

Norchard Clock Equipment

The clocks at Norchard are controlled by an ex GPO/BT pendulum master clock. This produces pulses every two seconds, every six seconds and every thirty seconds. A very much modified GMT34 relay set is used to interconnect the pendulum clock and the clock faces around the site.

We also have a radio controlled unit which can be switched in place of the pendulum clock. However since the time pulse transmitter moved from Rugby to Cumbria it has become unreliable and we now only use the pendulum clock.

We have two circuits feeding the slave clocks. The first circuit uses ordinary ex BT clocks which require a pulse of current every thirty seconds. These clocks are connected in series using the normal telephone cabling. This circuit connects the clocks close to the master equipment. The second circuit uses ex Underground clocks which require a permanent current which reverses direction every thirty seconds. These clocks are connected in parallel using the normal telephone cabling. This circuit connects the clocks which are remote from the master equipment.

The equipment normally runs with thirty second pulses, but should the clocks need adjustment, there are advance and retard switches provided in the exchange and shop to make the adjustments. Using advance, the clocks step every two seconds, using retard the clocks are stopped until time catches up with the clocks.

The clock system has grown over the years and the control equipment in particular now needs a rebuild as it is very difficult to follow the wiring should there be any fault. The rebuild is a job currently in the telecoms programme.

Circuit Description

When the clocks are pulsing normally, each thirty second pulse from the master clock operates relays AR and DR momentarily.

Relay DR has no function at Norchard.

AR1 operates relay AP momentarily.

AP1 applies a pulse to the series connected clocks.

AP2 operates relay A momentarily

Relay A causes relays B and C to change state.

On the first pulse, A1 operates relay C.

When relay A releases, Relay B operates in series with relay C, relay C holds via C1.

B2 and B3 change over the direction of the voltage feeding to the parallel clocks.

When relay A next pulses, relays B and C release.

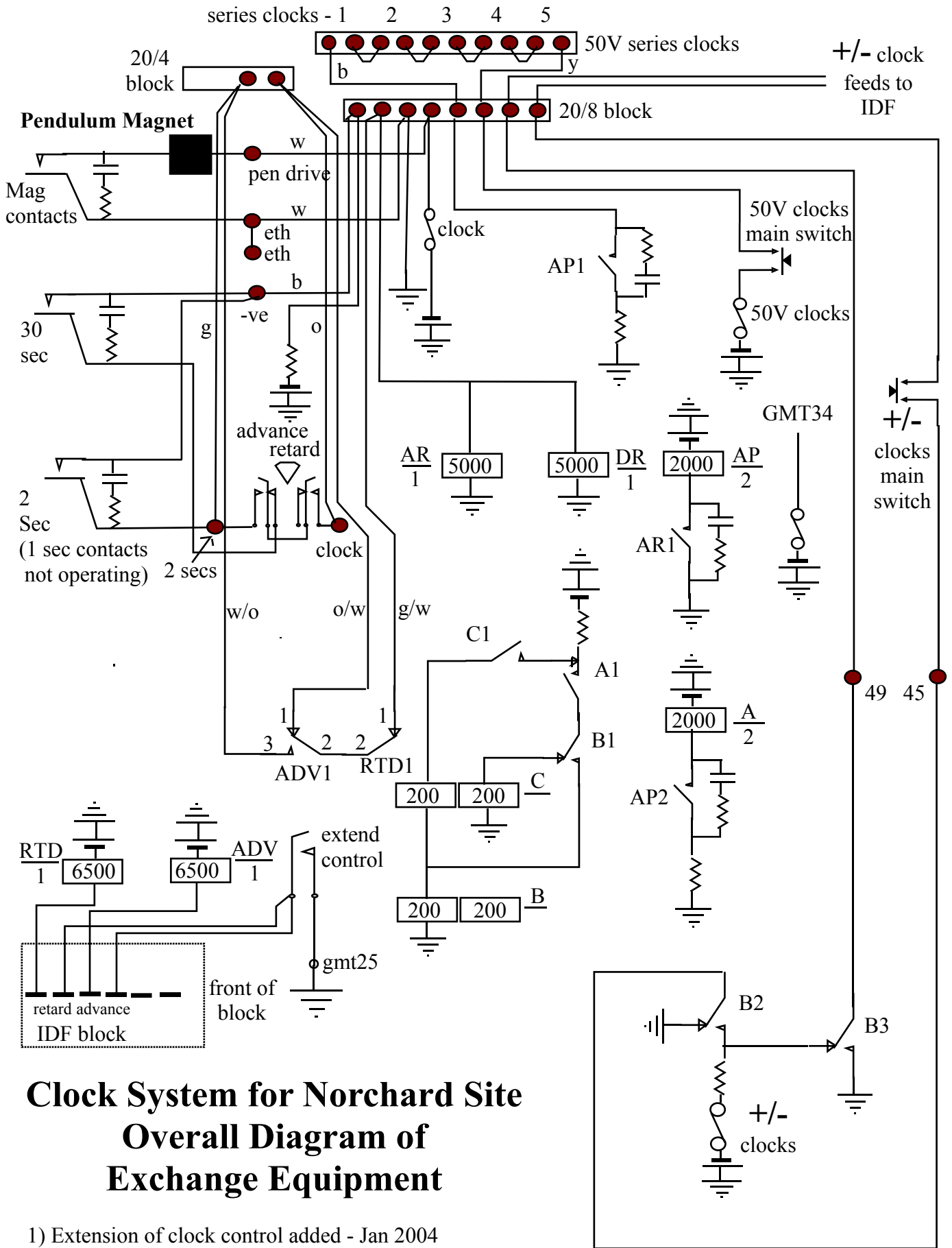
On the second pulse, A1 releases relay C, relay B holds via B1 and A1.

When relay A releases, A1 releases relay B.

B2 and B3 change back the direction of the voltage feeding the parallel clocks.

There are separate switches in both clock circuits which can isolate each circuit from the master clock. This facility is required should the two circuits get out of step as it allows either circuit to be stepped on or stopped independently.

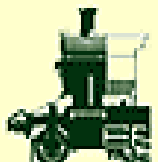




Clock System for Norchard Site Overall Diagram of Exchange Equipment

1) Extension of clock control added - Jan 2004

Dean Forest Railway



The master clock pulses can be changed from thirty second pulses to two second pulses or stopped by means of a changeover key in the master clock. The shop also has a changeover key but this key operates relay ADV or RTD as required. The contacts of these relays then alter the pulsing as needed. The shop key is only effective so long as the “extend control” key is operated at the master clock. Normally both the “extend control” and shop keys are kept locked. The shop can change the clocks, but needs to remove the lock on the shop key to do so.

Page provided by John Bathgate
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