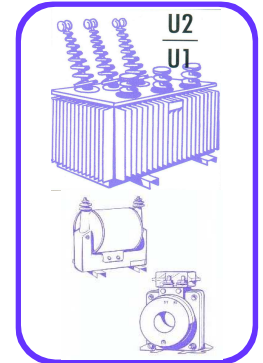
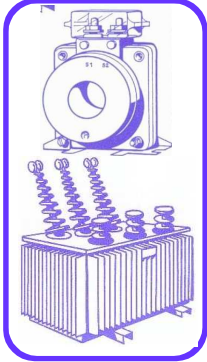




# MANUAL MEASURING BRIDGE FOR TRANSFORMER TURNS RATIO

## PRT 6

URNS RATIO, EXCITATION CURRENT,  
INTERNAL PHASE ANGLE ERROR



### FUNCTION

- Direct measurement of turns ratio of all types of transformers and autotransformers (mono & tri-phase), CT, VT, CVT...
- Indication of excitation current per phase (detection of defects in windings or/& connections...)
- Measurement for determination of internal phase angle error
- Polarity checking

### APPLICATIONS

- Production, transmission and distribution of energy in national grids or local networks (including internal networks of industries)
- Manufacturers, repairers, maintenance of transformers / autotransformers mono or tri-phase HV, MV, LV, CT, VT, CVT...
- Checking of transformers during manufacturing or re-coiling : Way of windings, internal connections, short-circuits, continuity...

### PRT 6 BENEFITS

- Simplicity of use
- Fast measurements
- Safety of operator
- Sturdiness
- Reliability
- Longevity
- Auto-checking
- Auto protection
- Reduced maintenance
- Easy checking of calibration
- Simple calibration



### STANDARDS

- Conformity to IEC 76, NFC 52 standards

### QUALITY

- of manpower
- of know-how
- of procedures
- des composants

### ACCURACY

- Very high accuracy of measurements
- stability of components

### CALIBRATION

- Primary standards linked to LNE (French National Laboratory) or equivalent
- Traceability

### WARRANTY

3 YEARS

### AFTER SALES SERVICE

10 YEARS

FP PRT 6 - 07/01/05



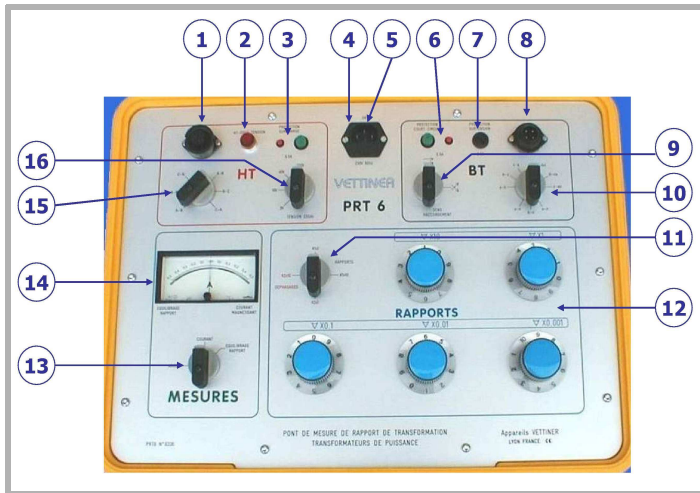
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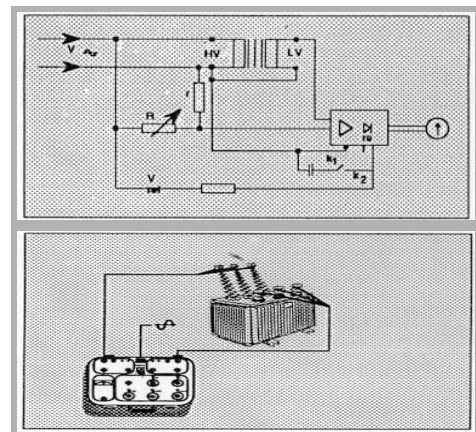
### DESCRIPTION



1. Terminal for HV transformer connection
2. Light indicating supply on HV side
3. HV Overload protection with 0.5A circuit breaker
4. Mains power supply
5. 2 A Fuse for mains protection
6. LV Overload protection with 0.5A circuit breaker
7. 0.5A Fuse for over-voltage protection on LV side
8. Terminal for LV transformer connection
9. Reversal switch for LV connection
10. Switch selector for LV side connection to measure
11. Switch for ratio measurement and phase error test
12. 5 commutators with decades for bridge balancing
13. ON/OFF with ratio test or current checking
14. 2 functions indicator : Logarithmic null galvanometer for bridge balancing & linear ammeter for magnetizing current
15. Switch selector for HV side connection to measure

### PRINCIPLE

- Potentiometric Bridge with direct reading. Opposition of reference injected voltage at primary and measured voltage at secondary (Method using Wheatstone Bridge structure)
- Logarithmic null galvanometer compare 2 voltages, one as a reference, other one as measured one. Voltage ratio is measured with the highest existing accuracy taking into account phase displacement angle.
- In a second step, voltage reference is de-phased with 45°. It becomes easy to identify internal phase angle error between windings.



### MAIN CHARACTERISTICS

- Test method Manual balancing of bridge
- Display of results On knobs
- Tests voltages 3V - 10V - 40V - 120 V
- Tests control 1 switch OFF/current/ratio

#### Turns ratio : primary / secondary

- Measuring range mini : 1 - maxi : 1009.99
- Accuracy Ratio -> 1 up to 100 :  $\leq 0.05\%$   
Ratio > 150 :  $\leq 0.1\%$

#### Internal phase angle error

- Measuring range 0 up to  $\leq 45^\circ$
- Accuracy  $\pm 0.3\%$

#### Current checking

- Display Needle indicator (linear)
- Checking range 0 - 500 mA

#### Power supply

- Mains supply 85 - 264 V / 45 - 65 Hz



### PROTECTIONS

- Full protection of device & operator Nevertheless, need of protection of test area
- Protection of bridge supply with fuse

### PRESENTATION

- Sturdy proof case (IP54)
- Dimensions : 465 x 380 x h 175 mm
- Net weight :  $\approx 14$  kg
- Cables length : 5 m (10m/15m or other in option)

### OPTIONS

- Battery operating in option
- Other presentations (Rack, Desk...) or other characteristics on request
- Example of possible specific options : Coupling of winding resistance test integrating an accurate micro-ohmmeter...