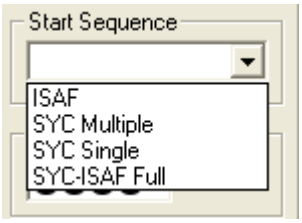
Yacht Racing Starting Signals

Download the installation file from
http://www.arundale.com/docs/ais/RacingSignals_setup_1.2.0.exe

After downloading click on RacingSignals_Setup_x.x.x.exe

Take all the defaults and run the program

You will be asked to select a starting Sequence



The "Splash" flag display will disappear after 2 seconds.

There are 4 sequences to choose from

SYC Single & SYC Multiple are the basic sequences that emulate the current starting system.
ISAF emulates the full ISAF sequence.
SYC-ISAF integrates ISAF with SYC and demonstrates some of the issues in doing this.

To start a sequence you must enter a start time.
If the start time is invalid, the displayed start time will turn red

The start time must be before the first warning signal time.

Up to the time of the first warning signal you can postpone the start time by clicking the Postpone Button

The Postpone signal will be displayed 

as well as the associated sound signal 

In addition if the PC has a sound card installed, volume turned up, and a speaker installed, you will hear the sound signal.

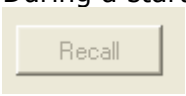
There are 4 buttons controlled by the start sequence, Postpone, Recall, General Recall and Finish.
The green button is the currently active button, which will be "clicked" if you press the <Enter> key, rather than using the mouse to click the button.

If you click any button a second time it will lower any associated signals. For example, the first

click of the Postpone will raise the Postpone flag making the associated sound signal  ,

the second click will lower the Postpone flag making  .

During a start sequence, if a signal is invalid, the associated button will be "grayed out"



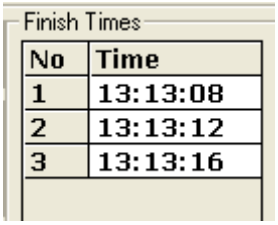
The Recall and General Recall buttons are enabled prior to the Class Start. If either of these are clicked before the Class Start, the signal is held pending the actual start time for the class.

The button will change to cyan 

, indicating a pending signal. Clicking the button a second time will cancel the request, providing it occurs before the class start.
Once the Class has started, the signal will continue being displayed until the button is clicked again or the signal "times out" as is defined in the race instructions.

After the last Class has started and Recalls have timed out, the Finish button is activated

Clicking the finish button or pressing <Enter> will create an entry in the Finishing table.



Once a start sequence is running, the only way to reset it is to reload the sequence again and entering a new start time.

Controller

The icon  is displayed when the PC is connected to the controller, or  when not connected.

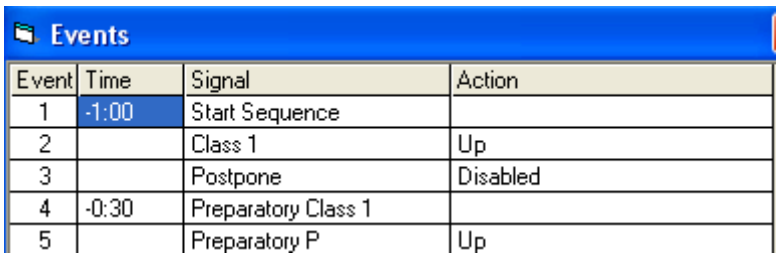
The icon  is displayed if a sound card has been found on the PC.

Testing

The SYC-ISAF and ISAF start sequences have all signals and their buttons displayed. Which buttons are actually displayed on the live version can be changed – I wished to make all possible options available for testing.

The 4 test sequences have their sequence speeded up by 10 times, 1 minute takes 6 seconds, otherwise checking a complete sequence would be too time consuming. The recall for the next class starting would be normally be enabled 40 seconds before the start, but will be enabled 4 seconds before the start (when testing), and will remain enabled for 6 seconds after the start (when testing) of the last class started. The RYA says a recall should be made within 5 seconds of the start this can be changed later in the live version.

There is currently an option to display the start sequences in time order by clicking 



You can click the time (-1.00 in the above example) to action the events that will occur 1 minute prior to the start time. Clicking the events out of order, or without having first reset the start time could cause confusing signals.

Changes V1.2.1
Minor changes to enabling/disabling/defaults on buttons
Events not always displayed correctly
Code to drive Controller (for Horn & Lights) added
Connected to Controller & Sound Card Icons added
Finish signals (if any) queued if multiple finishers in same second, recorded time may precede signal.
ISAF finish only makes sound signal for first finisher (RYA Race Management Guide)
ISAF Postpone flags changed to numeral pennants
SYC Class 3 flag changed to 707 (RYA Race Management Guide)

ToDo
Pausing the start sequence to allow a general recalled class to restart before the next class is started (an ISAF requirement). There are other minor issues on the timing of the recalls.

Postponement after class Warning signal & before Class start, Class start is reset to 1 minute after postponement signal is dropped.

More testing on Recalls

Please let me know of any issues (however small) - Neal Arundale 11/2/14

Reference

Recalls

Recalls are enabled a set interval before the current class start (currently 40/4 seconds – 40 when running at the correct speed and 4 seconds using the speeded up sequence).

Before the start
If the recall button is pressed, the recall will be actioned immediately after the start.

If the same recall button is pressed a second time, the pending recall will be cancelled.
If the other recall button is pressed before the start, the first recall will be cancelled and replaced with the second recall.

After the start
Once either recall button has been pressed the other recall button will be disabled.

If after an interval (currently 30/3 secs) from the start, a recall is not in progress, the recall buttons will be disabled. (RYA suggest no more than 5 seconds between the start and either recall being called).

If a recall is in progress the recall button pertaining to the recall, will remain enabled until either the recall button is pressed again (cancelling the recall) or after a set interval (currently 2 minutes/12 seconds – SYC SI's).

Postponements

The issue here is the normal use of postponements is to postpone the start for a class after the preparatory signal and before the start time. In effect it is a General Recall prior to the start. To do this the class – and all subsequent classes are postponed.

It is normally used when a wind shift results in a biased start line.

To implement this it is necessary for the program to implement a pause in the sequence AND restart the sequence at start of the class that was about to start.

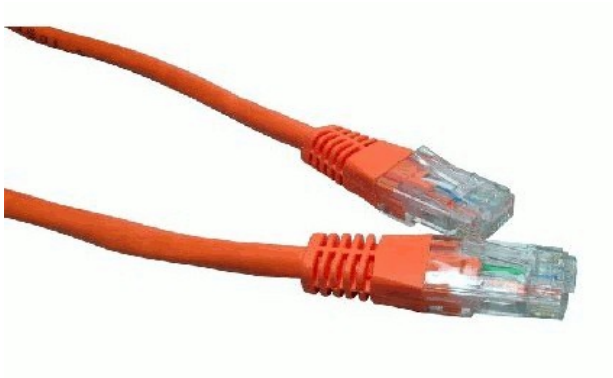
The new start recommences exactly 1 minute after the postpone signal has been dropped.

This makes the concept of "queueing" the Recall prior to the start redundant.

As this does not affect SYC, I have left the implementation of this.

Controller Set Up

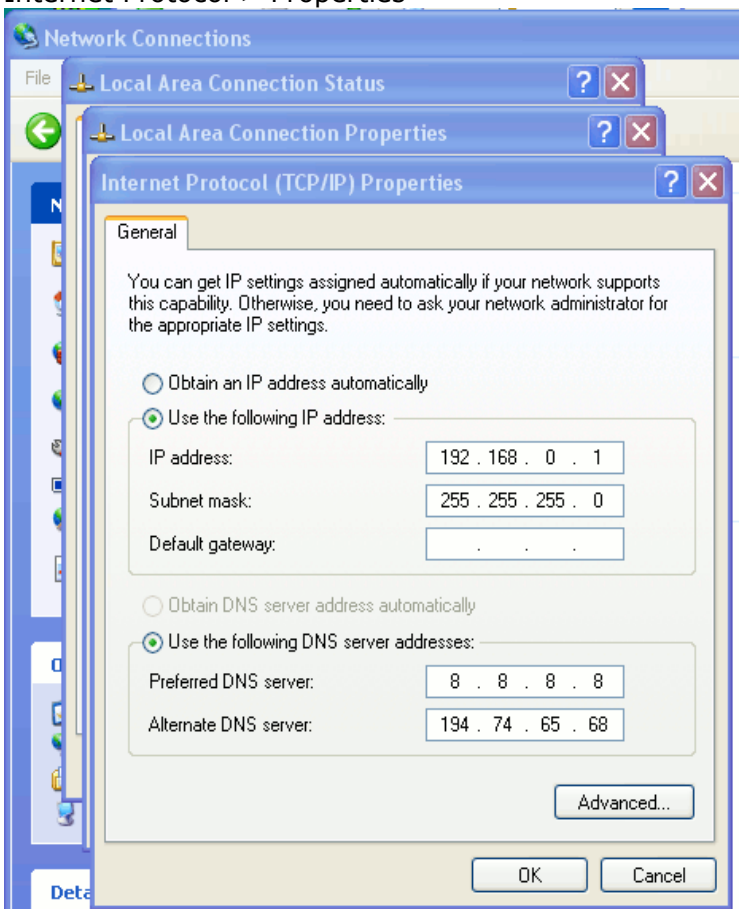
The Controller is connected to the PC with a RJ45 Network cable



The connection may be direct from the PC to the Controller, or may be via the local network using a hub or router.

If a direct connection

1. The RJ45 lead must be a crossover lead
2. The IP address of the controller will be 192.168.0.200
3. The PC must be configured to be on the same subnet as the controller
4. Set up the PC by using Control Panel > Network Connections > Local Area Connection > Properties > Internet Protocol > Properties



Click Use the following IP address and set up as above.
Leave the DNS server settings alone
Exit the Control Panel by clicking OK's

If via a hub, switch or router

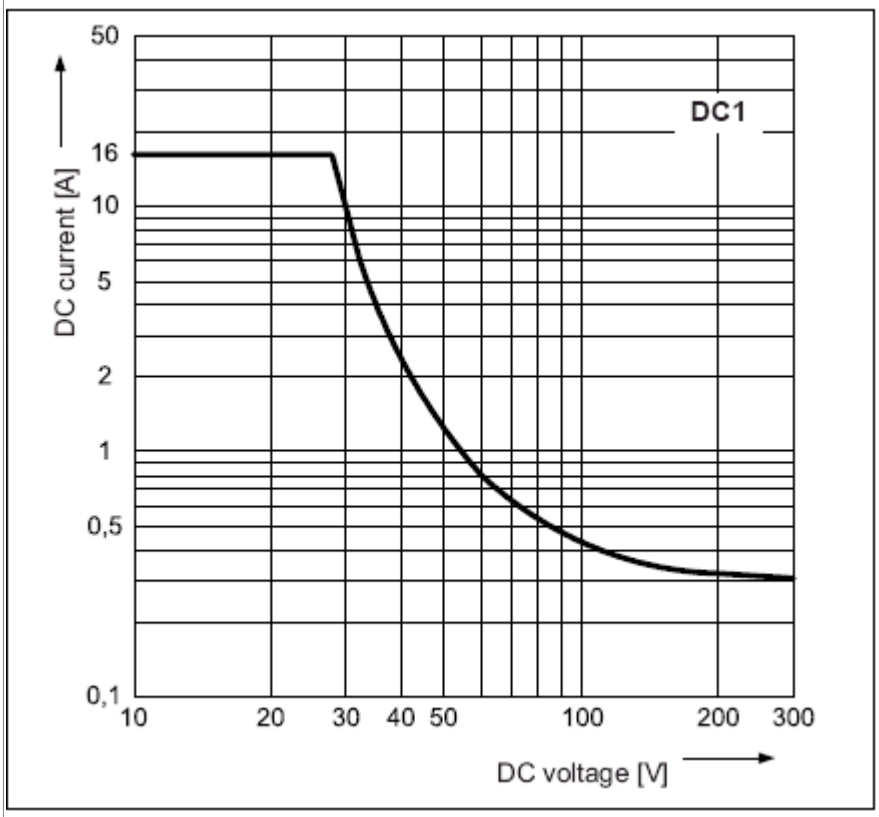
1. The RJ45 leads must be straight through leads
2. Connect the PC to the Hub, Switch or Router
3. Connect the Controller to the another port on the Hub, Switch or Router
4. If the local network has a DHCP server the controller will get its IP address from the DHCP server.

Controller Specification
The Controller communicates with the PC using TCP.
Host name is ETH008
Port is 17494
The Controller is powered from a 12vdc supply which can be regulated or unregulated. The DC input jack is 2.1mm with positive core polarity, DC supplies are required to supply at least 500mA at 12vdc
The Relay supplies should be externally fused.

Relay Power Rating
If the contact load voltage and current of the relay are in the region enclosed by the solid and dotted lines in the figure below, the relay can perform stable switching operation. If the relay is used at a voltage or current exceeding this region, the life of the contacts may be significantly shortened.

Load type	Typical applications	Rating
AC1	Non inductive or slightly inductive loads	16A @ 250V AC
AC15	Control of electromagnetic load (>72VA)	3A @ 120V AC 1.5A @ 240V AC
AC3	Control of motor	750W
DC1	Non inductive or slightly inductive loads	16A @ 24V DC
DC13	Control of electromagnetic loads	0.22A @ 120V DC 0.1A @ 250V DC

Max DC load capacity



If a 12v marine trumpet horn is connected, it will almost certainly require an auxiliary relay as they are an inductive load probably taking over 10 amps.