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// ENG // **AxG** Tower Instruction manual

AxG Tower

Active Filter

Power Factor Correction

Phase Balance

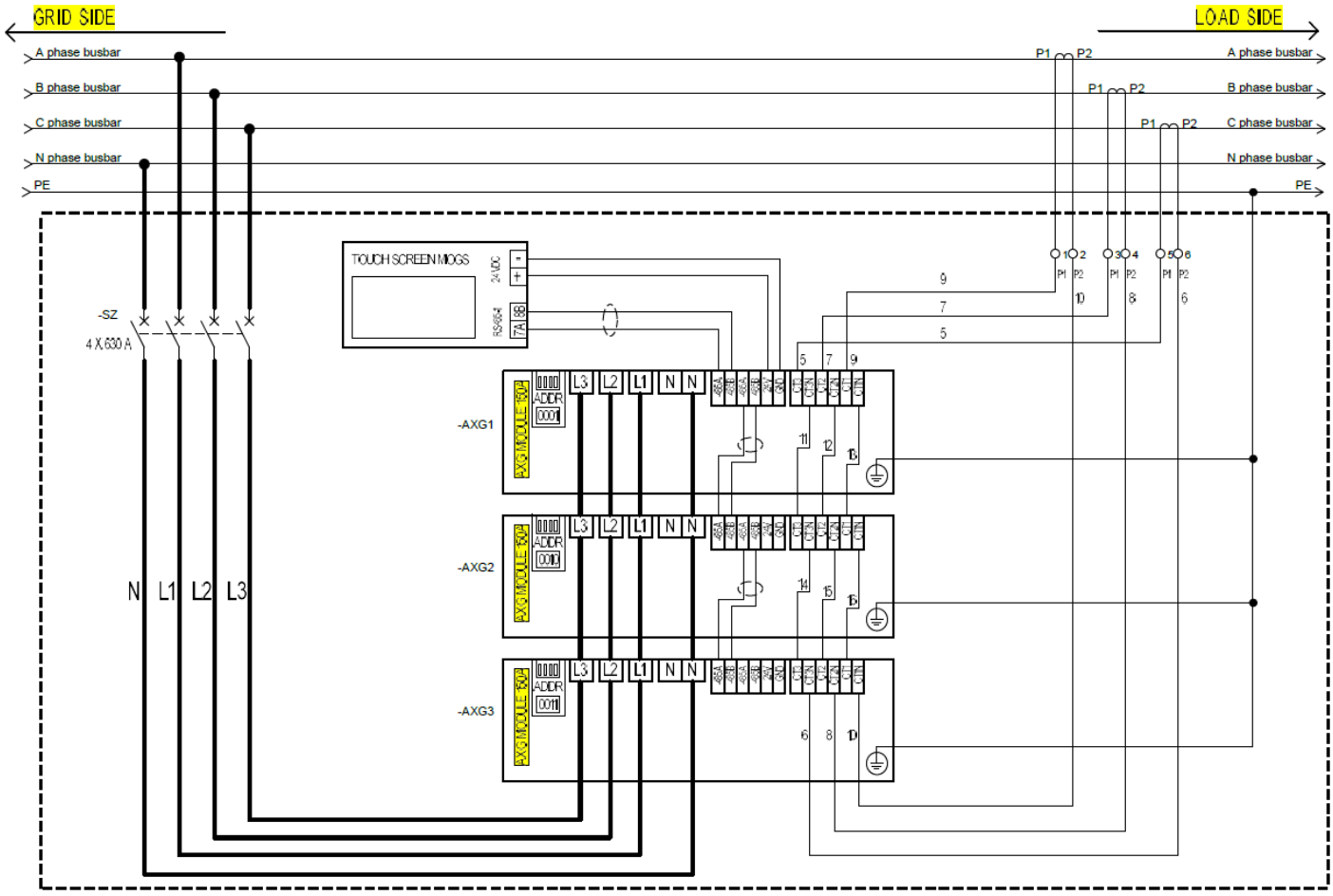
COMPANY WITH SOCIAL ACCOUNTABILITY SYSTEM CERTIFIED BY DNV GL = SA 8000 =

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001:2015 =

COMPANY WITH ENVIRONMENTAL SYSTEM CERTIFIED BY DNV GL = ISO 14001:2015 =

COMPANY WITH SAFETY SYSTEM CERTIFIED BY DNV GL = OHSAS 18001 =

Example of a diagram (the specific diagram of the AXG… cabinet, is attached to the documentation)



WARNING:

1. Install a thermal-magnetic switch upstream of the filter with a capacity suitable for the filter current, increased by approximately 25%.

2. The Current Transformers (C.T.) pertaining to the filter must be installed downstream of any other power factor correction system; The only exception is for power factor correction panels complete with filter reactors.

3. **Scrupulously respect the sequence of phases: L1/L2/L3 and CT1/CT2/CT3**

4. **Incorrect wiring will damage the AXG equipment. Before starting the filter make sure the wiring is correct. If there are errors, you will notice an exponential increase in the current, until the device breaks; turn off using the STOP button, recheck the C.T. wiring and restart.**

1. Filter ignition

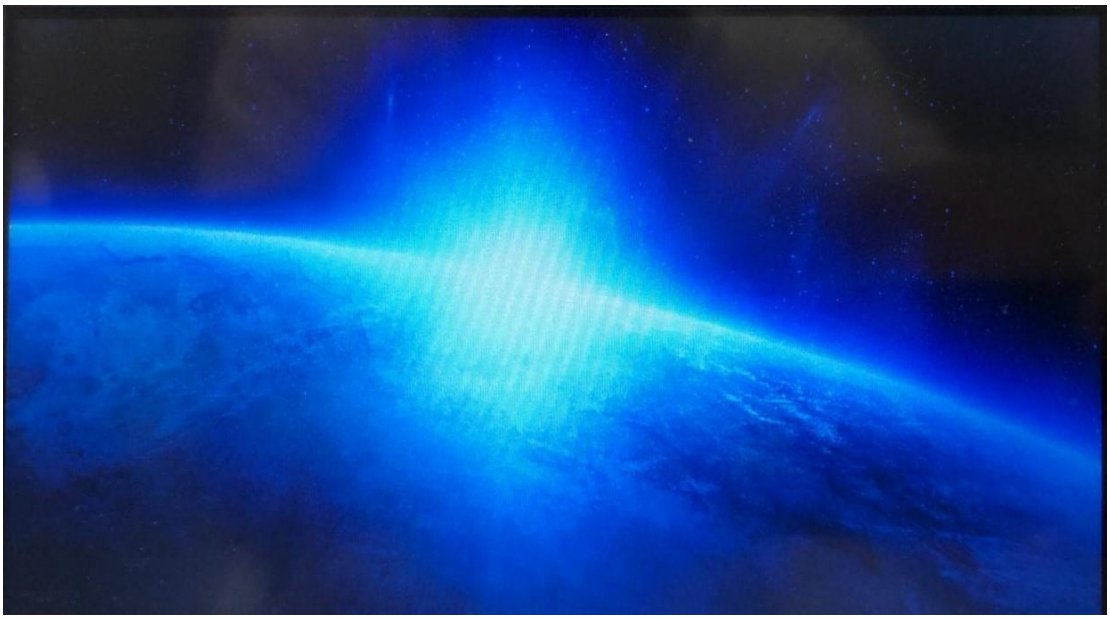


Figure 1 – Power Screen

After being powered, the screen in Figure 1 will be shown on the filter display. To continue viewing, simply touch the Display

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2. Touch Screen Interface Introduction

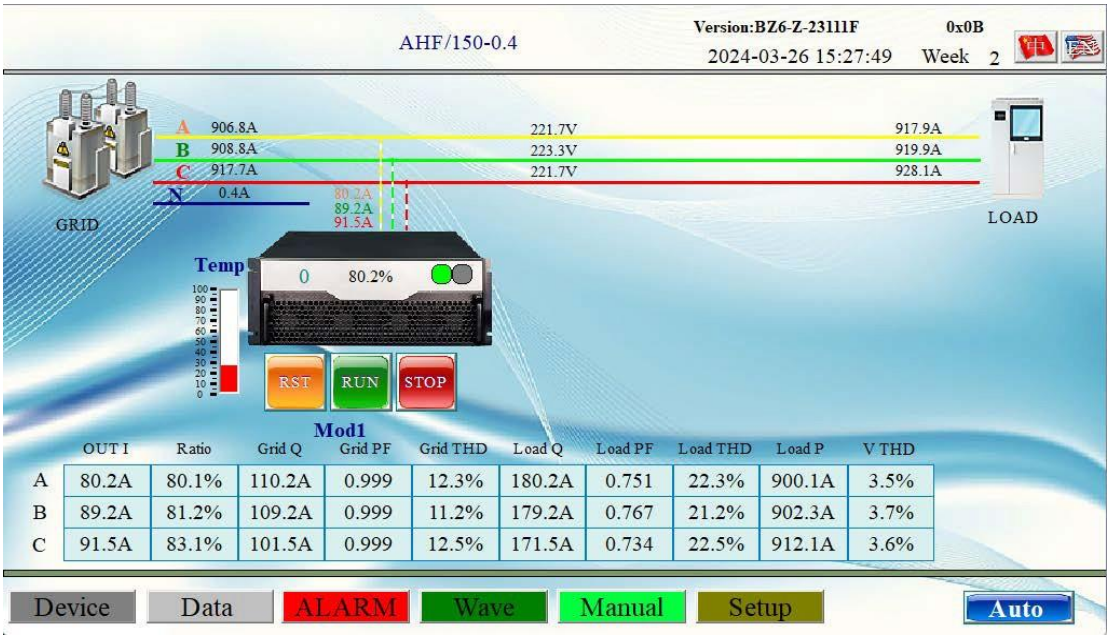

Figure 2 - Touch screen interface

On the screen in Figure 2 you can see important information, such as Temperature, Current (A), Voltage (V), Output compensation current, PF, THDI, Active power, Reactive power, etc.., there are also RUN and STOP buttons, which are used respectively for switching on and off the filter.

The following submenus can be selected at the bottom:

- **Device** → Detailed Data
- **Date** → Data Summary
- **ALARM** → Fault Alarms Display
- **Wave** → Real-Time Waveform
- **Manual** → User Manual
- **Setup** → Parameter Setting

The first operation to be performed is to access the **"Setup",** for setting the parameters.

Then the display screens of the various submenus are illustrated.

3. Setup – Parameters setting

To access the setup menu, enter the password **9345** and press login.

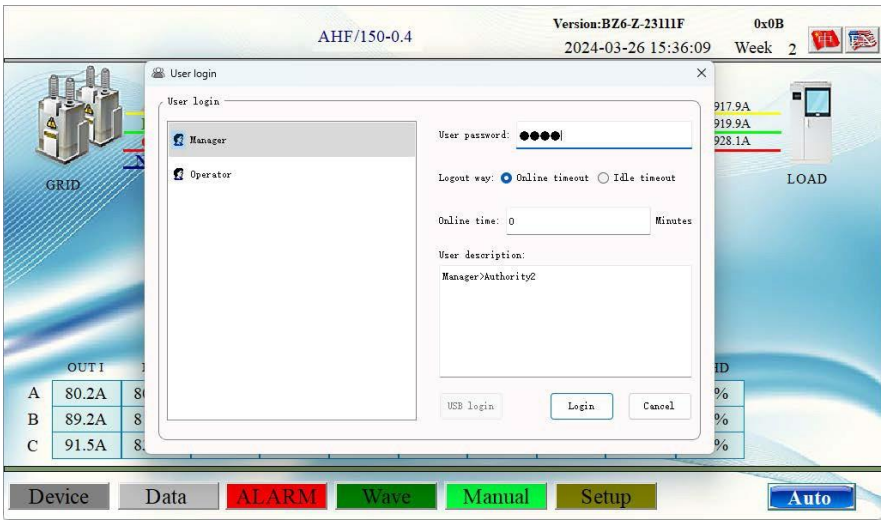

Figure 3 - Setup Access with Password

Figure 4 – Password entry keypad

In the setup you will see: the screens in Figure 5 and Figure 6, in which the filter and power factor correction settings are shown.

All settings are factory set and <u>should NOT</u> be changed, <u>except for the parameters in the red boxes.</u>

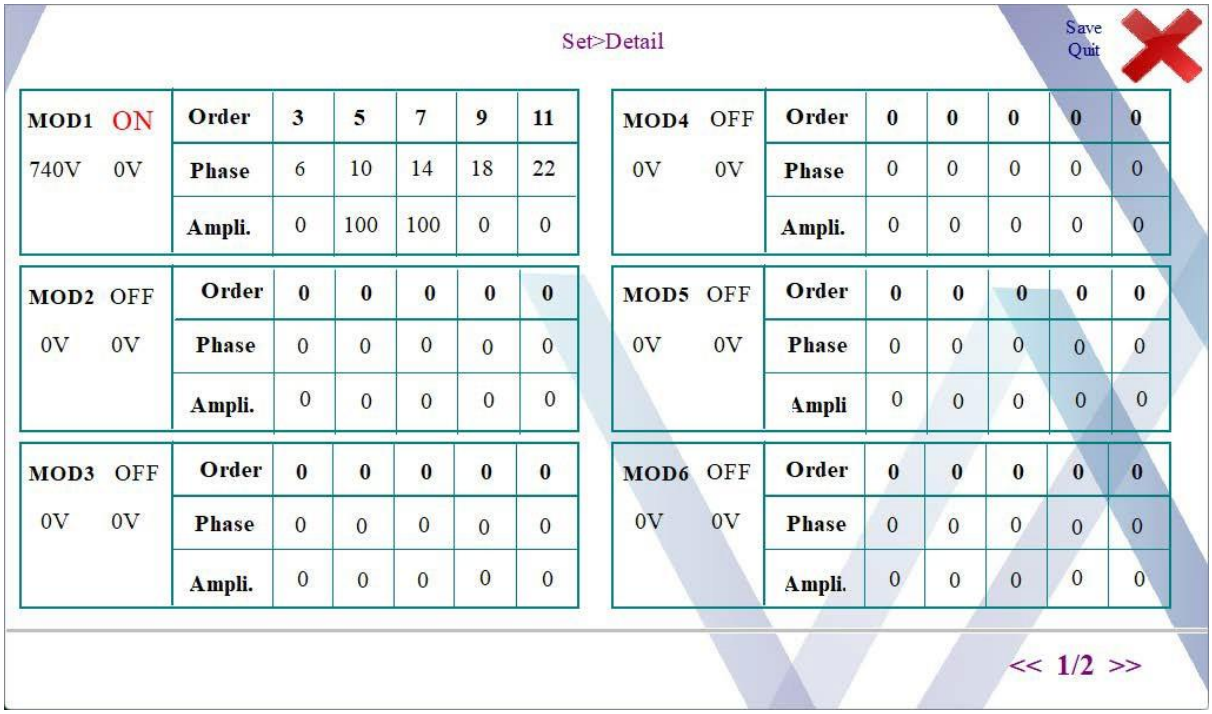

Figure 5 - Filter Settings (page 1 Setup)

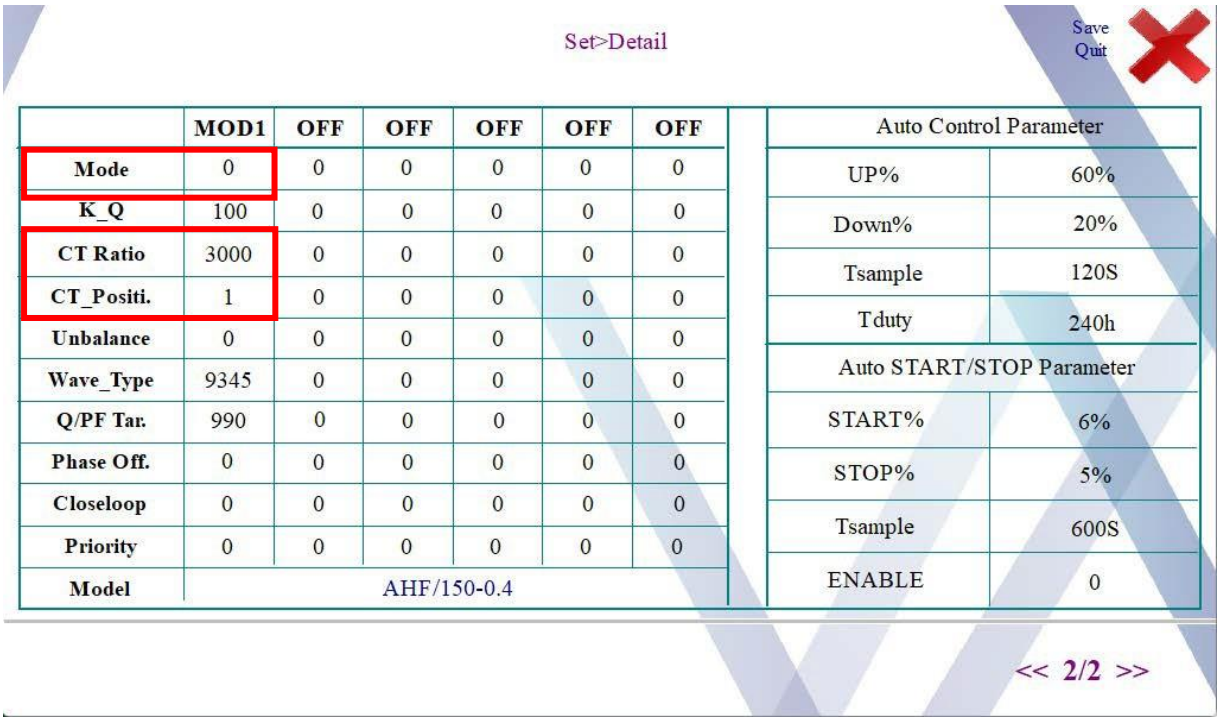

Figure 6 - Power factor correction settings (page 2 Setup)

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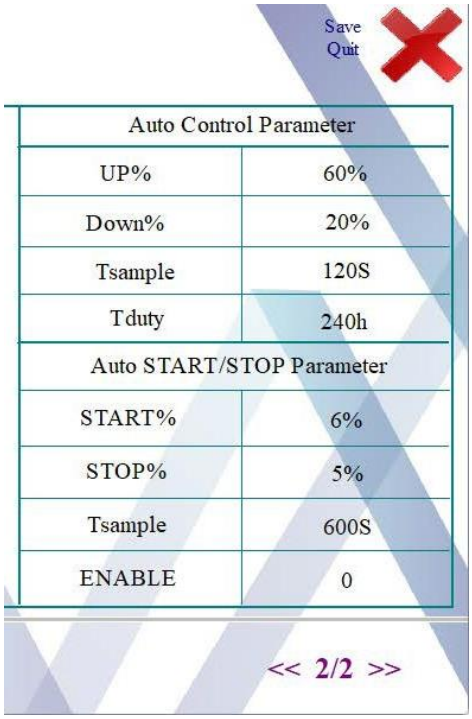
Setting Option	Definition
Mode	Device work mode. 0: Full manual start mode, 1: Automatic start when power on. After the device run well, please set mode to 1, Once power failure, the device will restart automatically when power on.
CT Ratio	Indicates external CT ratio. Directly enter the real primary value of the sampling CT in the setting column. (For example, if the sampling CT is 500:5, then enter 500 directly).
CT_Positi. **(CT Position)**	0: CT installed on the Load Side (it is preferable) 1: CT installed on the Grid Side

K-Q	Reactive power compensation output ratio, ”0” indicates no compensation,”100” indicates full compensation.
Unbalance	3 phase imbalance output Coefficient : ”0” indicates no compensation, ”50” indicates 50% compensation, ”100” indicates 100% compensation.
Wave_Type	password
Q/PF Target	You required target reactive value, only available with individual module and CT at grid side.
Phase offset	Phase lag correction for reactive calculations, the default setting is “0.”
Close loop	Close loop reactive power compensation coefficient, the default setting is“0”. “1” indicates individual module CT at grid CT enable close loop reactive power compensation.
Priority	Priority output based on full load, the default setting is “0”,”1” indicates priority output reactive power compensation,”2” indicates priority output for harmonic compensation,”3” indicates priority output for unbalance correction
Model	



Auto control parameters :

*(auto-stop current value = current transformer size * auto-sleep load ratio * 0.01)*

This set is the automatic rotation function of the parallel modules. When device starts, the device will timely switch the output according to the load change, to prevent single module output too large when the load is large, or the load is too small, the modules simultaneous output is too small, and reasonably adjust the use of the module.

(1) Up %: Up Switch ratio, when the auto rotation is turned on, and the load ratio is larger than this up switch ratio value, the modules will come into service.

(2) Down%: Down Switch ratio, when the auto rotation is turned on, and the load ratio is smaller than this Down Switch ratio, the modules will cut off from the service.

(3) T sample: Test period, Auto rotation test period.

(4) T duty: Rotation cycle, the modules rotation working cycle.

Auto start and stop parameters according to the load:

*(auto-stop current value = current transformer size * auto-sleep load ratio * 0.01)*

This setting is the module automatic start-stop function, the module operation will stop when the load current is too small, when the load current is large enough, start the module to run, which reasonably and utilize the modules.

(1) Start%: When the auto start/stop function is turned on, and load current value reaches to this start%, the modules will come into service.

(2) Stop%: When the auto start/stop function is turned on, and load current is less than The Stop% value, the modules will cut off from service.

(3) T sample: Auto start/stop test cycle.

(4) Enable: Auto start/stop function enable,”1” indicates turn on the auto start/stop function,”0” indicates turn off the auto start/stop function.

3.1. Ignition

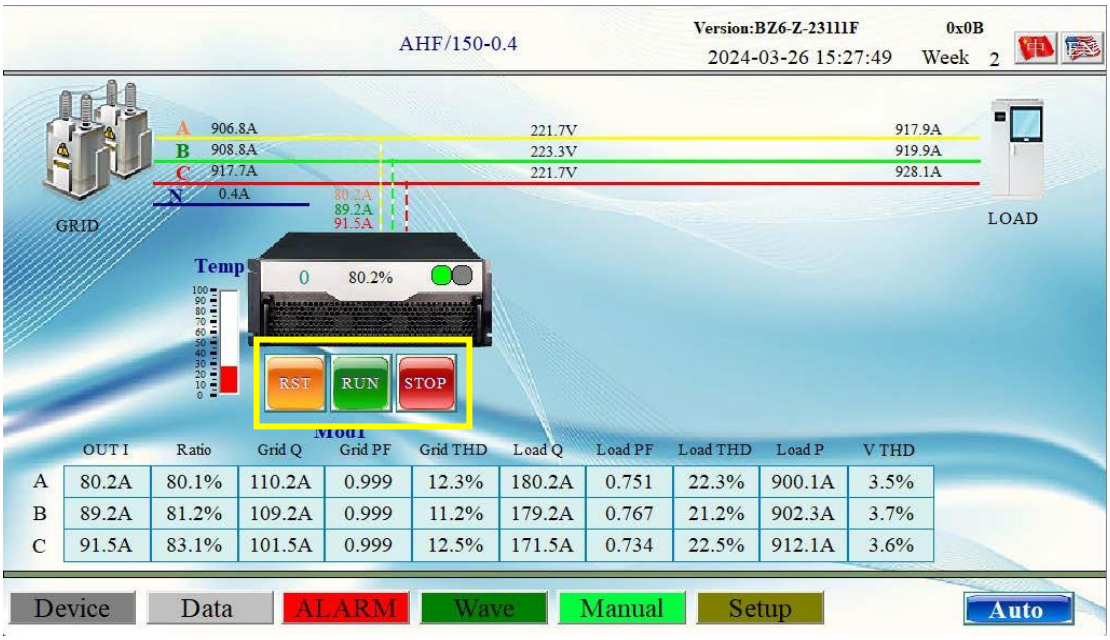


Figure 7 – Home screen

After setting the parameters, press the **RUN** button (Figure 7) for commissioning.

The red button is **STOP**

The orange button is the **RESET** (in case of malfunction of a module: - check the ALARM report - Delete all messages - Press RESET and restart the module)

4. Device - Detailed data

Figure 8 - Detailed data (page 1 Device)

The screen in Figure 8 displays detailed information regarding the individual data of each module, including values of DC voltage, DC fluctuation, neutral voltage, neutral fluctuation, temperature, mains frequency, T.A. ratio, mains voltage, load current, load reactive power, etc.

Figure 9 - Detailed data (page 2 Device)

The detailed data on page 2 show the harmonic currents (A Harmonic), both on the load side and on the mains side; the odd harmonics from the third to the twenty-fifth are displayed. In the top right, you can select the stages to view the different data.

5. Date – Summary of data

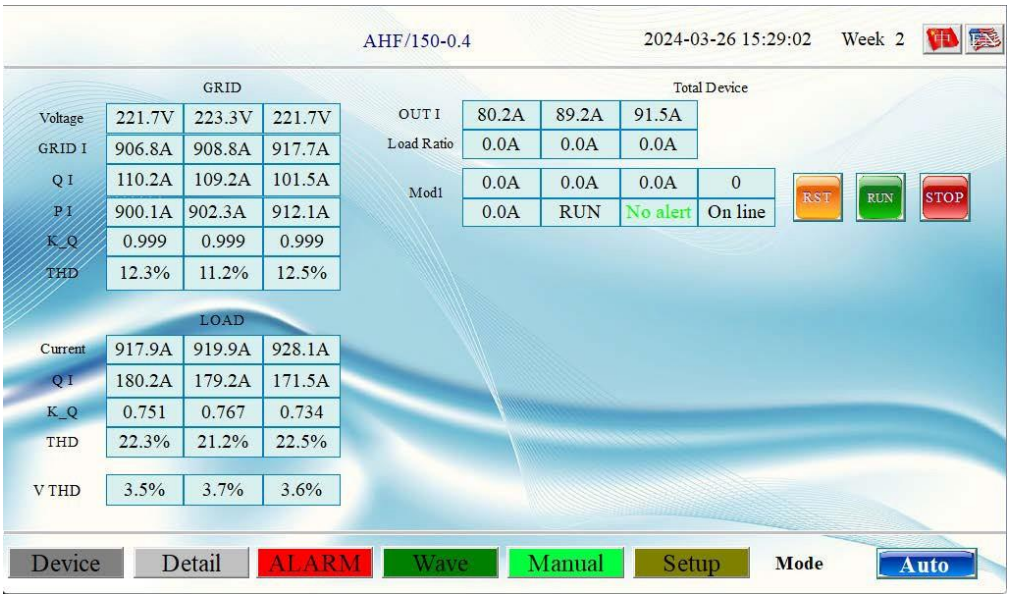


Figure 10 - Summary of the data

In the "Data" interface, the Network data and the Load data are displayed.

6. ALARM – Fault alarm display

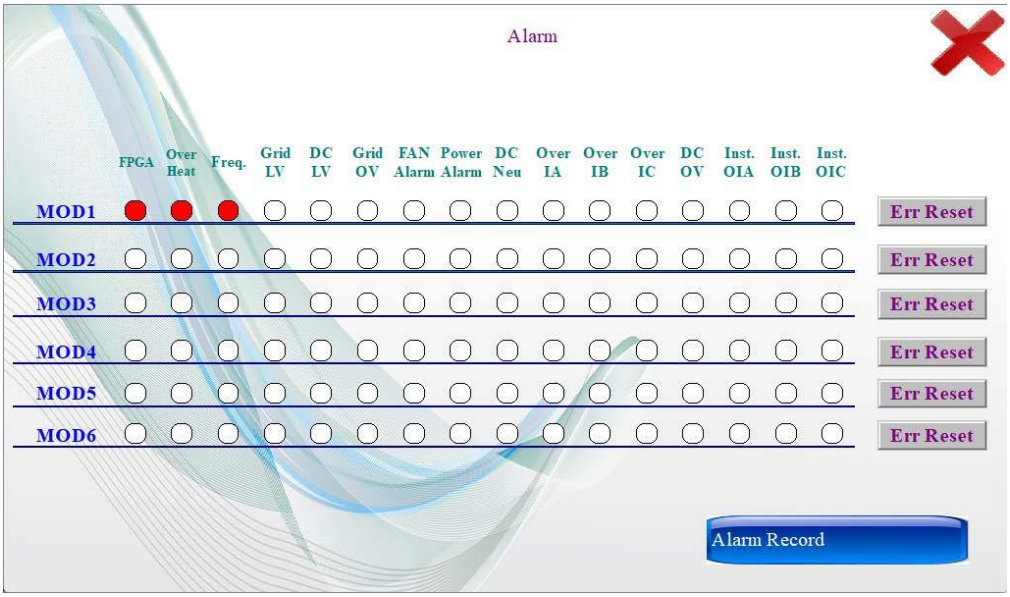


Figure 11 - Alarm status

The "ALARM" interface (Figure 11) shows detailed information regarding each individual alarm of the modules. To see the time the error occurred, the time the error ended, and other information, you need to select "Alarm Record" (Figure 12 - Alarm Logging), at the bottom right.

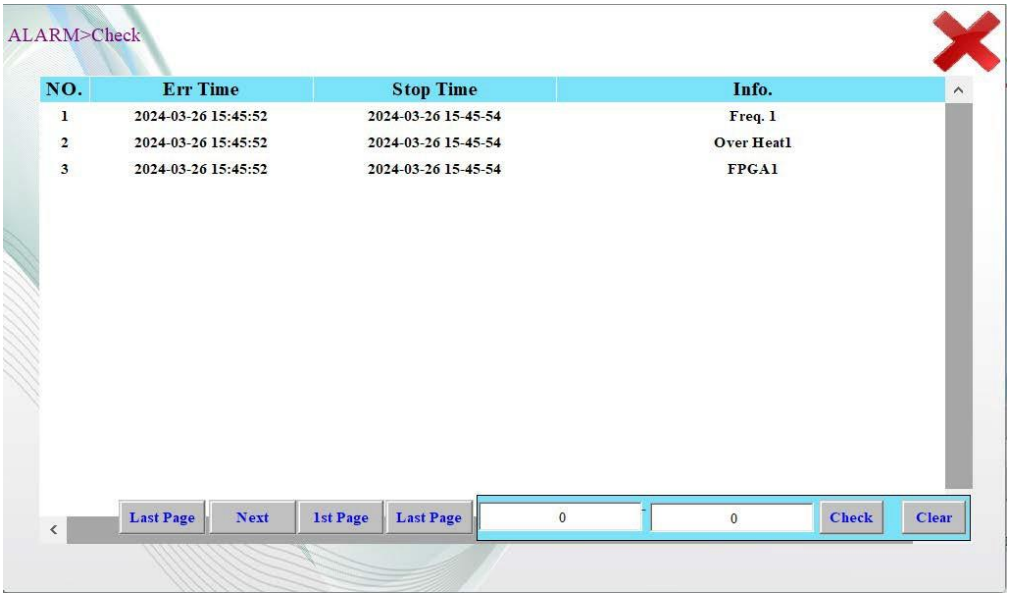


Figure 12 - Alarm Logging

7. Wave – Real-time waveform

In the "Wave" interface it is possible to view the graphs in figures 13, 14 and 15; to scroll from graph to graph press the "Column" key.

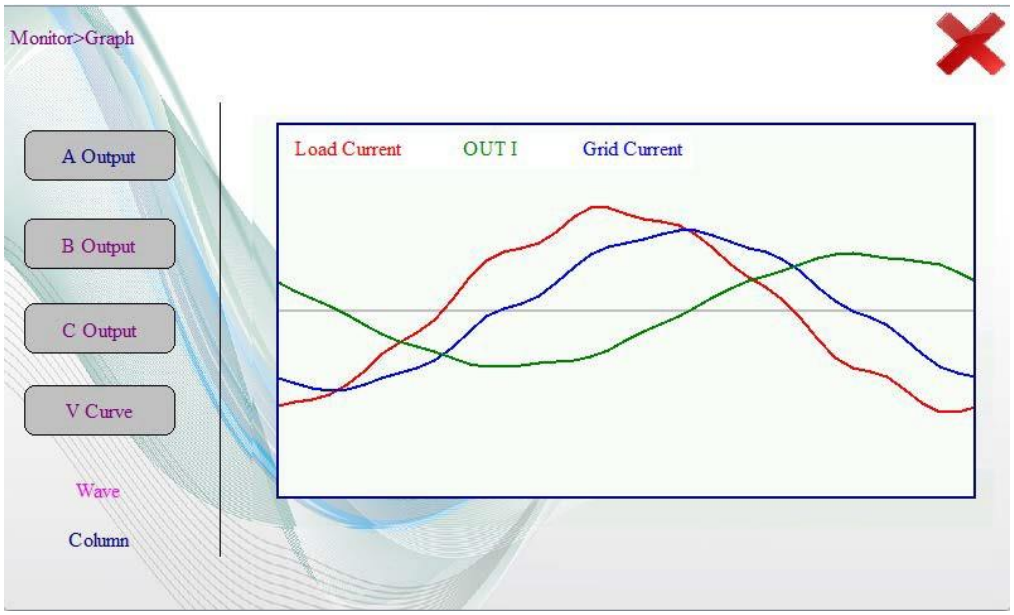


Figure 13 – Load-side and network-side current analysis over time

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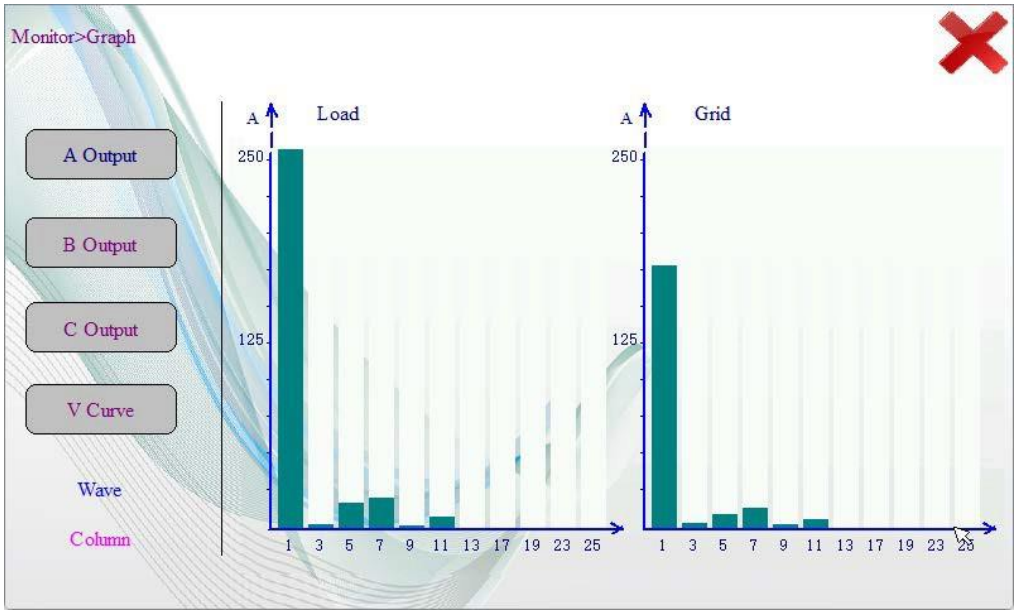

Figure 14 – Analysis of harmonic currents on the load side and on the network side

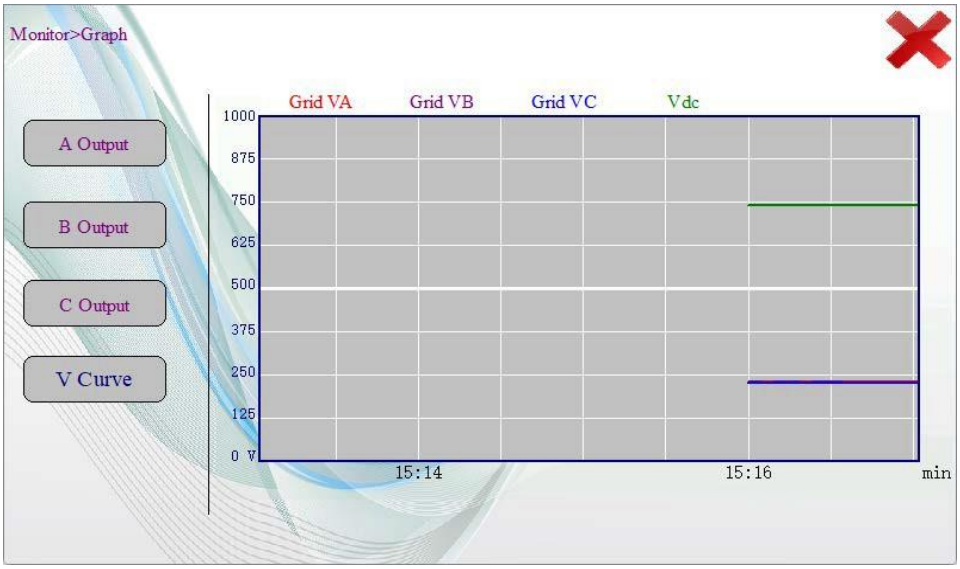

Figure 15 – Network curve analysis

8. Manual

The "Manual" interface, which can be selected from the red box in Figure 16, shows the record of program changes, the program version number, and other related information (Figure 17)

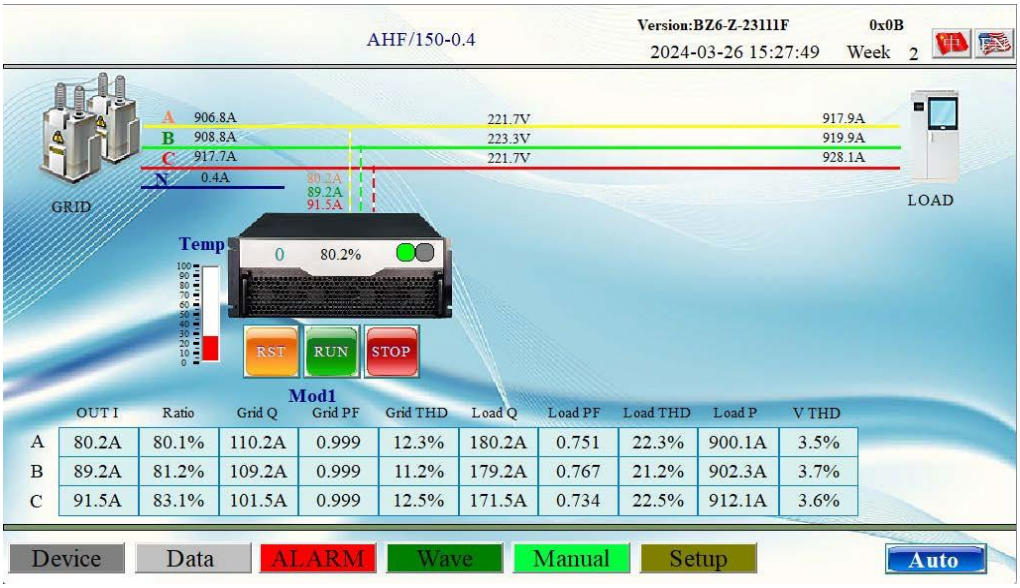

Figure 16 – Splash Screen

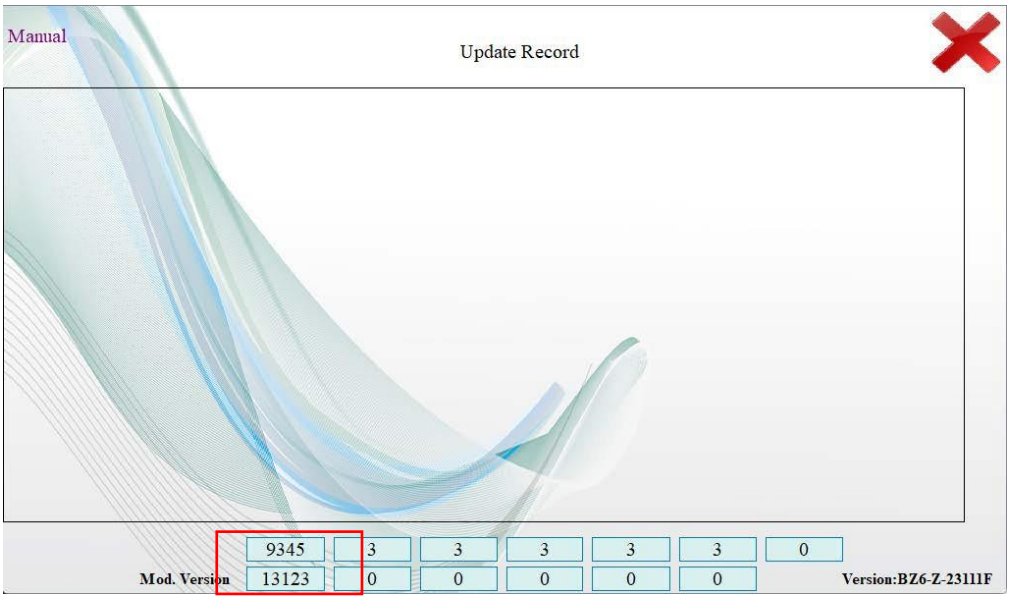

Figure 17 – Manual