



## DC Voltage and Current Power Supply

### User's Manual



# PTE-20-FA

REFERENCE:FAIMV02

EDITION: Sep, 2013

VERSION: 3

PTE-20-FA

Quality is the core reference for EuroSMC's activities, aimed to fully satisfy our customers' needs and expectations.

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PTE-20-FA PACKING LIST

1	PTE-20-FA Unit
1	Nylon Bag
1	Voltage supply cable , SCHUKO type
2	Connection Cables, 2.5-mm <sup>2</sup> section (1 red and 1 black).
1	BNC interconnection Cable for the Start Timer Output.
1	Interconnection cable between PC and PTE-20-FA unit, by RS-232.
2	Crocodile Clips for use up to 50A (1 red and 1 black).
2	Crocodile Clips for use up to 50A (1 red and 1 black).
2	Spare Fuses 5x20 / 8 A. (Normal)
2	Spare Fuses 5x20 / 4 A. (Normal)
1	Warranty Certificate
1	Calibration Certificate
1	Instructions Manual

## 1. INTRODUCTION

The PTE-20-FA is designed as a Portable D.C. unit that allows the user to test, as stand alone unit or in combination with others, all type of protective relays which require DC Voltage or Current.

The PTE-20-FA has been designed mainly as complimentary equipment for the other equipment in the PTE Range, but can work as a stand alone independent equipment.

Extremely compact and rugged, this unit incorporates the latest in the modern microprocessor technology to achieve unbeatable output characteristics in terms of power, accuracy, low distortion, and dynamic capability. This technology allows the unit to have a pre selected stabilized output, both in Voltage and Current.

All the output signals are digitally generated, amplified and controlled by the internal IGMs (Intelligent Generation Modules). A high accuracy and stability are obtained in the output waveforms, which are absolutely independent of the main supply.

Contained in an aluminum IP-65 case, with a membrane keyboard that allows full manual control, and a RS-232 com port for computer control, the PTE-20-FA offers the best features actually available for on site manual or automatic relay testing.

In any case, we appreciate suggestions you may have of the PTE-20-FA and this Instruction Manual, in that we always welcome new ideas and advice from users to make our product better. Whatever doubt you may have as an operator, whether it is for applications, use, etc, the technical staff of EUROSMC are at your complete disposal. Our address to assist you:

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## 2. STARTING

### 2.1. OBJECTIVES OF THIS SECTION

The section describes the steps required before starting to use the PTE-20-FA.

### 2.2. SAFELY USE OF THE EQUIPMENT

Before proceeding to work with the equipment, please read the rest of the instruction manual.

### 2.3. INITIAL CHECKS AND CONNECTIONS

Connect the voltage supply cable supplied with the equipment to the connection base of the equipment, located on the bottom left hand side of the unit.

Consult the characteristics of the information label situated on the side of the case, and make sure the voltage supply and frequency that you are going to use is correct with the characteristics indicated on the label of the equipment.



***The voltage supply cable to the equipment should be connected to earth. Without doing so, there may exist an internal derivation, which could provoke an electric discharge to the operator.***

Turn on the main supply switch. The equipment will enter into an auto test of Displays and Ventilators that will last about 3-seconds. During this time all the displays y LED's of the equipment will light up and the ventilators will become active. In continuation the equipment will show the firmware version number installed and the ventilators will stop and there will be a beep to confirm all is correct.

From this moment the equipment is ready to be used.

After reading Section 3 of this instruction manual (Using the Equipment) proceed to make a functional check of the unit.

With a Multi-meter, check that the selected output in all ranges, both in Voltage and Current are correct.

### 3. USING THE EQUIPMENT

#### 3.1. OBJECTIVES OF THIS SECTION

This section explains step by step the main functions of the equipment. This section does not intend to cover all the applications of the equipment, but gives a solid base of the majority of use the equipment has.

#### 3.2. SELECTION OF THE VOLTAGE/CURRENT MODE (V/I).

The PTE-20-FA has two function modes:

- o Voltage
- o Current

The difference between these two modes is in the level of the output control. In the voltage mode the equipment maintains the selected voltage in the taps independent of the load, while in the current mode the equipment maintains the voltage required in the load to give the current selected. The limits of the Voltage and Current Mode are indicated on the front panel above and below respectively of the LED, of the range selected.

The mode in which the equipment is in is defined by an indicator illuminated to the right hand side of the Display of the output selection level.

A (Amp) -> equipment is in the Current mode.

V (Volts) -> equipment is in the Voltage mode.

To select one output mode or the other (voltage/current) the press key marked TAP V/I, must be pressed until the display changes. A Beep sound will be heard indicating the change has been made and also the Display will also change to V or I depending on the selection made.

If the mode selection is made when the Output is on, the equipment will automatically cut off the output.

#### 3.3. SELECTING THE OUTPUT RANGE

The PTE-20-FA unit has Four output ranges for each output mode (V/I), allowing a greater reach in achieving the maximum power available.

- o Voltage Mode:  
0-25V. / 0-50V. / 0- 150V. / 0-300V.
- o Current Mode:  
0-6 A. / 0-3 A. / 0-1 A. / 0- 0.5 A.

The range in which is being used is indicated by a group of 4 LED's which are located below the output taps.

To select the output range press the key marked, **TAP V/I**, there will be a Beep sound, which indicates the change, has been made and as well the corresponding LED will be illuminated. When the last range is reached to the right, the range selections will continue form the first range, from the left.

If the range selection is made when the Output is on, the equipment will automatically cut off the output.

#### 3.4. SELECTING THE OUTPUT

When selecting the desired output level, there are several controls, LED indicators, and press keys. Using each correctly allows achieving the output level required quickly and easily.

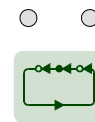
#### 3.5. DISPLAYS OF THE OUTPUT SELECTION



The Display is made of 4 red LED's of 7 segments, which enables to visualize the selection made. On the right hand side of the display is made up of 3 illuminated indicators which are automatically commuted and combined depending on the parameter selected.

Depending on the measurement range selected, both in voltage or current, the decimal points are adjusted automatically.

#### 3.6. SELECTING THE DIGIT TO BE USED



- o This key works in a sequential way and it is associated with 3 LED's located above this press key. This allows the operator to select the output level with in a fine or coarse regulation, by changing the digit to be adjusted

For this function, this key only needs to be pressed slightly.

By maintaining pressed this key for more than 3 seconds, the control knob will be blocked, impeding any changes in the output selected. In order to release again the control knob, press again this key during 3 seconds.

### 3.7. ROTATING CONTROL KNOB



This is a rotating pulse generator and has step by step sensation. The values can be increased or decreased by turning this control knob clockwise or anti-clockwise by one digit per step, according to the selected digit weight as described previously. This knob has no end and can be controlled at any speed.

### 3.8. OUTPUT SELECTION ON/OFF



When this key is pressed the output will turn on and the red LED situated below will light up.  
When it is pressed again it will disconnect this output and the LED will be off.



***When using the equipment in the current mode, and the output is in open circuit, all the voltage in range will be applied in the taps.***

The output will also disconnect automatically if the internal temperature of the unit is higher than permissible. In this case the alarm and LED marked Alarm Th. will illuminate and an acoustic alarm will also emit every 5 seconds and during this time it will not be possible to connect the output to ON.

Also if the value of the load is higher than what is permitted in each range the alarm and LED marked Alarm Ovl. will illuminate and for more than 10 seconds will not allow to connect the output to ON. The display will begin to flash indicating it is not giving the output selected.

### 3.9. DYNAMIC CHANGES



When this key is pressed it allows the selection of a 2<sup>nd</sup> value and it is shown on the display. This selection does not cancel the value already selected in the output at the moment. To distinguish the actual selected value from the 2<sup>nd</sup> value, the LED situated above the key illuminates when the 2<sup>nd</sup> value is displayed. When pressed again will display the 1<sup>st</sup> value selected.



To make the dynamic change from the 1<sup>st</sup> value to the 2<sup>nd</sup> value, press the key shown in the diagram to the left. To return to the first value press the key again.

### 3.10. RESET THE EQUIPMENT

To reset the equipment, simply press the **Reset** key. Continue pressing until the equipment resets.

### 3.11. STARTING AN EXTERNAL TIMER

This equipment has a BNC connector marked **Start Chrono**, that is a voltage free contact which delivers a "close contact" signal of 20 ms duration, with the main objective to start an external timer. This Start Chrono Output will be active each time the Current /Voltage output is turned on or off or when pressing the dynamic change key.

### 3.12.. CONNECTION TO A PC (RS-232)

The PTE-20-FA has a Serial Port, RS-232 for connection to a Computer. This is primarily designed for the "closed case" calibration adjustment of the equipment. An RS-232 cable is supplied with the unit

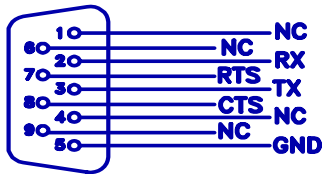
Once the cable has been physically connected to the unit and PC, the RS-232 key must be pressed.

The LED situated above the key should illuminate. To deactivate, simply press the key again.

### 3.13.. RS-232 Connector

This connector gives access to the communications serial port RS-232. It is a CANON type connector of 9 male pins, situated in the upper central part of the equipment.

The following shows the pin-out diagram of this connector:



#### RS-232

Where:

NC	Not connected
GND	Earth
RX	Entrance - Reception of data
TX	Exit.- Transmission of data
RTS	Exit.- Petition to send
CTS	Entrance.- Ready to receive

A one-meter long cable is supplied with the unit and it can be connected directly to this RS-232 output to a computer or printer.

### 3.14. CONNECTION TO ANOTHER PTE-UNIT

The PTE-20-FA has on the front panel a BUS-PTE connector, by which it is possible to connect this unit with other PTE Range equipment allowing this equipment to work as an automatic testing system controlled by PC.

## 4. SPECIFICATIONS

### OUTPUT RANGES

Mode V: 0 - 25 / 0 – 50 / 0 – 150 / 0 – 300 V dc

Mode I: 0 – 6 / 0 – 3 / 0 – 1 / 0 – 0.5 A dc

### POWER

150W in each range

### ACCURACY

±0.5 % of the Selected Value, 10 to 100% at the end of the scale.

### EXTRENAL TIMER CONTROL OUTPUT

Voltage free contact (Dry contact)

Maximum Voltage: ±30V

Maximum Current: ±0.5 A.

### VOLTAGE SUPPLY

230V ± 10% 50-60Hz.

115V ± 10% 50-60Hz.

### DIMENSIONES

Height: 200mm.

Width: 300mm.

Length: 200mm.

### WEIGHT

13 Kg.

## 5. After-sales Service and Warranty

### 5.1. WARRANTY

This is an expression of trust that our products obtain, based on the reliability and functionality standards that our customers expect.

The warranty covers the free replacement or repair of defective components for one year in the terms specified in the supplied warranty statement and registration card.

Damages resulting from improper handling of the product, use outside the scope and limits of the product's specifications, negligence, installation not in accordance with the standards or warnings listed in the Instructions Manual and servicing or manipulation by unauthorized persons are not covered by the warranty.

### 5.2. CUSTOMER SUPPORT

EUROSMC guarantees the supply of materials and components for its products up to 3 years after discontinuation. This support is extendable to 5 years for technical service.

### 5.3. OTHER EUROSMC PRODUCTS

Portable Relay Test Equipment and Software

Primary injection units up to 20,000 A

Digital handheld chronometer.

Digital handheld phase angle meter

Digital Portable microhmeter up to 100 A Test current.

Test systems for automatic miniature circuit breakers.

Voltage and current regulation equipment.

Step & Touch Voltage measurement equipment