

ELECTRIFICATION SERVICE

Care services

Start-up and commissioning services



ABB's start-up and commissioning services support the sustainable, reliable and safer operation of your electrification equipment. With a full suite of options, our standard start-up and commissioning package can be expanded to meet your needs.



Standard start-up and commissioning package

ABB's all-inclusive package delivers peace of mind by assisting you from testing to commissioning and providing initial operational support. Renowned for its superior service, ABB helps ensure a seamless transition from manufacturing to on-site implementation. With a full spectrum of services executed by expert professionals, ABB provides an effective and dependable commissioning process.



Warranty extension included

A 12-month extension to standard factory warranty is included with the startup and commissioning package for participating equipment. Refer to **this publication** for more details (terms and conditions apply).



Additional service options

- Expert support of installation: An ABB expert can lend support to your team or contractor by facilitating installation and verification at each stage of the process.
- Hands-on training for site operators: Informal training conducted in front of the equipment just after commissioning. This high-level orientation to the equipment is an excellent introduction to new operators or a great refresher for all.
- Post project check-up: As desired, ABB service personnel can return after a period of operation to evaluate the operation of the equipment. This can also serve as the first phase of a full scale NFPA 70B Electrical Maintenance Plan.



Highlighted testing options — additional or standalone

- NEC 230.95 ground fault protection: For services rated 1000 A or more. Help ensure safety through performance testing with primary current injection.
- NEC 240.87 arc flash energy reduction (RELT): For circuit breakers rated 1200 A or more. Test and document the appropriate performance of the RELT safety features.

Exclusive advantages

Depending on the selected start-up and commissioning package, ABB may include any of the following exclusive add-on benefits from the Power Care Service Agreement,

the SU&C Welcome Package or both. We offer a range of valuable add-ons, which can be included in two bundles:



Power Care Service Agreement

The Power Care Service Agreement is ABB's modular solution, designed to offer best-in-class equipment protection on site. To our SU&C customers, we offer one year of exclusive Power Care advantages, which can be renewed or expanded on request.

Service Assist mobile app

Service Assist is an app for field operators, providing all support and information needed on site — including ABB and non-ABB documentation, plus augmented reality guides. Users can book appointments for on-site or remote services.

Connect Partner Hub

Access to the Connect Partner Hub service section is designed for facility managers to oversee electrical equipment lifecycle status, manage documentation and request activities from ABB or site operators in the field.

NFPA 70B 2023 maintenance program

The compilation and annual update of an NFPA 70B plan is based on the ABB equipment installed. This program meets the NFPA 70B 2023 standard and protocol for a comprehensive view of equipment performance and maintenance needs to the planned end of its life.



SU&C Welcome Package

The SU&C Welcome Package is the perfect bundle to start your operations with peace of mind. The package may include exclusive services and special offers.

Warranty extension

For customers who choose ABB SU&C, we can provide a free warranty extension. An additional 12 months of standard warranty is offered free of charge when ABB provides start-up and commissioning of ABB equipment. Contact your Electrification Service sales representative for approved equipment.

Equipment training

Once start-up and commissioning is complete, our technicians can provide hands-on training on the main equipment functionalities and operational performance handled by daily operators. Contact your Electrification Service sales representative for more information.



Services — start-up and commissioning

Start-up of new equipment involves stand-by and start-up support of equipment.

Commissioning of new equipment is defined as inspecting and testing new equipment as per a defined procedure.

Service packages and work scopes

This publication contains descriptions of scopes of work that are listed by the scope reference ID. This document is to be used in conjunction with an ABB empower Quote, the “Services — Start-up and Commissioning” configurator and bill of materials (BOM). The scope reference ID will be referenced on the BOM at each change in equipment type.

Below is a guide to build a product number based on your desired service and is followed by details for each component of the product number.

Service packages

(SC0000) Expert support for installation:

Expert support for installation is provided by ABB to customer’s employees or contractors to facilitate their installation of the equipment. This support service addresses two main activities:

- Information about how equipment may be successfully installed
- Verification of the installation at each stage of the process

ABB’s expert support personnel will provide information and verification support related to:

1. The foundation frame (i.e., floor leveling, stability, etc.) and equipment room requirements
2. The equipment assembly, including (i) the correct closing of doors and (ii) the tightening torques for each connection type according to the manual
3. Installation of bushings and busbars, helping ensure secure and reliable electrical connections
4. Installation of top-mounted boxes (when applicable)
5. Connection of the control cables and interconnection bundles
6. Connection of the grounding system
7. The pressure-relief duct assembly (when applicable) according to the assembly manual

(SCXXX2) Start-up and commissioning:

The start-up and commissioning service includes review for proper installation, standard on-site testing, electronics settings and functional testing. Each equipment type has a unique work scope for start-up and commissioning. See descriptions for further details.

Scopes of work — start-up and commissioning

Each equipment type requires a different scope of work for start-up and commissioning. The following work scopes are applicable to the equipment type in the title only. These work scopes may be combined with other work scopes to form service packages as described above. This document is to be used in conjunction with an ABB empower Quote, the “Services — Start-Up and Commissioning” configurator and the bill of materials (BOM).

(SC0012) Automatic transfer switch — start-up and commissioning

- The start-up and commissioning service includes review for proper installation, standard on-site testing, electronics settings and functional testing.
- Visually inspect for damage and proper installation.
- Verify lug torque values of power connections.
- Verify engine start connections.
- Isolate control circuits and perform insulation resistance measurements phase-to-phase and phase-to-ground.
- Verify correct connections of all control wires.
- Ensure that all covers and barriers are properly fastened.
- Verify settings of timers and adjust to customer-supplied settings.
- Close primary source breaker feeding the ATS and verify phase-to-phase voltages at the ATS’s normal (or primary) side line terminals. Verify that controller LEDs for source availability are illuminated.
- Verify proper phase rotation of normal source.
- Close the alternate source breaker feeding the ATS.
- Start the engine-generator.
- Verify phase-to-phase voltages at the ATS’s alternate (or emergency) side line terminals. Verify that the controller LEDs for source availability are illuminated.
- Verify proper phase rotation of emergency source and that it matches the phase rotation of the normal source.
- Verify proper phasing of normal source to emergency source (for closed transition only).
- Shut down the engine-generator.
- Place ATS starting controls in the automatic position.

- Perform operational test of ATS by opening the normal source breaker and verifying the generator starts and ATS transfers to emergency position.
- Restore normal power to ATS and verify proper ATS operation for return to normal source.

(SC0022) Drives — start-up and commissioning

- Visually inspect for damage and proper installation.
- Perform on-line run checks.
- Confirm accuracy of drive front panel display parameters.
- Correct fan rotation in cabinet if applicable.
- Confirm power supply voltages are within specification.
- Confirm input signals are within specification.
- Confirm output voltages are within specification.

(SC0032) Low voltage starters — start-up and commissioning

- Visually inspect for damage and proper installation.
- Verify interconnect wiring corresponds to ABB manual recommended wiring diagrams.
- Set starter parameters (voltage ramp or current limit, acceleration ramp time, kickstart feature, stopping, full voltage or energy save, etc.) to buyer-supplied settings.
- Note that the motor must be connected and unloaded. The motor will be operated and verified to the programmed settings
- Startup does not include calculations to determine recommended starter settings. If requested by the customer, ABB can provide this service for an additional fee.

(SC0042) Low voltage heavy-duty switches and disconnects — start-up and commissioning

- Visually inspect for damage and proper installation.
- Operate the switch several times, verifying main blade and arcing blade alignment with stationary contacts and arc chute.
- Measure the primary contact resistance of each phase with a digital low resistance ohmmeter (DLRO).
- Using a megohmmeter, measure phase-to-phase and phase-to-ground insulation resistance.

(SC0052) Low voltage motor control centers — start-up and commissioning

- Visually inspect for damage and proper installation.
- Verify that protective devices and starting contactors open and close freely by operating breakers and/or fuse disconnects manually and physically depressing the motor starting contactors.
- Verify ground bus connections for proper tightness.
- Verify bus splices for installation and proper torque values.
- Verify control wiring for proper connection and tightness.
- Set circuit breaker instantaneous trip level to customer-provided setting. Note: If no settings are provided, trip level will be set to mid-range.
- Test insulation resistance phase-to-phase and phase-to-ground.
- Operate magnetic devices by hand to verify that all moving parts operate freely.
- Manually operate branch circuit disconnects and verify proper operation of disconnects and door interlocks.
- Where equipped, manually trip circuit breakers to verify that operating handles move freely to the trip-free position. With the door closed and latched, reset tripped circuit breakers and open and close breaker to confirm proper operation.
- Perform insulation resistance test of starter bucket/fused disconnect.
- Start up solid-state and variable speed drives.

(SC0062) Transformers (dry-type) — start-up and commissioning

- Visually inspect for damage and proper installation.
- Remove transformer panels to inspect connections, core assembly and core clamps for discrepancies.
- Ensure proper tightness of all external bolted electrical joints.
- Verify equipment grounds for proper installation and tightness.
- Verify proper torque of bus mounting and splice connection bolts wherever possible.
- Perform a turns ratio test at in-service tap.
- Inspect auxiliary devices such as fans and indicators.
- Perform insulation resistance measurement high side to low side, high side to ground and low side to ground (remove neutral-to-ground connection to perform test where applicable).

(SC0072) Medium voltage switches — start-up and commissioning

- Visually inspect for damage and proper installation.
- Operate the switch several times, verifying main blade and arcing blade alignment with stationary contacts and arc chute.
- Measure the primary contact resistance of each phase with a digital low resistance ohmmeter (DLRO).
- If the switch does not move freely or resistance readings are above the manufacturer's minimum requirements, clean and adjust switch contacts as required and retest.
- Remove fuses and verify for proper rating.
- Inspect fuse clips and ferrules for damage and proper lubrication.
- Inspect key interlocks for proper operating sequence and proper key distribution where applicable.
- Perform insulation resistance checks phase-to-phase and phase-to-ground. (Disconnect cables where necessary to isolate transformer where applicable.)

(SC0082) Transformers (liquid-filled) — start-up and commissioning

- Visually inspect for damage and proper installation.
- Visually inspect bushings, radiators and gauges for leaks.
- Inspect transformer auxiliary devices (gauges) for discrepancies.
- Verify operation of auxiliary devices where applicable.
- Ensure proper tightness of all external bolted electrical joints.
- Verify equipment grounds for tightness and proper installation.
- Perform turns ratio test at in-service tap.
- Perform insulation resistance measurement high side to low side, high side to ground and low side to ground (remove neutral-to-ground connection to perform test where applicable).
- 5 MVA and higher ratings:
 - Perform power factor testing on the transformer windings and bushings. Record values and report unfavorable conditions.
 - Perform winding resistance test.

(SC0092) Panelboards — start-up and commissioning

- Visually inspect for damage and proper installation.
- Verify proper open and close operation of circuit breakers.
- Test insulation resistance phase-to-phase and phase-to-ground.
- Program overcurrent devices with customer-supplied settings if applicable.
- Test overcurrent protective devices with appropriate digital test set (non-primary injection).

(SC0102) Surge protective device (SPD) — start-up and commissioning

- Visually inspect for damage and proper installation.
- Verify isolation switch operation (when applicable).

(SC0112) Switchboards — start-up and commissioning

- Visually inspect for damage and proper installation.
- Ensure proper manual open and close operation of circuit breakers.
- Isolate any PT/CPT circuits and perform insulation resistance test of bus phase-to-phase and phase to-ground.
- Perform resistance test of primary contacts (ductor) of HPCII switches or PowerBreak II circuit breakers.
- Program overcurrent devices with customer-supplied settings.
- Test overcurrent protective devices with appropriate digital test set (non-primary injection).

(SC0122) Switchgear (traditional) — start-up and commissioning

- Verify that equipment is properly installed and anchored per switchgear manufacturer instructions.
- Confirm shipping split bus splice connections have been installed and properly torqued.
- Visually inspect switchgear cubicles and circuit breaker compartments for damaged or defective devices.
- On low voltage switchgear, verify proper location of neutral disconnect link and main bond jumper.
- Verify control power wiring connections through shipping splits.
- Verify control power fuse/breaker ratings and continuity.
- Verify proper interference plates on both the breaker and in the switchgear compartments.
- Verify proper operation and installation of CPT/PT fuses/drawers as applicable.
- Verify circuit breaker operation via protective relay operation.

- Inspect compartment space heaters (if provided) for damage and perform resistance testing.
- Verify racking mechanism (disconnect, test and connect) operation and indication.
- Check ground bus connections and supports for proper connection and tightness across all shipping splits.
- Inspect and confirm CT ratio, polarity and connections per as-built drawings.
- Inspect and confirm PT ratio, rating and connections per as-built drawings.
- Inspect and confirm CPT ratio, CPT rating, fuse rating and connections per as-built drawings.
- Place all breakers in test or disconnect position and remove all PT/CPT fuses to perform switchgear bus insulation resistance tests phase-to-phase and phase-to-ground.
- Confirm emergency and remote circuits operate correctly.
- Test/confirm any designed transfer schemes, ground fault schemes, etc.
- Verify metering devices: ammeter, voltmeter and their respective phase-selector switch (where applicable).

(SC0132) Busway — start-up and commissioning

- Compare equipment name plate data with drawings and specifications.
- Inspect physical and mechanical condition of busway system.
- Inspect anchorage, alignment and grounding.
- Verify correct connection in accordance with single-line diagram.
- Inspect bolted electrical connections for high resistance using a low resistance ohmmeter.
- Confirm physical orientation in accordance with manufacturer's labels to ensure adequate cooling.
- Ensure busway is plumb and level.
- Ensure end cable tap boxes and switchboard/transformer stubs have been installed as per manufacturer's specifications.
- Ensure any wall penetrations have been properly sealed (firestop as applicable).
- Ensure support hangers have been properly and adequately placed to support busway.
- For plug-in bus, ensure plugs are properly seated and level.
- For riser bus, ensure spring hangers are properly installed and adjusted according to factory drawings and have been readjusted to accommodate field installation of additional plugs.
- Examine outdoor busway for removal of weep-hole plugs, if applicable, and correct installation of joint shields, caps and covers.

- Measure insulation resistance of each busway for one (1) minute; including phase-to-phase and phase-to-ground.
- Perform phasing test on each busway.
- Verify operation of busway heaters, as applicable.
- Provide documentation of field tests performed and results of those tests in an engineering appraisal report.

(SC0152) Low voltage draw-out circuit breakers (traditional) — start-up and commissioning

- Manually operate circuit breaker and inspect for proper trip and close operation.
- Lubricate primary disconnecting device contacts (finger clusters) as needed.
- Inspect secondary disconnects and auxiliary contacts for proper operation.
- Measure primary contact resistance of each phase with a digital low resistance ohmmeter (DLRO/ductor) and record test results.
- Test insulation resistance phase-to-phase and phase-to-ground.
- Rack breakers on bus and verify that the primary and secondary fingers are in good alignment.
- Set trip units to customer-supplied settings.
- Test circuit breakers equipped with solid-state or microprocessor programmers with a programmer test set, where applicable.

(SC0162) Microprocessor (digital) relays/metering — start-up and commissioning

- Visually inspect relays/meters for damage prior to commissioning.
- Prior to energizing meters/relays, verify control voltage is within proper operating range for equipment.
- Power up relay and verify successful self-test.
- Verify/program electronic relays/meters with appropriate CT and PT ratios.
- Program relays with customer-supplied setting files created with appropriate manufacturer's software format.
- Test relay operating time/current curves using appropriate secondary current injection test equipment.
- Test and verify metering inputs (current and voltage).
- Verify contact output functions with regards to protection and monitoring functions based on as-built drawings.
- Cycle control power and confirm setting files remain unchanged.
- Backup individual relay protection files, reflecting any adjustments made during start-up and commissioning.

(SC0172) Low voltage fixed-mounted, insulated case circuit breakers — start-up and commissioning

- Manually operate circuit breaker and inspect for proper open and close operation.
- Measure the primary contact resistance of each phase with a digital low resistance ohmmeter (DLRO/ductor) and record test results.
- Test insulation resistance phase-to-phase and phase-to-ground (if not tested as part of the switchboard insulation resistance test) and record readings where applicable.
- Test circuit breakers equipped with solid-state or microprocessor programmers with a programmer test set, where applicable

(SC0182) Medium voltage vacuum circuit breakers — start-up and commissioning

- Visually inspect circuit breaker and verify ratings.
- Perform primary contact resistance check for each breaker phase using a digital low resistance ohmmeter.
- Measure insulation resistance for each breaker in the closed position, phase-to-phase and phase-to-ground.
- Perform vacuum integrity test (high-pot test) on vacuum bottles of each circuit breaker.
- Verify proper operation of circuit breaker interlocks.
- Verify proper rack-in of circuit breakers.
- Verify proper operation of circuit breakers — manual and electric open/close/charge.
- Provide an engineering appraisal report containing the test data sheets from the equipment check-out and verifying the equipment is ready for service.

(SC0192) Medium voltage vacuum starters — start-up and commissioning

- Visually inspect for damage and proper installation.
- Verify ground bus connections for proper tightness.
- Verify lugs and bus splices for proper installation and tightness.
- Verify control wiring for tightness and proper installation across any shipping splits.
- Verify operation of isolation switch and adjust interlock assembly if required.
- Remove draw-out contactors and visually inspect for damaged components. Operate and lubricate as required.
- Perform contactor contact resistance checks using a digital low resistance ohmmeter.
- Perform vacuum integrity test (high-pot test) on contactor vacuum bottles.

(SC0202) Medium voltage gas-insulated switchgear

— start-up and commissioning

- Check mechanical and electrical interlocks for compliance with the specified conditions.
- Perform a functional test of protective devices.
- Check the general condition of the switchgear and external conditions.
- Display the instructions for SF₆ gas handling in the installation room.
- Display the ABB instruction manual on handling SF₆ gas and behavior in case of a fault in the installation room.
- Instruct local operating personnel on the fundamentals of operating ZX2 switchgear.
- Check readiness for operation and switching device positions of upstream and downstream electrical equipment.
- Perform installation checks: a) power cables, b) control wiring, c) auxiliary and control voltage, d) remote control panels, e) ground connections, f) operating conditions.

Scopes of work — special testing

These special testing work scopes may be accomplished along with a commissioning work scope or may be offered independently.

(TS0140) Special testing — NEC 230.95 ground fault protection

- Verify the ground connection is made to the source side of the neutral disconnect link and on the source side of any ground fault sensor.
- Verify any neutral sensors are connected with proper polarity on both primary and secondary.
- Verify all phase conductors and neutral pass through the sensor in the same direction for zero sequence systems.
- Verify grounding conductors do not pass through the zero sequence sensors.
- Verify the grounded conductor is solidly grounded.
- Inspect bolted electrical connections for high resistance using one of the following methods:
 - Low resistance ohmmeter
 - Torque wrench
- Verify correct operation of all functions of the self-test panel, if applicable.
- Set pick-up and time-delay in accordance with customer-supplied settings.
- Measure the system neutral-to-ground insulation resistance with the neutral disconnect link removed. Replace link after testing.
- Perform insulation resistance test on all control wiring with respect to ground.
- Perform ground fault protective device pickup test using primary injection.
- For summation-style systems using phase and neutral current sensors, and molded case circuit breakers using an external neutral current sensor, verify correct polarities by applying current to each phase-neutral current transformer pair.
- Measure time delay of the ground fault protective device at a value equal to or greater than the customer-supplied setting.
- Provide documentation of field tests performed and results of those tests in an engineering appraisal report.

(TS0141) Special testing — NEC 240.87(a) arc flash energy reduction (RELT)

- Test the breaker at normal relay and/or trip unit settings.
- Verify the maintenance mode activation switch has power and illuminates using the test feature of the switch where applicable.
- Verify the relay/trip unit settings are as provided by the customer.
- Activate the maintenance mode feature by placing the switch in the on or active position.
- Verify any/all visual indicators that maintenance mode is now active.
- Return the maintenance mode switch to normal.
- Verify any/all visual indicators of return to the normal status.
- Provide documentation of field tests performed and results of those tests in an engineering appraisal report.

Scopes of work — equipment training

In addition to start-up and commissioning services, ABB may provide informal equipment training. This additional service is a hands-on training with ABB certified field service engineers.

Each session of training will last four (4) hours and will be provided to eight (8) customer employees or fewer. The content of training may be adjusted based on the overall familiarity of the equipment to the audience. Additional hours of training may be included in the quote if more time is required or more customer employees need to be trained.

(ET0000) Additional services — ABB equipment training:

Informal equipment training will consist of:

- Expert review of equipment drawings by certified ABB field service engineers along with detailed question and answer engagement.
- High level orientation and introduction to the equipment and major components.
- High level system operation overview.
- Full review of safety devices and operation.
- Discussion and review of minor troubleshooting techniques and methods.

Additional services

Start-up and commissioning is only one of many world-class services that ABB offers its customers. Following are several other services commonly purchased along with start-up and commissioning services.

Contact ABB Electrification Service Sales for more information about any additional services you require. For more information, call toll free +1 888 434 7378 or visit electrification.us.abb.com/service.

Power system studies

A well-designed power system is the backbone of all industrial and utility facilities. An ABB power system study provides customers with the information necessary to upgrade and maintain their power delivery infrastructure. The results focus on reducing operating costs, improving efficiency, increasing reliability, improving system maintainability and fulfilling NFPA 70B requirements.

Power system studies is a comprehensive consultancy from ABB Advisory Services covering a wide range of analysis on your power system. These studies may be quoted directly through empower alongside start-up and commissioning and new equipment.

Three studies of most interest during start-up and commissioning are short circuit studies, protection coordination studies and arc flash studies. The first two studies are required for the third, which is now required per NFPA 70B for any greenfield installation in the U.S.

Short circuit study

Based on the equipment installation site, power system components may be required to have ratings for withstanding or interrupting the maximum possible short circuit currents imposed by the power system. ABB short circuit studies provide information to help determine if the interrupting capacities of the power system's components are applied correctly.

The short circuit study calculates the short circuit at designated locations within the power delivery infrastructure. This data may be used to evaluate equipment ratings and may serve as the basis for subsequent protection coordination study and an arc flash study.

This service may be quoted directly through empower alongside start-up and commissioning and new equipment.

Protection coordination study

One of the many types of power system studies that ABB Electrification Service provides is the protection coordination study, in which certified ABB field service engineers determine the appropriate relay and trip unit settings required for your equipment.

These settings are required for start-up and commissioning services. Without a protection coordination power system study, these settings must be supplied by the customer.

You can help ensure ongoing, reliable operation during a fault by periodically evaluating the protective devices in your power system. The goal of a protective device coordination study is to help ensure that protective device settings have been optimized to best satisfy the competing goals of system protection and system, while minimizing the impact to the power system. A protective device coordination study also may include recommendations for revisions of the types of protective devices for improved protection.

This data, in conjunction with data from a short circuit study, may serve as the basis for a subsequent arc flash study.

This service may be quoted directly through empower alongside start-up and commissioning and new equipment.

Arc flash study

ABB's comprehensive arc flash study is designed to help comply with recognized industry standards and practices, such as those mandated by NFPA 70B in the U.S., against dangers associated with the release of energy caused by an electrical arc. Key elements of an arc flash study are:

- Determining the required level of arc-rated personal protective equipment (PPE) necessary for work involving energized equipment
- Communicating PPE and safe approach distances to exposed energized equipment through an effective warning label system

This service may be quoted directly through empower alongside start-up and commissioning and new equipment.

For more information, call toll free +1 888 434 7378 or visit electrification.us.abb.com/service.

ATO scheme engineering

Critical applications require a constant and reliable power supply to keep fundamental services running and prevent serious consequences due to interruption or absence of the electrical grid. This need is even stronger in today's environment because of the increasing significance of key role, capacity and features of these systems.

A system able to switch the electrical power supply from the main line to an alternative line minimizes problems caused by faulty conditions. These operations comprise sequences that automatically control the circuit breakers, without intervention from a human operator. Operation can be performed via protective relays, PLC or ABB Emax 2 embedded ATS system.

ABB can provide or assist with the development or modification of ATO sequence of operations for your facility, including but not limited to:

- Voltage and frequency PU/DO settings
- Open or closed transition
- HMI/SCADA
- Phase monitoring
- Protections
- Time delays

Contact ABB Electrification Service Sales for more information about any additional services you require. For more information, call toll free +1 888 434 7378 or visit electrification.us.abb.com/service.

IR thermography services

Infrared thermography involves non-intrusive scanning of mechanical and electrical equipment to assess thermal properties. It is an online technique that gives best results when equipment is under higher loads. Thermal imaging can also be used to monitor process changes and time-dependent faults using video storage. Additionally, safe access to live equipment can be ensured through the supply and installation of infrared windows for covered equipment.

IR thermography is effective at diagnosing faults such as:

- High resistance faults, including issues due to malfunctioning electrical fittings
- Overloaded and overheated electrical equipment
- Electrical insulation breakdown
- Moisture ingress

Contact ABB Electrification Service Sales for more information about any additional services you require. For more information, call toll free +1 888 434 7378 or visit electrification.us.abb.com/service.

Start-up and commissioning extended warranty program

Included with the purchase of start-up and commissioning service for the equipment listed in table 1, ABB provides a 12-month extension to the standard warranty at no additional charge.

The extended warranty program does not apply to all equipment listed in the bill of materials (BOM); the extended warranty program only applies to equipment listed in table 1: equipment included in the extended warranty program.

For example, if the standard warranty terms provide coverage for 18 months from shipment or 12 months from initial energization (whichever occurs first), the extended warranty program will increase this by 12 months to 30 months from shipment or 24 months from initial energization (whichever occurs first).

ABB must perform the start-up and commissioning on the equipment as defined in the scope of work to provide the extended warranty program coverage. Start-up and commissioning must be quoted and purchased on the same empower quote and order for ABB to provide the extended warranty program coverage. The extended warranty program coverage will apply only to equipment that has less than or equal to 48 months of total warranty coverage prior to adding the 12-month extension to the standard warranty.

Table 1: Equipment included in the extended warranty program

Product description	Product name
Medium voltage load interrupter switch (LIS)	BreakMaster™
Medium voltage LIS with breaker	BreakMaster V
Medium voltage vacuum breaker	AMVAC™; ADVAC®; RMVAC™
Medium voltage vacuum starter	Limitamp®; Limitamp (AR); Advance/SafeGear® MCC
Medium voltage switchgear	All active products
Low voltage air/power circuit breaker	SACE® Emax2
Insulated case circuit breaker	Power Break® II
Low voltage molded case circuit breakers**	SACE Tmax® XT; SACE Tmax T; SACE Formula
Low voltage switchboard	ReliaGear® SB; Power Break switchboard
Low voltage switchgear	All active products
Low voltage motor control centers	MNS; ReliaGear® LV MCC

**Included in extended warranty offering only when sold as part of an electrical distribution equipment package. SEPS and individual non-system components not included.