

Eplex Troubleshooting Guide

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Introduction:

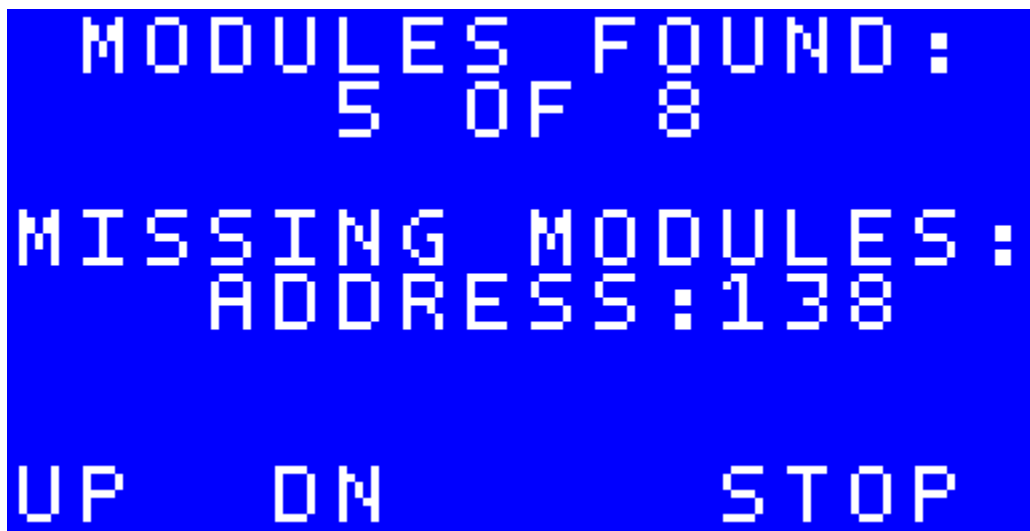
This guide will explain in detail how to troubleshoot various problems you may run into with the eplex system. Items of discussion in this guide are basic beginning diagnostics, input or output channel issues, module failure issues, touchscreen issues, display problems and data errors.

Diagnostic Basics:

For this section we will assume that you have a system that is basically functioning for the most part and that you can do some basic troubleshooting with the clock or laptop. If you have a 400 or 450 clock there are some basic diagnostics that can be done. If you have a 500 clock there are some additional diagnostic features available. If you have a laptop there are a number of additional diagnostics you can do. We will go through each method. Prior to attempting any diagnostic a wise first step is to shutdown power to the system, wait about ten seconds, and restart the system. This often fixes issues if something small went awry in the system. Be sure that all power to the clock and all modules resets when you do this.

400ECM and 450ECM basic troubleshooting.

Each system should have a place on the touchscreen you can press to enter a diagnostic mode. Every system is different so your manual should state what that location is. You can reverse engineer the location with a laptop and the program if you have it and do now know. The first step is to enter the diagnostic mode. Typically if you have a missing module it may already jump to this page. Otherwise hit the status button and the following screen will appear:



In this case I picked one with missing modules there. You may not have any and it will say “none” under missing modules. At the bottom you can notice three areas to press. There are “up” and “dn” buttons to scroll through the list of modules missing and their associated addresses. This is key info if you

indeed do have missing modules. There is also a “stop” button. This will stop the controller from streaming eplex to the modules and take you further into the diagnostic menu’s. To exit the status screen just hit the status button again. Once you press stop steaming stops and the following screen appears:



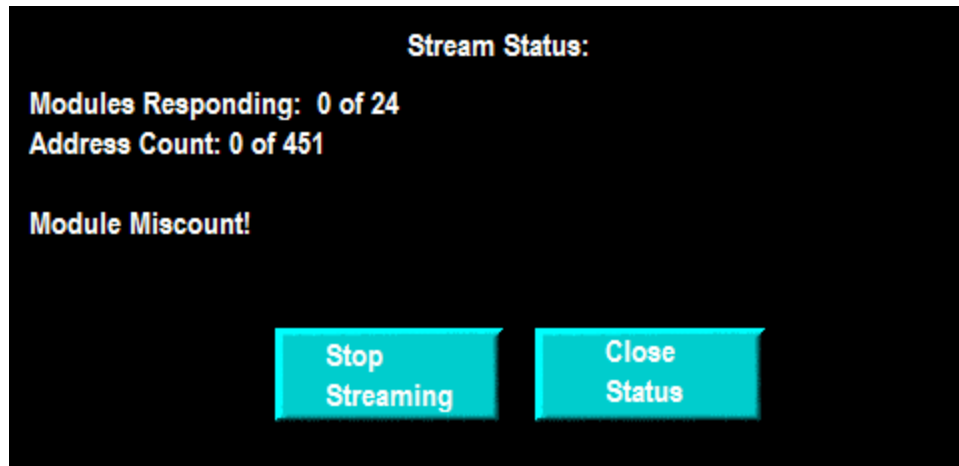
This screen tells you the hardware and firmware version of the clock. There are four buttons on this screen “rst”, “all”, “str” and “prg”. “Rst” allows you to reset the option module settings. This does nothing for most systems. “All” will program all modules with the program that resides in the clock. This, however, does not program screens and settings that are not embedded in clock logic. It will scroll through the modules and program each one. This is useful if you ever replace a clock or a couple modules. “Str” will start streaming and return you to the status screen. “Prg” will allow you to select a module to program and program that single module. When you program a single module it will interrogate it after and tell you the hardware and firmware versions of the module. This can be useful information. The only new button on the program screen is the “ext” button to exit back to the streaming inactive screen.

Other issues that may appear on the status screen are “data error” or “system failure!”. If these occur there are more significant problems that are occurring. These problems will be discusses in a later section

The main functions here for the 400 and 450 clocks is to see which modules are missing and determine hardware and firmware versions of the modules.

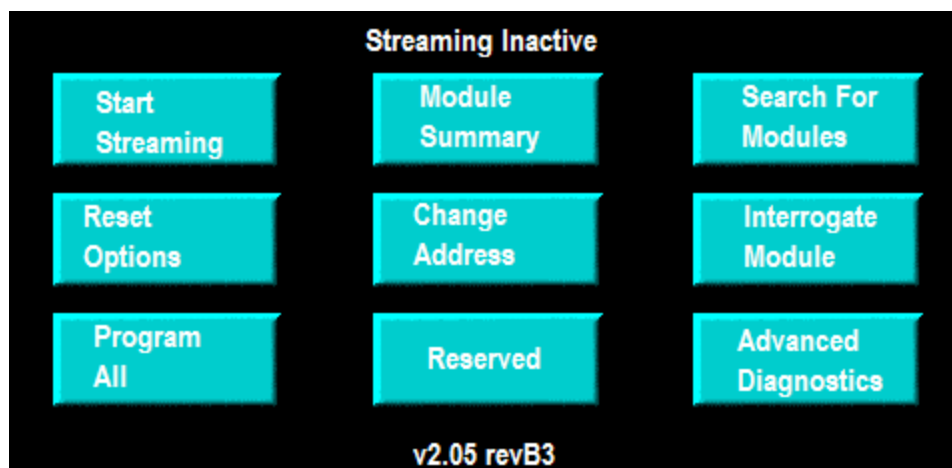
500CCM basic troubleshooting:

The 500 clock has a number of features in its diagnostic mode to assist the user in ascertaining any problems. Find out from the manufacturer or wesgarde, inc. how to enter diagnostic mode; it is different for each application. After entering diagnostic mode the following stream status screen will appear:



This screen will show you how many modules are responding and if all the addresses are present. If some modules are missing, it will state that there is a module mismatch. There are two buttons at the bottom of the screen. The one on the left will stop streaming and take you to the main diagnostic menu. The button on the right will continue streaming and return you out of diagnostic mode to normal functioning mode.

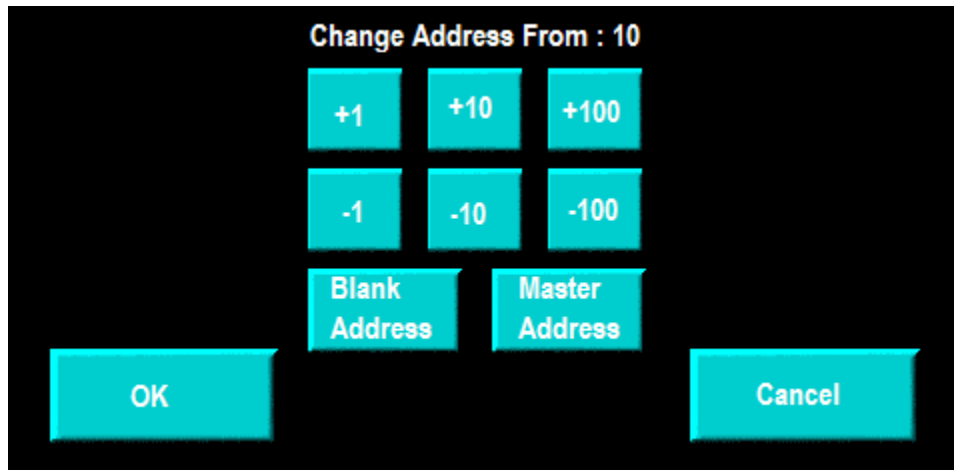
If you press the stop streaming button you will see the following main diagnostic menu:



The following table describes the buttons function in detail:

Start Streaming	This will start streaming and return you to the stream status screen
Module Summary	This will take you to the module summary screen
Search for Modules	This will attempt to search through the address base to determine which modules are online and which modules are not responding. This can be a very useful tool if you think you have a module that is unresponsive
Reset Options	This will reset the optional module settings if you have optional modules that have been changed from default. This is a very rarely used feature and is not recommended without assistance from an e-plex expert.
Change Address	This will bring you to a screen where you can select an address of a functioning recognized module and change it to a different address. The address change screen is shown in the diagram to follow. This is useful if you are replacing a module with another module but it has a different address than the one desired. This is not used in normal diagnostics and should only be done with the assistance of and e-plex expert
Interrogate Module	This will tell you whether a particular module number is responding and if so will tell you the revision level of the modules hardware and firmware.
Program All	This will take the program that is in the clock and program all modules on the bus that are properly addressed. This is a useful tool if you think that a module that has been replaced has an incorrect version of the program in it.
Reserved	This function is reserved for factory operation only
Advanced Diagnostics	The advanced diagnostics are in development at this time. Do not use

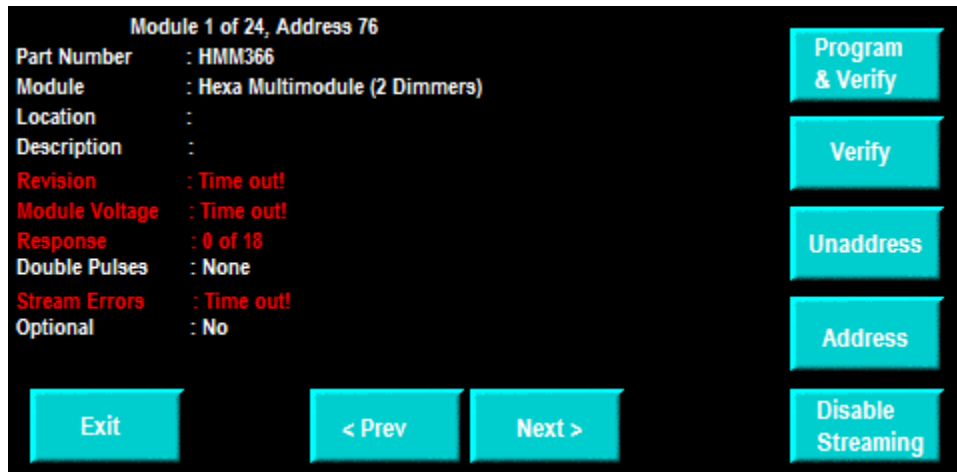
As discussed above the change address button takes you to the following screen:



With this screen you can change the address of a module from one number to another. This is a feature not to be used lightly since a module with an address not designated in the program will not operate at all. The most typical use for this is when addressing blank modules. This would occur when addressing modules at the factory or when replacing a failed module with a new module. To do this you would select blank when prompted for the “change address from” and hit the OK button. Then you would select the address to change it to and hit the OK button again. The master address is an advanced feature. It is only to be used when there is only one module on the system besides the clock. The master address should only be used in this screen if a module was locked into the master address. Since this can only happen via the laptop it is recommended that the problem be resolved via the laptop and this button on this screen not be used. Master addressing should only be attempted with assistance from an e-plex expert.

A similar screen will appear if you hit the interrogate module button from the main diagnostic menu. It will allow you to choose and address to interrogate. Select the address number or the blank address and hit OK to see if it is responding and its status. The master address button should only be used if you are positive you have only one other module besides the clock on the bus. If you hit master address when there is more than one module you will most likely end up with address conflicts and will cause a serious system problems. The master address is a useful tool if you have only one module on the bus and do not know what the address is. By selecting master address and OK you will communicate to the unknown module and it will respond by telling you what address it is at. Do not use master address without assistance of an e-plex expert. Any successful response from the module will tell you the revision level of the module.

As discussed above the modules summary button takes you to the following search for modules screen:



The functions on this screen are described in the table below:

Prev	Will take you to the previous modules status
Next	Will take you to the next modules status
Program and Verify	Will program the module from the clocks resident program and will verify that programming was successful
Verify	Will verify that the programming for that module is accurate and matches the clock program
Unaddress	Will change this modules address to the blank address. This is not recommended for a non expert user.
Address	Will change the address of the blank module on the system (note you should only have one at a time since this will change all blanks simultaneously) to the address selected
Disable Streaming	Will disable streaming to this module. In this mode you are streaming to this module and this module only. Hitting this button will disable streaming for this module only. Do not do this in normal diagnostics. You will have to program it to have it start streaming again. This is useful if you think you have one module that is corrupting the bus. You can disable that module and verify that the bus operates well without it.
Exit	Exits back to the main diagnostic menu

The most common features used in basic diagnostics with the 500 clock are the “search for modules”, “interrogate module”, “program all”, and “module summary”. With those features you can determine if a module is missing or improperly addressed, determine the modules firmware and hardware revisions and reprogram the modules with the program the resides in the clock. In the “module summary” screen you can program and verify the module under normal diagnostics. You can also see some other details like module voltages and responses.

To exit the diagnostics hit the start streaming button on the main screen and then hit close status to close the status screen. This will take you back to your main program. Sometimes on the status screen

you will have error messages. Some of these may be “Data Error”, “System Failure”, “Double Response” or “module miscount”.

When this occurs the only basic diagnostics would be to do a search for modules and determine what modules are not responding. In later sections we will discuss further diagnostics you can do during these issues. They are not basic, so they will be discussed later.

Laptop Basic Troubleshooting:

With a laptop the first steps are to open the elogic software, load the .elc file for your application and hit the eplex button to get to the eplex interface. Once you are at the eplex interface you need to connect to your clock (whatever type you have) and examine the status on the stream on the eplex interface screen to the right of the stop stream/start stream button.



As you can see in the above example there is a module miscount. The first thing you always do after seeing what errors are occurring (errors like clock not match design, data errors, module miscount, system failure, double pulse, etc..) is to stop streaming and do a search for modules. This will tell you what modules are communicating to you and if there are any missing. Since we are discussing basic diagnostics we will limit ourselves to those functions. More advanced functions will be discussed later.

The basic functions are program all, verify module, interrogate module, search for modules, and diagnose stream.

The program all button is used to reprogram the system. Only do this in basic diagnostics if you have a design mismatch or you suspect a module does not have the correct program in it (i.e. it ignores commands but is there in a search). Also only do that if all modules are present in a search unless directed otherwise.

To use the verify module or interrogate module functions select which module you want to verify or interrogate by selecting it from the dropdown menu in the module selector at the top right of the eplex interface window. These are numbered in order by address.

We have already discussed the search for modules button. The most common cause for a missing module that was previously present is a loose wire. Be sure to check the eplex cable going into that module and exiting the previous module in the system. (previous by wiring not by address number)

One other basic function you can do with a laptop if you have a data error is to go into diagnose mode rather than simulate mode. The selection for this is right above the stop/start stream button in the eplex interface. To change from simulate you need to stop streaming first. Once you do this you can select diagnose mode. It will pop up a screen with your module list. Then hit the start stream button and some information will appear on the screen. You can see an example on the next page:



As you can see above we have four modules missing. The responding modules screen tells you which modules have no response. If there was a partial response from a module producing data errors you may have seen it listing response 17 of 18 in the second response column. This would be indicative of a module that either needs a firmware update or has a problem. This concludes our basic diagnostics section and we will continue with more advanced diagnostic tools.

Input and Output Channel Problems:

There are several types of inputs and outputs. Inputs and outputs can be digital (i.e. 12/24V or Gnd), Analog (variable voltage, current, etc) or module based (i.e. 318pftg – analog type input but from a module with a sensing circuit already in it rather than reading an electrical signal). We will discuss issues with all types on inputs and outputs.

Digital Outputs:

Digital outputs are gnd or system voltage outputs from a module. Problems you may run into are outputs not turning on, staying on all the time, indicating output but no voltage, etc... There are several ways to troubleshoot an output. One thing to be sure of is that you have used basic non multiplexing troubleshooting first. This means that you have verified that the wiring is correct, that there is not a problem with the device you are trying to operate and you have checked the output from the module with a meter to see if it has turned on. (If not see step 2 below) .Here is a process that should be helpful:

1. Although it may be obvious, be sure that the output did not turn off because of over current (flashing LED if present). If the LED flashes you can remove the wire from your device and try again to make sure you do not have a bad output. Assuming that the circuit protection is not zero (use laptop and open module test program to verify) the output should turn on if no device is connected. Disconnect the device and try again. A disconnected output (non zero) that faults with no device is a bad output and needs the module to be replaced.
2. If you have a module that has override switches (i.e. 366HMM) then you can stop streaming and attempt to turn on the device with the override switch. Check the output with a meter.
3. Using a laptop with the software open the eplex interface, stop streaming, select the module in question in the module selector and hit the open module test program button. Most module test programs have a way to test the outputs. The HMM366 test module program is an good example of this (see below)

Hexa Multimodule

Address: 58

Success writing PWM values.

	Current Fault:	Current:	Trip Counter:	Trip Setpoint:	Feed-back:	Open Circuit:	Current Mult:
<input type="checkbox"/> Output #1		0 A	0.0 A	5 A			1.00
<input type="checkbox"/> Output #2		0 A	0.0 A	5 A			1.00
<input type="checkbox"/> Output #3		0 A	0.0 A	5 A			1.00
<input type="checkbox"/> Output #4		0 A	0.0 A	5 A			1.00
<input checked="" type="checkbox"/> Output #5		0 A	0.0 A	5 A			1.00
<input type="checkbox"/> Output #6		0 A	0.0 A	5 A			1.00

Total Current: 0 A

Set

Set Defaults

Dimmer #1:

Manual: 30%

Up

Dn

Set #1: 0%

Set #2: 10%

Set #3: 35%

Set #4: 100%

Dimmer #2:

0%

Up

Dn

Set #1: 0%

Set #2: 10%

Set #3: 35%

Set #4: 100%

Battery Voltage: 12.1 V

Trip Speed: 1/2 sec

Up

Dn

at x2 Current Limit

All On

All Off

With this you can hit the checkmarks at the left and test out the functions. The feedback tells you it is registering as on. Open circuit indicates no device and current fault indicates you had an over current condition. You have a failed module if you cannot change the state of an output or if you have feedback but no output on your meter.

Analog Outputs:

Analog outputs are not as commonly used. It is much more common to read analog signals than to supply them. However, there are instances where they are used. It is difficult to troubleshoot analog signals without a laptop. You are at the mercy of the program. Therefore, the best way to troubleshoot them is to use a laptop with the open module test program. The most common analog output would be a PWM output (i.e. from a 366HMM module). To test that output you can use the open module test program (see previous page) and see the dimmer controls at the bottom. You can also use a scope to see the output signal if desired. The output should read on a meter based on the PWM percentage of the modules voltage.

For straight analog outputs like 0-5VDC or 4-20ma you would also use the open module test program. Below is an example:

Octal Analog Output

Time out writing to channel 2.

Channel	Value	Current
1:	0.00V	<input type="checkbox"/>
2:	4.00mA	<input checked="" type="checkbox"/>
3:	0.00V	<input type="checkbox"/>
4:	0.00V	<input type="checkbox"/>
5:		<input type="checkbox"/>
6:		<input type="checkbox"/>
7:		<input type="checkbox"/>
8:		<input type="checkbox"/>

☐ External Power

Calibration

Channel 1 Zero Offset: 128 Multiplier: 128

Set Read All Reset Flag Set Defaults Stagger Outputs

With this you can test the outputs with a meter and the module test program. You would set a channel to a specified level and test it with your meter. No output (when it has success writing to the channel over the bus) indicates a bad module. Keep in mind some modules require a separate power source than just the eplex bus.

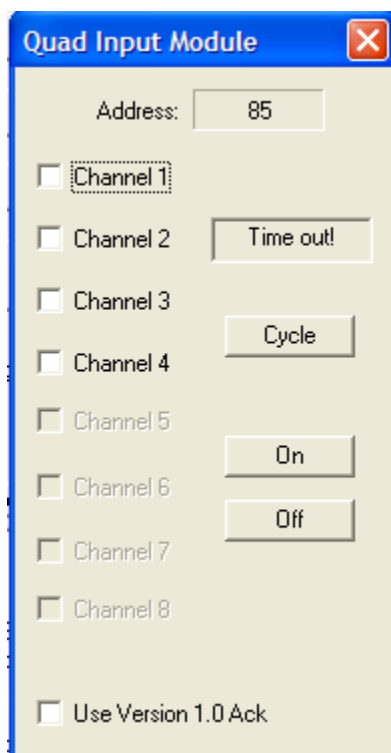
Module Based Outputs:

Certain modules are designed specifically for a certain use. Examples of these would be the 413DWM, the 425DRM, the 427CANI etc... The 413 had outputs like a 366 but is design for the needs of running a wiper motor. The 425 is designed to run motors that reverse. The 427CANI sends and receives messages over the CAN bus. Some of these modules have similar override buttons and open module test programs to the ones above and can be diagnosed using similar methods. Other modules may require making a special test program or the use of other tools to diagnose. The modules with CAN communication may require a CAN monitor to truly test out the operation.

One key thing to be aware of with modules that run motors is that motors have high start up currents and can trip out easily. Sometimes use of a current limiter inline can aid with these issues. To diagnose high start up currents you need a scope and a shunt. Another method to try is to run a device that does not have such requirements to test out the output.

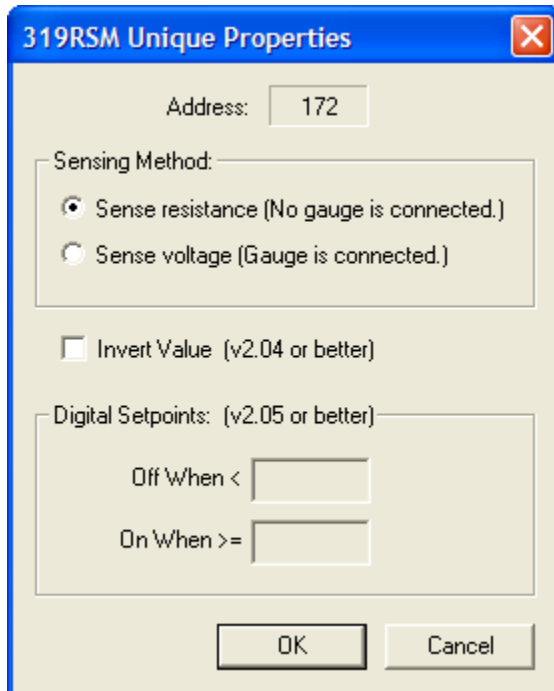
Digital Inputs:

Many modules have channels that can be used as an output or an input (i.e. 366HMM). The feedback is an indicator of an input if you are not using it as an output. Other modules are designed just to take digital inputs in (i.e. 421QIM). Digital inputs are not very difficult to diagnose. The best method to use when troubleshooting a digital input is to manually connect a known signal of system voltage or ground as appropriate to the modules input pin and see if it turns on. This can be done with the system streaming or even better would be to use the module test program for the module. Below you can see a module test program for a 421QIM:



If an input was on there would be a checkmark by the input. Some modules have an LED light that would indicate the inputs status. This can be a useful tool instead of the module test program to verify the input is working. If you connect a known source and the input state does not change you have a bad module.

The 319RSM can be used as a digital input device as well.



As you see above if you select the right type of object in software you can set the off and on points. The can be useful. However, it is still measuring in an analog fashion and you may need to evaluate it as an analog input device. Be sure when testing that you know the input voltage or resistance through checking with a calibrated meter.

Analog Inputs:

Analog inputs can be trickier to troubleshoot. A key thing to remember with analog inputs is that many problems can be created by connecting an analog sensor to multiple reading devices. Be sure that your sensor is only wired to one specified eplex module input. Analog inputs can be voltage, resistance, current, PWM, pulsed, etc... It is important to verify that the appropriate module and settings are being used for the nature of your analog signal. This can be the issue sometimes. For example, a 319RSM can read voltage or resistance. The software selects which mode it is in. For the moment we will assume the software was programmed properly. (you can see above an example of the unique properties of a 319RSM where you can choose the type of signal you are sensing). Most input modules do not have selectable input types.

When troubleshooting an analog input the proper tools are necessary to validate the signal. This means you may need a meter or scope to see the signal and be sure it is what you expected. Since analog inputs can be tricky to troubleshoot here is a simple process to follow.

1. Verify the module is communicating to the clock via laptop, search for modules, or through basic clock troubleshooting.
2. Verify the device you are measuring works properly with a meter, scope, or other appropriate tool.
3. Verify the signal is the same at the location of the module with the wire disconnected using the appropriate tool.
4. Connect the wire to the module and test using the open module test program for that module.
5. If possible, use a separate and known supply other than your sender to double check the channel. (using a resistor, variable voltage supply, function generator, etc..)
6. If all tests fail you need to replace the module.

Resistive Sensor Module

Advanced Help

Channel: #1 Success reading analog value. Address: 172

Tank Level:

587 Counts
(Calibrated: 66)

1023 Counts Max

Calibration Controls:

Initialize For Calibration

Calibrate For Zero

Calibrate For Full

Write Table

Zero Offset: -129 counts

Multiplier: 1.000

Range & Accuracy:

☒ Normal

☐ x2 Range

Calibration Mode

Read Calibration

Manual Set

Untitled

Counts:	n/u	Equals Value:
0	-	0
885	-	100

Table Builder Option #1:

Add Value Entry

Number of counts:

Equals value:

Table Builder Option #2:

Add Counts Entry

Current reading in counts should equal what value:

Save Table Load Table Clear Table Read Table

Above you can see an example of a module test program. I have put it in calibration mode which makes testing a little easier sometimes. You can also see the calibration table by reading it from the module. In the above list step 4 was to verify the signal with the open module test program. Here are some guidelines to follow when testing with an open module test program.

1. Note down the zero offset, multiplier, range and accuracy level and the table values.
2. Save the table so you can reload it later.

3. Examine the level bar and count window. If it is not zero or full you have a valid reading. If you see zero or full (and your reading is not out of range) you could just have a calibration problem.
4. Hit the initialize for calibration button. This should take the settings on the input back to factory levels. If your input is within the proper range (i.e. 2.3V on a 0-5V input) you should see it register at the top in the level bar or count window.
5. If nothing registers the only other potential issue would be a module whose value needed to be inverted. (using the unique properties). This should not be the case if the program worked before.

If all test fail replace the module.

Module based inputs:

Several modules perform readings and supply the information for use in eplex programs. These modules are both sensors and modules combines. Some of these modules may measure certain conditions. (pressure, fluid levels, temperature, battery voltage, etc..) Other modules may look for communication information. (CAN bus, serial, etc..) Still others may look for direct user input. (rocker switches, touch panel switches, etc...)

Measurement based modules can be treated similarly to analog input modules. The best way to check them is to follow the process explained above with the exception that you do not check the input with a meter. You validate the input manually. For example in a fluid sensor (318PFTG) you see if there is fluid in the tank and make sure the sender is places appropriately by its physical location. Sometimes you can manually manipulate the input (blow hot air on a temp sensor). Once the input is validated you check it with the process shown above for checking analog inputs with the open module test program.

Communication based modules can be tougher to troubleshoot. You may need a separate tool to see the communication messages and verify they are talking on the bus. You can also try using a scope to validate that there is something happening on the bus first. After that you would need a tool of some kind (CAN monitor for CAN) to validate what is happening. You can also make a simple program with just a clock and a module to make it easier to troubleshoot. Sometimes with communication the best way to troubleshoot is to use a simple test program in non optimized mode and watch the data to see if it is coming across as expected. This is more a tool for programming initially most of the time. If your program operated before the most likely issue is a bad wire or connection. Those need to be validated first. If you are using CAN you should check the terminating resistors as well. Other than that use a tool where you can send a specified message to the module and use the software and a monitor validate the message went over the bus and was received.

User input modules are relatively easy to troubleshoot with a laptop. Without a laptop there is no good way to troubleshoot them. You should use the open module test program to check the module. Assuming you have communication check through all the inputs to make sure they are operating.

Here is an example of an open module test program for a rocker switch assembly:

428RSP

Address: 94

	Switch:	LED:	Color #1:	A Color #2:	B Color #3:	A & B Color #4:
Switch #1 Up:		Color #1				
Switch #1 Down:		Color #1				
Switch #2 Up:		Color #1				
Switch #2 Down:		Color #1				
Switch #3 Up:		Color #1				
Switch #3 Down:		Color #1				
Switch #4 Up:		Color #1				
Switch #4 Down:		Color #1				
Switch #5 Up:		Color #1				
Switch #5 Down:		Color #1				
Switch #6 Up:		Color #1				
Switch #6 Down:		Color #1				
Switch #7 Up:		Color #1				
Switch #7 Down:		Color #1				
Switch #8 Up:		Color #1				
Switch #8 Down:		Color #1				

Auto Color: Red

Write Colors

Read Colors

Make All Like First

Disable Communications

Success reading switches.

In the above example you can operate all the switches and see if the input turned on (i.e. sw 1 is up now). You can also test the LED's on them as well. Typically a problem would be where you move a switch but it does not register. On a 428RSP you could need to replace a cam. If you can take the CAM off of the back and move the switch such that the input changes state you have a bad CAM.

The screenshot shows the 416TPS software window. At the top, the title bar says "416TPS" with a close button. Below the title bar, there's a field for "Address:" set to "202". Underneath, there are fields for "X-Axis:" and "Y-Axis:", both set to "0". To the right of these fields, there's a "Region:" dropdown set to "None" and a "Module Voltage:" field set to "13.3V".

Below the X and Y axis fields, there are two groups of LED controls. "Group #1" has buttons for "All Off" and "All On", and checkboxes for "Night Mode" and "Alarm". "Group #2" has checkboxes for "LED 1" through "LED 10".

In the center, there's a "Touch Regions:" section. It includes a "Region:" dropdown set to "Region #1", a "Set Default Regions" button, and a "Load Regions" button. Below these, there are two rows of "Set" buttons followed by "Upper Left:" and "Bottom Right:" labels, with corresponding X, Y coordinates (66, 171 and 97, 233). To the right of these are "Save Regions", "Write Regions", and "Read Regions" buttons.

At the bottom left, a status message says "Success writing LED's."

Above you can see an example of a TPS test program. If you do not register anything on the X and Y axis you could have a bad module. They should register when you touch it. A problem may be that the regions could be off. Loading them back in from the appropriate file can fix some problems. The LED's can be tested as well. With the appropriate tch file touching the buttons should register in the region box.

Module Missing Issues:

The most common issue in an eplex system is a module that is not communicating. By doing a search for modules you can find out if any of your modules are missing. The most common cause for a missing module is a loose wire, especially if multiple go missing at the same time. When a module goes missing follow this process:

1. Check to make sure if the module needs external power that it is present with a meter.
2. If no modules are responding check the clocks eplex bus output to be sure you have an eplex bus. You can do this with a meter. Check between eplex plus and minus. You should see roughly half the clock output voltage. This may be anywhere from 6V to 12V depending on your system. The most common voltage for a 12V system would be about 7V.

3. Next do the same thing at the module. Some modules have and eplex in and out. Since they are reversible check both to be sure. Once you have found the input connect it and check the output.
4. If all seems right next validate that the wires are pinned properly. A loose or unseated pin could be the culprit.
5. Next you need to go to the laptop and open the eplex interface with the appropriate program. Stop streaming. In the advanced menu you can hit search entire address range. This will check to see if a module lost its address and needs to be changed back and reprogrammed.
6. Next you can remove the module from its location, bring it to the clock area. Disconnect all eplex wires from the clock. Using small jumper cables (radio shack carries these with alligator clips) supply power and eplex to the module so that it is the only module on the bus. Hit the master address check box in the module selector area of the eplex interface. This should communicate to it and see if it is in a boot loader state or has a bad address.
7. If no communication occurs you have a bad module. If it is in boot loader mode contact an eplex expert for guidance on how to re boot load the module.

Most missing module issues are solved between step 1 and 4. Wiring is the most likely cause and bringing one module back on line often brings others with it.

Touchscreen Issues:

Two common issues with touchscreens are misalignment and non responsiveness. For misalignment of a module other than the 500CCM you should obtain the appropriate .tch file and reload it using the open module test program for that module. On the next page you can see a module test program for a touch panel switch.

416TPS

Address: 202

X-Axis:

0

Y-Axis:

0

Region: None

Module Voltage: 13.3V

-- Group #1: --

All Off

Night Mode

All On

Alarm

☒ LED 1

☐ LED 2

☒ LED 3

☐ LED 4

☐ LED 5

☒ LED 6

-- Group #2: --

☐ LED 7

☐ LED 8

☐ LED 9

☐ LED 10

Touch Regions:

Region: Region #1

Set Default Regions

Set

Upper Left: 66, 171

Load Regions

Set

Bottom Right: 97, 233

Save Regions

Write Regions

Read Regions

Success writing LED's.

You can verify operation by touching the display and watching the X and Y axis feedback. Load and write the regions and verify that the misalignment is gone. A slight misalignment may be fixed by creating a new .tch file. This is described in the eLogic programming manual obtained from a eplex institute class. A major misalignment means the module needs to be replaced.

On the 500CCM misalignment can be corrected by recalibrating the touchscreen. To do this you need to open the module test program for the 500CCM. On the next page you can see the module test program.

500CCM ✖

Address: ☐ Disable Module Mode
☐ Disable Clock Mode
Startup Delay: s

Pages: Elements: Strings:

Touch Coordinates: ☐ Flip H Brightness:
Voltage A: ☐ Flip V LED Backlight:
Voltage B: Vref:
Vreg: Vcom:

Time out reading touch screen coordinates!

Advanced Controls:

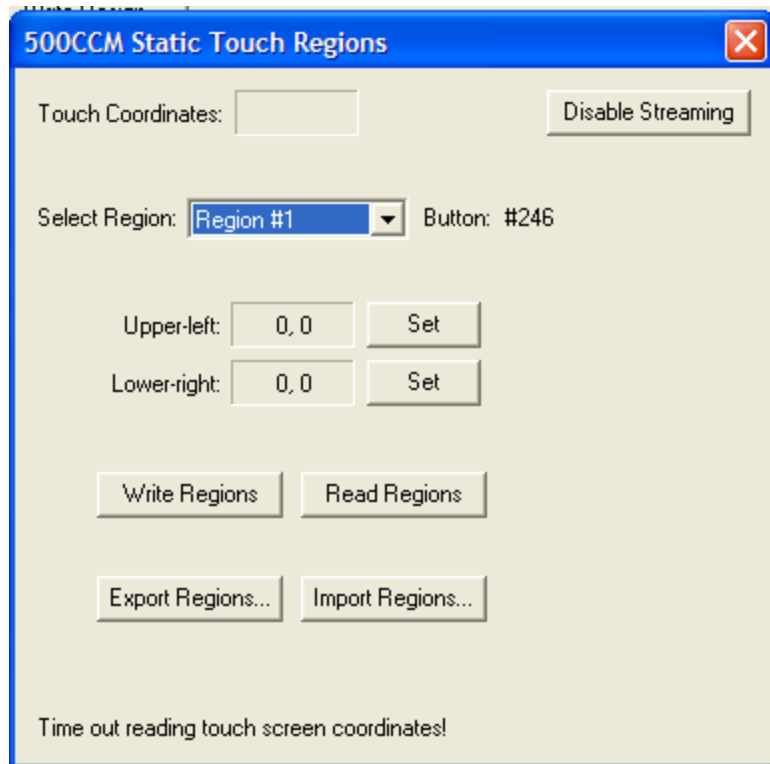
Flash Address: ☐ Slow Speed E-Plex
☐ Old Stream Format

Page: X: Y: Fore: Back:

Hit the button that says recalibrate touch. Then close the module test program, start streaming, and with a small but not sharp object such as a stylus touch the X's on the screen. This should recalibrate the touch screen. Be sure that no area of the touchscreen is depressed with anything else while doing this as you can have a bad calibration. The bezel or the palm of your hand can mess it up.

For a non responsive touchscreen on modules other than the 500CCM follow the same procedure as above. If the X and Y axis are non responsive when you touch the screen you have a bad module.

On the 500CCM you need to take an additional step. In the open module test program hit the Define touch regions button. This will take you to the following screen:



As long as you are touching the screen something should register in the touch coordinates box. If it does not try pressing a couple more times. If you still have no reading you have a bad touchscreen. If it does register then exit and try recalibrating the touchscreen as described above. A common issue for a failed touchscreen is to respond the the first two X's touch and ignore the third leaving you on the calibration screen. You can power down and back up and retry. If a retry does not work then you need to have the 500CCM send back for a touchscreen replacement.

The only exception to these situations is a 350LCD that is unresponsive. We have run into issues where the 350LCD does not recognize the eplex stream at startup and locks out of communication from the screen but does communicate to the clock. A way to verify this is to power down the system. Next you would power up all but the 350. Then power up the 350 by itself after a few seconds. This allows the system to be streaming before the 350 goes through its boot up process. If it fixes the issue it is helpful to install a switch to shut down power to the 350 on its own and power it up separately.

Display Problems:

The most common display problem is a touchscreen issue. See the previous section for that. Other display problems that may arise are a screen that is locked in screen saver mode, a display that lost its program. If a display problem is not a touch screen issue it is usually pretty easy to fix as long as the module is communicating and is not failing. For a screen locked in saver mode just power down and re

power back up. The most common reason for the lockout is that it was in screen saver mode and you stopped streaming. When you start streaming again it got locked in.

For a display that has lost its program you need to reprogram the display. Be sure to rewrite all screens and all strings as well as program it.

Another issue that we have seen is a program that has custom buttons or features. If the files needed for those features are not on your PC and you rewrite the screens the elogic software may make some assumptions that cause issues. If you suspect this contact the programmers to see if this could be the issue.

Data Errors:

Data errors are not always a problem. On many systems an infrequent data error occurrence is not an issue and is common. If you have enough errors that it is causing the system to run sluggish, you are getting a system failure, or you have more than 2 a minute the system is worth troubleshooting.

Data errors can be great tools or very difficult problems. The easiest way to find the data error issue is to use the laptop. This does not work all the time, but when it does it is nice. With a laptop you can open the eplex interface and watch the area at the bottom. It sometimes will show you which module address is causing the data error. Sometimes it will tell you a module dropped out at the same time as a data error. (this may also be able to be seen on the clock at the status screen). If that is the case you may have found the problematic module. The next step is to stop streaming and change to diagnose mode. (the selection above the start/stop streaming button). Then start streaming. This will open a window that allows you to watch your system a little more closely. An example of this is shown on the next page. You can see that there are several missing modules but the ones present are not showing errors. An error may be present in the second response column by a missing response. While doing this you can also watch the eplex interface info box at the bottom and the status next to the streaming button. They may show issues. If no issues seem to be showing, but your data errors keep counting up it will be harder to find the problem. You can use the diagnostics menu and select the automatic check modules for errors. A #5 error is common and probably is not the issue. If you have another error that shows up you may have found the erroneous module.

Responding Modules									
Address:	Module:	Response:	Previous	Found	Missing	... Error Counters: ...			
			Response:	@ Address:	Count:	Ack:	Checksum:	Sync:	
58	Hexa Multimodule (1 Dimmer)	OK							
76	Touch Panel Display	OK							
84	Quad Analog Output	None			1				
85	Quad Input Module	None			1				
94	Color Rocker Switch x4	OK							
102	10" Transmissive LCD	OK							
126	Pressure Tank Gauge	OK							
172	Resistive Sensor Module	OK							
182	RF Receiver Module	OK							
202	Touch Panel Switch	OK							
212	Quad RTD Module	None			1				
Other	Unknown Response	None							

E-Plex Interface - [demo kit erik2.elc v1.0]

Design Clock Diagnostics Advanced Help

Program All

Program Module

Verify All

Verify Module

Interrogate Module

Search For Modules

Simulate Stream

Open Module

Diagnose Stream

Test Program

Stop Stream

Streaming ... 13 sec Module Mismatch!

v2

Cycles/Second: 20

Address Count: 99 of 144

Reset

Data Errors: None

Module Mismatches: 1

Images generated for 12 modules including clock.

Stream range: 20% (820) RAM usage: 7% (115)

Currently using 10.1% of Clock Module logic memory.

● Ready to Program ●

Stream Mode successfully changed.

Missing Quad Analog Output at address 84.

Missing Quad Input Module at address 85.

Missing Quad RTD Module at address 212.

Module Selector:

Address: 58 (366HMM)

Hexa Multimodule (1 Dimmer)

@ Bottom of Case

☐ Blank Address ☐ Master Address

Initialize Find Unaddress

LIGHT 1: O/P 1

If you still cannot find which module is causing the data error you are left with the hard diagnostic method. This is shown below:

1. Stop Streaming
2. Disconnect the highest suspect module
3. Start streaming and watch data errors. If you get no errors that was the problem module. If not move on to step 4
4. Stop streaming.
5. Reconnect the module and repeat at step one till you find which module stops the errors.

Once you have found the module that is causing data errors you need to do a search and save (under the advanced menu) and send the file off to an eplex expert. They can verify that the module has the correct firmware and hardware. If it does not they may be able to guide you through a firmware update to fix the data errors. If you have appropriate firmware you will need to replace the module.