

**SYNCBLASTER BLACK BOX PROCESSOR**



**Overview**

The unit has been designed to cater for the different video input requirements for a range of equipment, e.g. monitors, video projectors and plasma screens etc. In particular, the way in which synchronising information needs to be presented to different equipment varies from one item to the next, as there is no one standard applicable to them all. Four switches are provided on the unit to enable you to select between the different processing modes that may be required. The unit also has three LED indicators, which provide useful information about the nature of the video signal being processed. The unit has been designed to be installed 'in line' with the input signal path of the display equipment and has SCART input and output connections. Depending upon the application, a specially wired SCART cable may be required.

**Product Description**

The unit has been designed to process the synchronising information on the GREEN signal of a RGB video input signal (and also on the Composite video input signal, if this is present). Two 5V logic-level separated sync pulses are also generated within the unit. These may be required by certain types of equipment. The polarity of these pulses can be inverted if required (SWITCH 1). These two generated pulses are Vertical (Field) syncs and Horizontal (Line) syncs respectively. The user can also switch the Horizontal (Line) sync signal to be a Mixed sync signal instead, if required (SWITCH 3).

**Processing**

The unit allows the user to process the video in a number of ways: Firstly the user can remove syncs from the GREEN video signal if required. Syncs are usually present on the GREEN input signal, but in some cases the presence of syncs here may prevent some video equipment from functioning properly. Thus, the unit provides for these to be removed if required (SWITCH 4). Conversely, in some cases, video equipment may require syncs to be present on the GREEN signal, but these are sometimes absent from GREEN, and may only be present on the Composite video signal instead. To cater for such cases, the user can add sync pulses to the GREEN signal if required (SWITCH 2), the unit deriving this sync information from the Composite signal in this case (assuming this is present).

**LED Indicators:**

The signal LED's on the unit provide useful information about the nature of the input video signals to the unit. Two of these LED's indicate the presence of the Composite signal and GREEN signal respectively. The third signal LED indicates the presence of syncs on the GREEN input video signal to the unit. It is assumed that sync pulses are contained within the Composite video signal whenever present. (Please note that the GREEN signal LED indicates the presence of picture video on the GREEN signal. In such cases where there is zero green picture content in the RGB input signal, this LED will not illuminate.) A fourth LED indicates the presence of power on the unit.

**Additional Information:**

No processing takes place on the following signals- RED, BLUE, LEFT AUDIO, RIGHT AUDIO, SCART PIN 8 SWITCH SIGNAL, SCART PIN 16 SWITCH SIGNAL. All of these signals pass through the unit unaffected. Although the Composite signal is used to derive synchronising pulses within the unit, this signal also passes through the unit without change.

All sync pulses are derived from the GREEN signal where these are present. Should these not be present, the sync pulses are derived from the Composite signal. This process takes place automatically within the unit.

The normal SCART input and output pin formats has been used in the design of this unit. However, on the output SCART, pins 10 and 12 have been used to output the 5V logic-level Vertical (Field) and Horizontal (Line)/Mixed synchronising pulses respectively. (The source impedance of these two pulse outputs is 470R)

## Switch Functions

Switch no	Function	Up (off)	Down (on)
B1	Sets the polarity of the logic-level separated synchronising output pulses	Positive going pulse outputs	Negative going pulse outputs
B2	Allows addition of syncs to the GREEN signal if required	Sync addition off	Sync addition active
<p>Note: If the 'GREEN syncs' LED indicates presence of syncs on the GREEN input signal (i.e. is ON), it is recommended that switch 2 be left in the UP position.</p>			
B3	Selects between Horizontal (Line) and Mixed sync on the logic-level separated synchronising output pulse	Horizontal (Line) syncs selected	Mixed syncs selected
B4	<i>Allows user to remove syncs from the GREEN signal if required</i>	Sync removed from green	Disables sync removal from green
<p>Note: If the 'GREEN syncs' LED does not indicate presence of syncs on the GREEN signal (i.e. is OFF), it is recommended that switch 4 be left in the DOWN position.</p>			
A1	Enables composite sync to be output on pin 19	Composite sync disabled on pin 19	Composite sync enabled on pin 19
A2	Enables composite video to be output on pin 19 (if present on input)	Composite video output disabled	Composite video output enabled

## Connection

The SyncBlaster Black Box uses SCART connections for input and output. For most instances, a fully wired SCART to SCART will suffice for the input, and the output cable will usually be a Scart to 15 pin HD or 5 x BNC/Phono cable. The SCART pin outs are listed below for your reference and depending upon the application and desired result it may be necessary to use a specially configured cable. Keene Electronics can provide a range of cables pre-configured for use with the SyncBlaster Black Box if required.



## SCART connections

Pin	Used for	Specification and notes
1	Audio out right	Line level audio
2	Audio in right	Line level audio
3	Audio out left	Line level audio
4	Ground	
5	Blue Ground	
6	Audio in left	Line level audio
7	Blue / Cb	75R video 0.7v peak / Cb in component video (usually!)
8	Auto switching control	12 volts AV mode / 8 volts AV mode widescreen ( if supported) 0 volts RF
9	Green Ground	
10	Comms data 2 / V sync	SyncBlaster Vertical TTL sync / Data comms 2 on some VCRs and STBs
11	Green / Y	
12	Comms data 1 / H sync	SyncBlaster Horizontal TTL sync /Data comms 1 on some VCRs and STBs
13	Red Ground	
14	Comms ground	
15	Red / Cr / Chrominance	Red in RGB mode / Cr in component and Chroma in S video mode
16	RGB control / blanking	If greater than 2v it switches TV to RGB mode. 0v normal. Can be a blanking (sync) signal on older equipment
17	Ground Video	Ground
18	Ground for RGB switching	Ground
19	Composite out / luminance out	1 volt peak (inc sync) video out / Luminance in S video mode
20	Composite in Luminance in	1 volt peak (inc sync) video in / Luminance in S video mode
21	Ground screen (outer shell)	Outer shell of scart and outer screen of cable

## Troubleshooting

Switch on the playback device and monitor. If all is well you should see the picture correctly displayed and can assume that everything is working correctly. If there is no display or a distorted picture please try the following;

### No display

Verify that the SB Box is receiving an RGB signal (via the LED indication). If it is not, double check that the playback device is definitely set to give RGB out at the TV scart. Most digi-boxes default to a composite output and usually require the RGB option to be selected from the set-up menu. (For example on widescreen display with a UK digi-satellite box it would be SERVICES - SYSTEM SETUP - PICTURE SETTINGS - PICTURE FORMAT = 16:9 - SCART CONTROL = ON - VIDEO OUTPUT = RGB). If you're using BNC connections double-check that the plugs are into the correct sockets.

If using a PC style monitor check that it is not designed solely for computer use i.e. the monitor must support a horizontal scan rate of 15.625KHz. Most projectors, plasma and LCD panels will do this whereas most standard CRT type monitors will not. Also, some screens may support this frequency only via the BNC/Phono connections whilst supporting only higher frequencies through the 15 pin HD plug.

### Distorted picture

Check that the playback device is set to RGB and not component video output. Remove all other AV connectors from the playback device. If this corrects the problem replace them one at a time until you identify the culprit.

For further assistance please Email [support@keene.co.uk](mailto:support@keene.co.uk)

## Syncblaster Black Box Pre-configured Cable options

		1.5m	5.0m
SBB output cables	scart to 4 BNC TTL sync	SBB12	SBB14
	scart to 4 BNC comp sync	SBB22	SBB24
	scart to 3 BNC sync on green	SBB32	SBB34
	scart to 5 BNC	SBB42	SBB44
	scart to 4 phono TTL sync	SBB52	SBB54
	scart to 4 phono comp sync	SBB62	SBB64
	scart to 3 phono sync on green	SBB72	SBB74
	scart to 5 phono	SBB82	SBB84
	scart to SVGA sync on green	SBB92	SBB94
SBB input cables	3 BNC to scart sync on green	SBB32	SBB34
	4 BNC to scart comp sync	SBB22A	SBB24
	5 BNC to scart	SBB42	SBB44
	3 phono to scart sync on green	SBB72	SBB74
	4 phono to scart comp sync	SBB62A	SBB64
	5 phono to scart	SBB82	SBB84

## Specifications

Power requirements:	12V DC centre positive (2.1mm) at 200mA or higher, UK mains adaptor supplied.
Dimensions:	90mm (w) x 76mm (d) x 44mm (h)
Weight:	170g (exc. cables & supply)

# Quick Setup Guide

## For common applications

### **DVD Player / Set top box with scart RGB (RGBs) output to Plasma TV/Projector with RGBHV input**

Use a fully wired scart to scart for the input and ensure the player is set to provide RGB output. Set the SyncBlaster Black Box dip switches as follows;

A1=off

A2=off

B1=on

B2=off

B3=off

B4=off

Connect the Black Box output to the Plasma/Projector using a scart to 5 x BNC (SBB42 or SBB44) or 5 x RCA phono (SBB82 or SBB84) cable.

### **Playstation with scart RGsB output to Plasma TV/Projector with RGBHV input**

Use a fully wired scart to scart for the input and ensure the player is set to provide RGB output. Set the SyncBlaster Black Box dip switches as follows;

A1=off

A2=off

B1=on

B2=off

B3=off

B4=off

Connect the Black Box output to the Plasma/Projector using a scart to 5 x BNC (SBB42 or SBB44) or 5 x RCA phono (SBB82 or SBB84) cable.

### **DVD Player / Set top box with scart RGB (RGBs) output to Projector with RGsB input**

Use a fully wired scart to scart for the input and ensure the player is set to provide RGB output. Set the SyncBlaster Black Box dip switches as follows;

A1=off

A2=off

B1=on

B2=on

B3=on

B4=on

Connect the Black Box output to the Plasma/Projector using a scart to 3 x BNC (SBB32 or SBB34) or 3 x RCA phono (SBB72 or SBB74) cable.

*RGB terminology and general help can be found at <http://www.syncblaster.com>*