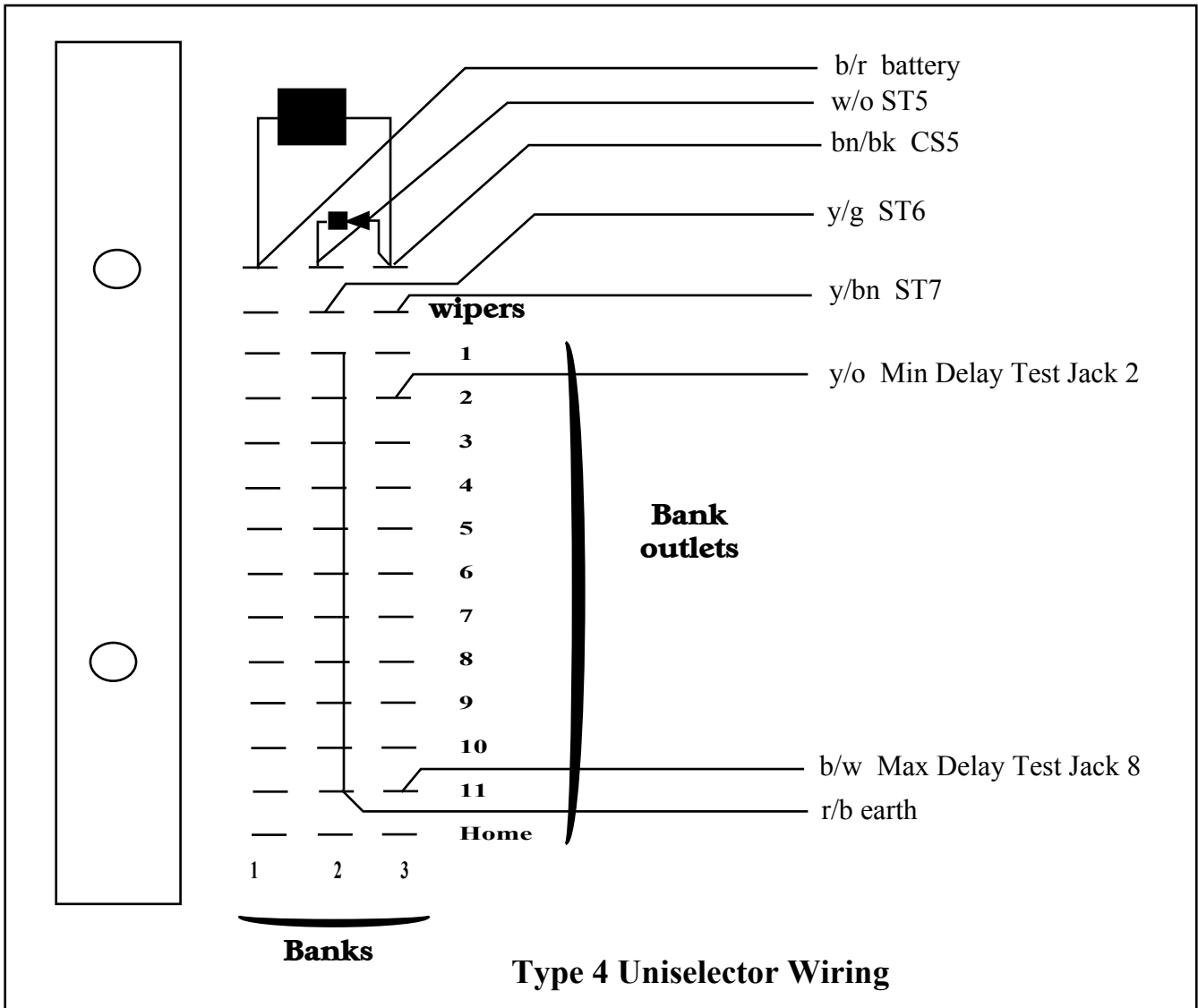



Norchard - Shop Display Relay Set		
DFR ex063a		
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Shop Display Relay Set - Diagram Notes (ex063a)

Introduction

The relay set accepts up to ten alarm earth conditions from the alarm reception relay set and displays them on a key and lamp unit (KLU) in the shop.

When an earth appears, or disappears, on an input wire, a capacitor charges or discharges to start a six minute timer. After the time period the new alarm condition appears on the KLU and the internal buzzer sounds to call attention to the condition. This delay period prevents the shop being called for momentary alarm problems eg changing a blown fuse, a blip on the mains etc.

The buzzer stops either when the alarm condition is acknowledged by the operation of a receive attention key, or by pressing the KLU micro switch. There is also a door contact which prevents the alarms showing and sounding at the KLU when the outer door is closed. This prevents the lamp flashing relays and sounder being operated for long periods when the shop is unattended.

Receipt of an Alarm Condition

When an alarm is received by the alarm reception relay set, it extends an earth to one of the inputs on the shop display relay set. This charges the 470 microfarad capacitor on that input. The charge current lasts around a second and during that time operates relay STA, STB or STC as appropriate. In turn relay ST is operated which holds via ST1 to the CS4 earth. Relays STA, STB or STC release when the charge current ceases.

ST4 connects the 30 second earth pulse to relay DA, which operates to the next pulse. When the pulse ceases, it removes the short circuit from relay DB which operates in series with relay DA. The first pulse is therefore absorbed by these relays.

DB1 extends the 30 second pulse to the uniselector magnet which, over the next five and a half minutes, steps to outlet eleven. Note that for testing purposes, the link in jacks 7 and 8 can be moved to 1 and 2 in order to speed up the timer.

On the eleventh step, relay CS operates. CS1 operates relay CSA. Its ten contacts extend the ten AL relay coils onto the input wires to see if any alarm conditions still exist. If the alarm has persisted then the appropriate AL relay operates and at AL2 holds to the alarm condition.

CS4 releases relay ST slowly due to the parallel capacitor. ST3 restores the uniselector to its home position and releases relay CS slowly. Relay CSA releases at CS1 and leaves the AL relays holding to any alarm earth on the input wires.

Displaying the Alarm in the Shop

Contact AL1 extends the FS relay to the LED in the KLU. FS operates over its two windings in series. FS1 operates relay FE which in turn operates FR. FR2 releases relay FE which in turn releases relay FR. In this way the relays interact and at FE1 produce low resistance pulses to flash the KLU LED. At the same time these low resistance pulses operate relay SN which at SN1 causes the buzzer to pulse.

Note that the 85 ohm earth produces a high light intensity from the LED, but the 5085 ohm earth still produces a low amount of light. However the flashing effect remains quite pronounced. Relay SN cannot hold to the 5085 ohm earth so the relay pulses to the 85 ohm earth. Relay FS holds over both windings or just the 85 ohm winding.

The buzzer can be stopped at any time by pressing the microswitch on the KLU. This operates the SO relay to the SN1 earth when it occurs. SO1 disconnects the buzzer circuit and SO2 holds the SO relay to the FS1 earth. The LED continues to flash.

When the alarm call is acknowledged by the shop staff, they operate the correct key. This disconnects the FS relay circuit from the LED battery. The LED dims and relay FS releases. Relay SN also releases and stops the buzzer if the microswitch has not been depressed previously. FE and FR stop interacting. SO releases if it has been operated.

The point has now been reached where a key is thrown on the KLU, the LED is dark, the buzzer is quiet and the relay set has restored apart from the particular AL relay which is holding to the alarm condition.

Removal of the Alarm Condition

When the alarm earth is removed from the input wire, the charge on the capacitor reoperates the STA, STB or STC relay via the AL winding. Relay AL releases. Relay ST operates as before and starts the timer circuit.

With the key thrown on the KLU nothing happens until the timer finally releases relay ST after around six minutes. The ST5 and AL5 earth lights the LED and operates relay SN continuously. The buzzer sounds continuously via SN1.

It is again possible to silence the buzzer by operating the microswitch and relay SO.

The shop staff can now restore the key which disconnects the LED And relay SN from the ST5 and AL5 earth.

At this point the KLU and relay set are restored to their normal condition.

Night Switch Off

The shop door has a set of contacts which are made while the door is closed, ie at night. These contacts operate relay DC. DC1 and DC2 remove the battery conditions which feed the KLU and buzzer.

Any incoming alarm condition will still operate the timer and then any appropriate AL relay but there will be no indication at the KLU or buzzer.

Opening the shop door will release relay DC, reconnect the battery conditions and start the lamp flashing and buzzer as required.