AMIS-3062x Evaluation Kit

Test Procedure

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This document describes the test procedure for the AMIS-3062x Evaluation Kit. All parts described below need to be tested before the Evaluation Kit can be shipped to a customer. It's important to follow the test procedure as given below to ensure a completely working Evaluation Kit.

1. ECUSIM MKII 600-SERIES

The test description of EcuSim MkII 600-Series can be found in the EcuSim MkII Production Guide.

2. LIN AND I²C CABLE

If tested cables are bought, the cables do not need to be re-tested. If the cables are custom/hand made, the cables need to be tested. Testing can be done by means of a cable tester or by doing the *AMIS-3062x Evaluation Kit Test*.

3. MOTHERBOARD

The Motherboard needs to be tested by doing the *AMIS-3062x Evaluation Kit Test*.

4. DAUGHTERBOARD

The Daughterboard(s) can be tested by doing the *AMIS-3062x Evaluation Kit Test*.

5.   AMIS-3062X EVALUATION KIT TEST

Follow next steps to test the AMIS-3062x Evaluation Kit.

Step 1:   Install the Stepper Motor Driver GUI.
Go to the ON Semiconductor website (www.onsemi.com) to download the Stepper Motor Driver GUI. Click Design Support (1). Go to the Design Resources page (2) and select Software (3). Download the AMIS-3062x Evaluation Kit GUI by clicking the appropriate link in the software list.
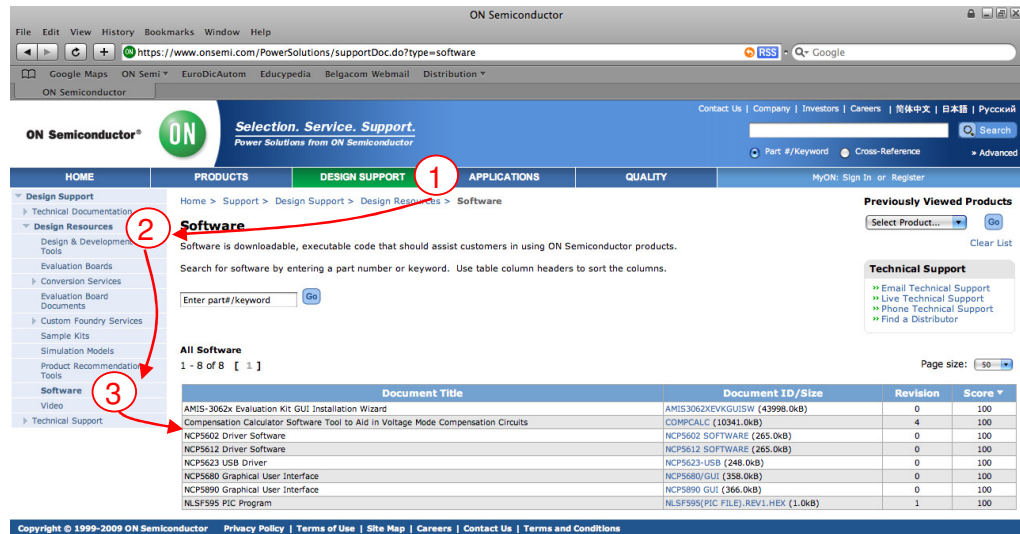

Figure 1: Download the AMIS-3062x Evaluation Kit GUI

Once downloaded, run the downloaded executable to start the installation process. The Installation Wizard will guide you through the complete installation of the AMIS-3062x Evaluation Kit GUI.

Step 2:   Start the AMIS-3062x Evaluation Kit GUI.
The AMIS-3062x Evaluation Kit GUI can be opened from the Windows Start Menu (Start > All Programs > AMI Semiconductor > AMIS-3062x Evaluation Kit > AMIS-3062x Evaluation Kit).

Step 3:   Select the interface to be used.
AMIS-3062x stepper motor driver has two types of interfaces, LIN and I²C. Which interface is used depends on the Daughterboard used.
If AMIS-30621 or AMIS-30623 is used, the *LIN Interface Test* has to be done. If AMIS-30622 or AMIS-30624 is used, the *I²C Interface Test* has to be done.

5.1. LIN Interface Test

Follow next steps to test the LIN cable, AMIS-30621/30623 Daughterboard and/or the Motherboard.

Step 1: Build setup.
To build the LIN setup, go to "Help > How to build LIN set up?" to open a presentation on building the LIN setup. Follow all steps given in this presentation.
It's important to build the setup the first time by using a so-called Golden Reference Setup. A Golden Reference Setup is a setup with all known working parts[1].
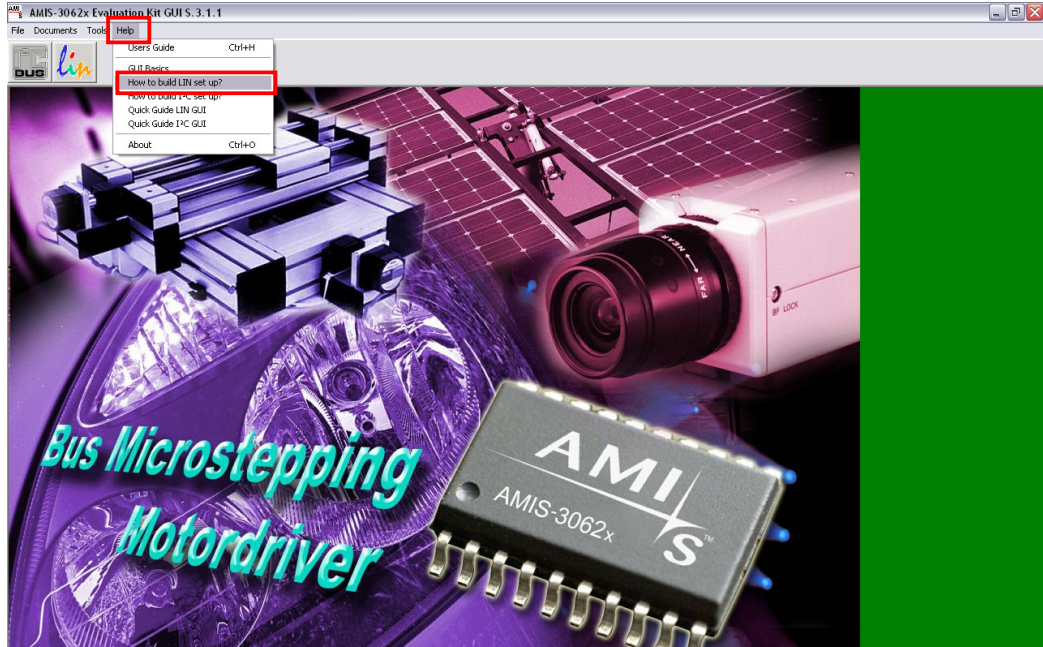

Figure 2: How to build the LIN setup

Remark: make sure all 4 jumpers on the Motherboard are placed in the GND position!

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[1] Mark all parts of the Golden Reference Setup to avoid confusion!

Step 2:   Test Sample.
Go to "Help > Quick Guide LIN GUI" to open a presentation on testing the LIN setup. Follow all steps given in this presentation.
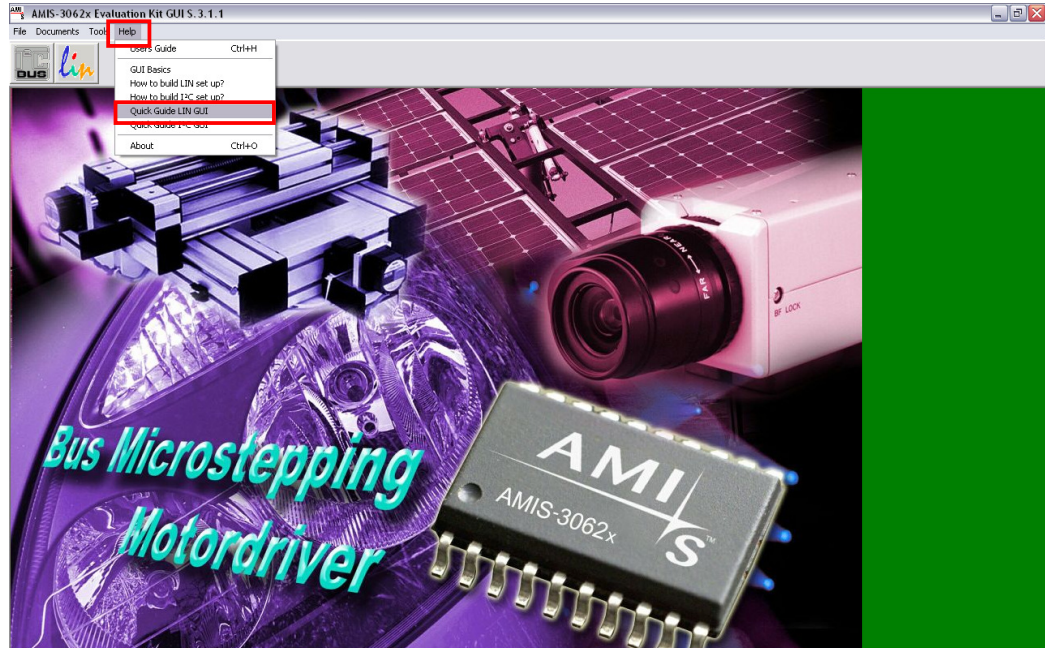

Figure 3: Run the LIN test

The stepper motor should have done the rotation. If not, check if the EcuSim MkII is connected properly with the PC running the AMIS-3062x Evaluation Kit GUI. Check if the Motherboard is powered and the LIN cable between EcuSim MkII and Motherboard is connected correctly. Check also if the Daughterboard is mounted correctly and the stepper motor is connected properly. If the problem can not be solved, restart the software and try again.
Because the Golden Reference Setup is used for the first test, the stepper motor should be rotating before one can continue with the test!

Step 3:   Test the different parts
Once the Golden Reference Setup is up and running, the LIN cable (if needed), LIN version Daughterboard and/or Motherboard can be tested.
It's very important that only one part of the Golden Reference Setup is replaced by a to-be-tested part. In this way, if the test would fail, the defect part can be located easily.

Test LIN Cable:
Starting from the Golden Reference Setup, replace the Golden Reference LIN cable by the to-be-tested LIN cable and repeat step 2.
Replacing of the LIN cable can be done while the Motherboard is powered and the EcuSim MkII is connected with the PC.
If the test fails (= stepper motor did not rotate), restart the software and redo the test. If the test still fails, the LIN cable is broken and needs to be repaired.

Test Daughterboard:
Starting from the Golden Reference Setup, replace the Golden Reference Daughterboard by the to-be-tested Daughterboard (LIN version only!) and repeat step 2.
Un-power the Motherboard before replacing the Daughterboard. EcuSim MkII as also the LIN cable do not need to be disconnected.
Be careful when removing the Daughterboard! If not done carefully, it's possible the pins of the Daughterboard are bended or broken.
If the test fails (= stepper motor did not rotate), restart the software and redo the test. If the test still fails, the Daughterboard is broken and needs to be repaired. Check if all components are stuffed correctly (all caps stuffed, all resistors stuffed, connecters stuffed in

the proper way, pin 1 of IC (motor driver) is at the correct location). If all this is correct, one could replace the IC (motor driver) and redo the test.

Test Motherboard:
Starting from the Golden Reference Setup, replace the Golden Reference Motherboard by the to-be-tested Motherboard and repeat step 2.
Always test the Motherboard with the stepper motor cable that is connected to the board. Do not use the stepper motor cable of the Golden Reference Setup! This to make sure that the stepper motor cable is connected correctly.
EcuSim MkII does not need to be disconnected when replacing the Motherboard.
Make sure the Golden Reference Daughterboard is mounted properly before powering the Motherboard.
Be careful when removing the Daughterboard! If not done carefully, it's possible the pins of the Daughterboard are bended or broken.
If the test fails, check carefully if the Motherboard is connected properly. Also, check if the stepper motor cable is connected properly with the Motherboard. If needed, redo the test with the Golden Reference Motherboard to verify.
If all is connected correctly and the test still fails, restart the software and redo the test. If this doesn't solve the issue, the Motherboard is broken and needs to be repaired. Check if all components are stuffed correctly.
If the test passes, the Motherboard is working and can be placed inside an Evaluation Kit case (see AMIS-3062x EvalKit Assembly document). Do not disconnect the stepper motor cable from the Motherboard! The Motherboard together with the connected stepper motor cable need to be placed inside the Evaluation Kit case.

If the Motherboard is tested by doing the *LIN Interface Test* (= this test), it's not needed to test the Motherboard by doing the *I²C Interface Test*.

Step 12: End of test
The *LIN Interface Test* can only be used to test the LIN cables, LIN version Daughterboards, and Motherboards. To test the other parts (EcuSim MkII not included), the *I²C Interface Test* has to be done.

5.2. I²C Interface Test

Follow next steps to test the I²C cable, AMIS-30622/30624 Daughterboard and/or the Motherboard.

Step 1:   **Build setup.**
To build the I²C setup, go to "Help > How to build I²C set up?" to open a presentation on building the I²C setup. Follow all steps given in this presentation.
It's important to build the setup the first time by using a so-called Golden Reference Setup. A Golden Reference Setup is a setup with all known working parts[2].
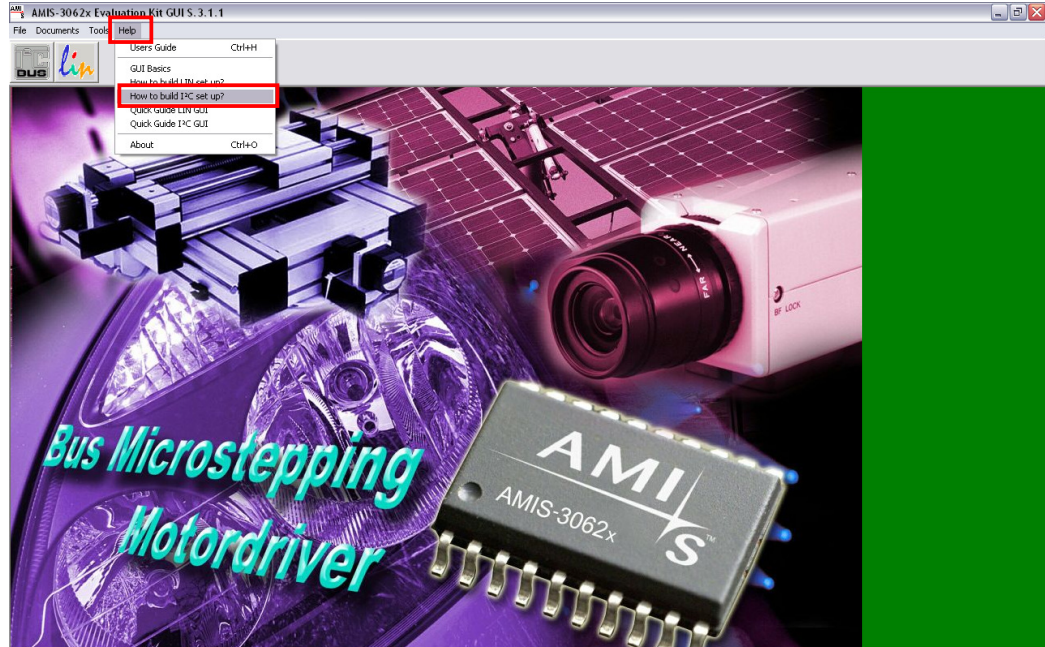

Figure 4: How to build the I²C setup

Remark: make sure all 4 jumpers on the Motherboard are placed in the GND position!

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[2] Mark all parts of the Golden Reference Setup to avoid confusion!

Step 2: Test Sample.
Go to "Help > Quick Guide I²C GUI" to open a presentation on testing the I²C setup. Follow all steps given in this presentation.
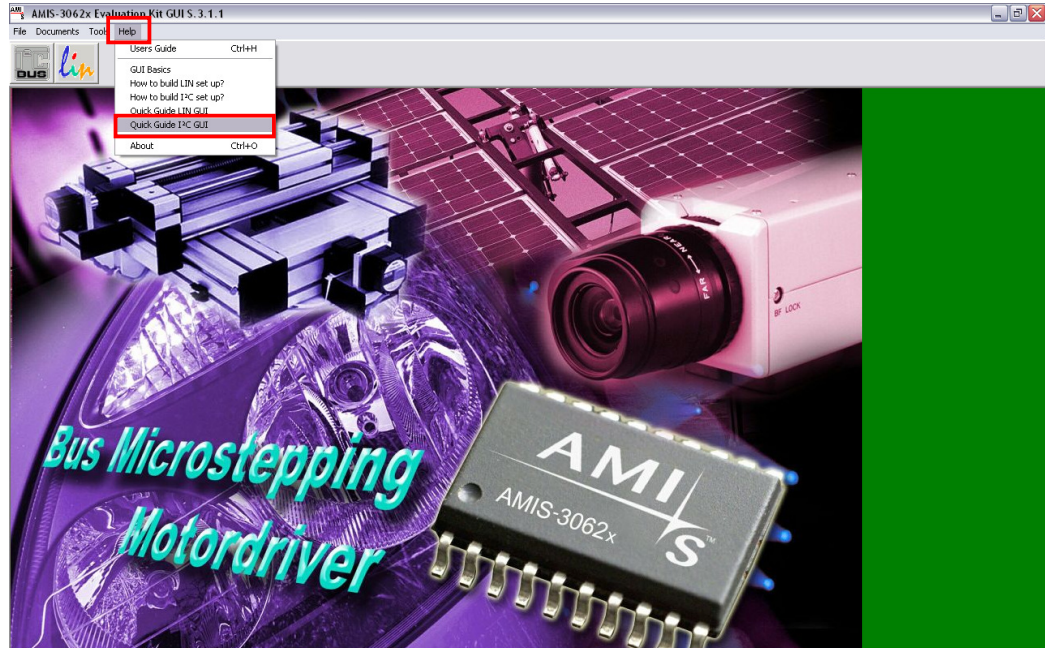

Figure 5: Run the I²C test

The stepper motor should have done the rotation. If not, check if the EcuSim MkII is connected properly with the PC running the AMIS-3062x Evaluation Kit GUI. Check if the Motherboard is powered and the I²C cable between EcuSim MkII and Motherboard is connected correctly. Check also if the Daughterboard is mounted correctly and the stepper motor is connected properly. If the problem can not be solved, restart the software and try again.
Because the Golden Reference Setup is used for the first test, the stepper motor should be rotating before one can continue with the test!

Step 3: Test the different parts
Once the Golden Reference Setup is up and running, the I²C cable (if needed), I²C version Daughterboard and/or the Motherboard can be tested.
It's very important that only one part of the Golden Reference Setup is replaced by a to-be-tested part. In this way, if the test would fail, the defect part can be located easily.

Test I²C Cable:
Starting from the Golden Reference Setup, replace the Golden Reference I²C cable by the to-be-tested I²C cable and repeat step 2.
Replacing of the I²C cable can be done while the Motherboard is powered and the EcuSim MkII is connected with the PC.
If the test fails (= stepper motor did not rotate), the I²C cable is broken and needs to be repaired.

Test Daughterboard:
Starting from the Golden Reference Setup, replace the Golden Reference Daughterboard by the to-be-tested Daughterboard (I²C version only!) and repeat step 2.
Un-power the Motherboard before replacing the Daughterboard. EcuSim MkII as also the I²C cable do not need to be disconnected.
Be careful when removing the Daughterboard! If not done carefully, it's possible the pins of the Daughterboard are bended or broken.
If the test fails (= stepper motor did not rotate), the Daughterboard is broken and needs to be repaired. Check if all components are stuffed correctly (all caps stuffed, all resistors stuffed,

connecters stuffed in the proper way, pin 1 of IC (motor driver) is at the correct location). If all this is correct, one could replace the IC (motor driver) and redo the test.

Test Motherboard:
Starting from the Golden Reference Setup, replace the Golden Reference Motherboard by the to-be-tested Motherboard and repeat step 2.
Always test the Motherboard with the stepper motor cable that is connected to the board. Do not use the stepper motor cable of the Golden Reference Setup! This to make sure that the stepper motor cable is connected correctly.
EcuSim MkII does not need to be disconnected when replacing the Motherboard.
Make sure the Golden Reference Daughterboard is mounted properly before powering the Motherboard.
Be careful when removing the Daughterboard! If not done carefully, it's possible the pins of the Daughterboard are bended or broken.
If the test fails, check carefully if the Motherboard is connected properly. Also, check if the stepper motor cable is connected properly with the Motherboard. If needed, redo the test with the Golden Reference Motherboard to verify.
If all is connected correctly and the test still fails, redo the test by using the Golden Reference Setup (to verify if the setup is build correctly). If this doesn't solve the issue, the Motherboard is broken and needs to be repaired. Check if all components are stuffed correctly.
If the test passes, the Motherboard is working and can be placed inside an Evaluation Kit case (see AMIS-3062x EvalKit Assembly document). Do not disconnect the stepper motor cable from the Motherboard! The Motherboard together with the connected stepper motor cable need to be placed inside the Evaluation Kit case.

If the Motherboard is tested by doing the *I²C Interface Test* (= this test), it's not needed to test the Motherboard by doing the *LIN Interface Test*.

Step 12: End of test
The *I²C Interface Test* can only be used to test the I²C cables, I²C version Daughterboards, and Motherboards. To test the other parts (EcuSim MkII not included), the *LIN Interface Test* has to be done.