Carrier Enterprise

TOSHIBA

Carrier

Toshiba Carrier VRF Technical Training

Dyna-Doctor Diagnostic Software & Communication Adapter

Ver. 1.0

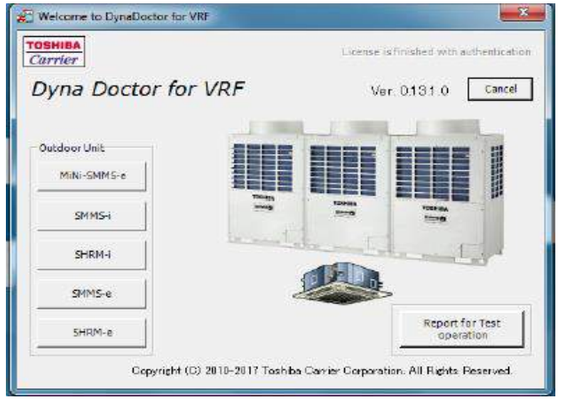
Toshiba Carrier **Dyna-Doctor**

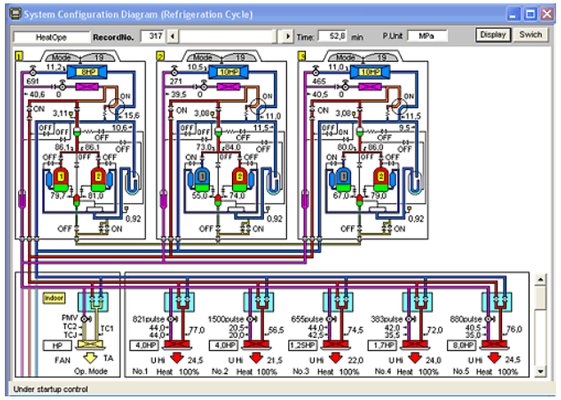
Attention:
Windows based PC only

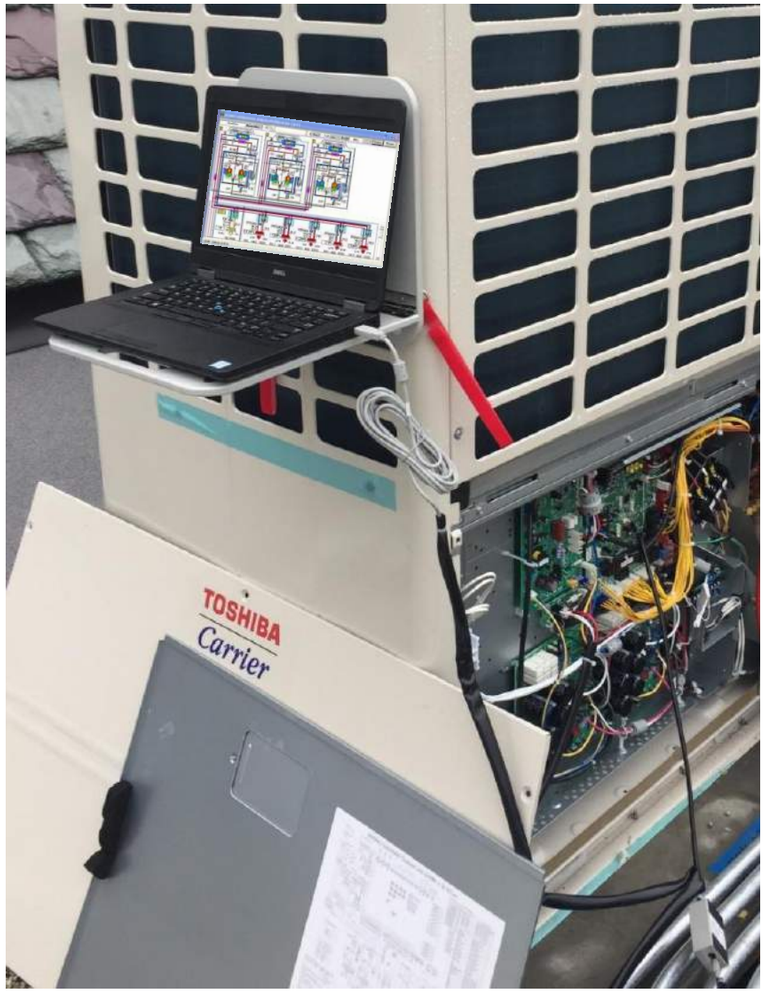
Toshiba Carrier MCY/MMY VRF Dyna-Doctor Diagnostic Software & Communication Adapter

Dyna-Doctor diagnostic software can provide a user a view across the VRF entire system. The technician will be able to see valve positions, refrigerant pressures, thermistor readings, compressor speeds, operational modes and much more.

We recommend you use the software to record a base line of each VRF system you Start Up/Service. The recorded operational data can help when performing yearly routine maintenance on the same systems or when trying to diagnose operational errors.







Part # TCB-DK01SS-E List $922.00
3.2022

Toshiba Carrier **Dyna-Doctor**

Toshiba Carrier MCY/MMY VRF Dyna-Doctor Diagnostic Software & Communication Adapter

NOTE: The following Dyna-Doctor Guide will help you Connect, Activate and Record using Dyna-Doctor. Not all features of the Software will be shown.

- Dyna-Doctor allows the technician to see a large amount of data all in one place. No need to put gauges on the outdoor unit or take a temperature at the coil inlet/outlet and much more.
- Dyna-Doctor will not do any diagnostics for you. The technician will need to review the data and make determinations for themselves.
- The only way to be successful at using Dyna-Doctor is to use it. The more you use it on properly operating systems, the better you will catch systems not operating correctly.
- Dyna-Doctor is best used in conjunction with the Factory Service Manual for the Outdoor Unit.
- You can only connect to one VRF system at a time, even if the outdoor units are daisy chained to a central controller.
- Operation Modes can be changed, set point cannot.
- Some windows and the values shown take longer to update then others, be patient.

Toshiba Carrier **Dyna-Doctor**

Toshiba Carrier MCY/MMY VRF Dyna-Doctor Diagnostic Software & Communication Adapter

What's in the Box

USB Cable

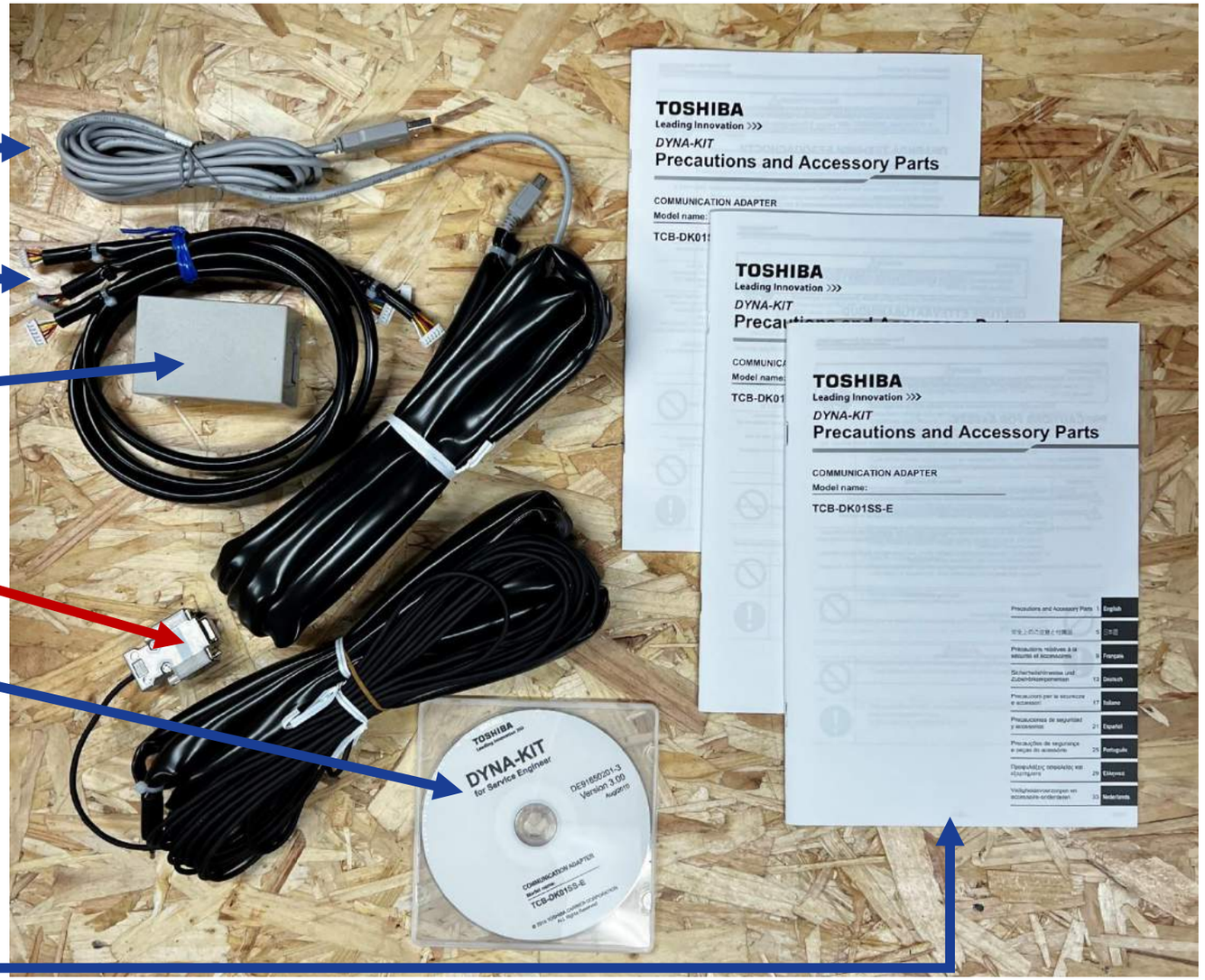
Three connector cables

Dyna-Doctor Communication Adapter

Serial cable, not used at this time

Software CD

Three User Manuals (20+ languages)

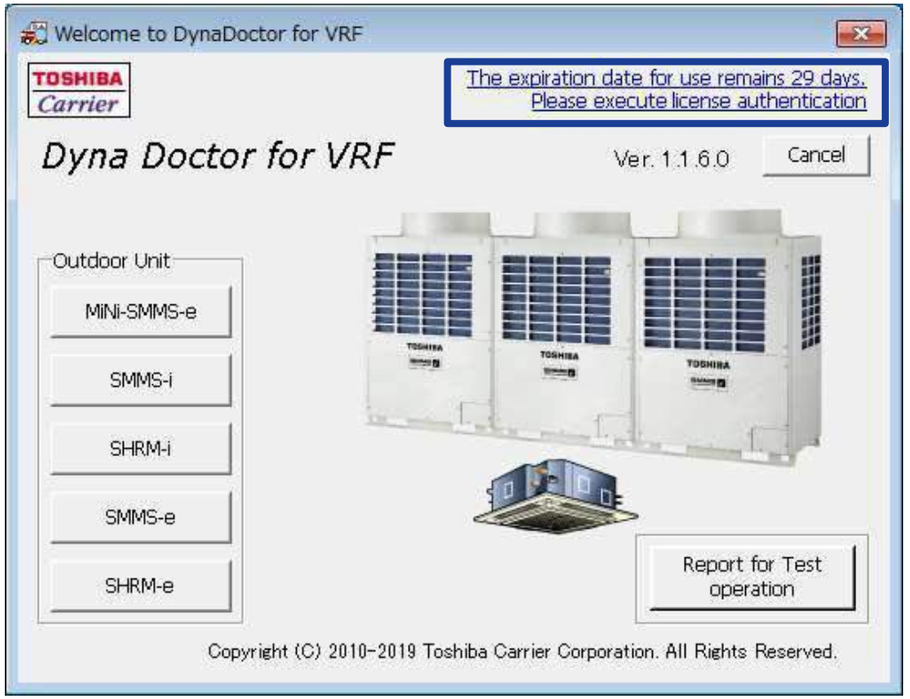


Toshiba Carrier **Dyna-Doctor**

Attention:
Windows based PC only

Toshiba Carrier MCY/MMY VRF Dyna-Doctor Diagnostic Software

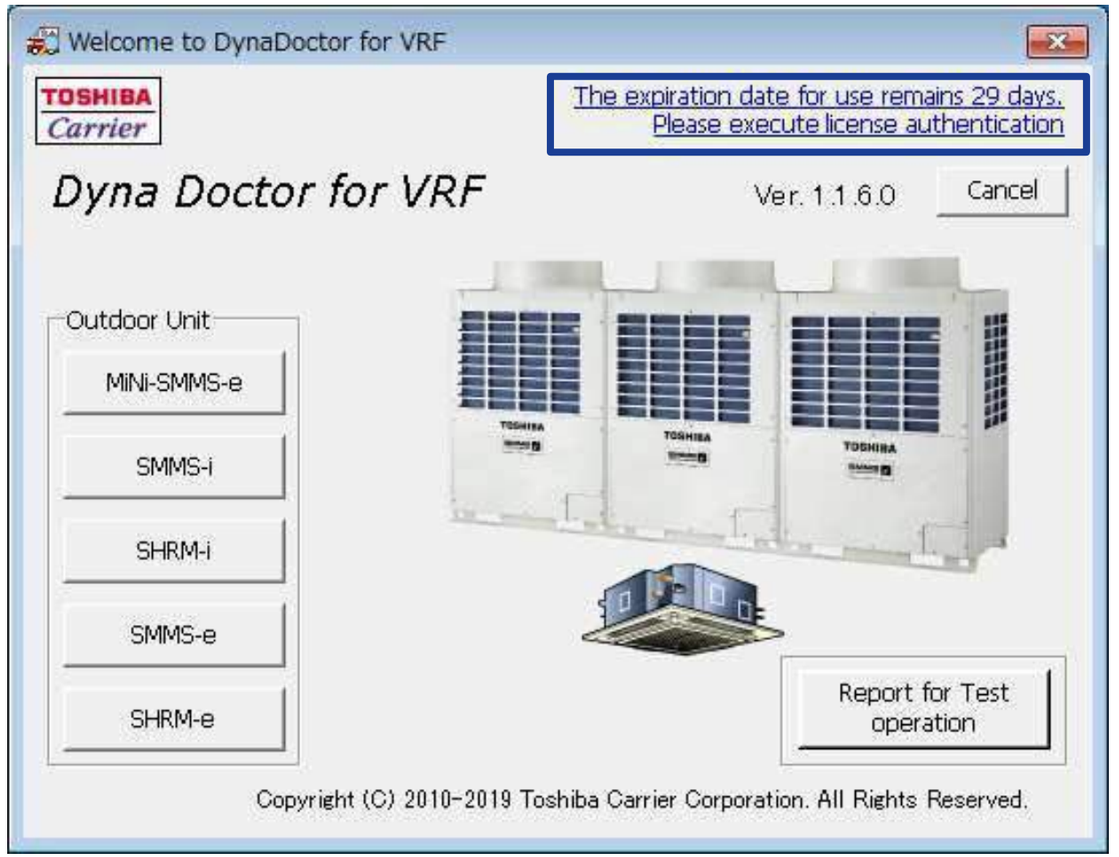
- Load Dyna-Doctor software on Windows computer/laptop to be used.
- Use the included CD or contact CE Tech Support for the latest version of software.
- The manufacture updates Dyna-Doctor software approximately once a year or as required by product enhancements.
- Once loaded, the software will only work for 30 days unactivated. We highly recommend you activate the software as soon as it's loaded. It can take up with 2 days for the activation email to be returned.



Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software

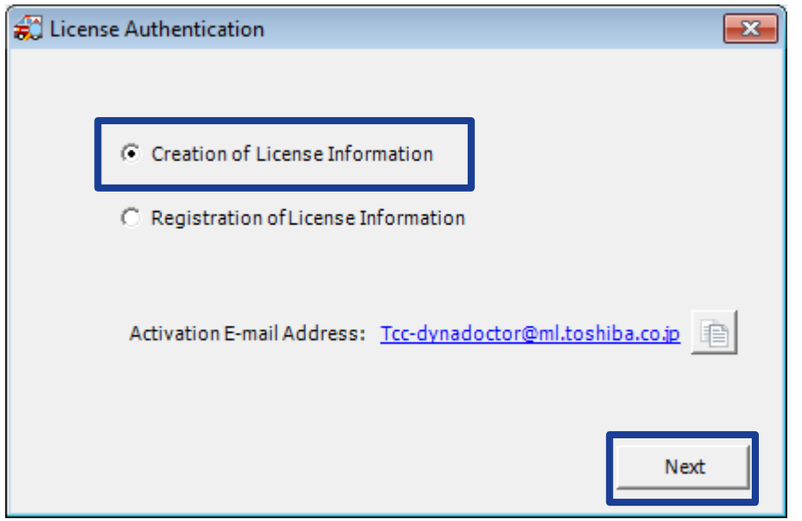
1. Start "Dyna-Doctor" and click on the message which says “The expiration date for use remains *XX* days. Please execute license authentication” to display the license authentication screen.



Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software (cont.)

2. Select “Creation of License Information” and click the “Next” button.

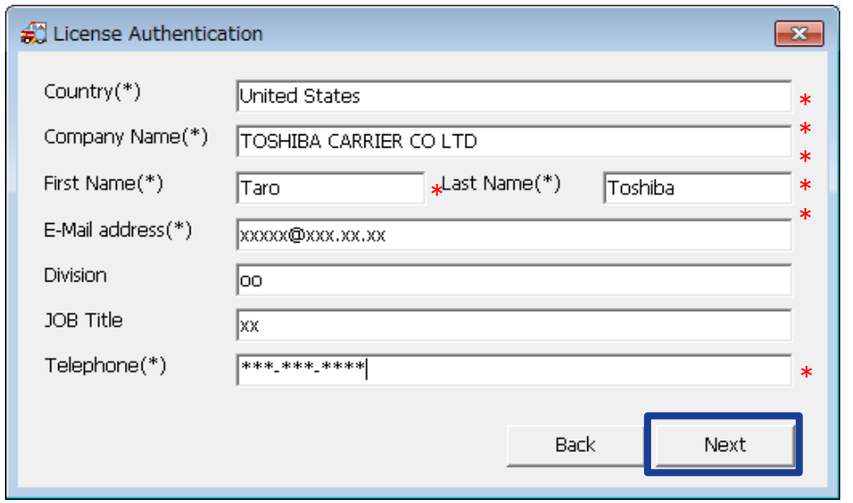


3. If you agree to processing of your personal data by Toshiba Carrier Corporation in accordance with the Privacy Notice, click the “YES” button.

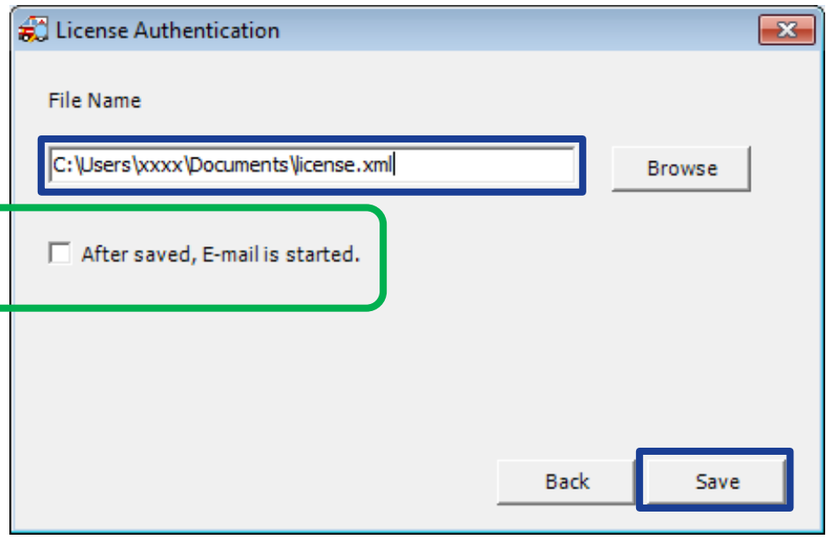
Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software (cont.)

4. Fill in the necessary sections (*) and click the “Next” button.



5. To save the created license information, enter a file name and click the “Save” button.
   File location defaulted to save in Document folder or select another location/folder instead.



Only check if you have a default email program set up, otherwise start new email after and attached license.

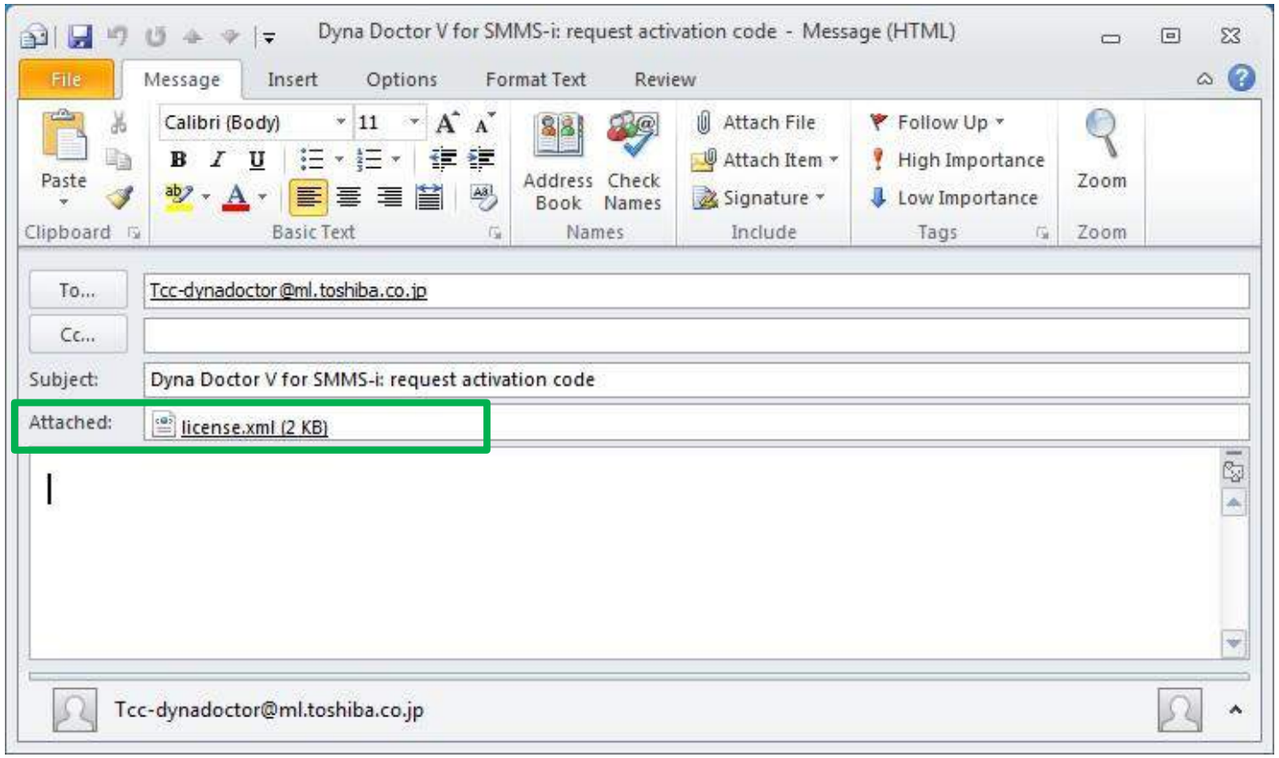
Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software (cont.)

6. Attach the saved license information file to a new email and send. When the license is authenticated, an authentication email with an attached authenticated license information file will be sent from Tcc-dynadoctor@ml.toshiba.co.jp

Use the following format for the request email:

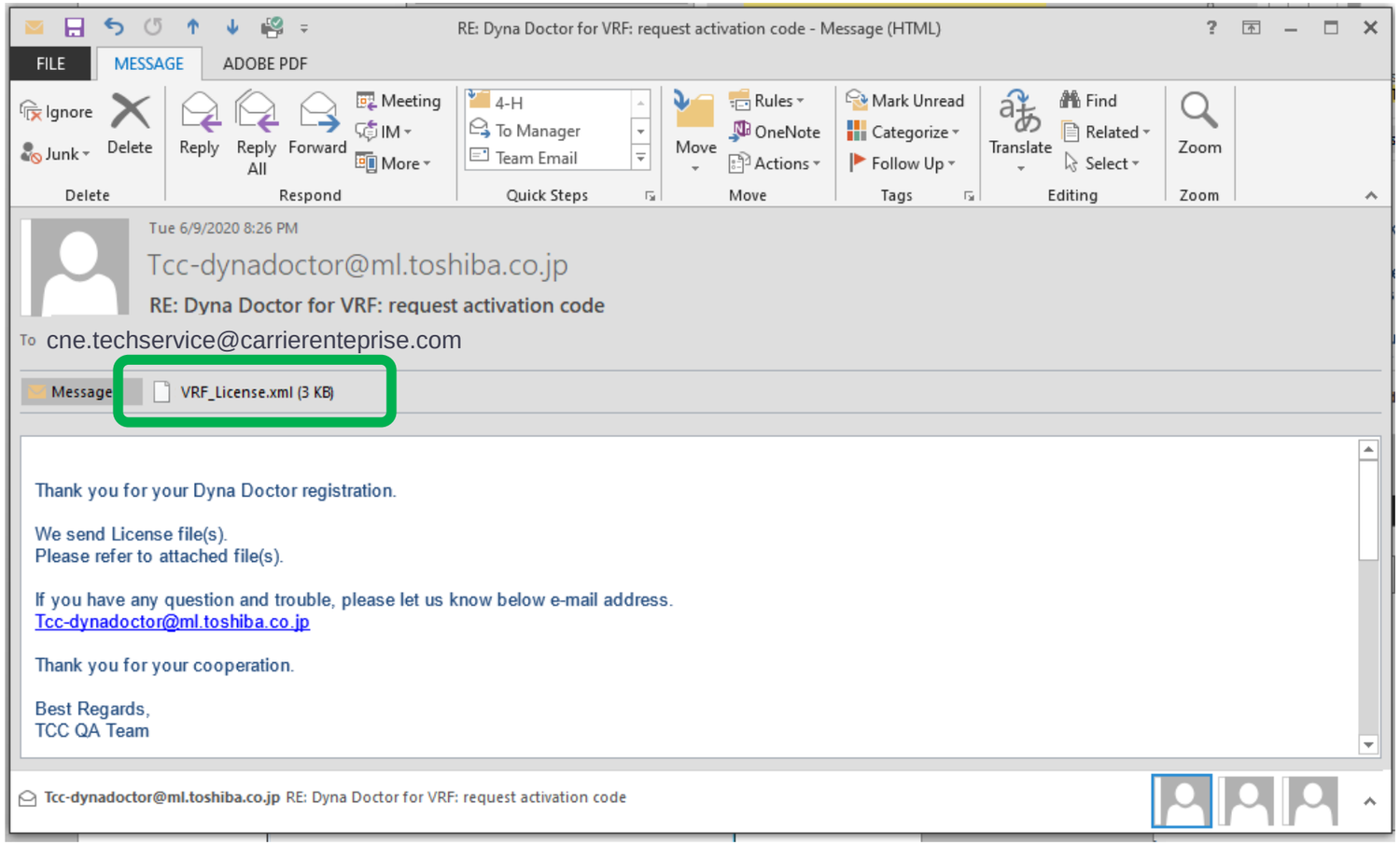
To: Tcc-dynadoctor@ml.toshiba.co.jp
Subject: Dyna Doctor for VRF: request activation code
Attachment: License information file (.xml)



Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software (cont.)

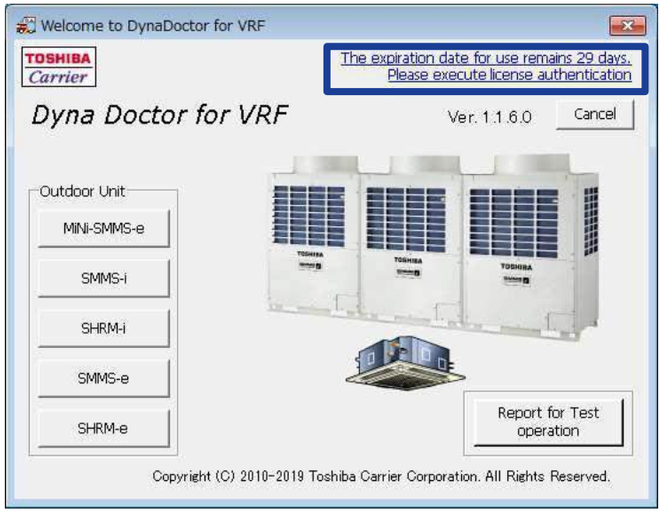
7. When email response is received. Copy the new license file to Documents of other location. Make sure you make note of where it is copied.



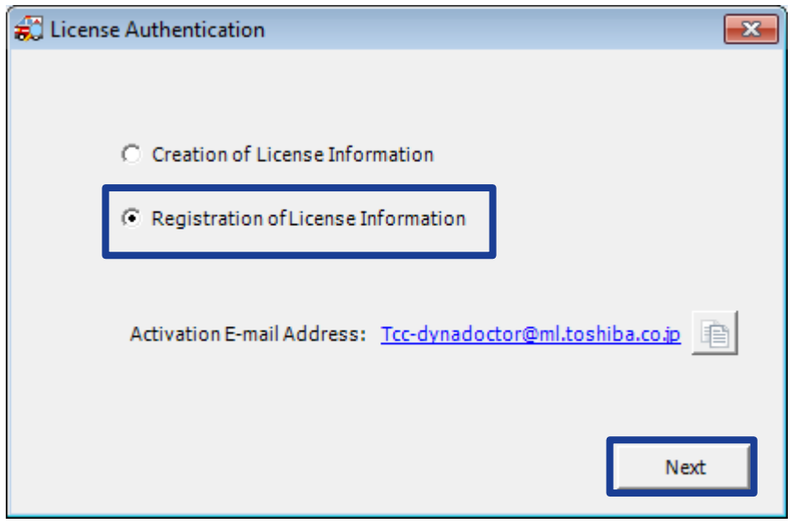
Toshiba Carrier **Dyna-Doctor** Activation

Activating Dyna-Doctor Software (cont.)

8. Start "Dyna-Doctor" and click on the message which says “The expiration date for use remains *XX* days. Please execute license authentication” to display the license authentication screen.



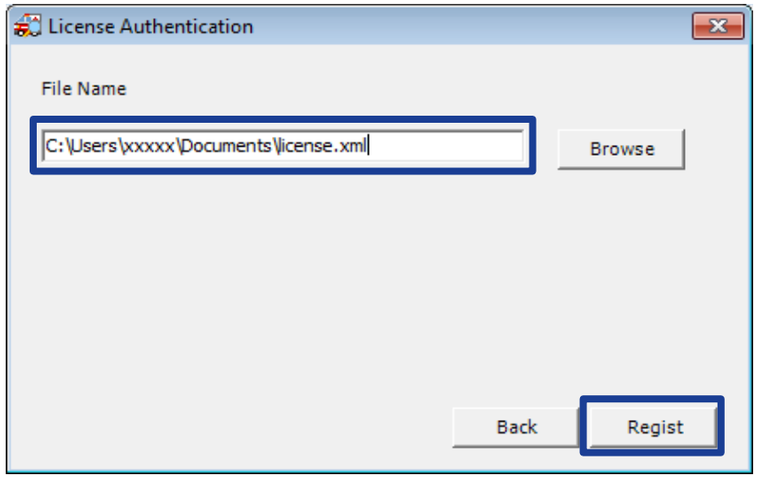
9. Select “Registration of License Information” and click the “Next” button.



Toshiba Carrier **Dyna-Doctor** Activation

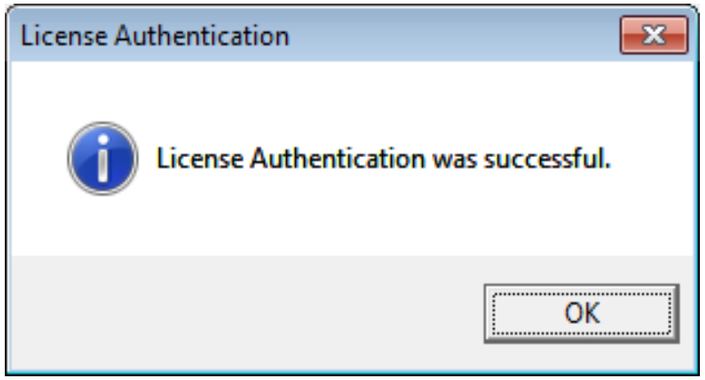
Activating Dyna-Doctor Software (end)

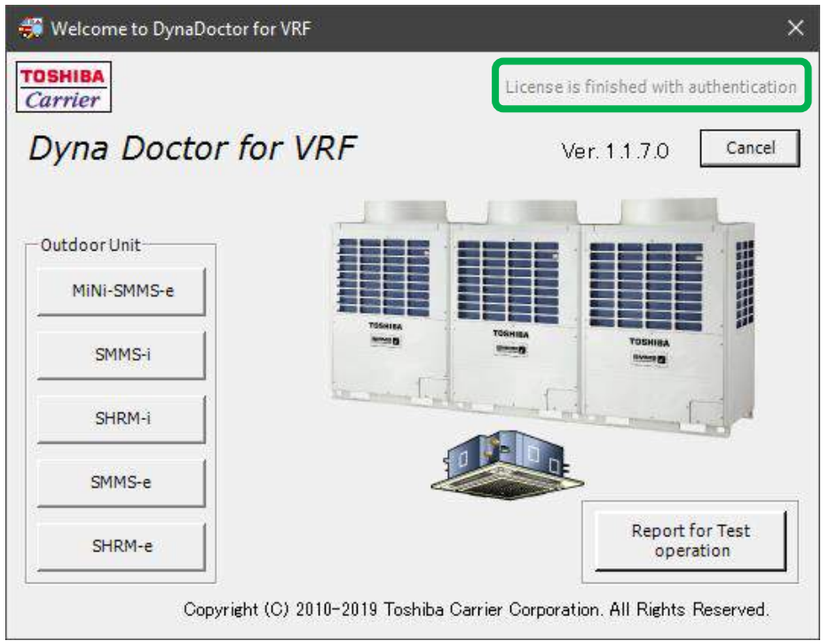
10. Select the authenticated license information file and click the “Regist” button.



If the license authentication is successful the following message is displayed.

The software is now activated.





Toshiba Carrier **Dyna-Doctor**

Connecting Toshiba Carrier MCY/MMY VRF Dyna-Doctor Communication Adapter

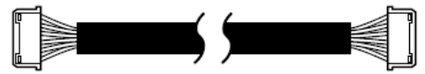
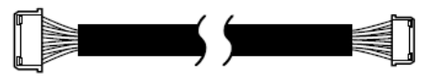
Connecting Adapter/Cables:

- Select cable “B” for all 1PH Heat Pumps
- Select cable “C” for 3PH Heat Pumps & all Heat Recovery Systems
- A small flat screw driver is required to open the communication adapter
- Insert cable “B or C” through opening and connect to CN101

Cable “A” not used at this time

1PH Heat Pumps

3PH Heat Pumps
All Heat Recovery

Cable type	Appearance DYNA-KIT side — Air conditioner side	Representative Air conditioner
A		Air to Water Heat Pump (Hydro unit)
B		SDI Series (Outdoor unit) (*) DI Series (Outdoor unit) (*) • For Japan SPE Series (Outdoor unit) (*) SME Series (Outdoor unit) (*) *: Connector type may differ with some models.
C		MiNi-SMMS (Outdoor unit) SMMS (Outdoor unit) SHRM (Outdoor unit) • For Japan SMMS (Outdoor unit) FLEX (Outdoor unit)

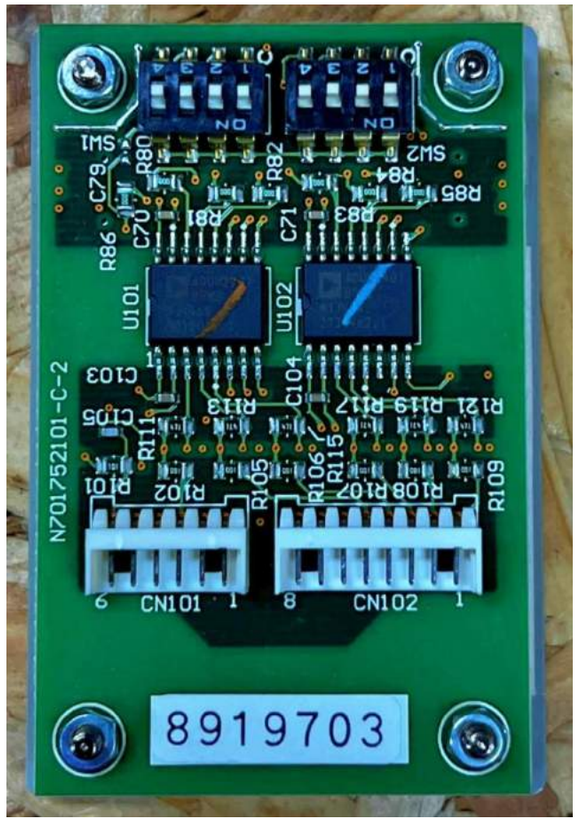
Toshiba Carrier **Dyna-Doctor**

Connecting Toshiba Carrier MCY/MMY VRF Dyna-Doctor Communication Adapter

Connecting Adapter/Cables (cont.):

- Leave all DIP switches in the OFF position
- Close cover

CN101 Connect Cable “B or C” here



CN1 (underneath) connection not used
CN102 connection not used

Toshiba Carrier **Dyna-Doctor**

Connecting Toshiba Carrier MCY/MMY VRF Dyna-Doctor Communication Adapter

Connecting Adapter/Cables (cont.):

- Plug Mini-USB end into Communication Adapter
- Plug USB end into computer
- Turn VRF system OFF at outdoor unit's disconnect
- Plug Cable “B or C” (depending on ODU type) into CN800 on Main Interface PCB
- Turn VRF system ON at outdoor unit’s disconnect

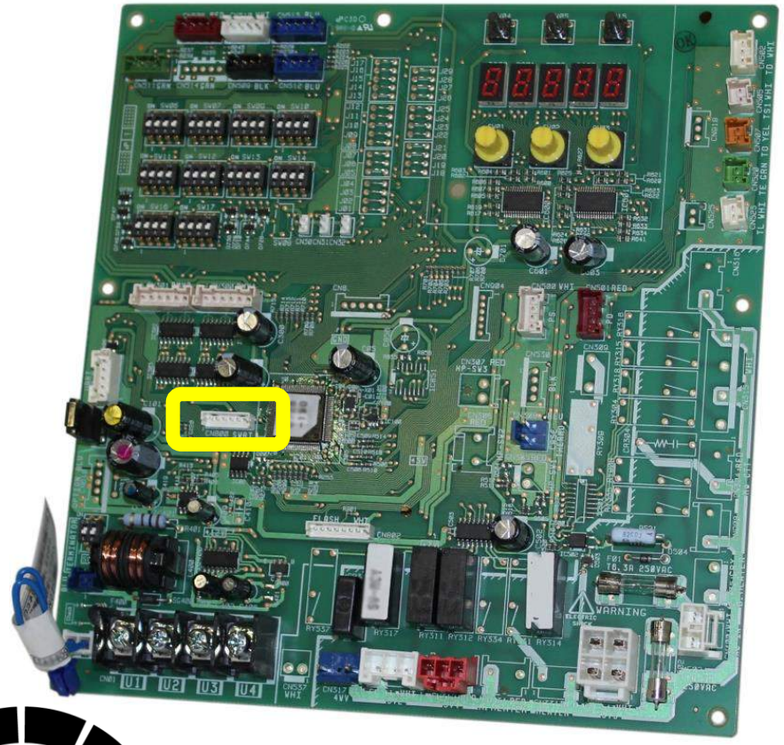
For Serial Cable, not used

Toshiba Carrier **Dyna-Doctor**

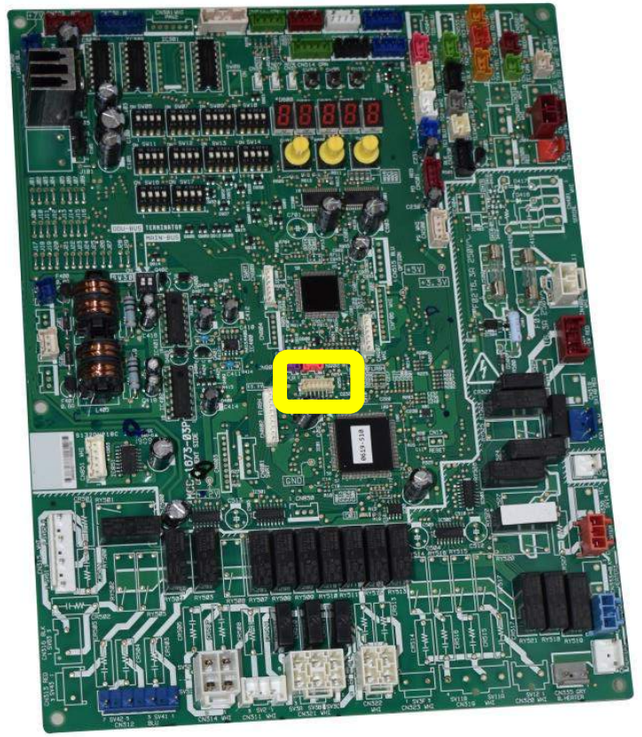
Connecting Toshiba Carrier MCY/MMY VRF Dyna-Doctor Communication Adapter (end)

Connecting Adapter/Cables (end):

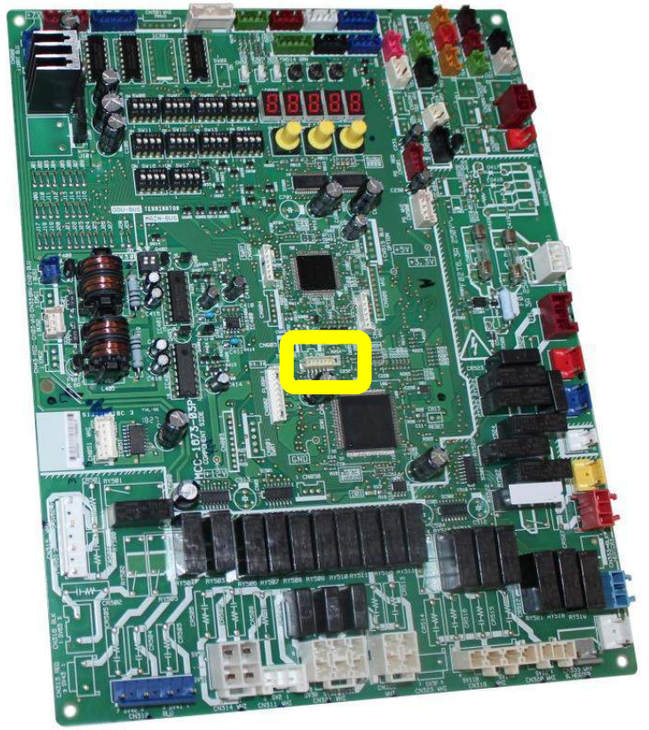
- Where to find CN800 on the Main Interface PCB



1PH Heat Pump
CN800



3PH Heat Pump
CN800



1PH & 3PH Heat Recovery
CN800

Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software

- Start Dyna-Doctor software
- Select the Outdoor Unit connected

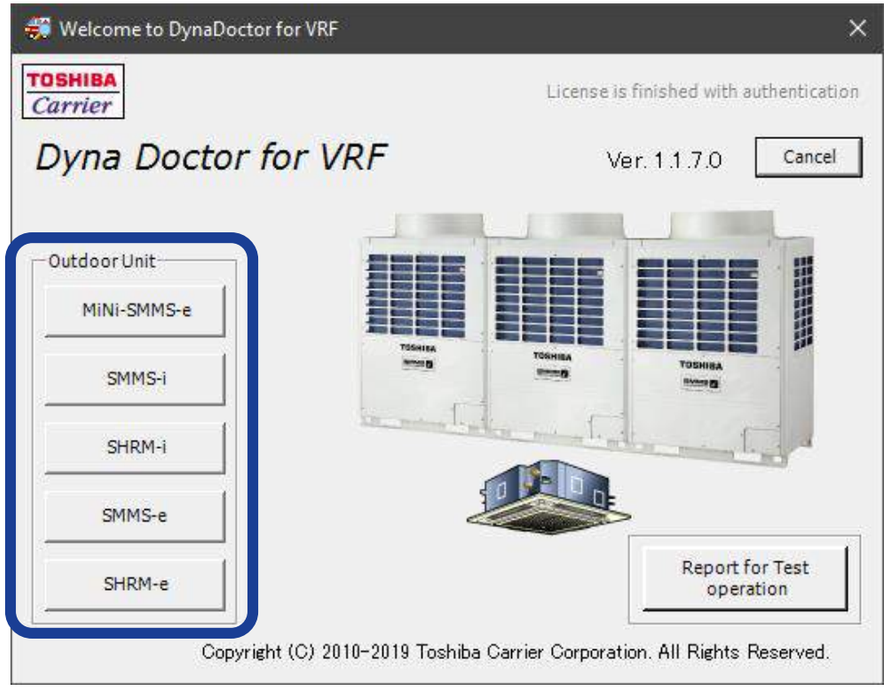
1PH Heat Pumps

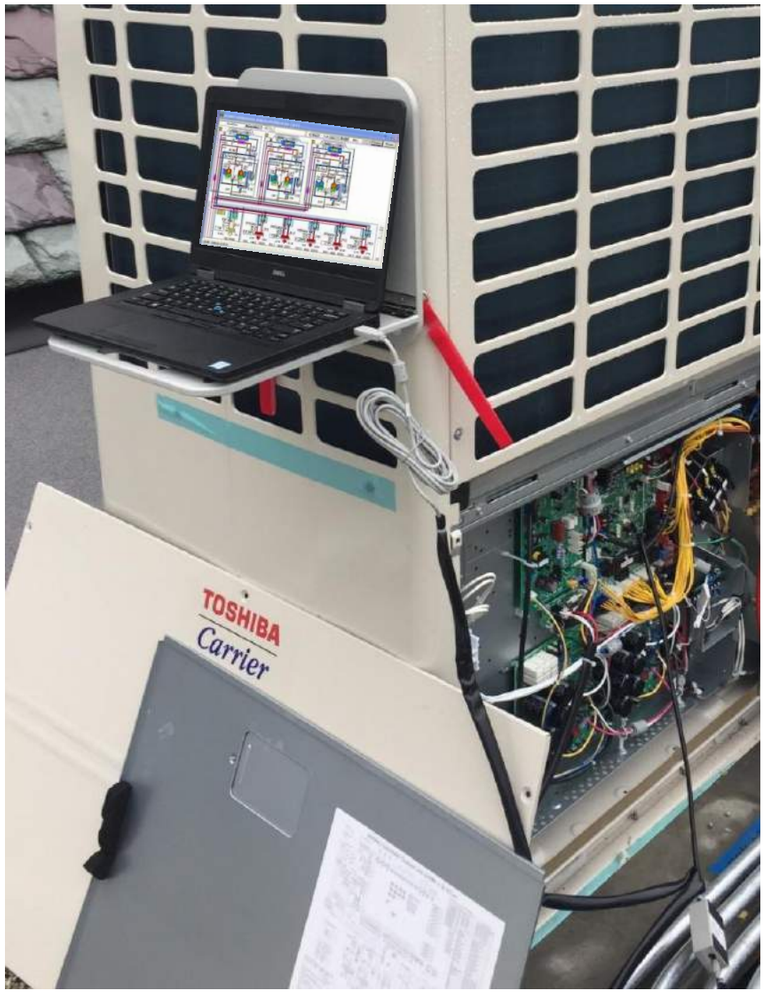
Older Model – 3PH Heat Pumps

Older Model – 1PH & 3PH Heat Recovery

Current Model – 3PH Heat Pump

Current Model – 1PH & 3PH Heat Recovery



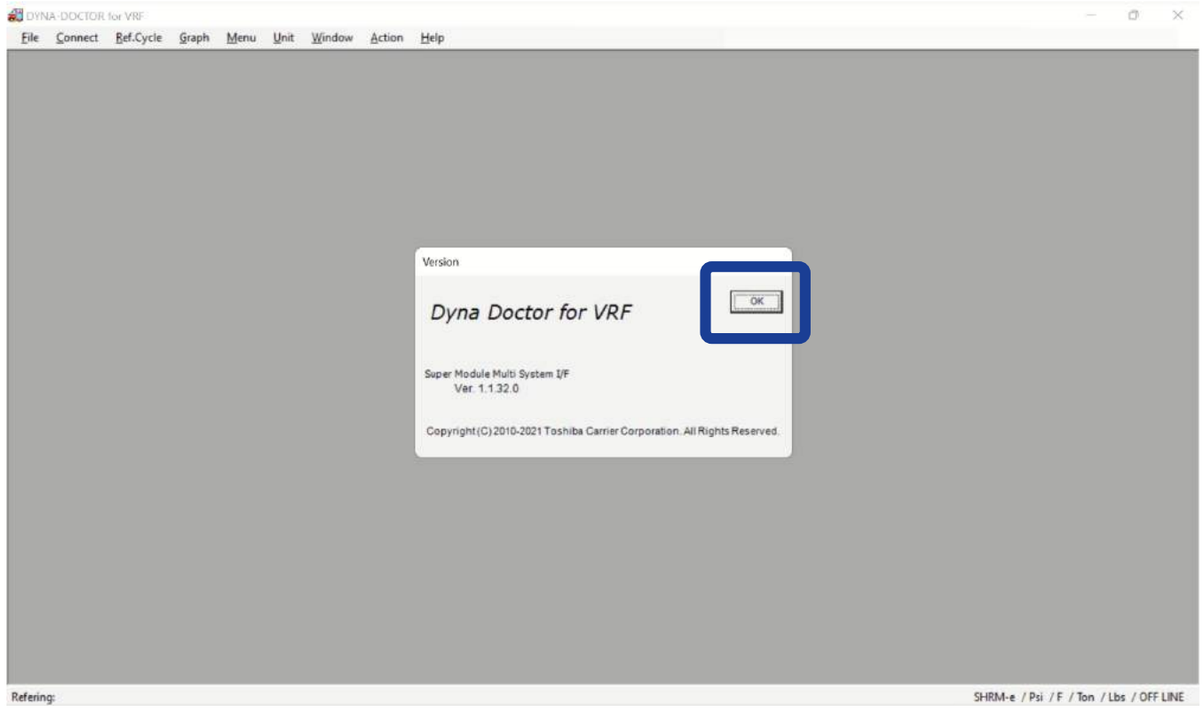


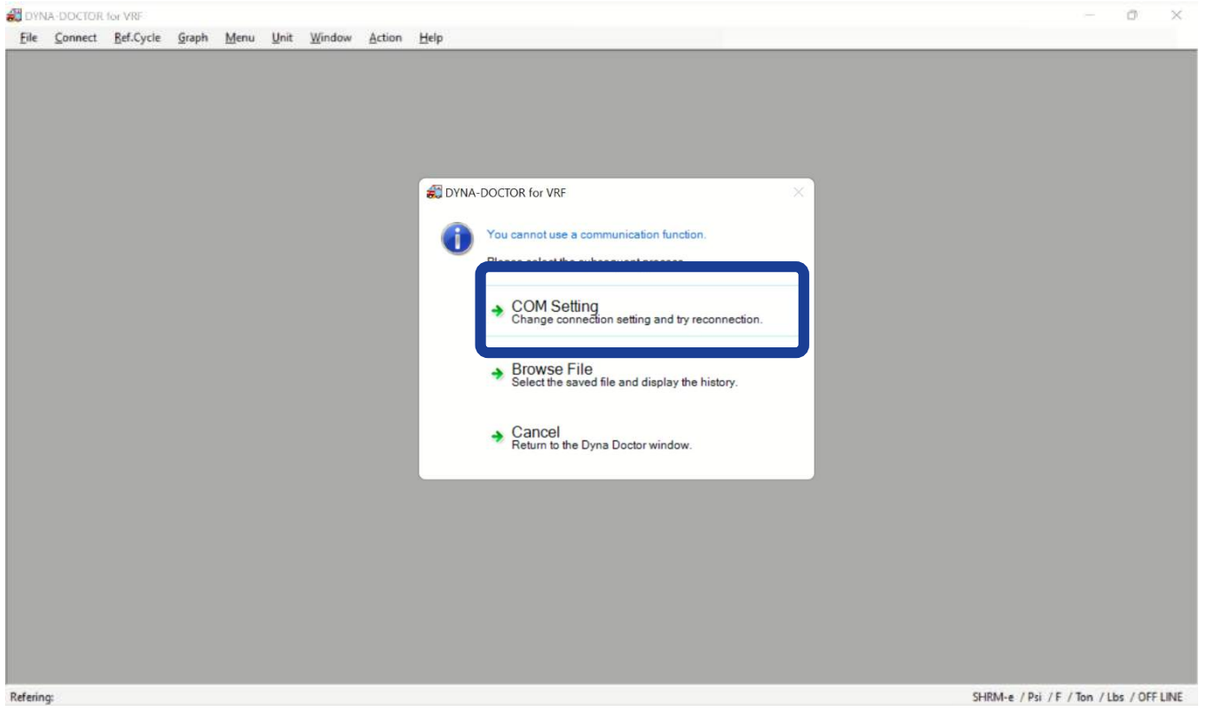
Look for label on Outdoor unit's cover that displays "SHRM-i" or "SMMS-i" or other.
All 1PH H/P's are "MiNi-SMMS-e"

Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

- After selecting the type of system, click “OK”
- Next Click on “COM Setting”

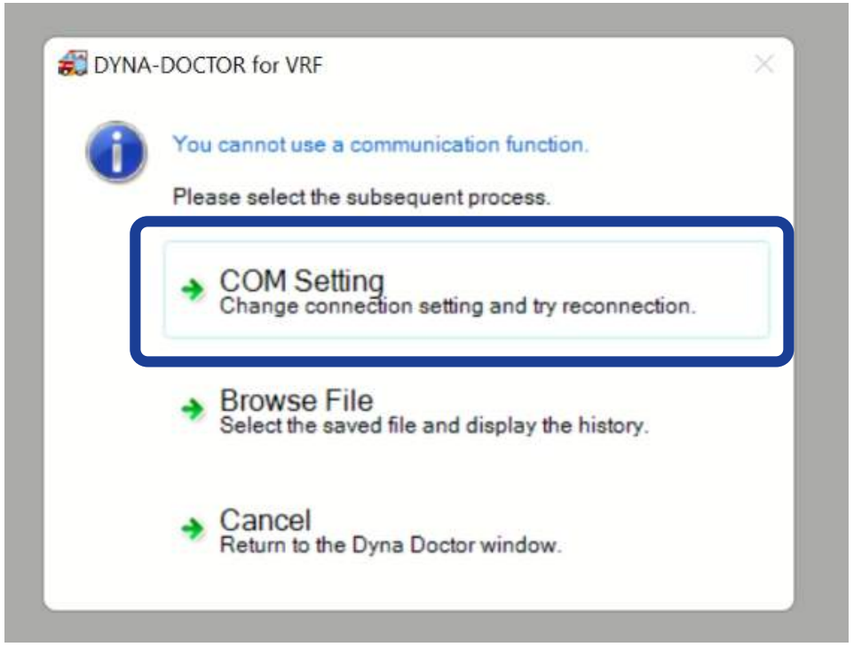


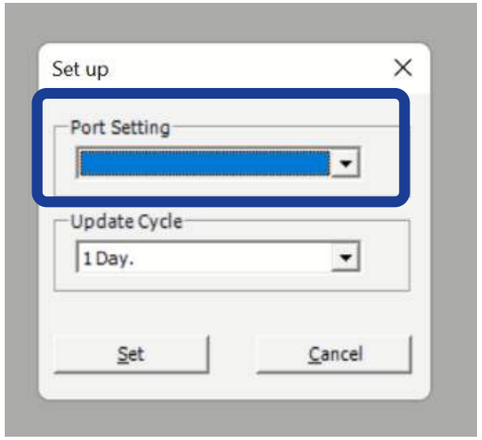


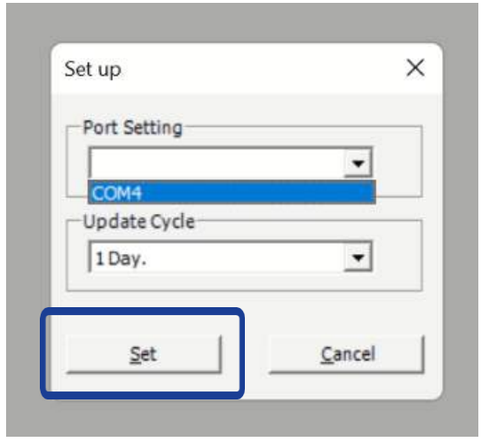
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

- After “COM Setting”, click the drop down for Port Setting and select the port Dyna-Doctor is connected to (USB Port).
- If you do not know the Port# (COM#), you can try each one until communication is established or see next page.

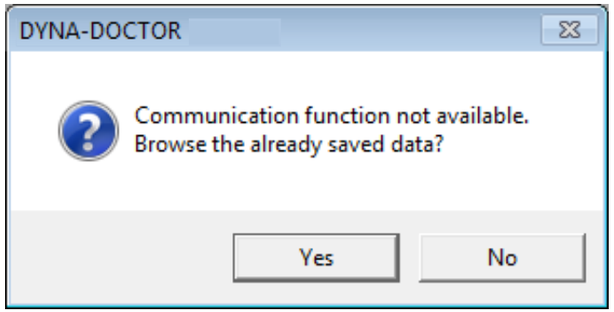






When communication can not be established the following.

If this happens, check COM Setting 1st. Next power down ODU, check CN800 connection, check USB connections, restart laptop/software



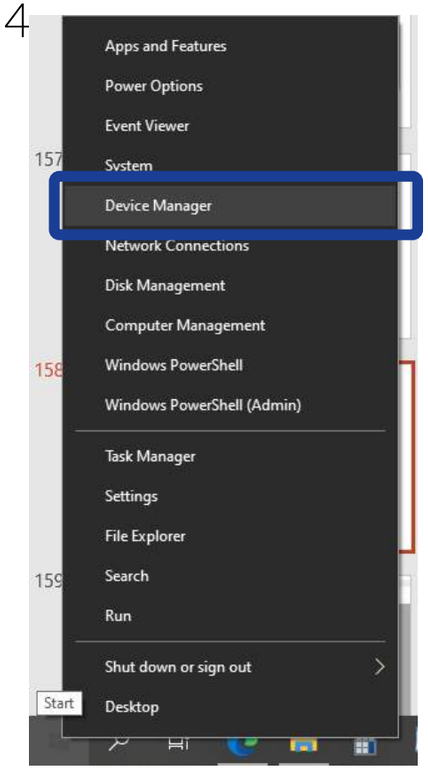
Toshiba Carrier **Dyna-Doctor** Software Navigation

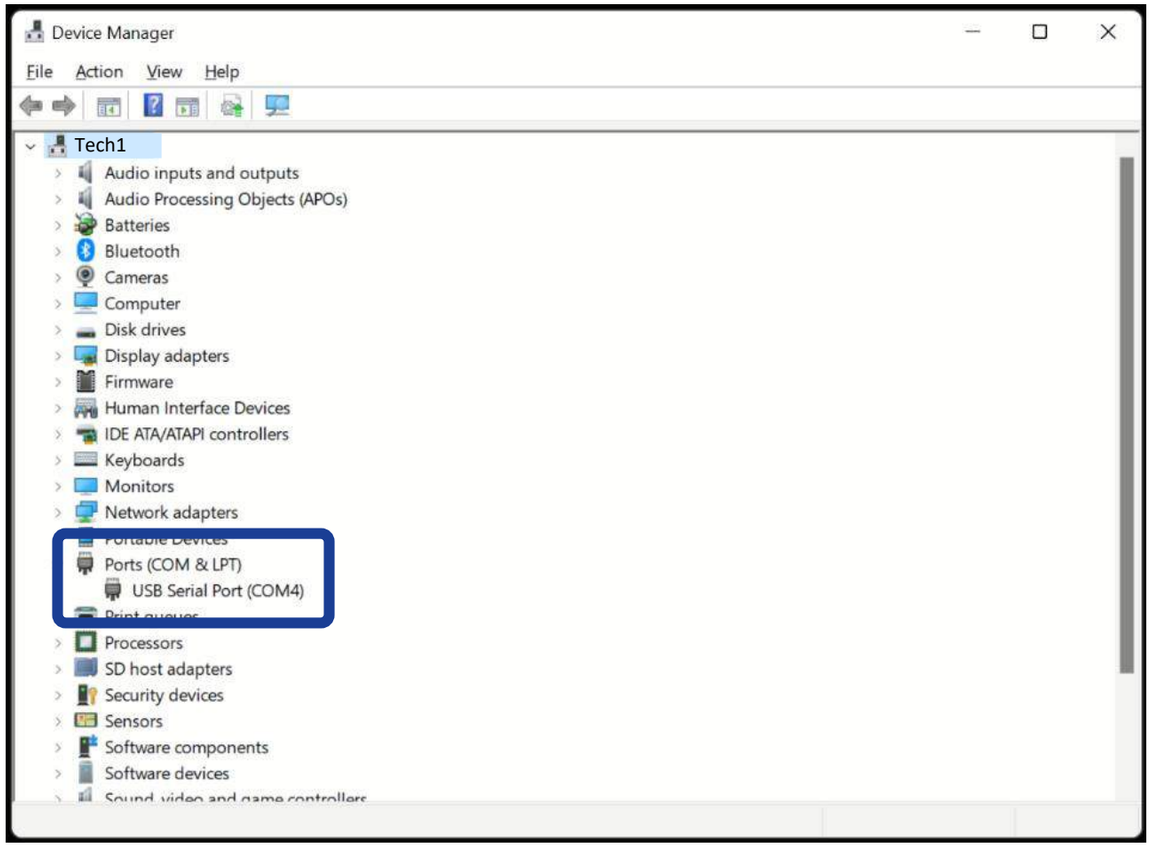
Navigating Dyna-Doctor Software (cont.)

How to find COM Port ID #

- Right click your mouse on the Windows Button

- Select “Device Manager”
- Scroll if needed and expand “Ports (COM & LPT)”
- In this case Dyna-Doctor is using COM4
- Close the Device Manager

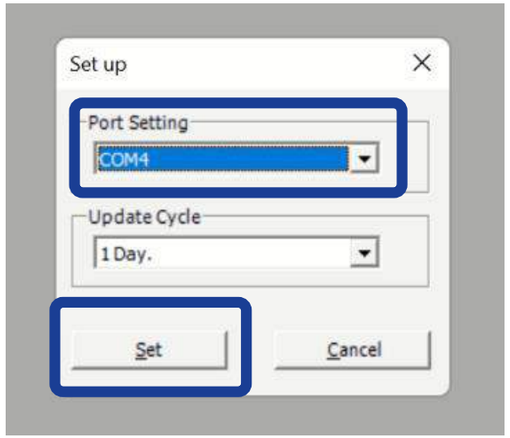


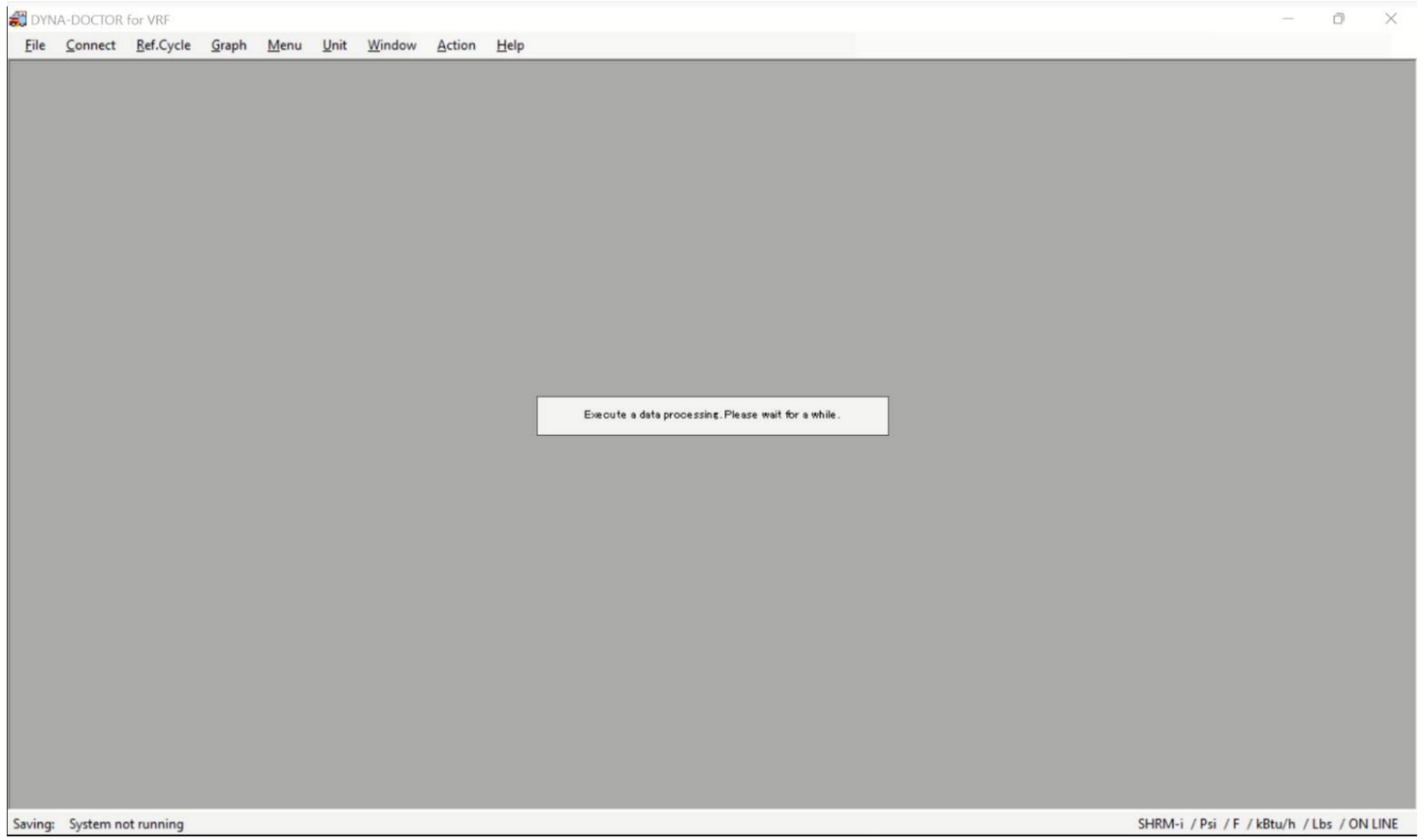


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Select the COM Port that was identified and click “Set”, after 15 to 30 seconds a message will appear and next a new “System Configuration Diagram” window will automatically open. Length of time depends on system size and if tech had previously connected to system.





Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Once this window opens you have successfully connected to the system.

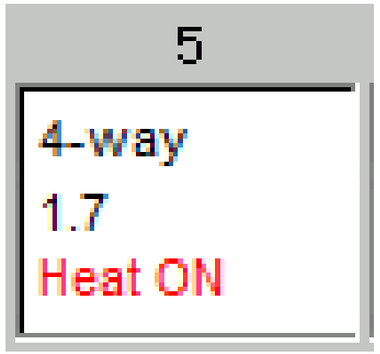
Immediately you will see the status of each fan coil as well as some outdoor unit information.

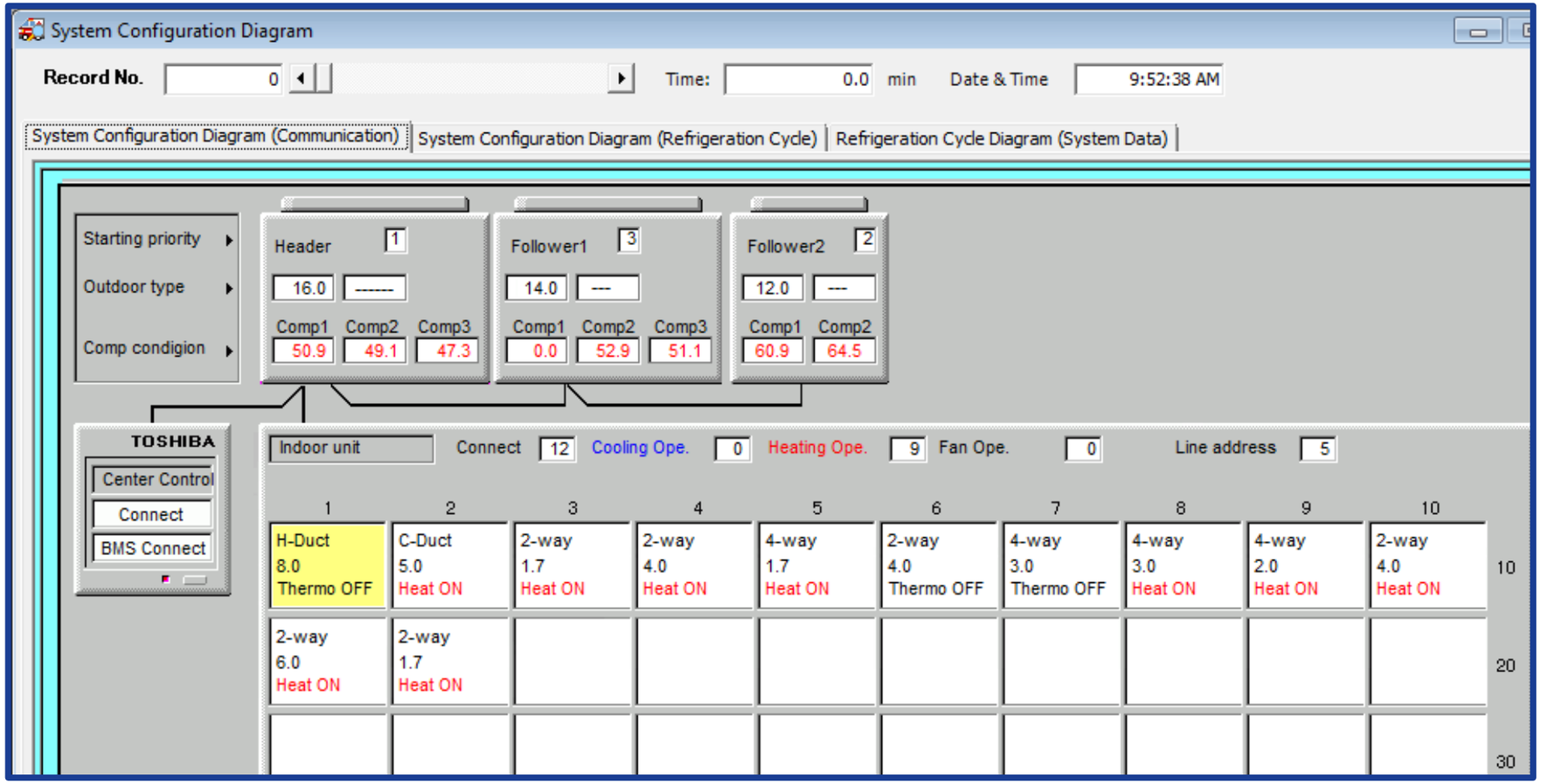
Unit Address

IDU Type

Tonnage

Status





Toshiba Carrier **Dyna-Doctor** Software Navigation

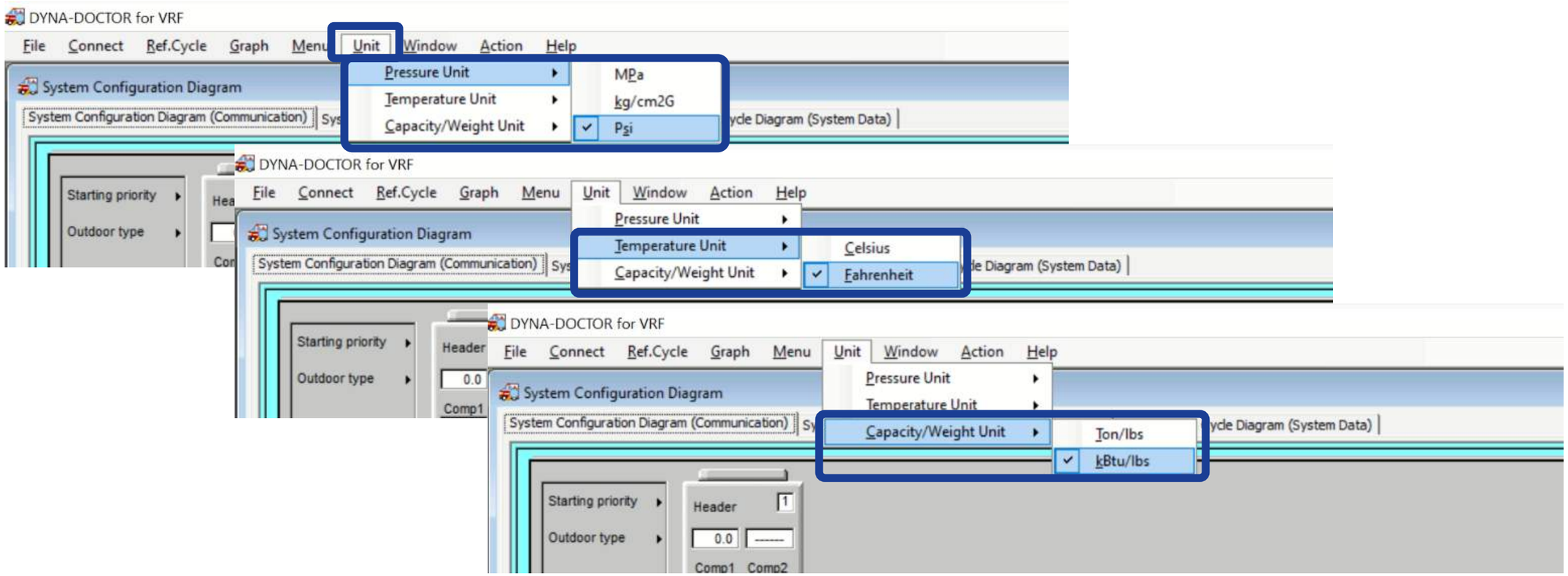
Navigating Dyna-Doctor Software (cont.)

On the first time you open Dyna-Doctor we recommend you select the desired units of measurements.

They do not come defaulted to the common units used in the United States and Canada.

Here we have selected PSI, Fahrenheit & kBtu/lbs.

The next time you open Dyna-Doctor these valves are saved and will not need to be set.

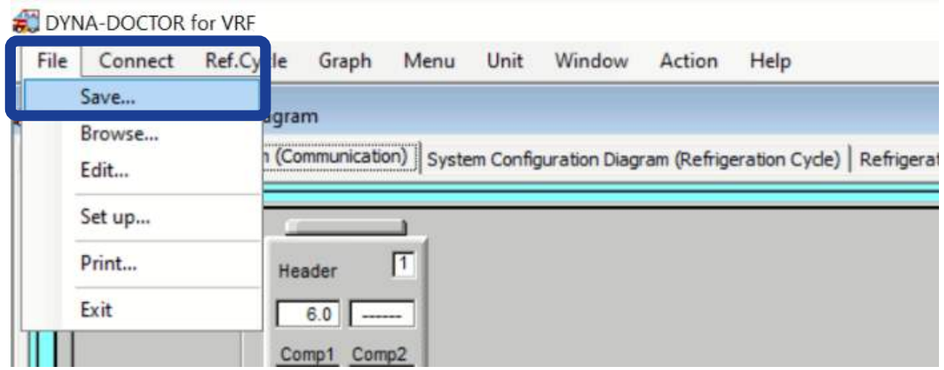


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Before you start reviewing data and system operation we recommend you start recording the data file. This way you can use it in the future for a comparison.

1. Click “File” then “Save”



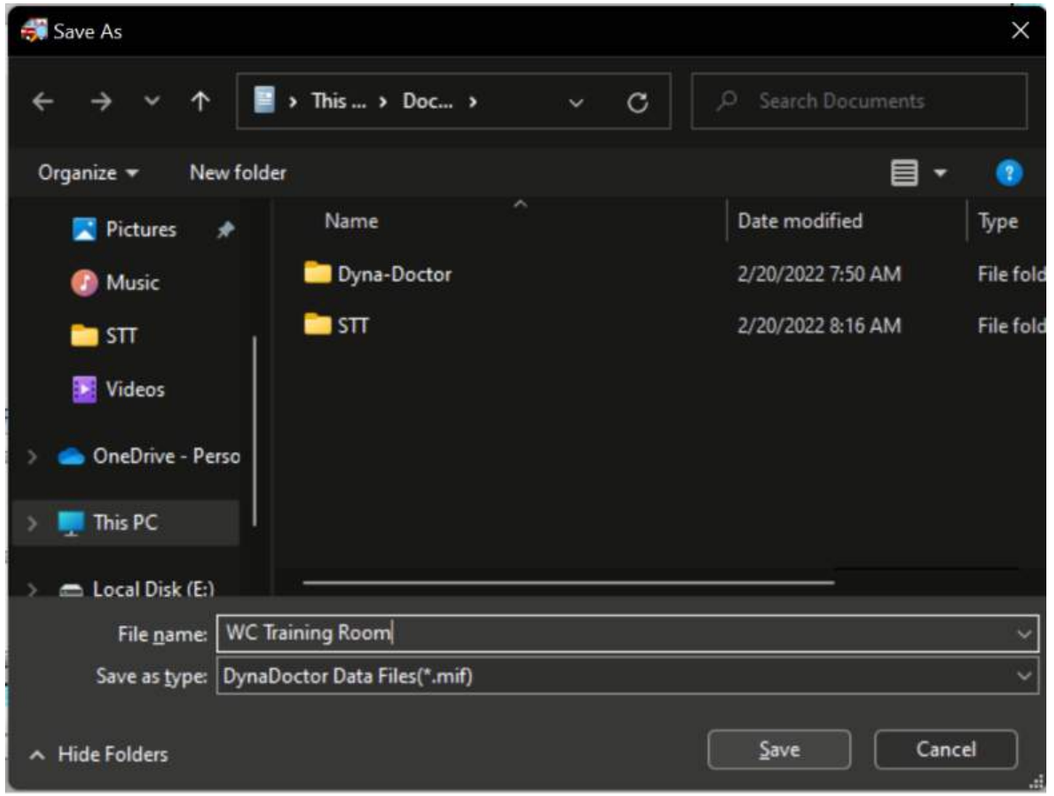
“Browse” lets you view previously recorded Data files.

“Edit” is used to view and add/edit comments.

“Set up” is used to update Port Setting and Update Cycle settings.

“Print” lets you print what is on the screen

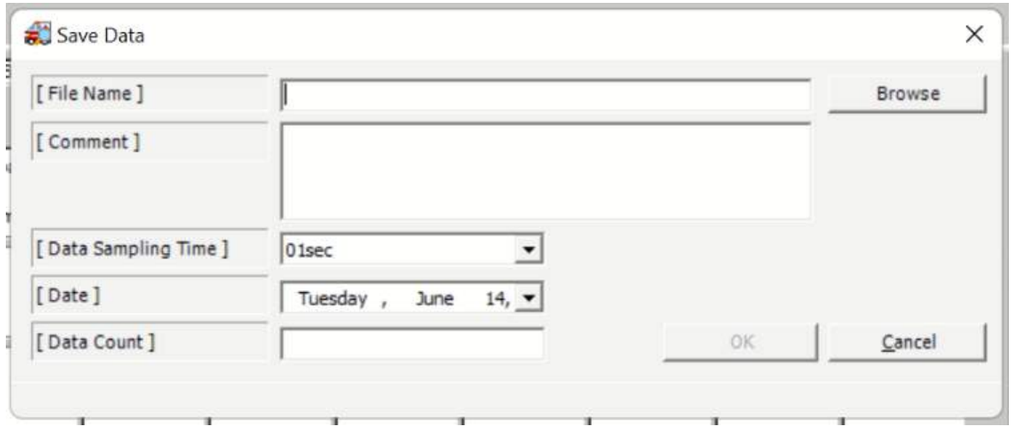
2. Next name the file and select the location to save it to.

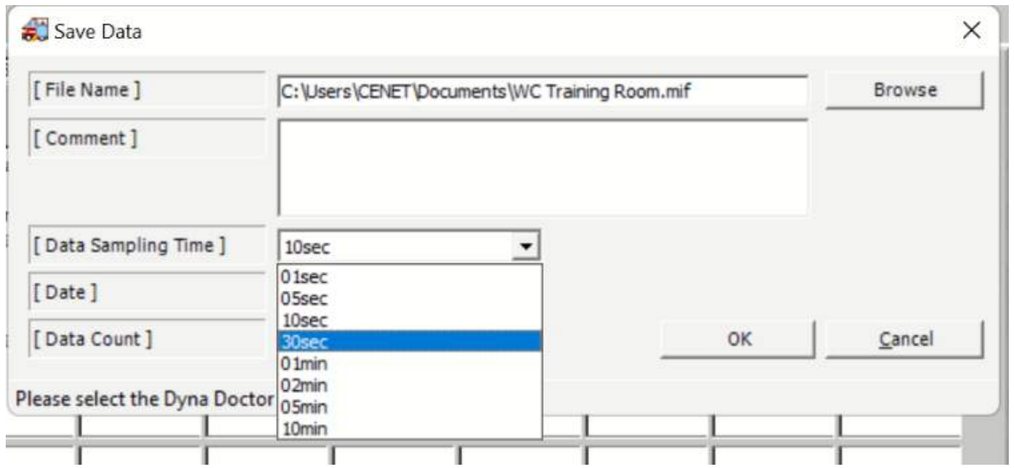


Toshiba Carrier **Dyna-Doctor** Software Navigation

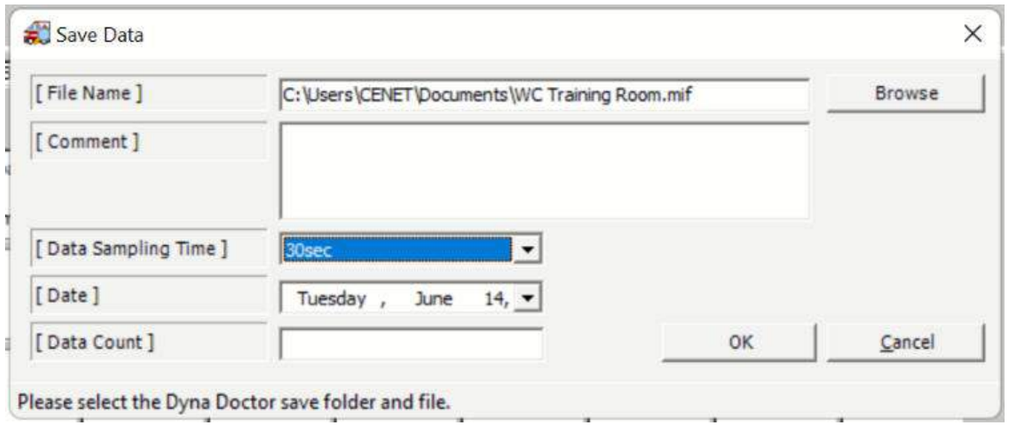
Navigating Dyna-Doctor Software (cont.)

3. Select the file sampling rate, typical settings are 30 sec to 5 min.

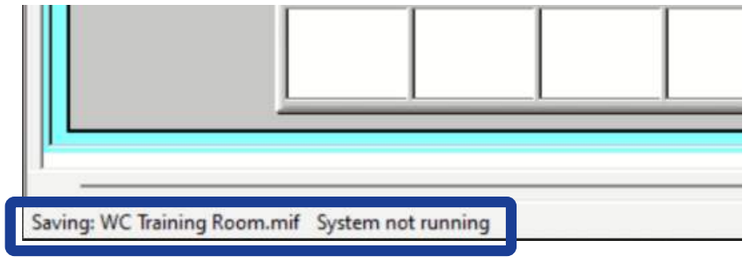




4. Finally click “Set”



In the bottom left corner you should see “Saving”

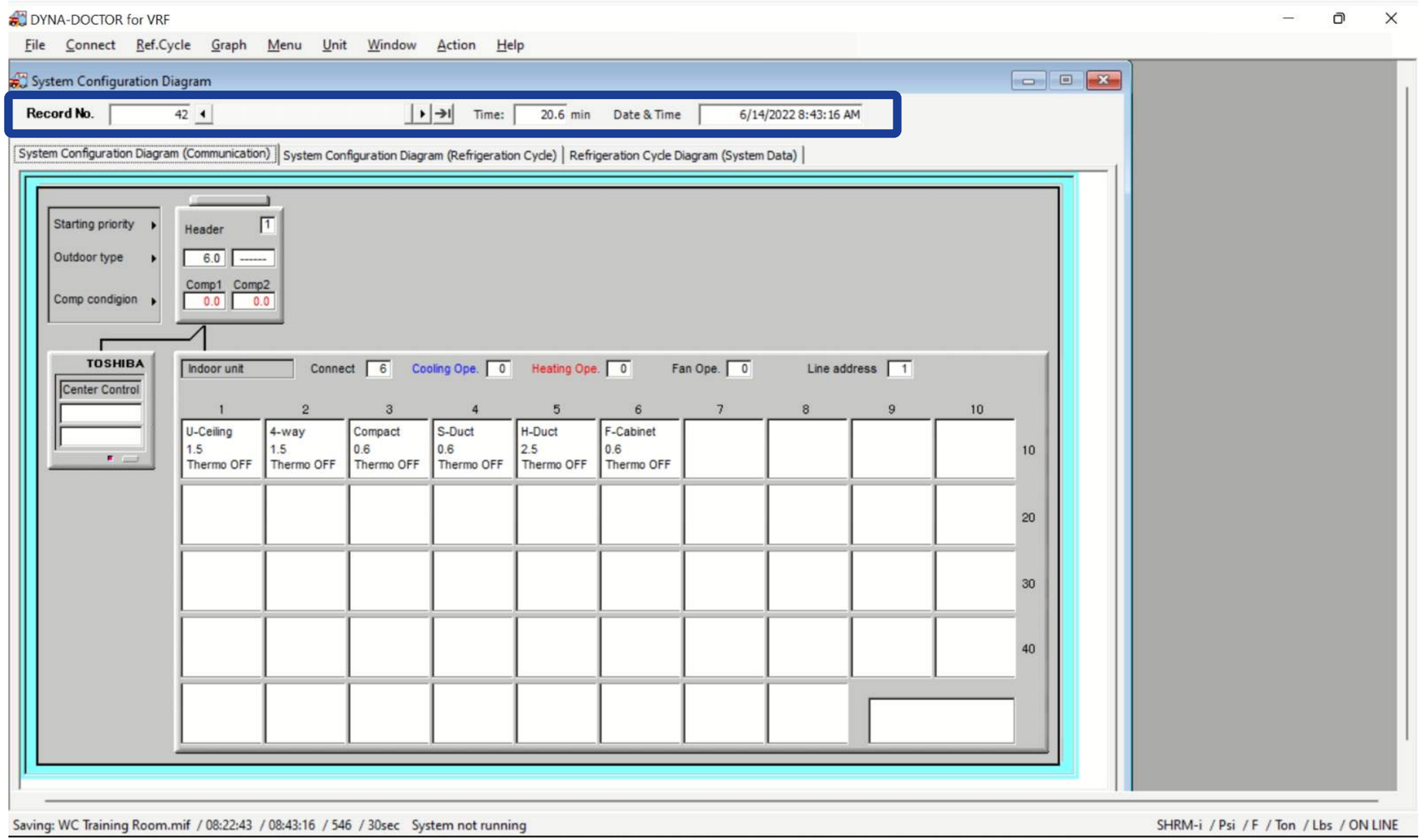


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

The Record No. (number) is how many data sets (sampling times) have been saved. You can use the scroll buttons to look back while the data is being saved.

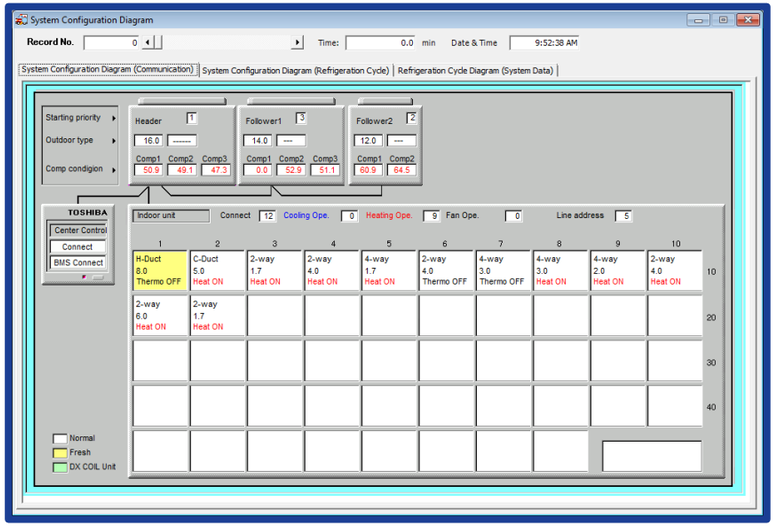
The total time record is shown as well as date/time each data set was taken.



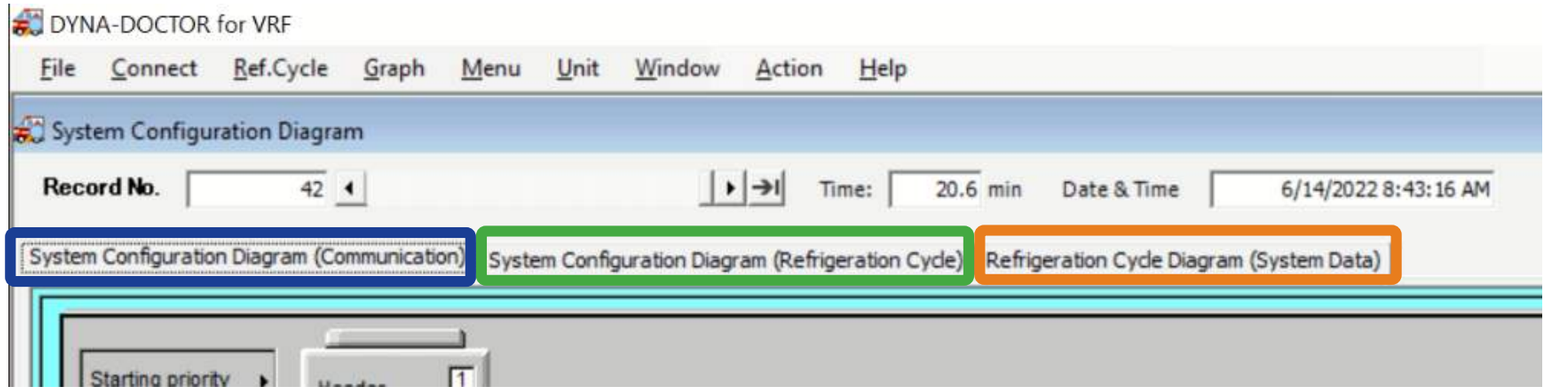
Toshiba Carrier **Dyna-Doctor** Software Navigation

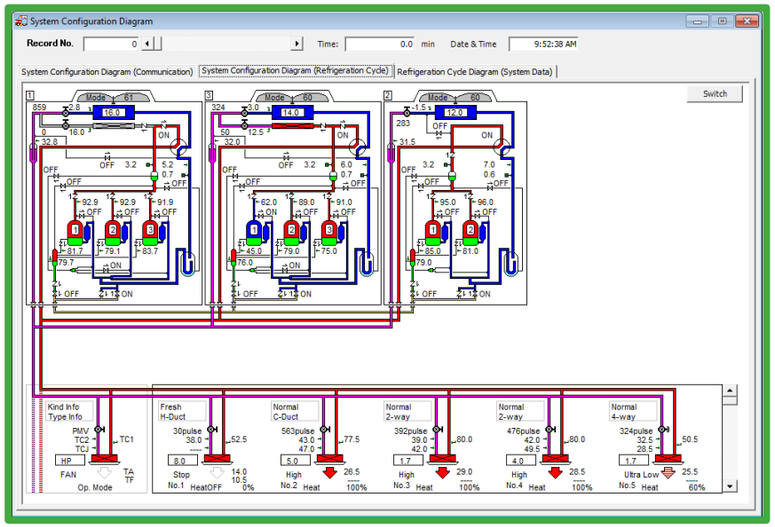
Navigating Dyna-Doctor Software (cont.)

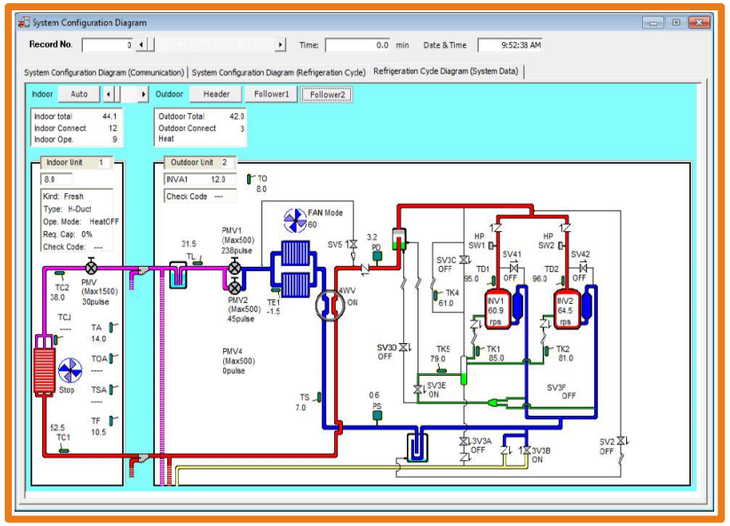
System Configuration Diagram window



The “System Configuration Diagram (Communication)” can be used to check the indoor/outdoor unit connection or operation status.







The “System Configuration Diagram (Refrigeration Cycle)” tab in the system configuration diagram window to display a refrigerant cycle diagram for the whole system.

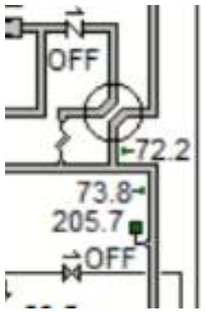
Select “Refrigerant Cycle Diagram (System Data)” to display a refrigerant cycle diagram for each air conditioner currently connected or being browsed can be displayed.

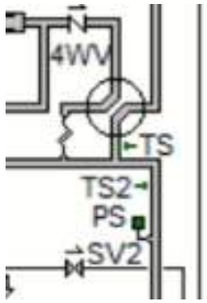
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

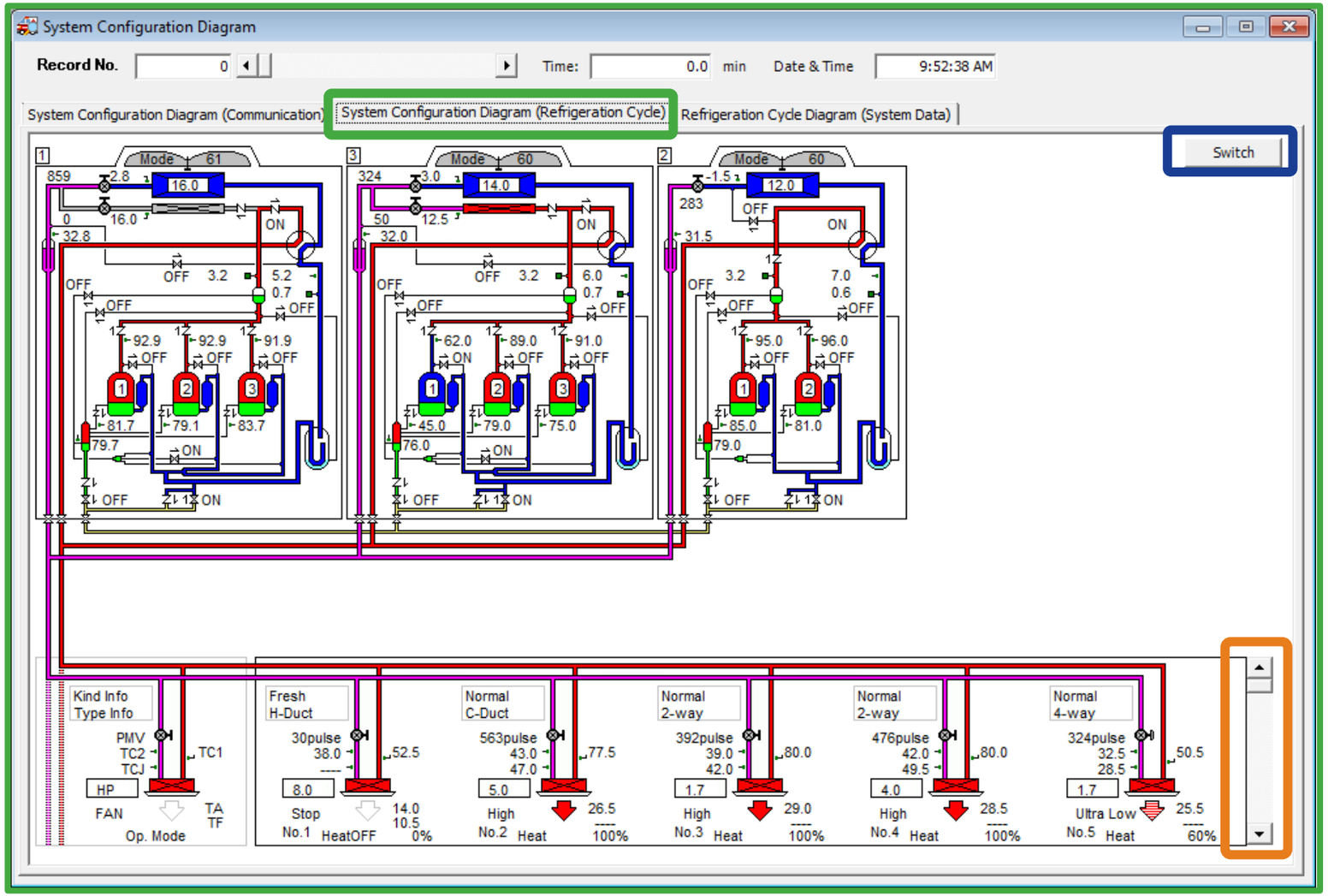
System Configuration Diagram (Refrigeration Cycle) window

- The “Switch” button will toggle between the component’s value and it’s name.





- Use the scroll arrows (located bottom right) to cycle through the indoor units.

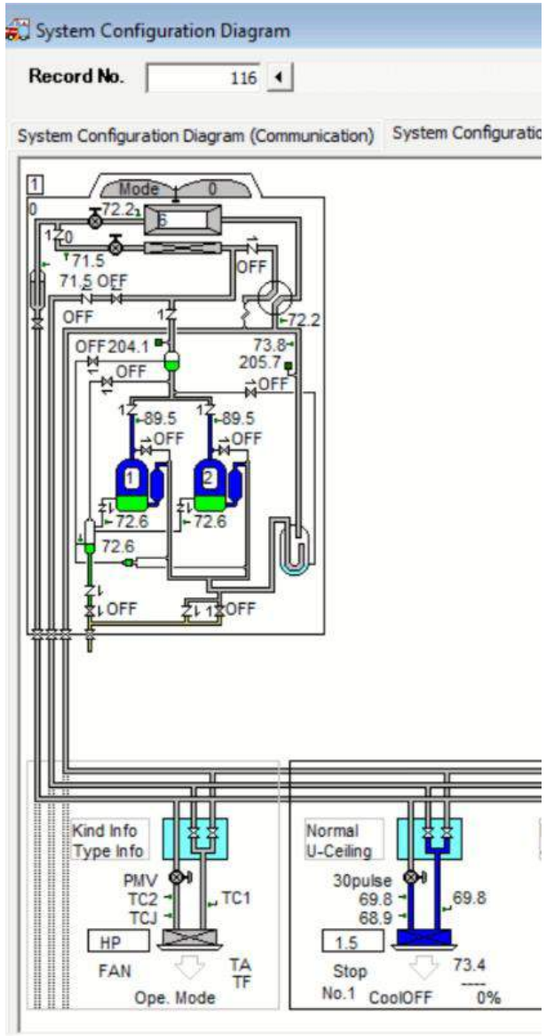


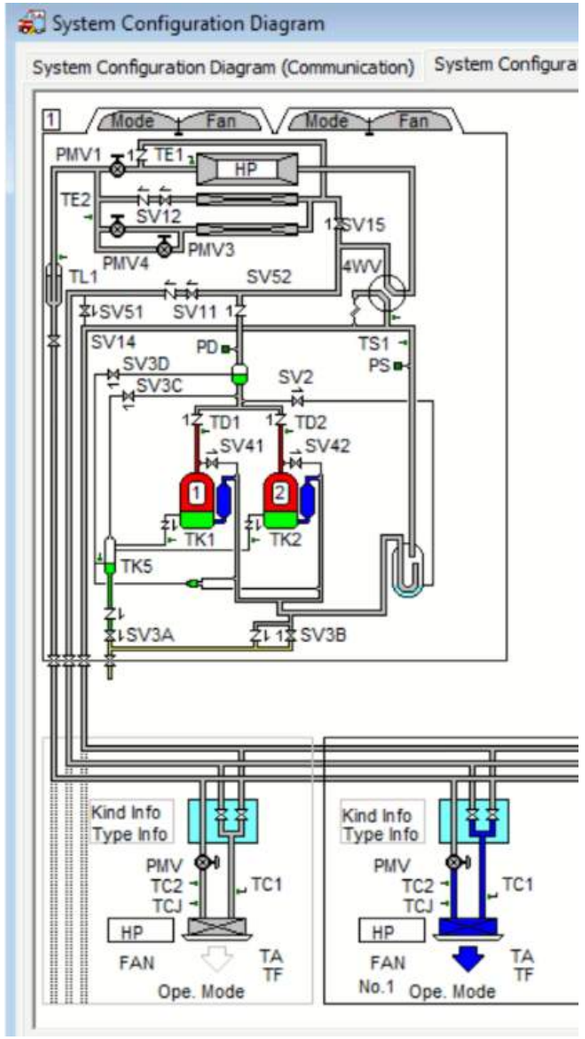
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

System Configuration Diagram
(Refrigeration Cycle) window

- When the system is operating, the diagram will tell you status, temperatures and pressure values.
- The indoor unit values: PMV, fan, mode, temperature values (coil split) can be seen.
- Note: When the Compressors are Blue they are OFF, when they are Red they are ON.



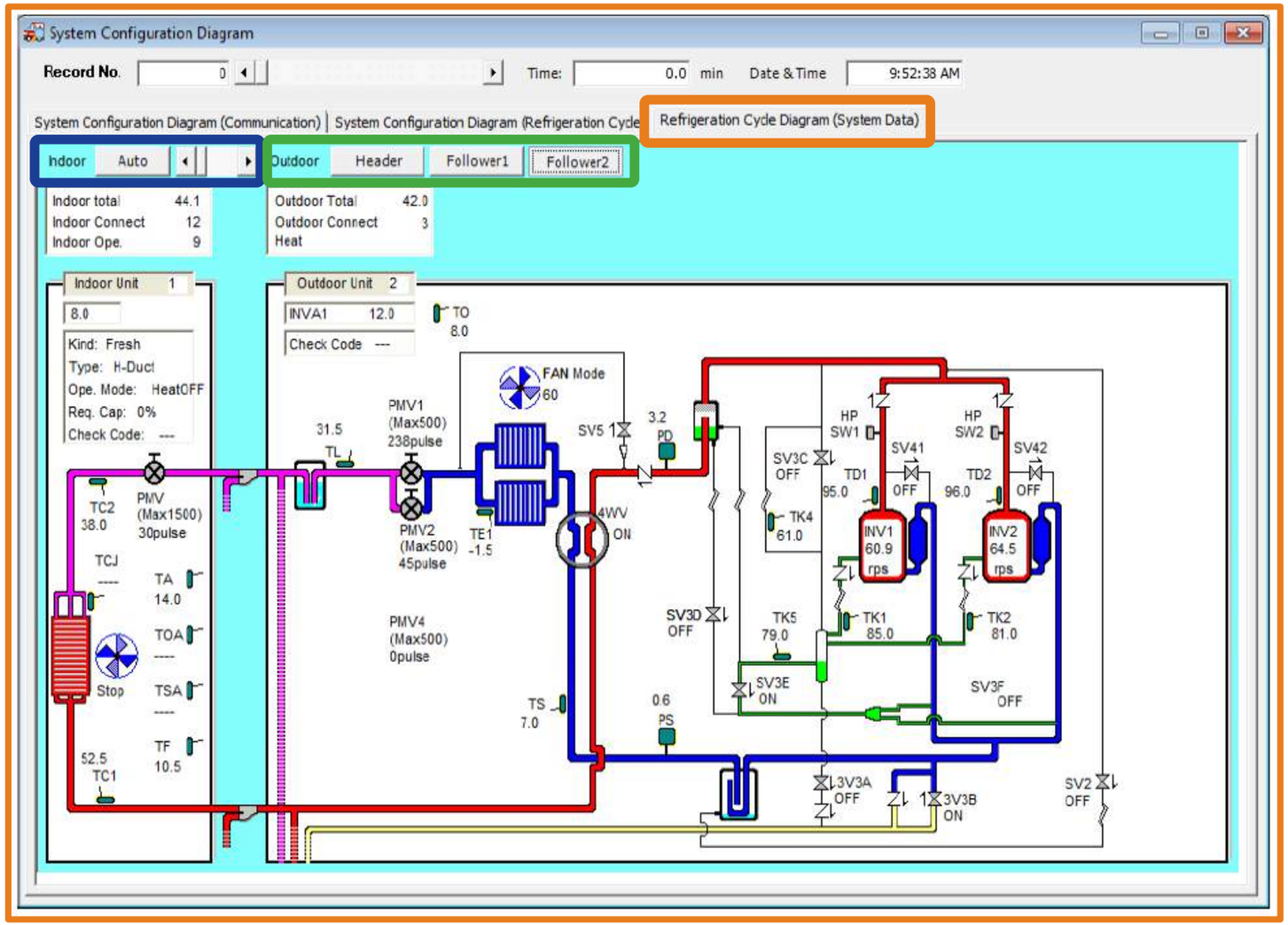


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

System Configuration Diagram
(System Data) window

- The view is defaulted to “Auto” mode the indoor unit values change once a second.
- If “Fixed” is selected mode the unit being viewed can be changed using the Indoor unit scroll bar, to the right of the “Auto/Fixed” button.
- The Outdoor unit being displayed can also be changed, if systems has more then one module. Click the “Header”, “Follower 1”, and “Follower 2’ buttons to choose an outdoor unit to be displayed.

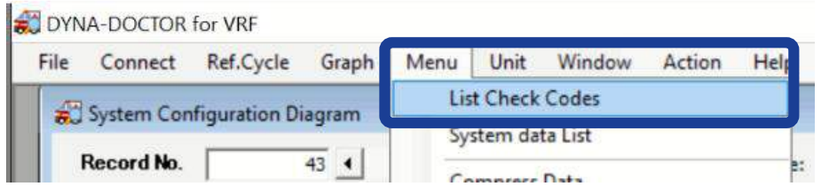


Toshiba Carrier **Dyna-Doctor** Software Navigation

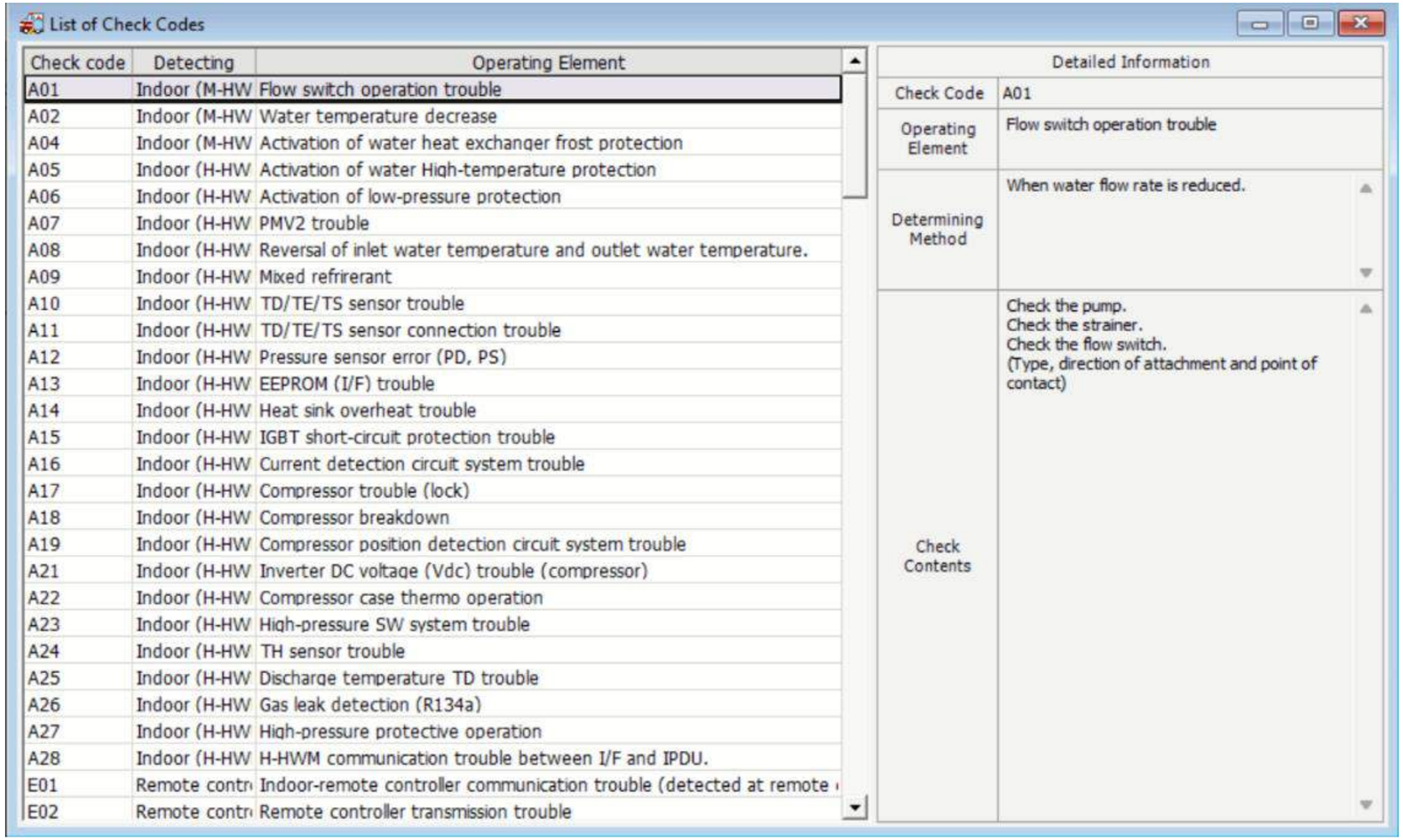
Navigating Dyna-Doctor Software (cont.)

List of System (Error) Codes

- Go to “Menu”, then click “List System Codes”



- Check Codes are broken down by Operating Element, Determining Method and what to Check.

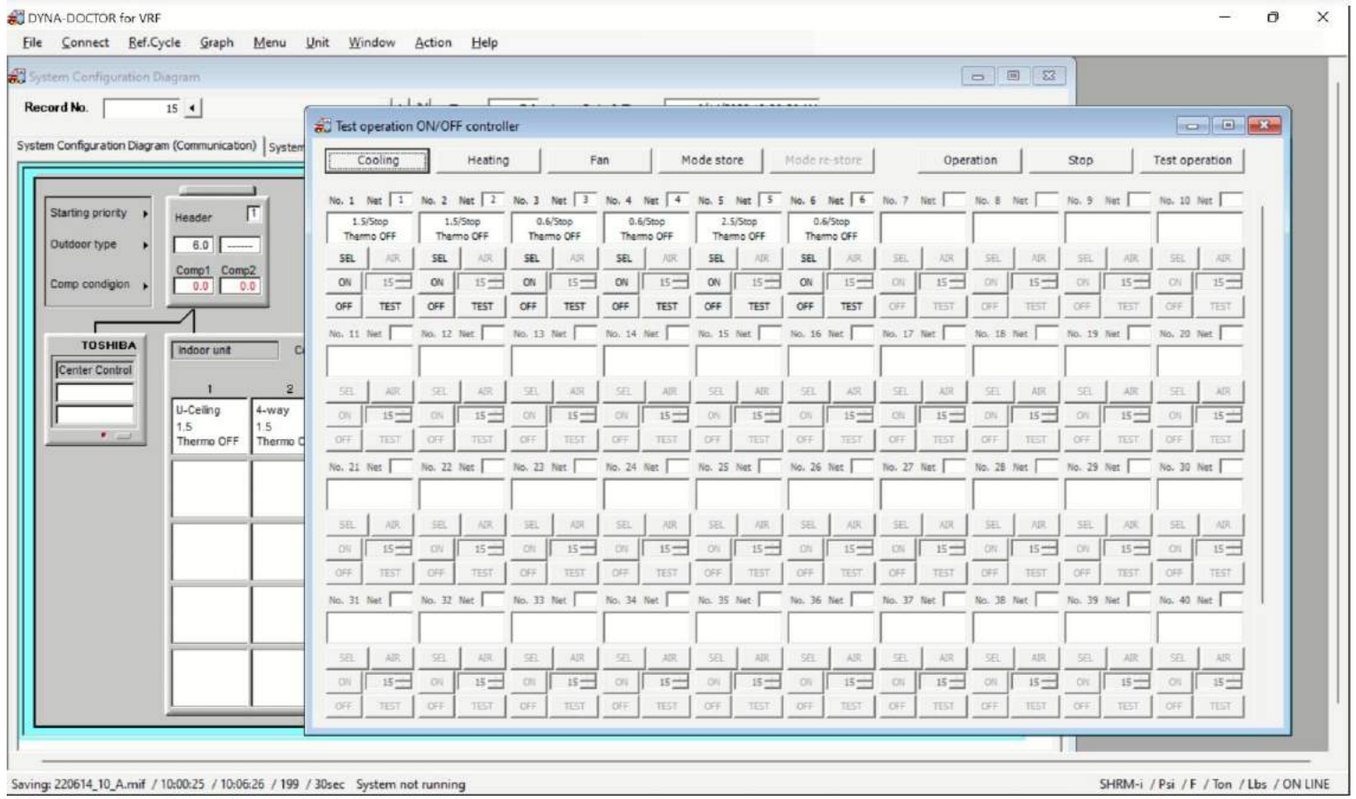


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Initiating Test Operation

- Select “Action” then “ON/OFF control”

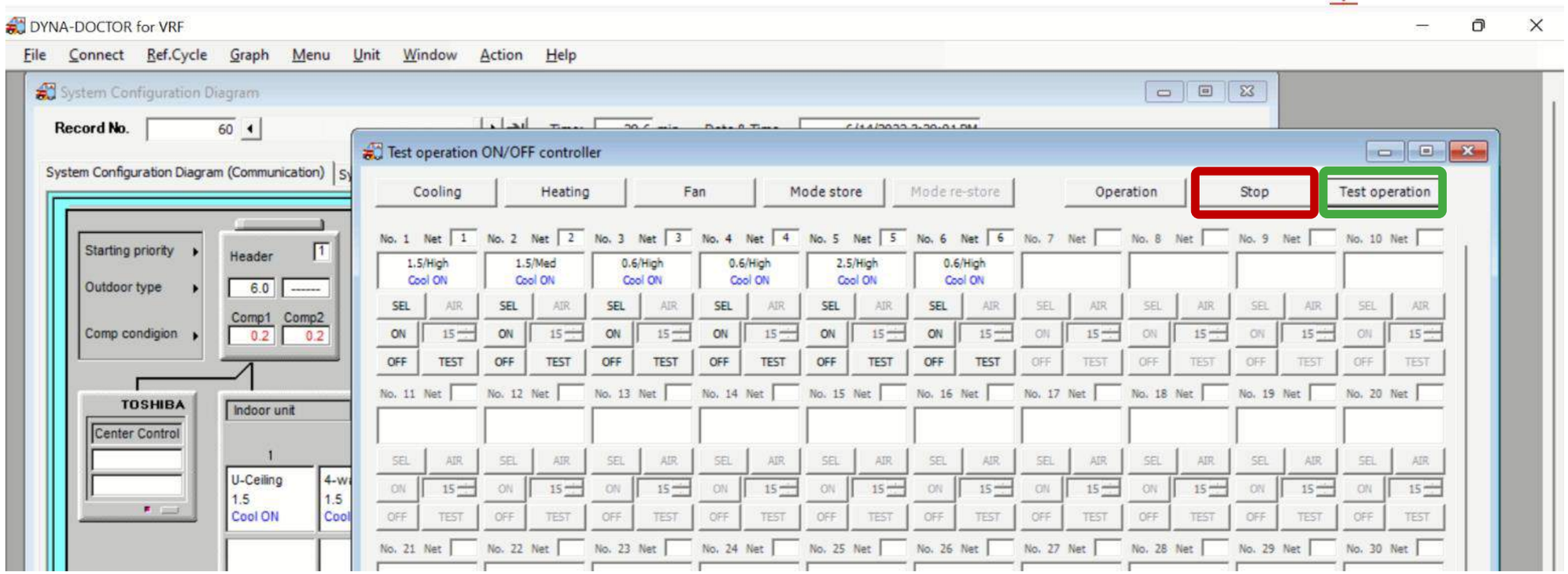


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Initiating Test Operation

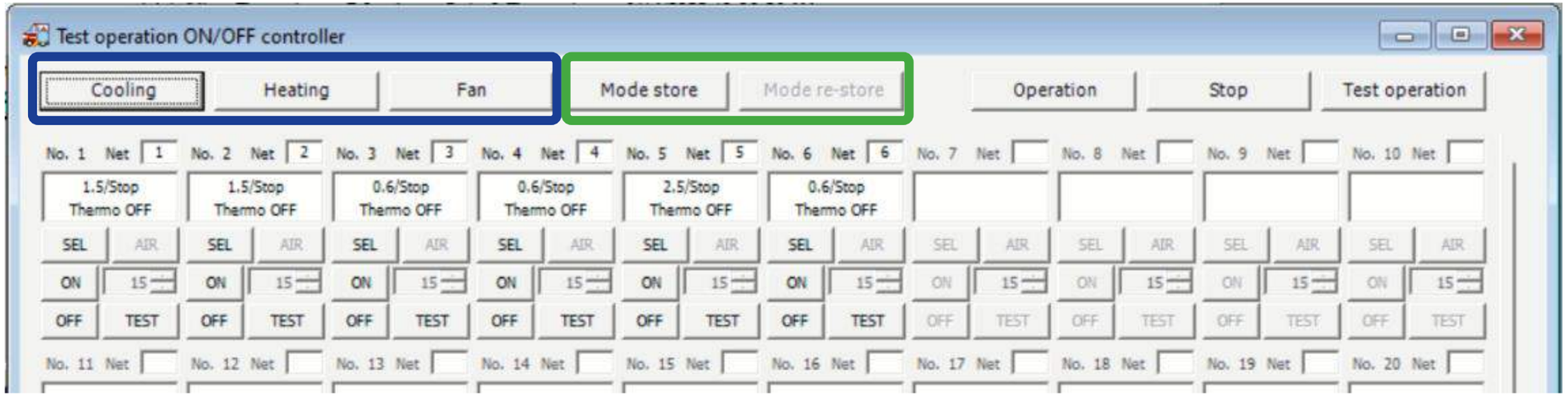
- If recording has not been started we recommend starting it before the test.
- Click “Test operation”. Within 5 to 20 seconds the IDU’s status will change and the test will start.
- Test Operation last about 1 hour.
- Once complete, the system will go back to what it was set at prior to the test.
- If you need to exit the test, click “Stop”.



Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

“Cooling”, “Heating” and “Fan” mode can also be selected from this window.

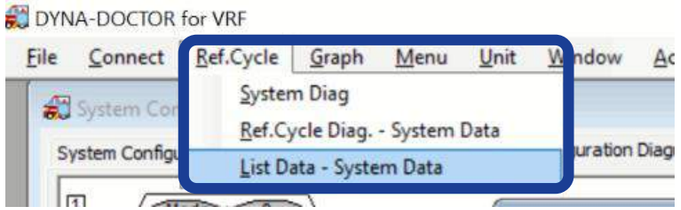


“Mode store” & “Mode re-store” can be used to first clicking “Mode store” prior to you making any changes to the operation using Dyna-Doctor. Once you are done simply click “Mode re-store” and the system should revert to the setting before you made any changes.

Toshiba Carrier **Dyna-Doctor** Software Navigation

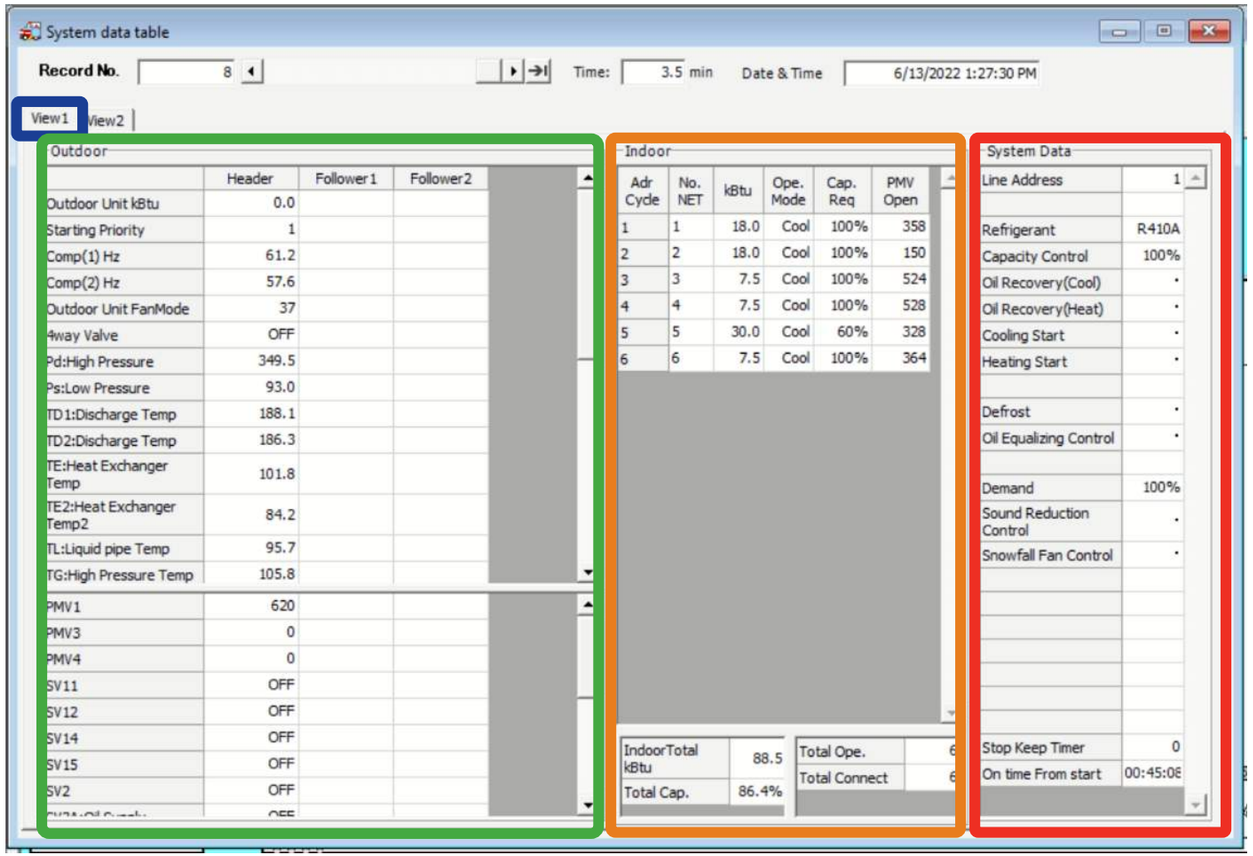
Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)



View 1 – Outdoor Units

Outdoor data is on the left, Indoor data is in the middle and System data is on the right. Scrolling may be required to see all available information.



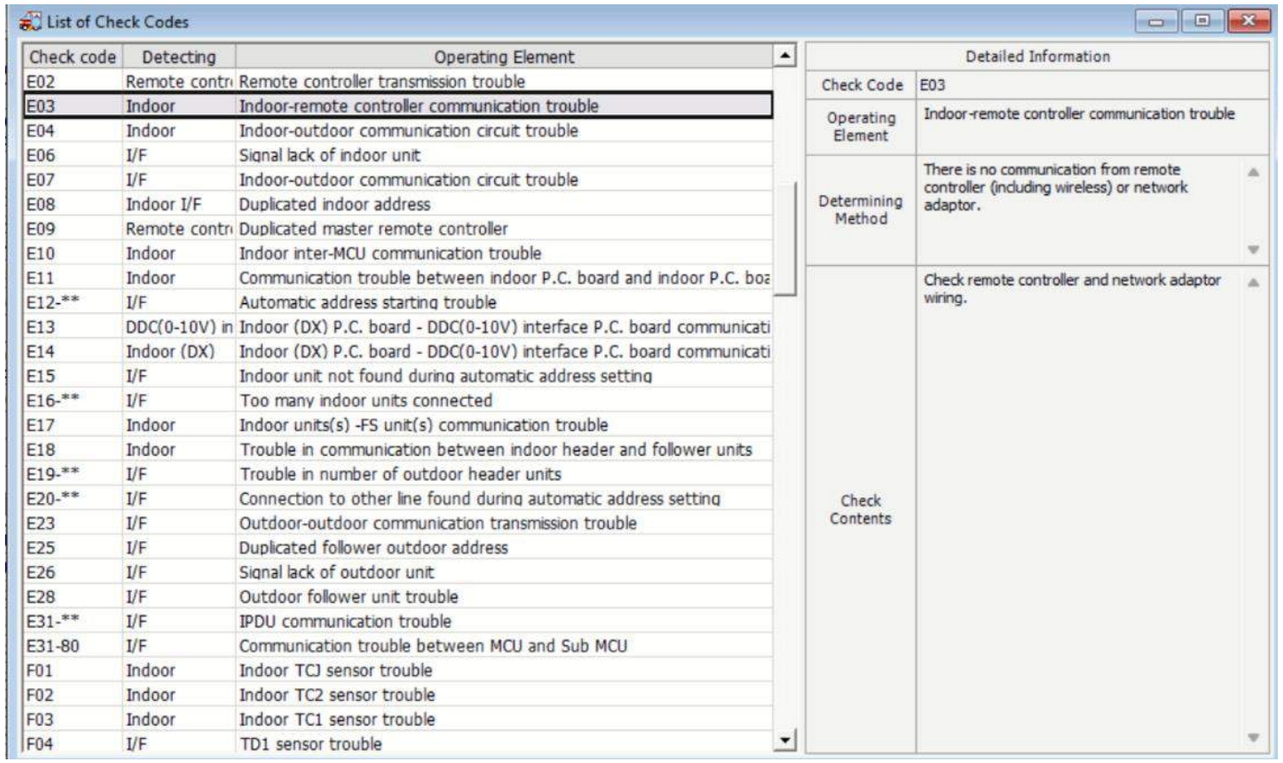
Toshiba Carrier **Dyna-Doctor** Software Navigation

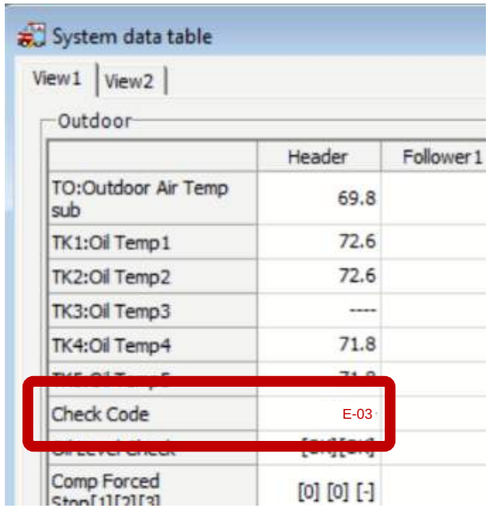
Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)

View 1 – Check (Error) Code

If Check Code is displayed, click on the code to bring up more detailed information on error.

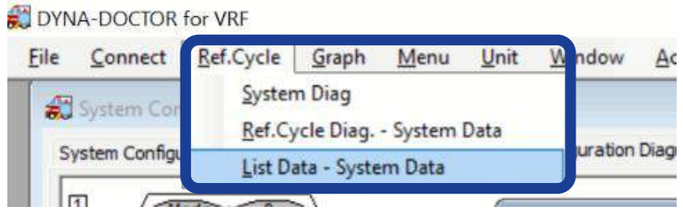




Toshiba Carrier **Dyna-Doctor** Software Navigation

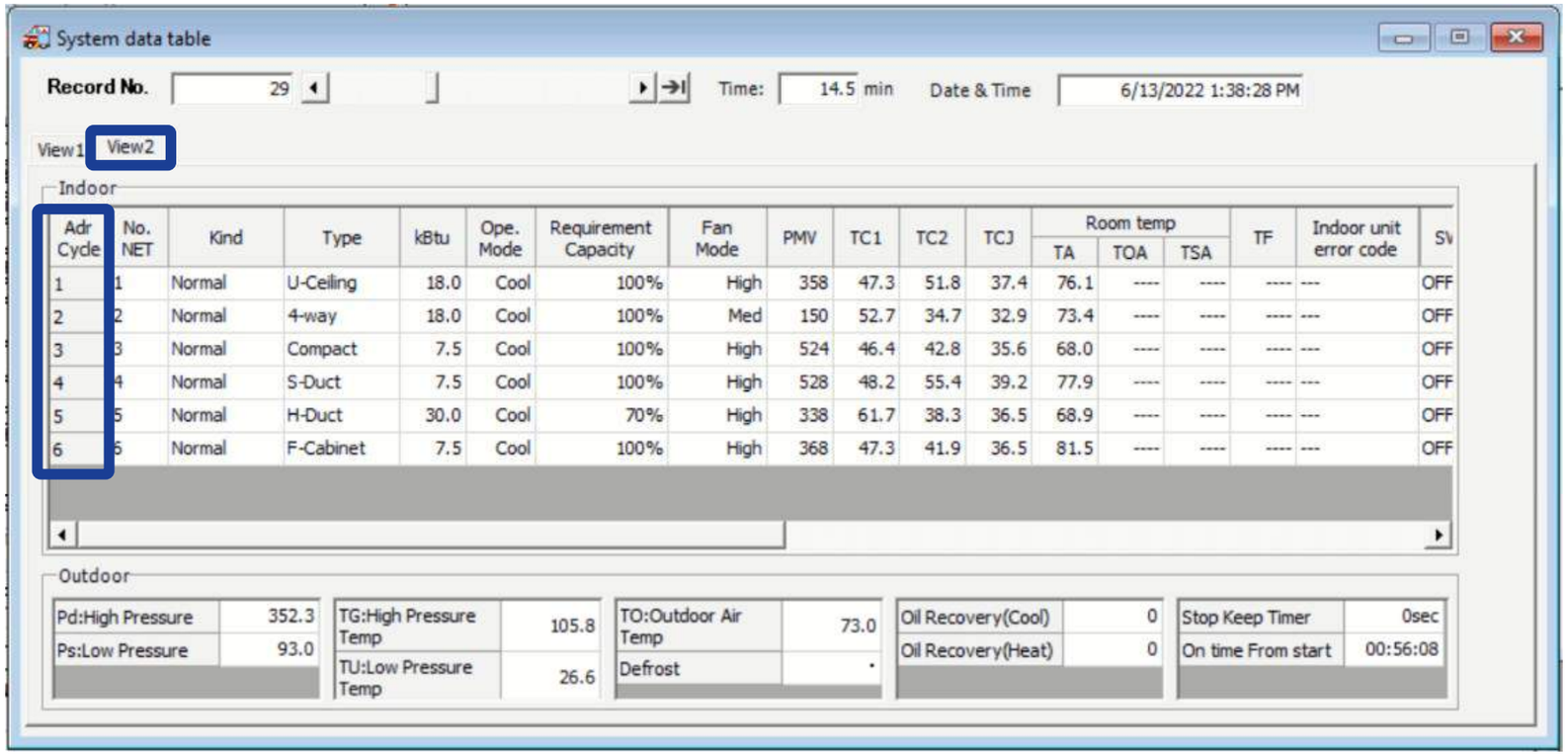
Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)



View 2 – Indoor Units

Detailed operational data can be seen for each indoor unit. Scroll to the right for more.



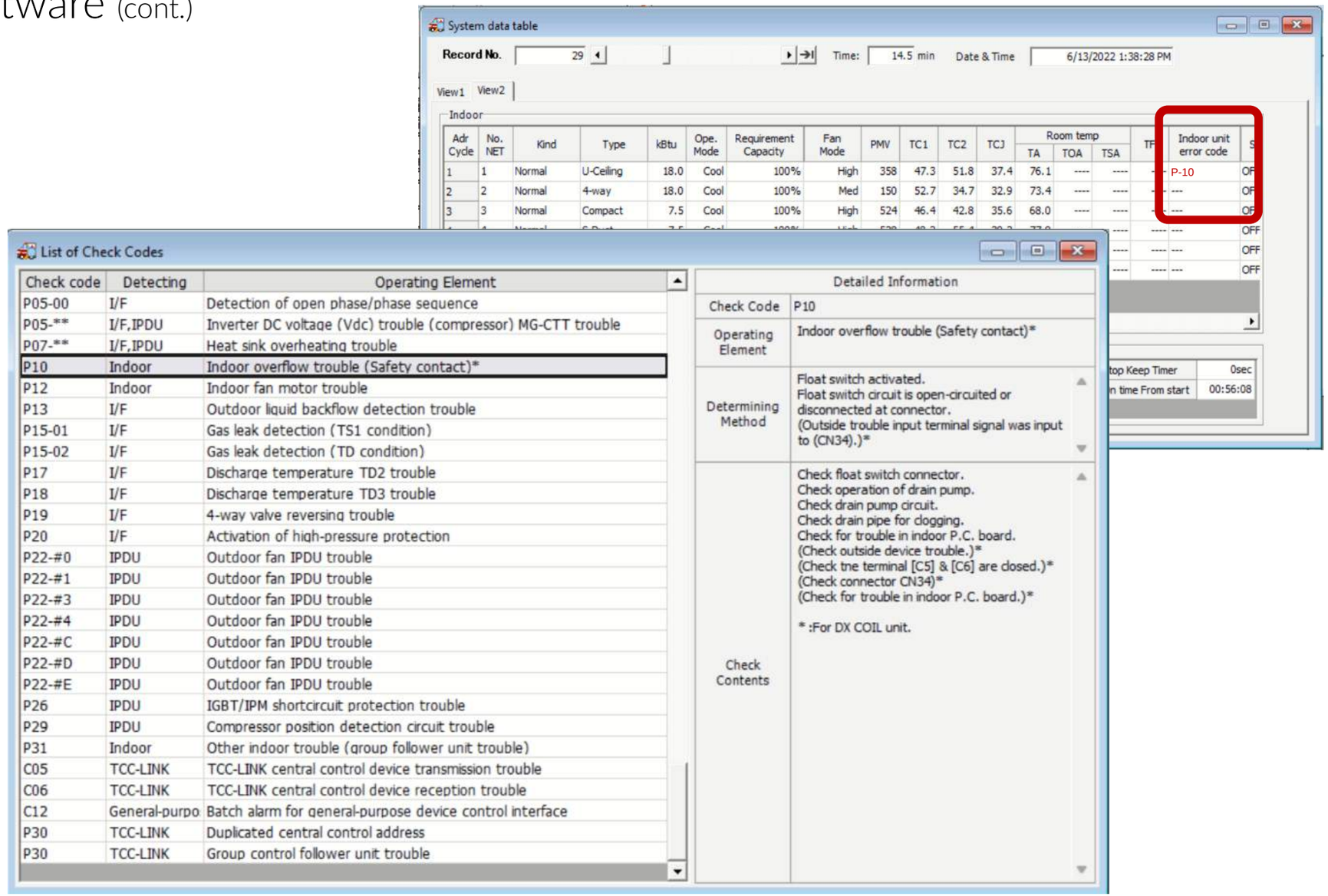
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)

View 2 – Check (Error) Code

If Check Code is displayed, click on the code to bring up more detailed information on error.



Toshiba Carrier **Dyna-Doctor** Software Navigation

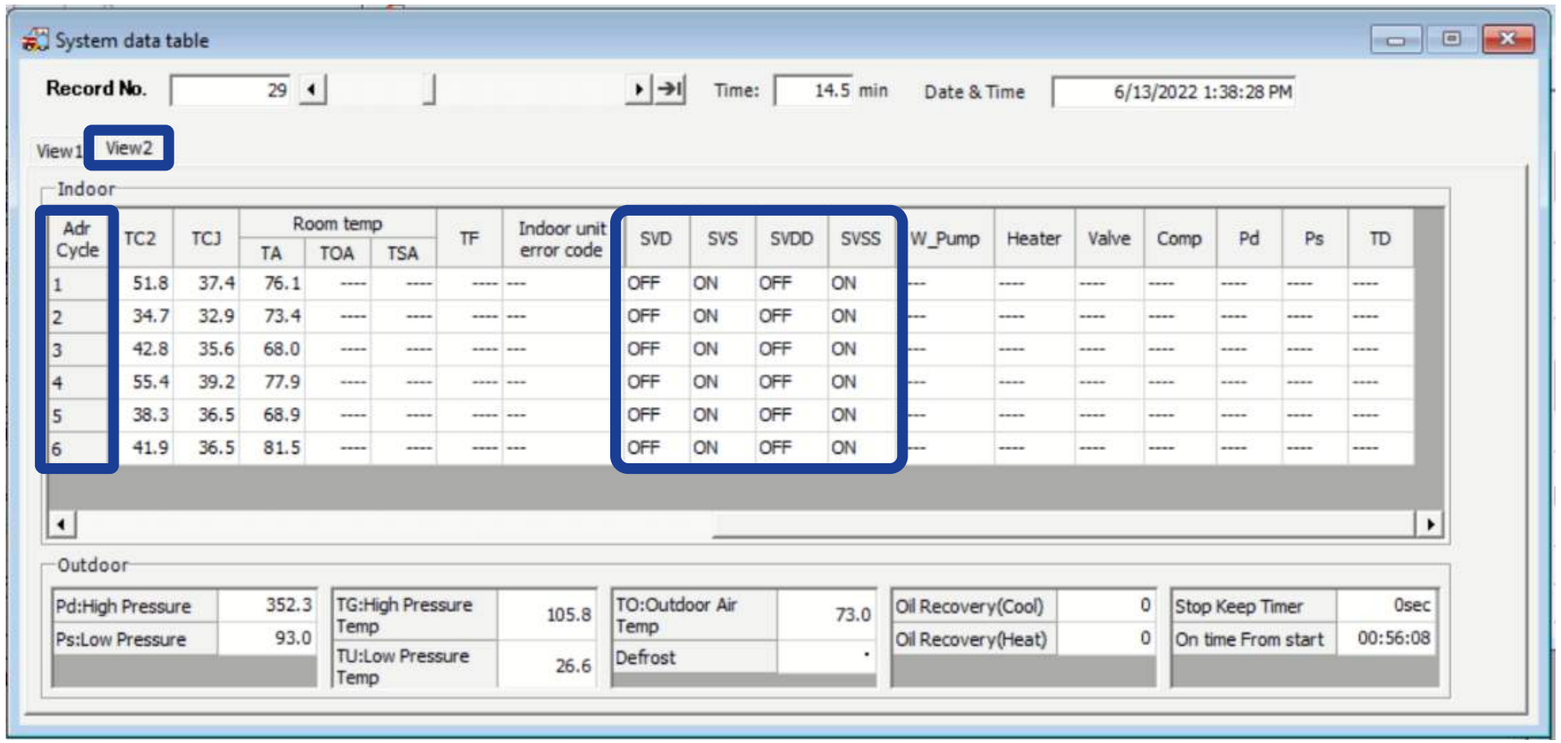
Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)

View 2 – Flow Selector Box Values

If Heat Recovery system, operational data can be seen for the Flow Selector Units.

Scroll window to the right for this information.

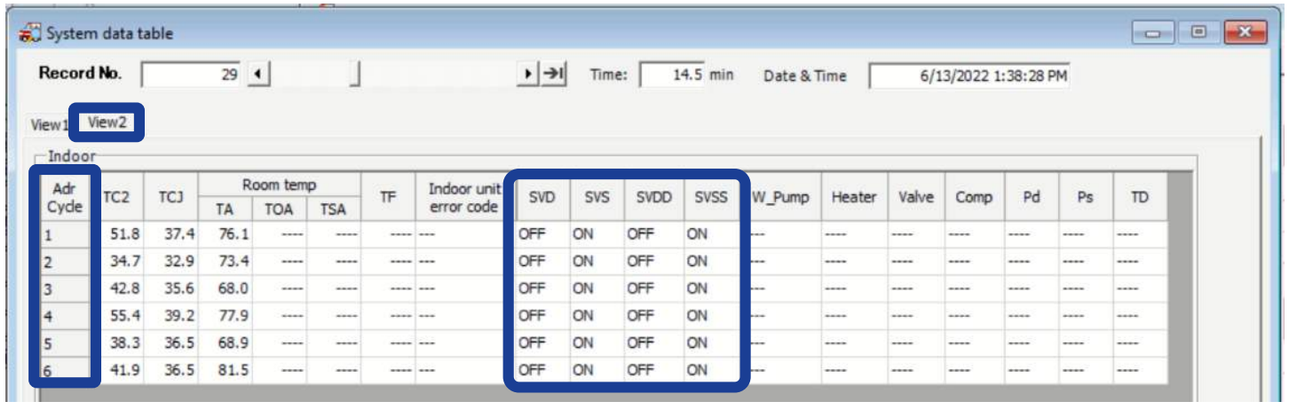


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

List Data - System Data (2 views)

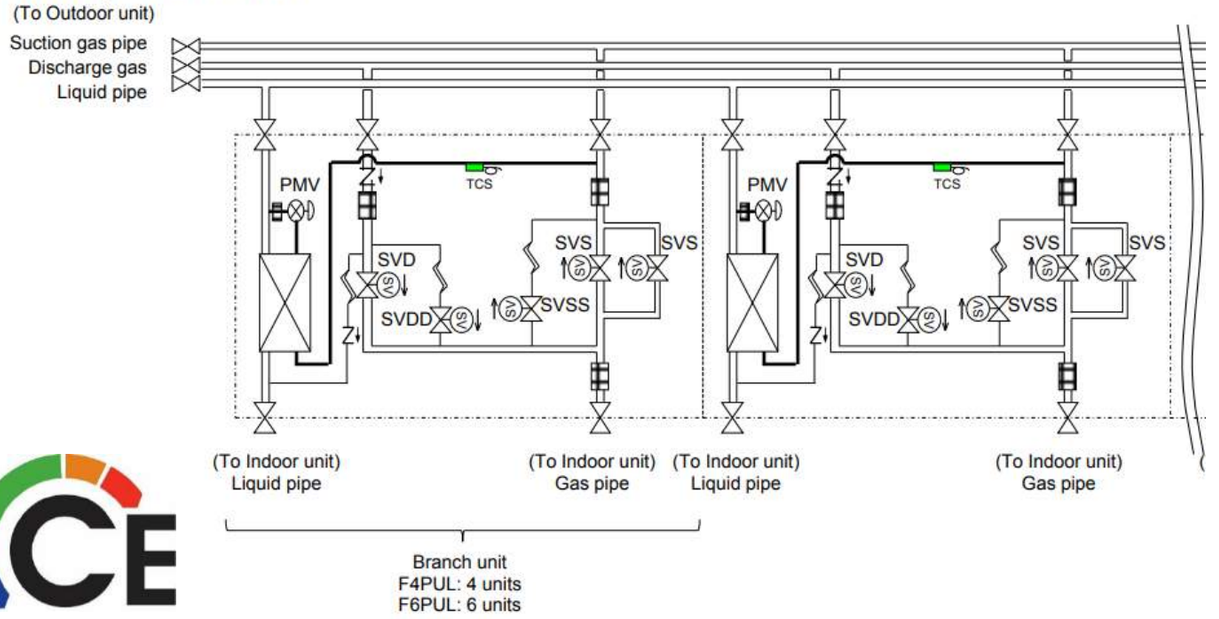
View 2 – Flow Selector Box Values



Adr Cycle	TC2	TCJ	Room temp TA	Room temp TOA	Room temp TSA	TF	Indoor unit error code	SVD	SVS	SVDD	SVSS	W_Pump	Heater	Valve	Comp	Pd	Ps	TD
1	51.8	37.4	76.1	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----
2	34.7	32.9	73.4	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----
3	42.8	35.6	68.0	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----
4	55.4	39.2	77.9	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----
5	38.3	36.5	68.9	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----
6	41.9	36.5	81.5	----	----	----	---	OFF	ON	OFF	ON	---	----	----	----	----	----	----

Use the diagram and table from the Factory Service Manual to help trace ands understand refrigerant flow.

Multi port FS unit



Functional parts name		Function outline
Solenoid valve	**SVD**	(Discharge gas block valve) 1) High-pressure gas circuit at heating operation
	SVS	(Suction gas block valve) 1) Low-pressure gas circuit at cooling operation
	SVDD	(Pressure valve) 1) To increase pressure when No. of indoor heating units are increased
	SVSS	(Regulator valve) 1) To recover refrigerant in the stopped cooling thermostat-OFF indoor unit 2) To decrease pressure when No. of indoor heating units are decreased
Pulse motor valve	**PMV**	1) Controls flow volume of the double-pipes bypass circuit
Temp. sensor	**TCS**	(Only Multi port FS unit) 1) Detects refrigerant temp. at outlet of the double-pipes bypass circuit to check an abnormality of PMV

Dyna-Doctor does not show these two values

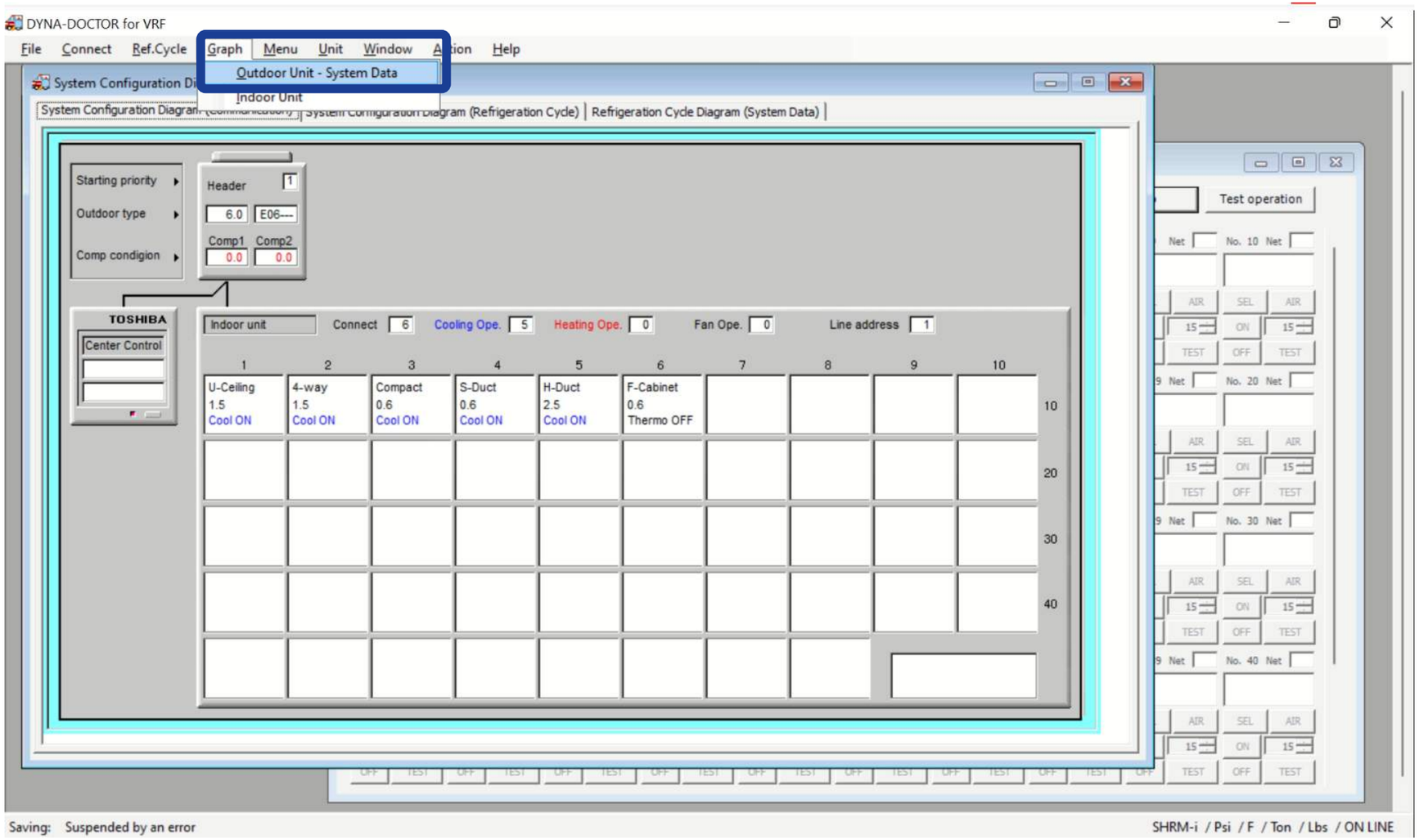
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Graphing Data

Using a graph to see the data trends can be very useful to spot irregularities in the equipment operation.

- Select “Graph” then “Outdoor Unit – System data”

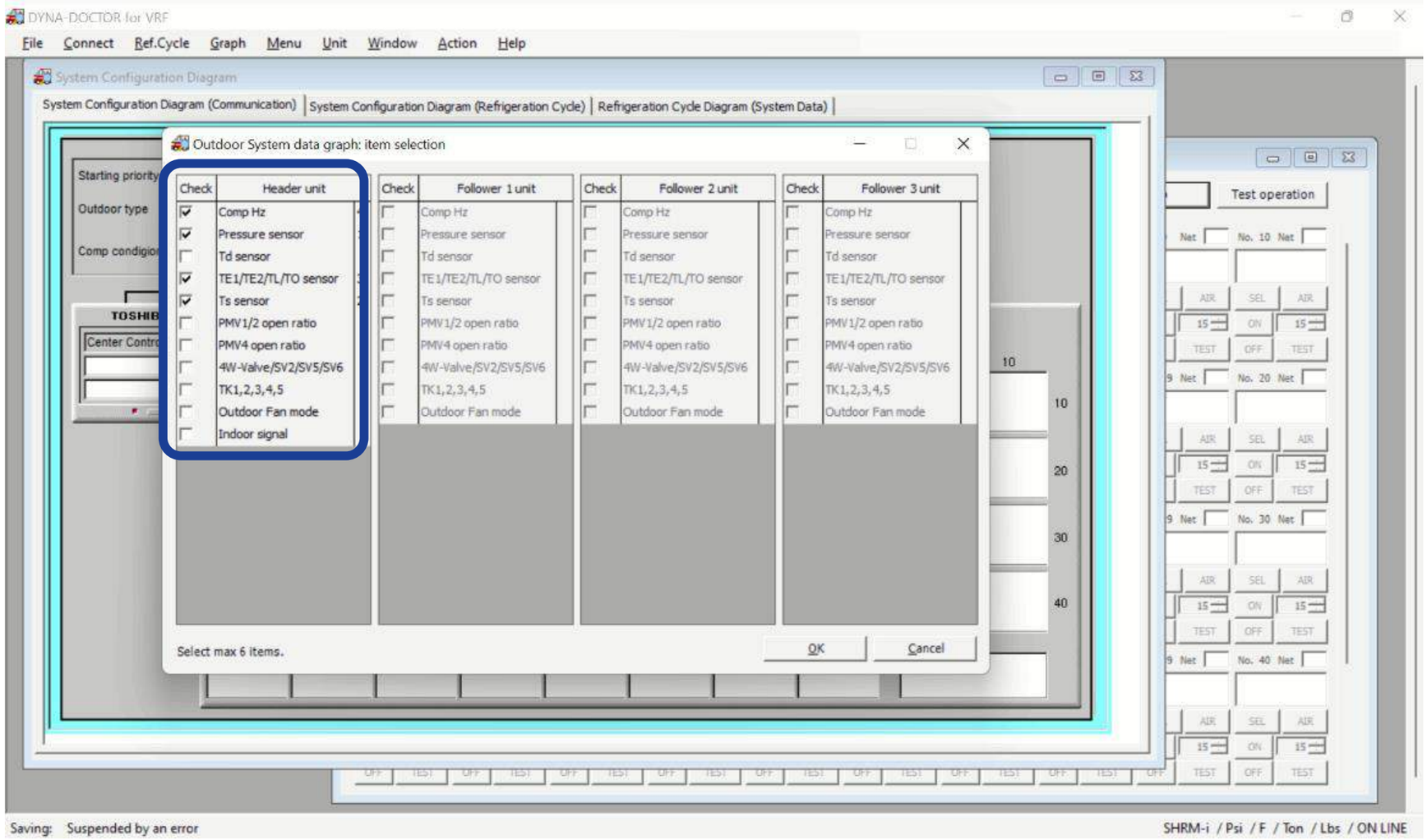


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Graphing Data

- Now select the data points you wish to see. Data points can be selected for each outdoor unit in the system up to a four module system.



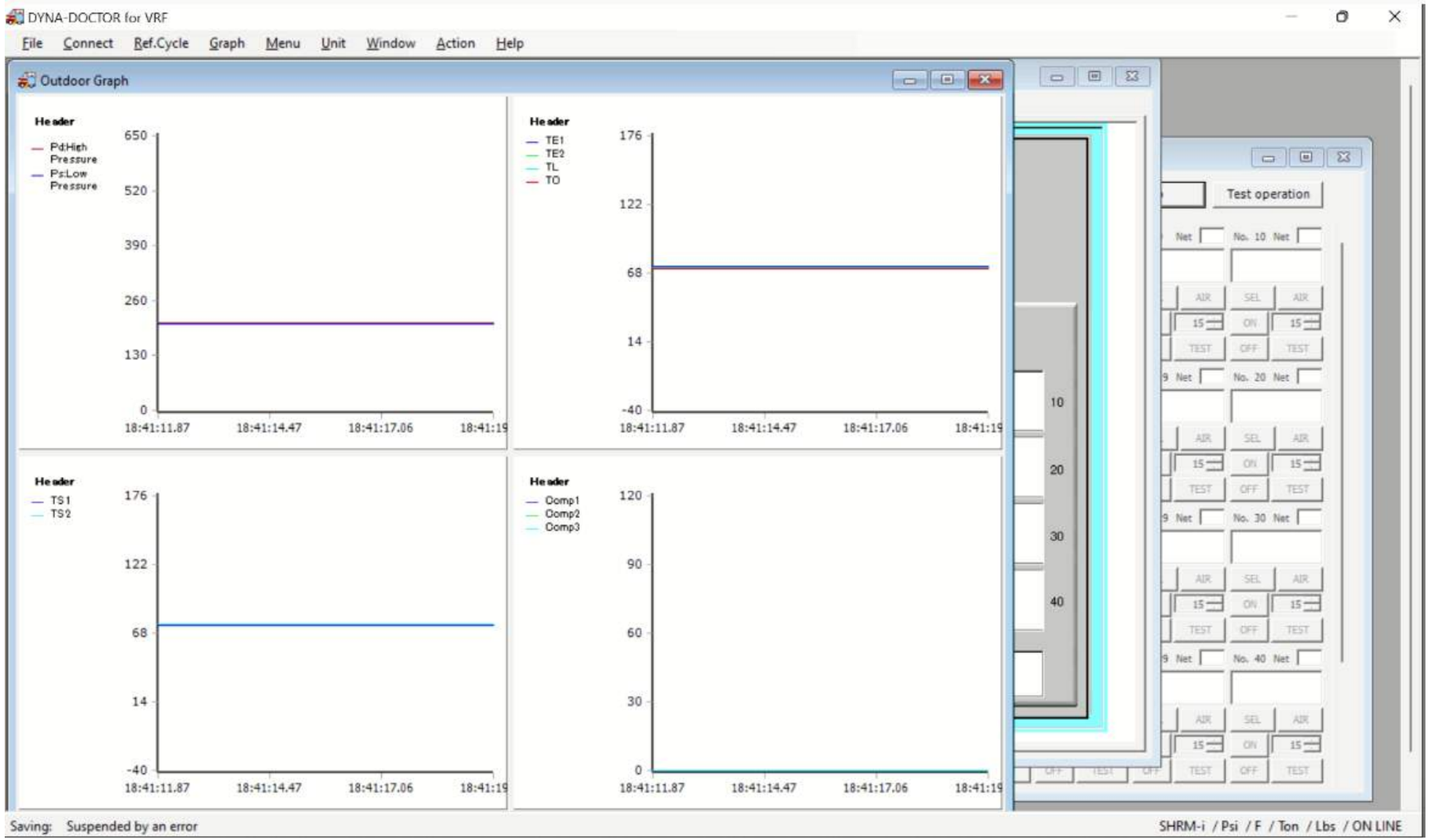
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Graphing Data

- When viewing a system live, the data points update based on what you selected.

- When viewing a recording of a system, data only updates when manually scrolling through data sets.



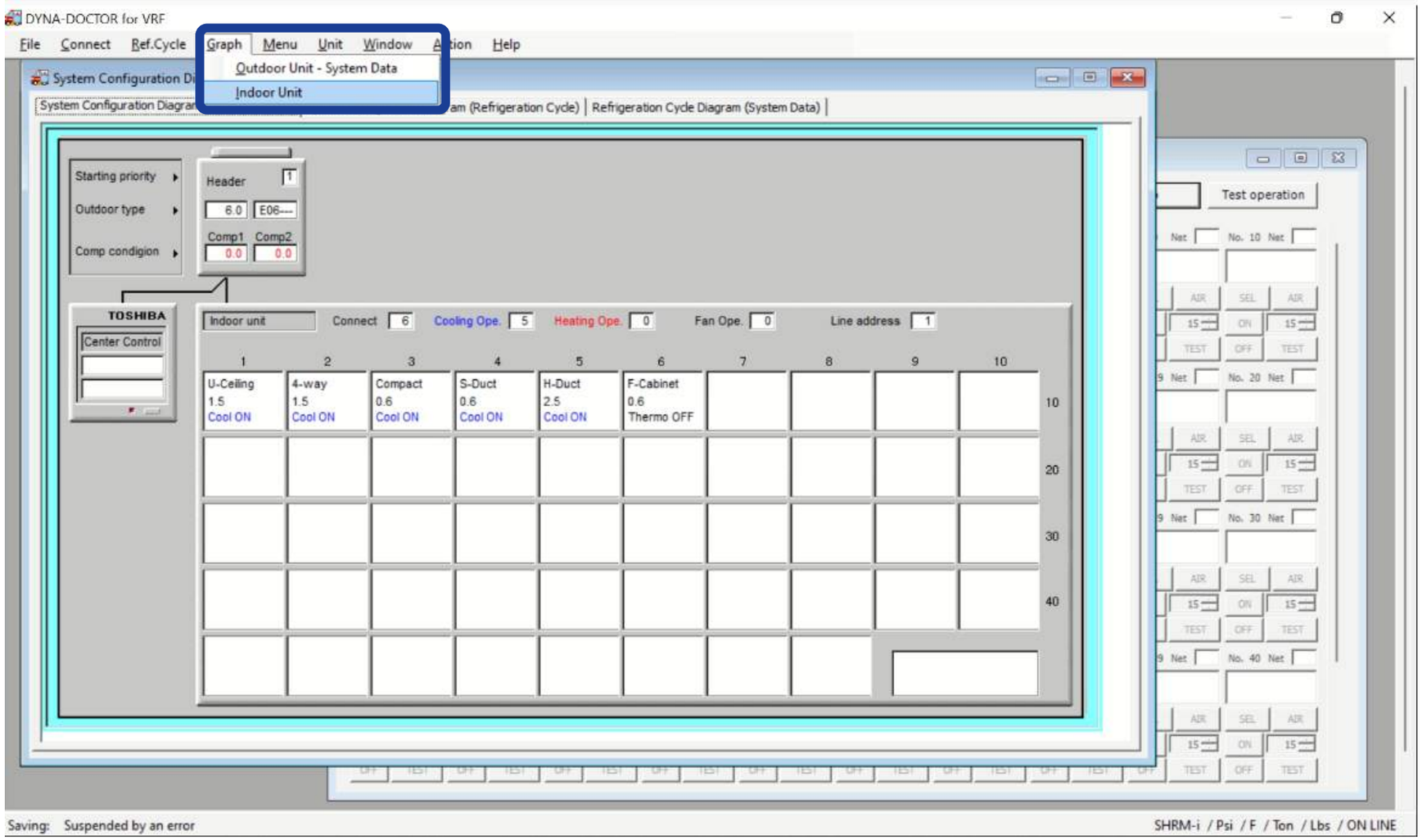
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Graphing Data

The same can be done for the Indoor Units.

- Select “Graph” then “Indoor Unit”

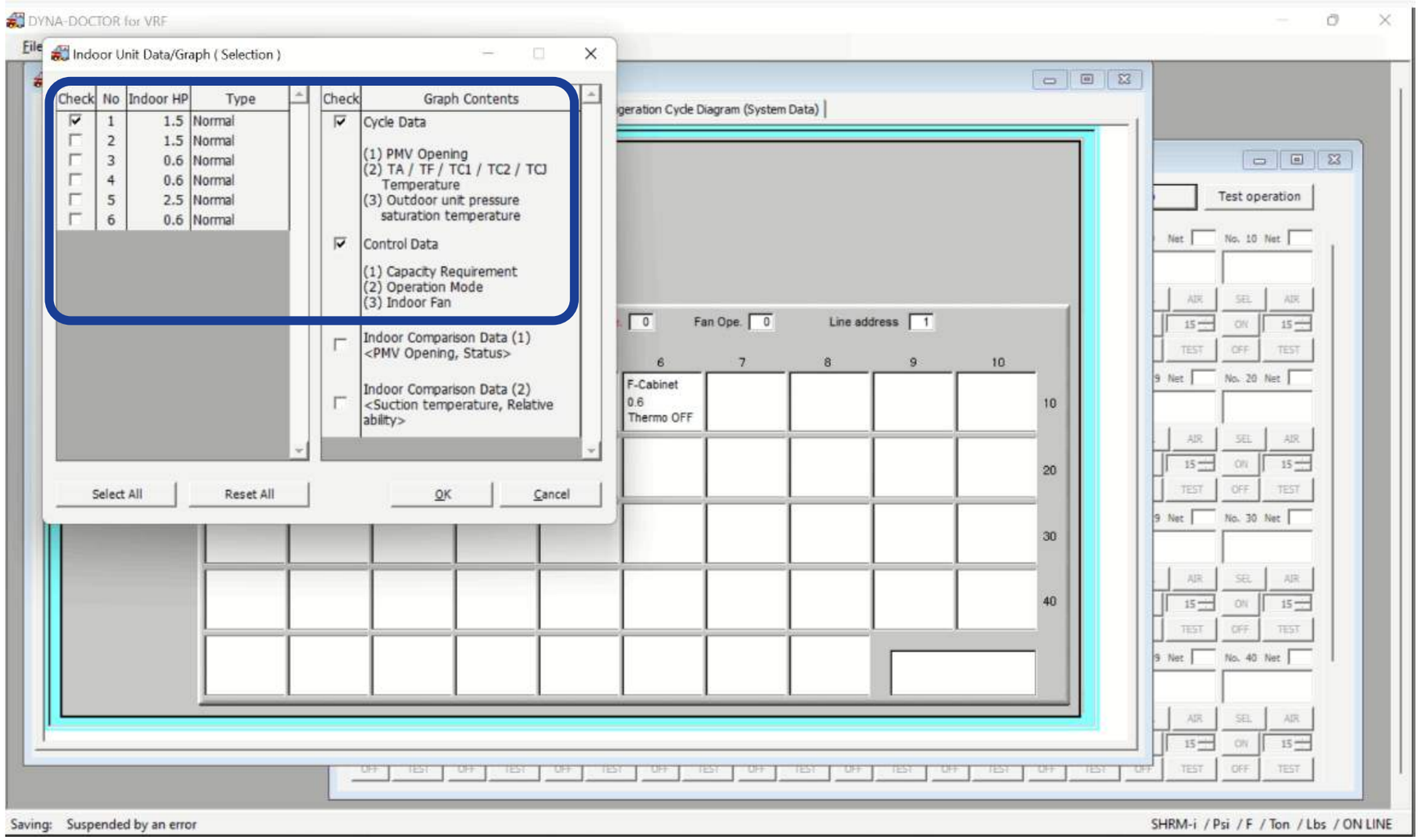


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Graphing Data

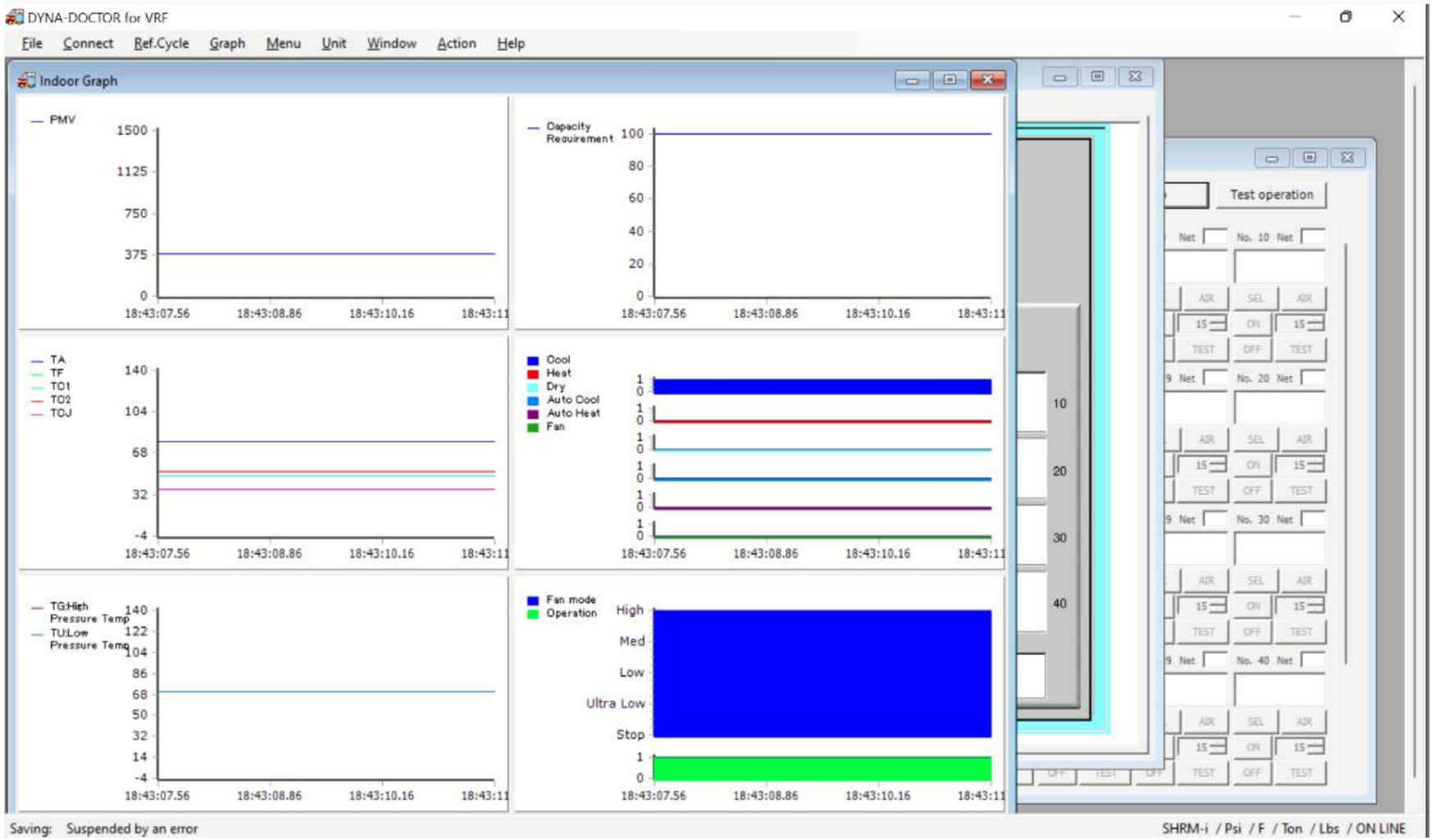
- Now select the Indoor Unit and the data points you wish to see.
- Not all Graph Contents can be seen at one time.
- Cycle Data and Control Data can be selected.



Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Indoor Unit - Cycle Data and Control Data



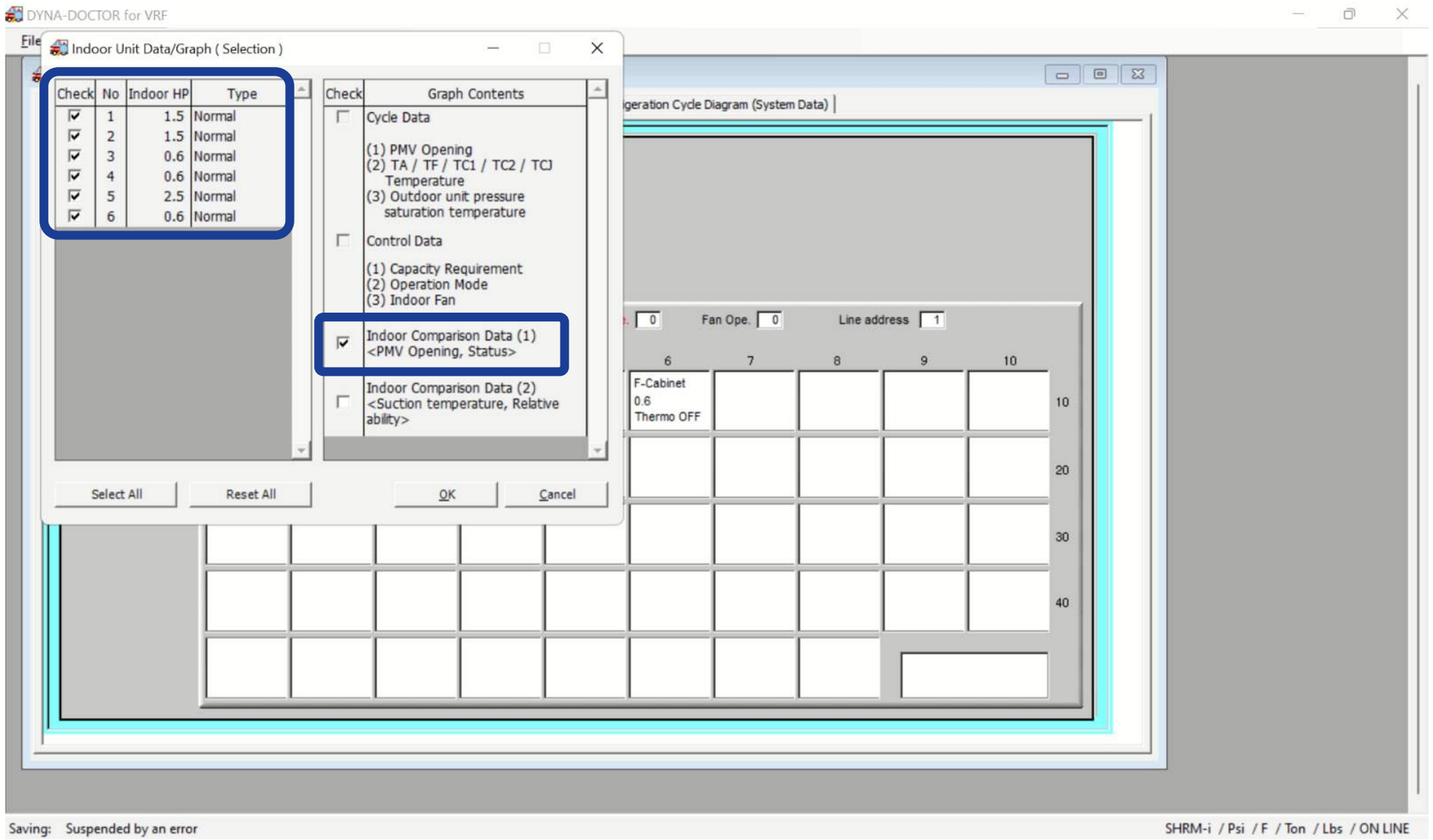
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Indoor Unit Comparison Data 1

PMV Opening Status

- If you want to compare two or more Indoor Unit's PMVs, select the ones you want to compare and then select "Indoor Comparison Data 1".

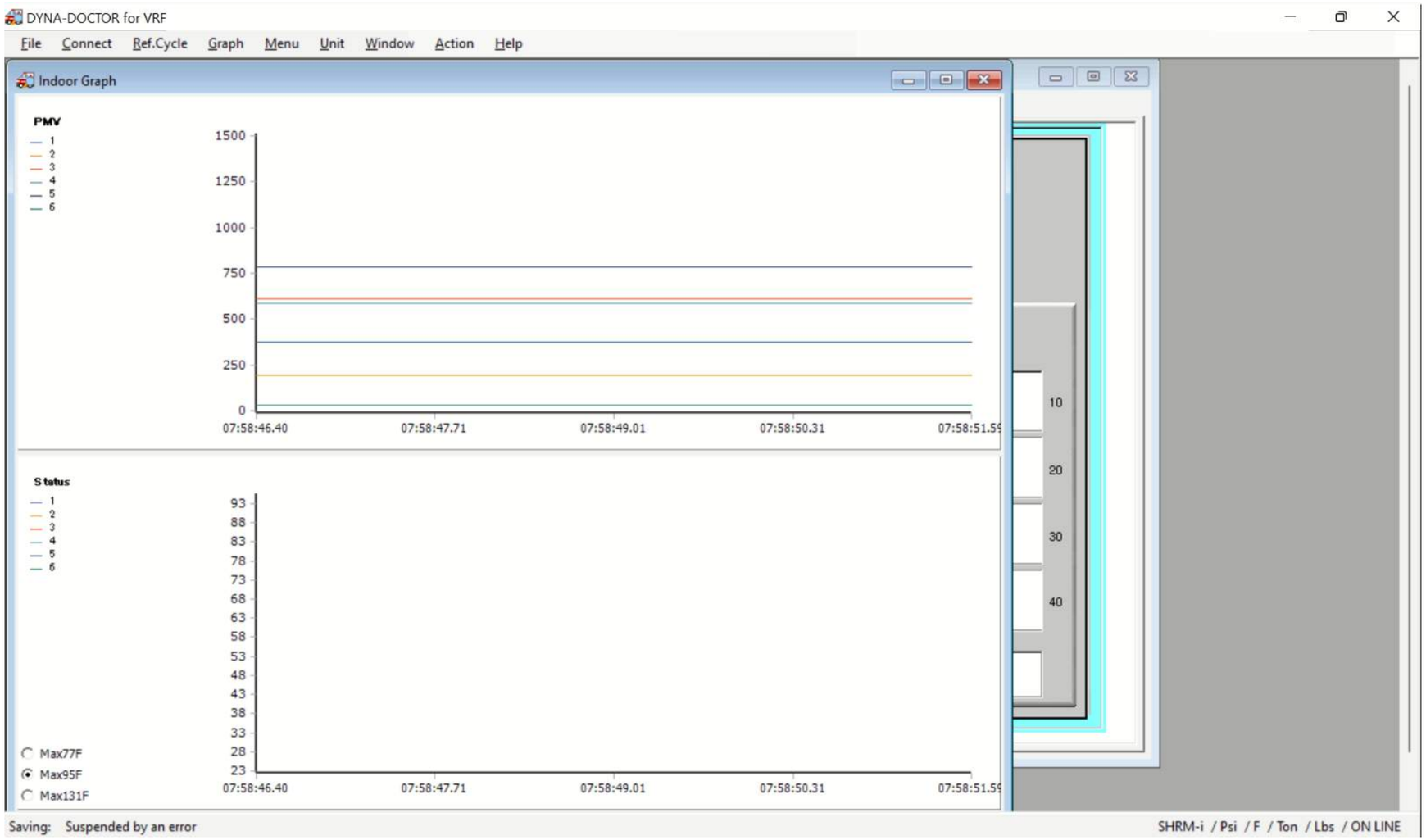


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Indoor Unit Comparison Data 1

PMV Opening Status



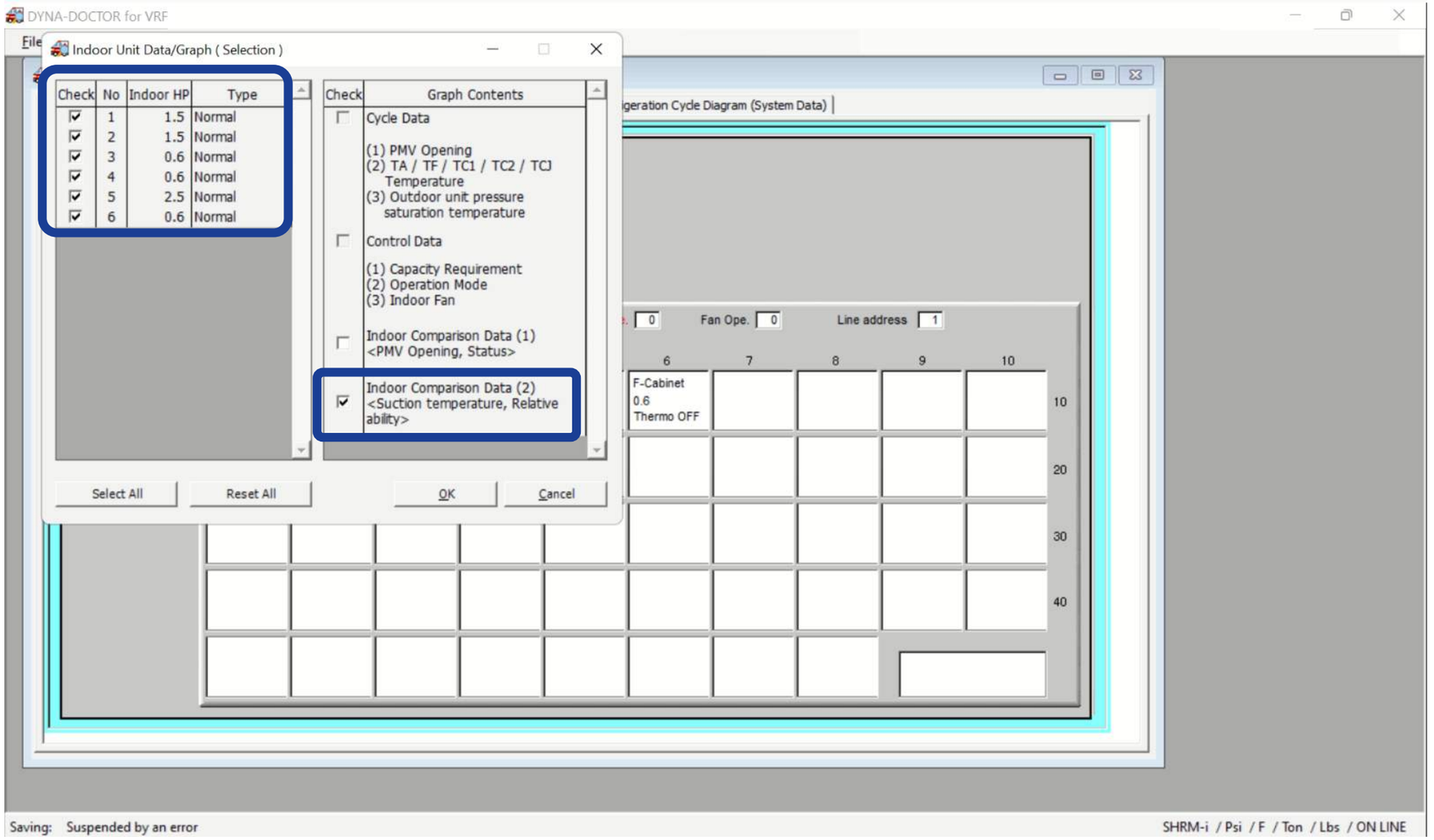
Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Indoor Unit Comparison Data 2

Suction Temp, Relative Ability

- If you want to compare two or more Indoor Unit's Suction Temp, Relative Ability (capacity), select the ones you want to compare and then select "Indoor Comparison Data 2".

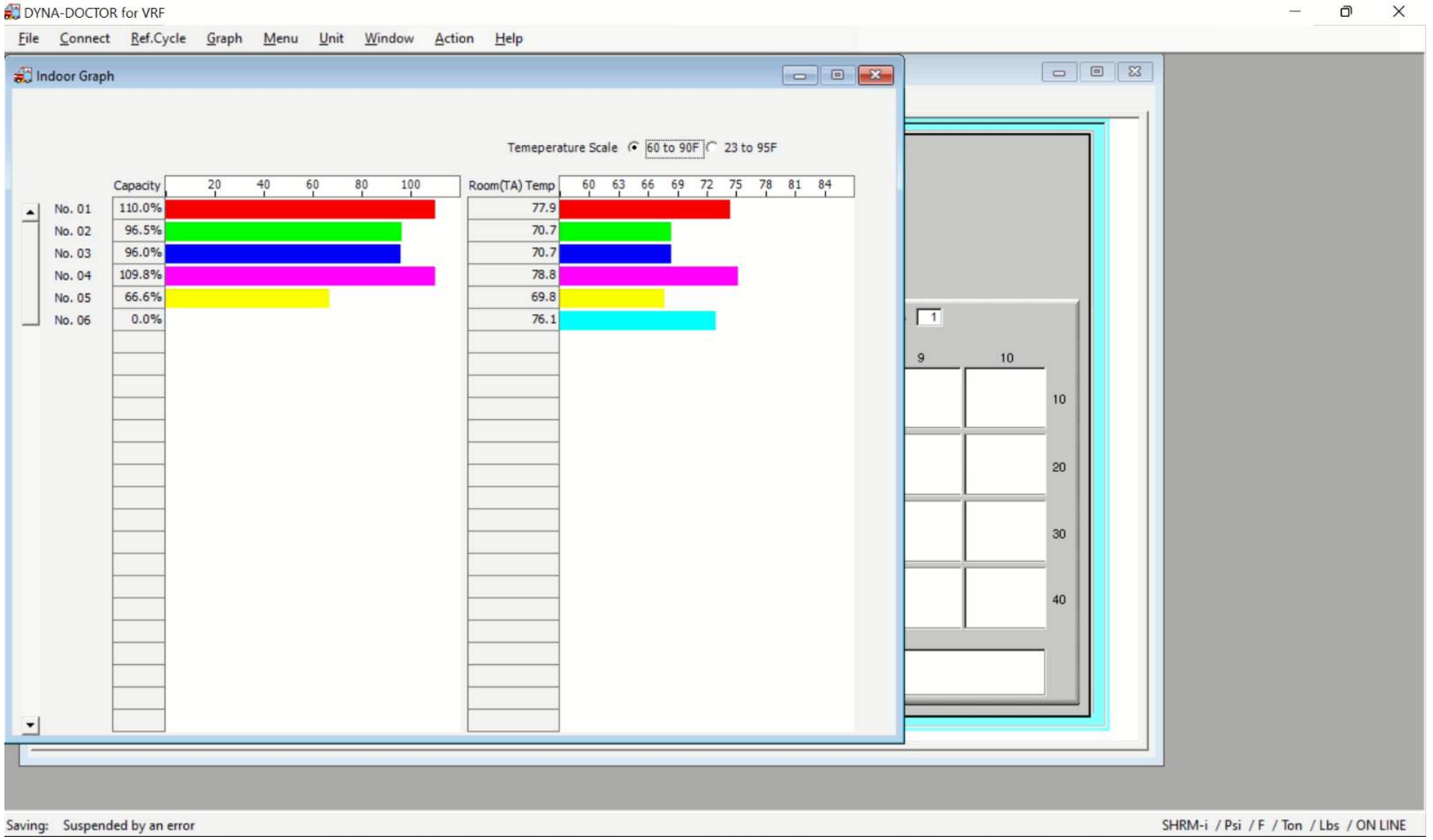


Toshiba Carrier **Dyna-Doctor** Software Navigation

Navigating Dyna-Doctor Software (cont.)

Indoor Unit Comparison Data 2

Suction Temp, Relative Ability



Toshiba Carrier **Dyna-Doctor**

Toshiba Carrier MCY/MMY VRF Dyna-Doctor Diagnostic Software & Communication Adapter

Important items to remember about Dyna-Doctor

- Dyna-Doctor will not diagnose the system for you. The Technician needs to review the data and make determinations based on findings.
- Dyna-Doctor is best used in conjunction with the Factory Service Manual for the Outdoor Unit.
- You can only connect to one VRF system at a time.
- Operation Modes can be changed, set point cannot.
- Some windows and the values shown take longer to update then others, be patient.
- The more you use Dyna-Doctor the better you will be at seeing irregularities in the operational data.

This guide was made by Carrier Northeast Technical Services Department.

Information within is subject to change