



**TRANSFORMER  
TRAINER KIT  
MODEL NO: TRTK2012**

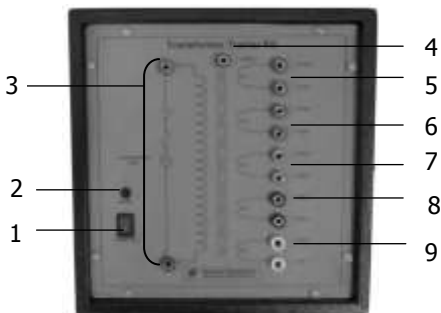


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## INSTRUCTION MANUAL OF TRANSFORMER TRAINER KIT MODEL NO: TRTK2012

### Introduction:

The kit is consisting of power transformer with suitable power switch, fuse, indicator, connecting terminals etc. The main purpose of the system is to study the characteristics of different parameters of power transformer.



- |                           |                          |
|---------------------------|--------------------------|
| 1. Power ON Switch        | 6. Secondary Voltage 3V  |
| 2. Power ON Indicator     | 7. Secondary Voltage 6V  |
| 3. Primary Voltage 240VAC | 8. Secondary Voltage 12V |
| 4. Shield                 | 9. Secondary Voltage 24V |
| 5. Secondary Voltage 1.5V |                          |

**Specification:**

1.	Primary voltage (max):	240V AC, 50Hz
2.	Secondary 1 voltage:	1.5V AC
3.	Secondary 2 voltage	3V AC
4.	Secondary 3 voltage	6V AC
5.	Secondary 5 voltage	12V AC,
6.	Secondary 6 voltage	24V AC
7.	Input VA (max):	93VA
8.	Isolation voltage:	1.5KV between primary and any secondary; body and any winding
9.	Insulation resistance:	>100M $\Omega$
10.	Screen:	provided between primary and all secondary windings
11.	Operating Temperature	0°C to 40°C
12.	Dimension	170mm(H) X 255mm(L) X 260mm(W)
13.	Weight	4.6Kg

**Standard Accessories:** Mains Cord – 01No. Banana to Banana Patch Cord – 04 Nos. Instruction Manual – 1No. 1Amp Fuse -2Nos.



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**1. To study Polarity Test:**

Connect any two secondary in series. Measure the total voltage.

- i. If the measured voltage is found equal to the sum of the secondary voltages then the polarity of the secondary is in phase; i.e. the junction is formed with one 'start' end with another 'finish' end.
- ii. If the measured voltage is found equal to the difference of the secondary voltages then the polarity of the secondary is in  $180^\circ$  out of phase; i.e. the junction is formed with one 'start' end with another 'start' end.

**2. To study Turn ratio Test:**

Connect voltmeter at primary and secondary side at first block i.e. 6V socket. Assume it is E1 & E2. Transformer Primary Turn ( $N_1$ ) is 1488, so putting the value of the following equation; calculate the secondary turn ( $N_2$ )

$$E_2/E_1 = N_2/N_1$$

After calculating,  $N_2=37$  Same procedure is repeat at 9V and 12V socket, it will measure the secondary turn i.e.  $N_3=56$  (secondary 9V) and  $N_4=74$ (secondary 12V)

**3. To study Open Circuit Test:**

As the name suggests, the secondary is kept open circuited and nominal value of the input voltage is applied to the primary winding and the input current and power are measured. V, A, W are the voltmeter, ammeter and wattmeter respectively. Let these meters read  $V_1$ ,  $I_0$  and  $W_0$  respectively.

The transformer under this test. The no load current at rated voltage is less than 1 percent of nominal current and hence the loss and drop that take place in primary



impedance  $r_1 + jx_{l1}$  due to the no load current  $I_0$  is negligible. The active component  $I_c$  of the no load current  $I_0$  represents the core losses and reactive current  $I_m$  is the current needed for the magnetization. The parameters measured already are in terms of the primary. Sometimes the Primary voltage required may be in kilo-Volts and it may not be feasible to apply nominal Voltage to primary from the point of safety to personnel and equipment. If the secondary Voltage is low; one can perform the test with LV side energized keeping the HV side opens circuited. In this case the parameters that are obtained are in terms of LV These having to be referred to HV side if we need the equivalent circuit referred to HV side.

#### 4. To study Short Circuit Test:

The purpose of this test is to determine the series branch parameters of the equivalent circuit of As the name suggests, in this test primary applied voltage, the current and power input are measured keeping the secondary terminals short circuited. Let these values be  $V_{sc}$ ,  $I_{sc}$  and  $W_{sc}$  respectively. The supply voltage required to circulate rated current through the transformer is usually very small and is of the order of a few percent of the nominal voltage. The excitation current which is only 1 percent or less even at rated voltage becomes negligibly small during this test and hence is neglected.

**This test should not be carried out continuously as the transformer may get damaged due to overheating.**



## 5. To study Load Regulation Test:

V1=secondary voltage in no-load condition

V2=same secondary voltage in full-load condition

Regulation in % =  $\{(V2-V1) \div V2\} \times 100 \%$

### Troubleshooting:

Check the input fuse if all of the secondary voltages is not available. Check same fuse if the power indicator is not glowing. For any further assistance contact the following address.

### Do's:

Keep the item always clean and dry. Clean with dry or moisten cloth with mild detergent. Keep the item covered when not in use.

### Don'ts:

Do not short-circuit the terminals of the same secondary winding continuously. Do not use fuses of higher current rating than the specified. Do not drop the item at any height more than 50mm.

For any other assistance please

Contact: +91 8420050140