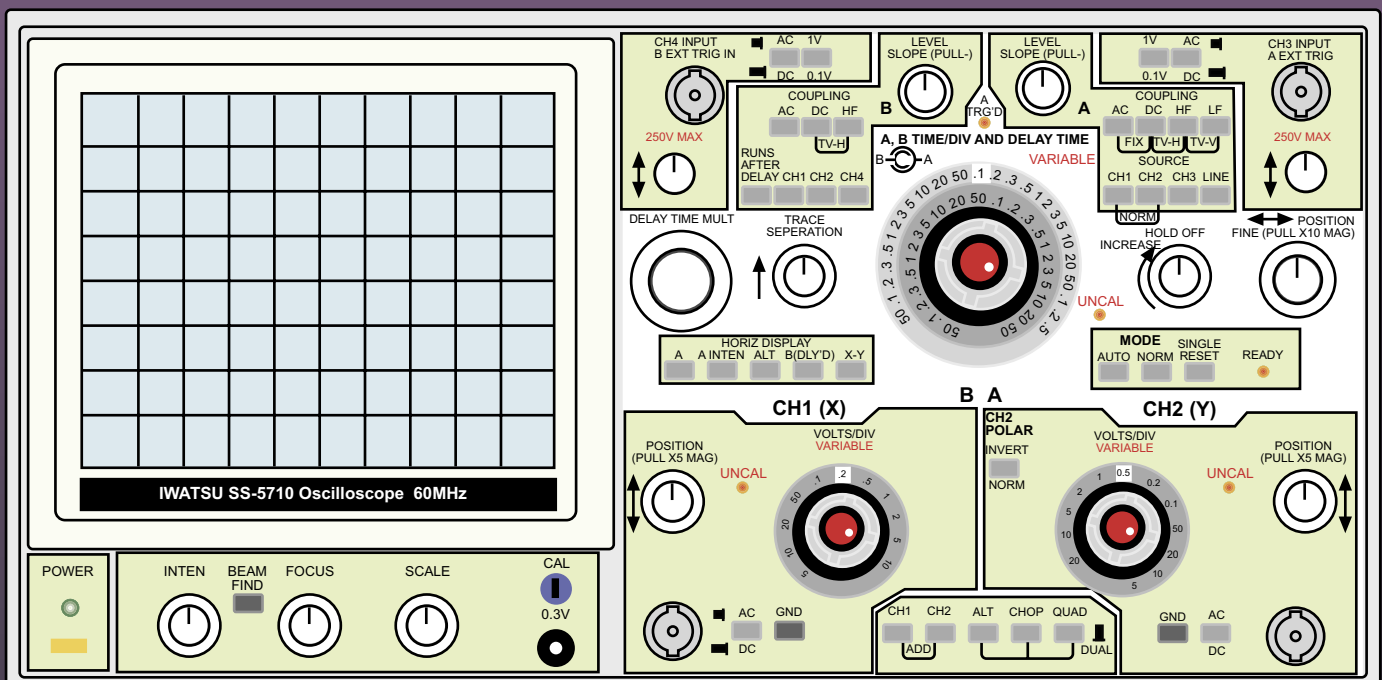


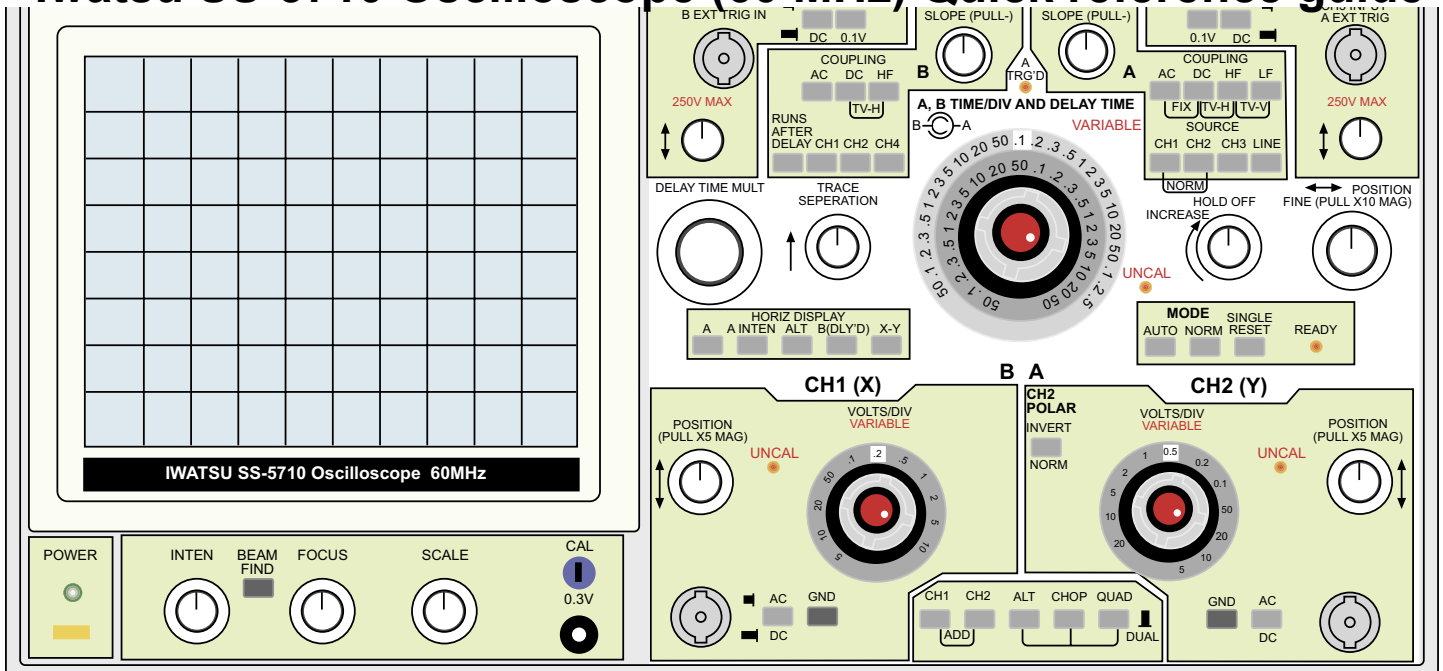
# Self Help Guides



# Iwatsu SS5710 Oscilloscope

Produced by John Wilmot

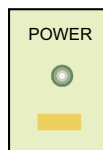
## Iwatsu SS-5710 Oscilloscope (60 MHz) Quick reference guide



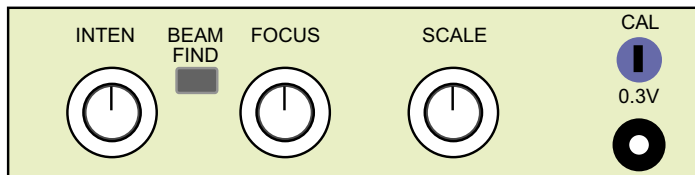
### CONTROLS

#### Power

Turns the oscilloscope on and off as indicated by the green LED.



#### DISPLAY SETTINGS



#### INTENSITY

Check that this control is not turned down to minimum making the trace invisible. Do not set the brightness too high as this could damage the cathode ray tube.

#### FOCUS

This focuses the image on the screen and is adjusted to get the display as sharp as possible.

#### BEAM FIND

This compresses the display to help you to find the trace if it has gone off the top or bottom of the screen.

#### SCALE

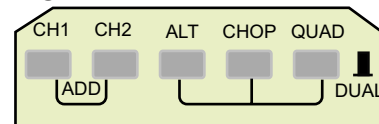
This adjusts the graticule illumination to make it easier to see the scale divisions.

#### CAL

Provides a square wave of approx. 0.3V peak-to-peak at 1 kHz. Used for checking oscilloscope probes and for compensating a probe on the x10 setting.

### VERTICAL SETTINGS

#### MODE



#### Ch 1 - Ch2/ADD

This selects whether channel 1 or channel 2 is displayed, if both switches are pressed in together the ADD function is selected.

The ADD function adds the two inputs, displaying the sum of (Ch1 + Ch2). It can also be useful in conjunction with Ch2 inverted to display the difference of (Ch1 - Ch2).

#### ALT/CHOP

The ALT and CHOP positions select alternate mode or chop mode when displaying both Ch1 and Ch2. It is normally best to use alternate mode except at low time base speeds where flicker is a problem and chop mode is preferable.

#### ALT

The ALT (alternate) mode obtains a dual trace by switching channels alternately between sweeps.

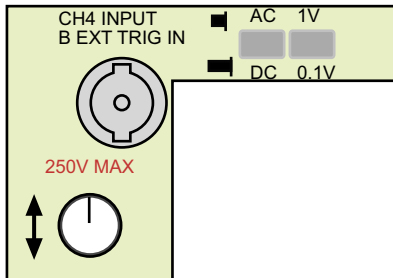
#### CHOP

An electronic switch selects the output of one channel and then the other at a high-frequency rate. As the sweep frequency becomes lower compared to the chopping frequency, the display will show apparently continuous traces.

## QUAD - DUAL

This is mainly switched to DUAL. When Quad is selected, channels 3 and 4 can be used and display 4 traces at once.

### CHANNEL 3



#### AC/DC

Selects AC coupling when in and DC coupling when out.

#### 1V/0.1V

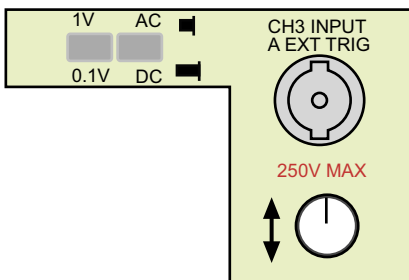
Selects 0.1V.DIV when out and 1V/DIV when in.

#### VERTICAL SHIFT

The knob below the input connector shifts the trace for channel 3 vertically.

### CHANNEL 4

These switches operate as channel 3.



## INPUT ADJUSTMENTS

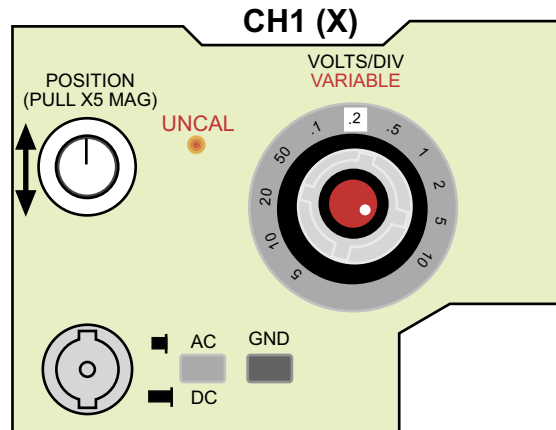
### CH2 POLAR (INVERT/NORM)

When this switch is out the signal is normal, when the switch is in then the signal will be inverted.

### INPUT COUPLING SWITCHES (CH1 AND CH2)

Switch to GND (ground) first and adjust Y Position to set the trace to a suitable point such as 2, 4 or 6 divisions from the bottom of the screen. Then switch to DC and do not adjust the Y position control again. You then know where 0 volts is in relation to your waveform.

The only time the AC input coupling should be used is to observe an AC signal which has a relatively large DC voltage superimposed on it.



## CH 1 & 2 VOLTS/DIV SWITCHES

This adjusts the sensitivity of the vertical input.

Make sure that this control is not set too far clockwise otherwise the trace may be much too large to fit the screen or it may be deflected completely off the screen.

## VARIABLE "Y" GAIN

Make sure that these controls are set to the CAL (calibrated) position, that is, fully clockwise where there is a small click stop and the word "CAL" is horizontal. Otherwise the volts/division switches are not calibrated and measurements of voltage are not valid.

## Y POSITION (CH 1 AND CH 2)

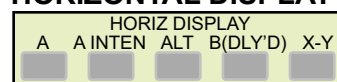
Sometimes known as "Y shift". Set to mid position initially otherwise the trace may be shifted off the top or bottom of the screen.

## TIMES 5 MAG "Y" MAGNIFIER (PULL)

Make sure that the variable "Y" gain controls are pushed in. Pulling out these controls multiplies the volts/division setting by 5 and reduces the bandwidth to 5 MHz. They are seldom used, unless you need higher sensitivity than 5 mV/div.

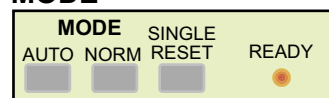
## HORIZONTAL SETTINGS

### HORIZONTAL DISPLAY



Make sure this switch is set to A for normal use. The other functions are described later.

## MODE



## AUTO

This control should normally be set to AUTO triggering mode. In auto mode, there is always a trace.



## NORM

The NORM setting selects “normal” triggering. In normal mode, there is no trace unless the time base is triggered (light is on).

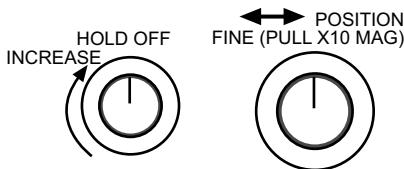
Normal triggering is useful for low frequency signals (below 30 Hz for example) where the time base does not trigger correctly in auto mode. To trigger the time base in normal mode, there must be an input signal and controls and must be set correctly.

## SINGLE/RESET

The Single/reset setting selects single sweep mode where the time base only triggers once until reset manually by pressing switch. This mode is not normally used.

## TIME BASE CONTROLS

### HORIZONTAL POSITION (COARSE AND FINE)

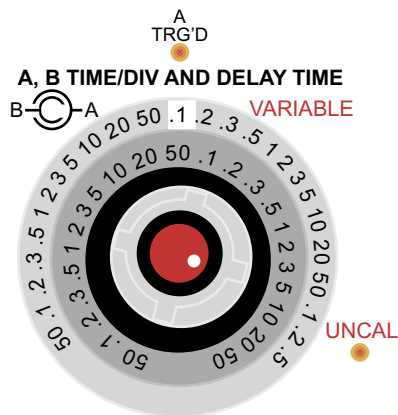


Sometimes known as “X shift”. Set to mid position initially otherwise the trace may be shifted off the screen to the left or right.

The outer knob is the course control and the inner knob fine. If the inner knob is pulled out then the trace is expanded by a factor of 5.

## HOLD OFF

This control should normally be set fully anti-clockwise to the MIN setting. Turning it clockwise increases the time between sweeps (hold off) which can improve triggering on complex waveforms but it also increases flicker at low time base speeds.



## TIME/DIV

This large rotary switch(es) sets the TIME/DIV for the A and B time bases. The outer knob controls the A time base and the inner switch the B time base.

## A TIME BASE

Make sure that the time base speed is not set too fast (too far clockwise) otherwise you may only see a very small part of the waveform.

## VARIABLE

Make sure that this control is set to the CAL (calibrated) position, that is, fully clockwise where there is a small click stop and the word “CAL” is horizontal.

Otherwise the time base (SEC/DIV) switch is not calibrated and measurements of time periods are not valid.

## B TIME BASE

This operates in the same manner, its use will be described later.

## TRIGGERING (A) COUPLING

### AC

This is normally used and is suitable for most purposes.

### DC

Usually only required at very low frequencies.

### LF REJ

Rejects low frequency signals (below approx. 30 kHz) so that the time base will not trigger on signals such as 50 Hz mains hum.

### HF REJ

Rejects high frequency signals (above approx. 30 kHz) so that the time base will not trigger on high frequency signals or high frequency noise.

### Slope +/-

When the Level knob/switch is in the pushed in position, the time base triggers on a rising edge of the input signal. When the Level knob/switch is in the pulled out position, the time base triggers on a falling edge of the input signal. For many applications, it does not matter which way this switch is set.

## LEVEL

This is only used in NORM trigger mode. It sets the voltage level at which the time base triggers.

TRIG'D indicator. When the 'scope is displaying a waveform, this LED should be on, showing that the time base is triggered. If it is not on, there will still be a trace (if control is in AUTO mode) but the waveform will not stand still.

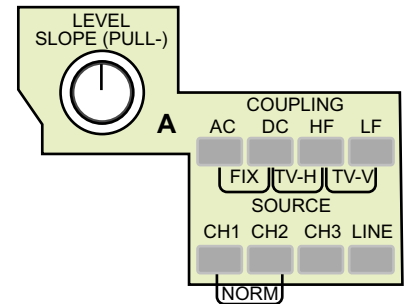
## SOURCE

The SOURCE switch selects whether the Ch1 Ch2 or Ch3 input triggers the time base. This works both in dual trace and in single trace modes.

If only Ch1 input is being used, the source should be set to trigger on Ch1, otherwise the time base does not trigger.

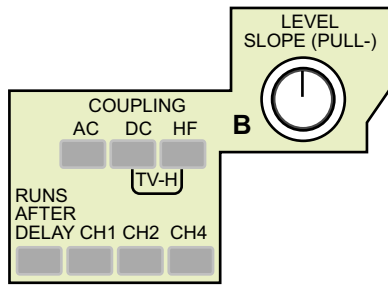
## LINE

This triggers on the 50 Hz AC mains (line). It is not used except for observing signals which are derived from the AC mains supply.



## TIME BASE B

COUPLING, SOURCE, LEVEL, and SLOPE controls. These serve the same function as those same controls in the A time-base section of the scope.



The only difference is:

### RUNS AFTER DELAY

When this mode is selected the B time base runs after the delay set by the A time base as described below.

## HORIZ DISPLAY



### A

Selects the A time base and this is the normal mode of operation.

### A INTEN

In this setting, The A time base is used but a portion of the trace is intensified for the duration of the B time base.



The INTENSITY control may have to be adjusted in order to see it properly.

When the RUN AFTER DELAY is selected for the source, the length of time before the intensified part of the trace appears is a function of the B time base setting multiplied by the setting on the DELAY TIME MULTIPLIER.

This is normally in the form of a 10-turn potentiometer with a calibrated vernier.

### B DLY'D

This displays the intensified part of the waveform as set up under A INTEN.



The length of the intensified part of the trace is set by the B time base.

The purpose of this is to enable close-up examination of an event in a periodic waveform.

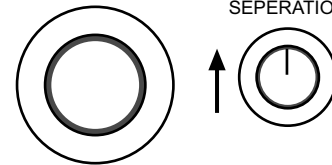
A good example of this is to pick out an individual line of an analogue TV signal.

The first time base is triggered at field rate and the second time base set to line rate. The multiplier can then be used to run through each line in sequence.

## MULTIPLIER

DELAY TIME MULT

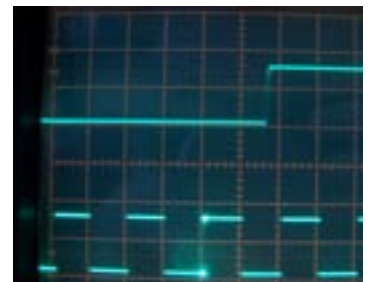
TRACE SEPERATION



### ALT

The trace switches between the A and B time base alternately.

Again the length of time from the start of the trace shown by the A time base before the B time base is triggered is a function of the B time base setting multiplied by the setting on the DELAY TIME MULTIPLIER.



The difference between this and the B DLY'D is that both traces are shown at once so you can see which part of the signal is being expanded by the B time base.

### TRACE SEP

This is only used when the horizontal mode is set to ALT and adjusts the separation between the two traces.

### X-Y

Turning the SEC/DIV control fully anti-clockwise selects X-Y mode where the horizontal deflection is controlled by Ch1 input instead of by the time base.

### EXT Z

In this mode, socket becomes the Z modulation or intensity modulation input which modulates the brightness of the trace. This is only used for special purposes.