



PULSE AND SIGNAL HANDLING EQUIPMENT

Synchronizing Pulse Generating Equipment Type B3605 Series

Marconi solid-state modular Synchronizing Equipment now offers a whole range of advanced facilities for colour and black and white. The basic Pulse Generator occupies only half the width of a 48cm (19in.) modular equipment frame containing Pulse Generator, Genlock, Colour Sync. and Colour Lock Units.

Colour units are available for 525 NTSC or 625 PAL. Black and white operation may be on 405, 525 or 625, and only the oscillator crystal and soldered links have to be changed to switch standards.

Synchronizing Pulse Generator Type B3605

Data summary

Inputs

Mains: 100–125V or 200–250V in 5% steps, a.c. 48–65Hz.

Consumption: Single generator 27VA (approx.); single with genlock and remote control panel: 39VA (approx.).

External a.c. mains reference: 2V–7V, p–p.

External twice line: Frequency according to line standard, 0.7V–5.0V p–p, sinusoidal or 1:1 square wave. (This may be derived from Marconi Colour Sync. Unit Type B3607.)

Output Pulses

Line drive, field drive, mixed blanking, mixed syncs, and burst gating pulse waveform. For PAL use, colour axis switching is also provided.

Performance

Levels: 2V or 4V ± 0.5 dB, negative going. Colour axis switching signal 1V p–p $\pm 10\%$ into 75 Ω .

Rise and fall times: Approx. skew-symmetrical (Sync., Blanking, Burst Gate: colour axis switching 0.1 to 0.13 μ s or 0.2 to 0.25 μ s, selected by links. Line drive, Field drive: 0.1 to 0.13 μ s).

Source impedance: 75 Ω .

Line standards: 405, 525, 625 selected by internal links. Appropriate master oscillator crystal must also be fitted.



B3605

Pulse duration and timings: adjustable to cover 405, 525 FCC, and all CCIR 625-line systems.

Mains locking range: +1.5 to –2.5Hz about 50 or 60Hz, according to line standard.

Genlock Type B3606

The three optional genlock modules plug into position alongside their parent synchronizing generator. They enable the synchronizing generator to be accurately locked to a remote signal, selected at the genlock remote control panel.

Input Signal

The genlock accepts: remote composite video 0.7V to 2V p–p or sync. 1.6V to 4V p–p negative going. Bridging input across 75 Ω line.

Generator Changeover Unit Type B10-3605

Controls: 3 selector buttons, 'Gen 1' — 'Gen 2' — 'Remote'. In the remote mode operation of the changeover unit is transferred to a remote Changeover Switching Panel. This unit accepts output signals from two generators together with their associated Colour Sync. Units in colour working, and provides instant changeover switching between sets of output sockets designated 'main' and 'reserve'.

Changeover Switching Panel Type B19-3605

Controls: 2 selector buttons, 'Gen 1' — 'Gen 2'.

Genlock Remote Control Panel Type B08-3606

This unit accepts up to four remote signals and passes the selected signal to the genlock input.

Colour Synchronizing Unit Type B3607

This unit, available for 625 line PAL and 525 NTSC, provides a highly stable source of subcarrier frequency sine wave, and a twice line frequency sine wave, used to lock associated Pulse Generators.

Data summary

Inputs

Mains: 100–125V or 200–250V, 48–65Hz, 20VA.

Outputs

- (a) **Twice line output:** 2 to 5V p–p $\pm 10\%$ into 75 Ω .
- (b) **Subcarrier:** 2V p–p $\pm 10\%$ into 75 Ω .

Subcarrier frequency:

- 4.43361875MHz (PAL).
- 3.579545MHz (NTSC).

Subcarrier stability: Better than ± 1.5 parts in 10^6 over range –10 to +20°C.

Crystal aging: Less than 5 parts in 10^6 per month.

Amplitude Stabilities:

- (a) **Twice line:** ± 1 dB over temperature range.
- (b) **Subcarrier:** ± 0.2 dB over temperature range.

Colour Lock Unit Type B3608

The Colour Lock Unit comprises two modules which fit alongside those of the



Colour Sync. Unit. The function of the Colour Lock Unit is to accept the video signal fed also to the Genlock and derive from it a control signal which locks the Colour Sync. Unit oscillator to the remote signal.

The Colour Lock Unit can only be operated in association with a B 3607 Colour Sync. Unit, and in operation it consumes an additional 8VA.

Equipment Combinations and Dimensions

The spare frame space may be used to house other Marconi modular equipment, e.g. Marconi Pulse Distribution Amplifiers, Type B 4002.

Single Generator Type B 3605 in frame, no Genlock.

Height 13.3cm (5.25in.)
Width 48.3cm (19in.)
Depth 45.7cm (18in.)
Weight 9.1kg (20lb)
Spare frame space
21.4cm (8.4in.)

Single Generator Type B 3605 with Genlock Type B 3606 in frame.

Height 13.3cm (5.25in.)

Width 48.3cm (19in.)
Depth 45.7cm (18in.)
Weight 10kg (22lb)
Spare frame space
14.2cm (5.6in.)

Dual Generators Type B 3605 in single frame, no Genlocks.

Height 13.3cm (5.25in.)
Width 48.3cm (19in.)
Depth 45.7cm (18in.)
Weight 16.3kg (36lb)
Spare frame space nil

Dual Generators Type B 3605 in two frames, with two Genlocks Type B 3605.

Height 26.6cm (10.5in.)
Width 48.3cm (19in.)
Depth 45.7cm (18in.)
Weight 20kg (44lb)
Spare frame space
28.4cm (11.2in.)

Single Generator Type B 3605 with Genlock Type B 3606, Colour Synchronizing Unit

Type B 3607 and Colour Lock Unit Type B 3608 in frame.
Height 13.3cm (5.25in.)
Width 48.3cm (19in.)
Depth 45.7cm (18in.)

Spare frame space nil.

Dual Generator Type B 3605 with dual Genlocks, dual Colour Synchronizing and dual Colour Lock Units. In two frames.

Height 26.6cm (10.5in.)
Width 48.3cm (19in.)
Depth 45.7cm (18in.)
Spare frame space nil.

B08-3606 Genlock Remote Control Panel.

Height 20.5cm (8.06in.)
Width 8.9cm (3.9in.)
Depth 12cm (4.7in.)

B 10-3605 Changeover Unit.

Height 4.4cm (1.75in.)
Width 48.3cm (19in.)
Depth 40.6cm (16in.)

B 11-3605 Changeover Switching Panel.

Height 5.1cm (2in.)
Width 35.6cm (14in.)
Depth 6.7cm (2.62in.)

Full details are given in TD-2-B 3605.

Monosync Pulse Distribution System Type B3609

Conventionally, synchronizing signals are distributed around studio centres by separate coaxial paths. This is acceptable for small systems, but with PAL Colour, seven distinct pulses are involved. The cost and complexity of pulse assignment using these separate pulses make some alternative very desirable.

Marconi Monosync provides the answer. Compact modular units combine all seven PAL pulses, or six NTSC pulses or four Black and White pulses, into a single waveform. One coaxial path through assignment switchers, distribution amplifiers etc. reaches each destination where a Decoder reconstructs the separate pulses for normal use.

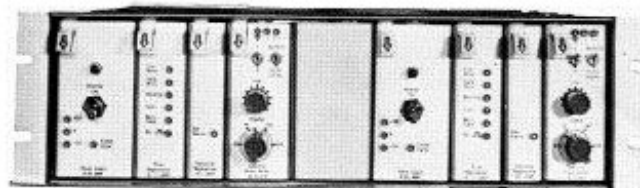
Features

Suitable for 625 PAL or 525 NTSC or corresponding black and white systems.

Sine Squared pulses in coded waveform ensure precise timing.

Coder and Decoder are self powered.

4 Coders or 3 Decoders will fit one 13.3cm (5.25in.) Rack Frame.



B 3609

A.G.C on Decoder eliminates timing errors due to normal level changes.

Optional Subcarrier Phase Shifter module.

Data summary

Monosync Coder B 01-3609

Inputs

Mains: 100-125V or 200-250V 40 to 60Hz.

Pulses: From sync. generator via 14-pin fixed plug. 2V or 4V negative going. Bridging 14 way output socket.

Subcarrier: From colour sync. unit via SO 239 socket, bridging output socket provided. Level 2V or 1V.

Coded Outputs

Output one: 75Ω 1V peak or peak delayed waveform, see Performance for details.

Output two: Undelayed coded waveform 1V peak to peak 75Ω.

Monosync Decoder B 10-3609

Inputs

Mains: 100-125V or 200-250V 40 to 60Hz.

Coded pulses: Bridging 75Ω input 1V peak to peak.

Outputs

Pulses: Separate (SO 239) output



sockets giving 2V peak to peak negative going.
Line drive
Field drive
Mixed blanking
Mixed syncs
Burst gating pulse
and PAL Identification signal, 1V p-p.

Subcarrier: Single output at 75 Ω impedance, adjustable to 1V or 2V peak to peak.

It should be noted that the following points are those where originating pulses will not necessarily be preserved after distribution via the system:
Subcarrier phase relative to burst gate pulse edges.
Line drive pulses in advance of line blanking are not reproduced.
Field drive end; this is adjustable.

The equipment is normally supplied for use in systems where line drive is coincident with line blanking. An optional delay line can be supplied for use with the Coder when system line drive is coincident with line sync. The Decoder can then be adjusted to provide either timing at the output.

Performance

Decoded Outputs: Pulses—rise time nominally 0.1 μ sec \pm 20%.

Variable Delay: Optional boards permit pulse outputs to be delayed by
(a) 0–0.375 μ sec. in 25nsec.
or (b) 0–3.15 μ sec. steps.
Delay boards may be fitted to Coder and Decoder.

Subcarrier Output: Harmonic content less than 5%.

Subcarrier Phase: Optional extra module gives 0–360° phase shift.

Temperature Range: 0 to +50°C.

Delays due to equipment:
Monosync Coder approximately 200 nsec.
Monosync Decoder less than 500nsec.

Rack Space

All the modules fit the Marconi B4306 Modular Equipment Frame which is 13.3cm (5.25in.) high.

Full details are given in TD B3609.

Subcarrier Phase Shifter Type B3610

Features

- Self-powered compact module.
- Suitable for use on PAL and NTSC.
- Adjustable input and output voltages.
- Fine and coarse subcarrier phase controls.
- Automatic or local manual control.
- Standard 75 Ω impedances.

Descriptions and Use

The type B3610 Subcarrier Phase Shifter is a plug-in module providing an accurate, stable, variable phase shift at subcarrier frequencies. This facility is essential in every colour studio installation where subcarrier travelling via paths of different lengths has to be recombined at mixers or switchers.

Furthermore, once the phase of a particular path has been set, it must remain stable for long periods without adjustment. The Marconi B3610 gives this high stability, phase remaining \pm 0.5° when the ambient temperature varies over a 20°C range.

The Marconi B3610 may be locally adjusted by front panel controls over a range of phase shift covering more than 360 degrees. Adjustment of fine phase may also be achieved by use of the Remote Control Panel, or by automatic control.

Another module, the Subcarrier Phase Comparator, may be provided to compare two separate subcarrier sinewaves and control the Subcarrier Phase Shifter so as to maintain automatically their desired phase relationship.

Data summary

Inputs

Mains: 100–125V or 200–250V \pm 6% steady with additional \pm 6% surge, 49 to 61Hz.

Subcarrier: 1V or 2V p.p \pm 3dB into 75 Ω . Return loss 30dB.

Control: d.c voltage to adjust fine phase shift, may be from manual or automatic control circuit.

Output

Subcarrier: 1V or 2V p.p. return loss 30dB.



B3610

Performance

Phase Shift: 0 to 360° by coarse control giving switched 90° steps and fine control with continuous range of more than 90°.

Phase stability: \pm 0.5° over \pm 10°C about set-up temperature, under manual control conditions.

Level stability: \pm 1dB.

Temperature range: –10° to +50°C.

Dimensions

Module: occupies 5.08cm (2in.) of space in a Marconi type B4306 frame 13.3cm (5.25in.) high.

Remote Control Panel:

Height 20.4cm (8.06in.)
Width 2.92cm (1.15in.)