grup ARGE

Ammeter
Instruction Manual

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Version 19-2

CONTENTS

PROPER USE AND SAFETY REQUIREMENTS

Cut all the power when connecting and disconnecting the device to a panel.

Do not clean the device with a solvent or similar material. Only use a dry cloth!

Please do not intervene to the device when a technical problem is encountered and get in contact with a technical service within the shortest time.

If the warnings are not taken into account, our company or the authorized dealer shall not be held responsible for the negative consequences.

Do not dispose in the trash, the device must be delivered to the collection centers (electronic device recycling centers). It should be recycled or disposed of without harming human health and environment.

The installation, assembly, activation and operation of the device should be done and used by only expert professionals and in accordance with safety regulations and instructions.

The device operates with current transformers. Do not strictly leave current transformer tips unattached. Dangerous high voltage can occur.

1. INTRODUCTION

1.1 General Features

Ammeter measures and calculates the current value that belongs to a single phase as True-RMS.

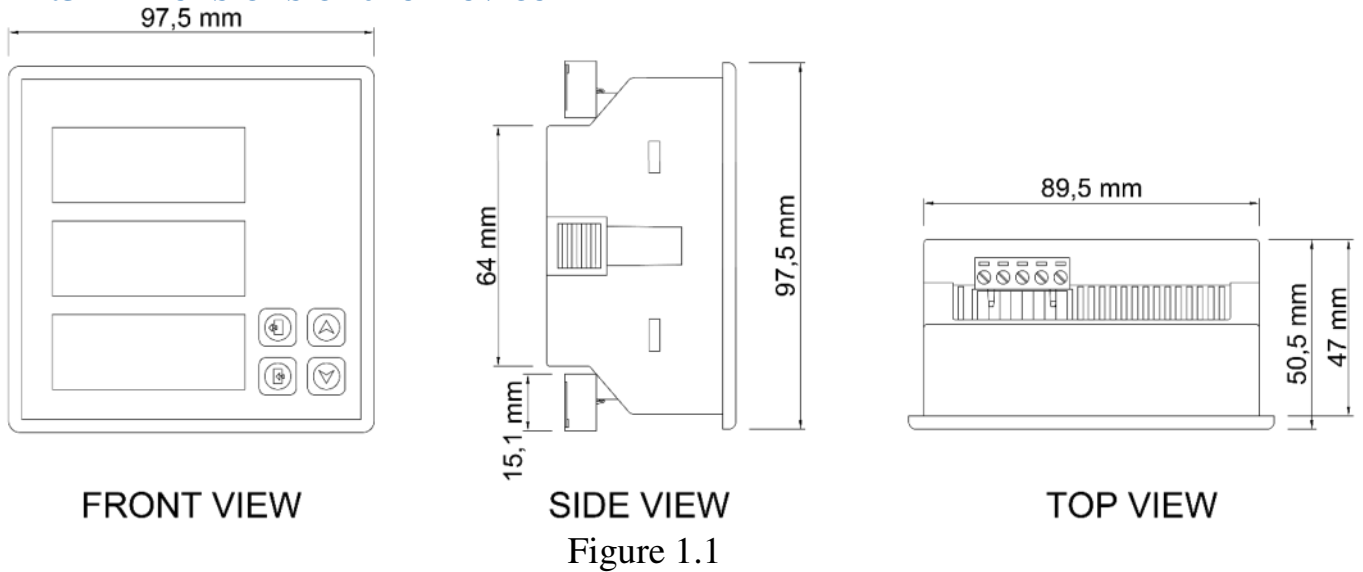The current transformer settings can be made via the menu.

In the versions with the output feature, the relay is controlled according to the current value ranges that are set through the menu.

Ammeter does not require a separate supply input with its new supply design. The device can operate if there is power (85-265 Volt) in the voltage phase (L1).

1.2 Technical Features

❖ Microprocessor based.

❖ The operating ambient temperature of the device must be between -10 °C and +55 °C.

❖ The power consumption of the measurement input is less than 1 VA.

❖ It has IP20 protection class.

❖ The current transformer ratio can be set between 5/5 and 10000/5.

❖ It can optionally be compatible with CT30 type current transformer.

❖ To adjust the polarity directions of the current transformers: There are three different modes as automatic, manual and reverse.

❖ The operating frequency is 45-65 Hz.

❖ The minimum measurement value is 25 mA.

❖ The measurement precision is 1%.

❖ The device can make single phase current measurement.

❖ The power consumption of version with the relay output is 4.0-8.5 VA and 3.0-7.0 VA in the normal version.

❖ It can optionally have a 5 A relay output.

❖ It has a 4-digit 7-segment display.

❖ The dimensions of the device are (width-length-depth) 97.5x97.5x50.5 mm.

❖ It operates under 85-265 V AC voltage.

❖ It has control output, menu and k (x1000) LEDs.

1.3 Dimensions of the Device

Figure 1.1

1.4 Measurable Line Parameters

Ammeter can make single phase current measurement.

1.5 Buttons and Functions

	PRG button enables to access the menu when on operation screen. It fulfills selection function when scrolling through the menu.
	It enables to return to the previous process and exit from the menu.
	Up arrow button enables to change parameters displaying on operation screen and stroll between the menus.
	Down arrow button enables to change parameters displaying on operation screen and stroll between the menus.

1.6 Connection Diagram

Com
Out

V_1 V_N
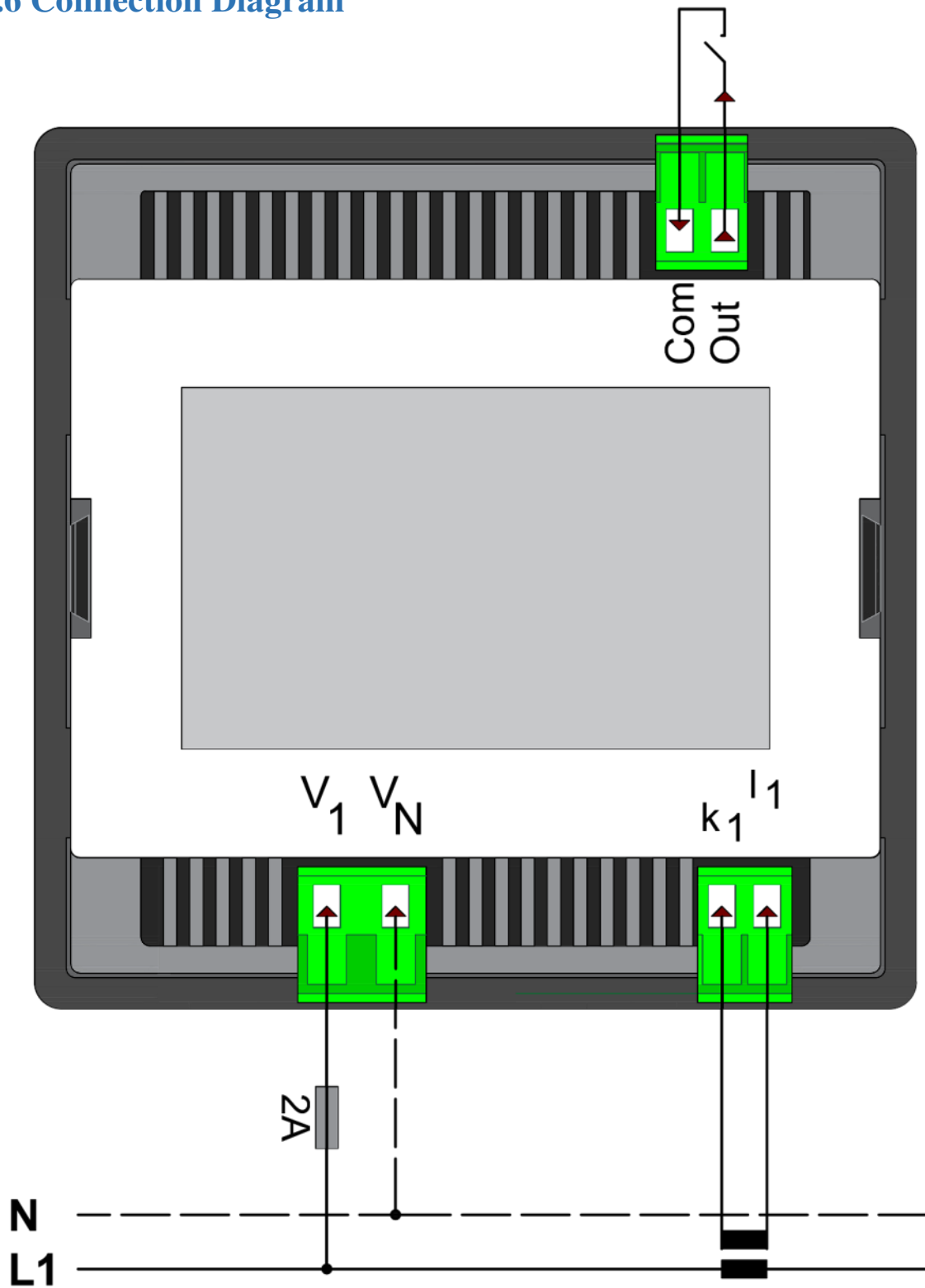
k_1 I_1

2A

N

L1

Figure 1.2

2. INSTALLATION

2.1 Device Installation

Make the connections of the voltage input according to the Figure 1.2.

Give energy to the device after checking and verifying the connections.

2.2 Installation Menu

Figure 2.1

After giving energy to your device, firstly the current transformer ratio menu in Figure 2.1 will be displayed and the present current transformer ratio will be flashing. The current transformer ratio is set with the direction buttons in this screen and is confirmed by pressing PRG button.

NOTE: The factory default value of the current transformer is 5/5.
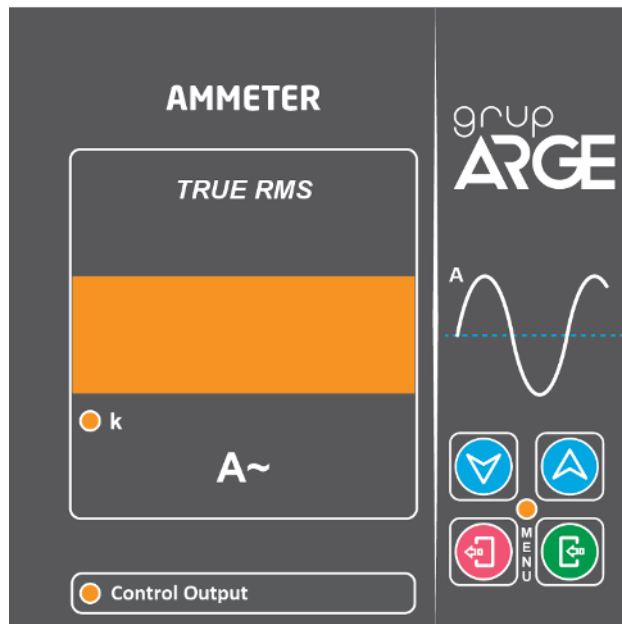
2.3 LED Descriptions

Figure 2.2

There are two LEDs (three in the devices with output option) on your device.

The menu LED will be on when entering the menu.

There is a K(x1000) LED on the left bottom of the device screen.

NOTE: If the related LED is on, the unit of the value displaying on the screen is in **Kilo**.

3. MAIN MENU AND SUB-MENUS

To enter menu, press the PRG button in the front panel of the device. The up and down buttons are used to scroll between menus in the device. There are four main menus in total. Press the PRG button to enter the wanted menu.

NOTE: When scrolling through the menu, holding down to the up button makes the transition fast and the menu come to the top. Moreover, holding down to the down button makes the transition fast and the menu comes to the bottom

3.1 Current Transformer Ratio Menu

Ct.rt.

Figure 3.1

The setting of the current transformer ratio is mentioned in the installation menu. The present current transformer ratio will be flashing in "**Ct.rt**" menu. The current transformer ratio can be set to the desired value by using the up and down direction buttons. If the PRG button is pressed after the selection, the desired value is confirmed.

NOTE: The value range to be entered and factory setting are as follows:

Min. Value: 5/5 - **Max. Value**: 10000/5 – **Factory Default**: 5/5

3.2 Cnt Menu

The settings related to the output control are made in "**Cnt**" menu. In this menu, there are eight sub-menus as "**type**", "**Invr**", "**Set.a**", "**Set.b**", "**t.on**", "**t.off**", "**trdy**" and "**rSt**".

3.2.1 Type Menu

By entering "**type**" menu, the parameter to produce output value will be selected.

"**Curr**" → The output controls are made via the **current parameter.**
"**nonE**" → No parameter is selected for output control.

3.2.2 Inverse Menu

If "**yES**" is selected in "**Invr**" menu, the relay outputs are set reverse to the present status.

3.2.3 SetA Menu

In "**SetA**" menu, a value is given if "**Curr**" is selected in the "**tYPE**" menu before.

The A point in Figure 3.1 indicates the required quantity (0 – 999,9) for the output to be "**On**". If the current value is bigger than the value that is determined in the "**SetA**" menu, the ammeter output becomes "**On**" and "Control Output" LED becomes on. If A value is smaller than "**SetB**" value, the ammeter output becomes "**OFF**" and "Control Output" LED becomes off.

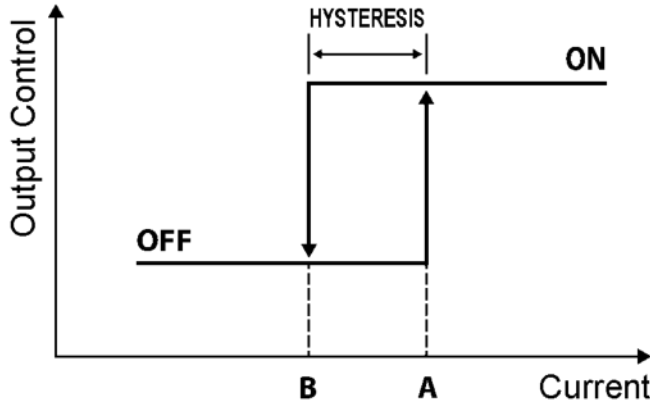**NOTE:** The entered values are in Ampere (A).

Figure 3.1

A and B points in Figure 3.1 are the current points that are read from the system.

If the current value is bigger than A value, the output that is related to the ammeter becomes ON. If the measured value is smaller than B value, the output that is related to the ammeter becomes OFF.

3.2.4 SetB Menüsü

In "**SetB**" menu, a value is given if "**Curr**" is selected in the "**tYPE**" menu before.

It indicates the quantity (0-0,999) of B point in the Figure 3.1. If the current value is smaller than the value of point B that is determined in "**SetB**" menu, the ammeter output becomes off and "Control Output" LED becomes off.

NOTE: The entered values are in Ampere (A).

3.2.5 Relay Control Time Menu

In "▪t.on▪" menu, in the case of the electrical values exceed the "▪Set.a▪" value ,the time to wait for pulling the relay is determined.

In "▪t.oFF▪" menu, in the case of the electrical values drop below the "▪Set.b▪" values, the time to wait for releasing the relay is determined.

In "▪t.rdY▪" menu, the time between the relay pull and release processes are determined. A period of time is waited depends on charge and discharge states of the capacitor and then the relay is pulled or released.

NOTE: The main aim to determine time is to prevent the relay to be pulled and released frequently in case of sudden increasing and decreasing of values.

3.3 Default Setting Menu

All the settings except for the current transformer ratio are reset in the "▪d.Set▪" menu. (return to default values). Press the PRG button to enter the menu. There appear two options as "▪YES▪" and "▪nO▪". If "▪YES▪" option is selected with the PRG button, the device will return to the factory default settings.

3.4 Reset Menu

The "▪rSt▪" (Reset) menu brings the device back to its state before the installation. All the saved information and parameters are reset with this menu. It also provides to use the same device in different panels. Press the PRG button to enter the "▪rSt▪" menu. There appear two options as "▪YES▪" and "▪nO▪". If the "▪YES▪" is selected with the PRG button, the device will be reset.

NOTE: The current transformer ratio does not return to the factory default settings.

4. LANGUAGE MENU

The "▪lnG▪" menu has two language options "▪tur▪" Turkish, and "▪EnG▪" English. When the language is changed, the menu and units will change.

5. SELECTION TABLE

Product Code	Product Name	Product Description	CT30	X/5 A	Panel Type	Display	Display Digit	Relay Output	85-265 V AC	1 Phase Measurmenet	Size (mm) (Width-Size-Length)
GA4411	APM 11	AMMETER		✓	✓	1	4		✓	✓	96 x 96 x 47
GA4412	APM 12	AMMETER (CT30 AT)	✓		✓	1	4		✓	✓	96 x 96 x 47
GA4413	APM 13	SET AMMETER		✓	✓	1	4	✓	✓	✓	96 x 96 x 47
GA4414	APM 14	SET AMMETER (CT30 AT)	✓		✓	1	4	✓	✓	✓	96 x 96 x 47

Table 5.1