

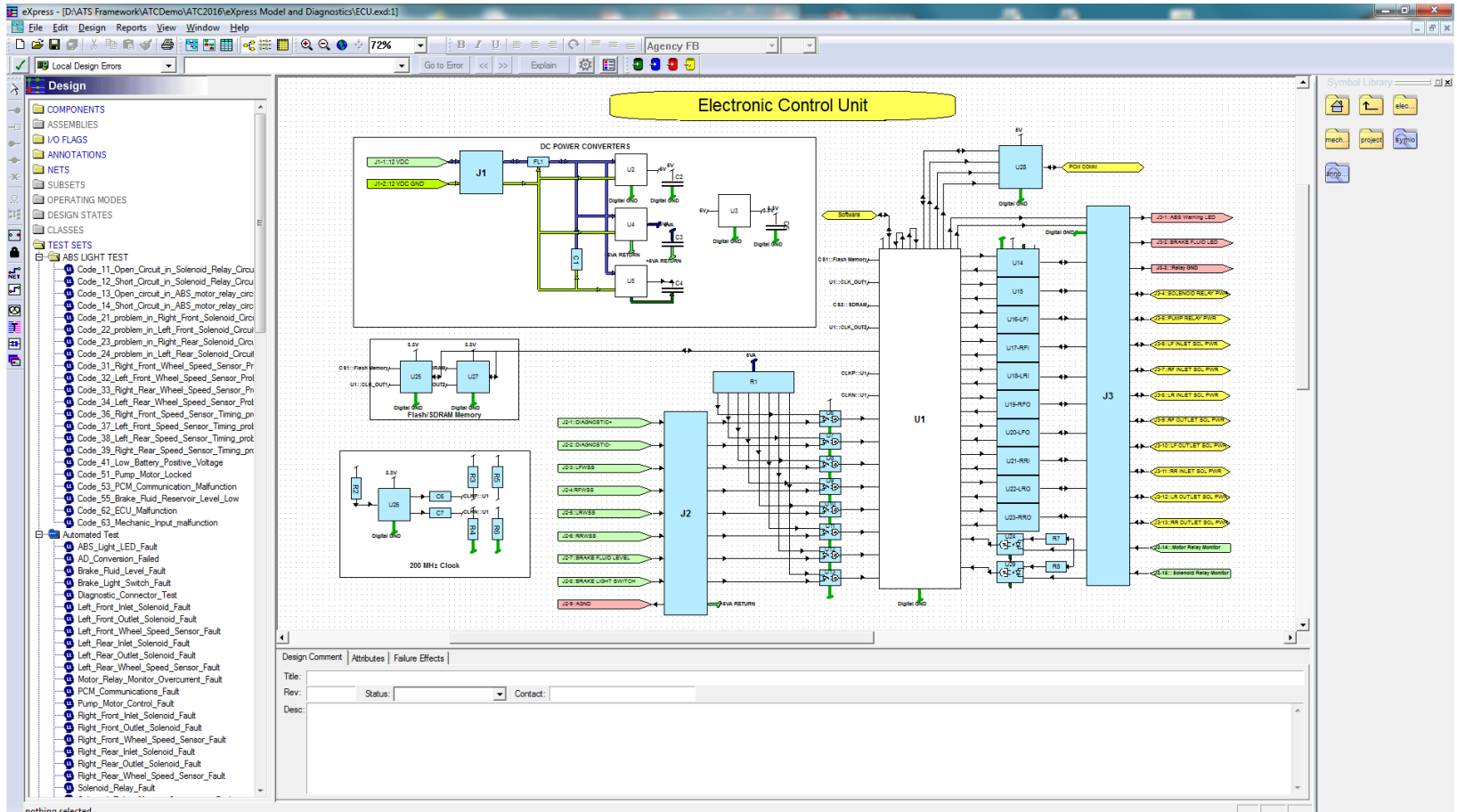


DSI Workbench Walkthrough

Smart Diagnostics



eXpress





eXpress Diagnostics

eXpress - [ECU Diagnostic Study(Single).exgdg:1]

File Reports View Window Help

Local Design Errors Go to Error << >> Explain

Diagnostic Study

Bit 1.0 AD_Conversion_U

Bit 1.1 Solenoid_Prefer...

Bit 1.2 Diagnostic_Connect...

Bit 1.3 Right_Peer_Outlet_Sc...

Bit 1.4 ABS_Loop_LAD...

Bit 1.5 PCM_Communication

Bit 1.6 Check_Sr_C1

Bit 1.7 Check_Sr_Output_H

Bit 1.8 Check_Sr_CS

Bit 1.9 Left_From_Inner_Sel...

Bit 1.10 Check_Sr_Output_H

Bit 1.11 Check_Sr_CS

Bit 1.12 Check_Sr_CS

Bit 1.13 Right_Peer_Outlet_Sc...

Bit 1.14 Left_From_Inner_Sel...

Bit 1.15 Check_Sr_CS

Bit 1.16 Check_Sr_CS

Bit 1.17 PCM_Communication

Bit 1.18 Right_Peer_Inner_Sel...

Bit 1.19 Right_Peer_Inner_Sel...

Bit 1.20 Left_From_Inner_Sel...

Bit 1.0 Fault Group # 1

Bit 1.0 Fault Group # 2

Bit 1.0 Fault Group # 3

Bit 1.0 Fault Group # 4

Bit 1.0 Fault Group # 5

Bit 1.0 Fault Group # 6

Bit 1.0 Fault Group # 7

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Bit 1.0 Fault Group # 86

Bit 1.0 Fault Group # 87

Bit 1.0 Fault Group # 88

Bit 1.0 Fault Group # 89

Bit 1.0 Fault Group # 90

Bit 1.0 Fault Group # 91

Bit 1.0 Fault Group # 92

Bit 1.0 Fault Group # 93

Bit 1.0 Fault Group # 94

Bit 1.0 Fault Group # 95

Bit 1.0 Fault Group # 96

Bit 1.0 Fault Group # 97

Bit 1.0 Fault Group # 98

Bit 1.0 Fault Group # 99

Bit 1.0 Fault Group # 100

Isolation Statistics

Common Cause Statistics

FG Size	Count	FP	Cum
1	27	24.36	24.36
2	7	8.56	32.92
3	14	36.59	69.51
4	2	4.73	74.24
8	2	16.07	90.31

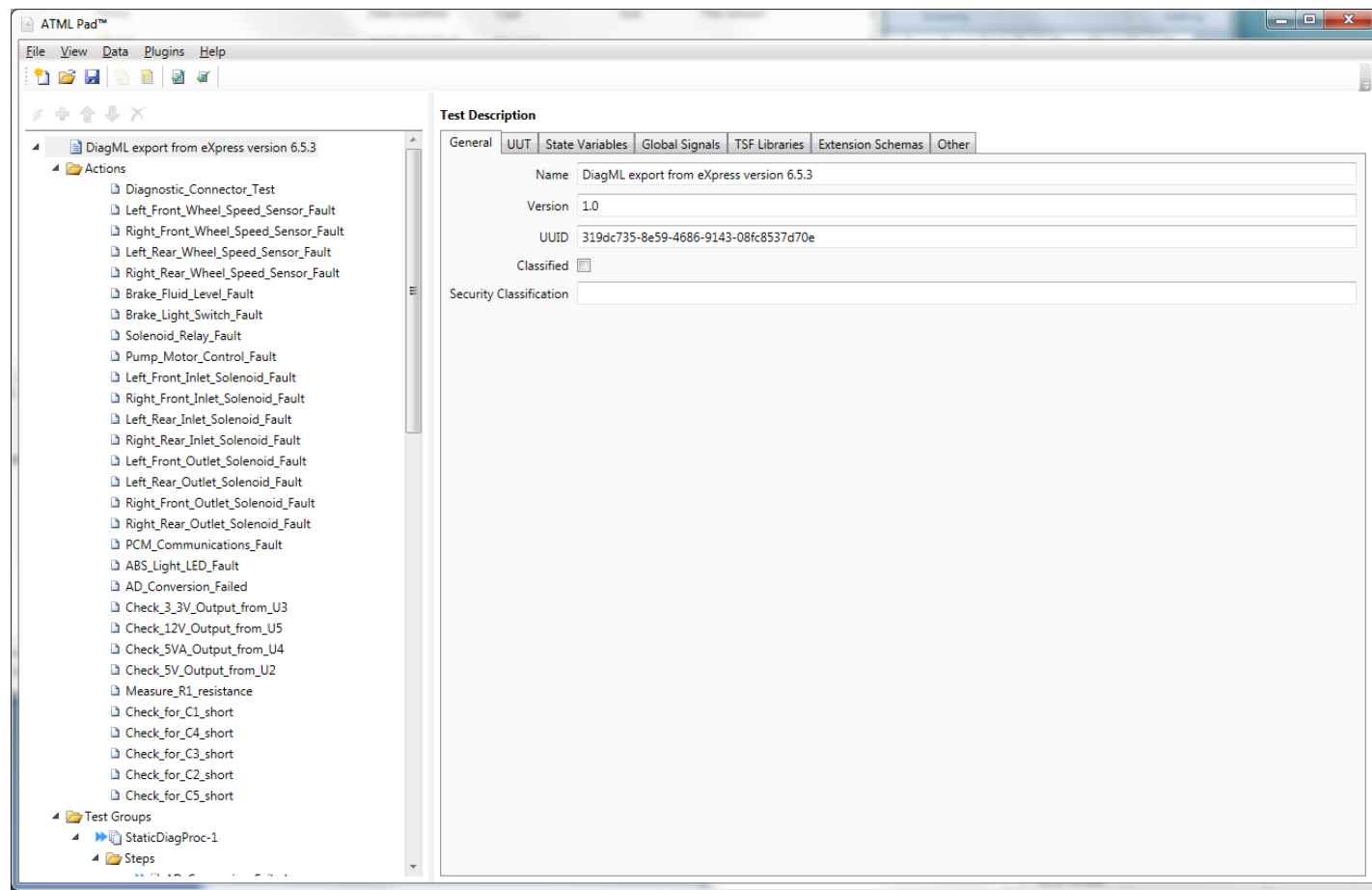
Fault Group Summary Statistics

Probability of Detection	79.97%
Probability of Isolation	24.36%
Expected Fault Group Size	3.86
Isolation Effectiveness	25.91

For Help, press F1



ATML Pad





Test Stand

NI TestStand - Sequence Editor [Edit]

File Edit View Execute Debug Configure Source Control Tools Window Help

ECU[09 15 2016][17 45 40].seq

Steps: StaticDiagProc_1

Step	Description	Settings
Setup (0)		
Main (429)		
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes
Test 1-0	AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi
Test 1-1	Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi
Test 1-2	Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi
Test 1-3	Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi
Test 1-4	ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi
Test 1-5	PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi
Test 1-6	Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi
Test 1-7	Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi
Test 1-8	Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi
Test 1-9	Check_3_3V_Output_from_U3	Pass/Fail Test, Check_3_3V_Output_from_U3.vi
Test 1-10	Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi
Test 1-11	Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi
Test 1-12	Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi
Test 1-13	Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi
Test 1-14	Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi
Test 1-15	Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi
Test 1-16	Check_for_C4_short	Pass/Fail Test, Check_for_C4_short.vi
Test 1-17	PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi
Test 1-18	Brake_Fluid_Level_Fault	Pass/Fail Test, Brake_Fluid_Level_Fault.vi
Test 1-19		

Step Settings

There are no steps selected.

Variables

- Locals (StaticDiagProc_1)
 - ResultList
 - EntryPoints
 - TestGroupOutcomes
- Parameters (StaticDiagProc_1)
 - FailureFaultData
- FileGlobals (ECU[09 15 2016]...)
 - UUT
 - EntryPoints
 - FailureFaultData
- StationGlobals
- ThisContext
- RunState

User: administrator Model: SequentialModelSeq No Steps Selected Number of Steps: 429



Passed Test Results

NI TestStand - Sequence Editor [Edit]

Serial#: 01 Test UUTs - ECU[09 15 2016] [17 45 40].seq

Report

ATML TestResult Report

TestStation	UKBH7304
UUT Serial Number	01
UUT Type	hardware
Start Date and Time	10/03/2016 3:44:41 PM
End Date and Time	10/03/2016 3:44:41 PM
Operator	administrator
Sequence File Path	D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq
Number of Results	24
Outcome	Passed

Expand All / Collapse All

Begin Sequence : MainSequence
(D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq)

Step	Status	Measurement	Limits		
			Low Limit	High Limit	Comparison Type
SequenceCall	Passed				

Begin Sequence : StaticDiagProc_1
(D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq)

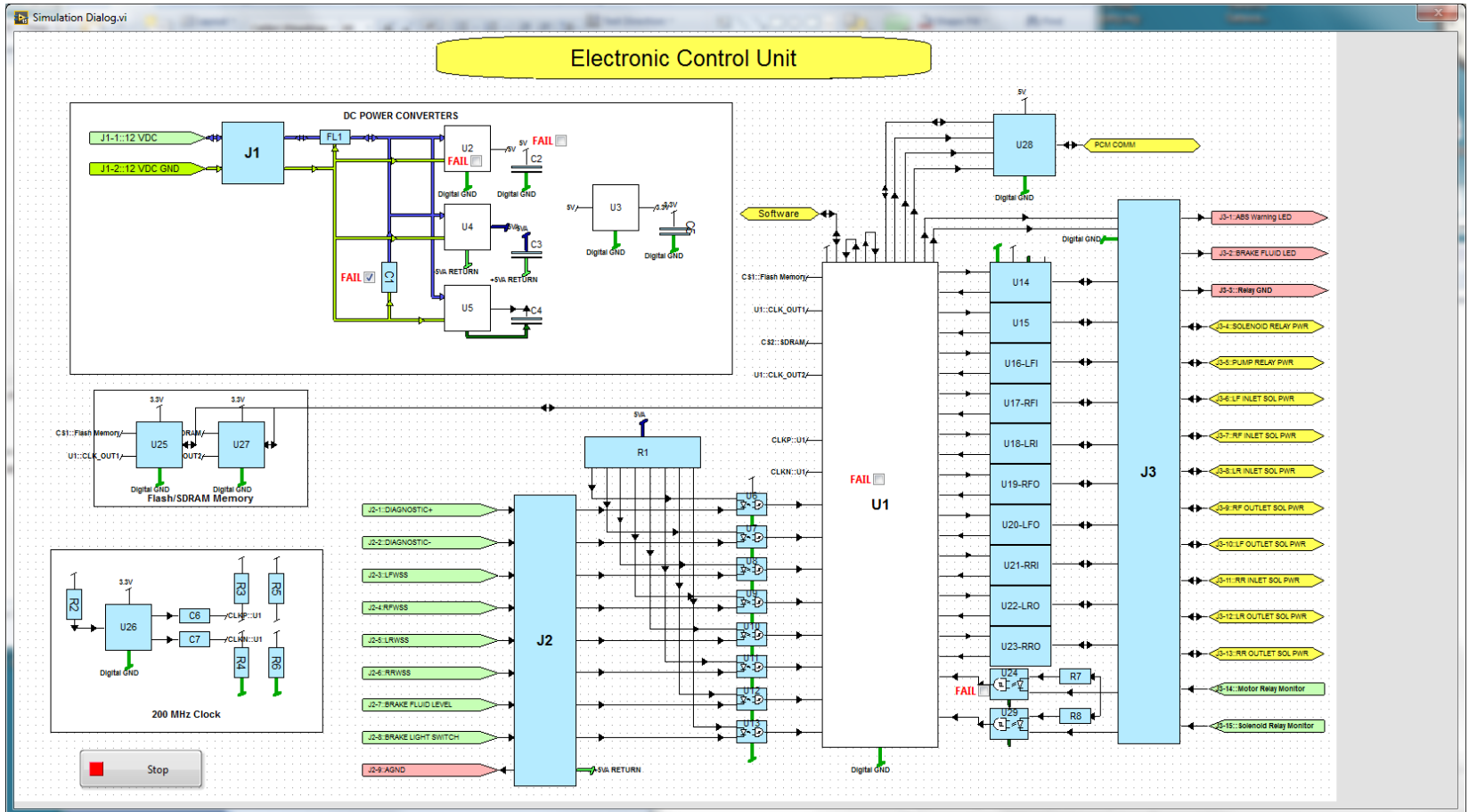
Step	Status	Measurement	Limits		
			Low Limit	High Limit	Comparison Type
TestGroupSequenceEntryPoint	Done				
AD_Conversion_Failed	Passed				
TestResults/Data					

Call Stack

There are no steps selected.

User: administrator | Model: SequentialModel Seq | Report Location: D:\VATS Framework\ATCDemo\ATC...

Fault (Simulator)





Failed Test Results

NI TestStand - Sequence Editor [Edit]

Serial#: 01 Test UUTs - ECU[09 15 2016] [17 45 40].seq

Report

ATML TestResult Report

TestStation	UKBH7304
UUT Serial Number	01
UUT Type	hardware
Start Date and Time	10/03/2016 3:48:34 PM
End Date and Time	10/03/2016 3:48:34 PM
Operator	administrator
Sequence File Path	D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq
Number of Results	9
Outcome	Failed

Expand All / Collapse All

Begin Sequence : MainSequence
(D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq)

Step	Status	Measurement	Limits		
			Low Limit	High Limit	Comparison Type
SequenceCall	Failed				

Begin Sequence : StaticDiagProc_1
(D:\VATS Framework\ATCDemo\ATC2016\eXpress Model and Diagnostics\ECU[09 15 2016][17 45 40].seq)

Step	Status	Measurement	Limits		
			Low Limit	High Limit	Comparison Type
TestGroupSequenceEntryPoint	Done				
AD_Conversion_Failed	Failed				
TestResults/Data					

Steps Variables Report

Call Stack

- MainSequence - Main (ECU[09 15 2016][17 45 40].seq)
- Test UUTs - Main (SequentialModel.Seq)

There are no steps selected.

User: administrator Model: SequentialModel Seq Report Location: D:\VATS Framework\ATCDemo\ATC...



DSI Workbench

The screenshot displays the DSI Workbench software interface. The main window is titled "Monitoring - No Test Results". On the left, a "Guided Troubleshooting" panel shows a "Pass" status with a "Detected Failure: None" and "Current Step: Test 1-0 AD_Conversion_Failed". Below this, a "Check for Failures:" section lists various diagnostic inputs for U1, including RISC processor, solenoid relay status, and multiple inlet/outlet solenoid control diagnostic inputs. A "Primary Suspects" section is also visible.

The central area features a detailed wiring diagram of an "Electronic Control Unit" (ECU). The diagram shows the ECU (U1) connected to various components, including solenoid relays (J1, J2, J3) and diagnostic inputs. Blue arrows indicate the flow of data or power between the ECU and these components.

On the right side, there is a 3D rendering of a physical ECU component, showing its internal circuitry and connectors.

The bottom of the interface is labeled "Diagnostic Status View".



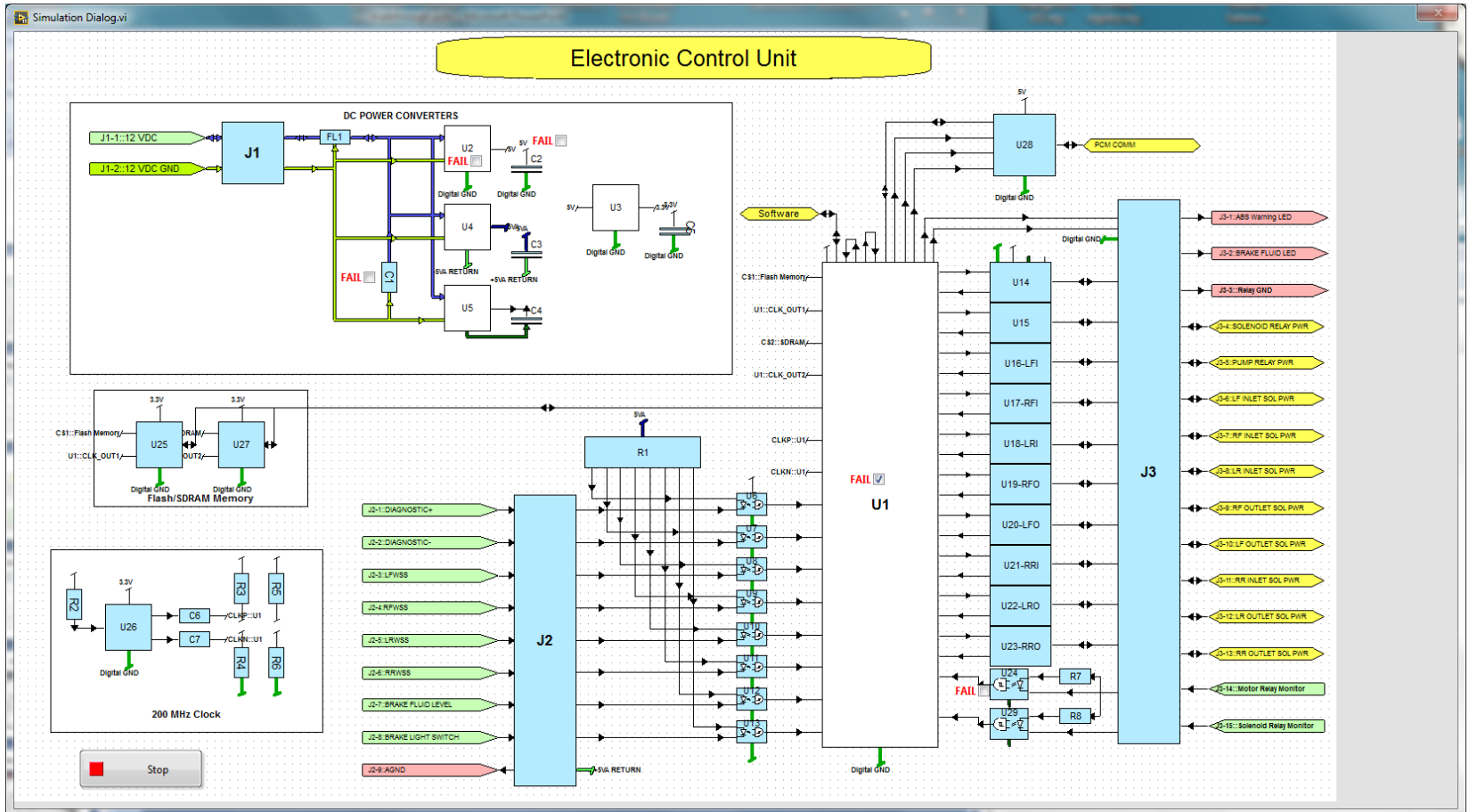
Reading Test Results

The screenshot displays the DSI Workbench software interface. At the top, a red banner reads "Fault Detected - Test Results on 03/10/2016 15:48:34". The main window is divided into several sections:

- Left Panel (Guided Troubleshooting):** Shows a "Retest" section with a "Detected Failure: AD_Conversion_Failed" and "Current Step: Fault Group # 1 Replace C1". Below this, it lists "Replace 1 Item" and "Replace:" with a list: "C1", "Failed Short", and "Failed Open".
- Bottom Left Panel (Primary Suspects):** Shows "Suspect Item" and "Suspect Failure" with "C1" listed.
- Center Panel:** A schematic diagram of an "Electronic Control Unit" (ECU) showing internal components like J1, U1, and J2, along with various electrical connections and components.
- Right Panel:** A 3D perspective view of the physical ECU hardware, showing its various ports and components.

The bottom of the window is labeled "Diagnostic Status View".

New Failure U1



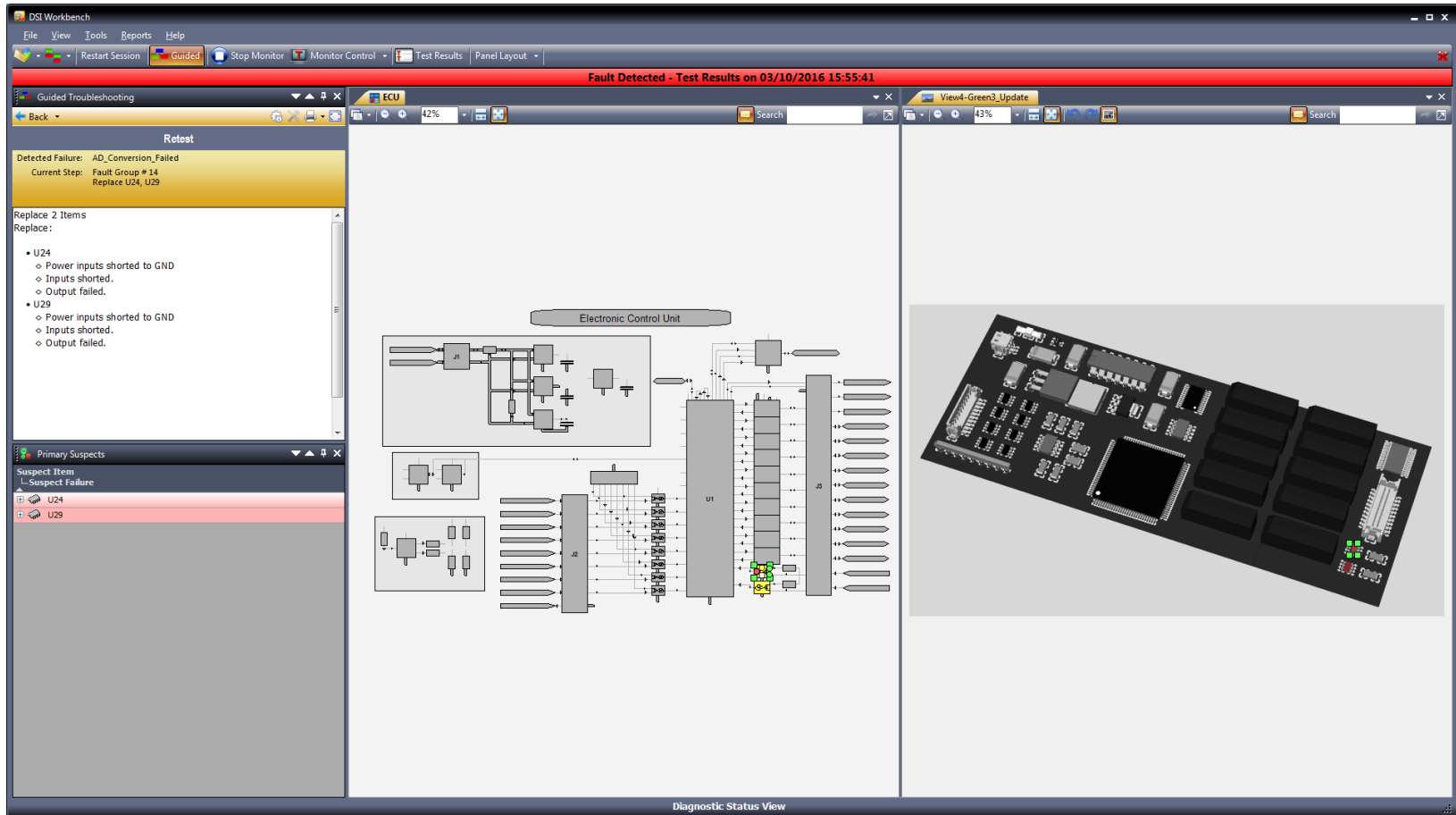


Test Results U1 - Failure

The screenshot displays the DSI Workbench diagnostic interface. At the top, a red banner reads "Fault Detected - Test Results on 03/10/2016 15:52:33". The main window is divided into several panels:

- Guided Troubleshooting:** Shows a "Retest" section with the following details:
 - Detected Failure: AD_Conversion_Failed
 - Current Step: Fault Group # 0
 - Replace U1
- Replace 1 Item:** Lists the item to be replaced:
 - Replace 1 Item
 - Replace:
 - U1
 - RISC processor failed
- Primary Suspects:** Shows a tree view with "Suspect Item" expanded to "Suspect Failure", which includes "U1".
- Diagnostic Status View:** The central area shows a schematic of the "Electronic Control Unit" (ECU) with a yellow highlight on component U1. To the right is a 3D perspective view of the physical ECU hardware.

Ambiguous Fault Groups



DSI Workbench

File View Tools Reports Help

Restart Session Guided Stop Monitor Monitor Control Test Results Panel Layout

Fault Detected - Test Results on 03/10/2016 15:55:41

Guided Troubleshooting

ECU View4-Green3_Update

Back

Retest

Detected Failure: AD_Conversion_Failed

Current Step: Fault Group # 14
Replace U24, U29

Replace 2 Items

Replace:

- U24
 - Power inputs shorted to GND
 - Inputs shorted.
 - Output failed.
- U29
 - Power inputs shorted to GND
 - Inputs shorted.
 - Output failed.

Primary Suspects

Suspect Item

- ↳ Suspect Failure
- ↳ U24
- ↳ U29

Electronic Control Unit

U1

J1

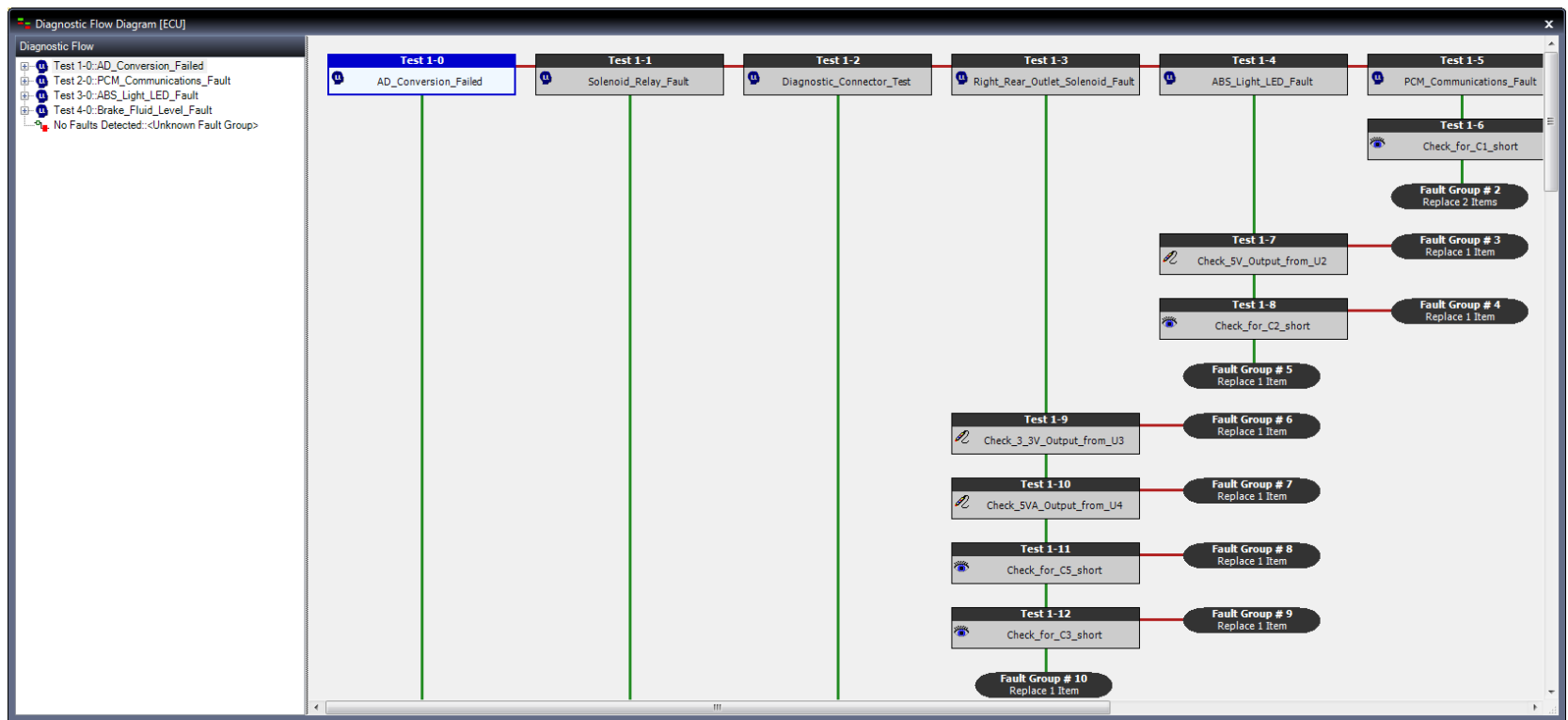
J2

J3

Diagnostic Status View



Diagnostic Tree





Step By Step Diagnostics



Step By Step Diagnostics

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-1	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	

Call Stack:
StaticDiagProc_1 - Main (ECU[09 15 2016][17 45 40].seq)
MainSequence - Main (ECU[09 15 2016][17 45 40].seq)
Test UUTs - Main (SequentialModel Seq)

Properties: Module Data Source
Call Type: VI Call
Project Path: (No file specified)
VI Path: CodeModules_ECU\Solenoid_Relay_Fault.vi
D:\VATS Framework\ATCDemo\ATC2016\Xpress Model and Diagnostic\Co
Parameter Name Type In/Out Log Default Value

Fault Detected - Test Results on 05/10/2016 10:44:53

Failed Failure: AD_Conversion_Fault
Current Step: AD_Conversion_Fault

Check for Failures:
- ECU processor
- Solenoid relay control diagnostic input.
- Solenoid relay control.

Hardware Modules:
- U2B
- U2B-VCC
- U2B
- U2B-VCC
- U2B-Digital GND
- U2B
- Solenoid GND
- U2B

Hardware Modules:
- C1
- C2
- C3
- C4
- C5
- C6
- C7
- C8
- P1
- P2
- P3
- P4
- P5
- P6
- P7
- P8
- P9
- P10



Step By Step Diagnostics

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Running
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	

Fault Detected - Test Results on 05/10/2016 10:46:10

Check for Failures

- ASIC processor
- Diagnostic connector input detect
- 5V Digital GND
- 5V
- 5V-Analog GND
- 5VKA
- R1
- R11
- R12
- R13
- R14
- R15
- R16
- R17
- R18
- R19
- R20
- R21
- R22
- R23
- R24
- R25
- R26
- R27
- R28
- R29
- R30
- R31
- R32
- R33
- R34
- R35
- R36
- R37
- R38
- R39
- R40
- R41
- R42
- R43
- R44
- R45
- R46
- R47
- R48
- R49
- R50



Step By Step Diagnostics

The screenshot shows the NI TestStand Sequence Editor interface. The main window displays a sequence of test steps for an ECU. The steps are listed in a table with columns for Step, Description, Settings, and Status.

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed

The bottom panel shows the Call Stack and Properties for the selected step, 'Right_Rear_Outlet_Solenoid_Fault'. The Properties section includes fields for Project Path, VI Path, and Parameter Name.

The screenshot shows the NI Research software interface. A red banner at the top indicates a 'Fault Detected - Test Results on 05/10/2016 10:47:45'. The main window displays a schematic diagram of an Electronic Control Unit (ECU) with various components highlighted in yellow. A 3D model of the ECU is shown on the right side of the interface.



Step By Step Diagnostics

The screenshot shows the NI TestStand Sequence Editor interface. The main window displays a sequence of test steps for an ECU. The steps are listed in a table with columns for Step, Description, Settings, and Status.

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed

The bottom panel shows the 'Step Settings' for the selected 'ABS_Light_LED_Fault' step, including fields for Project Path, VI Path, and Parameter Name.

The screenshot shows the NI TestStand Results Viewer interface. The top status bar indicates 'Fault Detected - Test Results on 05/10/2016 10:48:54'. The main window displays a detailed diagnostic report for the 'ABS_Light_LED_Fault' step, including a list of 'Check for Failures' and a 'Diagnostic Monitor View' showing a wiring diagram and a photograph of the ECU hardware.

The 'Check for Failures' section lists the following items:

- ASIC processor
- Pump relay status default
- Solenoid relay status check
- Right rear outlet solenoid control diagnostic input
- Right front outlet solenoid control diagnostic input
- Right rear inlet solenoid control diagnostic input
- Right front inlet solenoid control diagnostic input
- Left rear outlet solenoid control diagnostic input
- Left front outlet solenoid control diagnostic input
- Left rear inlet solenoid control diagnostic input
- Left front inlet solenoid control diagnostic input
- Pump relay control diagnostic input
- Solenoid relay control diagnostic input
- Stable light switch input



Step By Step Diagnostics

The screenshot shows the NI TestStand Sequence Editor interface. The main window displays a sequence of test steps for an ECU. The steps are listed in a table with columns for Step, Description, Settings, and Status.

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	

The Call Stack at the bottom shows the current step settings for 'PCM_Communications_Fault'.

Parameter Name	Type	In/Out	Log	Default	Value
PCM_C					

The screenshot shows the NI Research software interface. A red banner at the top indicates a 'Fault Detected - Test Results on 05/10/2016 10:05:55'. The main window displays a schematic diagram of an Electronic Control Unit (ECU) with various components highlighted in yellow. A photograph of the physical ECU hardware is shown on the right side of the interface.



Step By Step Diagnostics

The screenshot shows the NI TestStand Sequence Editor interface. The main window displays a sequence of test steps for an ECU. The steps are listed in a table with columns for Step, Description, Settings, and Status.

Step	Description	Settings	Status
Setup (0)			
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Passed
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5V_Output_from_U2	Pass/Fail Test, Check_5V_Output_from_U2.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C2_short	Pass/Fail Test, Check_for_C2_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_3.3V_Output_from_U3	Pass/Fail Test, Check_3.3V_Output_from_U3.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_5VA_Output_from_U4	Pass/Fail Test, Check_5VA_Output_from_U4.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C5_short	Pass/Fail Test, Check_for_C5_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C3_short	Pass/Fail Test, Check_for_C3_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Left_Front_Inlet_Solenoid_Fault	Pass/Fail Test, Left_Front_Inlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_12V_Output_from_U5	Pass/Fail Test, Check_12V_Output_from_U5.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Check_for_C4_short	Pass/Fail Test, Check_for_C4_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed

The bottom panel shows the Call Stack and Step Settings for the selected step, 'Check_for_C1_short'. The Call Stack includes: StaticDiagProc_1 - Main (ECU[09 15 2016][17 45 40].seq), MainSequence - Main (ECU[09 15 2016][17 45 40].seq), and Test UUTs - Main (SequentialModel Seq).

The screenshot shows the NI Research software interface. The top status bar indicates a 'Fault Detected - Test Results on 09/10/2016 16:31:13'. The main window displays a diagnostic test result for 'Check for Failures' with a 'Fail' status. The test results are shown in a table:

Failed Failure	Current Step
AD_Conversion_Failed	Check_for_C1_short

The interface also shows a hardware diagram of the Electronic Control Unit (ECU) and a photograph of the physical ECU hardware.



Step By Step Diagnostics

Step	Description	Settings	Status
Setup (0)			Done
Main (429)			
TestGroupSequenceEntryPoint	Goto AD_Conversion_Failed	Post Action, Attributes	Done
Test 1-0			
AD_Conversion_Failed	Pass/Fail Test, AD_Conversion_Failed.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-1			
Solenoid_Relay_Fault	Pass/Fail Test, Solenoid_Relay_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-2			
Diagnostic_Connector_Test	Pass/Fail Test, Diagnostic_Connector_Test.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-3			
Right_Rear_Outlet_Solenoid_Fault	Pass/Fail Test, Right_Rear_Outlet_Solenoid_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-4			
ABS_Light_LED_Fault	Pass/Fail Test, ABS_Light_LED_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed
Test 1-5			
PCM_Communications_Fault	Pass/Fail Test, PCM_Communications_Fault.vi	Post Action, Ignore Errors, Additional Results, Attributes	Passed
Test 1-6			
Check_for_C1_short	Pass/Fail Test, Check_for_C1_short.vi	Post Action, Ignore Errors, Additional Results, Attributes	Failed

Fault Detected - Test Results on 05/10/2016 16:22:53

Selected Failure: AD_Conversion_Failed
Current Step: Fault Group #1
Reference: CS

Predefined 3 Item Properties:
+ CS
+ Failed Short
+ Failed Open



Adding Resolution and Repair History



DSI Workbench User: Default User

File View Tools Reports Tickets Help

Restart Session Guided Stop Monitor Monitor Control Test Results Panel Layout

Fault Detected - Test Results on 04/10/2016 15:33:21

Ticket

Ticket: 000010

LUT: Serial Number: 01 Ticket Status: Open

LUT: ECU Open Date: 04/10/2016 15:33:32

Version: 1 Closed Date:

Ticket Action Log

Action	Summary	User	Date/Time
Ticket Action: Open	Ticket Opened	Default User	04/10/2016 ...
Session Action: Started	Started Session.	Default User	04/10/2016 ...

Resolution History

List By: Most Recent Date Count Filter By

Resolution	Resolution Count
Component Failure Replaced Components	1
Resolution: Replace C1	1

Guided Troubleshooting

Back

Reset

Detected Failure: [Ticket 000010] AD_Conversion_Failed

Current Step: Fault Group # 1
Replace C1

Replace 1 Item

Replace:

- C1
 - Failed Short
 - Failed Open

Primary Suspects

Suspect Item

Suspect Failure

C1

ECU

41%

Electronic Control Unit

View4-Green3_Update

42%

Diagnostic Status View



Step By Step Diagnostics

DSI Workbench User: Default User

File View Tools Reports Tickets Help

Restart Session Guided Stop Monitor Monitor Control Test Results Panel Layout

Fault Detected - Test Results on 04/10/2016 15:35:10

Ticket: 000010

LUT: Serial Number: 01 UUT: ECU Version: 1

Ticket Status: Open

Open Date: 04/10/2016 15:33:32

Closed Date:

Ticket Action Log

Action	Summary	User	Date/Time
Ticket Action: Open	Ticket Opened	Default User	04/10/2016 ...
Session Action: Started	Started Session.	Default User	04/10/2016 ...
Session Action: Resta...	Restarted All Testing	Default User	04/10/2016 ...

Guided Troubleshooting

Back

Retest

Detected Failure: [Ticket 000010] AD_Conversion_Failed

Current Step: Fault Group # 0
Replace U1

Replace 1 Item

Replace:

- U1
 - RISC processor failed

Electronic Control Unit

View4-Green3_Update

Resolution History

List By: Most Recent Date Count Filter By

Resolution	Resolution Count
Component Failure Replaced Components	1
Resolution: Replace U1	1

Primary Suspects

Suspect Item

Suspect Failure

U1

Diagnostic Status View



Step By Step Diagnostics

The screenshot displays the DSI Workbench diagnostic software interface. The main window title is "Fault Detected - Test Results on 04/10/2016 15:36:32". The interface is divided into several panes:

- Ticket Pane:** Shows ticket details for ID 000010, UUT ECU, and status Open. It includes a "Ticket Action Log" table with the following data:

Action	Summary	User	Date/Time
Ticket Action: Open	Ticket Opened	Default User	04/10/2016 ...
Session Action: Started	Started Session.	Default User	04/10/2016 ...
Session Action: Resta...	Restarted All Testing	Default User	04/10/2016 ...
Session Action: Resta...	Restarted All Testing	Default User	04/10/2016 ...
- Guided Troubleshooting Pane:** Shows a "Reset" step with a detected failure: "[Ticket 000010] AD_Conversion_Failed". The current step is "Fault Group # 14" with the instruction "Replace U24, U29".
- Primary Suspects Pane:** Lists suspect items: U24 and U29, both marked as "Suspect Failure".
- Resolution History Pane:** Shows a list of resolutions with counts:

Resolution	Resolution Count
Component Failure Replaced Components	3
Resolution: Replace U24	3
- ECU Diagram Pane:** Displays a schematic diagram of the Electronic Control Unit (ECU) with components U1, U2, and U3 labeled.
- View4-Green3_Update Pane:** Shows a photograph of the physical ECU hardware.

The bottom status bar indicates "Diagnostic Status View".