

ZMPT101B(ZMPT107) voltage transformer operating guide

1、Wiring diagram

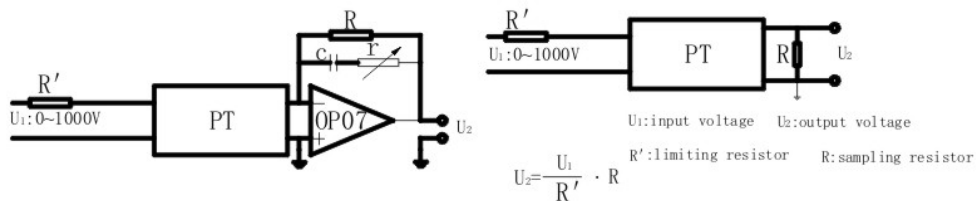


Figure I

Figure II

2、Determination of maximum output rms voltage

U_{max}:

U_{max} is decided by the AD peak voltage in the sampling loop in principle.

As for Bipolar AD, U_{max} = $\frac{\text{Peakvoltage } e}{\sqrt{2}}$

As for unipolar AD, U_{max} = $\frac{\text{peak voltage}}{2\sqrt{2}}$

for example:

As for $\pm 5V$ AD, the maximum rms voltage of the transformer: U_{max} = $5V / \sqrt{2} = 3.53V$

As for 0~3.3V AD, the maximum rms voltage of

the transformer: $V_{\max} = 3.3V/2\sqrt{2} = 1.16V$

3、 Determination of input current-limiting resistor R'

Current-limiting resistor $R' = \frac{V}{I}$

V: Rated input voltage

I : Rated operating current (when Coil resistance is compared with current-limiting resistor R' , it can be ignored.)

ZMPT101B/ZMPT107 usually working at rated current:1~2mA. When Rated input voltage $\leq 100V$, Usually choosing the operating current $I=2mA$; When Rated input voltage $\geq 220V$, To reducing the resistor power, Usually choosing the operating current $1 mA \leq I \leq 2 mA$.

for example: $V=100V$, $I=2 mA$,

$$R' = \frac{V}{I} = 50K\Omega$$

for example: $V=220V$, $I=1.1mA$,

$$R' = \frac{V}{I} = 200 k\Omega$$

To improve reliability, the current-limiting resistor selected usually is greater than its 4times the rated power, and generally use a high

temperature coefficient metal film resistor.

4、 Determination of the sampling resistor R

$$R = \frac{V_{output\max}}{I} = \frac{V_{output\max}}{V_{input\max}} \bullet R$$

for example: $V_{output\max} = 3.53V$, $V_{input\max} = 120V$, $R = 50 k\Omega$

$$R = \frac{3.53}{120} \times 50 k\Omega = 1.471 k\Omega$$

Directions:

(1) Above formula is also suitable for the two ways of active and passive output .

(2)when selecting the sampling resistor, Resistor should not exceed : $V_{output\max} \bullet R / V_{input\max}$

5、 The advantages and disadvantages of the two wiring

(1)、 Active output

Advantage: high precise, small phase error, high output voltage, strong load capacity.

As for unipolar AD, the positive input terminal of the op amp can plus a fixed benchmark reference voltage to solve.

Meanwhile, in order to simplify the line, Generally do not access the c and r which are for the phase compensation. If you need to compensate, Usually

use the software way.

Disadvantage: Line is a little more complicated.

(2)、Passive output

Advantage: Simple circuit, High precision.

Disadvantage : The output voltage has certain limitations , The greater the load resistance, the greater the phase difference

Typical testing data are as follows: