

Advanced retrofitting kit solution

Direct Replacement Isomax S7 vs Tmax XT7



With few modifications to your existing switchgear, retrofitting kits are a cost-effective solutions to upgrade your electrical system. The Direct Replacement retrofitting kits allows a very fast and reliable upgrade of Isomax S7 circuit breakers and switch-disconnectors with Tmax XT7

Molded case 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Service offers a unique way to upgrade installed hardware and software to the next generation, by changing the worn or outdated parts while maintaining the original plant and equipment configuration.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.

From Circuit-Breaker to Power Manager

Tmax XT improve the efficiency of electrical plants, creating the new standard of:



Control & Connectivity

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



Ease of use

Creation of efficiency and simplicity. Power measurement with XT7 advanced trip units.



Easy to Maintain:

Diagnosis and installation with Ekip Connect Software. Automatic notifications to remind maintenance activities. ABB Ability Asset and Energy Management is also available with XT7M for Predictive Maintenance.



Sustainability:

Retrofitting enable a circular economy by extending the lifespan of your electrical system minimizing CO₂ emissions and raw materials usage.

Isomax S7 panorama

ABB offers a complete range of solution to upgrade Isomax S7 circuit breakers with Tmax XT7:

- **Hard bus Retrofill (RF):** it is the traditional retrofit kit for which the complete Isomax S7 needs to be dismantled. The kit consists in a new XT7-XT7M equipped with special terminals to fit the existing busbars. This solution is available for fixed Isomax S7 versions.
- **Direct replacement (DR):** It is the most advanced retrofit solution type. In this case only the mobile part of circuit breakers needs to be removed. A special version of XT7-XT7M moving part is supplied by ABB to be racked in/out on the existing cradle.

This solution is available for withdrawable Isomax S7 versions.

With direct replacement solution the installation time is reduced to minimum, as the existing fixed part are not removed; with few adaptations on-site the new moving part can be inserted. 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.

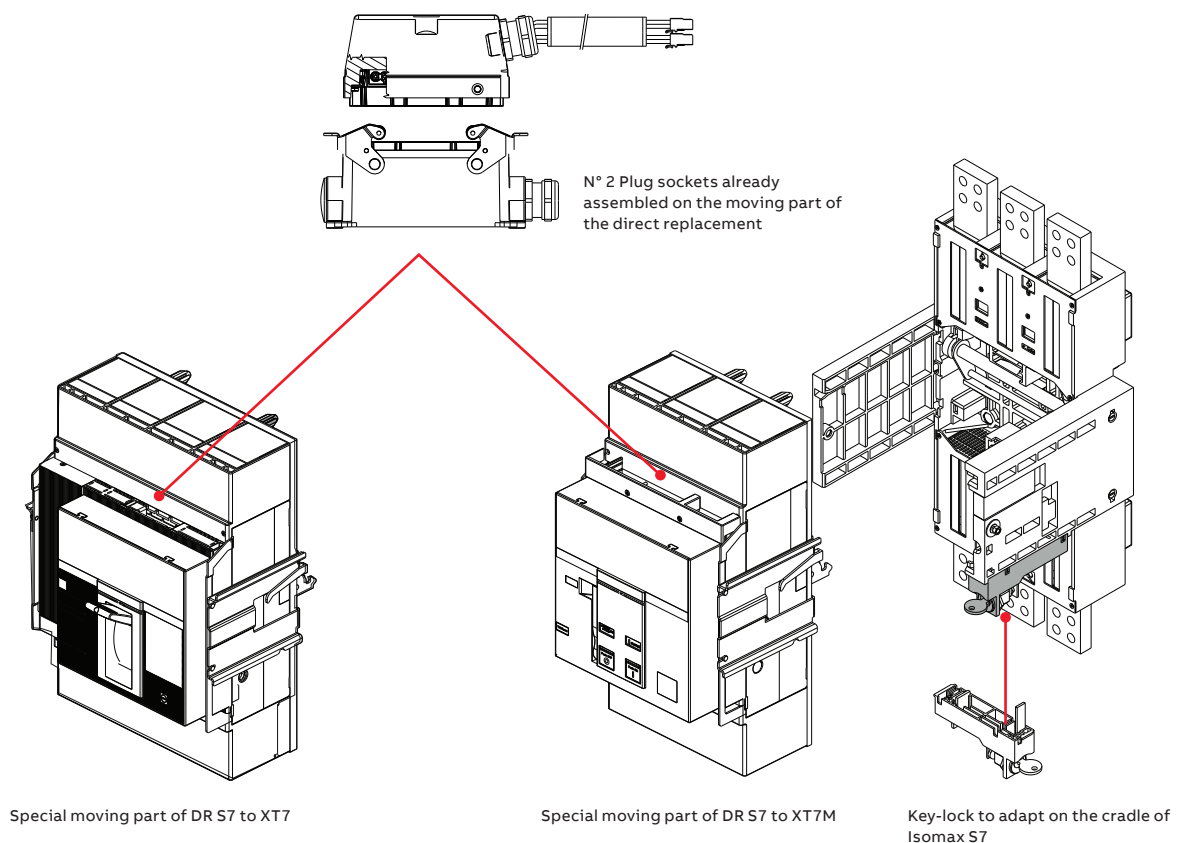
The Direct Replacement is a solution suitable when the existing part is full working.

Before ordering it is important to verify integrity of the fixed part according to the directions on the document [1SDH001279R0002](#).

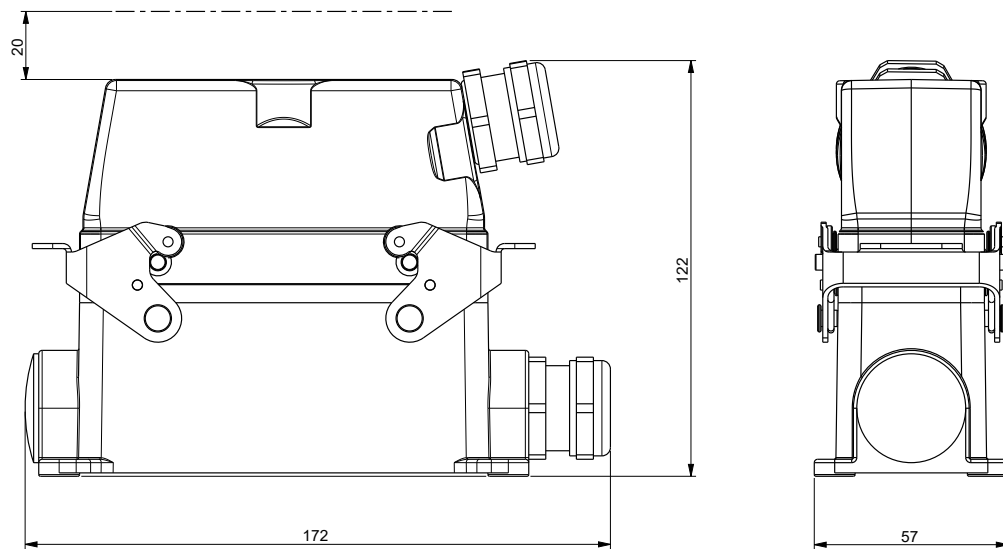
Product details:

The DR kit consists of:

- Special Tmax XT7-XT7M special moving part assembled and tested in ABB factory and ready to be racked-in into Isomax S7 cradle that includes:
 - Plug-sockets already assembled on the moving part for commutation of electrical and electronic accessories
 - Mechanical signaling
 - Special Key lock to adapt on Isomax S7 cradle
 - Anti-insertion lock
 - Racking in/out lever
- Kit for the door's adaption
- Instructional manual



Dimensions of the plug sockets



Please check the availability of space inside the cubicle for installing the sockets.

Correspondence table for Direct Replacement Isomax S7 to XT7-XT7M

Automatic circuit breakers and switch-disconnectors – Isomax S7

Isomax	Iu	Poles	Tmax XT7	Iu	Icu/Ics 380-415V [kA]	Icu/Ics 440V [kA]	Icu/Ics 500V [kA]	Icu/Ics 690V [kA]	Icw (1s) 440V [kA]
	[A]			[A]					
S7S	1250	3p/4p	XT7S - XT7S/M	1250	50	40	35	20	15
S7S	1600	3p/4p	XT7S - XT7S/M*	1600	50	40	35	20	20
S7H	1250	3p/4p	XT7H - XT7H/M	1250	65	55	45	25	15
S7H	1600	3p/4p	XT7H - XT7H/M*	1600	65	55	45	25	20
S7L	1250	3p/4p	XT7L - XT7L/M	1250	100	80	70	35	15
S7L	1600	3p/4p	XT7L - XT7L/M*	1600	100	80	70	35	20
S7D	1250	3p/4p	XT7D - XT7D/M	1250	-	-	-	-	20
S7D	1600	3p/4p	XT7D - XT7D/M*	1600	-	-	-	-	20

* Consider the following derating:
1550A for fixed parts with VR terminals
1450A for fixed parts with HR or F terminals

Trip Unit comparison



Protection functions	PR211/P I - LI	PR212/P LSI - LSIG	LI - LSI LSIG	LI - LSI LSIG	LI - LSI LSIG
Overload protection - L	●	●	●	●	●
Time delay overcurrent protection $I_2^*t = \text{cost}$ - S	-	●	●	●	●
Time delay overcurrent protection $(t=k)$ - S	-	●	●	●	●
Instantaneous overcurrent protection - I	●	●	●	●	●
Earth fault protection - G	-	●	●	●	●
Network analyzer	-	-	-	-	●
Real-time monitoring and protection - Current	-	●	●	●	●
Real-time monitoring and protection - Voltage, Power, Energy, Frequency	-	-	○	●	●
Maintenance indicators and records	-	-	●	●	●
Communication capability	-	○	○	●	○

PR212/D Communication capability using the release PR212/PD-L (LonTalk Protocol) or PR212/PD-M (Modbus RTU Protocol).

Accessories compatibility

Isomax S7	DR S7 to XT7-XTM-E1.2
YO	YO
YU	YU
YU + time-lag device	YU + Delay device for undervoltage release -UVD
Connectors for duty releases	Plug-socket already mounted on the moving part of the DR
Stored energy motor operating mechanism	Motor Operator (M) + YC +YO (solution suitable only in case of DR S7 to XT7M)
Direct-mounted rotary handle operating mechanism	Direct rotary handle - RHD (solution suitable only in case of DR S7 to XT7)
Rotary handle operating mechanism with transmission rod	Transmitted rotary handle - RHE (solution suitable only in case of DR S7 to XT7)
Key lock for open position	Supplied as default
Signalling unit SACE PR010/K	Ekip Signaling 2K - Ekip Signaling 10K (externally cabled)
Current transformer for neutral conductor outside circuit-breaker	XT7 - XT7M current sensor for neutral conductor outside the CB - cubicle's rewiring is required
AUX 2Q (O/C)	AUX 4Q
AUX SY + AUX 1Q (O/C)/AUX 2Q (O/C)	AUX SY + AUX 4Q (in case of XT7) 2K-1 + AUX 4Q (in case of XT7M)

The following XT7-XT7M accessories are not compatible with the Direct Replacement:

- Mechanical locks for compartment door
- Mechanical interlock system with other CBs
- All accessories of XT7-XT7M fixed part

While the following Emax 2 accessories can be installed with an external re-wiring with local adaptation:

- Ekip Multimeter
- Ekip Control Panel
- Remote Reset YR
- Ekip View
- YC (in case of XT7M YC needs local wiring adaptation only if ordered without motor operator)
- 1S52 for XT7
- RTC for XT7M