

## **Instructions for IRDASC-4 (3 aspect common negative)**

The IRDASC-4 combines block control of signals with built in infra red detection. As a train passes a signal that signal will change to red and each following IRDASC 4 will set its signal to the appropriate aspect ie yellow and green. An LED fixed to the circuit board indicates the operation of the infra red detection for set up purposes.

The IRDASC-4 is available in 2,3, and 4 aspect versions, these may be combined together when an oval is wired. For three aspect signalling at least three IRDASC4s are required (with 2 IRDASC4s only red and yellow would be indicated). When less signals are used or the line does not form a continuous oval a MAS Sequencer 4 is used to operate the last signal in the chain with the IRDASC 4s operating the other signals.

### **Position and fitting of IRDASC-4**

Each IRDASC 4 is positioned past the signal it controls. This position is important because the signal changes to red when the front of the train is detected.

The unit is screwed to the underside of the baseboard with the infra red emitter and detector located in a hole between the sleepers. It is easiest to install the units after the track is laid. Drill a small pilot hole between the sleepers. Fit an 8mm drill bit marked with tape for slightly less than the base board thickness. Drill from underneath the baseboard following the pilot hole. Cut or file the small amount of baseboard material left between the sleepers. Install the unit, and then fill the remainder of the hole with modelling material. Blue tack will hold the units in place temporarily.

When fitted to Z or N gauge track the gap between sleepers will be less than the diameter of the infra red detector and emitter. However, the modules work well provided they are adjusted to fit close to the sleepers. This positioning prevents reflections off the sleepers causing detection.

The modules will also operate on their side placed alongside the track. For thick baseboards and restricted space we can supply units with the emitter and detector fixed to wires up to 18 inches long.

## **Wiring**

### **Power**

IRDASC4s may be powered from either AC or DC a supply of 12 to 16volts. Connect the positive to all + terminals. Connect the negative to all 0V terminals. Check the LED on the IRDASC4 board only lights when rolling stock is over the detectors.

### **Signals**

Common negative LED signals are operated. The IRDASC 4 can also be supplied for signals with common positive wiring.

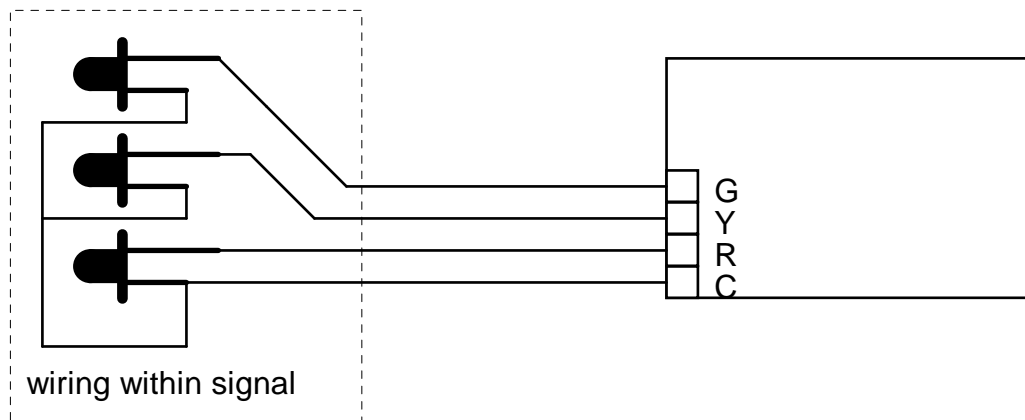
C=common

R=red

Y=yellow

G=green

The diagram shows a 3 aspect common negative signal (all the short legs of the LEDs (cathodes) connect to "C" common). The board has built in resistors for limiting the current through the LEDs so resistors supplied with the signals are not used.



### Interconnections between units

A single wire is used to send information about the current aspect of the signal back to the previous unit. Send "S" is wired back to receive "R" of the IRDASC controlling the previous signal. This wire sends back information about the aspect that the next signal is set at and if a train is in its block section. Only one send "S" can be connected to the "R" terminal. Although at junctions Send may be connected to two "R" terminals.

These are all the connections necessary for the signals to operate correctly use of the following terminals is optional.

### RR terminal

Use of this terminal is optional. It has three uses:

To set the signal to red when a train is running in the opposite direction to the signals.

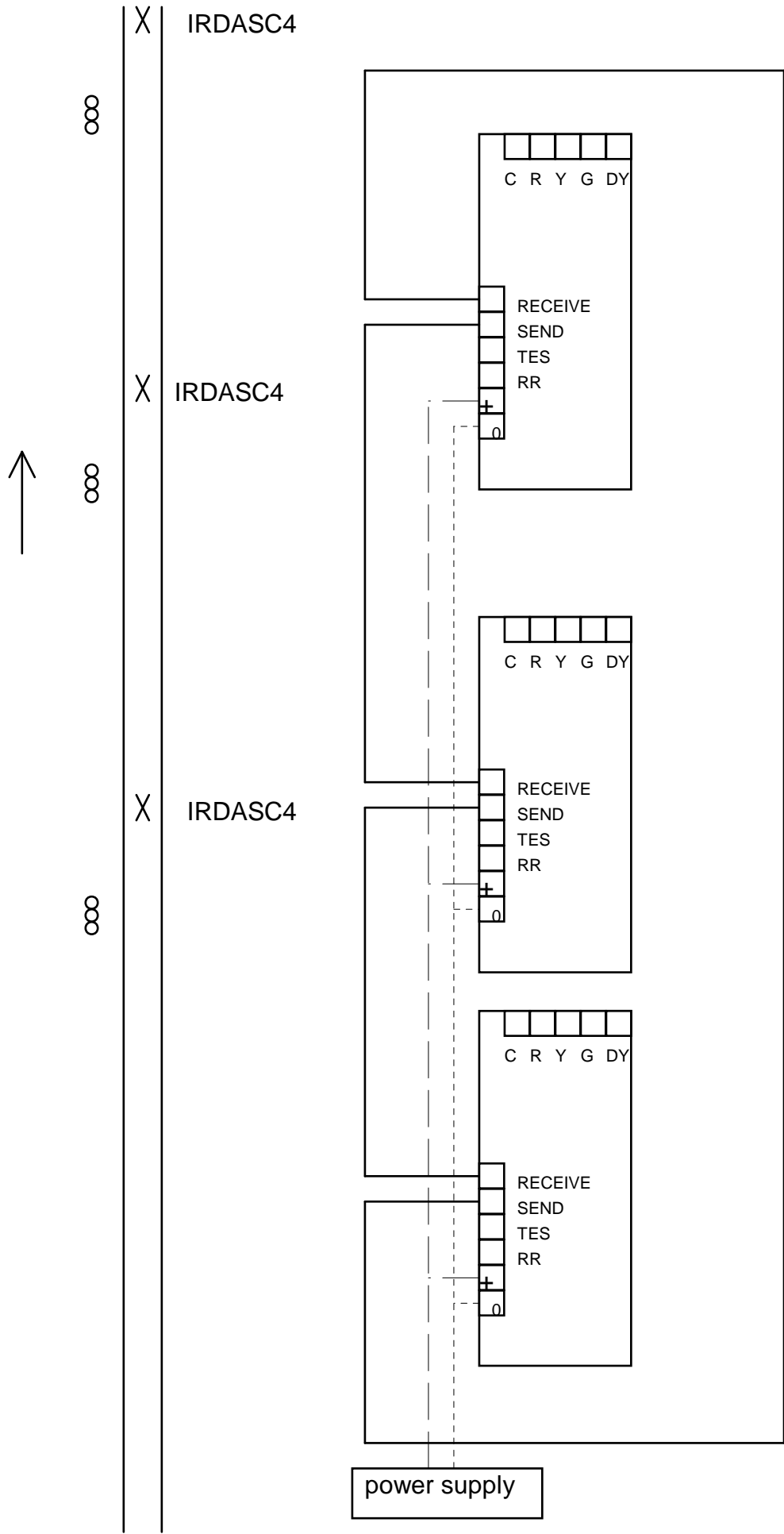
To force signal to red at a station

To force signals to red when a point ahead of the signal is adversely set

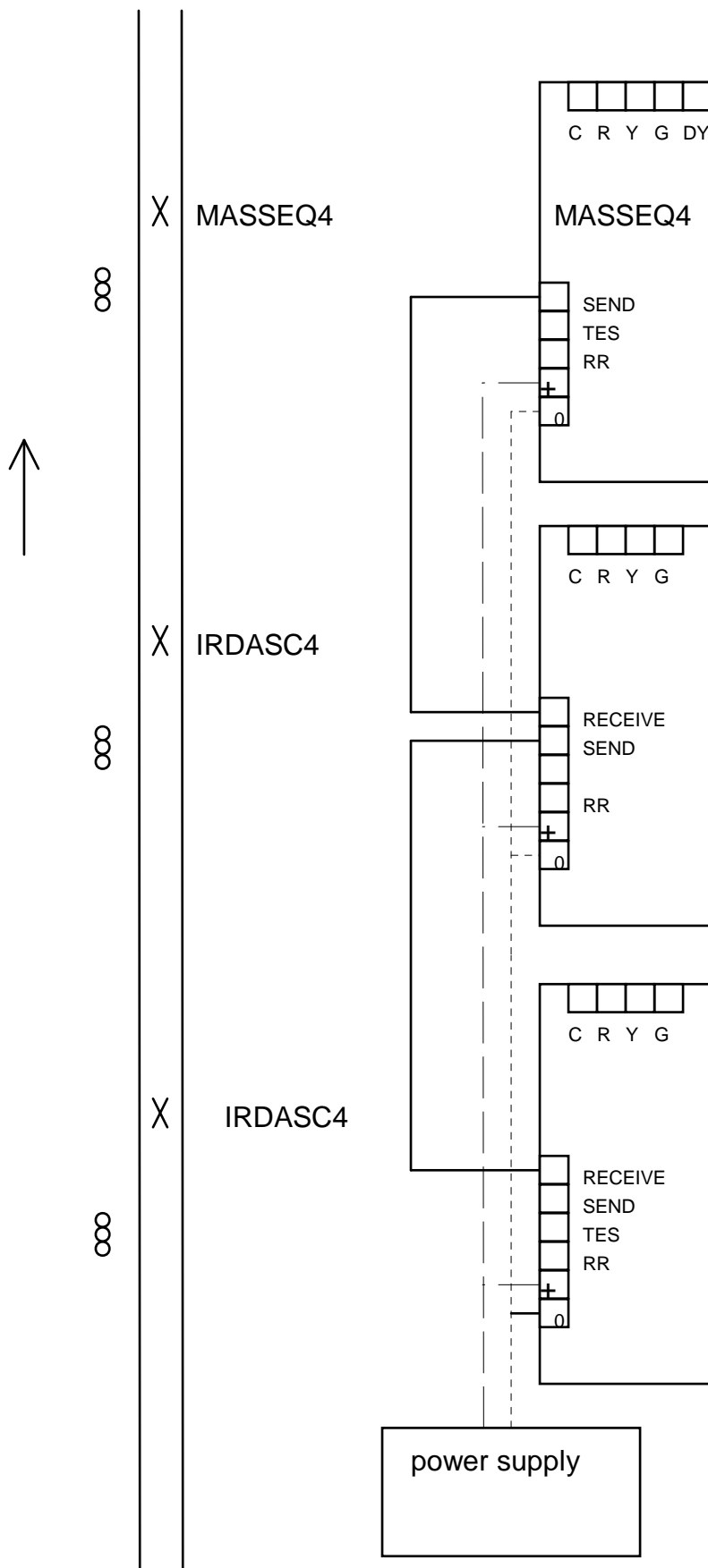
It is activated by connecting to the 0V (negative) terminal and sets the signal to red. This connection may be made with a switch or with the direction detector. One switch or direction detector may be connected to any number of "RR" terminals.

### Reset

When IRDASC-4s are used in an oval without a MAS-SEQUENCER-4 the signals get locked up if a train is removed from the oval. (for example the train goes into a siding)The reason is that the last signal passed will be at red. To reset this signal to green, 0 volts (o) is connected to the "receive" terminal. This connection may be made with a pushbutton switch or if the train diverts onto another line terminal 2 of an IRDOT-1 can be wired to the receive terminal. If it is required to connect a single push button switch to a number of "receive" terminals the wiring to each terminal needs to run via a diode.

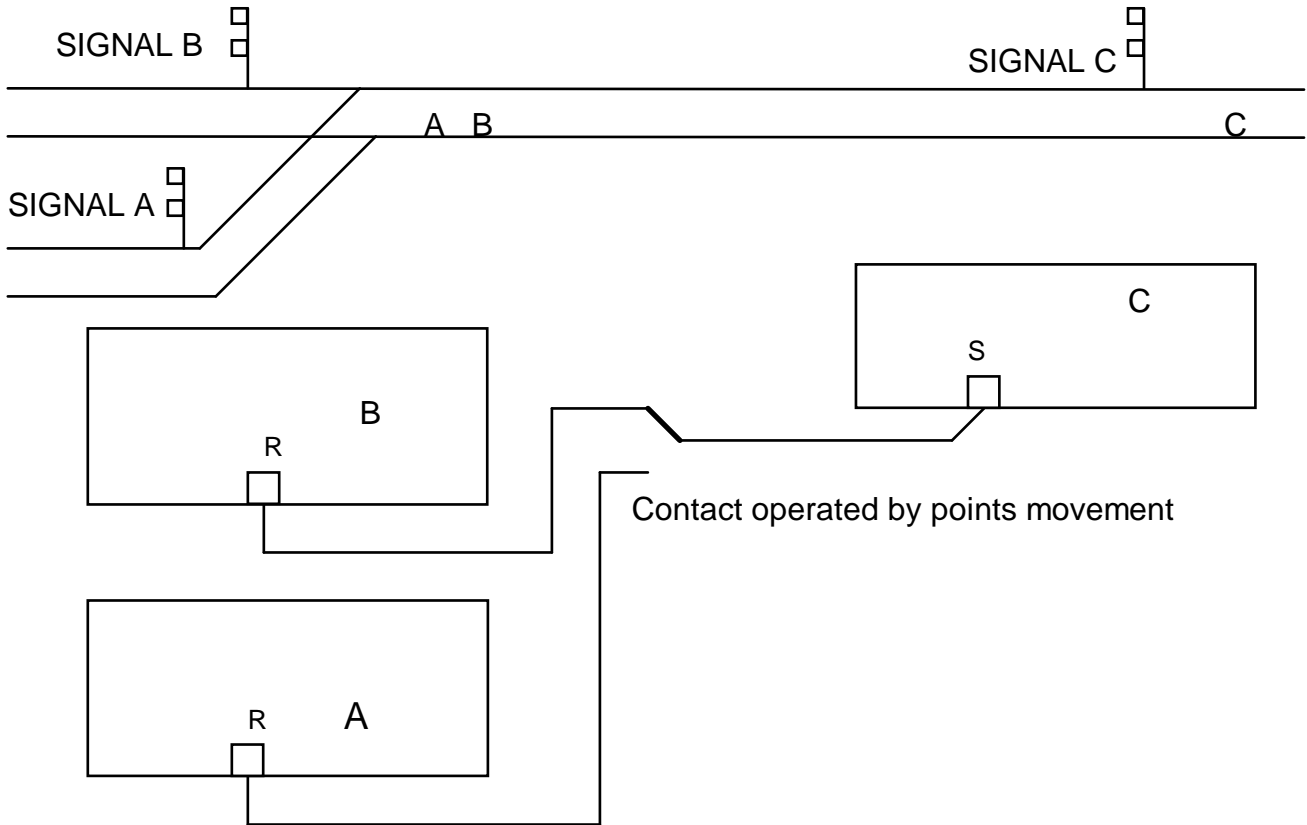


Wiring with a MASSEQ4 at the end of a chain of signals:



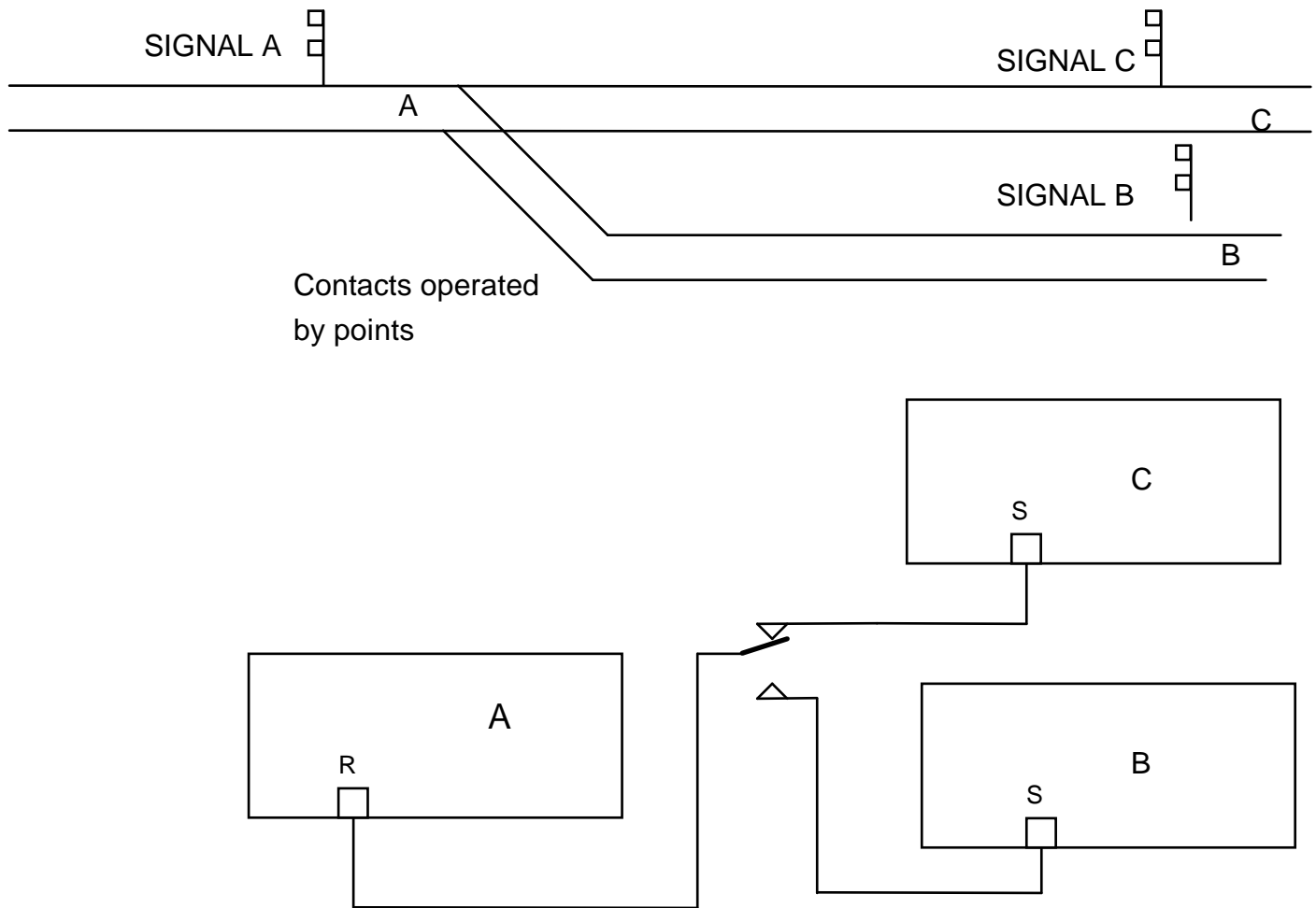
### Junction with two lines converging

The IRDASCs controlling signals "A" and "B" are positioned after the lines converge. Suppose the points are set for a train to travel from "B" to "C" then the point operated contact will feed IRDASC C's "S (send)" terminal to the "R" terminal of B. Meanwhile the "R" terminal of "A" will be open circuit causing IRDASC A to display a red aspect.



### Junction with tracks diverging

A changeover contact operated by the points movement is required. This feeds IRDASC A with the send "S" of whichever IRDASC the route is set for.



### Combining different aspect signals

IRDASC4s controlling signals with different numbers of aspects can be combined together. For example as a railway line approaches a terminus station there could be a 4 aspect then 3 aspect and finally 2 aspect signal. It would be incorrect for the signal immediately before the end of the line to be 4 aspect. Similarly it would be meaningless to have a 4 aspect signal before a 2 aspect one.

HEATHCOTE ELECTRONICS, 1 HAYDOCK CLOSE, CHEADLE, STAFFS, ST10 1UE  
 TEL/FAX 01538 756800  
 email [cah@heathcote-electronics.co.uk](mailto:cah@heathcote-electronics.co.uk)  
 web site [www.heathcote-electronics.co.uk](http://www.heathcote-electronics.co.uk)