



INSTALLATION, OPERATIONS AND MAINTENANCE MANUAL

ReliaGear™ SB 6000 A fan installation and trip unit programming

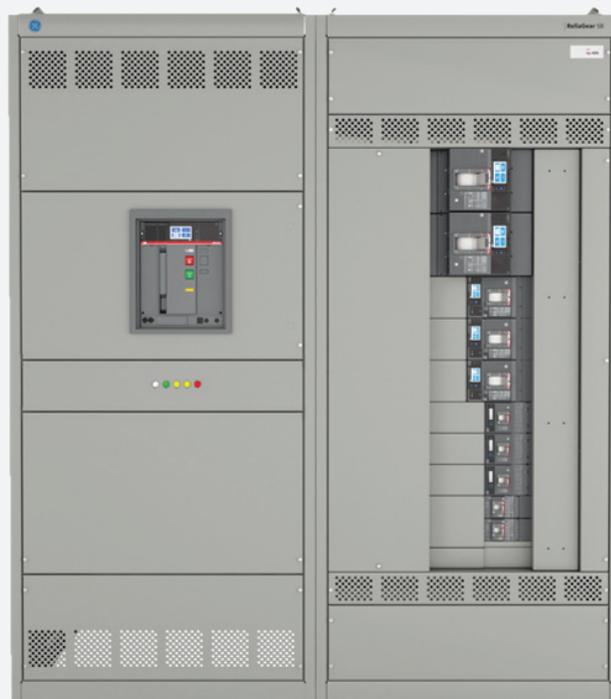


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Introduction

This document details the installation and maintenance pertaining to the cooling fan kit within a front-mounted auxiliary ventilation compartment for ReliaGear SB low voltage switchboard.

Front-mounted auxiliary ventilation compartments may be provided, from the factory, with one or more cooling fans installed.

Only a limited number of applications will require a cooling fan kit. Refer to 1VAL106902-MB for further information.

Contents per kit

6000 A cooling fan installation kit

Part number	Description	QTY
31028508047A	Cooling fan assembly	1

NOTICE

NOTICE: These instructions do not purport to cover all details or variations in equipment or to provide for every possible contingency to be met in connection with the installation, operation, or maintenance. Should further information be desired, or should problems arise which are not covered sufficiently for the Purchaser's purposes, the matter should be referred to an ABB sales representative. These instructions are intended for use by qualified personnel only

Hazard classifications

The following important highlighted information appears throughout this document to warn of potential hazards or to call attention to information that clarifies a procedure.

Carefully read all instructions and become familiar with the devices before trying to install, operate, service or maintain this equipment.

DANGER

DANGER: indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING: indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION: Indicates that if the hazard is not avoided could result in minor or moderate injury

NOTICE

NOTICE: Is used to notify of practices not related to personal injury.

Warranty

This document is based on information available at the time of its publication. While efforts have been made to ensure accuracy, the information contained herein does not cover all details or variations in hardware and software, nor does it provide for every possible contingency in connection with installation, operation, and maintenance. Features may be described herein that are not present in all hardware and software systems. ABB assumes no obligation of notice to holders of this document with respect to changes subsequently made. ABB makes no representation or warranty, expressed, implied, or statutory, with respect to, and assumes no responsibility for the accuracy, completeness, sufficiency, or usefulness of the information contained herein. No warranties of merchantability or fitness for purpose shall apply.

Contact the local sales office if further information is required concerning any aspect of the cooling fan kit.

Cooling fan replacement

- 01 Cooling fan kit
- 02 Auxiliary ventilation compartment
- 03 Fan compartment cover

These installation instructions cover the installation of a cooling fan kit in a front-mounted auxiliary compartment, as well as programming of the EKIP Touch Trip Unit. Cooling fan kits for each front-mounted auxiliary ventilation compartment are installed in the same manner and sequence.

Tools required for the installation of the cooling fans are as follows:

1. 3/8 inch wrench or equivalent ratcheting tool
2. 5/16-inch wrench or equivalent ratcheting tool
3. #2 Phillips Screwdriver

Figure 1 depicts the components and parts included in the cooling fan kit.

A typical location of a front-mounted auxiliary ventilation compartment and control components is shown in Figure 2.



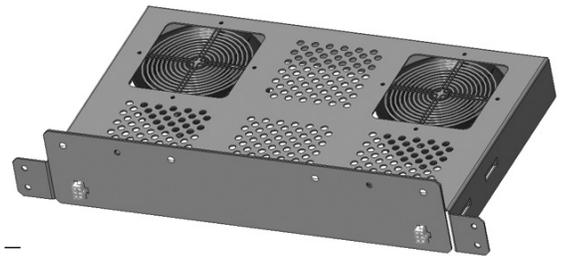
DANGER: Electrical arc flash hazard. Personal protection equipment required. Turn off power to the equipment before working inside.



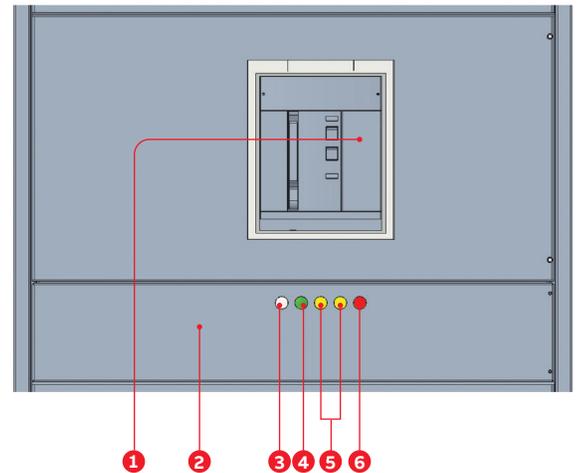
WARNING: The front-mounted auxiliary ventilated panel and associated components must be installed to maintain the integrity of the enclosure.



NOTICE: The fan cooling kit is an integrated system that is activated from the current alarm function on the SACE® Emax 2 circuit breaker. Refer to the section EKIP Touch - Trip Unit Programming of this document for more information.

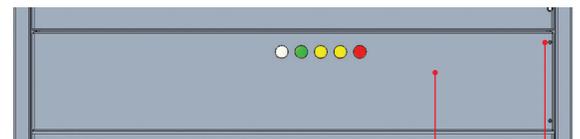


— 01



1. SACE® Emax 2 circuit breaker
2. Front-mounted auxiliary fan cooling compartment
3. Power indicating light
4. Fan control switch
5. Fan "On" indicating light(s)
6. Fan failure light

— 02



1. Compartment cover
2. 1/4"-20 hex bolts

— 03

NOTICE

NOTICE: An individual fan “On” indicating light is provided for each individual fan installed in the front-mounted auxiliary compartment.

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04
Fuse block and connectors

Remove the two ¼ inch hex bolts on the fan compartment cover from the equipment (Figure 3) and swing the cover open. Be sure to retain the hardware for re-installation later.

Open the two-pole fuse block to ensure power is disconnected to the fan circuit and unplug the two six pin plastic connectors located on the back wall of the compartment (Figure 4).

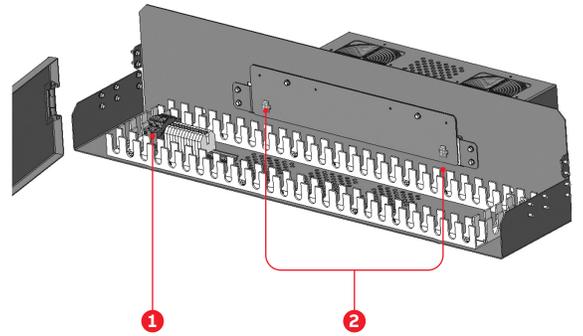
Remove the four ¼ inch hex bolts attaching the fan assembly to the fan compartment and slide the assembly out towards the front of the equipment (Figure 5) and discard. Be sure to retain the hardware for re-installation later.

In a similar manner slide the replacement fan assembly into the fan compartment and reinstall the four ¼ inch hex bolts, torque to 25-30 inch-lbs. Reconnect the two 6 pin plastic connectors from the fan compartment into the fan assembly. Close the two-pole fuse block.

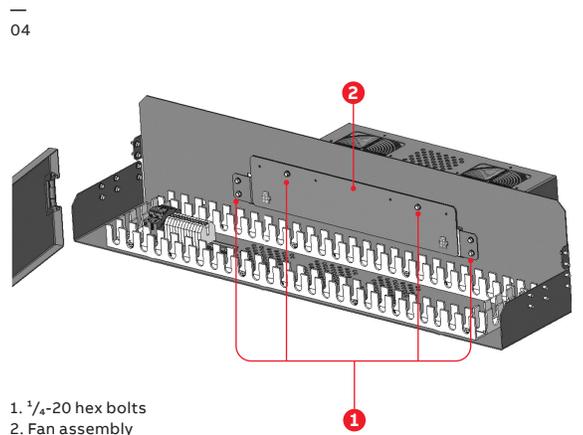
Close the fan compartment cover and reinstall the two ¼ inch hex bolts, torque to 25-30 inch-lbs. Verify the functional operation of the cooling fans by turning the green fan control switch to the “ON” position. The control switch light and both yellow FAN ON indicating lights will illuminate.

After successful testing, the green fan control switch should be returned to the “AUTO” position for normal operation.

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05
Fan assembly removal



1. Fuse block
2. Plastic connectors



1. ¼-20 hex bolts
2. Fan assembly

—
05



Indicating lights and fan troubleshooting

The auxiliary fan cooling compartment is provided with components and indicating lights to aid in the process of troubleshooting and diagnosing if a cooling fan fails (Figure 2).

In normal operation, the fan control switch remains in the Auto-position. Providing power to the fan circuit and allowing the indicating lights to illuminate based upon set conditions.

Conditions (1) and (2) in Table 1 depict which lights should be illuminated if the fan switch is in the Auto-position based upon the continuous current through the breaker.

To test the fan system, turn the fan control switch to the On position as indicated in Condition (3). With the switch in the On position, the fan control light, along with each of the Fan On indicating lights, should illuminate indicating a functional system. If these lights are not illuminated, refer to Conditions (4) through (6) from Table 2.

Table 1: Normal operation – fan indicating light status

Condition	Fan Control Switch Position	Fan Control Switch Light	Fan 1	Fan 2	Fan Failure	Outcome
1	AUTO	-	-	-	-	System On – Current Under Set Value
2	AUTO	On	On	On	-	System On – Current Above Set Value, All Fans Functional
3	On	On	On	On	-	System Test – All Fans Functional

If the fan control switch light is illuminated while one or more Fan On indicating lights are not illuminated, the respective fans require maintenance. Conditions (4) and (5) shown in Table 2 depict the indicating lights illuminated if Fans 1 or 2 require maintenance respectively.

Table 2: Fan maintenance – fan indicating light status

Condition	Fan Control Switch Position	Fan Control Switch Light	Fan 1	Fan 2	Fan Failure	Outcome
4	On or AUTO	On	-	On	On	System On – Fan 1 requires maintenance.
5	On or AUTO	On	On	-	On	System On – Fan 2 requires maintenance.
6	On or AUTO	On	-	-	On	System On – All fans require maintenance or power supply requires maintenance.

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06
Cables and accessories
for EKIP Connect

If the fan control switch light is illuminated but all the Fan Indicating lights are not, a failure may have occurred with the power supply. Verify functionality of the power supply and wiring.

EKIP Touch - Trip Unit Programming

In ReliaGear SB 6000 A applications, the fan control is initiated by the Alarm Warning Iw1 feature of the trip unit which signals a fan control circuit to turn the fans on or off. Table 3 provides the current threshold values that EKIP Touch or Hi-Touch trip unit's "Alarm Warning Iw1" function should be programmed to initiate the fan cooling system.

Note that the RELT function must be programmed prior to programming the second relay output of the EKIP 2K-3 module for fan control.

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Table 3: Current alarm settings for cooling fan function

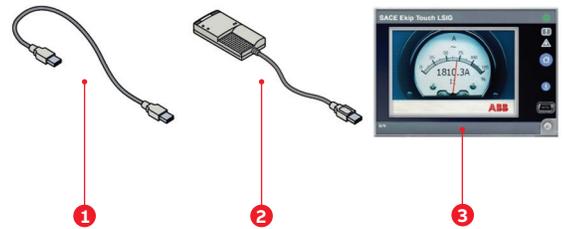
Circuit breaker	Current threshold (A)	Alarm warning Iw1 Up set point
E6.2	5600	0.93

EKIP Touch programming using EKIP Connect

Using a customer supplied laptop launch the EKIP Connect software. Connect one side of the micro USB cable (1) to the EKIP T&P Module (2) and the other side to the EKIP Touch or Hi-Touch trip unit (3) (Figure 9). Proper connection is confirmed when the green power LED is on as indicated on the front of the EKIP TandP module (2). Active communication is indicated via the blinking orange transmission indicator on the EKIP T&P module (2).

NOTICE

Notice: It may be necessary to scan for the trip unit via the ABB Key Icon in EKIP Connect before the device will be available.



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06

07
EKIP Connect - Login

Login to EKIP Connect and select Advanced User as shown in Figure 10, this allows all options to be available for programming.



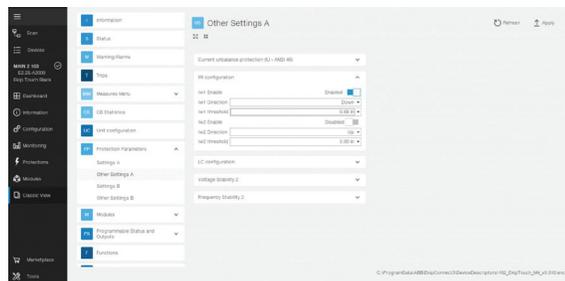
08
EKIP Connect – IW Configuration

09
EKIP Connect – signaling modules

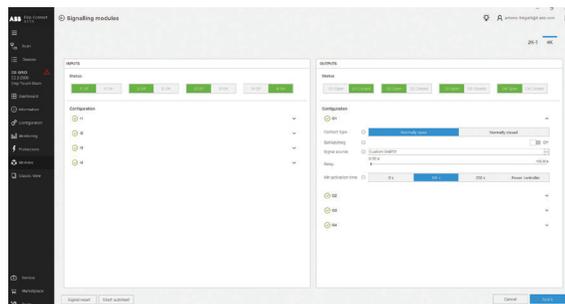
10
EKIP Connect – Source Trigger Selection

11
EKIP Connect – Contact Type and Delay Specification

07
Once logged in select Classic View via (1) in Figure 11. Expand Protection Parameters and select Other Settings A to reveal the IW Configuration panel (2). Within IW configuration, enable Iw1 and configure the direction and threshold per Table 3 and apply changes per (4).

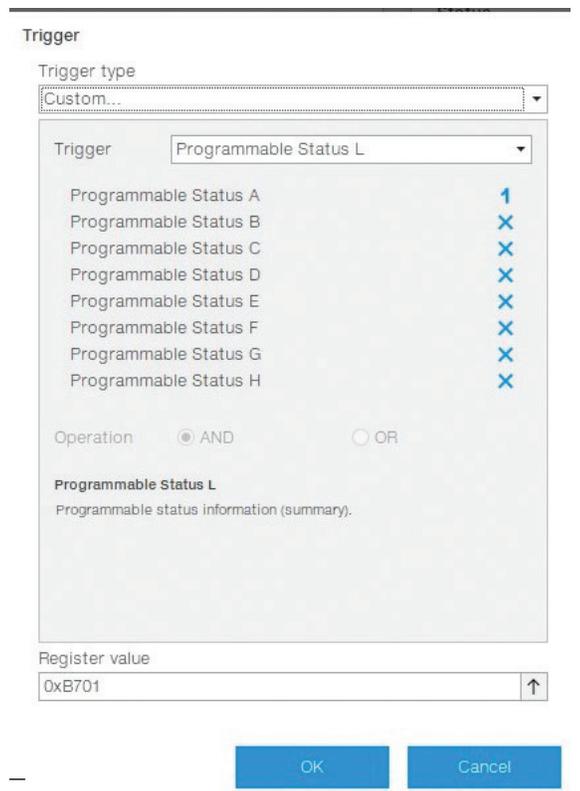


08
With the EKIP 2K-3 signaling module installed, select Modules (5), Signaling Modules and EKIP Signaling Module 2K-3 (Figure 12). When cooling fans are required, the second output of the 2K-3 module is reserved for fan control and is not available for customer use. To Configure the secondary output, select the drop down for O2 and define the signal source by selecting the ellipsis (6).

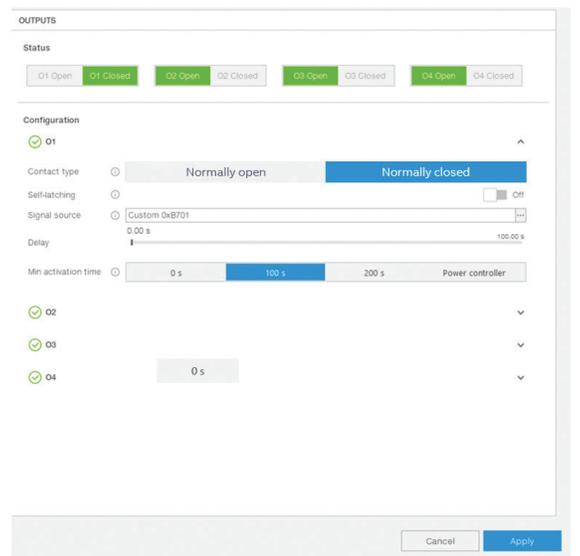


09

Change the trigger type to Custom and trigger value to “Programmable Status L”. To confirm the correct selection, a “1” rather than an “X” should be shown next to Programmable Status A as depicted by (7).



10
Select the Normally Closed contact type and confirm that the Signal Source is Custom 0x9B04. Change the Min Activation time to 100 s (Figure 14).



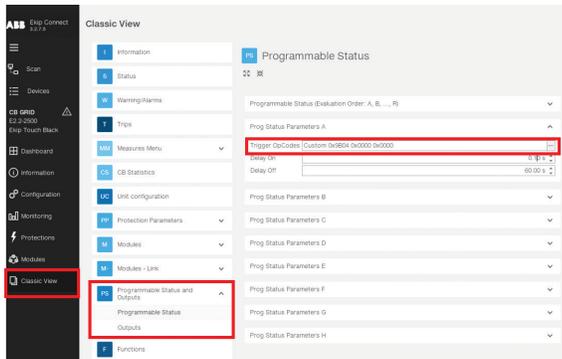
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12
EKIP Connect –
Programmable Status
and Outputs

13
EKIP Connect –
Trigger OpCodes

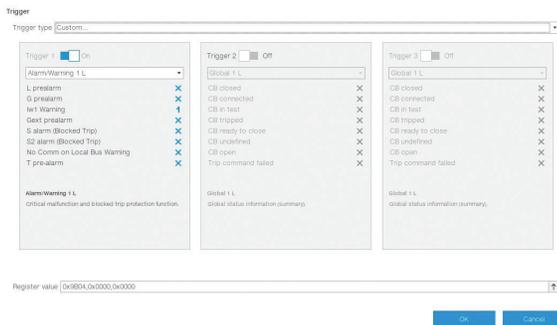
14
EKIP Connect –
Trigger OpCodes

Once the Programmable Status A has been activated the time delay can be set to ensure the fans remain operational for 60s after the current has dropped below 5600 A. To do so navigate to “Programmable Status and Outputs” within the classic view shown below (Figure 15).



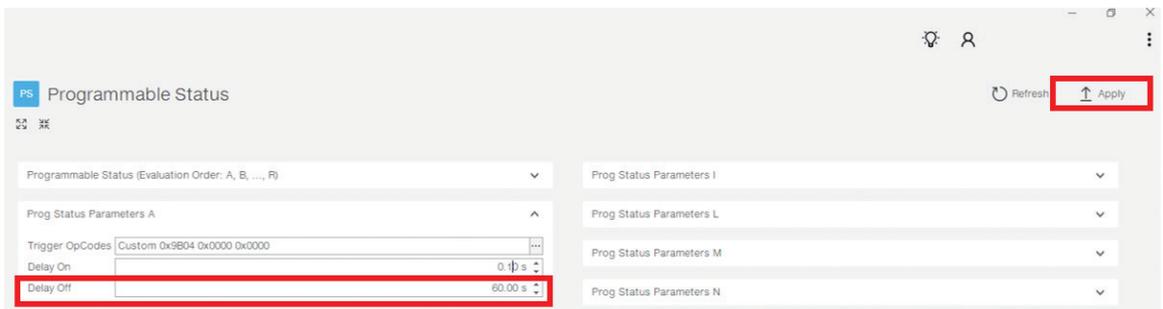
12

Navigate to “Prog Status Parameters A” Trigger OpCodes and expand the selection. Select the Trigger 1 and turn this to “On”. Change the trigger to “Alarm/Warning 1 L”



13

Apply the new Trigger selection to close the pop-out window. Select the Delay Time of 60s and apply the Delay Off value.



14

EKIP Touch programming verification

To verify if the 2K-3 is properly programmed for the Fan Control, utilize the Test Menu on the EKIP Touch Trip Unit. The test menu is available if the EKIP 2K-3 signaling module is detected correctly.

The Auto-Test command is available within each sub-menu; it activates Automatic Output Test (Contacts and LEDs), Input Test (LEDs) and provides the following operations:

1. Resetting of output contacts (= Open) and LEDs (= Off)
2. Illuminating all LEDs in sequence (Output and Input)
3. Closing and Switch-Off in sequence of the two output contacts while respective LEDs illuminate
4. Resetting to Initial Conditions.

ABB Inc.

305 Gregson Drive
Cary, NC 27511 USA
abb.com/contacts

abb.com/lowvoltage

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