



FRIEDRICH

1883

Room Air Conditioner SVC MANUAL(General)

DUCTLESS SPLIT SYSTEMS

CAUTION

Before Servicing the unit, read the safety precautions in General SVC manual.
Only for authorized service personnel.



THE EXPERTS IN ROOM AIR CONDITIONING

Notices

- Friedrich has all authorities on Friedrich DWTST.
 - The use of Friedrich DWTST is permitted only for residential inverter air conditioner products.
 - Friedrich DWTST cannot be sold/transferred/rented to others.
 - All files generated from Friedrich DWTST cannot be sold/transferred/rented to other.
- ※ If you violate the above restrictions, you may receive legal penalty.

Cautions

- To use Friedrich DWTST, you need knowledge on the usage of the residential inverter air conditioner and product installation information. Before using the product, study the usages through completing Friedrich DWTST user training and through the user manual.
- To use Friedrich DWTST efficiently, to understand residential inverter air conditioner cycle.
- If previous version of Friedrich DWTST is used, there may be no information on the latest residential inverter air conditioner product. Therefore, engineer shall use the product with periodical update to the latest version.

※ We clearly state that users are responsible for all the problems caused by the exposure of the Friedrich DWTST outputs.

Smart phone supporting specifications				Wireless communication effective distance
OS	Minimum Specification	Recommended Specification	Resolution	<ul style="list-style-type: none"> • Effective distance : (open area) • The effective distance may be reduced by the communication environment.
iOS	iOS 6.1	iOS 6.1, 7.0	960x640 / 1136 x 640	
Android	Android 2.3	Android 4.2	480x800 / 720x1280 / 768x1280 / 768x1024 / 1080x1920	

CAUTIONS DURING USAGE

Friedrich DWTST app users shall study the following cautions

- Since Friedrich DWTST uses the limited resources of the smart phone to process real time data, so if the smart phone has lower performance, data monitoring may be difficult, or all data may not be saved. So please use the smart phone with recommended specification (or higher).
- During the data monitoring, because of the use of other functions (internet, game, etc.), if there is insufficient system resource, the following situations may be caused. Monitoring or saving function may not be performed correctly. Wireless communication may be disconnected. App may end due to insufficient resource or unexpected error.
- The transmission/reception data amount may increase according to the number of indoor and outdoor units, and the response speed may be slower for some smart phone specifications.
- Wireless transmission/reception distance may be reduced or the communication may be disconnected according to the weather and ambient environment (electromagnetic waves or obstacle).
- It may not work correctly for routed smart phones.
- App may end by unexpected error or insufficient resource with system having less than the recommended specification.
- As the communication distance gets farther, smart phone Wireless output may increase, and battery may be consumed faster by this. Please use in a short distance with module.

- Friedrich DWTST processes data in real time. If other functions of the smart phone are used, system resource may be instantly or continuously insufficient and the real time processing (data reception/saving) may not work. Please use the product with this in mind.

SAFETY CAUTIONS


- Before using the product, please receive training on the product and use the product according to the handling manual.
- The following safety cautions are to use the product safely to prevent unexpected danger or damage in advance.


WARNING

If it is not followed, it may cause death or severe injury of the user.

CAUTION

If it is not followed, it may cause injury of the user or property damage.

 It is the symbol to call attention on the items and operations that may cause danger. Please carefully read and follow instructions to avoid the danger.

 It is the symbol to mark the usages to avoid the danger.

WARNING

During the usage (module)

- Make sure to request the usage of the product to service center or installation specialty store.
 - It may cause fire, electric shock, explosion, or injury.
- Do not change or extend the power cable without authorization.
 - It may cause fire or electric shock.
- Do not use the product with exposure to rainfall.
 - It may cause product failure.
- When the product is flooded, make sure to contact service center or installation specialty store.
 - It may cause fire or explosion

CAUTION

During the usage (module)

- Do not let water enter the product.
 - It may cause electric shock or failure.
- Do not place inflammables near the product.
 - It may cause fire.
- Do not impose shock to the product.
 - The shock on the product may cause failure.

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Thank you for using Friedrich DWTST.

If you read the user manual before using the product, you can will have a better and longer use of the product.

* Please read this manual to use Friedrich DWTST safely and correctly.

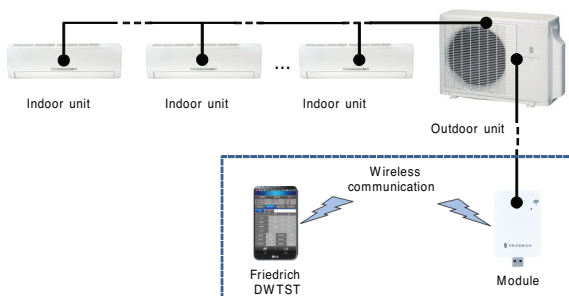
SUMMARY

Friedrich DWTST is the app monitoring the cycle of Friedrich residential inverter air conditioner products, and it helps the engineers find the current status and analyze cycle. Engineers find the operation status and problems of Friedrich residential inverter air conditioner using this app to provide solutions for the corresponding problem.

Main Functions

- Main information : displays major information of the air conditioner
- Outdoor unit information : displays major information of the outdoor unit
- Indoor unit information : displays major information of the indoor unit
- Graph : displays current, voltage, and temperature among major information of the air conditioner as a graph
- Data saving : stores received air conditioner information as file
- Error code : displays error code and supports Trouble Shooting Guide for the error code list

SYSTEM COMPOSITION DIAGRAM



- To use Friedrich DWTST, you need an exclusive Module.
- Module is installed and used in the outdoor unit FAC MVC Jig.

COMMUNICATION MODULE CONNECTION

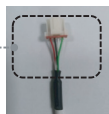
Module cable connection diagram



Connect module and cable



Remove outdoor unit handle cover.


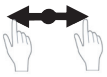



Module connector

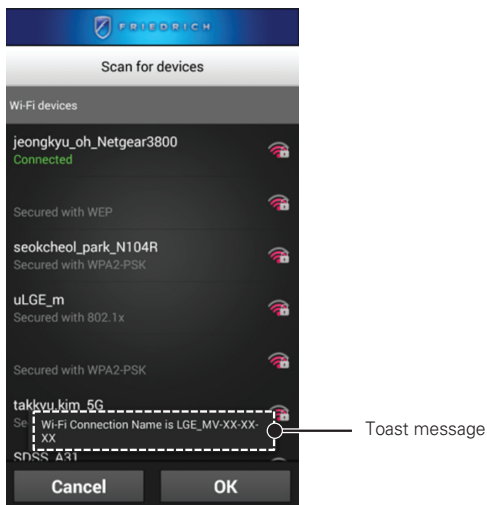
Connect module connector to outdoor unit main board FAC MVC Jig

NOTES

Notes on functions & operations

Operation	Symbol	Detail	Response
Tap (Press)		Press and hand off certain part of screen	- Press : corresponding object is displayed as pressed or focused - Stop pressing : run the event
Pinch (Tap & Drag)		Move while maintaining the pressing action from one point to another point of the screen and hand off (Element: starting point, end point)	- Press : corresponding object is displayed as pressed or focused - Move : response such as object moving / scroll, etc. - Stop pressing : stop response, run event
Flicking		Quickly move from one point to another point of the screen and hand off	- Press : no response (or display pressed) - Fast move & stop pressing : run event

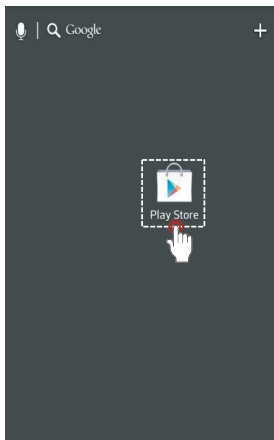
Toast message : toast message refers to the message that appears in the pop up window.



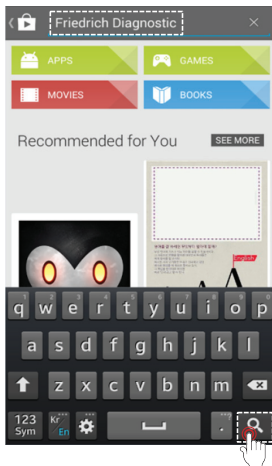
APP INSTALLATION

Order of Installation (Android)

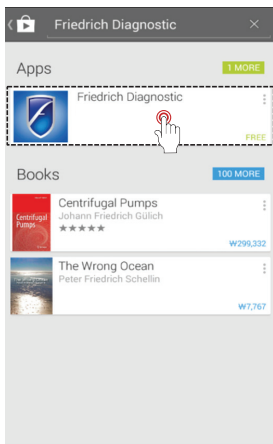
You can perform Friedrich DWTST installation in the following order.



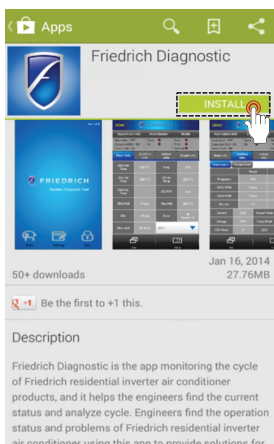
Access by tapping Play Store icon in the smart phone.



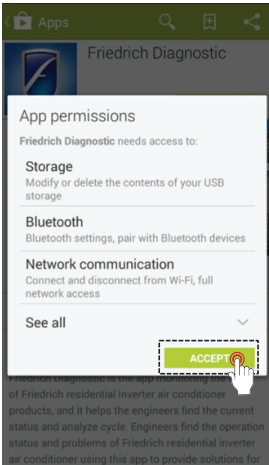
Input Friedrich Diagnostic in the search window and tap find button.



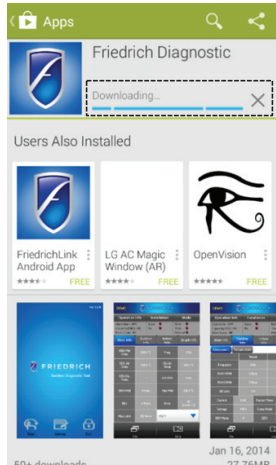
Tap Friedrich Diagnostic in the searched app list.



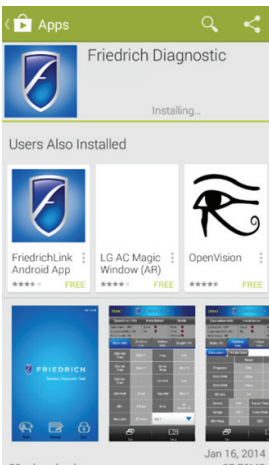
Tap Install button.



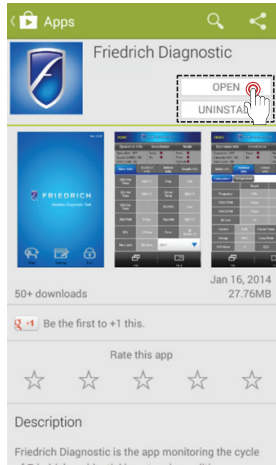
Check the rights necessary for application program installation and tap Agree button.



Download in Progress screen is displayed, and the download starts.



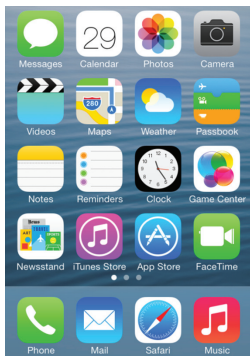
When the download is complete, Installation in Progress screen is displayed, and the installation starts.



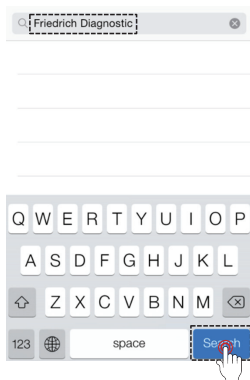
Run the app by tapping Open button or tap Home button to complete the installation.

Order of Installation (iOS)

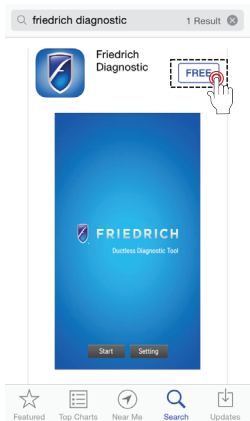
You can perform Friedrich DWTST installation in the following order.



Access by tapping App Store icon in the smart phone.



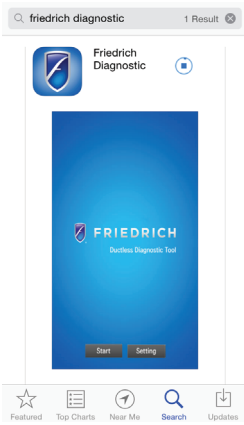
Input Friedrich Diagnostic in the search window and tap find button.



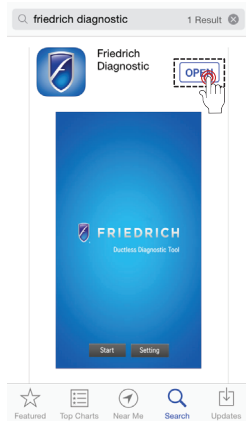
Select Friedrich Diagnostic in the searched app list and tap Free button.



Tap INSTALL APP button.



Installation in Progress screen is displayed, and the installation starts.



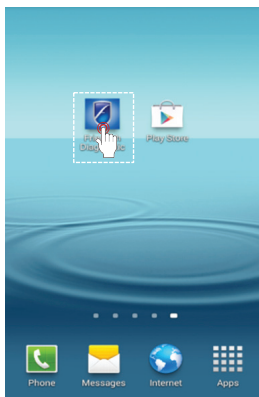
Run the app by tapping Open button or tap Home button to complete the installation.

HOW TO USE

Android smart phone connection setting



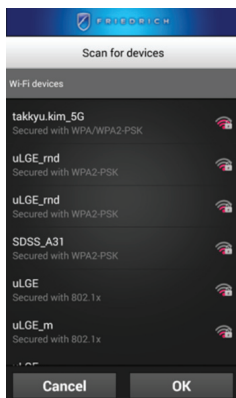
Connect module to the outdoor unit FAC MVC Jig



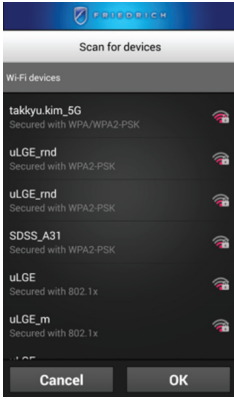
Tap Friedrich Diagnostic icon to run Friedrich DWTST



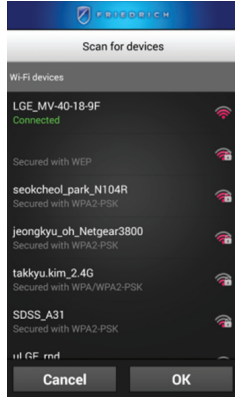
Tap Start button



AP list is automatically searched.



Select a device marked as LGE_MV-XX-XX-XX. (Caution: for some smart phones, address such as "XX:XX:XX:XX:XX:XX" may be displayed.)

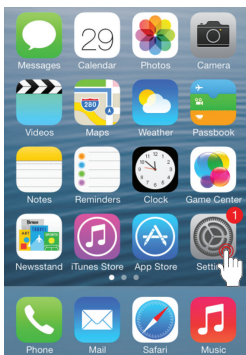


"Connected" is displayed in the selected list.
At this time, if you press OK button, it enters the monitoring screen.

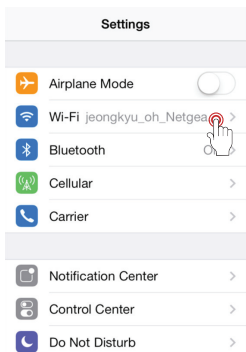
iOS smart phone connection setting



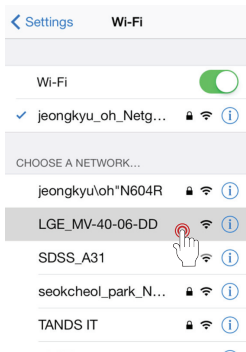
Connect module to the outdoor unit FAC MVC Jig



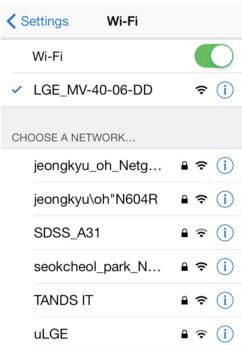
Tap Setting in the home screen(Spring Board).



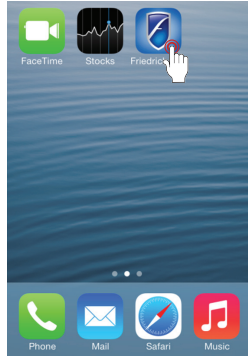
Tap Wi-Fi



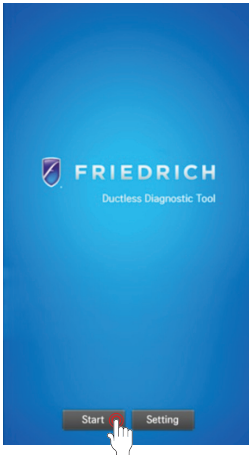
Turn on Wi-Fi, and select a device marked as LGE_MV-XX-XX-XX in the network selection. (Caution: for some smart phones, address such as "XX:XX:XX:XX:XX:XX" may be displayed.)



When the connection is completed, V is displayed next to the selected list.

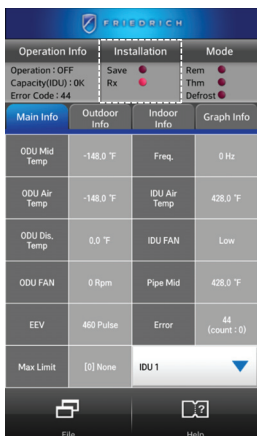


After Wi-Fi connection, tap Friedrich Diagnostic.

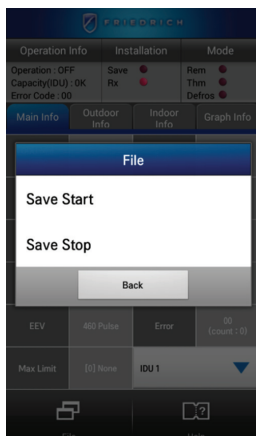


When you press Start button, it moves to the main screen. (Access may be delayed according to the strength of the WLAN signal.)

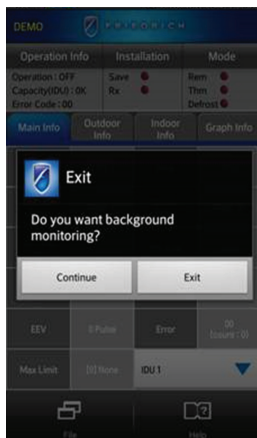
Check operation status and finish app



Check if the communication connection is successful. (When the connection is normal, reception lamp is lighted.)



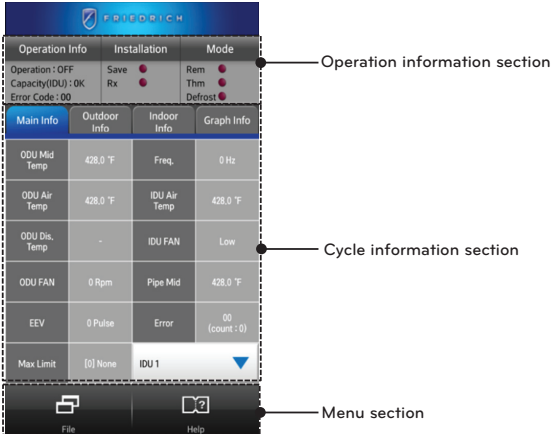
With Start Saving in the file menu, store received data.



If the diagnosis is completed, press Back(Previous) button or Home button of the smart phone to end Friedrich Diagnostic.

Main screen composition

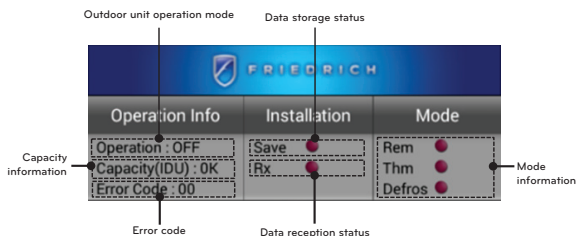
It is the first screen displayed when you enter monitoring screen after Wi-Fi connection, and it monitors outdoor and indoor unit information of the residential inverter air conditioner.



Monitoring screen is largely composed of 3 sections.

- Operation information section: displays operation mode, error code, capacity(IDU) information, operation status, mode, etc.
- Cycle information section: Each information is classified with taps, it displays main information, outdoor unit information, indoor unit information, and graph information, and you can verify by selecting each tap.
- Menu section: You can save air conditioner data or use additional functions other than monitoring, such as viewing Help(Trouble Shooting Guide), etc.

Operation information section screen composition



- **Outdoor unit operation mode**
It displays the current operation mode.
The displayed data are cooling/heating/fan/stop.
- **Outdoor unit error information**
It displays the error code currently generated from the outdoor unit.
- **Data storage status**
If data is being saved, red lamp is lighted to let user know it is being saved.
- **Data receptions status**
It tells the user the data reception status from outdoor unit.
If data is being received, red lamp is lighted.
- **Mode information**
It tells the user the operation status of remote controller on/off, defrost operation, thermo on/off.
- **Capacity information**
It displays the capacity of indoor unit.

Cycle information section screen composition

Main Info	Outdoor Info	Indoor Info	Graph Info
ODU Mid Temp	-148.0 °F	Freq.	0 Hz
ODU Air Temp	-148.0 °F	IDU Air Temp	428.0 °F
ODU Dis. Temp	0.0 °F	IDU FAN	Low
ODU FAN	0 Rpm	Pipe Mid	428.0 °F
EEV	460 Pulse	Error	44 (count : 0)
Max Limit	[0] None	IDU 1	

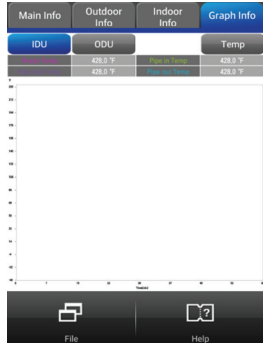
Main information

Main Info	Outdoor Info	Indoor Info	Graph Info
Component		Temperature	
	Target	Present	
Frequency	0 Hz	0 Hz	
FAN1 RPM	0 Rpm	0 Rpm	
FAN2 RPM	0 Rpm	0 Rpm	
DC Link	0 V	280 V	
Current	0.0A	Restart Timer	255 S
Voltage	214 V	Comp Mode	Stop
EEV Mode	5	EEV	460 Pulse

Outdoor unit information

Main Info	Outdoor Info	Indoor Info	Graph Info
	#1	#2	#3
Capacity			
Operation			
THM Mode			
REM Mode			
FAN			
EEV			
Air Temp			
Pipe-in			
Pipe-mid			
Pipe-out			

Indoor unit information



Graph information

Main Info	Outdoor Info	Indoor Info	Graph Info
ODU Mid Temp	-148.0 °F	Freq.	0 Hz
ODU Air Temp	-148.0 °F	IDU Air Temp	428.0 °F
ODU Dis. Temp	0.0 °F	IDU FAN	Low
ODU FAN	0 Rpm	Pipe Mid	428.0 °F
EEV	460 Pulse	Error	44 (count : 0)
Max Limit	[0] None	IDU 1	

Indoor unit

File Help



Main information

1 Main information

- Main information displays information such as current outdoor unit temperature, indoor unit temperature, frequency, opening operation, error, frequency restriction, indoor/outdoor unit fan speed, etc.

Name	Description	Name	Description
ODU Mid Temp	Outdoor heat exchanger middle pipe temperature	Freq.	Outdoor unit compressor frequency
ODU Air Temp	Outdoor temperature	IDU Air Temp	Indoor temperature
ODU Dis. Temp	Outdoor unit compressor out temperature	IDU Fan	Indoor unit wind amount
ODU Fan	Outdoor unit fan rpm	Pipe Mid	Indoor heat exchanger middle pipe temperature
EEV	Electronic Expansion Valve	Error	Error code
Max Limit	Inverter compressor frequency restriction	IDU 1	Indoor unit

- If you tap the inverted triangle of IDU1, it displays the indoor unit list.

Main Info		Outdoor Info		Indoor Info		Graph Info	
Component		Temperature					
		Target		Present			
Frequency		0 Hz		0 Hz			
FAN1 RPM		0 Rpm		0 Rpm			
FAN2 RPM		0 Rpm		0 Rpm			
DC Link		0 V		280 V			
Current		0.0A		Restart Timer		255 S	
Voltage		214 V		Comp Mode		Stop	
EEV Mode		5		EEV		460 Pulse	
							
File				Help			

Outdoor unit information

2-1 Outdoor unit information (Components information)

Outdoor unit information displays information such as frequency, fan RPM, DC Link, input current, input voltage, EEV operation mode, restart timer, compressor mode, EEV opening, etc.

Name	Description	Name	Description
Frequency	Inverter compressor frequency	Voltage	Input voltage
FAN1 PRM	Fan 1 RPM	EEV Mode	EEV operation mode
FAN2 PRM	Fan 2 RPM	Restart Timer	Restart timer
DC Link	DC Link	Comp Mode	Compressor operation status
Current	Input current	EEV	Electronic Expansion Valve

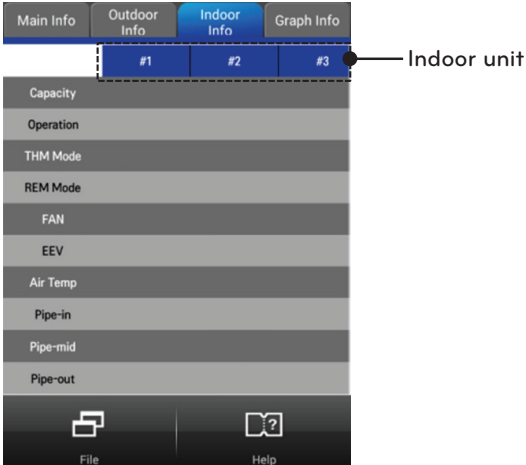
Main Info		Outdoor Info		Indoor Info		Graph Info	
Component		Temperature					
		Target		Present			
Inv Td		32.0 °F		32.0 °F			
Suction		-		-			
Discharge		0.0 °F					
Cond Mid		-148.0 °F					
Cond Out		-					
Heatsink		79.0 °F					
Air Temp		-148.0 °F					
File		Help					

Outdoor unit information

2-2 Outdoor unit information (Temperature information)

Outdoor unit information displays information such as inverter Td, compressor in/out temperature, heat exchanger pipe middle/outlet temperature, Heat sink temperature, outdoor temperature, etc.

Name	Description	Name	Description
Inv Td	Target/current out temperature	Cond Out	Heat exchanger pipe outlet temperature
Suction	Compressor in temperature	Heatsink	Heat sink temperature
Discharge	Compressor out temperature	Air Temp	Outdoor temperature
Cond Mid	Heat exchanger pipe middle temperature		



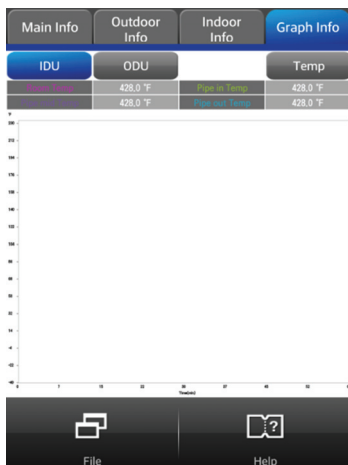
Indoor unit information

3 Indoor unit information

Indoor unit information displays information such as indoor capacity, operation mode, THM mode, REM mode, FAN operation status, EEV opening, indoor temperature, heat exchanger inlet/middle/outlet temperature, etc.

Name	Description	Name	Description
Capacity	Indoor unit capacity	EEV	Electronic Expansion Valve
Operation	Indoor unit operation mode (cooling/heating, etc.)	Air Temp	Indoor temperature
THM Mode	Thermo on/off	Pipe-in	Heat exchanger pipe inlet temperature
REM Mode	Remote controller on/off	Pipe-mid	Heat exchanger pipe middle temperature
FAN	Fan RPM	Pipe-out	Heat exchanger pipe outlet temperature

- If you flick indoor unit number to the left, you can move to another indoor unit.



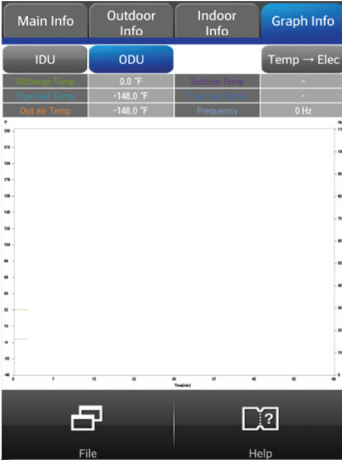
Graph information
(Indoor unit temperature)

4-1 Graph information (Indoor unit temperature)

Room Temp and Pipe in/mid/out Temp values of residential inverter air conditioner product master indoor unit with communication connected are displayed with each color to classify and see cycle elements.

Name	Description	Name	Description
Room Temp	Indoor temperature	Pipe in Temp	Heat exchanger pipe inlet temperature
Pipe mid Temp	Heat exchanger pipe middle temperature	Pipe out Temp	Heat exchanger pipe outlet temperature

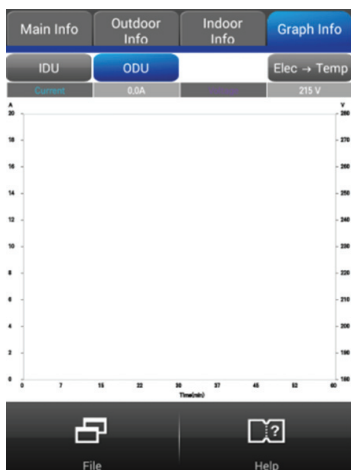
- For Android OS, you can use pinch to expand Graph.



4-2 Graph information (Outdoor unit temperature)

Out/Suction Temp, Pipe in/mid/out Temp, and Frequency values of residential inverter air conditioner product outdoor unit with communication connected are displayed with each color to classify and see cycle elements.

Name	Description	Name	Description
Discharge Temp	Compressor out temperature	Suction Temp	Compressor in temperature
Pipe mid Temp	Pipe middle temperature	Pipe out Temp	Pipe outlet temperature
Out air Temp	Outdoor air temperature	Frequency	Compressor frequency



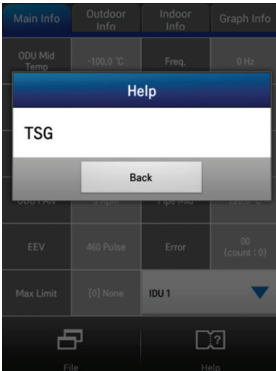
Graph information
(Outdoor unit voltage/current)

4-3 Graph information (Outdoor unit voltage/current)

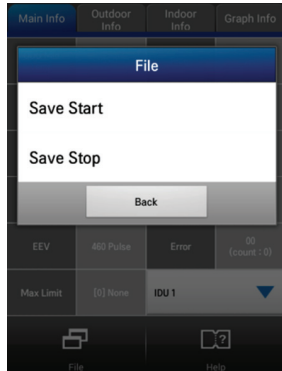
Current and Voltage values of residential inverter air conditioner product outdoor unit with connection connected are displayed with each color to classify and see cycle elements.

Name	Description	Name	Description
Current	Current	Voltage	Voltage

Menu section screen composition



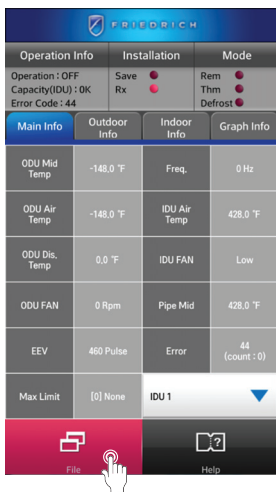
File menu



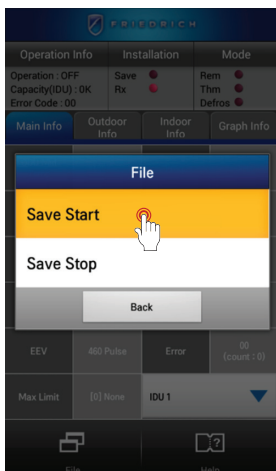
Help menu

Data

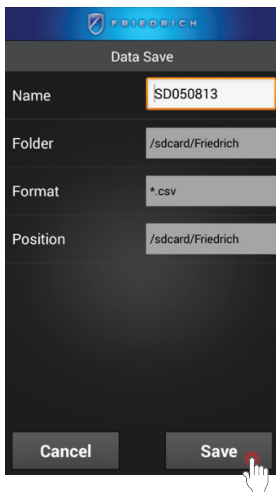
1-1 Start saving



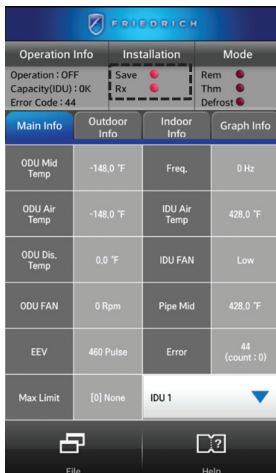
Tap file menu.



Tap Start Saving.



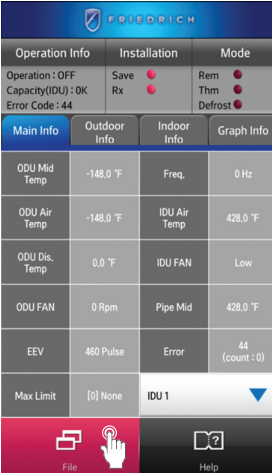
Set the file name to save, and pressing tap will start the saving.



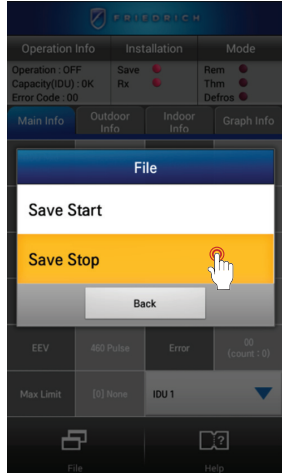
If it is saving, the operation status lamp will be lighted as red.

- Android OS Data saving folder : /sdcard/LGPMV
- iOS Data saving folder : App/Documents

1-2 Stop Saving



Tap file menu.



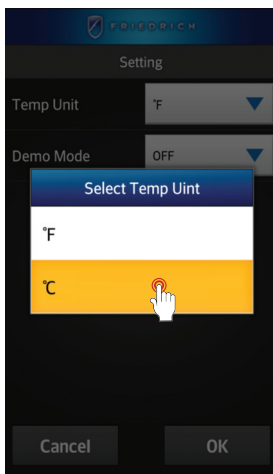
When you press stop saving, saving will stop.

Convenient functions

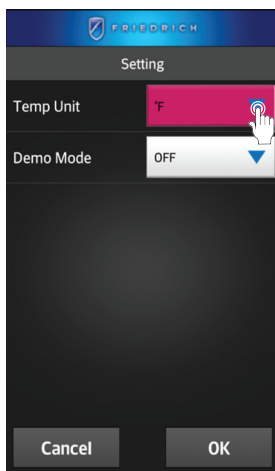
1-1 Temperature unit conversion



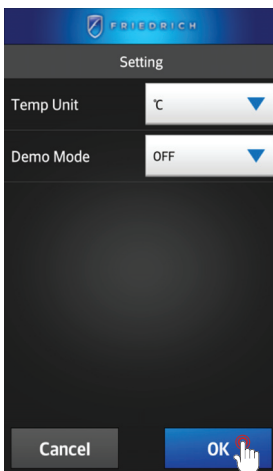
Tap setting in the default screen.



Tap inverted triangle in temperature unit menu.



Tap desired unit in the temperature unit selection.

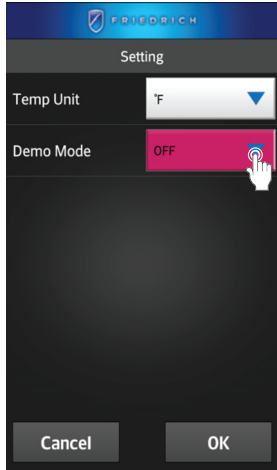


Tap confirm and it changes to the set temperature unit.

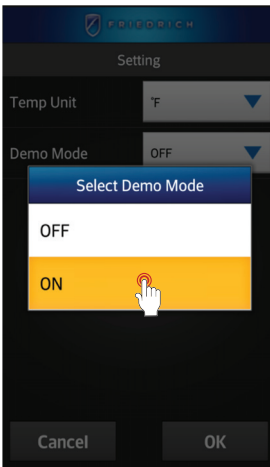
1-2 Demo mode



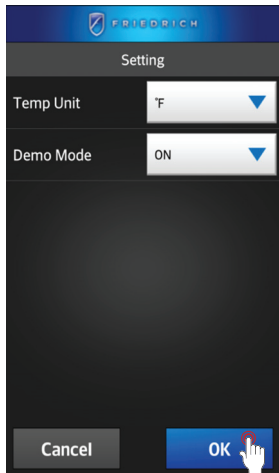
Tap setting in the default screen.



Tap red inverted triangle in the demo mode menu.



Tap on/off in the demo mode selection.

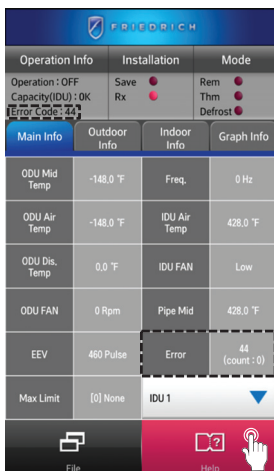


Tap confirm, and demo mode will start. (Afterwards, if you press Start button in the default screen, it moves to the main screen without Wi-Fi connection.)

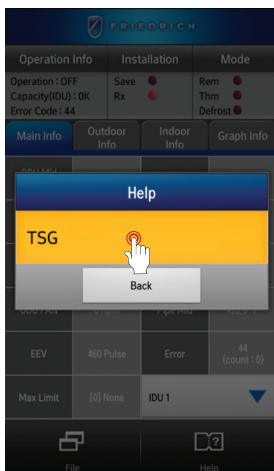
- Demo mode : you can look into the app functions without Wi-Fi connection.

Help

TSG (Trouble Shooting Guide)



Tap help menu



Tap TSG in help menu.



Inverter T/shooting Guide

Trouble Shooting Guide

Error Code & Descriptions

■ Error Indicator

- The function is to self-diagnosis air condi
- If more than two troubles occur simultane be expressed.
- After error occurrence, if cause of error is
- Turn off the power and then turn it on a

■ Indoor unit error – Descriptions

Error code	Description
1	Indoor Sensor (Air) open/short
2	Indoor Sensor (Entry Pipe) open/short
5	Communication Failure (Indoor Unit)
6	Indoor Sensor (Exit Pipe) open/short
9	EEPROM ERROR (Indoor Unit)
10	Indoor Unit Fan Lock (Operation Fail)
12	Indoor Sensor (Middle Pipe) open/sh

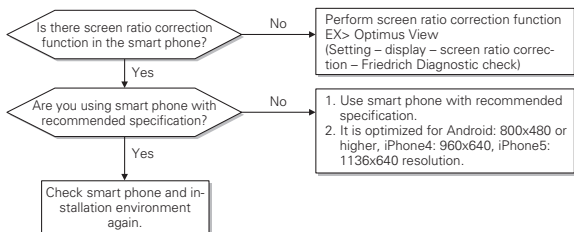
It shows Trouble Shooting Guide.

It moves to the page corresponding to the error code, and you can see the solutions.

- If you tap error code, TSG guide corresponding to the error code is displayed.
- If you use pinch, TSG can be expanded.

Part of the screen is not displayed, or it is shown wider.

How to diagnose the cause



DATA GUIDE

Open source

If you would like to get the source code of GPL, LGPL, MPL, and others which are developed with open source license and installed in this product, please visit <http://opensource.lge.com>

In addition to the source code, indications of all applicable license contents, copyright, and no responsibility on warranty can be downloaded.

If you request the open source code of the software that is installed on this product by sending email to opensource@lge.com within 3 years of purchasing this product, we will provide it in CD-ROM with a minimum cost of shipping and handling.

WLAN module specification

Standard	IEEE 802.11b/g/n
Frequency range	2.412~2.462GHz
Security	128 bits WEP, AES WPA, WPA2
Output Power	802.11b : 11 dBm (11 Mbps) 802.11g : 15 dBm (54 Mbps) 802.11n : 11 dBm (72.2 Mbps)
Data rate	802.11b : 11 Mbps 802.11g : 54 Mbps 802.11n : 72.2 Mbps
Sensitivity	802.11b : -88 dBm (11 Mbps) 802.11g : -74 dBm (54 Mbps) 802.11n : -69 dBm (72.2 Mbps)
Modulation	QPSK + OFDM
Class of emission	G1D, D2D
number of channel	11CH
Oscillator / Communication mode	Crystal / Half duplex



WARNING

This device is not available for laptop or similar portable system.



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www.friedrich.com



P/NO : MFL68165402