
Date: 8/18/2017
Subject: TriPac EVOLUTION Communications Update
Bulletin Location: TSA Info Central\Service Bulletins

Units: All TriPac EVOLUTION

Summary: This bulletin updates and replaces TT760. Computers with Microsoft Windows 10, Version 1607 and later, are not able to communicate with TriPac EVOLUTION through TK Monitor or previous service tool software. A new EVOLUTION Service Tool R2 has been released to allow all Windows computers to communicate with the TriPac EVOLUTION Base Controller. The EVOLUTION Service Tool R2 will be installed on the service computer. It retains all the features found in TK Monitor. The EVOLUTION Service Tool R2 software is available on Thermo King Info Central and will be on the www.thermoking.com Website. Uninstall and delete the previous version of EVOLUTION Service Tool.

Discussion: Thermo King TriPac EVOLUTION units have TK Monitor communication software built into the Base Controller of each unit. It allowed PC type computers to establish two way communications with the EVOLUTION control system without special software being loaded on the computer. Microsoft Windows 10, 8 and updated 7 computers would not communicate with TK Monitor. In 2015 Thermo King developed the first EVOLUTION Service Tool. In 2016 TriPac EVOLUTION software Version 1.7 was released. They were to re-establish communication with Microsoft Windows 10 through Version 1511. When Windows 10 Version 1607 was released communication issues with TK Monitor returned.

The EVOLUTION Service Tool R2 software application has been developed to allow all Windows based computers to communicate with the TriPac EVOLUTION Base Controller. This application software is installed on the service computer. It will communicate directly with the EVOLUTION Base Controller. We are moving toward using a service tool on the service computer as standard. This will allow communication that is not threatened by software changes made by Microsoft.

The EVOLUTION Service Tool R2 is a full function communication tool. It will allow all the features found in TK Monitor. These include setup and run-in of units after installation. It will also allow viewing and clearing of alarms, viewing real time diagnostic information, performing software updates and operation of all Service Test modes. It will also perform datalogger downloads and system restarts.

Availability: The EVOLUTION Service Tool R2 software can be downloaded from TSA Info Central/Software and Downloads/APU/EVOLUTION Service Tool R2. We plan to make it available

on the www.thermoking.com Website. The downloaded zip file must be extracted and saved on the service computer. Uninstall and delete the previous version of EVOLUTION Service Tool.

Communication Using EVOLUTION Service Tool R2

Where Used

All TriPac EVOLUTION units if the Microsoft Windows service computer is having difficulty communicating with the TriPac EVOLUTION Base Controller.

Purpose

External communication with the Base Controller on the TriPac EVOLUTION Interface Board through TK Monitor is not possible when using a Microsoft Windows 10 Version 1607 computer. The EVOLUTION Service Tool R2 will be installed on the service computer to allow access to the Base Controller using a proprietary interface. The EVOLUTION Service Tool R2 will use the USB plug (J39) on the Interface Board and a USB cable with a Mini B connector (P/N 204-2000). Communication will require the use of an IBM compatible PC service computer. The EVOLUTION Service Tool R2 is not dependent on Microsoft Internet Explorer and will work with all versions of Microsoft Windows.

The EVOLUTION Service Tool R2 will retrieve real time information from the TriPac EVOLUTION Base Controller and display it on the service computer. The EVOLUTION Service Tool R2 will provide a system interface to flash load system upgrades, program system features, view real time system information, initiate Service Test Modes and allow alarm clearing capabilities. It will also allow a data logger down load and Cold Restart.

Materials Required

- PC type computer.
- EVOLUTION Service Tool R2 software installed on service computer.
- USB to Mini B interconnect cable. (204-2000)

Unable to Communicate Using EVOLUTION Service Tool R2

If the service computer is not able to communicate with the TriPac EVOLUTION Base Controller using the EVOLUTION Service Tool R2 perform the following:

1. Verify TriPac EVOLUTION system is turned on at the HMI.
2. Remove the cover from the system control box.
3. Check the status of the green ON LED on the interface board.
 - a. Blinking once per second = Normal. Controller is communicating. Check service computer for proper connections.

- b. Off = Controller is not reacting to the ON signal from the HMI. Refer to Diagnostic Manual Section 5, HMI Control Panel Diagnosis.
- c. Blinking more than once per second = Controller is stuck in boot mode and not communicating. Refer to Diagnostic Manual, Section 6, A57A, Power Cycle Base Controller.

Menus

The following menu choices are on tabs at the top of the screen. They allow direct access to desired system features:

Dashboard

When the EVOLUTION Service Tool R2 is started the Dash Board screen will always appear first. This screen provides the technician quick access to basic operating information such as APU engine status, A/C or Heat operation, system electrical status, hour meters, and alarm status.

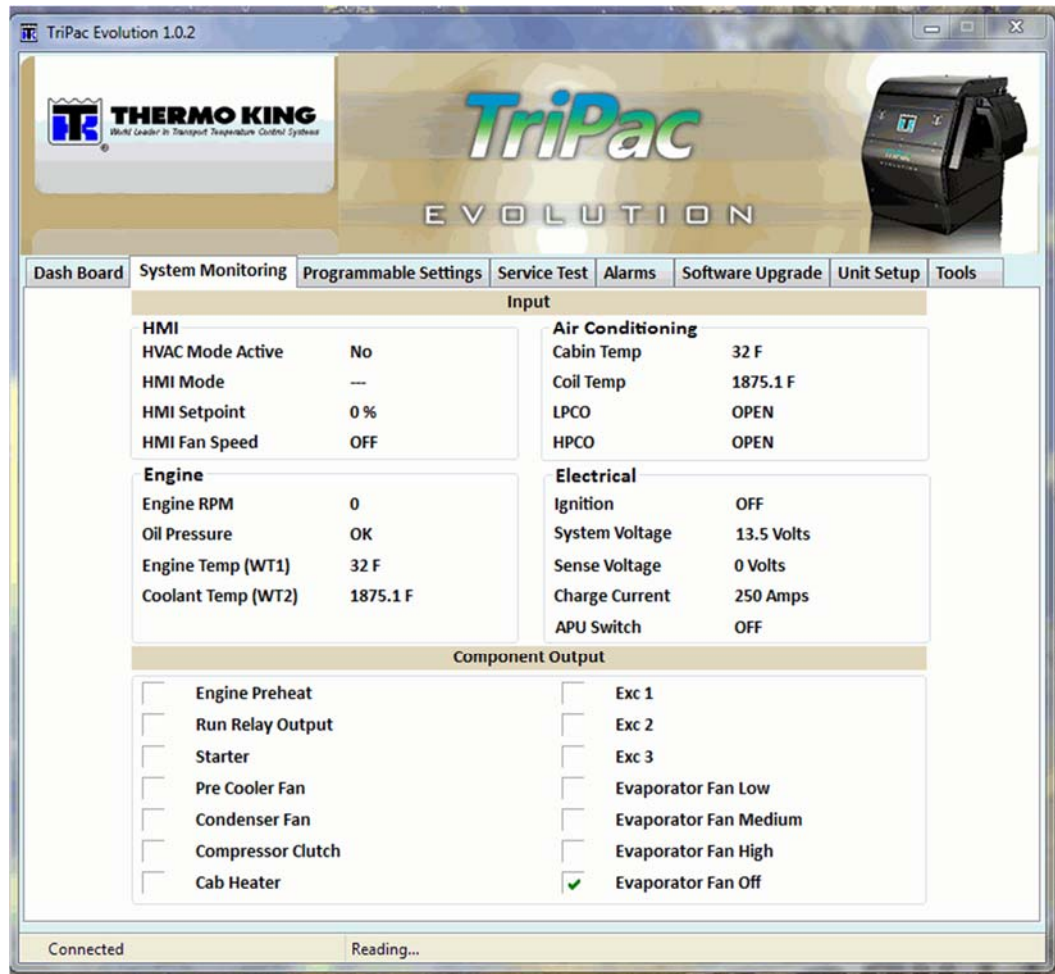
NOTE: Red numbers indicate values that are changing.



System Monitoring

The TriPac EVOLUTION System Monitoring screen provides the technician with detailed real time system information to evaluate the operation of different areas of the unit. This expanded information can be helpful when diagnosing system issues.

NOTE: Red numbers indicate values that are changing.



System Monitoring information is divided into two main sections; Input and Component Output.

Input: Provides sensor readings and system state. Information is divided into four boxes.

- HMI = Indicates the current settings of the HMI Control Panel.
- Engine = Indicates current engine RPM, oil pressure switch status and engine coolant temperatures.
- Air Conditioning = Indicates system temperatures and pressure switch status.
- Electrical = Indicates volt and amp readings for the system along with the position of some control switches.

Component Output: Provides the On/Off state of interface board outputs to system components.

- A check in the box indicates a component output has been energized by the control system.

Programmable Settings

This screen provides a central location to view or change the value for all of the programmable features. Refer to Diagnostic Manual Section 3, Software Description for information about the available programmable features. Select a feature. Click on the arrows to scroll up or down to the desired setting. New settings for multiple features may be selected. If Set System Clock is checked the controller real time clock will be set to match system time of the connected computer. All changes will be saved when the Update Setup button is clicked.

NOTE: System will not accept changes if Password Protection is set to YES. Enter password and retry. The Password boxes near the bottom of the screen will be greyed out and inactive unless the Password Protection feature is programmed Yes.

The screenshot displays the 'TriPac Evolution 1.0.2' software window. The 'Programmable Settings' tab is active, showing various configuration options. The interface includes a top navigation bar with tabs for Dash Board, System Monitoring, Programmable Settings, Service Test, Alarms, Software Upgrade, Unit Setup, and Tools. The main content area is divided into sections for Current Settings, Change Password, and Update Settings. The Current Settings section contains two columns of settings, each with a label, a radio button or input field, and a unit. The Change Password section has fields for Old Password, New Password, and Status, along with a Change Password button. The Update Settings section has a Password field and an Update Settings button. The bottom status bar shows 'Connected' and 'Reading...done'.

Current Settings	
Temperature settings	<input checked="" type="radio"/> Fahrenheit <input type="radio"/> Celsius
Password Protection	<input type="radio"/> Yes <input checked="" type="radio"/> No
Switch To Monitor	<input checked="" type="radio"/> Yes <input type="radio"/> No
DL Logging Interval	5 Mins
Minimum Charge Duration	0 Mins
HMI Display Brightness	7
Run Time Period	0 Hours
Cooling Dead Band	3
Battery Voltage Restart Value	12.2 Volts
Low Temp Limit Cool	65 F
High Temp Limit Cool	81 F
Low Temp Limit Heat	50 F
HighTemp Limit Heat	81 F
Charge Current Shutoff Value	12.0 Amps
Engine Off Delay Timer	8 Mins
Real Time Clock	Aug 11, 17 11:30:34
	<input type="checkbox"/> Set System Clock

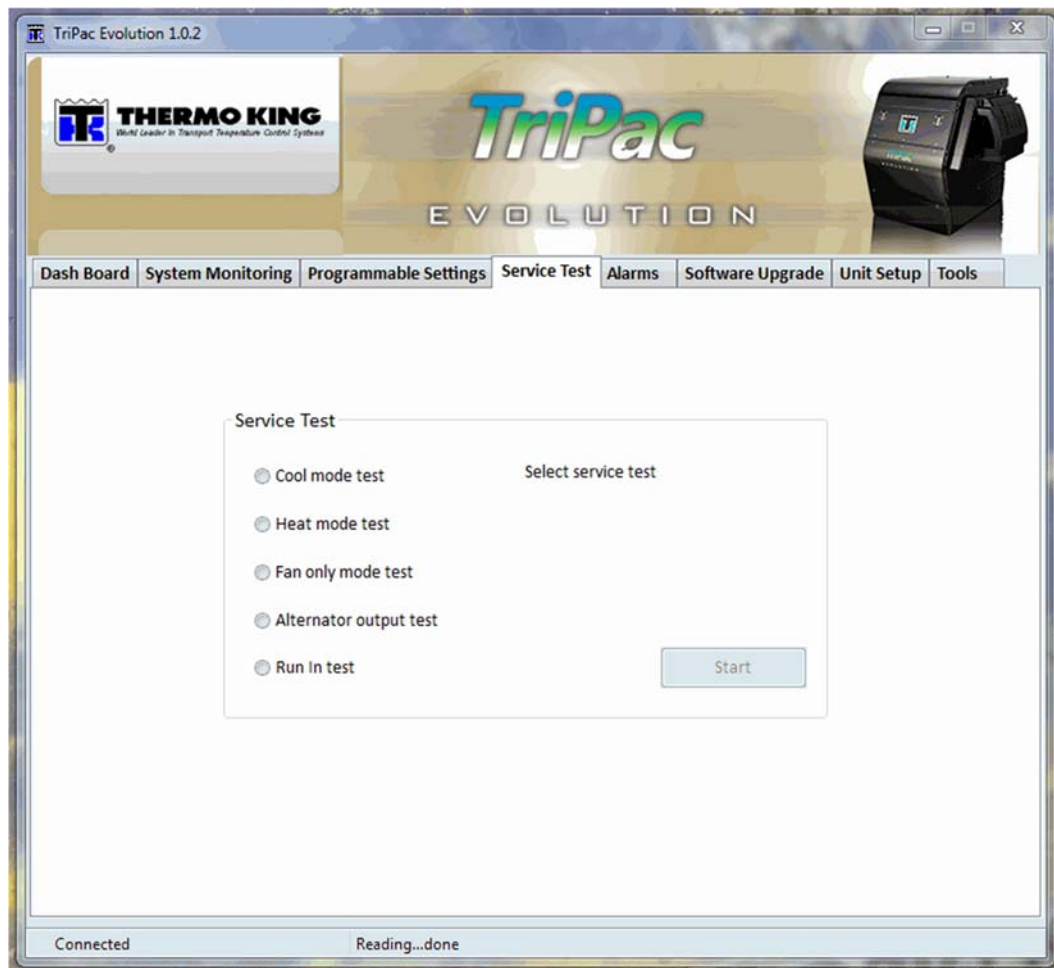
Change Password	
Old Password	
New Password	
Status	
Change Password	

Update Settings	
Password	
Status	
Update Settings	

Connected Reading...done

Service Test

The Service Test Mode screen in EVOLUTION Service Tool R2 allows the technician to force the system into a specific operating mode for up to 15 minutes. This ability can be helpful when diagnosing system issues. Available tests are; Cool Mode, Heat Mode, Fan Only Mode, Alternator Output and Run In. The current test must be canceled before selecting a new one. If a Service Test is initiated while the system is running the current operation will terminate and the selected mode will begin.



Once selected, a test will be active for 15 minutes. "Running Service Test" will display in the upper right of the screen while a test is active. Once a test is selected the "Run Test" button will change to "Cancel Test". When changing to a new test the current test must first be canceled. If the test is not canceled before the timer has expired, an alarm code 54 shutdown will generate. If any shutdown alarm occurs during the test the unit will record the alarm, exit Service Test Mode and shut down. When the alarm is cleared the unit will return to operation with the settings stored prior to entering Service Test Mode. Following is a description of the available modes.

While operating in a Service Test Mode the Dashboard, System Monitoring and Alarm screens are available. This will allow the technician to gather real time diagnostic information. Shutdown alarms are still actively protecting the system.

NOTE: Operator should wait for system response before selecting new setting or changing to a new screen.

Cool Mode Test:

Use to check operation of air conditioning system where cool ambient conditions prevent normal activation. The APU engine will start or continue to run. The compressor, evaporator fan and condenser fan are turned on. The evaporator fan will run at the driver selected speed (default minimum low speed). Fan speed may be changed at the HMI while in the test. Setpoint and cab temperature are not monitored. The compressor may start and stop during the test based on the Low Pressure Cutout (LPCO) or evaporator coil temperature below 32 F. The functions of heat mode are disabled. When the optional 120 amp alternator is installed and 120 Amps option selected during Unit Setup, load management is required as in regular cool mode. See Diagnostic Manual Cool Section 4, Engine Load Management.

Heat Mode Test:

Use to check operation of the cab heater where warm ambient conditions prevent normal activation. The interface board heat output circuit (YEL, J13-2) is turned on. The HMI setpoint setting is set to maximum (90 F [32 C]). If cab temperature is higher than maximum setpoint the heater will not start. The other functions of Fan and Cool modes are disabled. The APU engine will not run. When Heat Mode Test is terminated the heater will enter a cool down mode.

Fan Only Mode Test:

Use to check operation of system fans. Evaporator, condenser and pre-cooler fans are on. Evaporator fan speed can be changed at the HMI. The other functions of Heat and Cool modes are disabled. The APU engine will not run. This is the only way to force the pre-cooler fan to run.

Alternator Output Test:

Use to check 120 amp alternator output while ambient and cab temperatures are high. The APU engine will start or continue to run. Air conditioning compressor operation is disabled. Engine Load Management system is temporarily disabled. The FLD1 circuit will be grounded. Without Load Management active the optional 120 amp alternator is allowed to charge at the full output requested by the voltage regulator, even in high ambient conditions. Has no effect on the 65 amp charging system.

NOTE: The test does not force the alternator to maximum output. It is not "Full Field".

Run In Test:

Use after new unit installation to perform the required 10 hour run in. This test allows the air conditioning system to continue operating to load the engine when ambient and/or cab temperature is low. This is done by allowing the heater to run while air conditioning. The test does not guarantee the APU engine will run for 10 hours. It creates conditions to help the engine run with a load when ambient temperature is below normal air conditioning range.

The test mode will initiate a 10 hour timer. The engine will start or continue to run. The air conditioning system will be activated. Cool setpoint will be set to 60 F. Evaporator Coil and Cab Temperature sensors along with pressure switches are functional. Compressor may cycle based on setpoint, cab temperature, coil temperature and system pressure. Heat system will also be activated. Heat setpoint will be set to 80 F. It is intended the heater will help keep cab temperature high enough for the air conditioning system to operate.

When ambient temperature is below 60 F the heater begins to have difficulty keeping the cab temperature above setpoint. The compressor may cycle on/off based on setpoint or the Coil Temperature sensor. If system suction pressure is low the LPCO may open, temporarily stopping the air conditioning function. If this occurs three times in an hour an alarm code 93 may generate. Air conditioner operation will stop. The Run In test does not force the engine to run. As ambient temperature falls so will engine run time during the 10 hour Run In Test. If cab temperature remains below setpoint for more than eight minutes the engine may cycle off. Cab temperature must rise more than three degrees above setpoint before the engine will restart. Engine Load Management will be active if the 120 Amps option was selected during Unit Setup.

EVOLUTION Service Tool R2 may be turned off and computer disconnected while Run In Test is running. At the end of the 10 hour run in period the system will shut down with an alarm in the [ENG] group. It will be a code 54, Test Mode Timeout. Turning system off at the HMI will clear the alarm. Best practice would be to reconnect EVOLUTION Service Tool R2. Verify there are no additional alarms and that the hour meter reads some engine run time. The code 54 should be cleared.

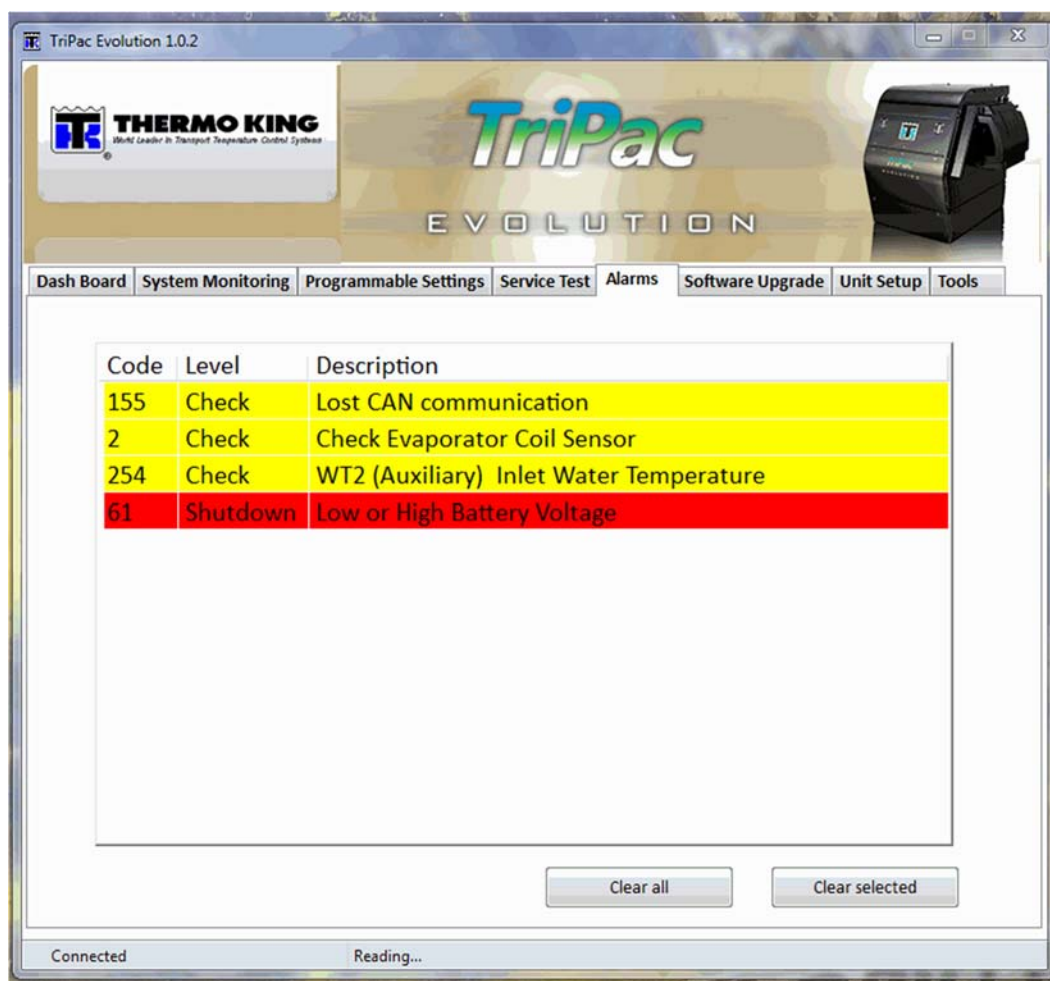
NOTE: Changing system mode at HMI or entering Standby mode will cancel the Run In test. Do not start and move truck once Run In test has been started.

Alarms

The Alarms screen allows the technician to view alarm history and clear alarms. Alarms that are cleared by turning the HMI OFF/ON will remain on the list as inactive and can be cleared along with the active alarms through the Alarm screen. The screen will indicate the level of each alarm. It will also allow alarms to be cleared. Cleared alarms remain in data logger memory. Alarm history may be viewed in a download.

NOTE: Active alarms cleared from the alarm list by the EVOLUTION Service Tool R2 will not be reset until the system is turned Off at the HMI.

Refer to Diagnostic Manual Section 5, Diagnostics, Alarm Codes for additional information.



Software Upgrade

The currently installed software revisions for Controller, HMI and TK Monitor will be listed. Software upgrades can be flash loaded for the Controller or HMI. Software for TK Monitor can also be upgraded through this screen. For detailed information about specific system software features refer to Diagnostic Manual Section 3, Software Description. Also review the Service Bulletin published at the time of software release.

NOTE: System will not accept changes if Password Protection is set to YES. Enter password and retry.

The screenshot shows the 'Software Upgrade' tab of the TriPac Evolution 1.0.2 software. The interface includes a header with the Thermo King logo and a navigation bar with tabs: Dash Board, System Monitoring, Programmable Settings, Service Test, Alarms, Software Upgrade (selected), Unit Setup, and Tools. The main content area displays the current software versions for the Controller (41.08), HMI (00.00.00), and TK Monitor (1.0.2). Below this, there is a 'Software upgrade' section with a 'Status' label, a 'Progress' bar, a 'File' label, and a 'Password' input field. At the bottom of this section are 'Select file' and 'Upgrade software' buttons. The status bar at the bottom indicates 'Connected' and 'Reading...done'.

Current version					
Controller	41.08	HMI	00.00.00	TK Monitor	1.0.2

Software upgrade

Status

Progress

File

Password

Select file Upgrade software

Connected Reading...done

Unit Setup

This screen provides access to unit configuration and identification settings. These settings will typically be made when the unit is installed. Failure to setup the unit to match the hardware configuration will cause operating issues. Failure to program unit information will make datalogger files difficult to identify. Refer to Diagnostic Manual Section 3, Software Description for information about all available configuration settings.

NOTE: System will not accept changes if Password Protection is set to YES. Enter password and retry.



The screenshot displays the 'TriPac Evolution 1.0.2' software window. The title bar shows the application name. The main window features a header with the 'THERMO KING' logo and the 'TriPac EVOLUTION' branding. Below the header is a navigation menu with tabs: 'Dash Board', 'System Monitoring', 'Programmable Settings', 'Service Test', 'Alarms', 'Software Upgrade', 'Unit Setup' (which is currently selected), and 'Tools'. The 'Unit Setup' section is divided into two main areas: 'Unit Setup' and 'Update Settings'. The 'Unit Setup' area contains several configuration fields: 'Alternator Capacity' set to '65 Amps', 'Engine Cooling Option' set to 'Arctic', 'Unit Serial Number' (empty), 'Unit Id' set to 'tt4dlf', 'Engine Hours' set to '2000', 'Cool Hours' set to '1000', and 'Heat Hours' set to '500'. Each of these fields has a small up/down arrow icon to its right. The 'Update Settings' area includes a 'Password to Update Settings' field (empty) and a 'Status' field (empty). Below these fields is an 'Update Settings' button. At the bottom of the window, a status bar shows a green checkmark icon followed by the text 'Connected' and 'Reading...done'.

Unit Setup	
Alternator Capacity	65 Amps
Engine Cooling Option	Arctic
Unit Serial Number	
Unit Id	tt4dlf
Engine Hours	2000
Cool Hours	1000
Heat Hours	500

Update Settings	
Password to Update Settings	
Status	
<button>Update Settings</button>	

Connected Reading...done

Tools

This is a technician access Tools screen. It provides access to advanced system service functions. Click on the Tools tab. A box will appear that says “Tools Password”. Type 4444 in the Password box, click OK.

NOTE: During normal system monitoring and diagnosis it is not necessary to enter this screen.



Download Datalogger

Selecting the Download datalogger button will allow downloading the information recorded in the controller memory to the attached PC computer. TriPac EVOLUTION data logger files are BIN format and cannot be directly viewed. A file converter is required. See Diagnostic Manual, Service Procedure A50A, TriPac EVOLUTION Data Logger in the TriPac EVOLUTION Diagnostic Manual.

Restarts

Warm Restart: Performing a Warm Restart will reboot the Base Controller on the Interface Board. This is a “soft” restart that is equivalent to power cycling the Interface board (turning system off at the HMI or removing power from #2 terminal). Hour meters, data logger and programmable settings are retained. A Warm Restart may be required after installing a software update.

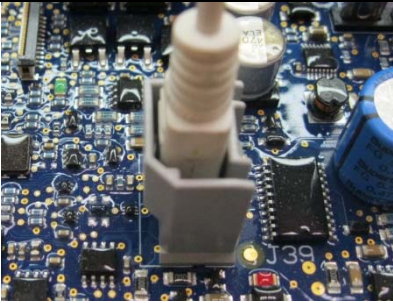

Cold Restart: Performing a Cold Restart will reboot the Base Controller on the Interface Board and reset the Programmable Settings to their default value. Data logger information will be lost. Any active alarms will be cleared and alarm history will be lost. Hour meters are retained. Unit Setup settings are retained. Before performing a Cold Restart the programmable feature settings should be recorded and data logger downloaded if possible.

NOTE: A Cold Restart is not a standard service procedure. It should not be performed unless directed by Minneapolis Service Department or as part of a published service procedure.

Operation Instructions

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Connect To EVOLUTION Service Tool R2

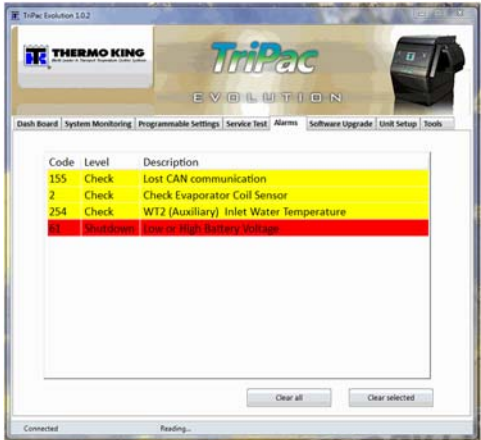
Step	Action	Result	Comments
1	Remove cover from the Control Box		
2	Connect the EVOLUTION Service Tool R2 Adapter Harness (P/N 204-2000) to the J39 plug on the Interface board.		May use USB cable with Mini B connector. Do not connect to PC computer at this time.
3	Turn system on at HMI.	Wait for selected mode icon to stop flashing.	
4	Verify the green LED indicator on the Interface board is flashing.	Should be flashing about once per second.	On power up LED will flash rapidly for a few seconds then rate should return to normal.
5	Start the PC computer.		Wait for the computer to complete the startup process.
8	Use "My Computer" or "Windows Explorer" to locate the EVOLUTION Service Tool R2.exe file downloaded from Thermo King Info Central. Double click to start program.	EVOLUTION Service Tool R2 should open with the Dashboard screen. 	There will be no data in any of the fields. A "Controller Not Connected" box will display.
6	Connect the EVOLUTION Service Tool R2 Adapter Harness to a USB port on the service computer.	Click OK in the "Controller Not Connected" box. Current data will fill in the fields.	Red numbers indicate values that are changing

Step	Action	Result	Comments
7	Disregard any new data drive. It is not used with EVOLUTION Service Tool R2.	If a new drive window opens you should close it.	Do not click on any file in this new drive.


Disconnect From EVOLUTION Service Tool R2

Step	Action	Result	Comments
	If operating in Service Test Mode select Cancel Test in the Service Test screen.	Returns TriPac EVOLUTION system to normal operation.	
1	Disconnect the Adapter Harness from the computer USB port.	A "Lost Communication" box will appear. Unit will continue to operate. Service Test Run In will continue if selected.	Unit data will not be displayed.
2	Exit EVOLUTION Service Tool R2 by closing the program window.	Click X in upper right corner of window.	It does not matter if the Service Tool is closed or adapter harness is disconnected first.
3	Disconnect the Adapter Harness from the Interface board.	Optional: The Adapter Harness may remain connected to the interface board. It should be routed and secured to an easily accessible location.	
4	Shutdown the PC computer.		
5	Replace the Control Box cover.		
6	Verify proper unit operation.		


View and Clear Alarms

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Alarms.	<p>Alarms screen should open. It will display the Alarm Code, Type and Title of the listed alarms.</p> 	If there are no alarms the screen will show "No Active Alarms". The grid will not display.
3	Record the listed alarms.	<p>Red = Active, Shutdown</p> <p>Yellow = Active, Check or Log</p> <p>Gray = Inactive, cleared at HMI</p>	Refer to Diagnostic Manual Section 5, Alarm Code Diagnosis.
4	Clear individual alarms by selecting an alarm. Click the Clear Selected button.	The alarm will be removed from the list.	Alarm may return if alarm condition still exists.
5	Clear entire alarm list by selecting the Clear All button.	NOTE: Active Check or Shutdown alarms cleared from the list will remain active until the system is tuned off at the HMI.	Some alarms may return if alarm conditions still exists.
6	Alarms have been cleared.	Select a new function from the tabs on the top or refer to Disconnect From EVOLUTION Service Tool R2.	All alarms are recorded by the data logger as they occur.


Record or Setup Programmable Features

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Programmable Settings.	<p>Programmable Settings screen should open.</p> 	<p>Programmable Feature setup should be done as part of new unit installation. It will setup the software settings to match customer requirements and set Real Time Clock.</p>
3	Note the programmable feature settings.	<p>If correct: select a new function from the tabs on the top or refer to Disconnect From EVOLUTION Service Tool R2.</p> <p>If incorrect: proceed to next step.</p>	Refer to Diagnostic Manual Section 3, Software Description, Programmable Features.
4	To change setting: Select the desired setting.	Press up/down arrow to scroll through options.	Do not select Update Setup until all desired changes have been selected.
5	Note Real Time Clock.	<p>If correct: proceed to next step.</p> <p>If incorrect: Select the check box next to Set System Clock.</p>	The Real Time Clock will be reset to match the connected computer. There is no ability to set a different time.
6	Select Update Settings	The controller will restart.	A "Lost Communication" message will display.
7	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.


Unit Setup

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Unit Setup.	Unit Setup screen should open. 	Unit setup should be done as part of new unit installation. It will setup the software to match the system hardware.
3	Note the programmable feature settings.	If correct: select a new function from the tabs on the top or refer to Disconnect From EVOLUTION Service Tool R2. If incorrect: proceed to next step.	Refer to Diagnostic Manual Section 3, Software Description, Unit Setup.
4	Change setting for Alternator Capacity and Engine cooling Option.	Select the desired setting. Press up/down arrow to scroll through options.	Do not select Update Settings until all desired changes have been selected.
5	Enter unit identification information.	Click on Unit Serial Number box, type in serial number. Click on Unit ID box, type in truck number.	Serial number from unit serial plate. Unit ID of any six numbers or letters, typically truck number. NOTE: Must use all six characters.
6	Select Update Settings	The controller will restart.	A "Lost Communication" message will display.
7	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.

Set Real Time Clock

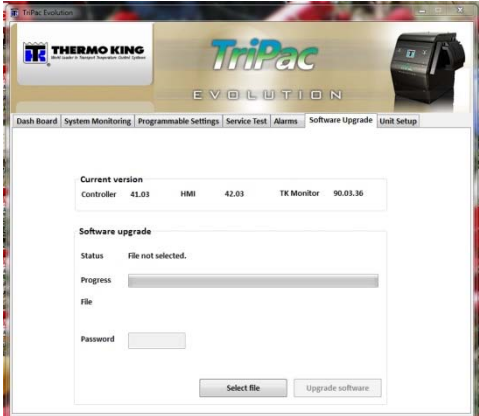
Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Programmable Settings.	<p>Programmable Settings screen should open.</p> 	
3	Note Real Time Clock.	If correct: select a new function from the tabs on the top or refer to Disconnect From EVOLUTION Service Tool R2. If incorrect: proceed to next step.	
4	Select the check box next to Set System Clock.	The Real Time Clock will be reset to match the connected computer.	There is no ability to set a different time.
5	Select Update Settings	The controller will restart.	A "Lost Communication" message will display.
6	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.

Check Software Revision

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Software Upgrade.	Software Upgrade screen should open. 	
3	Under Current Version, note the installed component software revisions.	If correct: select a new function from the tabs on the top or refer to Disconnect From EVOLUTION Service Tool R2.. If incorrect: proceed to Upgrade System Software.	Refer to Diagnostic Manual Section 3, Software Description. Controller = 41.xx HMI = 42.xx TK Monitor = 43.xx


Upgrade System Software

Step	Action	Result	Comments
1	Download software upgrade ZIP file from Thermo King Info Central.	Save software upgrade file to the PC computer. Extract and save three extracted files to a known location. These will be the actual flash load files.	Recommendation: Create a file folder dedicated to TriPac EVOLUTION software upgrade files.
2	Copy extracted flash load files to the service computer to be used for the software update procedure	Refer to the Service Bulletin about the planned software upgrade for actual flash load file names.	Recommendation: Create a file folder dedicated to TriPac EVOLUTION software upgrade files.
3	Connect to EVOLUTION Service Tool R2.		Refer to Connect to EVOLUTION Service Tool R2.

Step	Action	Result	Comments
4	In the tabs on top of the EVOLUTION Service Tool R2 screen select Programmable Settings. Record the current value of the Programmable Settings.	Will be used to verify correct settings after software upgrade.	Refer to Record or Setup Programmable Settings.
5	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Software Upgrade.	Software Upgrade screen will open. 	
6	Verify current software revisions to determine if a software upgrade is required.		Refer to Service Bulletin for the planned software upgrade.
7	Click the Select file button.	A file search dialog box will open. Locate the software upgrade files extracted and saved in step 1.	NOTE: Only the software for one component; Controller, HMI or TK Monitor can be flash loaded at one time. Perform upgrades in the following order: Controller HMI TK Monitor
8	Click Upgrade software button to open the selected software upgrade file.	Upgrade process will begin.	NOTE: System will not accept changes if Password Protection is set to YES. Enter password and retry.
9	A "Progress Bar" will be visible on the Software Upgrade screen.	Indicates progress of the flashloading process.	Flash load of each component should take 20 to 45 seconds. Green LED may flash rapidly.



Step	Action	Result	Comments
10	A "Software Upgrade Complete" message will display.	A prompt will display "Do you want to upgrade another Software? Click Yes to continue, No to restart." If you click No, "Lost Communication" will display. Click OK.	NOTE: When HMI software is updated, the controller will turn off. You will have to turn the system on by pressing the HMI power button.
11	EVOLUTION Service Tool R2 will restart at the Dashboard. Go to Software Upgrade to verify updated revision.	Software revision numbers should have changed to the expected level.	Refer to Service Bulletin for the planned software upgrade.
12	Verify the value of the Programmable Settings match those previously recorded.	Update programmable settings if necessary.	Refer to Record or Setup Programmable Features and Unit Setup.
13	Verify proper unit operation.		
14	Close EVOLUTION Service Tool R2 or continue with other tasks.		Refer to Disconnect From EVOLUTION Service Tool R2.

Operate Service Test Mode

Step	Action	Result	Comments
Enter Service Test Mode			
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Service Test.	Service Test screen will open. 	



Step	Action	Result	Comments
3	From the list select the desired test.		For details of test functions refer to Diagnostic Manual Section 6, A51A, Communication Using TK Monitor.
4	Select the Start button.	The system should operate in the Run In test mode. "Running Service Test" will appear in the upper right corner.	All sections of System Monitoring are available and displaying current information.
View System Information During Service Test			
1	In the menu on the top of the EVOLUTION Service Tool R2 screen select System Monitoring.	The screen will open. "Running Service Test" will appear in the upper right of the screen. System will continue to operate in the selected test mode.	All sections of System Monitoring are available and displaying current information.
2	In the menu on the top of the EVOLUTION Service Tool R2 screen select Service Test.	Returns to the Service Test when done reviewing information.	
Change Test or Exit Service Test Mode			
1	Select the Stop button	The currently running test is terminated.	System will return to normal operation.
2	From the list select the desired new test.	Select the Start button.	The new test should start.
2A	To exit Service Test screen: In the tabs on the top of the EVOLUTION Service Tool R2 screen select a new function.		Exiting the Service Test screen will not terminate a running test. Refer to step 1.

Controller Cold Restart

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Tools.	<p>A “Tools Password” screen will appear. Enter 4444 in the Password box. Click OK.</p> 	
3	The Tools screen will appear.		CAUTION: A Cold Restart is not a normal service procedure. It should only be performed when directed by Minneapolis Service or a published service bulletin.
4	Select Cold Restart.		A Cold Restart will reboot the Controller and reset Programmable Settings to their default value. Data logger information will be lost. Any active alarms will be cleared and alarm list lost.
5	“Cold Restart Initiated” will display.	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart at the Dashboard.


Step	Action	Result	Comments
6	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.

Download Datalogger


Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Tools.	<p>A “Tools Password” screen will appear. Enter 4444 in the Password box. Click OK.</p> 	
3	The Tools screen will appear.		
4	Select “Download datalogger”	Downloading, please wait.	

<i>Step</i>	Action	Result	Comments
5	System will generate a datalogger file.	Download complete. Please Warm Start before next download.	The file will be a *.BIN file. EVOLUTION Service Tool R2 cannot display these files. A file converter is required. See A50A.
6	A “Save Datalogger” window will display. Choose a file name and save location.	File may be renamed with a short descriptive name with no spaces. File extension must remain .BIN. Save to a location that you can find again.	Recommendation: Create a file folder dedicated to TriPac EVOLUTION data logger files. Default file name is TT4DLFxx.bin or the Unit ID programmed during Unit setup.
7	Click “Warm Restart”.	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart in Dashboard.
8	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.


Reset Hour Meters

Step	Action	Result	Comments
1	Connect with EVOLUTION Service Tool R2 to the old interface board.	Record hour meter readings.	
2	Connect with EVOLUTION Service Tool R2 to the new interface board.	This procedure will only work on a new interface board that has less than 100 hours recorded.	If the hour meters have been reset or any meter exceeds 100 hours access to set them will be permanently locked out.
3	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Unit Setup.	Unit Setup screen should open. 	Unit setup should be done as part of interface board replacement. It will setup the software to match the system hardware.
4	Enter the new settings in each of the hour meter boxes.	Use the readings recorded from the old interface board.	
5	Select Update Settings.	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart in Dashboard.
6	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.


Set Password



Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Programmable Settings.	Programmable Settings screen should open. 	
3	Select the YES check box next to Password Protection.	This activates the Password Protection feature but does not allow the password to be changed. Password boxes are not active.	The default password is blank space.
	Select Update Settings	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart in Dashboard.
4	Return to Programmable Settings.	Password boxes are now active. In the "New Password" box enter desired Password. "Old Password" should be blank.	Password may be up to 8 characters.
	Select Change Password	This activates the new password.	
	Enter the new password in the box under Update Settings.		
5	Select Update Settings	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart in Dashboard.
6	Reconnect to EVOLUTION Service Tool R2.	Password will now be active in Programmable Settings and Unit Update screens.	

Change Password

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Programmable Settings.	Programmable Settings screen should open. 	
4	Enter current password in the “Old Password” box.	Password boxes are now active. In the “New Password” box enter desired Password. “Old Password” should be blank.	Password may be up to 8 characters.
	Enter new password in the “New Password” box.		
	Select Change Password	This activates the new password.	
	Enter the new password in the box under Update Settings.		
5	Select Update Settings	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart in Dashboard.
6	Reconnect to EVOLUTION Service Tool R2.	Password will now be active in Programmable Settings and Unit Update screens.	

Bypass the Password

Step	Action	Result	Comments
1	Connect to EVOLUTION Service Tool R2.		
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Programmable Settings.	<p>Programmable Settings screen should open.</p> 	
3	The YES check box next to Password Protection is selected. A Password box is active at the bottom of the screen.	A password is required to make changes to Programmable Settings or Unit Setup values.	
4	The password is not known and is not available.	The password can only be bypassed by performing a Cold Restart.	CAUTION: A Cold Restart will return Programmable Settings to default values, erase the data logger and erase alarm history
5	Record value of all programmable settings. Record all alarms. Download the data logger.	Will be used to re-enter customer settings.	

Step	Action	Result	Comments
2	In the tabs on the top of the EVOLUTION Service Tool R2 screen select Tools.	<p>A “Tools Password” screen will appear. Enter 4444 in the Password box. Click OK.</p> 	
3	The Tools screen will appear.		CAUTION: A Cold Restart is not a normal service procedure. It should only be performed when directed by Minneapolis Service or a published service bulletin.
4	Select Cold Restart.		A Cold Restart will reboot the Controller and reset Programmable Settings to their default value. Data logger information will be lost. Any active alarms will be cleared and alarm list lost.
5	“Cold Restart Initiated” will display.	Lost Communication box will appear. Click OK.	EVOLUTION Service Tool R2 will restart at the Dashboard.
10	Go to Record or Setup Programmable Settings	Make changes as required.	
11	Go to Unit Setup.	Verify correct settings.	

<i>Step</i>	Action	Result	Comments
12	Verify proper unit operation.		
13	Disconnect the Adapter Harness from the computer.		Refer to Disconnect From EVOLUTION Service Tool R2.