

Chapter 10

CURRENT TRANSFORMER, ROTAX, TYPE P 4501/1

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LEADING PARTICULARS

Current transformer, Type P 4501/1	Ref. No. 5UB/6502
<i>Input (primary winding)</i>	27.5 amp., 400 c/s
<i>Output (secondary winding)</i>	0.018 amp., 8.6 volts a.c.
<i>Primary winding</i>	1 turn
<i>Secondary winding</i>	1,500 turns
<i>Secondary resistance</i>	91.0 to 98.0 ohms at 20 deg. C
<i>Temperature range</i>	-65 deg. C to +70 deg. C
<i>Altitude</i>	60,000 ft. (max)
Overall dimensions—	
<i>Height</i>	3.281 in.
<i>Width</i>	2.281 in.
<i>Depth (including fixing lugs)</i>	2.749 in.
<i>(excluding fixing lugs)</i>	1.937 in.
<i>Weight</i>	10 oz.

Introduction

1. This current transformer is designed for use with the 3-phase a.c. generator, Type 155 (Rotax N0306) and its associated transformer rectifier unit (U3301). The current transformer operates the relay (F6102) contained in the transformer unit, so as to provide earth leakage protection for the 3-phase, 3-wire system supplied by the generator. The current transformer will give satisfactory operation in air temperatures between -65 deg. C and +70 deg. C at altitudes up to 60,000 ft.

DESCRIPTION

2. The current transformer has a "C" type case which carries a through primary and a 1,500 turn secondary winding. The transformer core is secured to the underside of a bakelite block moulding, which is formed to house the input and output terminals, a detachable bakelite terminal cover being provided at the top. A ventilated sheet metal case is secured to the underside of the block moulding, and encloses the transformers. A mounting plate with two fixing holes is attached to the underside of the case.

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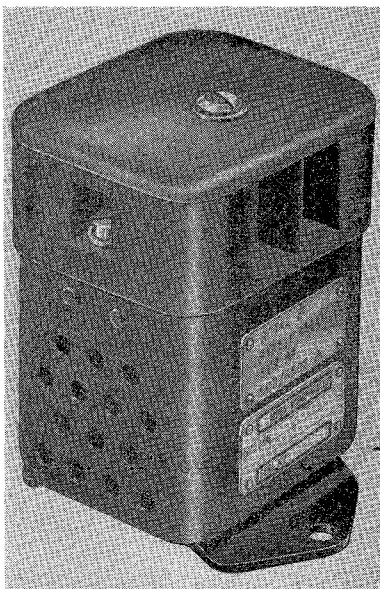


Fig. 1. Current transformer, Type P4501/1

Rating

3. The current transformer is continuously rated for loads up to 0.018 amp. at 8.6 volts, with primary current up to 27.5 amp., 400 c/s.

OPERATION

4. The primary of the current transformer is connected between the generator neutral or star point and "earth". The current transformer secondary is connected to the earth leakage relay via a bridge-connected rectifier contained in the relay case. The relay is set to operate at 0.016 amp., 6.6 volts d.c., which corresponds to a transformer output of 0.018 amp., 8.6 volts a.c. Earth leakage currents from the 3-phase, 3-wire system connected to and supplied by the generator, will return via the transformer primary to the generator neutral. Should the earth leakage current reach 27.5 amp., the current transformer will operate the relay. Operation of the relay will close a trip circuit and cause the contactor controlling the main rotor excitation circuit of the generator to open.

Electrical connections

5. Two input terminals, marked E.T. and N. respectively, are provided. These terminals, which comprise 2 B.A. studs with washers and nuts, are suitable for accepting Prenal cable lugs (Ref. No. 5X/6456).

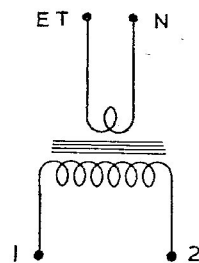


Fig. 2. Circuit diagram

6. Two output terminals 1 and 2, of similar construction but 6 B.A., are provided and are suitable for accepting Pren cable lugs (Ref. No. 5X/6546).

INSTALLATION

7. The unit may be mounted in any attitude. Two fixing holes each of 0.203 in. diameter are provided at 2.375 in. centres (see Leading Particulars for overall dimensions and weight of unit).

SERVICING

8. Assuming that the unit has been correctly installed and operated, servicing will normally be restricted to visual inspection for freedom from damage and security of connections. Should the operation of the transformer be suspect, it may be tested in accordance with the following paragraphs.

Testing

9. The resistance of the secondary winding should be between 91 and 98 ohms at 20 deg. C.

10. With an a.c. ammeter connected in series with a 600 ohm variable resistor across the secondary winding, and the primary connected to a 400 c/s supply, increase the primary current to 27.5 amp. Connect a suitable testmeter (100 volt a.c. scale) across the terminals of the secondary winding, and vary the resistor until the test meter reads 10 volts. The secondary current should be between 16.8 and 17.5 mA.

Insulation resistance test

11. The insulation resistance should be measured with a 500-volt insulation resistance tester between:—

- (1) Primary winding and the core.
- (2) Secondary winding and the core.
- (3) Primary and secondary windings.

The reading should not be less than 50,000 ohms.

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