

TRES

*Three phase Relay
Equipment System*



TRES

MAIN FEATURES

- Complete Three phase system supplied in 2 units (PTE-300-V/PTE-50-CET).
- Reversible Outputs (Up to 6 current and 6 Voltage Outputs).
- Three phase current output 3 x 50A or 3 x 150V.
- Three phase voltage output 3 x 300V or 3 x 8A.
- Variable phase angle from 0°-360°, independent in each output channel.
- Variable frequency between 40 to 420 Hz.
- Programmable frequency ramp, with selectable ramp speed between 0.01 Hz/s. to 10 Hz/s.
- Instantaneous Frequency Step from one value to another.
- Harmonic Selection, independent in each current phase to the 7th harmonic.
- Output power is 100 VA in each channel.
- Fully isolated outputs.
- Manual Control of all outputs and phase angles, independent in each channel or linked when making two phase or three phase tests.

- Fault Simulation can be programmed and achieved manually on the front panel controls.
- Capability to perform dynamic and transient tests with a bandwidth of 0.5 to 5000 Hz.
- Completely programmable from a computer.
- Close Case Calibration.
- Built-in timer with reading in seconds or cycles.
- 3 independent monitors.
- External phase and frequency reference.
- Case: IP-65.
- Portable.

APPLICATIONS

- To test all types of three and single phase protection relays.
- Three and single phase fault simulation.
- Automatic relay test, with the EUROTTEST software.



DESCRIPTION

The TRES is a comprehensive, portable Three-phase test system capable of testing all types of single and three phase protective relays.

With high power outputs package in an extremely compact and rugged system, the TRES has a tremendous power-to-weight ratio. The design incorporates the latest in modern digital microprocessor technology to achieve unbeatable output characteristics in terms of power, accuracy, low distortion, and dynamic capability. This hi-tech solution enables the testing of many different functions required in relay testing without the need of additional accessories.

The system comprises 2 independent units, each with three independent output channels. Each output channel is reversible from Voltage to Current (in the Voltage unit) or from Current to Voltage (in the Current unit). Each output is controlled for Amplitude and Phase Angle and can be 'linked' into a Master-Slave co-ordinated sequence, with simulated ramp and dynamic changes.

All output signals are digitally generated, amplified, and internally controlled by the IGM's (Intelligent Generator Modules) which interpret the commands received from the front panel to produce a highly accurate and stable output with low distortion that is independent of the voltage supply.



The system also allows optional connection to a computer for either automatic testing of relays or control of the equipment using Windows compatible software.

Even the adjustment and calibration of the equipment is made easy through the Closed Case Calibration software, supplied with the units, which enables calibration and/or adjustments of the outputs without any need for hardware intervention.

The TRES offers a complete system with all the features and functions required for protective relay testing in both manual and automatic modes of operation and suitable for laboratory and on-site testing.

The TRES system is made up of 2 units, one of the reasons is to allow easier transport.

FEATURES

The TRES system provides a solution to all relay testing problems, whether it is commissioning new systems, scheduled preventative maintenance, repairs of existing systems etc.

For the specialist involved in testing protective relays, the world is full of challenges and the ideal situation rarely exists. This is because various relay types are often found in the same location, not only as a mix of relay functions but also the three generations of relay designs (Electromechanical, Electronic, and Digital) which all need to be tested.

Each relay design demands differing requirements of the testing equipment, not only related with the power and accuracy, (which normally determines the selected tester), but also the equipment design concept. Design concepts such as various control modes, size, modularity, etc. properly developed can improve the application. The test system needs to match the wide range of relay integration now commonly adopted, such as the mix of relay applications within one system, panel or even unit.

The TRES can offer substantial improvements in these common situations makes the TRES system your practical choice when choosing a relay test equipment with features such as:

USER FLEXIBILITY

Relay test equipment needs to be flexible to offer a complete testing service in all projects, from routine maintenance to commissioning new systems, from the ordinary to the complicated. Thus the TRES offers the user ideal flexibility by:

- *2 separate and independent units, each with three independent output channels, all of which can be independently configured as current or voltage generators.*
 - *Each unit can be use as a stand-alone test item for single or two phase testing.*
 - *Each unit can take its frequency and phase angle reference from any other EUROSMC unit or even from test equipment from any other manufacturer.*



MANUAL CONTROL

The need for a manual control mode, even when testing the most sophisticated of systems, lies at the core of efficient testing.

Often in commissioning work, the largest part of the tests are not systematic, but depend upon the installation and the functions assigned to the relay under test.

This implies that the manual control must be intuitive, easy to use, understandable by any operator, without the need of special training and without the need of any external elements from the system.

The manner and clarity of the TRES Manual Mode is one reason why the TRES proves a success .



- The manual controls are clearly arranged for the user. There is a control step-knob beside the display of each parameter, be it output level or phase angle, which sets the display value in real time.
- A single control step-knob can simultaneously change values in 2 or more channels. This allows, for example, the use of paralleled channels as if there were one, with greater power and reach.
- Complete programming of pre-fault and fault conditions, either as a single parameter change or by changing all available outputs at the same time (3 voltages, 3 currents, and 6 phase angles).
- Total system status display enables the user to view outputs for status, alarms, monitor signals, output levels, phase angle, etc. in real time.

REVERSIBLE OUTPUTS

All six channels of the TRES system are 'reversible'; ie they can be used either as voltage or current generators completely independent from one another. A simple yet safe front panel control allows the TRES to offer key benefits to users by:

- Up to 6 Current or 6 Voltages are available simultaneously.
- Converting either of the two units, which make up the TRES, into a full single phase system with voltage, current and their corresponding phase angle.
- Creating numerous combinations of voltage and current in the six channels.
- Creating Super-Power outputs by linking channels with identical parameters to sum the power and reach available.



EFFECTIVE POWER AVAILABLE

The TRES delivers 'effective' power to match the impedance of the relay by a combination of different output ranges and the ability to link 2 or more outputs to generate a signal which is a sum of the individual channels, hence increasing the power and reach available. As each channel can be selected for current or voltage mode, the TRES can deliver a combination of signals in terms of value and power.

This ease of setup and operation provides the user with a system that can produce a range of outputs from multiple channels with varying phases to reduced channels with increased power delivery.

The TRES optimises the effective power that can be delivered whilst minimising the size and weight of the units. By advanced design and careful choice of multiple tap outputs, the TRES offers a wide range of current-voltage-power outputs to match the most demanding relay of any type. The following are the output ranges that can be used.

- 0 - 2 A 150 V max.
- 0 - 24 A 12.5 V max.
- 0 - 48 A 6.25 V max.
- 0 - 75 A 4 V max.
- 0 - 150 A 2 V max.



COMPUTER CONTROL

The TRES offers the best to all levels of users as it can be completely controlled by various EUROSMC software packages. This offers users the flexibility to perform typical maintenance test when on site to experimental testing in the laboratory.

TRES uses the PTE-12 adapter, which connects the RS232 serial port of the computer to the BUS-PTE port on the units. The various software packages are:

- **EUROTEST.** Automatic and systematic test routines, with generic test routines for each type of relay. These routines can easily be edited to adapt to the application required or the user can create new routines. Also supplied is a library of routine tests
- **EUROVECTOR.** Graphic interface that enables the creation up to 10 successive fault situations by vector representation and the editing and creation of Impedance characteristics either MHO or Quadrangles of distance relays.
- **EUROFAULT.** Enables the playback of any previously registered or calculated fault in COMTRADE format. The bandwidth is 0.5 to 5000Hz.
- **PTE-CAL.** Enables the adjustment and calibration of the units, without the need of any intervention inside the equipment. (Closed Case Calibration)



- The relay setting values are entered as read from the relay, avoiding the need to make any calculations.
- Test results are easily understood by graphical and tabular comparisons against the software-generated theoretical values.
- Well structured management of the test results, the test data, etc. reduce the need for manual recording and promotes an integrated office approach for efficiency. Use of ACCESS database enables users to customise report generation to suit company standards.
- Library of Relay Tests include ready-made relay tests routines for a great majority of the relays normally found.
- Compatibility with other test equipment brands means EUROTEST software options can perform the programmed test routines with the other relay test equipment on the market.

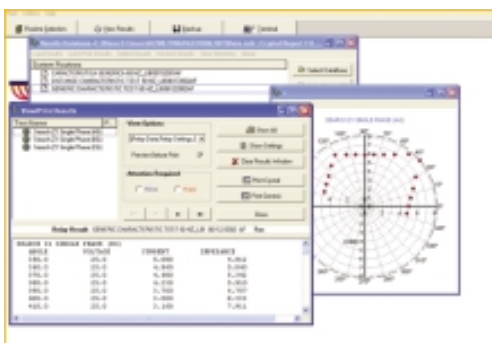
SOFTWARE OPTIONS

EUROTEST RTS

AUTOMATIC SOFTWARE TO TEST PROTECTIVE RELAYS

The EUROTEST RTS software is specially designed to test all types of relays from the simple overcurrent to the most complicated distance relay.

The software has available an advanced level of 'expert knowledge', allowing the user to enter basic relay data whilst in-built commands create the detailed signal and timing structure for the automatic test procedure.



The main features are as follows:

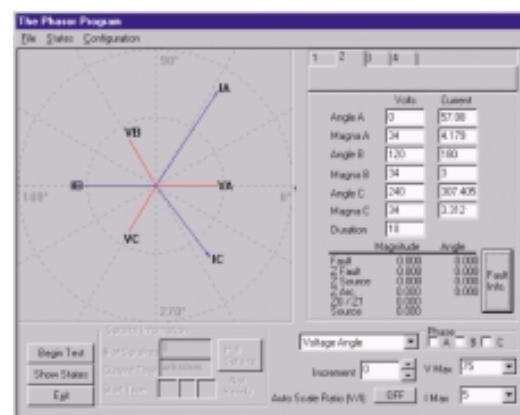
EUROVECTOR FAULT EDITING AND GENERATION OF SUCCESSIVE FAULTS SOFTWARE

Injecting faults in protection relays to determine if it is functioning correctly is commonly used.

The Software EUROVECTOR, WINDOW based and is designed as a graphic tool to facilitate fault testing. It can also record, print, etc. the different types of faults.

To perform the task, there are two basic modules which cover the two different concepts to edit and define the fault sequence:

- Vector Module, a Graphic vector that represents the six vectors applied (three voltages and three currents) with their corresponding phase angles. Sequences of up to 10 successive faults can be edited.
- Impedance Characteristics Module, to define a fault or faults in an Impedance plan previously produced. Available as a Mho or quadrangular representation in numeric or graphic form.



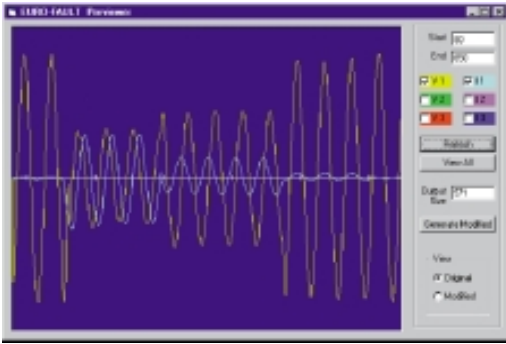
EUROFAULT

TRANSIENT PLAYBACK SOFTWARE IN COMTRADE FORMAT

The EUROFAULT software is designed to capture any fault register in COMTRADE format and, when connected to the TRES system, can be downloaded and reproduced exactly.

The software is easy to use and is Windows based, having all the advantages in terms of files handling, data base, graphic representation, etc. incorporated in it.

The user does not need to perform any complicated task for the editing of the COMTRADE file,



because the application has the necessary options to easily edit the file from a numerical and graphical point of view.

The Pre-fault and/or Post-fault duration can be altered by simply pressing the appropriate key to ensure correct operation of the relay under test.

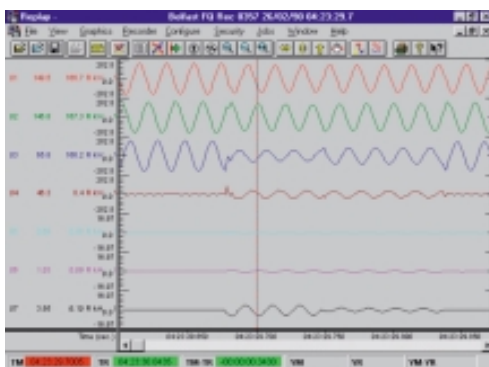
Similarly, active voltage and/or current channels can be selected along with all the secondary parameters that defines the peak levels of the transients.

Furthermore, enables interpolation of the wave form to a greater number of samples that "smooth" the wave form closer to reality, when the number of captured samples per cycle is not sufficiently high.

Obviously the number of cycles is limited by the memory capacity of the internal microprocessors of the TRES, the cycles to be reproduced will reduce when more samples by cycles are used.

FAULT PLAYBACK

It is becoming more important than ever to record and simulate the fault condition resulting in relay operation. The TRES system, along with the software EUROFAULT, can playback any type of fault simultaneously in its 6 output channels.



In each channel there are up to 8 pages of 4 Kb memory, a total of 32 Kb. Thus a fault of up to 16 seconds duration at 50 Hz (800 cycles) with resolution of 20 samples/cycle, or

up to 8 seconds duration at 50 Hz (400 cycles) with a resolution of 40 samples/cycle can be reproduced. The system is able to generate a bandwidth range from 0.5 to 5 KHz.

PTE-CAL

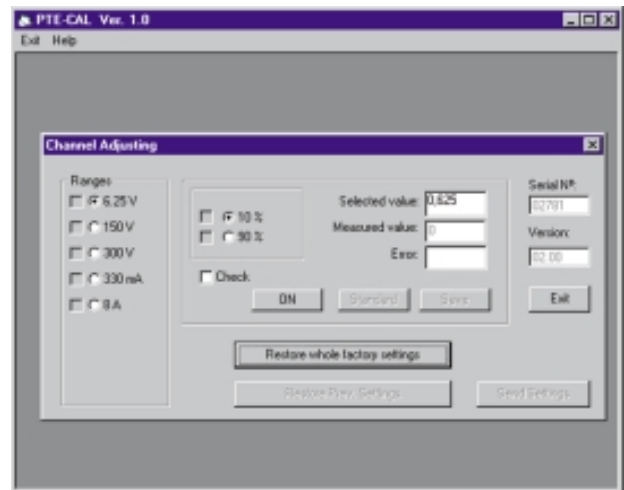
TRES CALIBRATION SOFTWARE

All equipment in the PTE Range is calibrated and/or adjusted by software via the serial port RS-232. This is known as "Closed Case Calibration".

There are many advantages to this type of calibration as there is no need to open the equipment or need to adjust any potentiometers, trimmers, etc. The possibility of errors and damage to the equipment is reduced, significant time is saved and calibration can be made as often as desired.

The program is completely automatic and only requires a reference standard for signal comparison.

PTE-CAL also allows the user to set-up the default values of phase direction (clockwise or anti-clockwise) and frequency generation upon power up.



STANDARD ACCESSORIES

- Instruction Manuals
- 2 Voltage supply cable with earth, 1.5 m length
- 6 Connection Adapters, 4 mm / Flat Terminal
- 24 Crocodile clips, input 4 mm
- 18 Connection Cables, 2.5 mm section 2 meters length
- 2 RS-232 Cables for calibration
- 3 BNC Cables with 2 Banana terminals, 4 mm
- 2 Interconnection Cables BUS-PTE.
- Complete set of fuses.
- 2 nylon protection bags



OPTIONAL HARDWARE ACCESSORIES

PTE-FCG (BATTERY SIMULATOR)

To supply an auxiliary DC voltage, which is needed for a majority of relays, with the following specification.

- Voltage Supply: 230 V-50/60 Hz
115 V-50/60 Hz (upon request).
- Voltage Output: 48 V, 125 V y 250 Vcc.
- Power: 60 W in each output
- Ripple: $\pm 10\%$
- Accuracy: $\pm 20\%$
- Dimensions: Height: 110 mm / 4"
Width: 180 mm / 7"
Depth: 60 mm / 2"
Weight: 4 kg / 8 lb.
- Can be incorporated in the top lid of the PTE equipment.

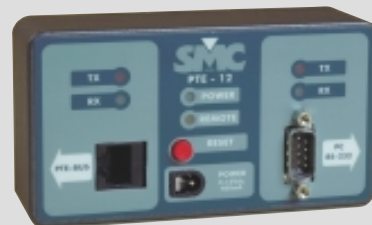


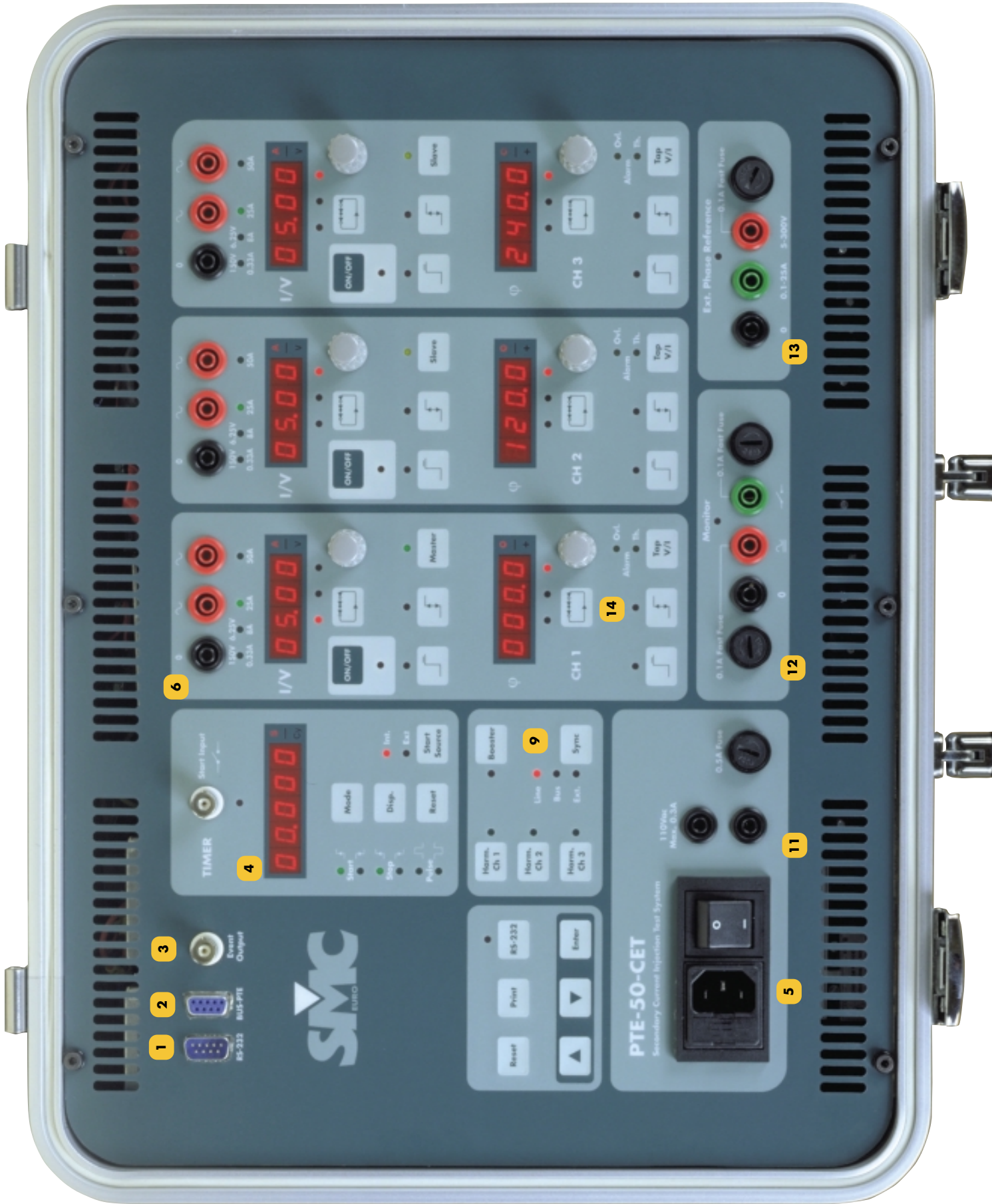
PTE-12 (INTERFACE RS-232/BUS-PTE)

Acts as the Interface between the RS-232 serial port of the computer and the BUS-PTE in the units.

Includes all the adapters and cables required, and the control commands manual (PTE-COM).

- Dimensions: Height: 90 mm / 3"
Width: 120 mm / 4"
Depth: 60 mm / 2"
Weight: 500 g / 1 lb.





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13

100V 6.25V 0.33A EA 35A

I/V 05.00

ON/OFF

Slave

CH 3 240.0

100V 6.25V 0.33A EA 35A

I/V 05.00

ON/OFF

Slave

CH 2 120.0

100V 6.25V 0.33A EA 35A

I/V 05.00

ON/OFF

Master

CH 1 000.0

TIMER 00.000

Start Input

Start Stop Pulse

Mode

Diagn. Reset

Int. Ext. Start Source

Harm. Ch 1 Line Bus Ext. Sync

Harm. Ch 2

Harm. Ch 3

Booster

110VAC Max. 0.3A

0.3A Fuse

0.1A Fuse

0.1A Fuse

0.1A Fuse

Ext. Phase Reference

0 0 0 0

0-1-234 5-200V

Monitor

0.1A Fuse

0.1A Fuse

0.1A Fuse

0.1A Fuse

Reset

Print

85-333

Enter

Enter

SMC EURO

PTE-50-CET

Secondary Current Injection Test System

1 RS-232 COM PORT

User to control and communicate with external hardware to perform the following:

- Connected to a computer
 - Calibration and default values
 - Automatic testing and fault simulation.
- Connection to a printer to directly print test results.

2 PTE-BUS

Allows for synchronised operation between all units in the PTE RANGE, providing easy access for references, controls, etc.

3 EVENT OUTPUT

Normally used to start an external timer, this output produces a voltage free, closed contact type pulse with a 20ms duration each time the ON/OFF key or any of the step to 2nd value keys are pressed on the front panel.

5 MAINS VOLTAGE SUPPLY

The voltage is supplied to the equipment by a standard SCHUKO male plug with ground. Contain in this is a mains filter to eliminate external interference. Standard 5 x 20 mm. fuses protect the input circuits.

6 POWER OUTPUTS

Each unit contains three output channels that can operate simultaneously or independently. Each Channel may be used in Current or Voltage mode.

- PTE-50-CET: Up to 50 A in 4 ranges or up to 150V in 2 ranges.
 - PTE-300V: Up to 300V in three ranges or up to 8 A in 2 ranges.
- All output regulation including the phase angle can be independent by channel, or linked for co-ordinated outputs such as three-phase regulation or stacked output mode for increased power delivery. All linked channels can be changed simultaneously by a single control step-knob.

Any combination of voltage and current channels can be selected. All the outputs have a Dynamic Capability, which means that any combination of Dynamic steps to 2nd. Values can be selected by amplitude and phase angle. This Dynamic capability can work independently in each channel or linked, eg in a three-phase system, in a way that allows for an easy and flexible method to perform any type of fault simulation.

4 BUILT-IN TIMER

The built-in timer can measure the time delay of the Relay under test with a 1ms resolution. It is a digital timer incorporated in the PTE-50CET and contains all the required inputs and outputs to start and stop the timer whether by the signal monitors or via the BUS-PTE.

9 INTERNAL HARMONICS GENERATOR

Each output channel of the PTE-50CET unit can select any Harmonic of the fundamental reference Frequency. The 1st, 2nd, 3rd, 4th, 5th, 6th and 7th harmonic are available and may be set in different channels to achieve combinations of Harmonics by paralleling the outputs.

11 AUXILIARY VOLTAGE OUTPUT

The auxiliary voltage output has a nominal voltage of 110V ac with a maximum current of 0.3 A. This output is fuse protected.

12 SIGNAL MONITOR

The signal monitor informs the state of the relay under tests. These inputs can work with Dry Contacts (voltage free) or with Voltage Signals from 5 to 250 V ac or dc.

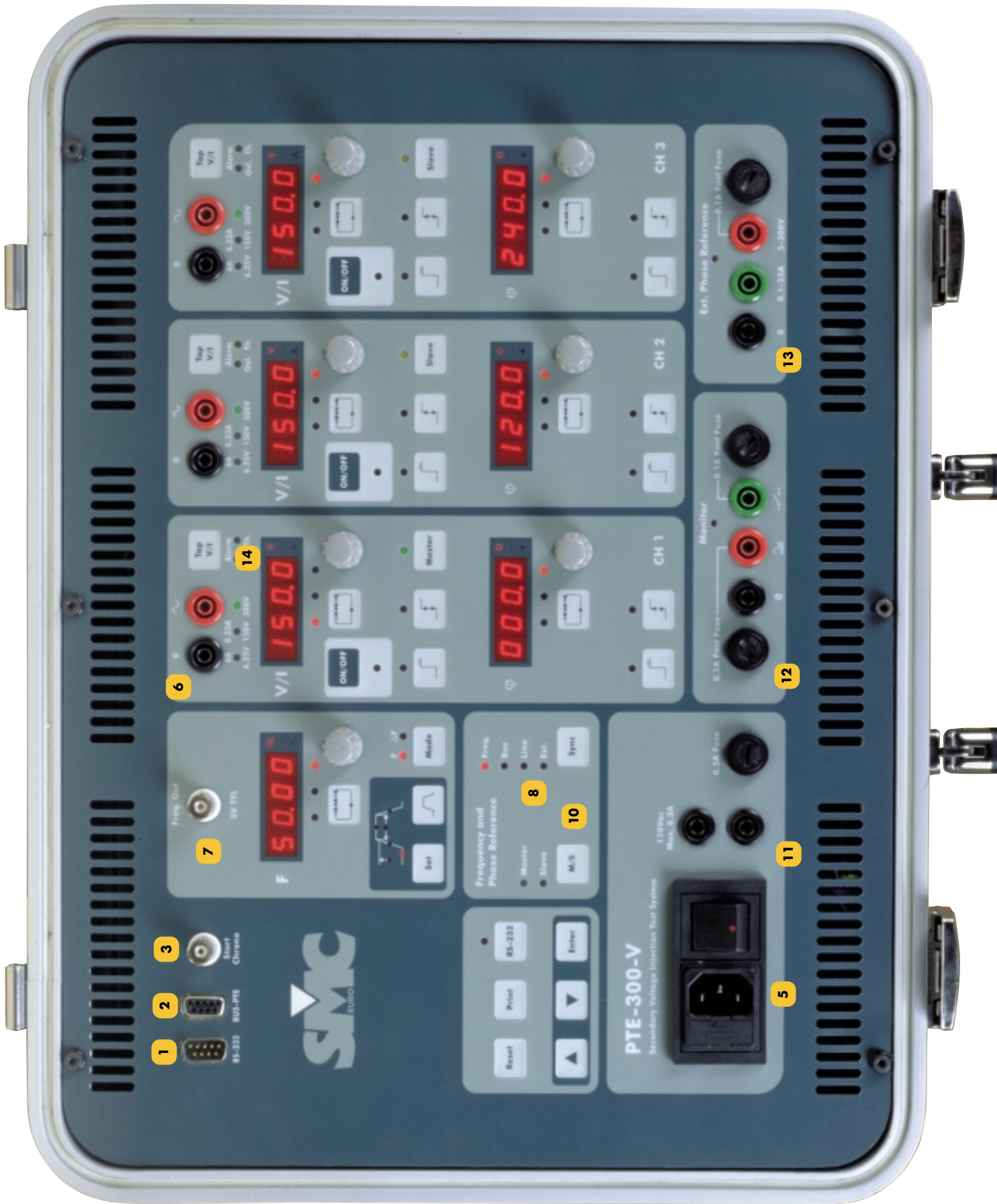
13 EXTERNAL REFERENCE INPUT

The equipment can be synchronized, in terms of frequency and phase, with any external signal in current from 0.1 to 25A or in voltage from 5 to 300V.

This feature enables the equipment to work with any other test equipment.

14 OUTPUT PROTECTION

The outputs and the unit are electronically protected against overload, short-circuit and over-temperature. The appropriate alarm is indicated on the front panel as well as the channel where it occurs. The inputs are protected by standard 5 x 20mm fuses.



1 RS-232

2 BUS-PIE

3 Start Chrome

7 Freq. Out

F 50.00

6

V/I 150.0

V/I 150.0

V/I 150.0

SMC
EURO

Reset Prior Enter
 ▲ ▼

Frequency and Phase Reference
 Master Slave M/S
 Freq. Bus Line Ext. Sync

8

10

PTE-300-V

Secondary Voltage Injection Test System

110Watt Max. 0.3A

0.5A Fuse

5

11

Monitor 0.1A Fast Fuse

12

Ext. Phase Reference 0.1A Fast Fuse

13

CH 3

CH 2

CH 1

0.5A Fuse

1 RS-232 COM PORT

User to control and communicate with external hardware to perform the following:

- Connected to an computer
 - Calibration and default values
 - Automatic testing and fault simulation.
- Connection to a printer to directly print test results.

2 PTE-BUS

Allows for synchronised operation between all units in the PTE RANGE, providing easy access for references, controls, etc.

3 EVENT OUTPUT

Normally used to start an external timer, this output produces a voltage free, closed contact type pulse with a 20ms duration each time the ON/OFF key or any of the step to 2nd value keys are pressed on the front panel.

5 MAINS VOLTAGE SUPPLY

The voltage is supplied to the equipment by a standard SCHUKO male plug with ground. Contain in this is a mains filter to eliminate external interference. Standard 5 x 20 mm. fuses protect the input circuits.

6 POWER OUTPUTS

Each unit contains three output channels that can operate simultaneously or independently. Each Channel may be used in Current or Voltage mode.

- PTE-50-CET: Up to 50 A in 4 ranges or up to 150V in 2 ranges.
- PTE-300-V: Up to 300V in three ranges or up to 8 A in 2 ranges.

All output regulation including the phase angle can be independent by channel, or linked for co-ordinated outputs such as three-phase regulation or stacked output mode for increased power delivery. All linked channels can be changed simultaneously by a single control step-knob.

Any combination of voltage and current channels can be selected. All the outputs have a Dynamic Capability, which means that any combination of Dynamic steps to 2nd. Values can be selected by amplitude and phase angle. This Dynamic capability can work independently in each channel or linked, eg in a three-phase system, in a way that allows for an easy and flexible method to perform any type of fault simulation.

7

INTERNAL FREQUENCY GENERATOR

The PTE-300-V enables frequency to be selected between 40 and 420Hz.

Furthermore, by an easy to use preprogrammed key located on the front panel, frequency can be set to ramp (ROCOF) setting ramp-rates, stabilized times and frequency levels. The slip frequency mode allows testing of frequency synchronisation where the frequency difference between an external reference is compared, with a resolution of 1mHz.

Also included is a BNC output which gives a 5V TTL square wave output of exactly the same frequency as is generated by the output.

8

SELECTABLE REFERENCES

The power outputs can be synchronized to four different references in both frequency and phase.

- The mains supply (Line)
- The BUS-PTE, when working with other PTE equipment (Bus)
- External Phase Reference (Ext)
- Internal Frequency Generator (Freq)

10

MASTER/SLAVE CONTROL

Enables the controls of both units such as outputs ON/OFF and change to a 2nd value to be used by the one unit.

11

AUXILIARY VOLTAGE OUTPUT

The auxiliary voltage output has a nominal voltage of 110V ac with a maximum current of 0.3 A. This output is fuse protected.

12

SIGNAL MONITOR

The signal monitor informs the state of the relay under tests. These inputs can work with Dry Contacts (voltage free) or with Voltage Signals from 5 to 250 V ac or dc.

13

EXTERNAL REFERENCE INPUT

The equipment can be synchronized, in terms of frequency and phase, with any external signal in current from 0.1 to 25A or in voltage from 5 to 300V.

This feature enables the equipment to work with any other test equipment.

14

OUTPUT PROTECTION

The outputs and the unit are electronically protected against overload, short-circuit and over-temperature. The appropriate alarm is indicated on the front panel as well as the channel where it occurs. The inputs are protected by standard 5 x 20mm fuses.

TECHNICAL SPECIFICATION

POWER OUTPUT (Each channel)

MODE	RANGES		Permanent Current	Permanent Voltage	Accuracy	Maximum Distortion	Permanent Power
	LEVEL	RESOLUTION					
CURRENT (PTE-50-CET)	0 - 0.390A	0.001 - 0.01 - 0.1A	-	150V			
	0 - 8.000A	0.001 - 0.01 - 0.1A	-	12.5V	± 0.5%	1%	100VA
	0 - 25.00A	0.01 - 0.1 - 1A	-	4V			
	0 - 50.00A	0.01 - 0.1 - 1A	-	2V			
VOLTAGE (PTE-50-CET)	0 - 150V	0.1 - 1 - 10V	0.39A	-			
	0 - 6.25V	0.01 - 0.1 - 1V	8A	-	±0.5%	1%	100VA
VOLTAGE (PTE-300-V)	0 - 6.25V	0.01 - 0.1 - 1V	8A	-			
	0 - 150.0V	0.01 - 0.1 - 1V	0.39A	-	± 0.5%	1%	100VA
	0 - 300.0V	0.01 - 0.1 - 1V	0.15A	-			
CURRENT (PTE-300-V)	0 - 0.390A	0.001 - 0.01 - 0.1A	-	150V	± 0.5%	1%	50VA
	0 - 8.000A	0.001 - 0.01 - 0.1A	-	6.25V			
PHASE ANGLE	0 - 359.9°	0.1 - 1 - 10°	-	-	± 0.5°	-	-
TRANSIENT BANDWIDTH:	0.5 - 5000 Hz						

EXTERNAL REFERENCE INPUT (Incorporated in each unit)

MODE	SIGNAL RANGE	FREQUENCY RANGE	INPUT IMPEDANCE
VOLTAGE	5 - 300 V	40 - 70 Hz	47 K Ω
CURRENT	0.1 A	40 - 70 Hz	25 m Ω

INTERNAL FREQUENCY GENERATOR (Incorporated in PTE-300-V)

MODE	RANGE	RESOLUTION	ACCURACY	SLOPE RANGE	DURATION RANGE
STANDARD	40 - 420Hz	0.01 - 0.1 - 1 Hz.	±0.003 Hz.	0.1 - 100 Hz/s.	0.01 - 10.0 s.
DIFFERENTIAL	0.001 - 10 Hz.	0.001 - 0.01 - 0.1 Hz.	±0.001 Hz.	-	-

INTERNAL HARMONICS GENERATOR (Incorporated in PTE-50-CET)

HARMONICS AVAILABLE:	1st, 2nd, 3rd, 4th, 5th 6th and 7th of the reference frequency up to 420 Hz.
ACCURACY:	±0.003 Hz.
SELECTION:	The different harmonics can be easily selected and are completely independent by channel.

BUILT-IN TIMER (Incorporated in PTE-50-CET)

MEASURING RANGES:	Time: 0.001 to 99999 s. (auto-range)
	Cycles: 000.1 to 9999.9 Cycles (referenced frequency).
ACCURACY:	±0.003% of the reading ±1 dig.
TIMER START:	<ul style="list-style-type: none"> Internal Events: <ul style="list-style-type: none"> By activation/deactivation of the power output. By activation/deactivation of the change to 2nd value key. External Events: <ul style="list-style-type: none"> By a positive or negative event in the BUS-PTC. By activation/deactivation of the external signal input.
TIMER STOP:	<ul style="list-style-type: none"> Selectable between activation or deactivation of the Signal Monitor. By a positive or negative event in the BUS-PTC.

SIGNAL MONITOR (Incorporated in both units)

Dry Contact Input (Monitors M1, M2, M3)
• Open circuit voltage: 10.2 V.D.C.
• Short-circuit current: 25 mA
• Fuse protected.
Voltage input (Monitors M1 and M3)
• Level Limits: From 5 to 250 V A.C./D.C.
• Input Impedance: 19 K Ω
• Fuse protected.

DIGITAL CONTROL OUTPUT

Maximum AC Voltage:	20 V
Maximum DC Voltage:	± 28 V
Maximum AC/DC Current:	0.5 A
AC Power:	10 VA
DC Power:	14 W

GENERAL

Auxiliary Voltage Output:	Nom.V: 115 Vac/Max: 0.3 Aac/Fuse protected
Temperature Range:	Operator: 0 - 50° C /Storing: -20° - 70° C
Voltage supply:	230 V + 10% (Standard version) 50-60 Hz 115 V + 10% (upon request) 50 Hz.
Dimensions:	Height: 200 mm Width: 442 mm Depth: 327 mm
Weight:	PTE-50-CET: 23 Kg - 50 lb. / PTE-300-V: 22 Kg - 48 lb.

DISTRIBUTED BY:

Please Note: Due to the continuous research and development by EUROSMEC, specifications in this catalog may be changed without previous notice.

EUROSMEC, S.A.

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