Troubleshooting Guide

North American Electric

Siemens G120 and G120X Variable Frequency Drive (VFD)

Though our packages are pre-programmed from our factory to make setup and commissioning as easy and seamless as possible, you may experience conditions that cause a drive fault to inhibit operation of your panel. This document will outline the most common issues and their resolutions.

1.0 Common Faults

The Siemens G120 series VFD included in this package can be controlled by theIOP-2 Keypad pictured on the right. Any active faults will be displayed on screen.
***Your drive may have a differing keypad. If So, move to the section pertaining to your keypad for Commissioning Instructions.**

Items displayed with a yellow indicator are Alarms non-critical and cannot be cleared. Items with a red indicator are operation inhibiting and must be cleared and acknowledged before the drive can initiate operation.
Listed below are the most common faults and warnings.

1.1 F07860 - External Fault 1

This fault is caused by the MotorSaver 460 in many NAE VFD packages. Pictured on the right, this component acts as an incoming phase monitor. If an F07860 fault is present, verify the status light on the front of the MotorSaver is green. If it is not, refer to the MotorSaver 460 instructions posted inside of the panel. If your package does not include the MotorSaver refer to the electrical schematics to identify which component is configured to cause an external trip.

1.2 A07994 - noMotID

This alarm presents itself in the case that a motor identification has not been performed. Refer to the section on the next page for guidance on performing the motor commissioning process.

2.0 Common Issues Not Presenting Drive Faults

Many issues with operation of the G120 and G120x series may not present a fault and will allow operation of the drive with unideal functionality. Many of these can be remedied with a Quick Commissioning of the motor connected to the drive. Perform a quick commission if you are experiencing any of the following issues.

- Motor not running at rated RPM
- Motor current too high or too low
- Motor Voltage too high or too low
- Operation inhibited by Fault relating to motor characteristics

2.1 Commission Motor Data (IOP-2)

1. Press the ESC key until the “Status” screen is shown. This screen displays the motor status.
2. Use the right and left arrow buttons to select the gear wheel (setup) icon in the bottom left corner of the screen and press OK.
3. Select Advanced Startup, and press OK
4. Select Motor Data and press OK. Here is where all of the commissioning parameters can be viewed and changed. Use the arrow keys to select the parameter and press the OK button to edit it. Use the right and left arrow keys to select the digit. Use the up and down arrow keys to change the value of the selected digit.
5. Change the parameters to match the values listed on the motor nameplate.
6. Once the parameter data matches the values of the motor, press the ESC button.
7. Press and hold the OK button for 2 seconds to save settings. The VFD will now attempt to change the motor data. If the VFD faults at this time, then the data is not valid. Double check the motor data to ensure it is correct, then try again. If it fails again, use the manual to lookup the fault code.
8. If the operation was successful, press OK to return to the monitor screen. Motor Identification The next step is to run the motor identification process. This will allow the Drive to collect characteristics data from the motor.
9. Switch the HOA to HAND mode and press the START button to begin the motor identification process. It might appear that the motor is trying to run, but it is not actually turning. This is part of the motor identification process and is no cause for alarm. This can take several minutes to complete.
10. Once the motor identification process is complete, switch the HOA back to OFF.

Now the system is ready to run

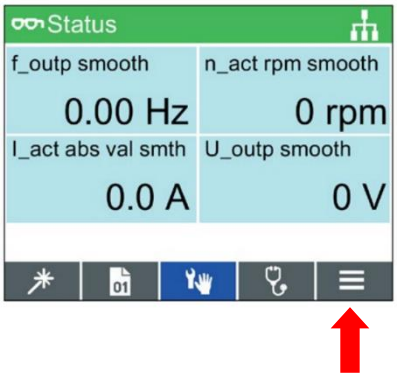
Please contact NAE if you are experiencing issues with your product not covered in this document.

3.0 Restoring Factory Default Parameters

In the course of operation, it may be necessary to restore the preprogrammed parameters from NAE. The following will outline the steps required to do so.

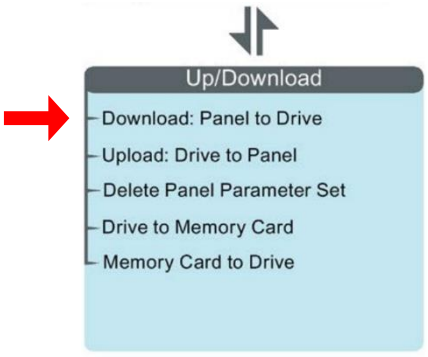
3.1 Steps for Restoring Factory Default Parameters

1. Navigate to the "**Status**" screen of the IOP-2 by pressing "**ESC**" until the screen to the right is displayed.
2. Select the "**Menu**" option and press "**OK**".
   This is the rightmost option on the IOP-2, shown on the right.
3. Once the menu screen is displayed, select "**Up/Download**" and press "**OK**"
4. Select "**Download: Panel to Drive**" and press "**OK**"
5. Once selected, you will be presented with one option. This option should reflect the NAE serial number of the panel being restored. Select this option and press "**OK**".
6. Once this operation is complete, the NAE parameters have been restored to the panel.



Once restored, these parameters will need to be saved.

1. Press and hold "**ESC**" to get to the "Status" screen.
2. Use the right and left arrow buttons to select the three, horizontal lines icon in the bottom right corner of the screen, and press "**OK**".
3. Select Extras, and press "**OK**".
4. Select Parameter settings, and press "**OK**".
5. Select Save RAM to ROM, and press "**OK**".



The parameters are now being saved to the drive. This can take several seconds to complete.

3.2 Basic Operator Panel - Commission Motor Data

Layout The BOP or Basic Operator Panel is used to communicate with the Drive. Depending on the package it can either be found on the front of the panel or inside the panel attached to the drive.
Figure 1 shows the BOP with all of its elements and Table 2 explains the function of each element.

Table 2 – BOP- 2 Characteristics

ELEMENT	DESCRIPTION
①	Release catch
②	LCD Screen
③	ESC key
④	Up key
⑤	Down key
⑥	OK key
⑦	OFF key
⑧	HAND/AUTO key
⑨	ON/RUN key

Figure 1 - BOP-2

To commissioning the drive, follow the instructions below:

1. Press the **ESC** key until the screen displays **MONITOR**
2. Press the ▼ or ▲ key until the screen displays **PARAMETERS**, then press the **OK** key
3. Press the ▼ or ▲ key until the top word is standard if it is not already displayed, then press the **OK** key

Here is where all of the parameters can be viewed and changed. The ▼ and ▲ keys are used to scroll through the parameters. The top row displays the parameter number (eg **P304**), and the bottom row displays that parameter's value (eg **480**). The commissioning process will involve scrolling through and changing several of these parameters.

4. Use the ▼ or ▲ key to navigate to **p10**
5. If the value of **p10** is 0, press the **OK** key to select the parameter value; otherwise skip to step 8
6. At this point, the value (bottom number) should be flashing. Use the ▼ and ▲ keys to change the value to a **1**, then press **OK**. This will begin the quick commissioning process.
7. Pres **ESC** to exit this parameter.
8. Using the same methods in steps 4-7, change the parameters in Table 1 to their respective value.

   Some parameters will require values collected in **Error! Reference source not found**.. Some parameters will also be specific to the application and are left blank in Table 1 to be determined by the user.

Table 1 - BOP Commissioning Parameters

NUMBER	NAME	VALUE
p100	NEMA Motor Standard	**1**
p300	Motor	**1**
p304	Motor Voltage (VAC)	***(Error! Reference source not found.)***
p305	Motor Current (Amps)	***(Error! Reference source not found.)***
p307	Motor Power (HP)	***(Error! Reference source not found.)***
p309	Motor Efficiency (%)	***(Error! Reference source not found.)***
p310	Motor Frequency (Hz)	***(Error! Reference source not found.)***
p311	Motor Speed (rpm)	***(Error! Reference source not found.)***
p1080	Minimum Motor Speed (rpm)	
p1082	Maximum Motor Speed (rpm)	
p1120	Ramp Up Time (sec)	
p1121	Ramp Down Time (sec)	
p1900	Motor Data Identification	**2**
p3900	Complete Quick Commissioning	**3**

9. Once **p3900** is set to **3**, the commissioning process will begin and may take several seconds to complete. Once completed, **p3900** will automatically change back to **0**.

10. Navigate back to parameter **p10** and check its value. If its value is 0, then the commissioning process was successful. If its value is **1**, then the commissioning process failed. If the commissioning process failed, double checked the data that was gathered on from the motor in **Error! Reference source not found.**
11. Switch the HOA to HAND mode and press the START button to begin the motor identification process. It might appear that the motor is trying to start but not running. This is part of the motor identification process and is no cause for alarm. This can take several minutes to complete.
12. Once the motor identification process is complete, switch the HOA back to OFF.

3.3 Save Parameters (RAM to ROM)

The last step is to save all the parameters to the Drives memory. This step is very important for **IF THE PARAMETERS ARE NOT SAVED, THEN ALL THE CHANGED PARAMETERS WILL REVERT TO THEIR PREVIOUS VALUES IF THE PANEL LOOSES POWER.**

1. Press the **ESC** key until the screen displays **Monitor**
2. Press the ▼ or ▲ key until the screen displays extras, then press the **OK** key
3. Press the ▼ or ▲ key until the screen displays **RAM to ROM**, then press the OK key
4. Press the **OK** key again when a prompt appears displaying **OK/ESC**. This will begin the process of saving the parameters and may take several minutes.
5. Once the parameters are saved, then the system is ready to run.

3.4 IOP (Intelligent Operator Panel)

3.4.1 Commission Motor Data

The IOP or Intelligent Operator Panel is used to communicate with the Drive. Depending on the package it can either be found on the front of the panel or inside the panel attached to the drive. Figure 1 shows the IOP with all of its elements.

Figure 1 – IOP

3.4.2 Commissioning

1. Press the **ESC** key until the screen displays two, horizontal bar graphs and the menu options: **Wizard, Control**, and **Menu** at the bottom of the screen.
2. Turn the **OK** wheel to select **Menu**, and then press the **OK wheel**.
3. Turn the **OK wheel** to select **Parameters**, and then press the **OK wheel**.
4. Turn the **OK wheel** to select **Commissioning**, and then press the **OK wheel**.
5.

Here is where all of the commissioning parameters can be viewed and changed. The **OK wheel** is used to scroll through the parameters. The left column displays the parameter number (eg p10), and the right column displays that parameter's name on top (eg **Drv. comm. par…**) and its value below it (eg **0 Ready**). The commissioning process will involve scrolling through and changing several of these parameters.

6. Use the **OK wheel** to select **p10** and press the **OK wheel**.
7. Use the **OK wheel** to select option **1: Quick commission** and press the **OK wheel**.
8. Using the same methods in steps 5-6, change the parameters in Table 2 their respective value. Some parameters will require values collected in **Error! Reference source not found..** Some parameters will also be specific to the application and are left blank in Table 2 to be determined by the user.

Table 2 - IOP Commissioning Parameters

NUMBER	NAME	VALUE
p304	Mot U_rated Motor Voltage (VAC)	***(Error! Reference source not found.)***
p305	Mot I_rated Motor Current (Amps)	***(Error! Reference source not found.)***
p307	Mot P_rated Motor Power (HP)	***(Error! Reference source not found.)***
p309	Mot eta_rated Motor Efficiency (%)	***(Error! Reference source not found.)***
p310	Mot f_rated Motor Frequency (Hz)	***(Error! Reference source not found.)***
p311	Mot n_rated Motor Speed (rpm)	***(Error! Reference source not found.)***
p1900	MotID and rot… Motor Data Identification	**2**
p3900	Compl quick_c… Complete Quick Commissioning	**3**

9. Once **p3900** is set to **3**, the commissioning process will begin and may take several seconds to complete. Once completed, **p3900** will automatically change back to **0**.

10. Navigate back to parameter **p10** and check its value. If its value is 0, then the commissioning process was successful. If its value is **1**, then the commissioning process failed. If the commissioning process failed, double checked the data that was gathered on from the motor in **Error! Reference source not found..**

3.4.3 Motor Identification

The next step is to run the motor identification process. This will allow the Drive to collect certain characteristics of the motor automatically.

10. Switch the HOA to HAND mode and press the START button to begin the motor identification process. It might appear that the motor is trying to start but not running. This is part of the motor identification process and is no cause for alarm. This can take several minutes to complete.
11. Once the motor identification process is complete, switch the HOA back to OFF.

THE PARAMETERS HAVE NOT BEEN SAVED YET (SEE SECTION SAVE PARAMETERS)

3.5 Save Parameters (RAM to ROM)

The last step is to save all the parameters to the Drives memory. This step is very important for **IF THE PARAMETERS ARE NOT SAVED, THEN ALL THE CHANGED PARAMETERS WILL REVERT TO THEIR PREVIOUS VALUES IF THE PANEL LOOSES POWER.**

12. Press and hold the **ESC** key to get back to the main menu.
13. Use the **OK wheel** to select **Menu** and press the **OK wheel**.
14. Use the **OK wheel** to select **Extras** and press the **OK wheel**.
15. Use the **OK wheel** to select **Parameter Settings** and press the **OK wheel**.
16. Use the **OK wheel** to select **Save RAM to ROM** and press the **OK wheel**.
17. When the **Save drive RAM to ROM?** prompt appears, use the **OK wheel** to select **Yes**, and press the **OK wheel**. This will begin the process of saving the parameters and may take several minutes.
18. Once the parameters are saved, then the system is ready to run.
19. Press and hold the **ESC** key to get back to the main menu.

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