

# RA-485

## ***Color Touch Screen Remote Annunciator Operators Manual***



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## SECTION 1 : INTRODUCTION

### 1.1 Preliminary Comments and Safety Precautions

The manual covers installation, operation and maintenance of the RA-485 Remote Annunciator. This manual is for use by authorized and qualified personnel only.

<b>WARNING</b> <b>High voltages can kill.</b>
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### 1.2 Overview

RA-485 Remote Annunciator is a remote operation and alarm annunciator. Only support GCU and ATS controllers from Kutai Electronics (Currently support AMF-10, GCU-100, GCU-3000, ATS-22, ATS-33, ATS-34, ATS-PLC etc. Controllers).

RA-485 Built-intuitive full touch screen 5.7" TFT color LCD control panel with a group of RS485 communication interface ports. RA-485 cannot off-line operating individually. It must be connected with GCU or ATS controller (With KCU-02 module) before operation.

### 1.4 Specification Summary

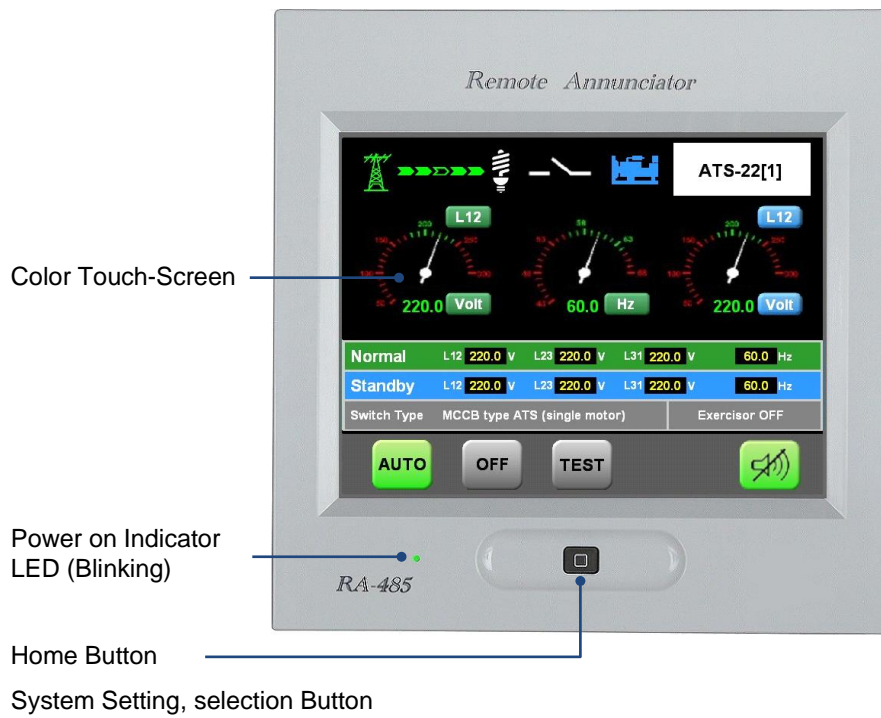
Description	Specification
AC Voltage Input Range	80 – 530 Vac 50/60 Hz
Operating Temperature	-20 to +70 °C
Storage Temperature	-30 to +80 °C
Relative Humidity	Max. 90%
Weight	520 g +/- 2%

### 1.3 Functions / Features

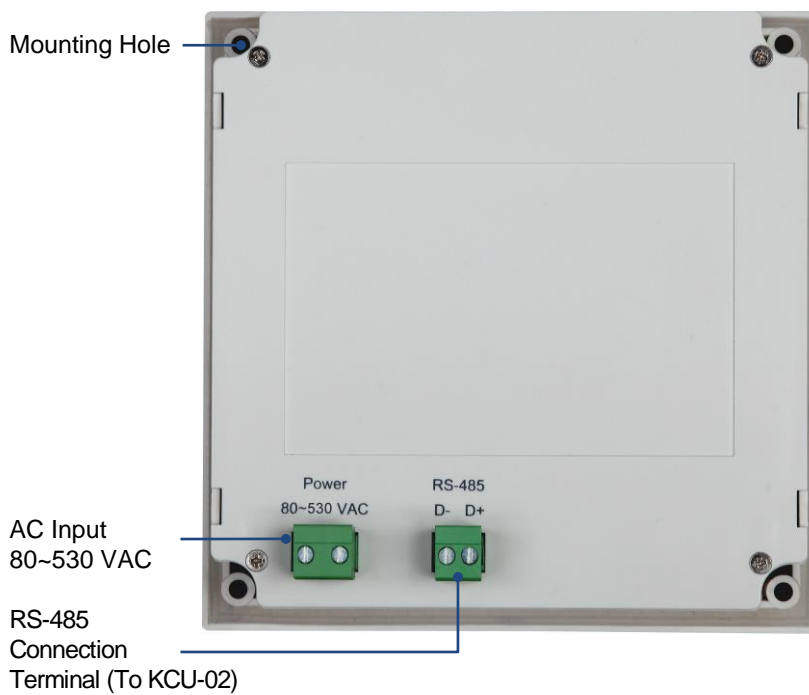
- Multi Language Support (Traditional Chinese, English).
- Touch Screen 5.7" TFT Color LCD Control Panel
- Up to four controllers can be monitored.
- Automatically search RS485 Communications protocol settings (Slave Address : 1 – 32)
- With OFF / AUTO / MANU / TEST function keys.
- With enable / disable buzzer function keys.
- When alarm messages is generated, buzzer will be enabled automatically.
- Can re-download customizable start-up screen by user.

## 1.5 Exterior Overview

### Front

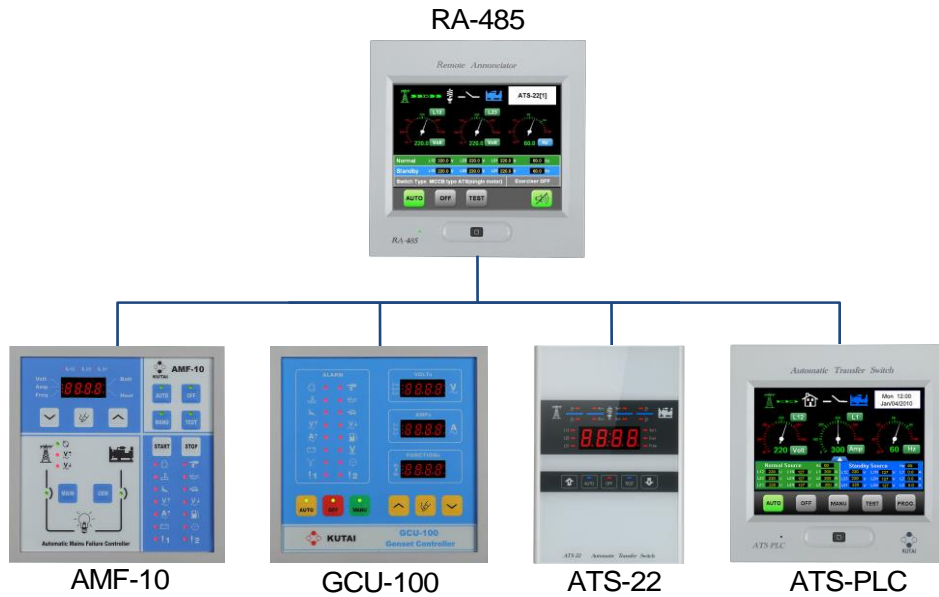


### Rear



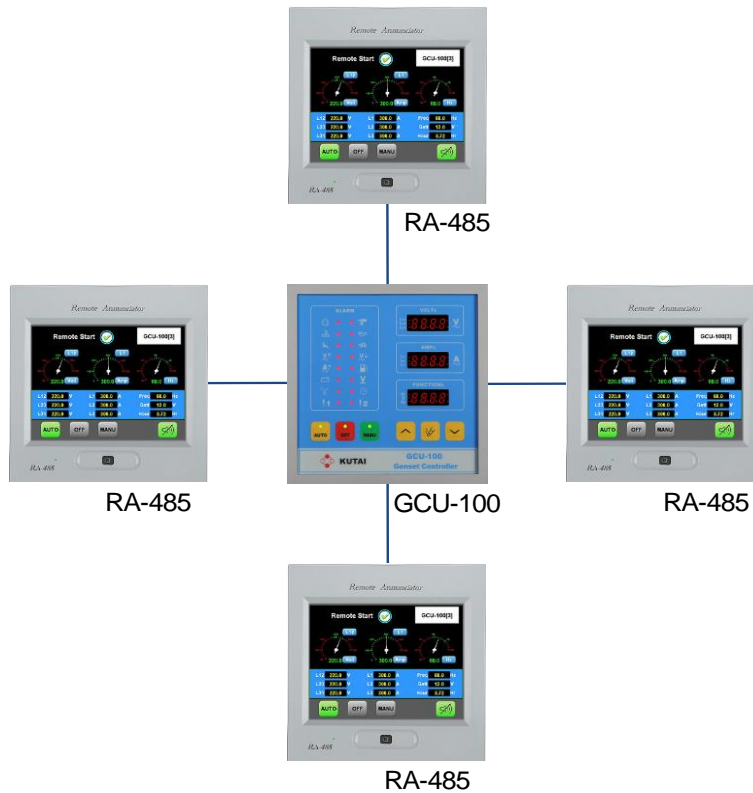
## 1.6 Application Example

### 1.6.1 RA-485 Connection to 4 Controllers



**Attention!** From the above connection, the AMF-10, GCU-100, ATS-22, and ATS-PLC, each controller needs to be equipped with KCU-02 module individually, with same baud rate setting but different slave address (1 – 32).

















### 1.6.2 Single Controller and Multiple RA-485 Connection



















**Attention!** From the above connection, the GCU-100 needs to install four KCU-02 modules.




















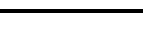
## SECTION 2 : TOUCH SCREEN PANEL OVERVIEW

### 2.1 Status Icons

Icon	Function
	Normal power / Grid
	Emergency power / Standby
	Load
	Power source connected
	Power source not connected
	Connecting failure
	Overload or trip warning
	Reverse phase sequence warning
	Failure Warning
	Incorrect input or operation
	Warning Message
	TDEN/TDNE/TDEC/TDES Time delay countdown
	DC Battery Voltage
	Operated Hour
	Remote Start OFF
	Remote Start ON

Icon	Function
	Engine engaging in remote start
	Auto Search
	Over Voltage
	Under Voltage
	Over Speed
	Under Speed
	Overload
	Over Temperature
	Emergency Stop
	Low Fuel
	Low Oil Pressure
	Start Failure
	Charging Failure
	MPU Failure
	Alarm Output 1
	Alarm Output 2

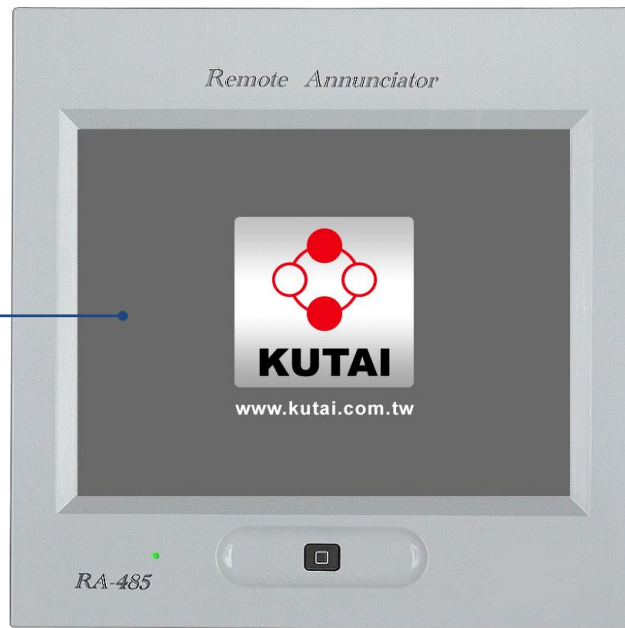
## 2.2 Key Icon

Key	Function
	Auto Mode
	Off Mode
	Manual Mode
	Test Mode
	Pointer Gauge : Normal Side (Grid)
	Pointer Gauge : Emergency Side (Standby)
	Normal Power / Grid connected
	Emergency Power / Standby connected
	Engine Start
	Engine Stop
	Mute (Buzzer)
	Test with Load
	Test without Load
	Digital Numerical Mode Display
	Pointer Gauge Mode Display
	System Setting
	Auto Search
	Brightness Increase / Button Testing
	Brightness Decrease
	Language / Controller Selection



## 2.3 Start-up Screen

Start-up Screen  
Displayed for 3 sec  
then automatically  
enters operation mode



**Attention!** Start-up screen is customizable by user, for details please refer to .....

## 2.4 Automatic Search

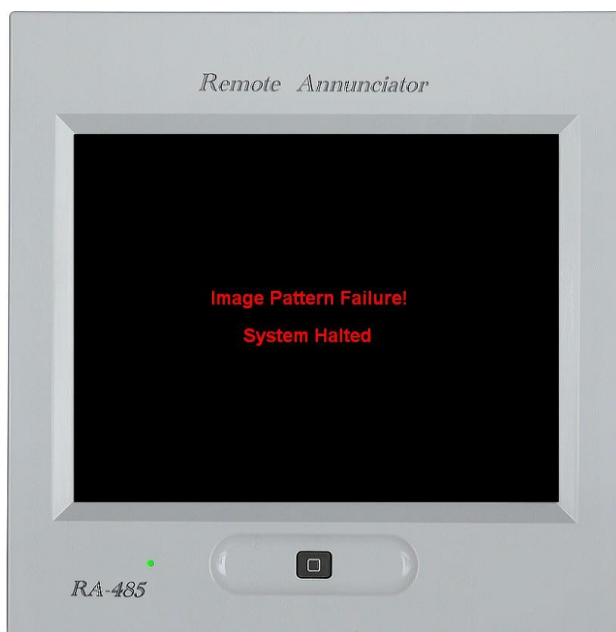
Automatically search and memorize the connected controller (Maximum of 4 controllers)



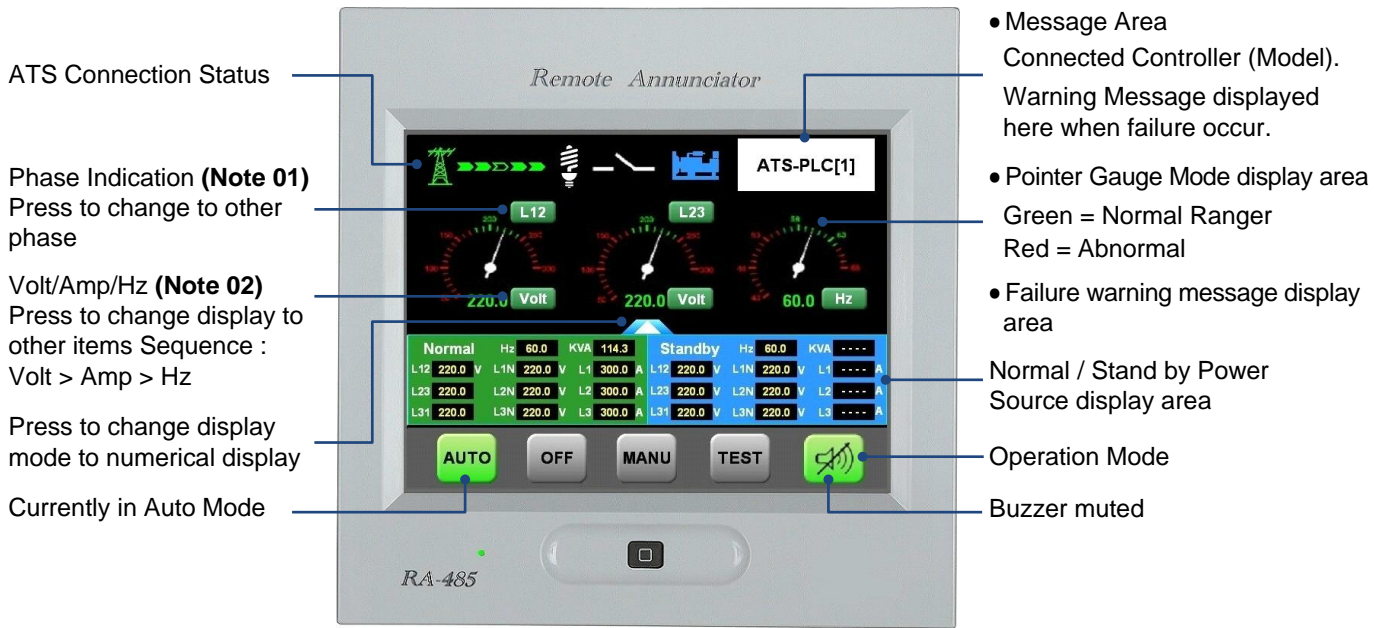
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## 2.5 System Failure Warning

When the screen displays the the following messages “Storage Memory Failure! Image Pattern Failure! System Halted”, please contact with local authorized dealer or Kutai Electronics.



## 2.6 Display and Screen Operation Overview



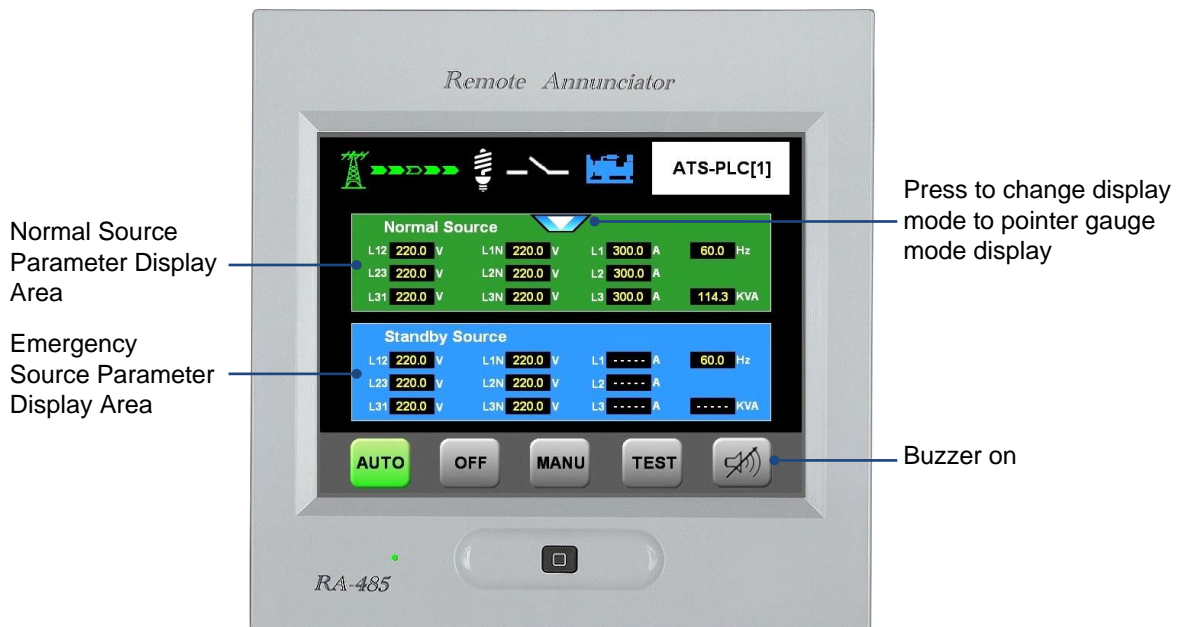
**(Note 01)** 3 Phase 3 Wires selection sequence = L12 > L23 > L31.

3 Phase 4 Wires selection sequence = L12 > L23 > L31 > L1N > L2N > L3N

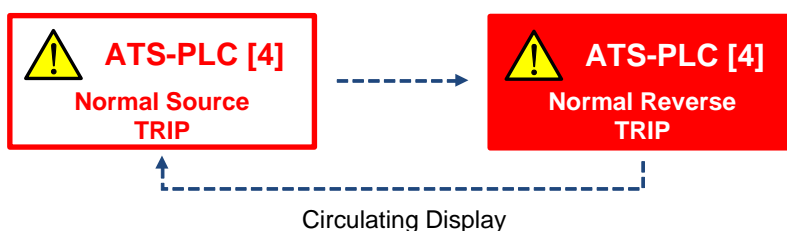
Current sequence = L1 > L2 > L3

**(Note 02)** Volt / Amp / Frequency display sequence = Volt > Amp > Hz


**(Note 03)** When Phase Indication or Volt / Amp / Hz key is changed, in 20 seconds, the system will automatically memorise the changes as primary display (Except for ATS-PLC)

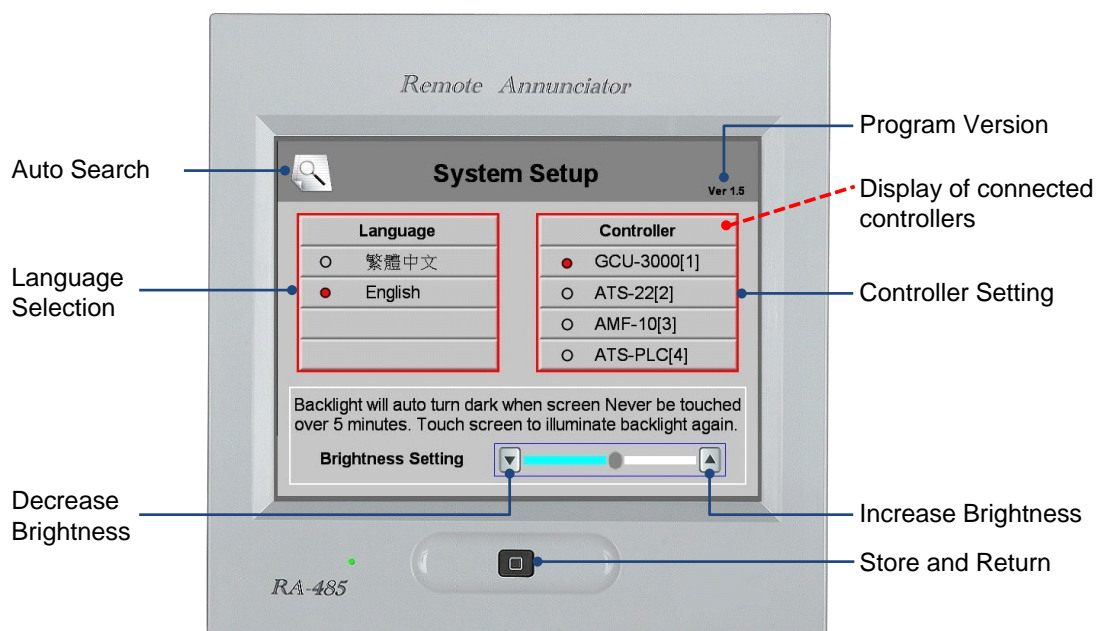


Warning Message display example :




### SECTION 3 : RA-485 SYSTEM SETTING


In anytime, by pressing the System Setting button , user is able to enter the system setting page and access Language Setting, Controller monitoring setting, brightness adjustment or auto search functions.



- : Selected
- : Unselected

## SECTION 4 : RA-485 SYSTEM AUXILIARY FUNCTION

To enter the Auxiliary Function, first press and keep hold the  button and then connect RA-485 to power. In sequence the system enters the Auxiliary functions as the following address :

Startup screen image download, Touch screen sensitivity calibration and Button testing. If changes are not required, press  to skip to next function.

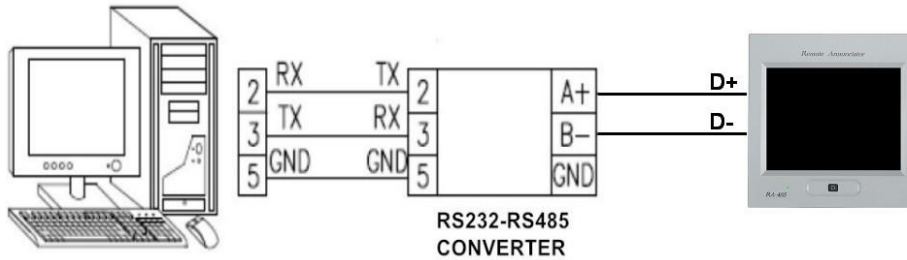
### 4.1 Startup Screen Image Download

\*If changes are not required, press  to skip to 4.2 Touch Screen Sensitivity Calibration.

Insert the supplied DVD disc into your PC or download the installation software from website [www.kutai.com.tw](http://www.kutai.com.tw) and execute "RA-485 Image Transfer" software.


#### Step 1 : RA-485 to PC Connection

Connecting the RA-485 to your PC



**Attention!** The RS-485 port at the back of the RA-485 must be correctly connected D+ to A+ and D- to B-.

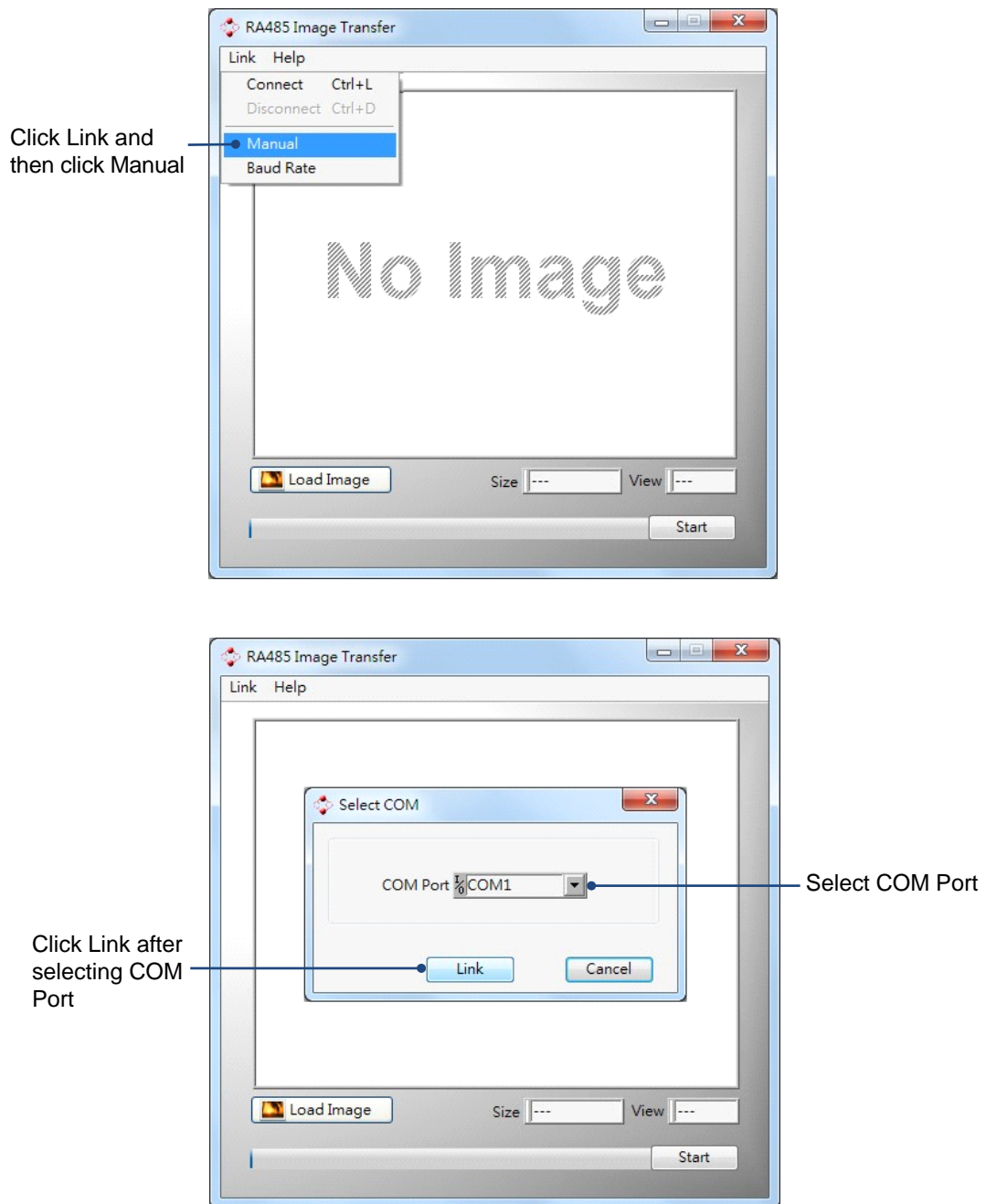
#### Step 2 : Entering System Auxiliary Function

Press and hold  button and connect to power. RA-485 will display the following image on the display screen "Download Image Pattern" (See below picture).



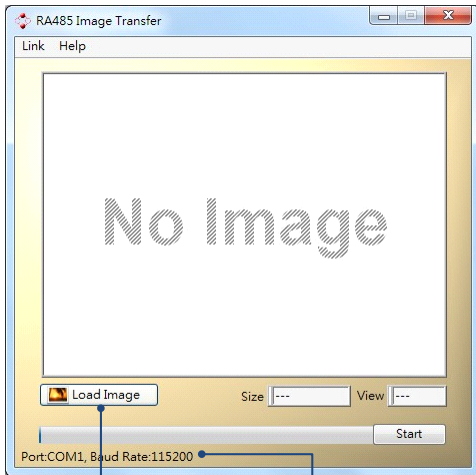
### Step 3 : Select COM Port

Execute the “RA-485 Image Transfer” program on PC and select the correct COM port setting (The COM port where the connector is connected on the PC).

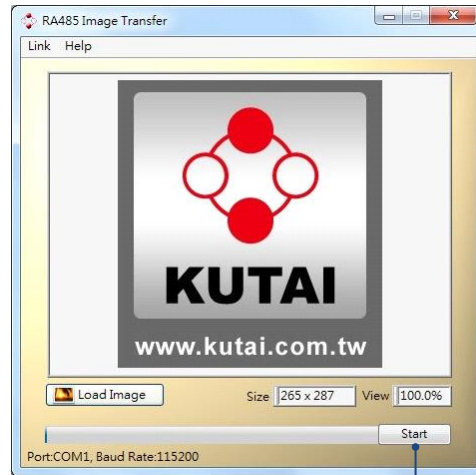


### Step 4 : Selecting Image

Select the desire startup screen image (Format restricted to JPG or BMP files only. Max file size 630\*390).




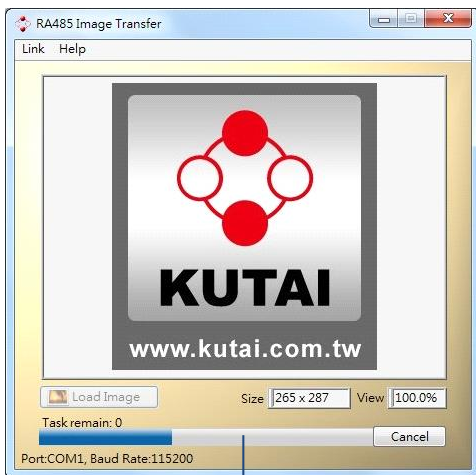
Select Upload Image      COM Port Status



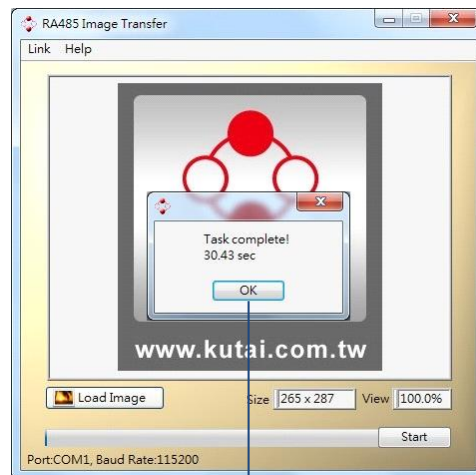
Begin Uploa

### STEP 5 : Upload Complete

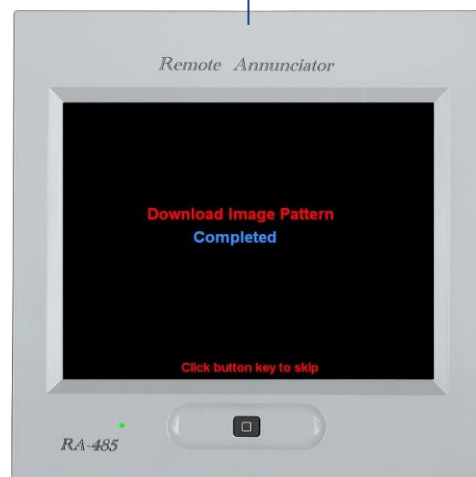
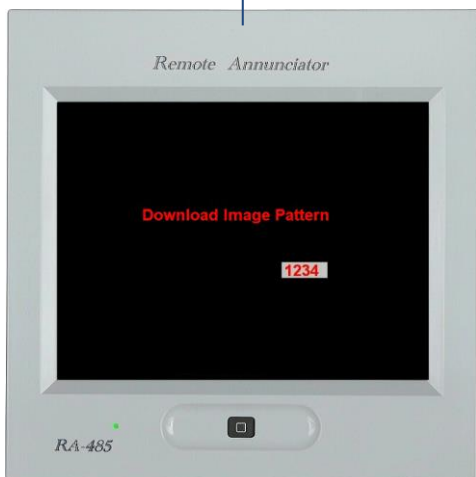
When uploading is completed, Press  to enter 4.2 Touch Screen Sensitivity Calibration.




File Uploading



Download Complete




## 4.2 Touch Screen Sensitivity Calibration





\*The accuracy and sensitivity is precisely adjusted in factory, unless necessary, please do not recalibrate and press  to skip to 4.3 Button Testing.

When executing sensitivity calibration, please follow the coordinate calibration sequence (Total of 7 coordinates), preferably with a touch screen stylus and press the center of each coordinates. When calibration is completed, move on to 4.3 Button Testing.



## 4.3 Button Testing

To skip Button Testing, press  to skip to end program and enter system main screen.

In this operation, there are total of 13 testing coordinates. Press each  and the button icon should turn into  and then press the button again the icon should turn into . After all coordinates have been tested, press  to return to system main screen.

If user notices the deviation on the coordinates, return to 4.1 Touch Screen Sensitivity Calibration to recalibrate.



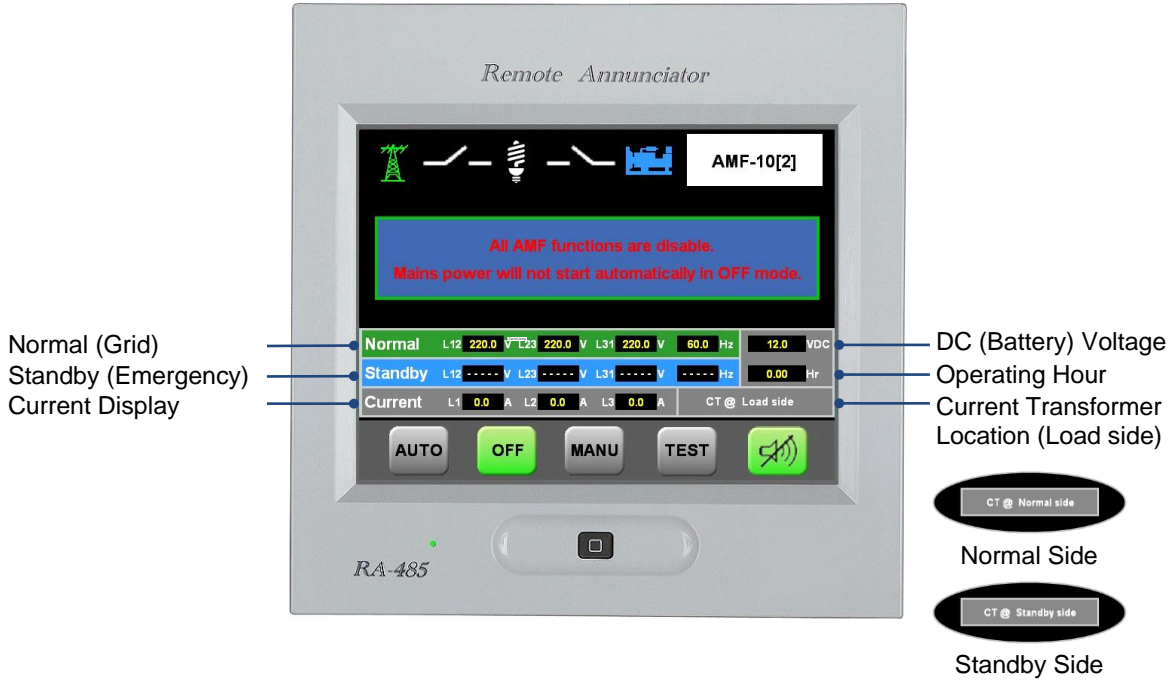


## SECTION 5 : AMF-10 OPERATION INSTRUCTION

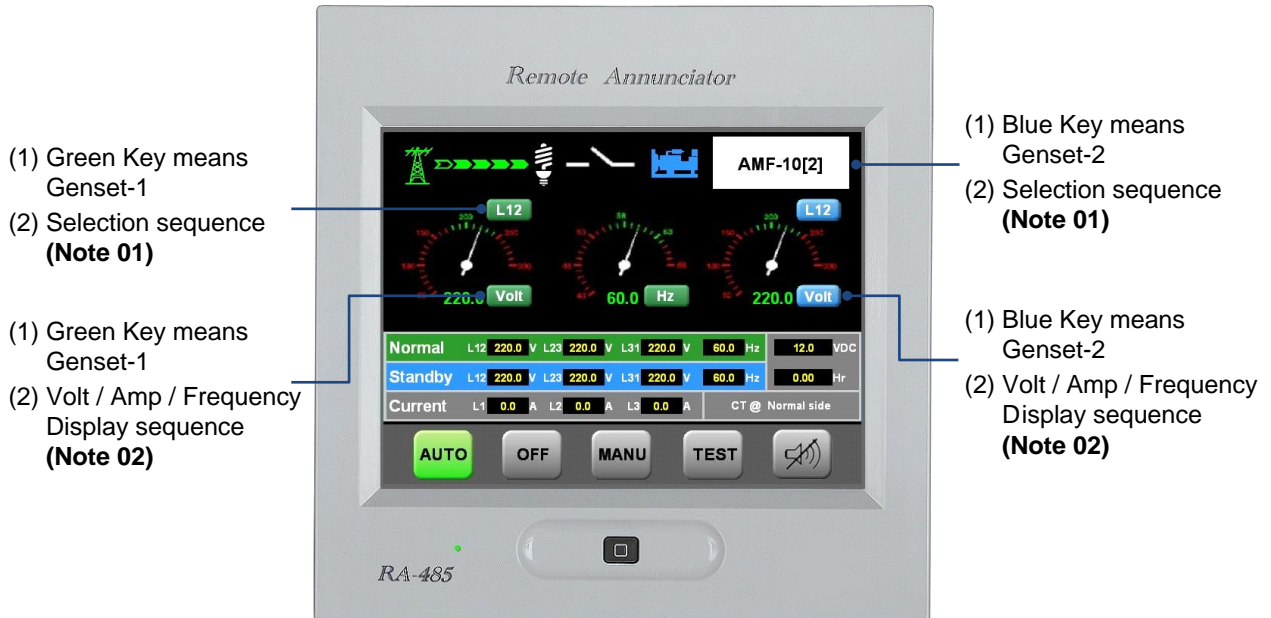
RA-485 does not support the modification of parameter settings for AMF-10 controller system.

Display and operation image please refer to Section 2.6.

### 5.1 OFF Mode (OFF)



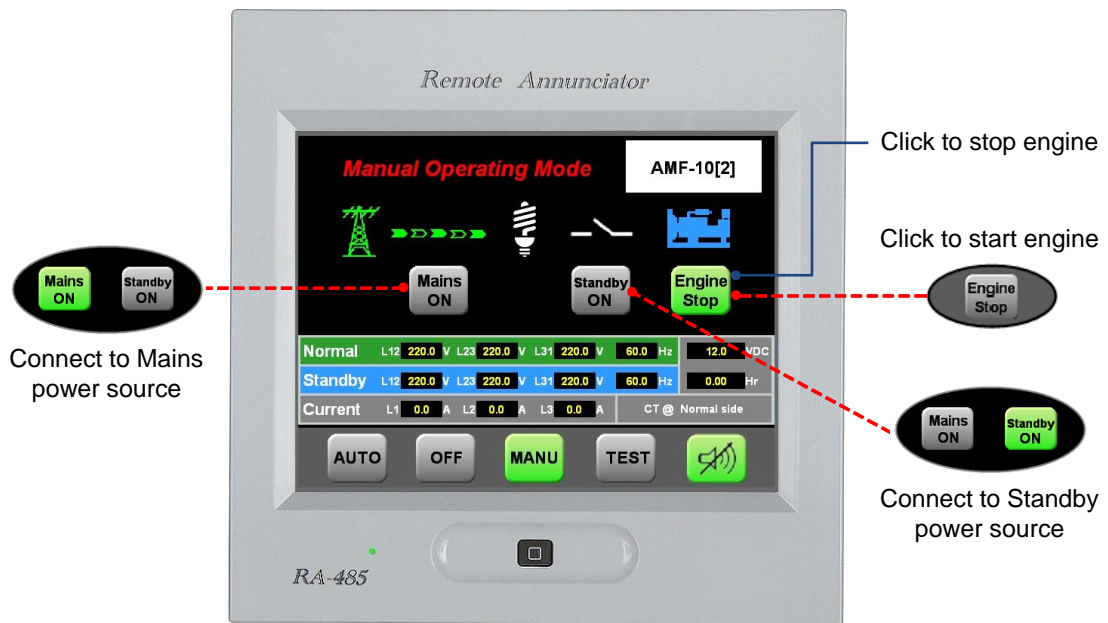
### 5.2 AUTO Mode (AUTO)



**(Note 01)** Selection sequence = L12 > L23 > L31

**(Note 02)** Normal Power Source (Green key) Volt / Amp / Frequency display sequence = Volt > Amp > Hz, Standby Power Source (Blue key) = Volt > Amp > Hz

### 5.3 Manual Mode (MANU)



### 5.4 Test Mode (TEST)






















## 5.5 Message Display

### 5.5.1 Numeric display fields

Single phase	<b>Normal</b>	L12 ----- V	L23 ----- V	L31 220.0 V	60.0 Hz	12.0 VDC
	<b>Standby</b>	L12 ----- V	L23 ----- V	L31 220.0 V	60.0 Hz	0.00 Hr
	<b>Current</b>	L1 ----- A	L2 ----- A	L3 0.0 A	CT @ Normal side	
3 phase 3 wire Single phase 3 wire	<b>Normal</b>	L12 220.0 V	L23 220.0 V	L31 220.0 V	60.0 Hz	12.0 VDC
	<b>Standby</b>	L12 220.0 V	L23 220.0 V	L31 220.0 V	60.0 Hz	0.00 Hr
	<b>Current</b>	L1 0.0 A	L2 0.0 A	L3 0.0 A	CT @ Normal side	

### 5.5.2 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.

 <b>AMF-10 [2]</b> Normal Power OFF	 <b>AMF-10 [2]</b> Normal Over Volt	 <b>AMF-10 [2]</b> Normal Under Volt	 <b>AMF-10 [2]</b> Standby Power OFF
 <b>AMF-10 [2]</b> Standby Over Volt	 <b>AMF-10 [2]</b> Standby Under Volt	 <b>AMF-10 [2]</b> Over Speed	 <b>AMF-10 [2]</b> Under Speed
 <b>AMF-10 [2]</b> Over Load	 <b>AMF-10 [2]</b> Emergency Stop	 <b>AMF-10 [2]</b> Low Battery Volt	 <b>AMF-10 [2]</b> Low Fuel Level
 <b>AMF-10 [2]</b> Low Pressure	 <b>AMF-10 [2]</b> Over Temperature	 <b>AMF-10 [2]</b> Charge Failure	 <b>AMF-10 [2]</b> Over Cranking
 <b>AMF-10 [2]</b> Alarm 1 Failure	 <b>AMF-10 [2]</b> Alarm 2 Failure	 <b>AMF-10 [2]</b> Maintenance	

### 5.5.3 Engine Stop Failure (Alarm Message)














 <p><b>Alarm-1 Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Alarm-1 Failure</b> Press OFF button to return to normal.</p>
 <p><b>Alarm-2 Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Alarm-2 Failure</b> Press OFF button to return to normal.</p>
 <p><b>Charge Alternator Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Charge Alternator Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Cranking Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Cranking Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Oil Pressure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Oil Pressure Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Fuel Level Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Fuel Level Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Load Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Load Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>Under Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Under Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>ACV Over Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Over Voltage Failure</b> Press OFF button to return to normal.</p>

 <p><b>ACV Under Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Under Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>Standby Over Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Standby Over Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>Standby Under Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Standby Under Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Temperature Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Temperature Failure</b> Press OFF button to return to normal.</p>
 <p><b>Emergency Stop</b> Press OFF button to return to normal.</p>	

#### 5.5.4 Time Delay Countdown Message

 <p><b>ACV Over Voltage Shut-Down</b> <b>12 Sec</b></p>	 <p><b>ACV Under Voltage Shut-Down</b> <b>12 Sec</b></p>
 <p><b>Alarm-1 Failure Shut-Down</b> <b>12 Sec</b></p>	 <p><b>Alarm-2 Failure Shut-Down</b> <b>12 Sec</b></p>
 <p><b>Charge Alternator Failure Shut-Down</b> <b>12 Sec</b></p>	 <p><b>Emergency Stop Shut-Down</b> <b>12 Sec</b></p>
 <p><b>Engine Cooling-Down</b> <b>12 Sec</b></p>	 <p><b>Engine Cranking</b> <b>12 Sec</b></p>
 <p><b>Engine Idle</b> <b>12 Sec</b></p>	 <p><b>Engine Pre-Heat</b> <b>12 Sec</b></p>

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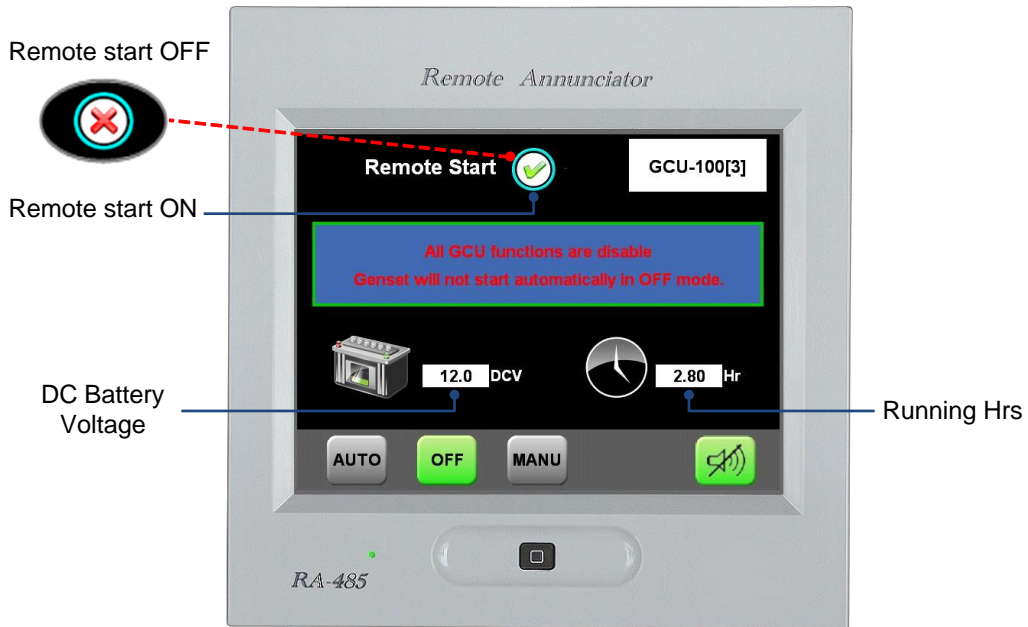
 <p>Engine Shut-Down <b>12 Sec</b></p>	 <p>Low Fuel Level Shut-Down <b>12 Sec</b></p>
 <p>Low Oil Pressure Shut-Down <b>12 Sec</b></p>	 <p>Over Cranking Shut-Down <b>12 Sec</b></p>
 <p>Over Speed Shut-Down <b>12 Sec</b></p>	 <p>Under Speed Shut-Down <b>12 Sec</b></p>
 <p>Over Temperature Shut-Down <b>12 Sec</b></p>	 <p>Temperature Sensor Failure Shut-Down <b>12 Sec</b></p>
 <p>Standby Over Voltage Shut-Down <b>12 Sec</b></p>	 <p>Standby Under Voltage Shut-Down <b>12 Sec</b></p>
 <p>Over Load Shut-Down <b>12 Sec</b></p>	

## SECTION 6 : GCU-100 OPERATION INSTRUCTION

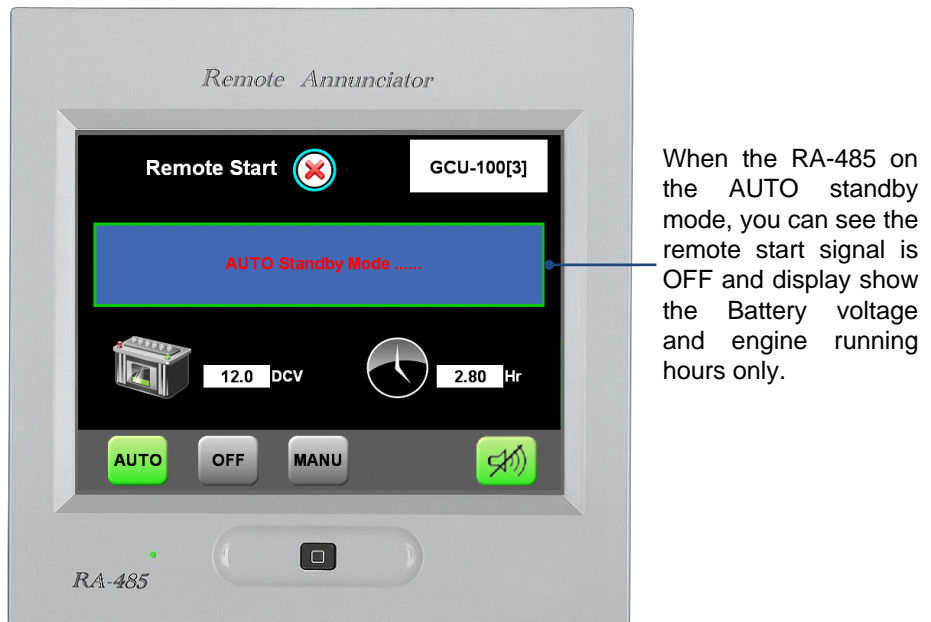
RA-485 does not support the modification of parameter settings for GCU-100 controller system.

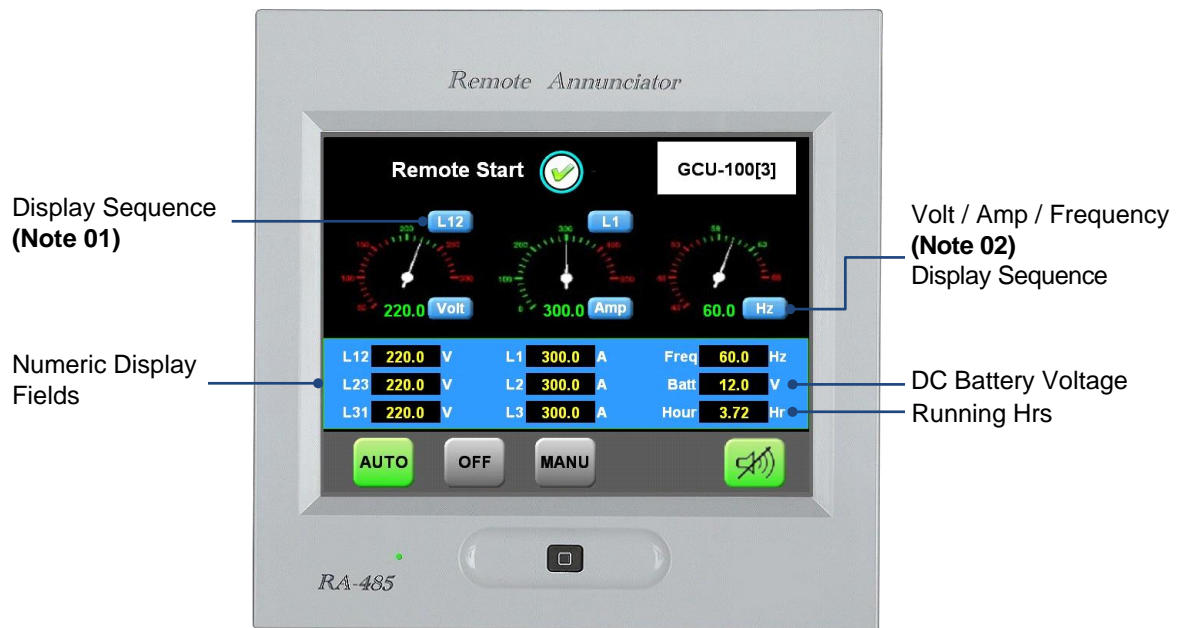
Display and operation image please refer to Section 2.6.

### 6.1 OFF Mode (OFF)



### 6.2 AUTO Mode (AUTO)

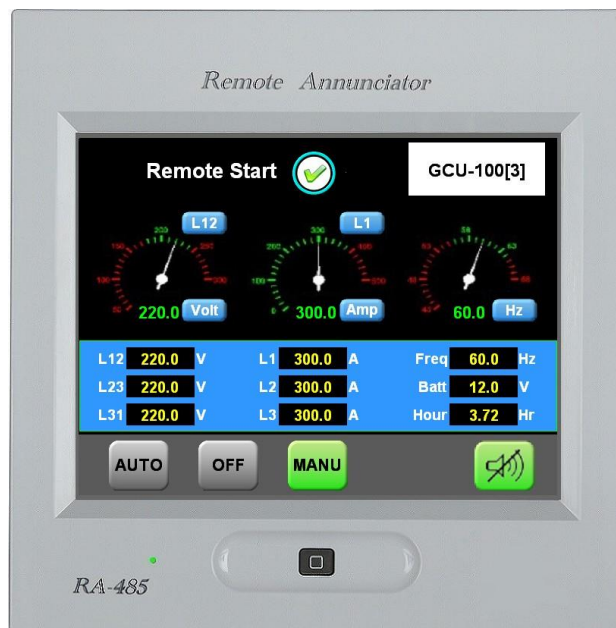




**(Note 01)** Display sequence : Volt = L12 > L23 > L31, Amp = L1 > L2 > L3

**(Note 02)** Volt / Amp / Frequency display sequence = Volt > Amp > Hz

### 6.3 Manual Mode (MANU)





















## 6.4 Message Display

### 6.4.1 Numeric Display Fields





Single phase	L12	-----	V	L1	-----	A	Freq	60.0	Hz
	L23	-----	V	L2	-----	A	Batt	12.0	V
	L31	220.0	V	L3	300.0	A	Hour	3.72	Hr
3 phase 3 wire Single phase 3 wire	L12	220.0	V	L1	300.0	A	Freq	60.0	Hz
	L23	220.0	V	L2	300.0	A	Batt	12.0	V
	L31	220.0	V	L3	300.0	A	Hour	3.72	Hr

### 6.4.2 Failure Warning Message

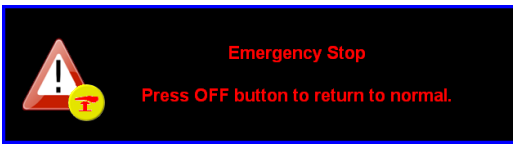
Warning message displayed on the upper right hand side of the screen.

 <b>GCU-100 [3]</b> Over Volt	 <b>GCU-100 [3]</b> Under Volt	 <b>GCU-100 [3]</b> Over Speed	 <b>GCU-100 [3]</b> Under Speed
 <b>GCU-100 [3]</b> Over Load	 <b>GCU-100 [3]</b> Over Temperature	 <b>GCU-100 [3]</b> Low Battery Volt	 <b>GCU-100 [3]</b> Low Fuel Level
 <b>GCU-100 [3]</b> Low Pressure	 <b>GCU-100 [3]</b> Over Cranking	 <b>GCU-100 [3]</b> Charge Failure	 <b>GCU-100 [3]</b> MPU Failure
 <b>GCU-100 [3]</b> Emergency Stop	 <b>GCU-100 [3]</b> Alarm 1 Failure	 <b>GCU-100 [3]</b> Alarm 2 Failure	 <b>GCU-100 [3]</b> Maintenance

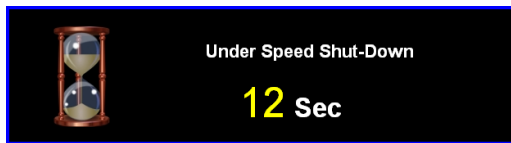
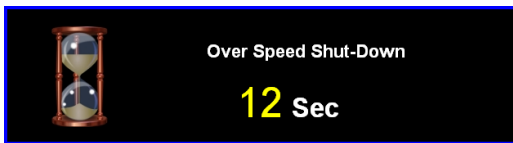
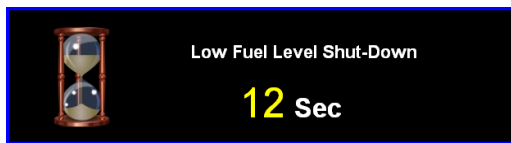
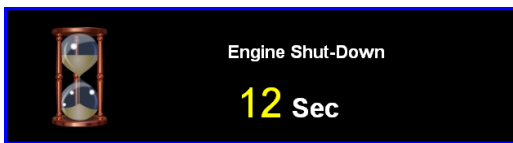
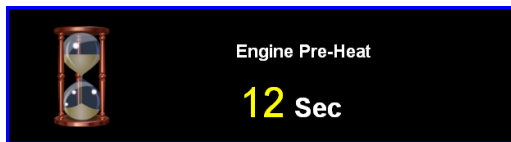
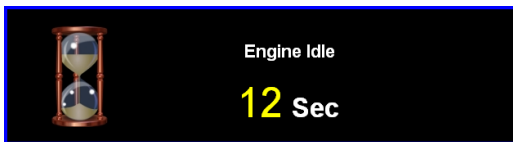
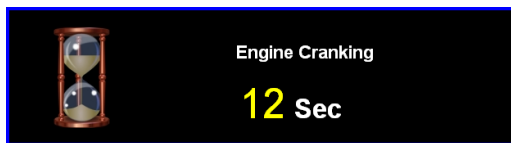
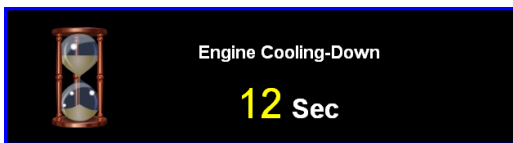
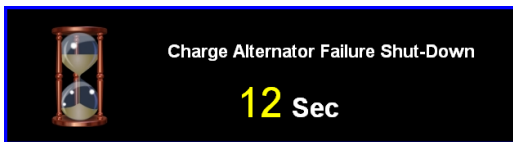
### 6.4.3 Engine Stop Failure (Alarm Message)

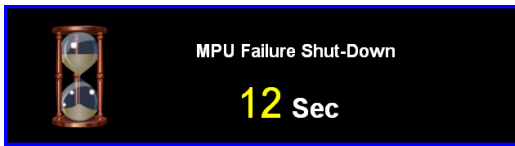
 <b>Alarm-1 Failure Shut-Down</b> Press OFF button to return to normal.	 <b>Alarm-1 Failure</b> Press OFF button to return to normal.
 <b>Alarm-2 Failure Shut-Down</b> Press OFF button to return to normal.	 <b>Alarm-2 Failure</b> Press OFF button to return to normal.

 <p><b>Charge Alternator Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Charge Alternator Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Cranking Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Cranking Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Oil Pressure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Oil Pressure Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Fuel Level Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Fuel Level Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Load Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Load Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>Under Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Under Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>ACV Over Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Over Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>ACV Under Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Under Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>MPU Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>MPU Failure</b> Press OFF button to return to normal.</p>



#### 6.4.4 Time Delay Countdown Message

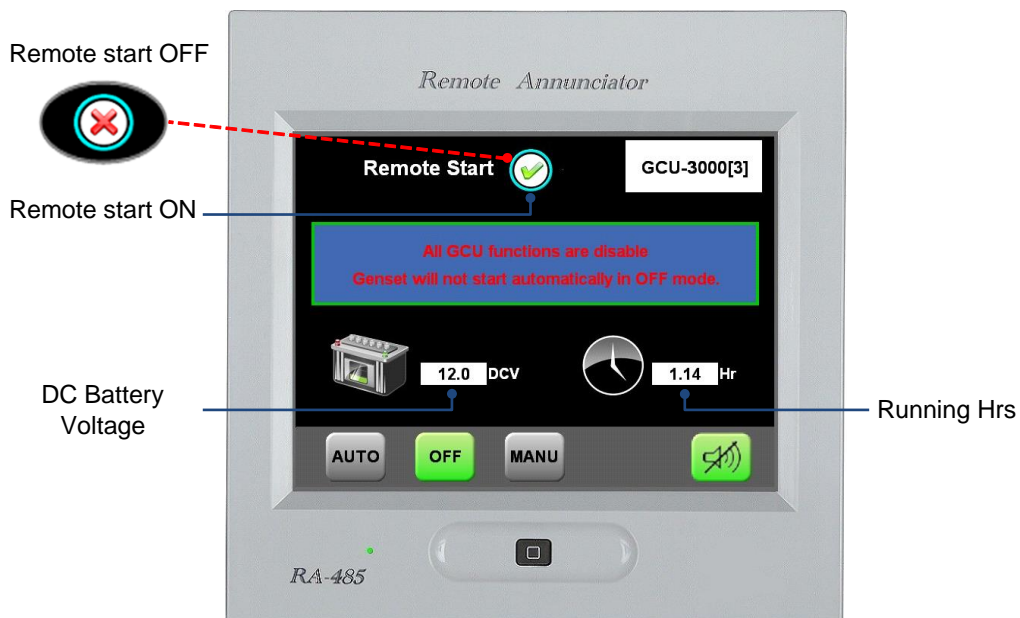




## SECTION 7 : GCU-3000 OPERATION INSTRUCTION

RA-485 does not support the modification of parameter settings for GCU-3000 controller system. Display and operation image please refer to Section 2.6.

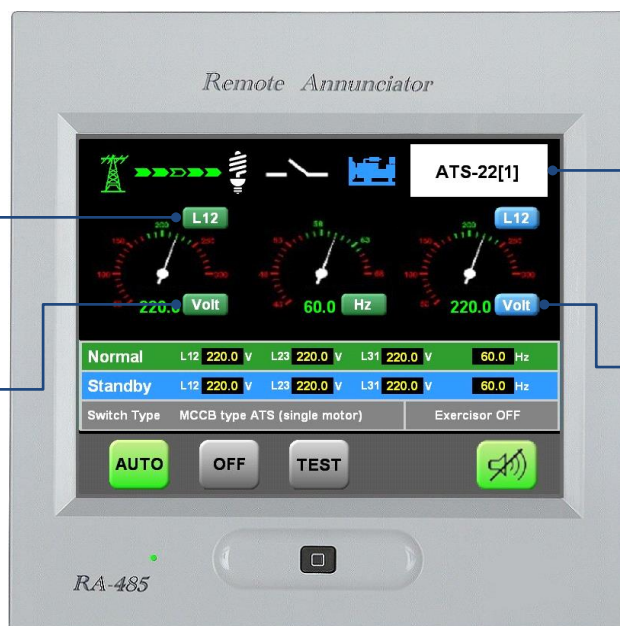
### 7.1 Off Mode (OFF)



## 7.2 Auto Mode (AUTO)



When the RA-485 on the AUTO standby mode, you can see the remote start signal is OFF and display show the Battery voltage and engine running hours only.



- (1) Green Key means Genset-1
- (2) Selection sequence **(Note 01)**

- (1) Green Key means Genset-1
- (2) Volt / Amp / Frequency Display sequence **(Note 02)**

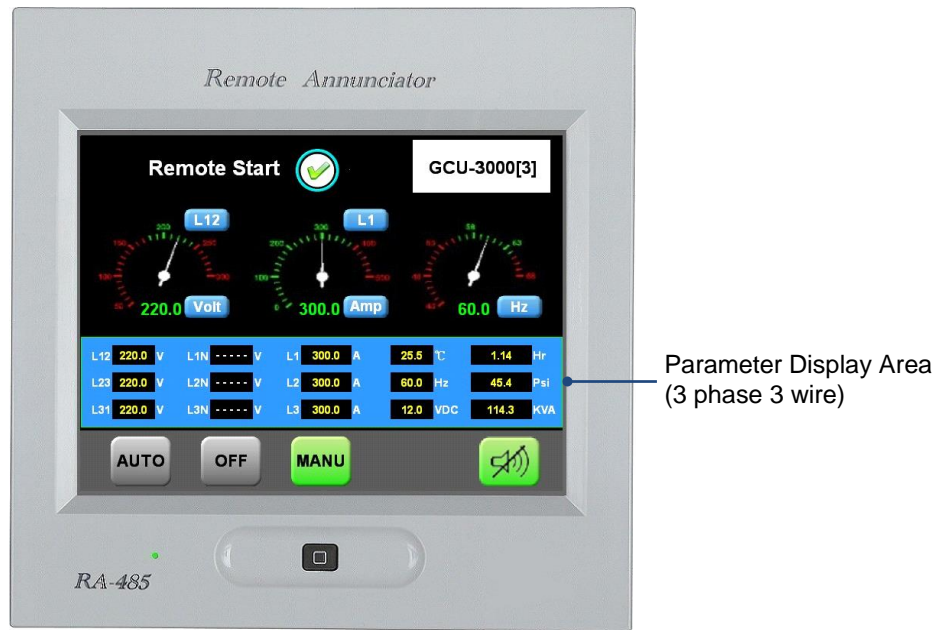
- (1) Blue Key means Genset-2
- (2) Selection sequence **(Note 01)**

- (1) Blue Key means Genset-2
- (2) Volt / Amp / Frequency Display sequence **(Note 02)**

**(Note 01)** Voltage : 3 Phase 4 Wires display sequence = L12 > L23 > L31 > L1N > L2N > L3N  
 Current : Display sequence L1 > L2 > L3

**(Note 02)** Display sequence Volt > Amp > Hz

### 7.3 Manual Mode (MANU)



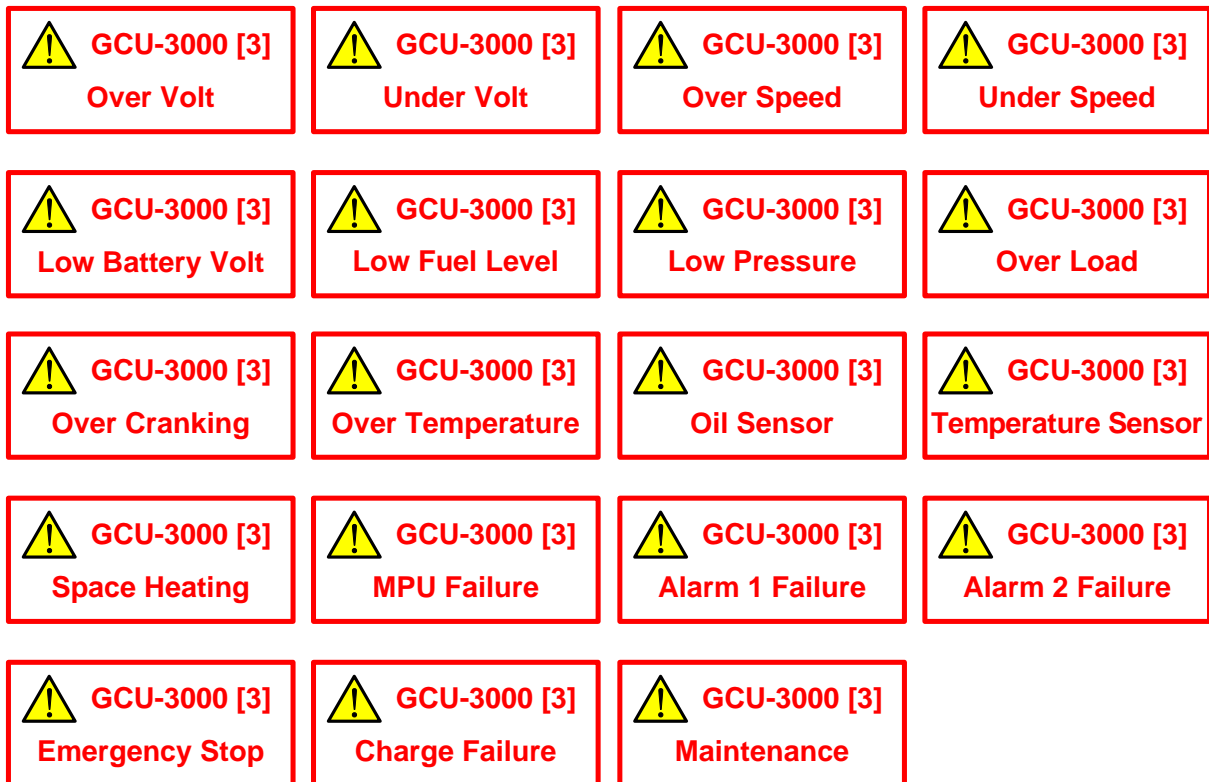
### 7.4 Message Display

#### 7.4.1 Numeric Display Fields

Single phase	L12 220.0 V	L1N ----- V	L1 300.0 A	25.5 °C	1.14 Hr
	L23 ----- V	L2N ----- V	L2 ----- A	60.0 Hz	45.4 Psi
	L31 ----- V	L3N ----- V	L3 ----- A	12.0 VDC	114.3 KVA
Single Phase 3 Wire	L12 220.0 V	L1N 127.0 V	L1 300.0 A	25.5 °C	1.14 Hr
	L23 ----- V	L2N 127.0 V	L2 300.0 A	60.0 Hz	45.4 Psi
	L31 ----- V	L3N ----- V	L3 ----- A	12.0 VDC	114.3 KVA
3 Phase 3 Wire	L12 220.0 V	L1N ----- V	L1 300.0 A	25.5 °C	1.14 Hr
	L23 220.0 V	L2N ----- V	L2 300.0 A	60.0 Hz	45.4 Psi
	L31 220.0 V	L3N ----- V	L3 300.0 A	12.0 VDC	114.3 KVA
3 Phase 4 Wire	L12 220.0 V	L1N 127.0 V	L1 300.0 A	25.5 °C	1.14 Hr
	L23 220.0 V	L2N 127.0 V	L2 300.0 A	60.0 Hz	45.4 Psi
	L31 220.0 V	L3N 127.0 V	L3 300.0 A	12.0 VDC	114.3 KVA

## 7.4.2 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.



## 7.4.3 Engine Stop Failure (Alarm Message)



 <p><b>Over Cranking Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Cranking Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Oil Pressure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Oil Pressure Failure</b> Press OFF button to return to normal.</p>
 <p><b>Oil Sensor Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Oil Sensor Failure</b> Press OFF button to return to normal.</p>
 <p><b>Low Fuel Level Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Low Fuel Level Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Load Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Load Failure</b> Press OFF button to return to normal.</p>
 <p><b>Over Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Over Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>Under Speed Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>Under Speed Failure</b> Press OFF button to return to normal.</p>
 <p><b>ACV Over Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Over Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>ACV Under Voltage Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>ACV Under Voltage Failure</b> Press OFF button to return to normal.</p>
 <p><b>MPU Failure Shut-Down</b> Press OFF button to return to normal.</p>	 <p><b>MPU Failure</b> Press OFF button to return to normal.</p>





#### 7.4.4 Time Delay Countdown Message



---




Over Speed Shut-Down  
**12 Sec**



Under Speed Shut-Down  
**12 Sec**



Over Temperature Shut-Down  
**12 Sec**



Temperature Sensor Failure Shut-Down  
**12 Sec**



Over Load Shut-Down  
**12 Sec**



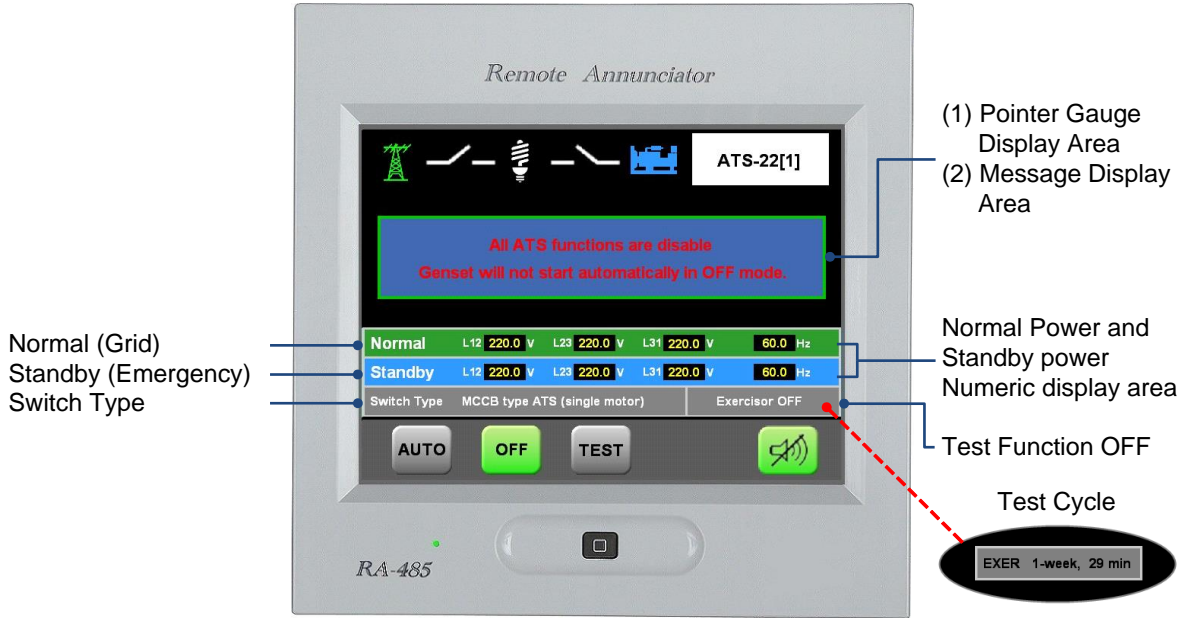
MPU Failure Shut-Down  
**12 Sec**

## SECTION 8 : ATS-22 OPERATION INSTRUCTION

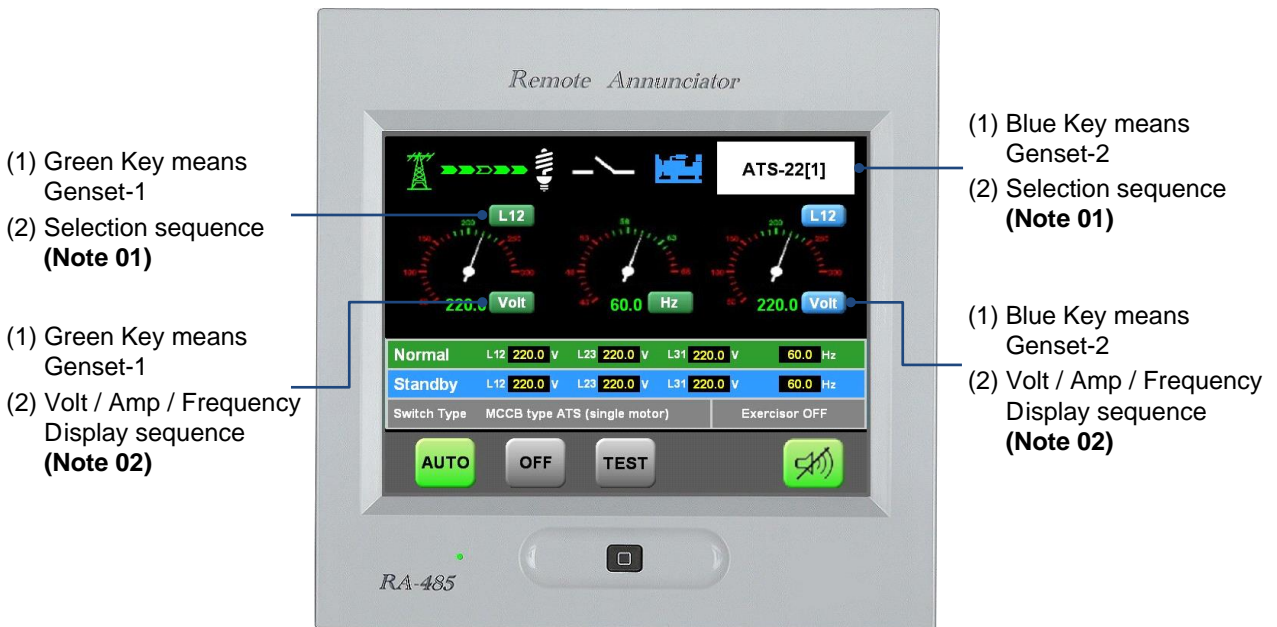
RA-485 does not support the modification of parameter settings for ATS-22 controller system.

Display and operation image please refer to Section 2.6

### 8.1 Off Mode (OFF)



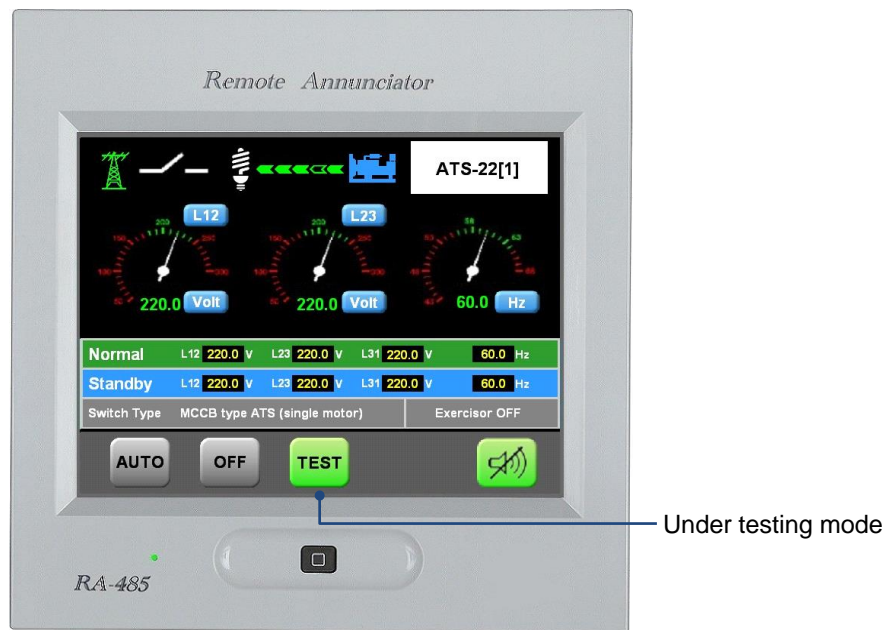
### 8.2 Auto Mode (AUTO)



**(Note 01)** Selection sequence = L12 > L23 > L31

**(Note 02)** Normal Power Source (Green key) Volt / Amp / Frequency display sequence = Volt > Amp > Hz, Standby Power Source (Blue key) = Volt > Amp > Hz

### 8.3 Test Mode (TEST)



### 8.4 Message Display

#### 8.4.1 Numeric Display Fields

Single phase

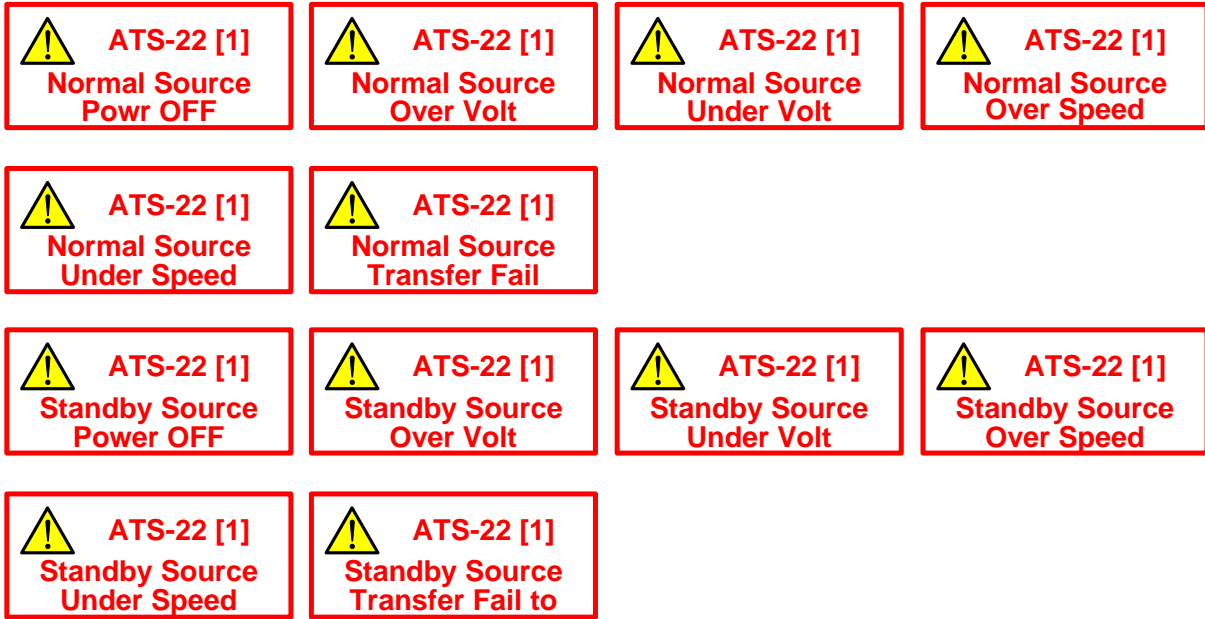
<b>Normal</b>	L12 220.0 V	L23 ---- V	L31 ---- V	60.0 Hz
<b>Standby</b>	L12 220.0 V	L23 ---- V	L31 ---- V	60.0 Hz
Switch Type	MCCB type ATS (single motor)			Exercisor OFF

3 phase

<b>Normal</b>	L12 220.0 V	L23 220.0 V	L31 220.0 V	60.0 Hz
<b>Standby</b>	L12 220.0 V	L23 220.0 V	L31 220.0 V	60.0 Hz
Switch Type	MCCB type ATS (single motor)			Exercisor OFF

### 8.4.2 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.



### 8.4.3 Engine Stop Failure (Alarm Message)



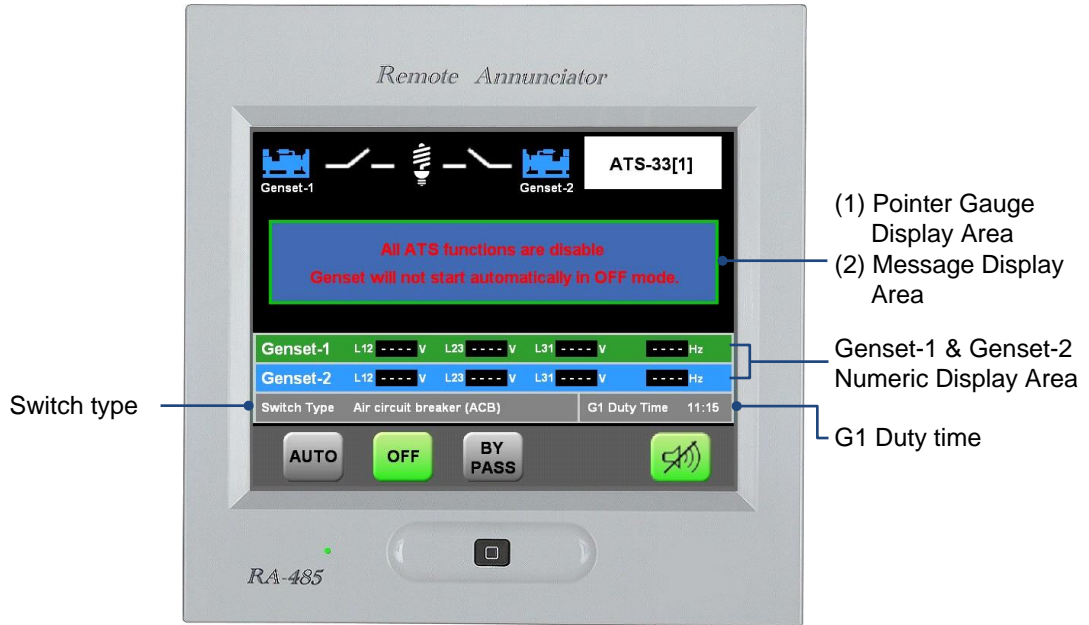
### 8.4.4 Time Delay Countdown Message



## SECTION 9 : ATS-33 OPERATION INSTRUCTION

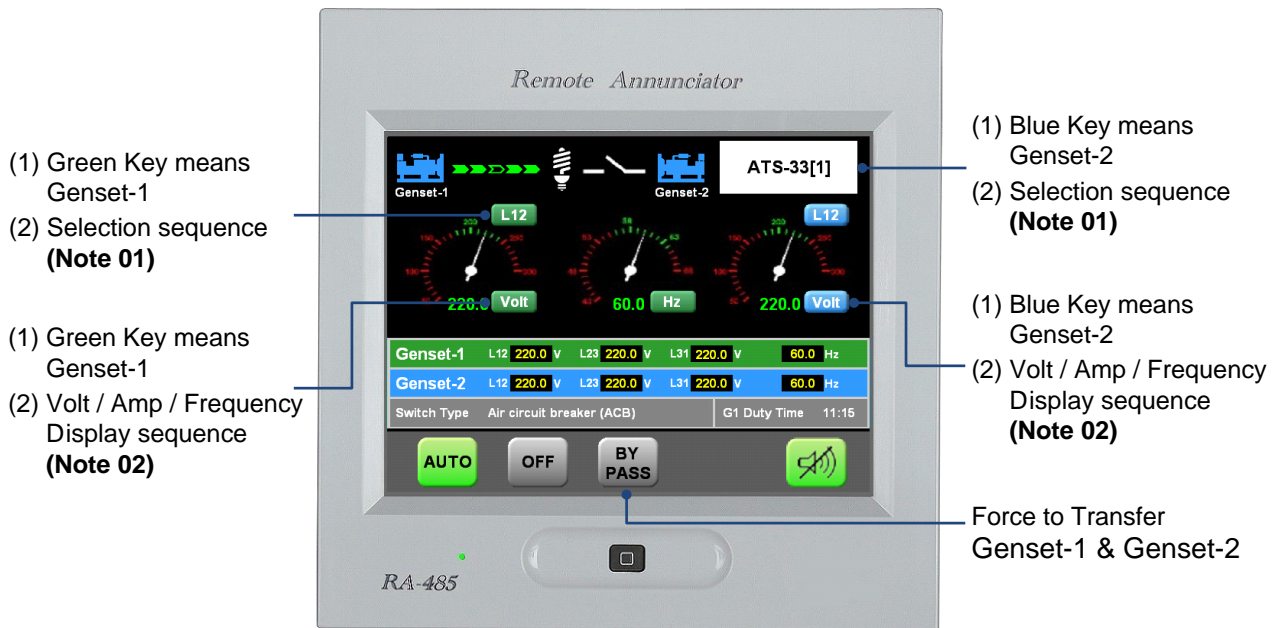
RA-485 does not support the modification of parameter settings for ATS-33 controller system.  
 Display and operation image please refer to Section 2.6

### 9.1 Off Mode (OFF)



**NOTE!** G1 : Genset-1, G2 : Genset-2

### 9.2 Auto Mode (AUTO)



**(Note 01)** Selection sequence = L12 > L23 > L31



















**(Note 02)** Normal Power Source (Green key) Volt / Amp / Frequency display sequence = Volt > Amp > Hz, Standby Power Source (Blue key) = Volt > Amp > Hz

### 9.3 Numeric Display Fields

Single phase	<b>Genset-1</b> L12 <b>220.0</b> V L23 <b>----</b> V L31 <b>----</b> V <b>60.0</b> Hz			
	<b>Genset-2</b> L12 <b>220.0</b> V L23 <b>----</b> V L31 <b>----</b> V <b>60.0</b> Hz			
	Switch Type	Air circuit breaker (ACB)		G1 Duty Time 11:15
3 phase	<b>Genset-1</b> L12 <b>220.0</b> V L23 <b>220.0</b> V L31 <b>220.0</b> V <b>60.0</b> Hz			
	<b>Genset-2</b> L12 <b>220.0</b> V L23 <b>220.0</b> V L31 <b>220.0</b> V <b>60.0</b> Hz			
	Switch Type	Air circuit breaker (ACB)		G1 Duty Time 11:15

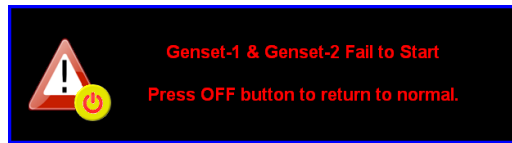
#### 9.3.2 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.

 <b>ATS-33 [1]</b> <b>G1 Power OFF</b>	 <b>ATS-33 [1]</b> <b>G1 Over Volt</b>	 <b>ATS-33 [1]</b> <b>G1 Under Volt</b>	 <b>ATS-33 [1]</b> <b>G1 Over Speed</b>
 <b>ATS-33 [1]</b> <b>G1 Under Speed</b>	 <b>ATS-33 [1]</b> <b>G1 Over Cranking</b>	 <b>ATS-33 [1]</b> <b>Transfer Fail to G1</b>	 <b>ATS-33 [1]</b> <b>G1 Power Unstable</b>
 <b>ATS-33 [1]</b> <b>G2 Power OFF</b>	 <b>ATS-33 [1]</b> <b>G2 Over Volt</b>	 <b>ATS-33 [1]</b> <b>G2 Under Volt</b>	 <b>ATS-33 [1]</b> <b>G2 Over Speed</b>
 <b>ATS-33 [1]</b> <b>G2 Under Speed</b>	 <b>ATS-33 [1]</b> <b>G2 Over Cranking</b>	 <b>ATS-33 [1]</b> <b>Transfer Fail to G2</b>	 <b>ATS-33 [1]</b> <b>G2 Power Unstable</b>
 <b>ATS-33 [1]</b> <b>G1/G2 Power OFF</b>	 <b>ATS-33 [1]</b> <b>Remote Start OFF</b>		

---

### 9.3.3 Engine Stop Failure (Alarm Message)



### 9.3.4 Time Delay Countdown Message



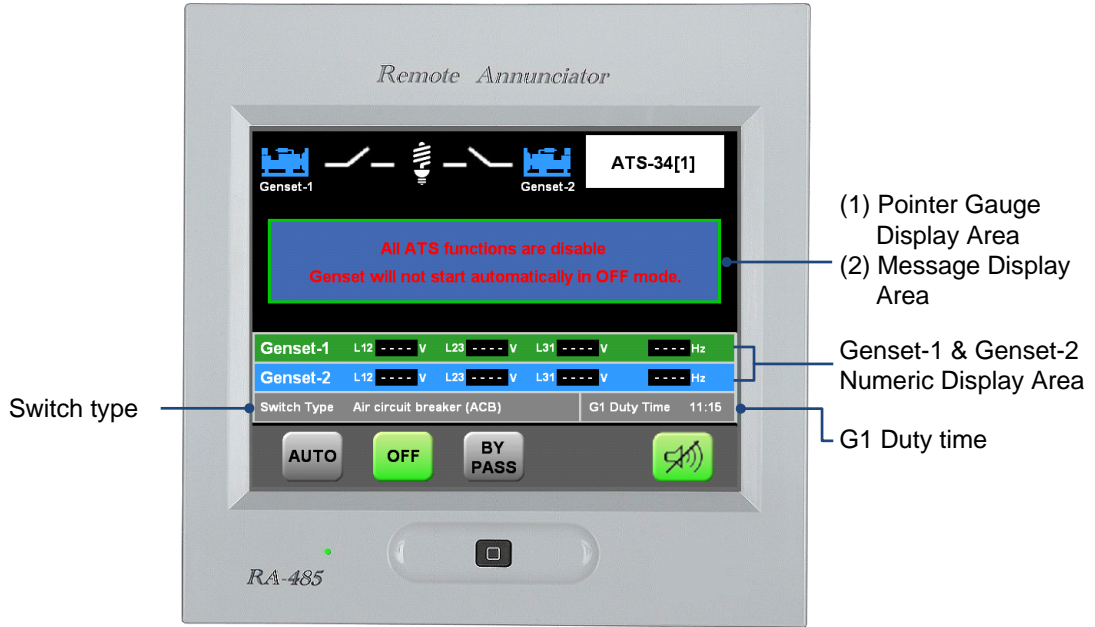


## SECTION 10 : ATS-34 OPERATION INSTRUCTION

RA-485 does not support the modification of parameter settings for ATS-34 controller system.

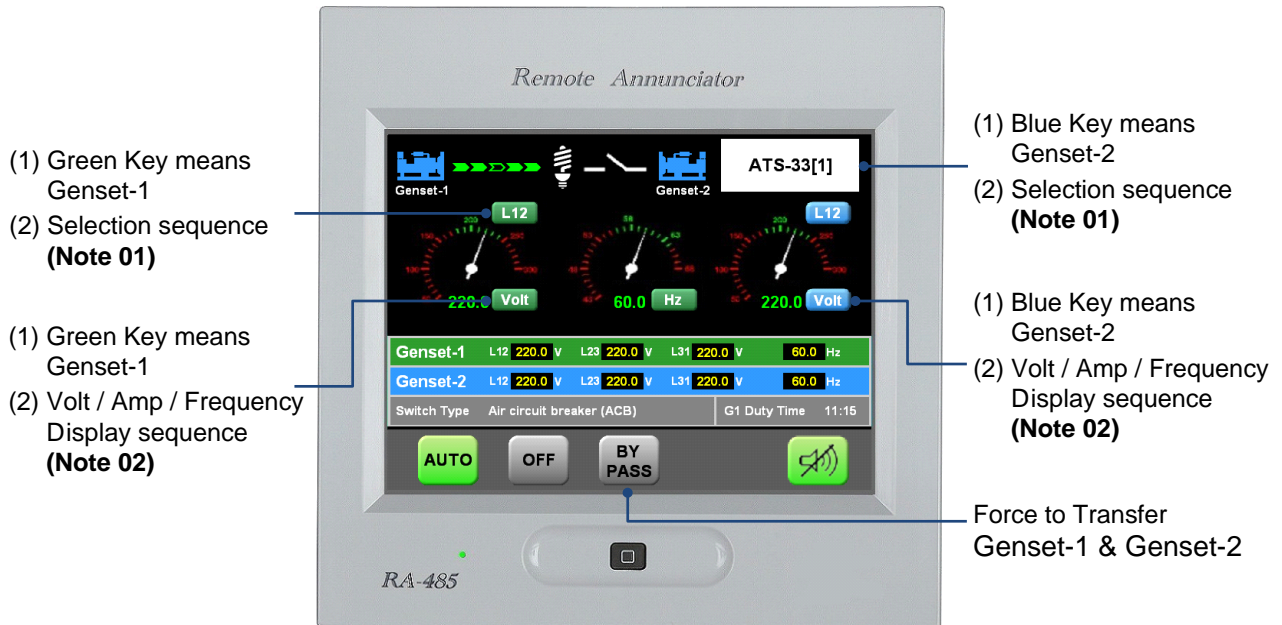
Display and operation image please refer to Section 2.6

### 10.1 Off Mode (OFF)



**NOTE!** G1 : Genset-1, G2 : Genset-2

### 10.2 Auto Mode (AUTO)



**(Note 01)** Selection sequence = L12 > L23 > L31

**(Note 02)** Genset-1 (Green key) Volt / Amp / Frequency display sequence = Volt > Amp > Hz  
Genset-2 (Blue key) = Volt > Amp > Hz



















## 10.3 Message Display

### 10.3.1 Numeric Display Fields

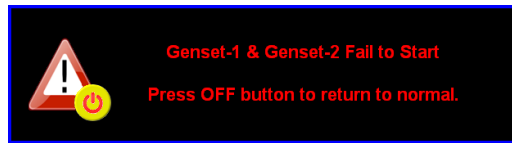
Single phase	<b>Genset-1</b> L12 <b>220.0</b> V L23 <b>----</b> V L31 <b>----</b> V <b>60.0</b> Hz
	<b>Genset-2</b> L12 <b>220.0</b> V L23 <b>----</b> V L31 <b>----</b> V <b>60.0</b> Hz
	Switch Type MCB type ATS (single motor) G1 Duty Time 07:45
3 phase	<b>Genset-1</b> L12 <b>220.0</b> V L23 <b>220.0</b> V L31 <b>220.0</b> V <b>60.0</b> Hz
	<b>Genset-2</b> L12 <b>220.0</b> V L23 <b>220.0</b> V L31 <b>220.0</b> V <b>60.0</b> Hz
	Switch Type MCB type ATS (single motor) G1 Duty Time 07:45

### 10.3.2 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.

 <b>ATS-34 [1]</b> <b>G1 Power OFF</b>	 <b>ATS-34 [1]</b> <b>G1 Over Volt</b>	 <b>ATS-34 [1]</b> <b>G1 Under Volt</b>	 <b>ATS-34 [1]</b> <b>G1 Over Speed</b>
 <b>ATS-34 [1]</b> <b>G1 Under Speed</b>	 <b>ATS-34 [1]</b> <b>G1 Over Cranking</b>	 <b>ATS-34 [1]</b> <b>Transfer Fail to G1</b>	 <b>ATS-34 [1]</b> <b>G1 Power Unstable</b>
 <b>ATS-34 [1]</b> <b>G2 Power OFF</b>	 <b>ATS-34 [1]</b> <b>G2 Over Volt</b>	 <b>ATS-34 [1]</b> <b>G2 Under Volt</b>	 <b>ATS-34 [1]</b> <b>G2 Over Speed</b>
 <b>ATS-34 [1]</b> <b>G2 Under Speed</b>	 <b>ATS-34 [1]</b> <b>G2 Over Cranking</b>	 <b>ATS-34 [1]</b> <b>Transfer Fail to G2</b>	 <b>ATS-34 [1]</b> <b>G2 Power Unstable</b>
 <b>ATS-34 [1]</b> <b>G1/G2 Power OFF</b>	 <b>ATS-34 [1]</b> <b>Remote Start OFF</b>		

### 10.3.3 Engine Stop Failure (Alarm Message)



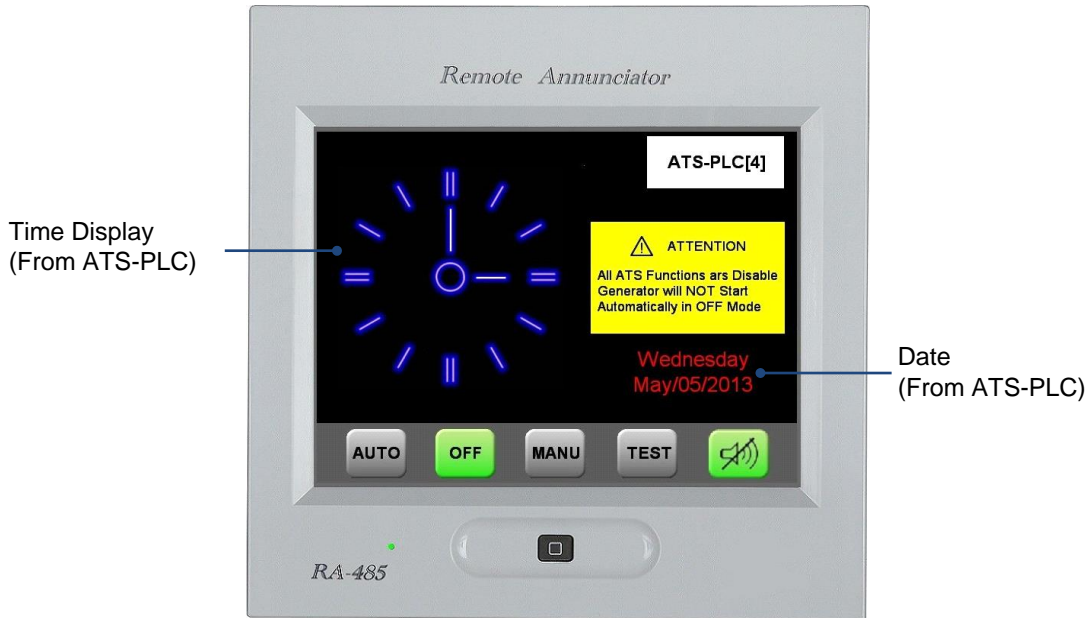
### 10.3.4 Time Delay Countdown Message



# SECTION 11 : ATS-PLC OPERATION INSTRUCTION

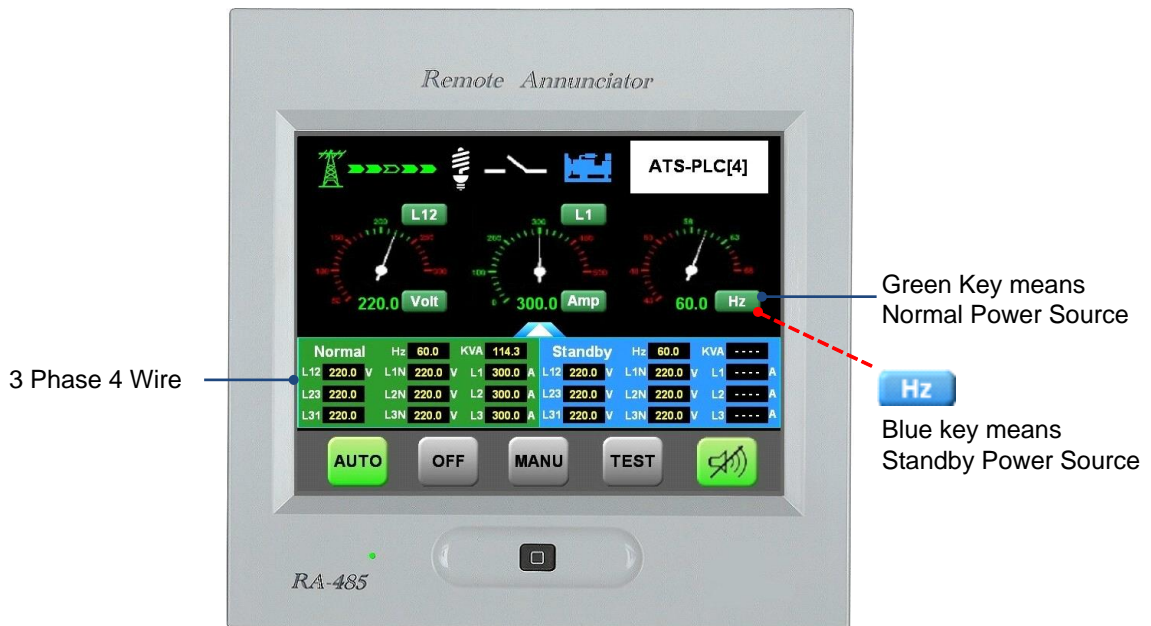
When connecting the RA-485 to the ATS-PLC, The RA-485 will operate in synchronous display and operation mode. Because RA-485 does not support remote system configuration for ATS-PLC, therefore when ATS-PLC is under Program mode, the RA-485 will stop operation and change into OFF mode automatically and display only time and calendar.

## 11.1 Off Mode (OFF)

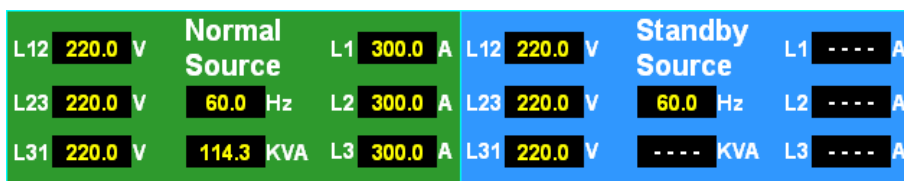


## 11.2 Auto Mode (AUTO)

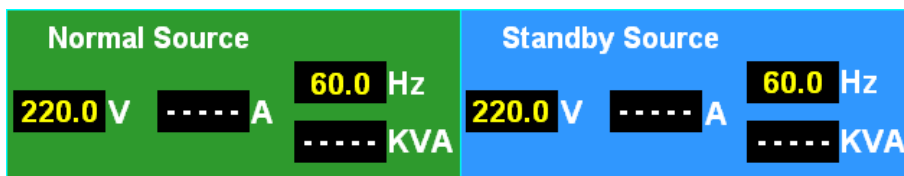
### 11.2.1 Pointer Gauge Display



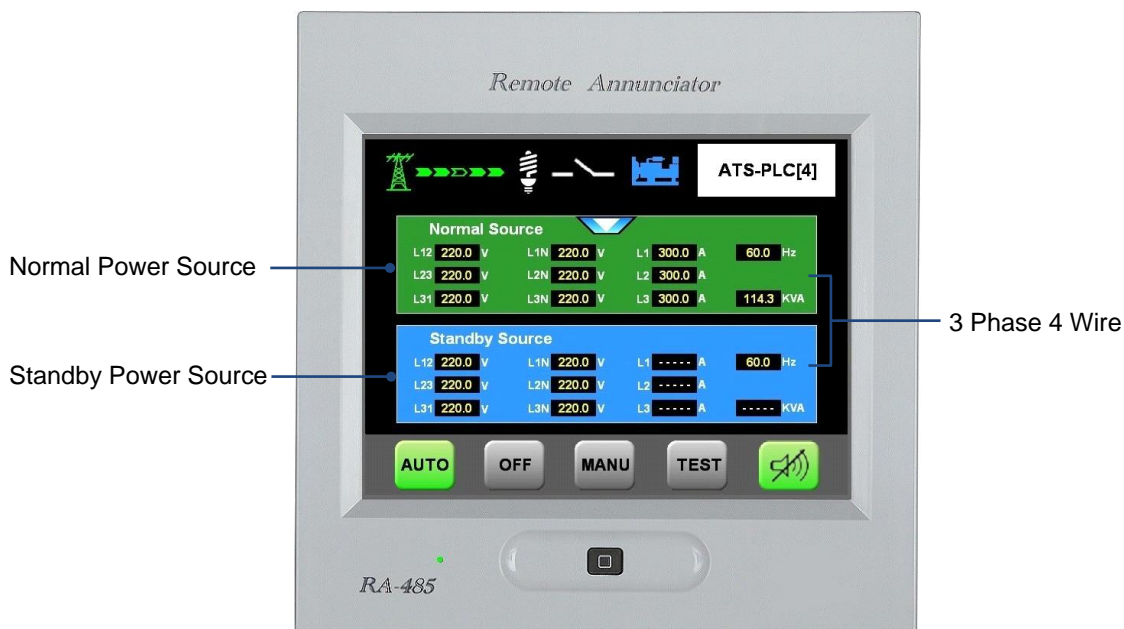
3 phase 3 wire



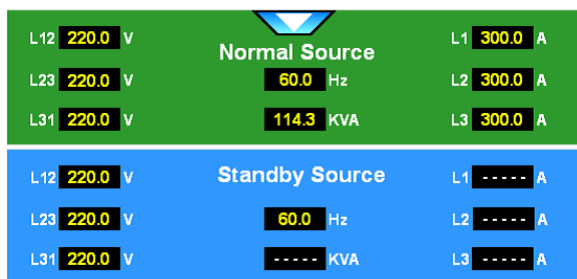
Single phase



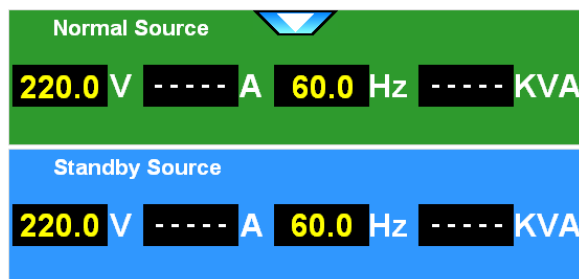
11.2.2 Numerical Meter Display



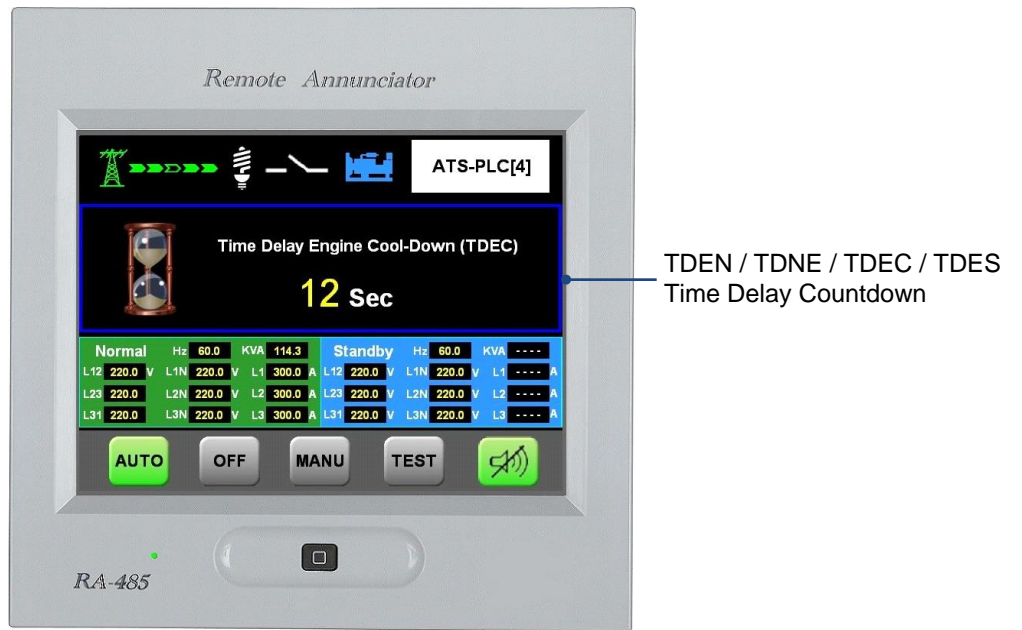
3 phase 3 wire



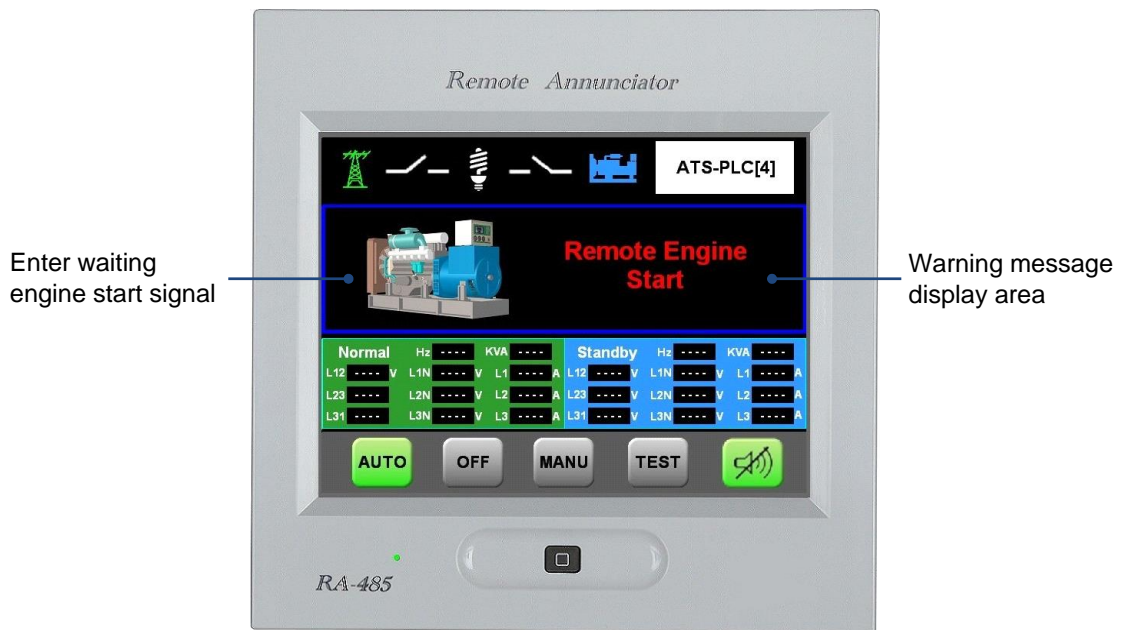
Single phase



### 11.2.3 Time Delay Countdown

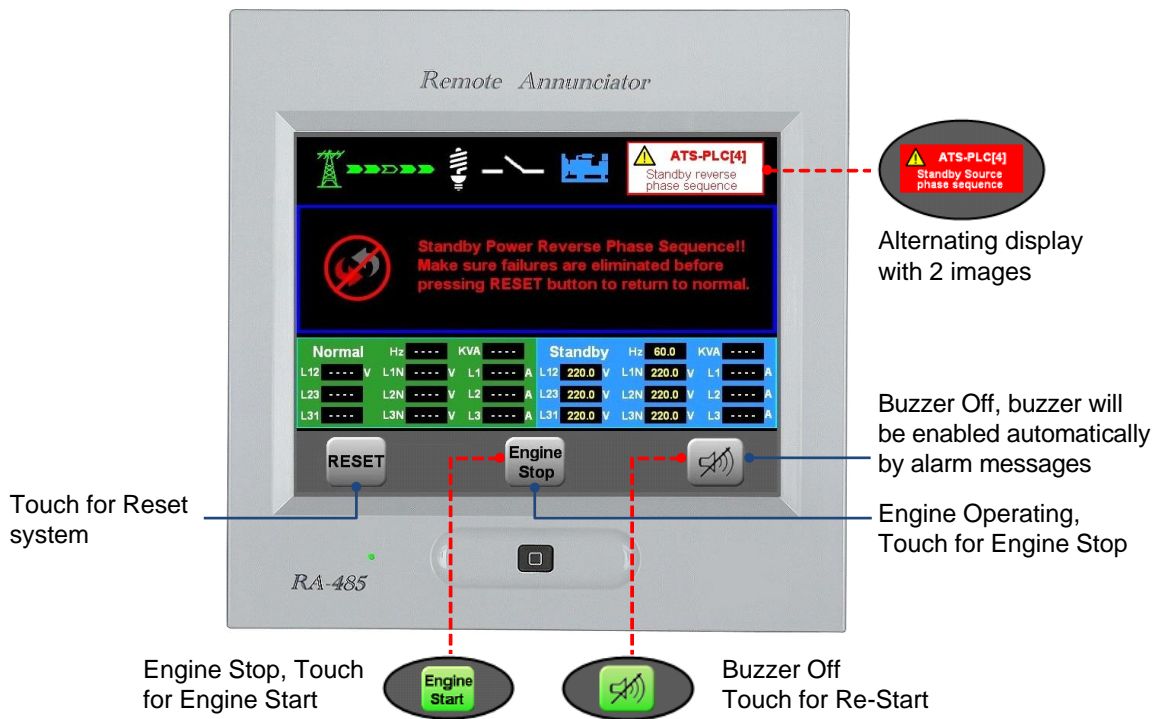


### 11.2.4 Remote Start

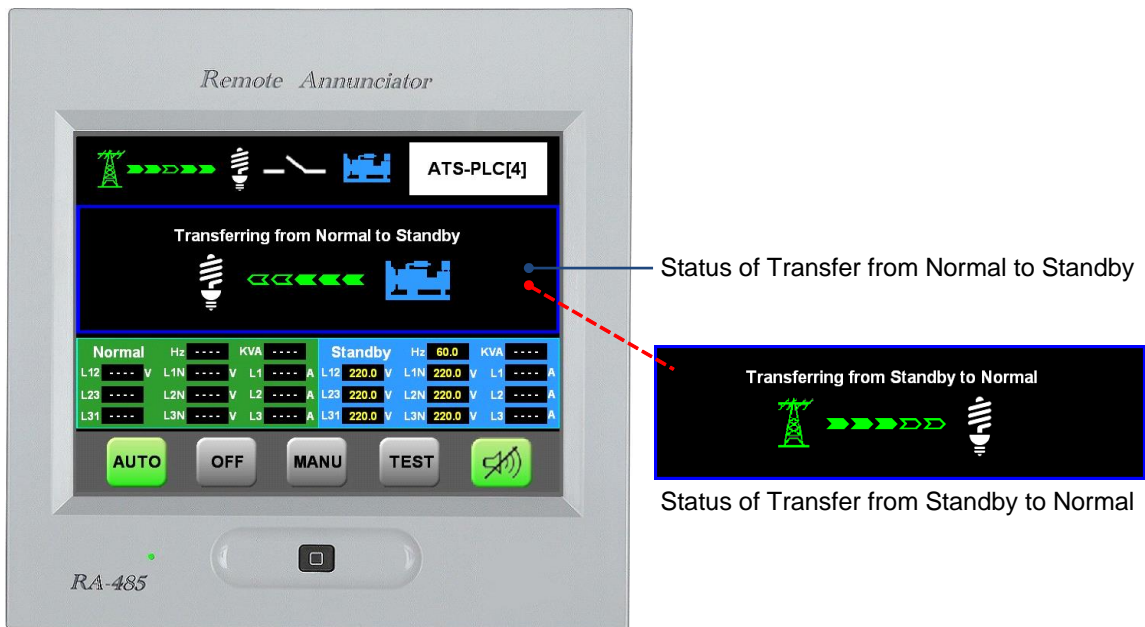


### 11.2.5 Reverse Phase Sequence

When Reverse Phase Sequence (Normal Power Source or Standby Power Source) alarm messages be generated, buzzer will be enabled automatically.

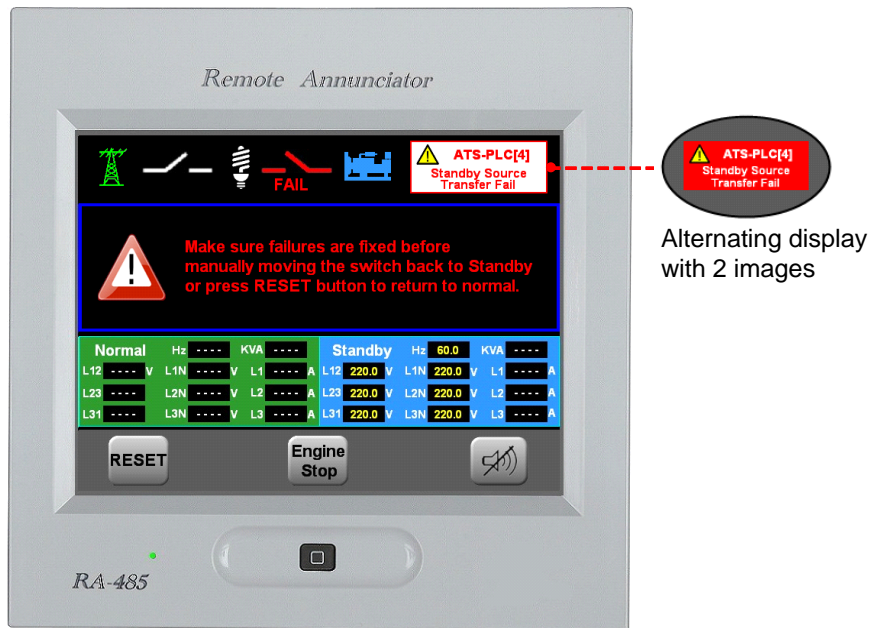


### 11.2.6 Transferring



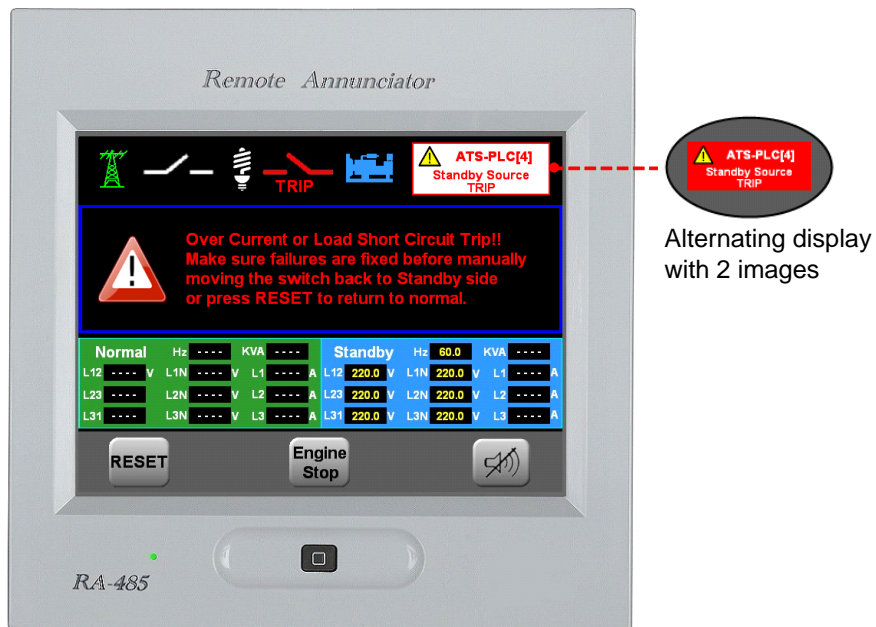
### 11.2.7 Transfer Failure

When Transfer Failure (Normal Power Source or Standby Power Source) alarm messages will be generated and enable buzzer automatically.



### 11.2.8 Power Overload or TRIP

When power overload or TRIP (Normal Power Source or Standby Power Source) alarm messages will be generated and enable buzzer automatically.



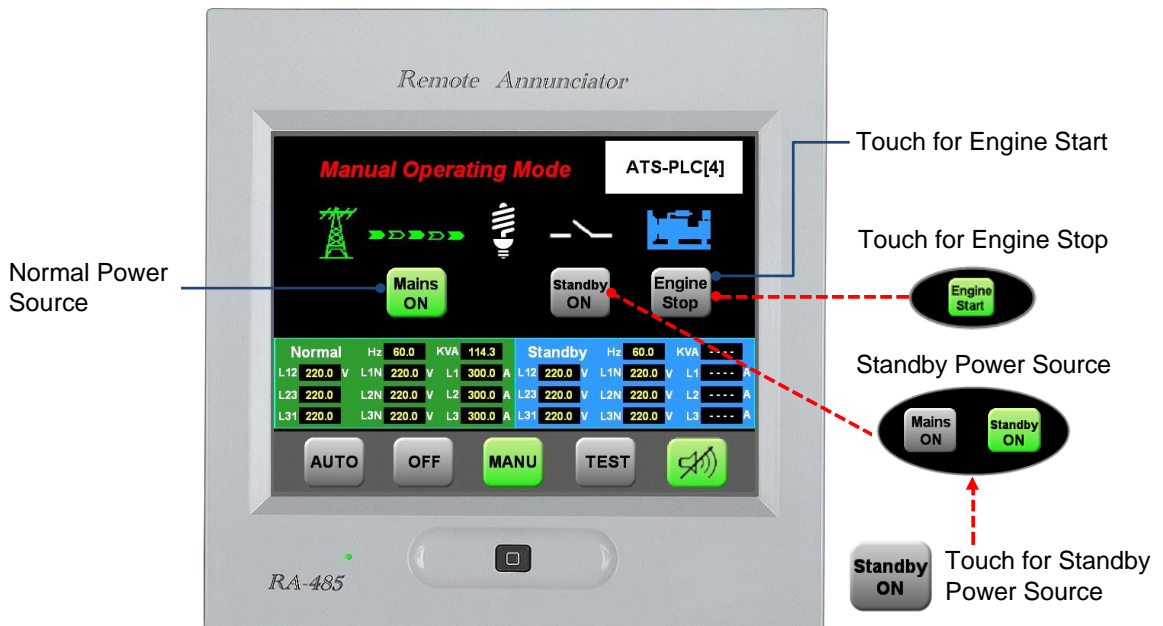


### 11.2.9 Procedure Error

When a controller operation procedure error occurred at sequence of control mode switch button on ATS-PLC. Alarm messages will be generated and enable buzzer automatically. After sustained for 5 seconds, automatically return to the previous screen.

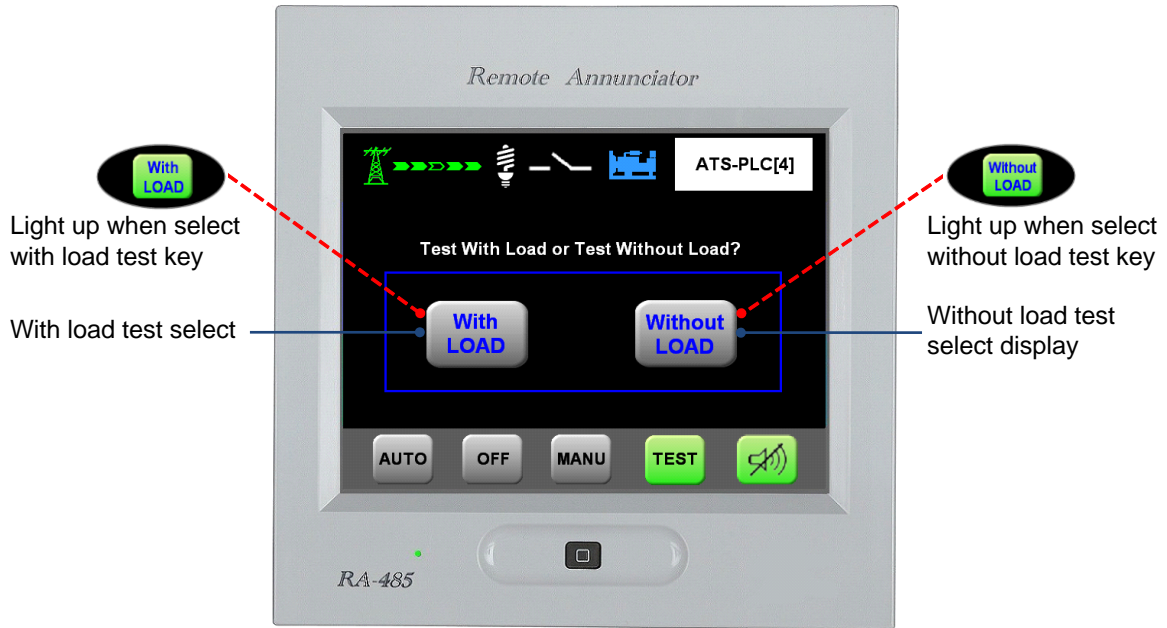


### 11.3 Manual Mode (MANU)



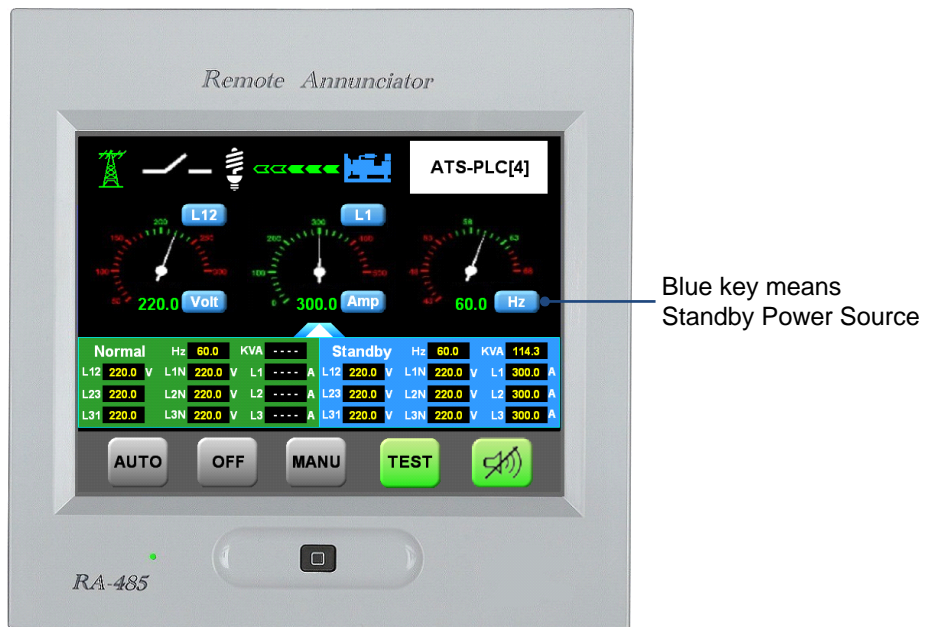
## 11.4 Test Mode (TEST)

### 11.4.1 With / Without Load Test Select Display



**Attention!** Under Standby Power Source with load test function, ATS-PLC will not display with / without load image, will enter with load test image directly. Please refer to section 5.4.2

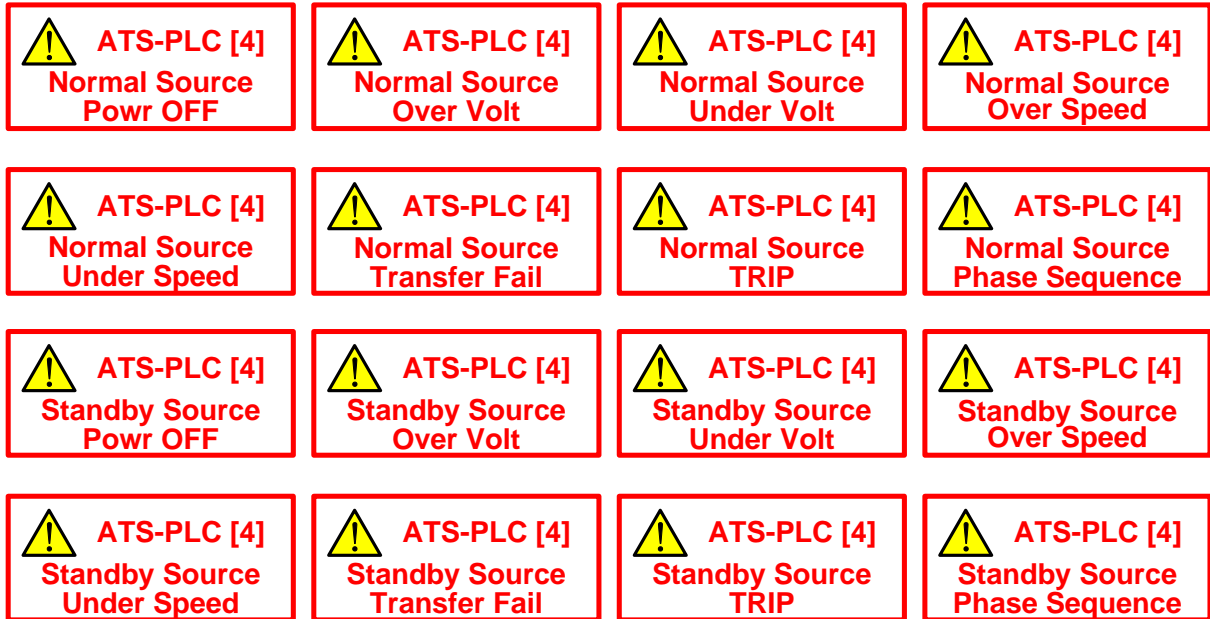
### 11.4.2 With Load Test Display



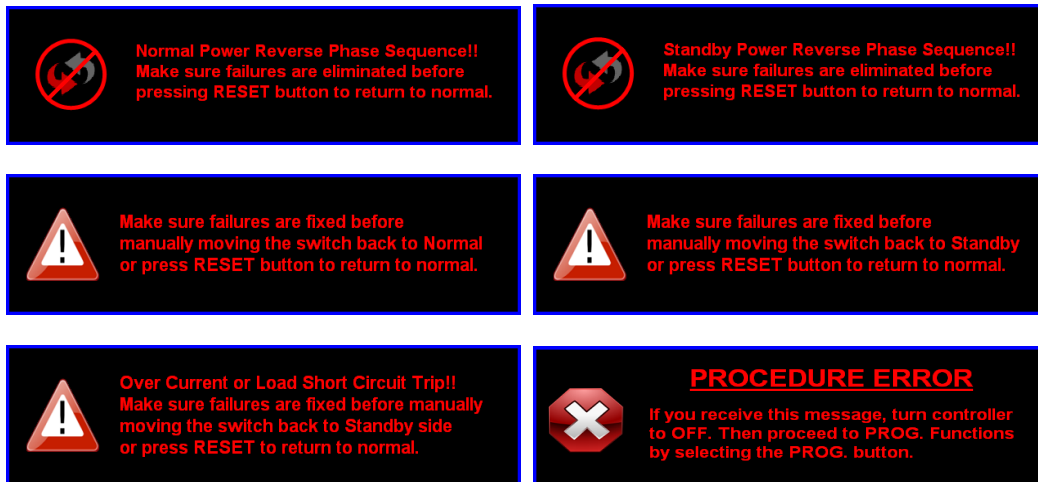
## 11.5 Message Display

### 11.5.1 Failure Warning Message

Warning message displayed on the upper right hand side of the screen.



### 11.5.2 Engine Stop Failure (Alarm Message)



### 11.5.3 Time Delay Countdown Message

 Time Delay Engine Cool-Down (TDEC) <b>12 Sec</b>	 Time Delay E to N (TDEN) <b>12 Sec</b>
 Time Delay Engine Start (TDES) <b>12 Sec</b>	 Time Delay N to E (TDNE) <b>12 Sec</b>
 Time Delay OFF (TDOF) <b>12 Sec</b>	

### SECTION 12 : Unit Dimension and Installation Reference (Unit: mm)

