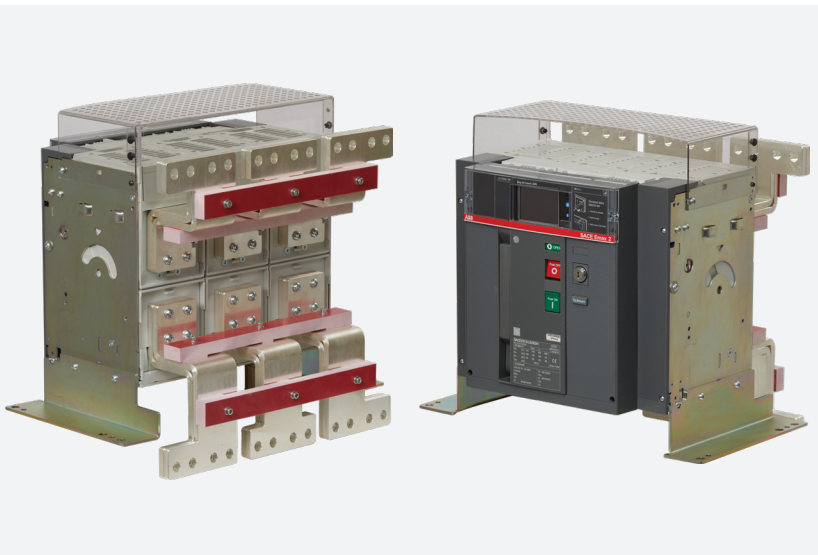


SERVICE NOTE

## Advanced retrofitting kit solution

### Hard Bus Retrofill AEG ME07 Fixed to Emax 2 IEC



With few modifications to your existing switchgear, retrofitting kits are a cost-effective solution to upgrade your electrical system. The Hard Bus Retrofill retrofitting kits allows a very fast and reliable upgrade of AEG ME07 circuit breakers and switch-disconnectors with Emax 2.

Air circuit breakers put into service many years ago might not provide the reliability and safety assurances required today. Making certain that people, equipment, and processes are properly protected is a growing concern. When maintenance is no longer enough owing to lack of materials or when components are out of production, retrofit kits are the best solution. ABB Low Voltage Service offers a unique way to upgrade installed hardware and software to the next generation, by changing the worn or outdated parts while maintaining the original plant and equipment configuration. The kits are tested in the ABB SACE Division Lab, accredited by ACCREDIA and acknowledged by important international certification bodies such as ACAE/LOVAG, ANCE, ASTA, ETL SEMKO, UL, CSA and Naval Registers.

#### Safety and Service continuity

- Safety improvement
- Service continuity guaranteed
- Ease of installation
- Reduction of the cost of maintenance
- Long availability of the product and its spare parts
- Factory tested solution
- Wide range of mechanical and electrical accessories with Emax 2.

## Value Propositions



### Safety & Protection

Highest quality level confirmed by certified products. ABB brand is associated with buying quality products.



### Easy to install

Fast and easy installation without dismantle the existing fixed part. Reduction of the downtime due to the installation in less than 1 hour.



### Control & Connectivity

Ekip Power Controller to improve energy efficiency and saving. Integration into systems with integrated communication modules of different protocols: Modbus RS-485, Modbus TCP, Profibus, DeviceNet, EtherNet/IP, IEC61850, Bluetooth.



### Easy to maintain

Diagnosis and installation with Ekip Connect Software. Automatic notifications to remind maintenance activities. ABB Ability Energy and Asset Manager is also available with Emax 2 for Predictive Maintenance.



### Sustainability

Retrofit kits enable a circular economy by extending the lifespan of your electrical system and minimizing CO<sub>2</sub> emissions and raw materials usage.

## How to retrofit an AEG ME07 IEC?

ABB offers a complete range of solutions to upgrade AEG ME07 circuit breakers with Emax 2:

- **Hard Bus Retrofill (HBRF):** it is the traditional retrofit kit for which the complete ME07 circuit breaker needs to be dismantled. The kit consists in a new Emax 2 breaker equipped with special terminals to fit the existing busbars. This solution is available for both Fixed and Withdrawable versions.

All retrofit solutions have been tested for mechanical and electrical operations, short circuit breaking capacity, short circuit withstand current and dielectric properties according to IEC standards.

## Correspondence table

The tables below show the correspondences between AEG ME07 Fixed and Emax 2 both for automatic circuit breakers and switch disconnectors.

### Automatic Circuit Breakers: AEG ME07 to Emax 2

AEG ME07 Frame size	AEG ME07 Type	AEG ME07 nameplate	Iu [A]	Poles	Terminals type	Emax 2 Iu [A]	Icu/Ics 400-415V [kA]	Icu/Ics 440V [kA]	Icu/Ics 500V [kA]	Icu/Ics 690V [kA]	Icw (690V, 1s) [kA]	
Size 10	Type N	ME 637N	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 630	30	-	-	-	30	
		ME 807N	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 800	30	-	-	-	30	
		ME 1007N	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1000	30	-	-	-	30	
		ME 1257N	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1250	30	-	-	-	30	
	Type S1	ME 637S1	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 630	50	-	50	50	50	
		ME 807S1	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 800	50	-	50	50	50	
		ME 1007S1	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1000	50	-	50	50	50	
		ME 1257S1	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1250	50	-	50	50	50	
	Type H	ME 637H	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 630	66 <sup>(1)</sup>	66 <sup>(1)</sup>	50 <sup>(2)</sup>	50	50	
		ME 807H	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 800	66 <sup>(1)</sup>	66 <sup>(1)</sup>	50 <sup>(2)</sup>	50	50	
		ME 1007H	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1000	66 <sup>(1)</sup>	66 <sup>(1)</sup>	50 <sup>(2)</sup>	50	50	
		ME 1257H	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2 1250	66 <sup>(1)</sup>	66 <sup>(1)</sup>	50 <sup>(2)</sup>	50	50	
	Size 20	Type N	ME 1607N	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 1600	35	-	-	-	35
			ME 2007N	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2000	35	-	-	-	35
		Type S1	ME 1607S1	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 1600	55	-	55	55	55
			ME 2007S1	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2000	55	-	55	55	55
Type H		ME 1607H	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 1600	100	100	80	60	55	
		ME 2007H	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2000	100	100	80	60	55	
Size 30	Type N	ME 2507N	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2500	40	-	-	-	40	
	Type S1	ME 2507S1	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2500	65	-	65	65	65	
	Type H	ME 2507H	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2 2500	100	100	85 <sup>(3)</sup>	75	65	
Size 40	Type N	ME 3207N	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2 3200	40	-	-	-	40	
	Type S1	ME 3207S1	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2 3200	70	-	70	70	70	
	Type H	ME 3207H	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2 3200	100	100	90	80	70	
	Type S1	ME 3207S1	3200/ 2000 <sup>(4)</sup>	4p <sup>(5)</sup>	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2 3200	65	-	65	65	65	
	Type H	ME 3207H	3200/ 2000 <sup>(4)</sup>	4p <sup>(5)</sup>	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2 3200	100	100	90	80	65	

#### Note:

(1) derating from original circuit breaker (100 kA)

(2) derating from original circuit breaker (70 kA)

(3) derating from original circuit breaker (90 kA)

(4) Second value for the neutral pole

(5) Neutral pole only on the left

For 4 poles circuit breakers it's mandatory to specify the position of the neutral phase by choosing between standard sequence (N, L1, L2, L3) or neutral on right side sequence (L1, L2, L3, N).

## Switch disconnectors: AEG MET07 to Emax 2

AEG MET07 Frame size	AEG MET07 Type	AEG MET07 nameplate	Iu [A]	Poles	Terminals type	Emax 2	Iu [A]	Icw (690V, 1s) [kA]	
Size 10	Type N	MET 637N	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	630	30	
		MET 807N	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	800	30	
		MET 1007N	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1000	30	
		MET 1257N	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1250	30	
	Type S1	MET 637S1	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	630	50	
		MET 807S1	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	800	50	
		MET 1007S1	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1000	50	
		MET 1257S1	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1250	50	
	Type H	MET 637H	630	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	630	50	
		MET 807H	800	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	800	50	
		MET 1007H	1000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1000	50	
		MET 1257H	1250	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E1.2/MS	1250	50	
	Size 20	Type N	MET 1607N	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	1600	35
			MET 2007N	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2000	35
		Type S1	MET 1607S1	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	1600	55
			MET 2007S1	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2000	55
Type H		MET 1607H	1600	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	1600	55	
		MET 2007H	2000	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2000	55	
Size 30	Type N	MET 2507N	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2500	40	
	Type S1	MET 2507S1	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2500	65	
	Type H	MET 2507H	2500	3p/4p	HR-HR / VR-VR / HR(top)-VR(bottom)	E2.2/MS	2500	65	
Size 40	Type N	MET 3207N	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2/MS	3200	40	
	Type S1	MET 3207S1	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2/MS	3200	70	
	Type H	MET 3207H	3200	3p	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2/MS	3200	70	
	Type S1	MET 3207S1	3200/2000 <sup>(1)</sup>	4p <sup>(2)</sup>	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2/MS	3200	65	
	Type H	MET 3207H	3200/2000 <sup>(1)</sup>	4p <sup>(2)</sup>	HR-HR / VR-VR / HR(top)-VR(bottom)	E4.2/MS	3200	65	

**Note:**

(1) Second value for the neutral pole

(2) Neutral pole only on the left

For 4 poles circuit breakers it's mandatory to specify the position of the neutral phase by choosing between standard sequence (N, L1, L2, L3) or neutral on right side sequence (L1, L2, L3, N).

### Trip Unit comparison

With Emax 2 retrofit kits it is possible to choose amid three different Trip Units in order to replace the AEG ME07 ones: Ekip Dip, Ekip Touch and Ekip Hi-Touch.

The table below shows the functions available for the various ME07 trip units compared to the Emax 2 trip units:



	AEG ME07 Trip Units bse								Emax 2 Trip Units Ekip		
	3-1 rms 4-1 rms	3-2 rms 4-2 rms	3-3 rms 4-3 rms	3-3.1 rms 4-3.1 rms	3-4 rms 4-4 rms	3-5 rms 4-5 rms	3-6 rms 4-6 rms	3-7 rms 4-7 rms	Dip	Touch	Hi-Touch
<b>Protection functions</b>											
L - Overload protection	●	●	●	●	●	●	●	●	●	●	●
S - Selective short-circuit	●	●	●	●	●	●	●	●	●	●	●
I - Instantaneous short-circuit	-	-	●	●	●	●	●	●	●	●	●
G - Earth fault	-	-	-	-	●	●	●	●	●	●	●
Neutral protection	●	●	●	●	●	●	●	●	● (4p); ▲(3p)	● (4p); ▲(3p)	● (4p); ▲(3p)
Thermal memory for L protection	-	-	-	-	-	-	●	●	●	●	●
Thermal memory for S protection	-	-	-	-	-	-	-	-	●	●	●
<b>Other functions</b>											
Trip alarm contact	-	-	●	●	●	●	●	●	●	●	●
Zone selectivity	-	-	-	●	-	●	●	●	-	●	●
General relay outputs (4 available)	-	-	●	●	●	●	●	●	-	▲	▲
Watchdog	-	-	-	-	-	-	●	●	●	●	●
Modbus	-	-	-	-	-	-	-	●	-	▲	▲
24V DC auxiliary power supply	-	-	●	●	●	●	●	●	●	●	●
Test kit	●	●	●	●	●	●	●	●	●	●	●

● = supplied as standard  
▲ = module or device needed

## Accessories compatibility

The majority of AEG ME07 Fixed mechanical and electrical accessories can be replaced with Emax 2's ones:

AEG ME07 Fixed	HBRF AEG ME07 Fixed to Emax 2
1st shunt trip	Emax 2 standard YO (AUX 4Q to be wired in series with YO to replace the contact in series with the shunt trip of ME07)
2nd shunt trip	Emax 2 standard YO2 (AUX 4Q or AUX 6Q to be wired in series with YO to replace the contact in series with the shunt trip of ME07)
Closing coil	Emax 2 standard YC
Undervoltage release	Emax 2 standard YU
Time delay unit	Emax 2 standard UVD (external wiring required)
Drive	Emax 2 standard M
Spring energy system charged indication switch (1 N/O)	Emax 2 standard S33 M/2 contact
Breaker ready for closure indication switch (1 N/O)	Emax 2 standard ready to close signalling contact RTC
Auxiliary contacts (6N/C+5N/O)	Emax 2 (E1.2) standard AUX 4Q Emax 2 (E2.2/E4.2) standard AUX 4Q + AUX 6Q + AUX 15Q (external)
Auxiliary contacts (5N/C+5N/O or 4N/C+4N/O or 4N/C+3N/O)	Emax 2 (E1.2) standard AUX 4Q Emax 2 (E2.2/E4.2) standard AUX 4Q + AUX 6Q
Trip indication (1 N/O)	Emax 2 standard S51 contact
Locking devices - cylindrical lock	Emax 2 standard key lock in open position KLC (verify the correct functionality)
Locking devices - padlocks	Emax 2 standard protection device for opening and closing pushbuttons PBC (D=4 mm or D=7 mm or D=8 mm)
Sealing cover for pushbuttons	Emax 2 standard protection device for opening and closing pushbuttons PBC
Sealing kit	Emax 2 standard IP54 flange
Door interlock	Emax 2 (E2.2/E4.2) standard DLC
Bowden wire interlock	Emax 2 mechanical interlock (all the interlocked breakers need to be replaced)