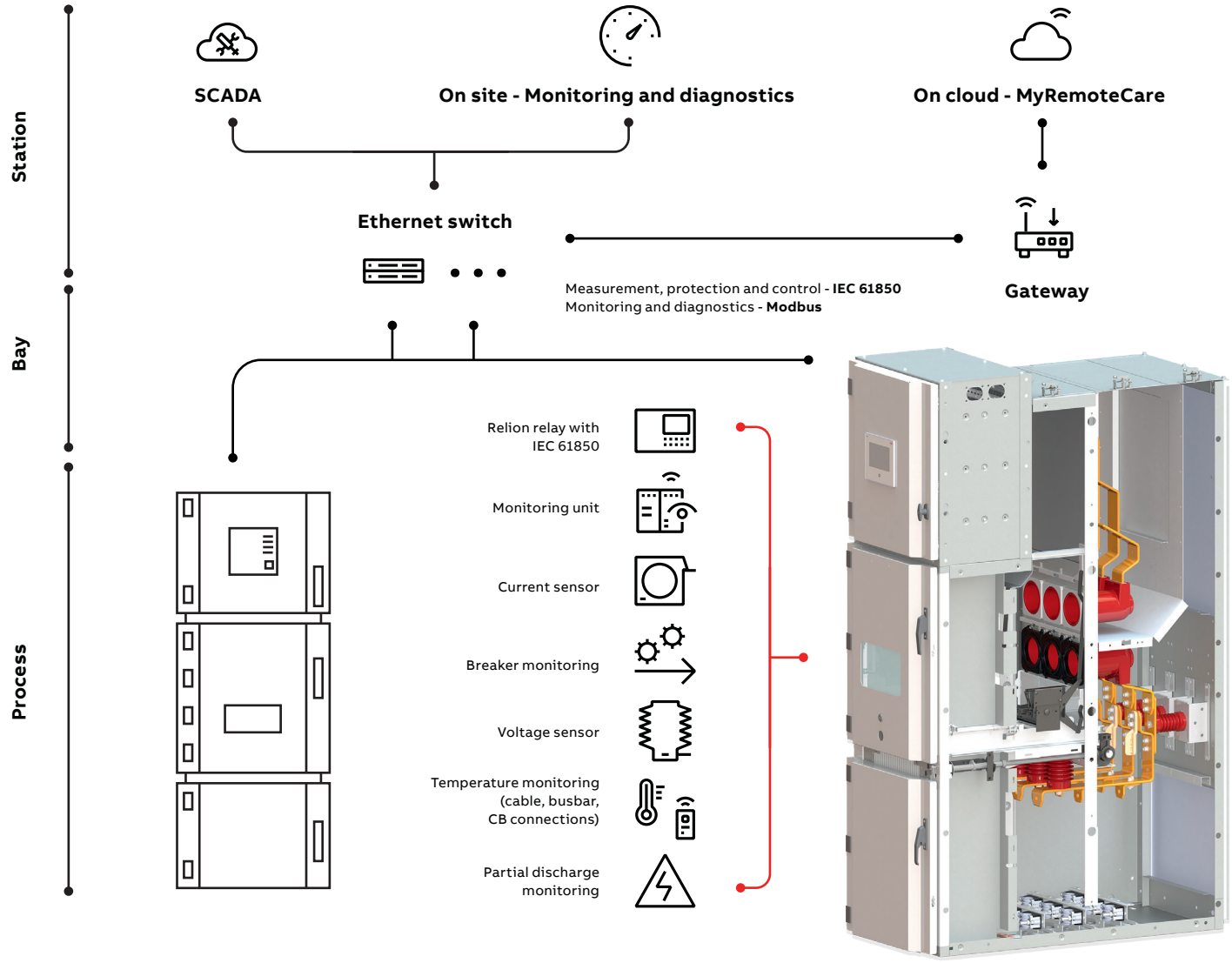
Towards varying loads and complex networks

- Current sensors work in large dynamic range without saturation, and don't need to be replaced when load rating changes.
- Cables are replaced by IEC 61850 digital communication that enables easy reconfiguration i.e. when adding new feeders or changing components.

Reliable and safe

Further reduction of risk

- Signals over the IEC 61850 network can be supervised in real-time. Protection operates upon these signals are faster compared to hardwiring.
- Online monitoring and diagnostics of switchgear conditions, such as temperature rise and partial discharge, enable identification of risks at an early stage.
- Constant condition monitoring of the circuit breaker and contactor ensure reliable operation.
- Voltage sensors do not use any iron core. Therefore, they are immune against grid disturbances, such as ferro resonance.



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02 UniGear Digital architecture
Note: the picture shows various options, while actual implementation depends on the selected features

Minimize lifetime costs
Efficient use of resources
- Increased reliability minimizes risk of outage
- With condition monitoring and diagnostics, maintenance can be managed in a more cost-effective way.

Energy-efficient solution
Lower environmental impact
- Amount of hardwiring between panels are saved by using IEC 61850 digital communication
- Current/voltage sensor technology has negligible energy consumption/losses compared to current transformers. E.g. in a substation of 14 feeders, you save energy losses equal to 150 tons of CO_2 during 30 years of service. That's the same as emissions produced by mid-sized European car driven for 1.250.000 km.

Up to 30% faster delivery
Shorter time from order to operation
- Current/voltage sensor technology enables higher level of switchgear standardization, and therefore no need to specify all the technical details, which are required for conventional instrument transformers.
- Current/voltage sensor are always available on stock
- Relion® relays with IEC 61850 digital communication enable the configuration of the application scheme at any time, without delaying the delivery.

Space saving solution
Smaller switchgear footprint
- Voltage sensors are of compact size, and can be installed into the busbar compartment of any feeder, and therefore a separate metering panel is not needed.

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1VLC000056 REV F EN 2020