

# M210A1 | Amplifier



The **M210A1** amplifier provides:

- verification and calibration of low-power voltage transformers (LPVT) as part of any VT calibration system;
- conversion of any secondary voltage of a traditional VT into a value equal to the nominal voltage of the reference VT.

## FEATURES AND BENEFITS

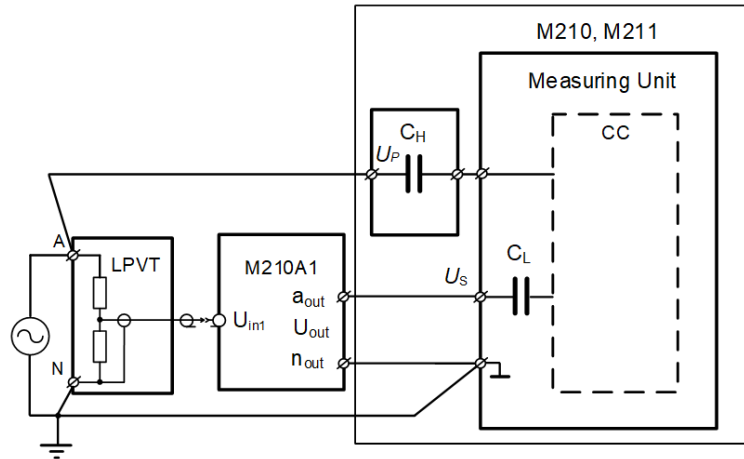
- Continuous range of rated secondary voltages of verified LPVT
- Continuous range of rated secondary voltages of verified traditional VT
- High conversion accuracy
- Simple use by intuitive user interface
- Storage of individual voltage settings
- Possibility of using with automated VT calibration system

## APPLICATIONS

**M210A1** is used by:

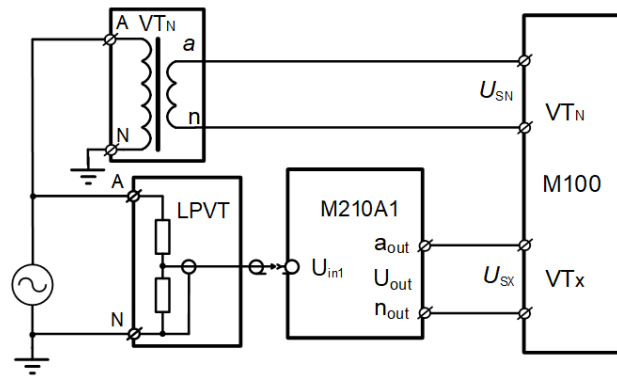
- Manufacturers of LPVT and VT
- Calibration Laboratories
- Metrology Institutes

**TEST ARRANGEMENT**



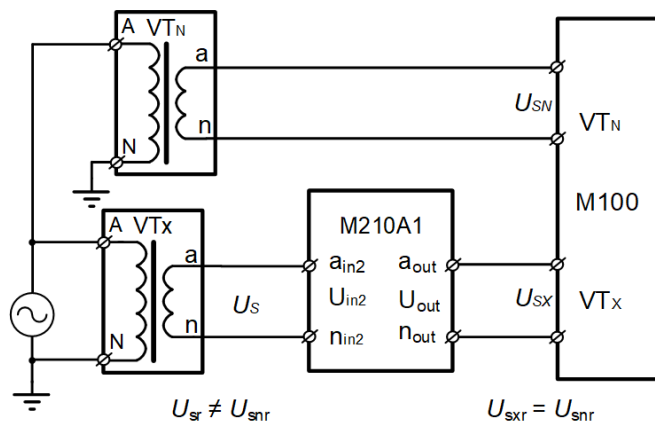
$C_L$  – low-voltage measuring capacitor;  $C_H$  – high-voltage measuring capacitor;  
CC – current comparator with automatic balancing

Fig.1 Test circuit for LPVT by use the Voltage Transformer Test Set M210/M211



$VT_N$  - standard transformer

Fig.2 Test circuit for LPVT by use the Comparator M100



$VT_N$  - standard transformer;  $VT_X$  - transformer under calibration

Fig.3 Test circuit for traditional voltage transformers with different rated secondary voltages

**TECHNICAL SPECIFICATIONS**

**Input 1:**

Rated input voltage range ( $U_{in1r}$ )	0.1 V ... 4 V
Input voltage resolution	0.001 V
Additional factors	$\times 1/\sqrt{3}$ ; $\times 1/3$
Rated operating frequency	50/60 Hz
Input impedance, represented as a parallel resistor-capacitor circuit	$2\text{ M}\Omega \pm 5\% \parallel C \leq 50\text{ pF}$

**Input 2:**

Rated input voltage range ( $U_{in2r}$ )	30 V ... 245 V
Input voltage resolution	0.1 V
Additional factors	$\times 1/\sqrt{3}$ ; $\times 1/3$
Rated operating frequency	50/60 Hz
Input impedance, represented as a parallel resistor-capacitor circuit	$2\text{ M}\Omega \pm 5\% \parallel C \leq 50\text{ pF}$

**Output:**

Rated output voltage range ( $U_{outr}$ )	30 V ... 100 V
Output voltage range	0 ... 120 V
Output voltage resolution	0.1 V
Additional factors	$\times 1/\sqrt{3}$ ; $\times 1/3$
External burden	$R \geq 500\text{ k}\Omega$ ; $C \leq 5\text{ nF}$

**Accuracy:**

Ratio error	
$0.02 \cdot U_{outr} \leq U_{out} < 0.2 \cdot U_{outr}$	$\pm 0.1\%$
$0.2 \cdot U_{outr} \leq U_{out} < 0.8 \cdot U_{outr}$	$\pm 0.04\%$
$0.8 \cdot U_{outr} \leq U_{out} < 1.9 \cdot U_{outr}$	$\pm 0.02\%$

**Phase displacement**

$0.02 \cdot U_{outr} \leq U_{out} < 0.2 \cdot U_{outr}$	$\pm 5\text{ min}$ ( $\pm 0.15\text{ crad}$ )
$0.2 \cdot U_{outr} \leq U_{out} < 0.8 \cdot U_{outr}$	$\pm 2\text{ min}$ ( $\pm 0.06\text{ crad}$ )
$0.8 \cdot U_{outr} \leq U_{out} < 1.9 \cdot U_{outr}$	$\pm 1\text{ min}$ ( $\pm 0.03\text{ crad}$ )

**Power mains:**

Voltage	100...240 V
Rated frequency	50/60 Hz

Operating temperature	0...40 °C
Relative humidity	up to 80 % non-condensing

Size	245 × 135 × 325 mm
Weight	5 kg