

Peak Voltmeter

Type PVM-100

Instruction Manual

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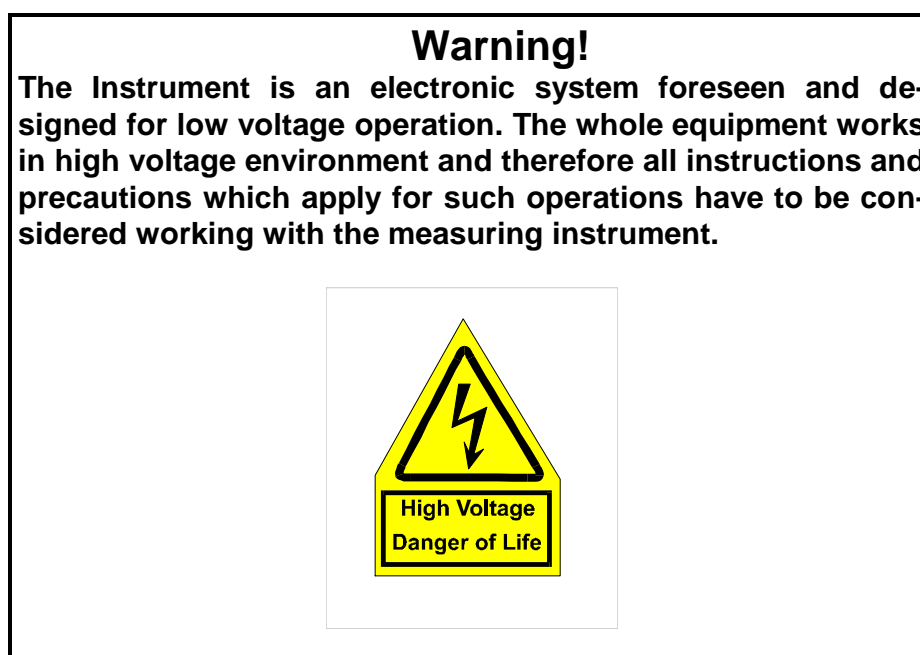
1 Safety precautions

1.1 Safety

The instrument described in this manual is designed to be used by properly trained personnel only. Adjustment, maintenance and repair of the exposed equipment should be carried out only by qualified personnel aware of the hazards involved.

1.2 Safety precautions

For correct and safe use of this instrument it is essential that both operation and service personnel follow generally accepted safety procedures in addition to the safety precautions specified in the manual. Specific warning and caution statements, where they apply, will be found throughout the manual. Safety is the responsibility of the user.



1.3 Impaired safety precautions

Whenever it is likely that safety protection has been impaired, the instrument must be made inoperative and be secured against any unintended operation. Safety protection is likely to be impaired if, for example, the instrument fails to perform the intended measurements or shows visible damage.

2. Introduction

2.1 Function Principle

The measuring instrument is a peak detecting digital voltmeter with differential input.

Fig. 1 shows the principle of the measurement

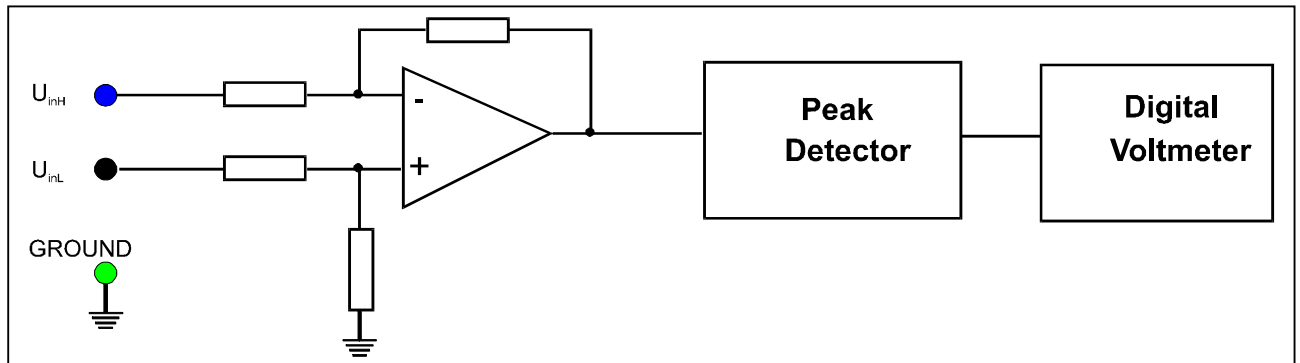


Fig.. 1

The input unit is a differential amplifier with $1\text{ M}\Omega$ input impedance. It is proposed to ground the input " U_{inL} " and apply the voltage on the U_{inH} input.

The peak detector is an ultra – linear active peak detecting circuit.

The digital voltmeter has 3.5 digits.

The instrument has only one scale factor; in the given case, 100 V input results in a 100 kV display.

The instrument makes one decade autoranging: at 10 kV it increases the resolution.

3. Technical Data

Peak Voltmeter

Type PVM 100

To be connected to a standard capacitor with built-in capacitive divider

Displayed value	$U_{\text{peak}} / \sqrt{2}$
Display scale factor	100 kV / 100 V
Highest input voltage to ground at any terminal	200 V peak
Display	LED 3 ½ digit
Resolution	0.1 kV / 10 V
Uncertainty	$\pm 1 \% \pm 1$ digit
Input impedance	1 M Ω
Dimensions	W 255 x H 110 x D300 mm
Weight	2.6 kg
Power Mains	115 / 230 V / 50 / 60 Hz
With front and rear panel connectors	

Reference conditions

temperature	23° C \pm 2° C
humidity	45 ... 75%
altitude (pressure)	101.3 kPa

Rated range of use

according IEC 359

temperature	5° C ... 40° C
humidity, non condensing	20 ... 95%
altitude (pressure)	70 ... 106 kPa

3.1 Scope of supply

- 1 p. peak voltmeter type PVM-100
- 1 p. power chord
- 1 p. test certificate
- 1 p. instruction manual

4 Measuring arrangements

4.1 The front of the instrument (Fig. 2)

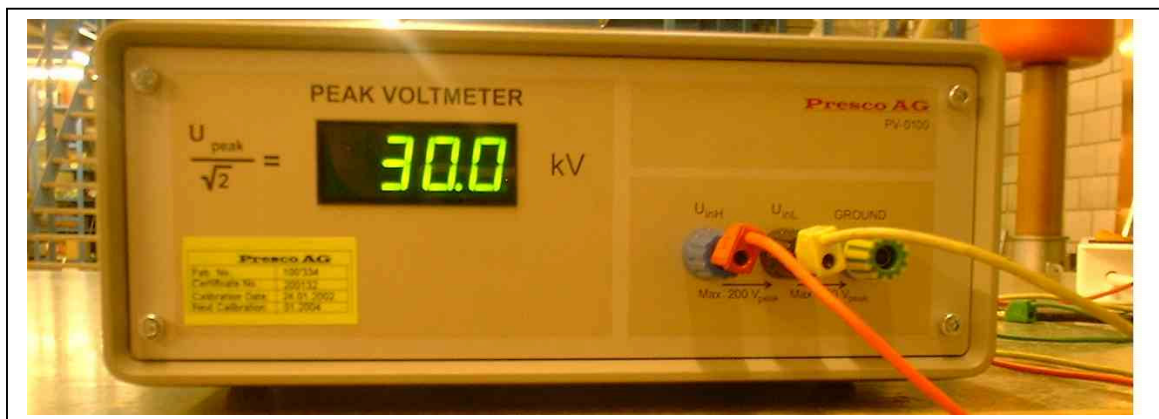


Fig.2.

Establish a ground connection between ground of the laboratory and the ground terminal

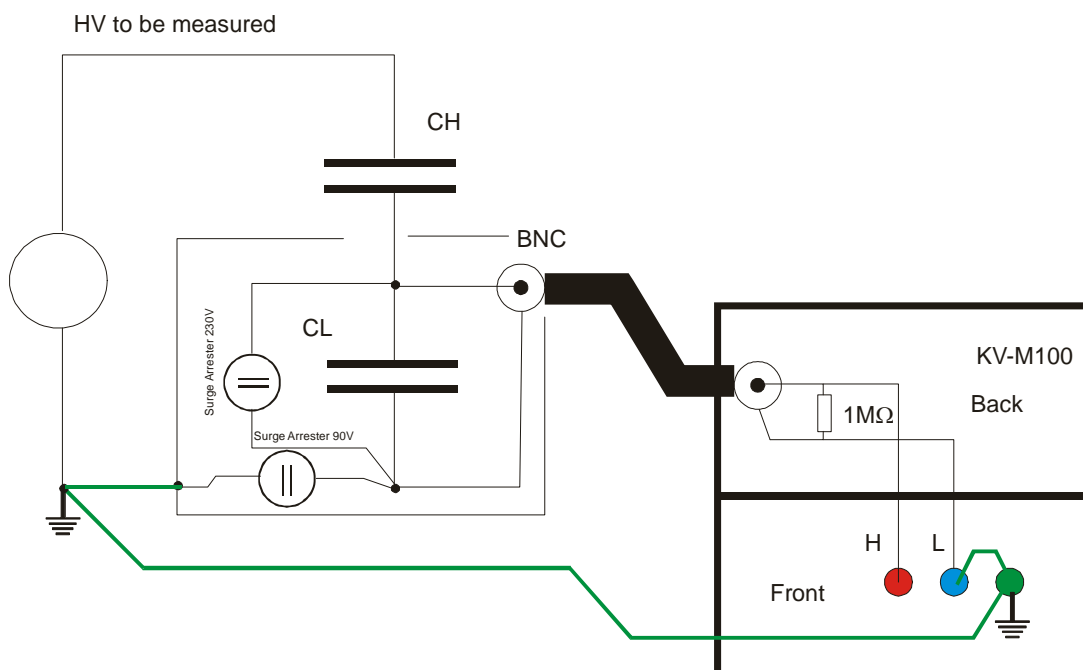


of the instrument.

Because the instrument is built according to safety class I of IEC 359, the mains cable contains a ground conductor which also has to be connected to ground of the local mains.

It is strictly forbidden to open the ground connection between "laboratory ground → " and "Instrument → ground of local mains"! Danger of life!

4.2 Using the instrument with a divider.



The instrument can be used with resistive, capacitive, inductive divider or voltage transformer.

The example above shows a connection with a capacitive divider.

The low voltage part of the divider must be dimensioned in a way that the 1 MΩ load impedance of the instrument causes lower than 1 % error.

Example:

The high voltage capacitor (C_H) is: 100 pF

For a 100 V output at 100 kV input we need a low voltage capacitor of: $C_L = 99\,900$ pF

The error, resulted by the 1 MΩ load is: $\varepsilon = (1/2) * (\omega * R * C * L)^2)^{-1} = 0.2\%$

5.2 Measurement

Make the test set up using the example above.

Connect input green-yellow (GROUND) to laboratory ground

Connect input black (U_{inL}) to ground point of divider

Connect input blue (U_{inH}) to the dividing pint of divider

Switch on the instrument

Now you can begin the voltage measurement

Warning:

Although the instrument is safe, there is no protection against certain application errors and carelessness. In case of unsteadiness please consult a senior specialist instead of damaging the test object or the instrument.

Caution:

Do not forget that using the instrument you work in a high voltage environment. Thoughtless handling and switching can be lethal.

6 Servicing

Repair work and maintenance can only be done by qualified personnel of Presco AG. In case of problems please contact the representative which delivered the instrument or Presco AG directly.