

MTESTQuattro Materials Testing System

Troubleshooting Guide



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Test with Certainty. Test with ADMET

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Communication Problem		
Problem Description	Possible Causes	ACTION
Unsupported operation on port <i>portname</i> OR Port <i>portname</i> does not exist. OR Port <i>portname</i> is not available. OR No port was specified. Error.	MTESTQuattro Drivers have not been installed.	Exit MTESTQuattro and Install Drivers Communications between the MTESTQuattro host and the MTESTQuattro Controller occur through a USB connection. Drivers for the USB communications are installed when a USB cable is first connected to an available USB port on the host computer and to the USB port on the Controller.
Persistent Errors: Port Busy..., Port <COM1> not available Loading Test Procedure..., Invalid Thread Access, data store corrupted	USB cable not properly connected between MTESTQuattro Interface Box and computer	Make sure the USB cable is not damaged and is fully inserted into both USB ports. Reroute cabling if needed so that power or other cables do not introduce noise into the USB cable. Cycling power on the MTESTQuattro controller may also correct communications problems.
Loading Test Procedure..., null, data store corrupted	USB Cable is damaged	Replace with known good USB cable
	Improper USB Cable being used	Ensure cable is USB 2.0. USB 1.0 or 1.1 will not work properly
Software Locks Up on Opening Splash Screen and/or on Live screen with status: INITIALIZING	MTESTQuattro Controller does not have power	Ensure that the MTESTQuattro controller is powered up and working properly. If the controller is powered up then try rebooting system in the following order: Exit MTESTQuattro Software Shut Down Computer Power down MTESTQuattro controller. Wait 10 seconds and power up MTESTQuattro controller Turn on the computer Open MTESTQuattro software If still locked up on "INITIALIZING" then try rebooting MTESTQuattro controller WHILE software is trying to open and displaying "INITIALIZING". If the above does not work then contact ADMET technical support.
	MTESTQuattro Interface Box has failed.	Contact ADMET
	Improper USB Cable being used	Ensure cable is USB 2.0. USB 1.0 or 1.1 will not work properly

Analysis (Modulus/Yield) Problems		
Problem Description	Possible Cause	ACTION
Offset Yield Result is 0 or N/A.	Data logging threshold is not set properly	Ensure that the logging threshold, Acquisition Tab, is set to appropriate value: it should be above any type of "foot" in the stress strain curve.
	Automatic algorithm for modulus calculation not appropriate for test data	Use Pick Points OR Specify Stress Points for elastic slope calculation in Analysis tab to ensure that data points being used for modulus calculation are in the linear elastic portion of the test curve.
	Insufficient strain data collected	Ensure that enough strain data is being collected so that the stress/strain data point that is being specified by the offset percentage is included in the test data.
Autofreeze is triggering early	Data logging threshold is not set properly	Ensure that the logging threshold, Acquisition Tab, is set to appropriate value: it should be above any type of "foot" in the stress strain curve.
	Automatic algorithm for modulus calculation not appropriate for test data	Use Pick Points OR Specify Stress Points for elastic slope calculation in Analysis tab to ensure that data points being used for modulus calculation are in the linear elastic portion of the test curve.
	Load Threshold for Freezing Strain Channel, Acquisition Tab, not set to proper value	Ensure that the strain freeze load threshold is higher value than the logging threshold. If it is and you are still having a problem you can raise the strain freeze load threshold to be closer to the yield point of the stress strain curve.
	Insufficient strain data collected	Add an extra strain based analysis at higher offset than your desired value to force test to collect additional strain data. For example if your desired analysis is .2% yield offset add a .5% offset EUL analysis to the setup. This will provide a safety factor in collecting enough strain data for the .2% offset yield. EUL (elongation under load) is preferable to Offset Yield for this purpose as it draws a vertical line from the strain axis to intercept the stress curve and it is not dependent on the slope of the modulus line.
Modulus Calculation is wrong	Data logging threshold not set properly	Ensure that the logging threshold, Acquisition Tab, is set to appropriate value: it should be above any type of "foot" in the stress strain curve.
	Automatic algorithm for modulus calculation not appropriate for test data	Use Pick Points OR Specify Stress Points for elastic slope calculation in Analysis tab to ensure that data points being used for modulus calculation are in the linear elastic portion of the test curve.
	Incorrect value for gage length entered.	Ensure that the correct gage length value is entered in the Specimen tab.

Test Procedure Execution Problems		
Problem Description	Possible Cause	ACTION
<p>No procedure assigned. Run aborted.</p> <p>OR</p> <p>Procedure does not exist. Run aborted</p> <p>Error.</p>	<p>Current Test Procedure was never saved.</p>	<p>Each new test procedure must be saved. Previously saved test procedures can be run in modified states, but new test procedures must first be saved so that a corresponding resource appears in the Test Procedure folder in the Workspace View.</p>
<p>Procedure has errors. Run aborted</p> <p>Error</p>	<p>One or more of the channels that are checked as Active in the test procedure Channels tab do not have transducer calibration selected.</p>	<p>Assign valid transducer calibration to each active channel in the test procedure Channels tab.</p>
<p>Test Ends Early with no Errors.</p>	<p>Sample Break Criteria Break Threshold and Drop Interval (% of Peak) in Acquisition tab not set to values appropriate to test.</p> <p>NOTE: This only applies when Stop at Sample Break is selected for Logging Cutoff.</p>	<p>Ensure that the Break Threshold and Drop Interval (% of Peak) in Acquisition tab are set to values appropriate for your test. Break Threshold is where the sample break algorithm is enabled. Once Break Threshold is crossed the software is looking for the the end of test as specified by Drop Interval (% of Peak) percentage. The test ends and data logging stops when the load to drops from the maximum load by the Drop Interval (% of Peak) percentage for three successive sampling intervals OR three times the Drop Interval (% of Peak) percentage (up to a maximum of 95%) over any number of sampling intervals. An insignificant drop in load at the beginning of a test can trigger the end of the test if the threshold is set to low.</p>
<p>No data is plotted in Run Plot</p>	<p>Plot scaling is not setup properly for test</p>	<p>If User Scale is selected for Plot Option in XY Graph tab then make sure that specified axes and plot scale are appropriate for your test data.</p> <p>If Auto Scale is selected for Plot Option in XY Graph tab then make sure that High Scale values for X and Y axis are NOT significantly greater than expected data. Auto-scaling increases the scale as necessary but does not decrease scaling.</p>
<p>No data is logged</p>	<p>Data logging threshold not set properly</p>	<p>Ensure that the data-logging threshold is set to an appropriate value. Data logging begins at logging threshold specified in the Acquisition tab. If, for example, the threshold is set to a value higher than the expected peak load for a particular sample, then no data will be logged for the test.</p>
<p>Data Logging Stops</p>	<p>Test Buffer is Full</p>	<p>Data buffer is about 128KB.</p> <p>Lower data logging rate in Servo Control, Profile tab.</p> <p>Select Overwrite Oldest Data when Buffer Full in Acquisition tab.</p>

Load (transducer) reading wrong		
Problem Description	Possible Causes	ACTION
Load or Strain reading is unstable	Incorrect transducer calibration specified	Ensure that the correct transducer calibration is selected in the test procedure, Channels tab.
	Bad transducer calibration	Open the calibration table for transducer that is connected. (Select Calibrate from the Utilities menu in the program.) Check to see that the calibration is good: The A/D count span should extrapolate to close to 132,000 from zero to full scale of transducer. The relationship between the A/D counts and engineering unit values should be linear and there should be no duplicate points.
	Bad transducer and/or transducer cable	Open the calibration table for the transducer that is connected. (Select Calibrate from the Utilities menu in the program.) Observe the live count value at zero and full scale (in this view MTESTQuattro is not providing the engineering unit values so you need some independent way of evaluating the full scale value) and compare with A/D counts for the corresponding engineering unit value in the original calibration. The typical A/D count span from zero to full scale for a transducer should be close to 132,000. If there is little or no span with the transducer in question connected, try swapping a known good transducer and cable to the channel in question. If little to no span stays with the transducer/cable then the problem is with the transducer/cable. If little to no span stays with the analog channel then the problem is likely with the hardware and the unit may need repair. If you do not have a known good transducer and cable to perform this test then the test could be done with a voltage simulator with mv/V output..
	Failed analog channel in MTESTQuattro box	If possible swap transducers. For example if the A/D saturation is in the load channel, switch extensometer and load cables at the back of the MTESTQuattro interface box so that the extensometer is now connected to the load channel and the load transducer is connected to the strain channel. If the A/D saturation stays with the load channel then it is likely that there is a hardware failure and the MTESTQuattro interface box needs to be returned to ADMET. If the A/D saturation moves to the strain channel then the most likely problem is with the load transducer and/or cable. Open the calibration table for the transducer that is connected (Select Calibrate from the Utilities menu in the program. You will need a password to enter calibration) Observe what the A/D count value that corresponds to 0 engineering unit value in the original calibration. Is the number displayed in live A/D counts window significantly larger than the A/D count value in the original calibration? If it is then the transducer has been damaged and there is 0 offset so that full scale range of transducer has been reduced.

Load (transducer) reading wrong, cont'd.		
Problem Description	Possible Causes	ACTION
Load or Strain reading is incorrect	Incorrect transducer calibration specified	Ensure that the correct transducer calibration is selected in the test procedure, Channels tab.
	Bad transducer calibration	Open the calibration table for transducer that is connected. (Select Calibrate from the Utilities menu in the program.) Check to see that the calibration is good: The A/D count span should extrapolate to close to 132,000 from zero to full scale of transducer. The relationship between the A/D counts and engineering unit values should be linear and there should be no duplicate points.
	Bad transducer and/or transducer cable	Open the calibration table for the transducer that is connected. (Select Calibrate from the Utilities menu in the program.) Observe the live count value at zero and full scale (in this view MTESTQuattro is not providing the engineering unit values so you need some independent way of evaluating the full scale value) and compare with A/D counts for the corresponding engineering unit value in the original calibration. The typical A/D count span from zero to full scale for a transducer should be close to 132,000. If there is little or no span with the transducer in question connected, try swapping a known good transducer and cable to the channel in question. If little to no span stays with the transducer/cable then the problem is with the transducer/cable. If little to no span stays with the analog channel then the problem is likely with the hardware and the unit may need repair. If you do not have a known good transducer and cable to perform this test then the test could be done with a voltage simulator with mv/V output.
	Failed analog channel in MTESTQuattro box	If possible swap transducers. For example if the A/D saturation is in the load channel, switch extensometer and load cables at the back of the MTESTQuattro interface box so that the extensometer is now connected to the load channel and the load transducer is connected to the strain channel. If the A/D saturation stays with the load channel then it is likely that there is a hardware failure and the MTESTQuattro interface box needs to be returned to ADMET. If the A/D saturation moves to the strain channel then the most likely problem is with the load transducer and/or cable. Open the calibration table for the transducer that is connected (Select Calibrate from the Utilities menu in the program. You will need a password to enter calibration) Observe what the A/D count value that corresponds to 0 engineering unit value in the original calibration. Is the number displayed in live A/D counts window significantly larger than the A/D count value in the original calibration? If it is then the transducer has been damaged and there is 0 offset so that full scale range of transducer has been reduced.

Load (transducer) reading wrong cont'd.		
Problem Description	Possible Causes	ACTION
A/D Saturation Error	Bad transducer and/or transducer cable	<p>If possible swap transducers. For example if the A/D saturation is in the load channel, switch extensometer and load cables at the back of the MTESTQuattro interface box so that the extensometer is now connected to the load channel and the load transducer is connected to the strain channel. If the A/D saturation stays with the load channel then it is likely that there is a hardware failure and the MTESTQuattro interface box needs to be returned to ADMET. If the A/D saturation moves to the strain channel then the most likely problem is with the load transducer and/or cable.</p> <p>Open the calibration table for the transducer that is connected (Select Calibrate from the Utilities menu in the program. You will need a password to enter calibration) Observe what the A/D count value that corresponds to 0 engineering unit value in the original calibration. Is the number displayed in live A/D counts window significantly larger than the A/D count value in the original calibration? If it is then the transducer has been damaged and there is 0 offset so that full scale range of transducer has been reduced.</p>
	Failed analog channel in MTESTQuattro box	<p>If possible swap transducers. For example if the A/D saturation is in the load channel, switch extensometer and load cables at the back of the MTESTQuattro interface box so that the extensometer is now connected to the load channel and the load transducer is connected to the strain channel. If the A/D saturation stays with the load channel then it is likely that there is a hardware failure and the MTESTQuattro interface box needs to be returned to ADMET. If the A/D saturation moves to the strain channel then the most likely problem is with the load transducer and/or cable.</p> <p>Open the calibration table for the transducer that is connected (Select Calibrate from the Utilities menu in the program. You will need a password to enter calibration) Observe what the A/D count value that corresponds to 0 engineering unit value in the original calibration. Is the number displayed in live A/D counts window significantly larger than the A/D count value in the original calibration? If it is then the transducer has been damaged and there is 0 offset so that full scale range of transducer has been reduced.</p>

Control Problem (Servo Control Systems Only)		
Problem Description	Possible Causes	ACTION
Test Ending Early	Sample Break Criteria (Break Threshold and Drop Interval (% of Peak) in Acquisition tab not set to values appropriate to test.	Ensure that the Break Threshold and Drop Interval (% of Peak) in Acquisition tab are set to values appropriate for your test. Break Threshold is where the sample break algorithm is enabled. Once Break Threshold is crossed the software is looking for the load to drop by a percentage of the peak load as specified in Drop Interval (% of Peak). An insignificant drop in load at the beginning of a test can trigger the end of the test if the threshold is set to low.
	Servo Control Profile not set up properly	Check the servo profile and ensure that it is correct for what you want to do. The machine will stop when it reaches programmed end point in any particular step and the test will end if there are no subsequent steps in the profile.
	Logging Cutoff in Acquisition tab is not set appropriately for your test	Ensure that Logging Cutoff in Acquisition tab is set to appropriate setting to your test. Select either Stop at End of Profile or Stop at Sample Break . With End of Profile selected, the test will run until programmed servo profile is completed. With Stop at Sample break selected the test will end when after load has crossed Break Threshold and then dropped from the peak by percentage specified in Drop Interval (% of Peak).
Difficulty Preloading	Load tuning gains not set	Ensure that the system is tuned for load control. Preload moves under position control to a percentage of the specified preload amount and then switches to load control. Note that Preload can also be accomplished by inserting a position control step to the target preload value as the first step in your servo control profile. This is sometimes easier than using the Preload Function.
	Requested preload amount and rate not practical for testing machine	Ensure that your programmed Preload Amount and Preload Rate in the Servo Control, General tab are practical for the machine. For example preloading at a very fast position rate to a low preload value increases the possibility of having control problems and overshooting the preload amount. Note that Preload can also be accomplished by inserting a position control step to the target preload value as the first step in your servo control profile. This is sometimes easier than using the Preload Function.
Machine not controlling at requested rate	Tuning gains not set for requested control channel	Ensure that the machine has been tuned in the requested control channel. Ensure that the test procedure being used has the proper PID gains. Select Gains sub tab under Servo Control tab. NOTE that the PID tuning gains are specific to each Test Procedure.
	Incorrect Gear is selected	Ensure that the correct gear is selected. In hydraulic and single gear electromechanical machines only the Low Gear settings are used. In multigear electromechanical machines the gear selection in the software must match the gear the machine is currently in.

Control Problem (Servo Control Systems Only)		
Problem Description	Possible Causes	ACTION
Machine not moving	Tuning gains not set for requested control channel	<p>Ensure that the machine has been tuned in the requested control channel.</p> <p>Ensure that the test procedure being used has the proper PID gains. Select Gains sub tab under Servo Control tab. NOTE that the PID tuning gains are specific to each Test Procedure.</p>
	Position tuning gain and/or calibration is incorrect	<p>Ensure that the Position channel calibration and tuning gains are correct. If the position channel tuning gain has been overwritten with the default value then the machine may not move at all.</p>
	Hardware/Electronics Problem	<p>Open Check Equipment Dialog from the Utilities menu. Moving slider to right should cause Control DAC voltage to increase positively and the position encoder counts should increase. Conversely moving the slider to the left of 0 should cause Control DAC voltage to go negative and the position encoder counts should decrease.</p> <p>If the control DAC voltage does not respond then there is a problem with the MTESTQuattro controller.</p> <p>If the control DAC voltage responds appropriately and there is still no machine movement (and you have confirmed that tuning gains and position calibration are correct) then there is a problem with the MTESTQuattro controller and/or other system hardware.</p> <p>In both cases contact ADMET Technical Support.</p>

Control Problem (Servo Control Systems Only)		
Problem Description	Possible Causes	ACTION
Machine not stopping at requested endpoint	Tuning gains not set for requested control channel	<p>Ensure that the machine has been tuned in the requested control channel.</p> <p>Ensure that the test procedure being used has the proper PID gains. Select Gains sub tab under Servo Control tab. NOTE that the PID tuning gains are specific to each Test Procedure.</p>
	Programmed control rate and end amounts are not practical for testing machine and/or test sample.	<p>Ensure that your programmed control channel rate and limit channel value specified in Servo Control, Profile tab are practical for the machine and test sample. Example of an impractical servo profile would be programming the test machine to move at very fast position rate to end point of 5lbs on machine with load capacity of 25,000lbs. 5lbs is in the noise area relative to the full-scale capacity of 25,000lbs so you will probably have difficulty controlling to 5lbs.</p>
Machine moves in wrong direction during testing.	Incorrect Load cell calibration selected in test procedure Channels tab	<p>Ensure that correct load calibration is selected for the test procedure.</p>
	Incorrect setting for Direction of Loading in load cell's calibration	<p>Ensure that the load cell calibration was setup with the proper value for Direction of Loading. The proper setting depends on the type of testing machine and the type of test you are running. On ADMET universal testing machines the tension direction of loading is Positive and the compression direction of loading is Negative.</p>
Machine moves in undesired direction during jogging.	Jog direction not set appropriate to your requirements	<p>Jog UP by default is set as direction that increases tension and increases position encoder counts. Jog Down will move the machine in the opposite direction. Select Invert Jog in System Setup (Utilities menu) to reverse these default directions.</p>