



BR 947
JULY 1965

Controlled copy: 142

Specification for
A. C. Motor Operated Time Delay Relay

Controlled Copy Number	

British Railways Board

PROVISIONAL
B.R. SPECIFICATION NO. 947

FOR

A.C. MOTOR OPERATED TIME DELAY RELAY

1. General

This relay is intended for applications where an accurate measurement of elapsed time is required and where failure to time out is a right-side failure.

2. Method of Timing

An A.C. operated synchronous motor and gear train shall form the basis of measurement.

3. Operation

The motor unit shall be energised only if it is first proved that the timing means is at zero upon initiation of timing action.

The motor unit shall be de-energised at the end of the timing period alternatively the timing mechanism may be mechanically disconnected from the motor and the latter allowed to run continuously.

In the event that the motor circuit not be interrupted for the purpose stated above no damage shall be caused to it or any part of the timing mechanism within a period of 10 minutes; subsequent timing action shall not be impaired by this condition.

Should the output circuit provide an impulse only this must be of adequate duration under the most adverse circuit conditions to allow any relay to B.R. Specification 930 to pick up and stick up.

4. Working Voltages

24v D.C. $\pm$ 20%

110v 50 cps A.C. $\pm$ 10% on voltage

5. Timing

The timing shall be specified on the order and shall have a tolerance not exceeding $\pm$ 1% at nominal supply voltages and frequency. No adjustment is to be provided for the user.

The tolerance on timing shall not exceed $\pm$ 2.1/2% at the extremes of supply voltage permitted in any combination of same.

6. Terminals

Standard 2 BA terminals to B.S.442/1950 with non-rotatable stems are to be provided at the rear of the unit; alternatively a plug-in form of construction may be used.

Terminal markings shall be approved by the Chief S & T Engineer, BRB.

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7. Case

The assembly shall be contained entirely within one case capable of being sealed. No access shall be provided to the setting of the timing mechanism. All contacts shall be visible from the exterior.

8. Construction

The following clauses of B.R. Specification 930 shall apply in the sense of that the whole unit is to be regarded as the relay referred to in B.R. Specification 930.

Clauses 4.2, 4.4, 4.5, 4.6, 4.7

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11.2, 11.3, 11.4, 11.5, 11.7

The output circuit, if of the impulse type, shall be rated to withstand over the rated life of the relay the operation of one relay to B.R. Specification 930 of maximum power dissipation with a supply of 24 volts D.C. nominal.

If an internal stick relay is used to provide a sustained output this must comply with clauses 12-16 inclusive of B.R. Specification 930.

The unit is required for mounting on a B.R. standard relay rack. Therefore, the size of the unit should be arranged to occupy the space taken by up to three relays to B.R. Specification 930 and to pick up the mounting centres of the same where necessary.

Wiring is to be carried out such that no strain is applied to soldered connections and is to use wire to B.R. Specification 972, Type C, or wire of a type approved by British Railways Board.

No resistor of weight greater than 1/2 oz. shall be supported by its connections, and then only if the connections are axial with the resistor.

9. Type Tests

B.R. Specification 930, Clause 20 shall apply, taking the whole unit in the sense applying to the relay covered by B.R. Specification 930.

10. Acceptance Tests

The relay shall be subject to the following tests:

- (i) A timing test to check that the relay complies with Clause 5.
- (ii) As B.R. Specification 930, Clause 21.1 (ii), but reading "unit" in the sense applying to the relay covered by B.R. Specification 930.