

# ABB eStorage Flex 40

## Fully integrated Energy Storage System

The state-of-the-art ABB eStorage Flex is a compact, fully integrated, pre-engineered energy storage system designed to maximize the return of investment with an industrialized solution that reduces installation time and complexity as well as transportation costs. The solution is optimized for functionality featuring digital intelligence that improves solution performance and operating costs.



eStorage Flex  
outside view



### Plug-and-play

Provides all required batteries, power conversion, coupling transformer, safety features, cooling, and protection and controls.



### Factory tested

Factory built solution integrates comprehensive safety features that bring extensive quality control for the highest level of safety.



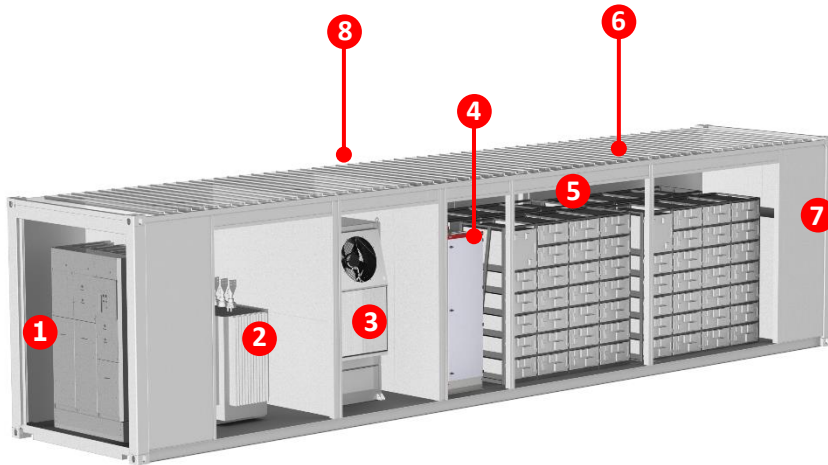
### Pre-engineered

Designed with careful equipment selection, catering for a long lifespan in all conditions.

### Applications

- **Peak shaving:** reducing energy and power tariffs by capping the consumption peaks.
- **Grid support:** compensating grid fluctuations by regulating reactive and active power or frequency.
- **Diesel genset optimization:** optimizing diesel hybrid systems for consumption by delaying the start and managing ramp rates.
- **Intermittent power generation:** using more of the power generated with distributed energy resources.
- **Charging infrastructure:** integrating charging stations by providing peak shaving, self-consumption optimization and grid system services.
- **Islanding:** supporting microgrids and loads during power outages with seamless transition and black start capabilities.
- **Time of use:** using of the storage system is dependent on the electricity cost (charge when low, discharge when high).
- **Multiuse applications:** combining several applications with dedicated priorities.

\*The graphics shown might differ from the actual structure

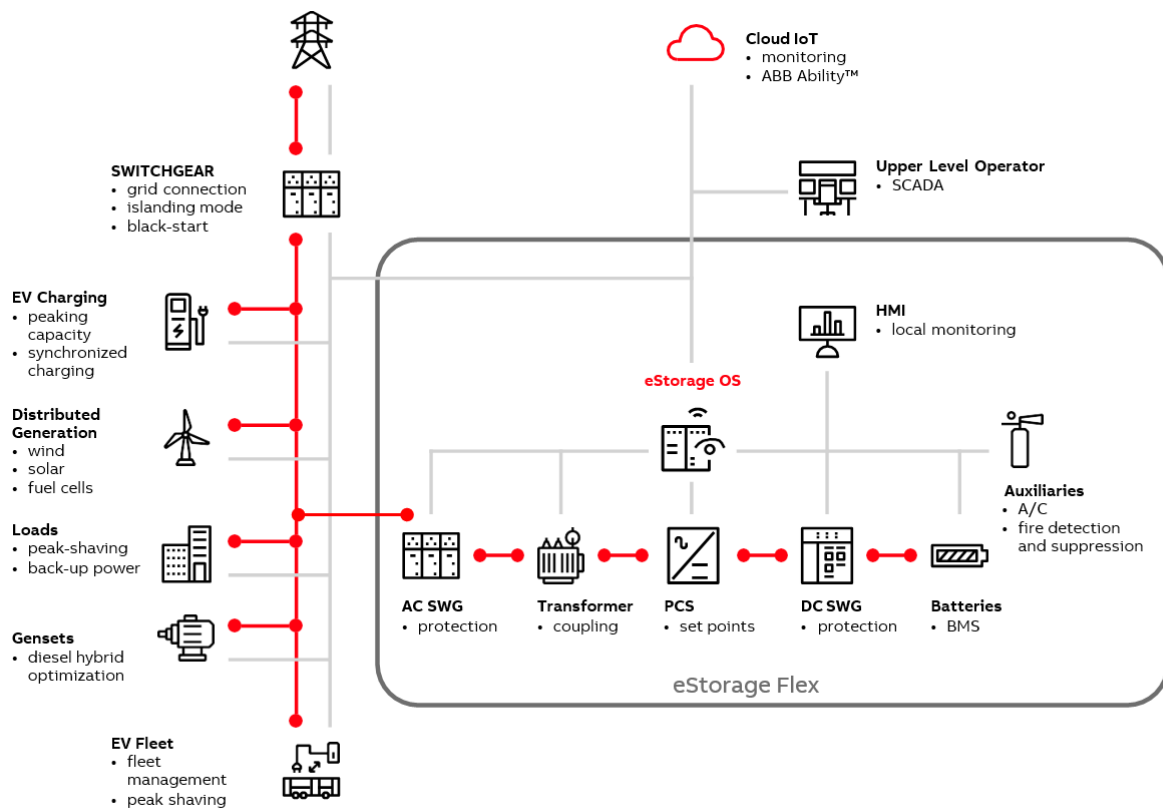


### Integrated Equipment

- 1 AC switchgear
- 2 Coupling transformer
- 3 Inverter
- 4 DC switchgear
- 5 Battery Modules + BMS
- 6 Fire suppression system
- 7 HVAC
- 8 eStorage OS

### System Architecture

The eStorage OS is a fully integrated digital operating system for the energy storage that provides asset management, monitoring, control, and protection; Fieldbus connectivity for remote control and monitoring as predefined option and embedded energy management functions for different applications and remote connectivity are available upon request.



## Technical data

### 1200Vdc

Description	eStorage Flex-40-770	eStorage Flex-40-880	eStorage Flex-40-1100	eStorage Flex-40-1210
<b>Electrical specifications</b>				
Maximum Output power (S) <sup>1</sup>	1000kVA	1000kVA	1300kVA	1300kVA
Typical Output power (P) <sup>1,2</sup>	730kW	830kW	1050kW	1150kW
Installed Energy	770kWh	880kWh	1110kWh	1210kWh
Max C-rate	<1C	<1C	<1C	<1C
Nominal voltage	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Power factor range	4-quadrant, 0 to 1	4-quadrant, 0 to 1	4-quadrant, 0 to 1	4-quadrant, 0 to 1
Connection method	3-phase	3-phase	3-phase	3-phase
DC Voltage range	800-1200Vdc	800-1200Vdc	800-1200Vdc	800-1200Vdc
<b>Equipment</b>				
Enclosure	ABB EcoFlex	ABB EcoFlex	ABB EcoFlex	ABB EcoFlex
Inverter operations modes	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start
Battery chemistry	NMC	NMC	NMC	NMC
Transformer type	Oil-filled, dry-type	Oil-filled, dry-type	Oil-filled, dry-type	Oil-filled, dry-type
AC switchgear	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus
<b>Environmental conditions</b>				
Ambient temp. range (nom. ratings)	-20°C to +50°C	-20°C to +50°C	-20°C to +50°C	-20°C to +50°C
Relative humidity	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
<b>General specifications</b>				
Overall dimensions (LxWxH)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)
Weight (maximum)	27670kg	28570kg	31960kg	32950kg
<b>Product compliance</b>				
Power conversion system	EN 50549-2, UL1741, IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	EN 50549-2, UL1741, IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	EN 50549-2, UL1741, IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	EN 50549-2, UL1741, IEEE1547, CA Rule 21, VDE-AR-N 4110/4120
Batteries	IEC 62619, UL1973, UN 38.3, UL9540A	IEC 62619, UL1973, UN38.3, UL9540A	IEC 62619, UL1973, UN 38.3, UL9540A	IEC 62619, UL1973, UN 38.3, UL9540A
Transformer	IEC 60076	IEC 60076	IEC 60076	IEC 60076
Low-voltage distribution	IEC 61439	IEC 61439	IEC 61439	IEC 61439
<b>User interface and communications options</b>				
Fieldbus connectivity (predefined option)	Modbus, for control and monitoring	Modbus, for control and monitoring	Modbus, for control and monitoring	Modbus, for control and monitoring
Local user interface (upgrade package)	ABB local control panel and embedded ABB Energy Management	ABB local control panel and embedded ABB Energy Management	ABB local control panel and embedded ABB Energy Management	ABB local control panel and embedded ABB Energy Management
Remote connectivity (upgrade package)	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443

## Technical data

### 1500Vdc

Description	eStorage Flex-40-1035	eStorage Flex-40-1380	eStorage Flex-40-1725	eStorage Flex-40-2070
<b>Electrical specifications</b>				
Maximum Output power (S) <sup>1</sup>	1000kVA	1500kVA	1500kVA	1500kVA
Typical Output power (P) <sup>1,2</sup>	950kW	1300kW	1300kW	1300kW
Installed Energy	1035kWh	1380kWh	1725kWh	2070kWh
Max C-rate	<1C	<1C	<1C	<1C
Nominal voltage	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV	LV: up to 690Vac MV: up to 40.5kV
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Power factor range	4-quadrant, 0 to 1	4-quadrant, 0 to 1	4-quadrant, 0 to 1	4-quadrant, 0 to 1
Connection method	3-phase	3-phase	3-phase	3-phase
DC Voltage range	1100-1465Vdc	1100-1465Vdc	1100-1465Vdc	1100-1465Vdc
<b>Equipment</b>				
Enclosure	ABB EcoFlex	ABB EcoFlex	ABB EcoFlex	ABB EcoFlex
Inverter operations modes	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start	VSI Vf, CSI PQ, Islanding, Black-start
Battery chemistry	NMC	NMC	NMC	NMC
Transformer type	Oil-filled, dry-type	Oil-filled, dry-type	Oil-filled, dry-type	Oil-filled, dry-type
AC switchgear	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus	Low-voltage: ABB MNS / Medium-voltage: ABB SafeRing/SafePlus
Ambient temp. range (nom. ratings)	-20°C to +50°C	-20°C to +50°C	-20°C to +50°C	-20°C to +50°C
Relative humidity	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
<b>General specifications</b>				
Overall dimensions (LxWxH)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)	12000x2450x2900mm (ISO 40ft)
Weight (maximum)	30460kg	35640kg	38640kg	41460kg
<b>Product compliance</b>				
system	IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	IEEE1547, CA Rule 21, VDE-AR-N 4110/4120	IEEE1547, CA Rule 21, VDE-AR-N 4110/4120
Batteries	IEC 62619, UL1973, UN 38.3, UL9540A	IEC 62619, UL1973, UN 38.3, UL9540A	IEC 62619, UL1973, UN 38.3, UL9540A	IEC 62619, UL1973, UN38.3, UL9540A
Transformer	IEC 60076	IEC 60076	IEC 60076	IEC 60076
Low-voltage distribution	IEC 61439	IEC 61439	IEC 61439	IEC 61439
Fieldbus connectivity (predefined option)	Modbus, for control and monitoring	Modbus, for control and monitoring	Modbus, for control and monitoring	Modbus, for control and monitoring
Local user interface (upgrade package)	ABB local control panel and embedded ABB Energy Management System	ABB local control panel and embedded ABB Energy Management System	ABB local control panel and embedded ABB Energy Management System	ABB local control panel and embedded ABB Energy Management System
Remote connectivity (upgrade package)	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443	Advanced SCADA and cloud connection, IEC 62443

<sup>1</sup> Derating applies above 1000m

<sup>2</sup> Power factor and performances considered

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