

TELEPHONE UNIT UN10/11

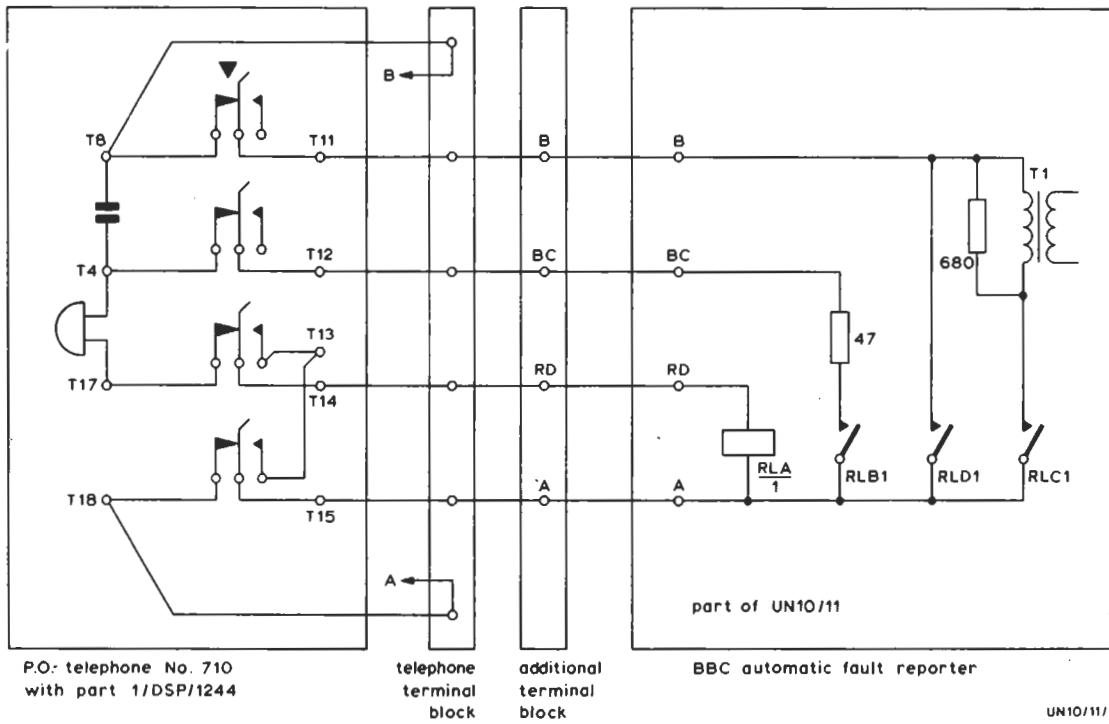


Fig. 1. Connections from the UN10/11 to a Post Office Telephone

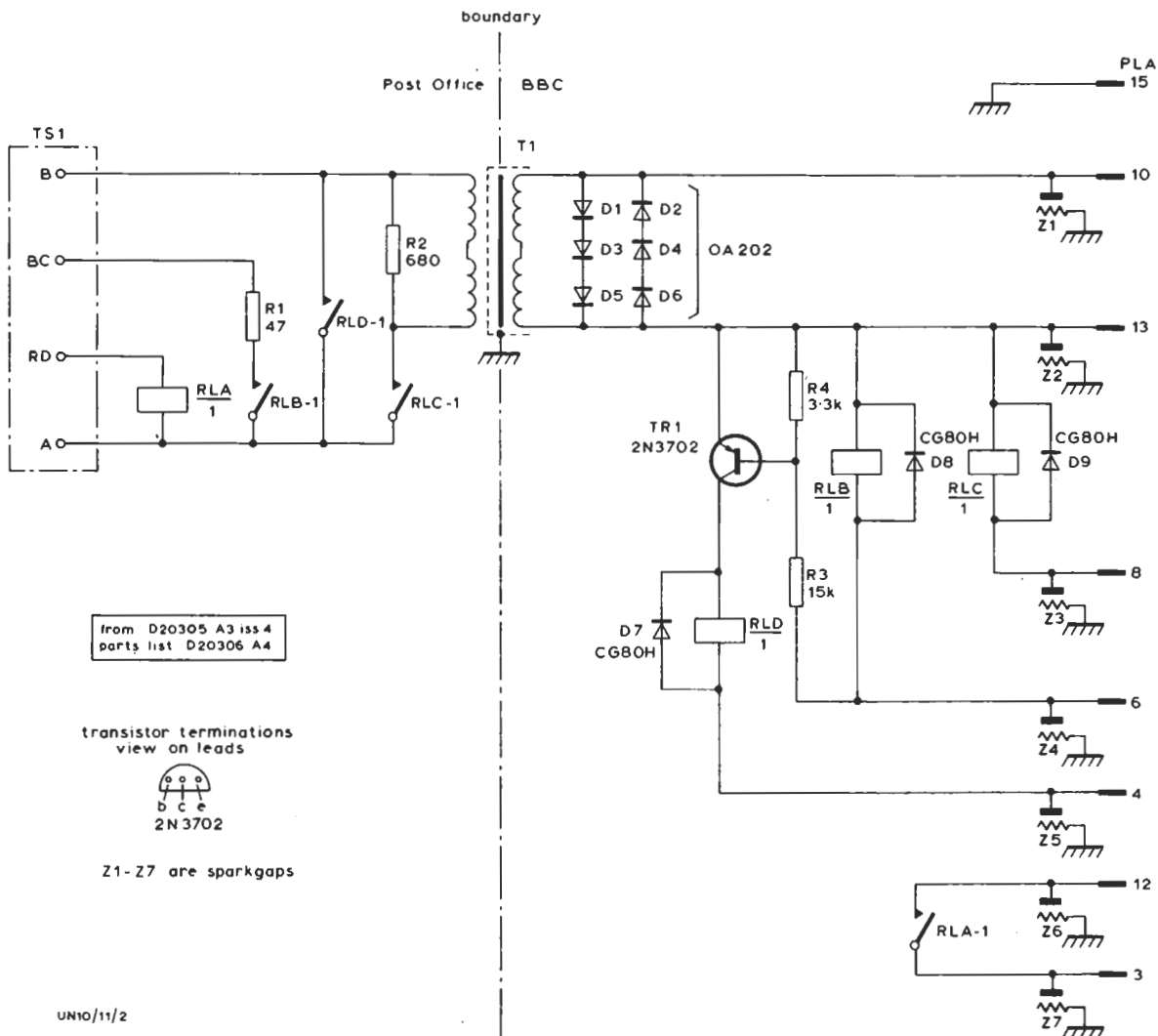


Fig. 2. Circuit of the UN10/11

### Introduction

The UN10/11 forms an interface between BBC equipment<sup>1</sup> and Post Office telephone equipment. The unit conforms to stringent requirements laid down by the Post Office and it must not be modified in any way without prior permission from them.

The unit is built on a printed wiring board which is mounted on a CH1/18C chassis with index pegs in positions 6 and 43.

### Interconnections (Fig. 1)

Fig. 1 shows the connections to a standard Post Office telephone instrument. The Post Office line is connected to points A and B of the telephone terminal block.

### Circuit Description (Fig. 2)

Fig. 2 is a circuit diagram of the UN10/11.

Transformer T1, which is designed to provide insulation up to 5 kV, is the boundary for Post Office and BBC responsibilities. Components, on the circuit diagram, shown to the left of the transformer are mounted on one side of the printed wiring board and those shown to the right of the transformer are mounted on the other side.

Each pin of plug PLA which carries a signal is fitted with a Post Office spark-gap which breaks down if the applied voltage exceeds 300.

Diodes D1-D6 limit the signal applied to transformer T1 to two volts p-p.

### Operation

#### Incoming Calls

An incoming 17-Hz ringing signal pulses relay RLA and causes contact RLA-1 to open and close across pins PLA3 and PLA12.

#### Outgoing Calls

If a number is being dialled automatically the following events take place:

- (a) Earth connections are applied to pins PLA4 and PLA6.
- (b) Relay RLB is energised and RLB-1 closes to prevent the bell in the local telephone instrument ringing.
- (c) Relay RLD is energised and RLD-1 closes and loops the telephone line to set the Post Office exchange equipment to receive dialling information.
- (d) After a short delay the earth connection to pin PLA4 is made and broken according to the number being dialled. Relay RLD is pulsed and

the exchange equipment accepts the pulses as a dialling signal.

- (e) After the dialling routine has been completed the earth connection is removed from pin PLA6. Relays RLB and RLD are de-energised.
- (f) At the same time as event (e), pin PLA8 is pulled down to earth potential.
- (g) Relay RLC is energised and RLC-1 connects transformer T1 to the telephone line.
- (h) Audio signals applied across pins PLA10 and 13 are sent to line.

### Test Schedule

#### Apparatus Required

Variable-frequency tone source TS/10  
12-volt power supplier  
Avometer Model 8

#### Test Procedure

1. Connect a 12-volt positive supply to pin PLA13, pin PLA15 being the negative terminal.
2. Check that there is an open circuit between points A and B on tag strip TS1.
3. Connect pin PLA8 to earth.
4. Check that the resistance between points A and B is 16 ohms.
5. Remove the earth connection from pin PLA8 and connect pin PLA4 to earth.
6. Check that an open circuit exists between points A and B.
7. Maintain the earth connection on pin PLA4 and connect pin PLA6 to earth.
8. Check that there is a short circuit between points A and B.
9. Remove the earth connection from pin PLA4.
10. Check that the resistance between points A and BC on tag strip TS1 is 47 ohms.
11. Remove the earth connection from pin PLA6.
12. Apply 20-Hz tone at +14 dB across terminals A and RD on terminal strip TS1.
13. Check that the armature of relay RLD is vibrating.
14. Connect pin PLA8 to earth.
15. Apply 1-kHz tone at +18 dB across pins PLA10 and 13.
16. Check that the voltage at points A and B on the terminal strip, measured on the 10-volts a.c. range of the Avometer, is between 1.9 and 2.3 volts.

### References to Typical Associated Equipment

1. Automatic Fault Reporter PA2M/7A.

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