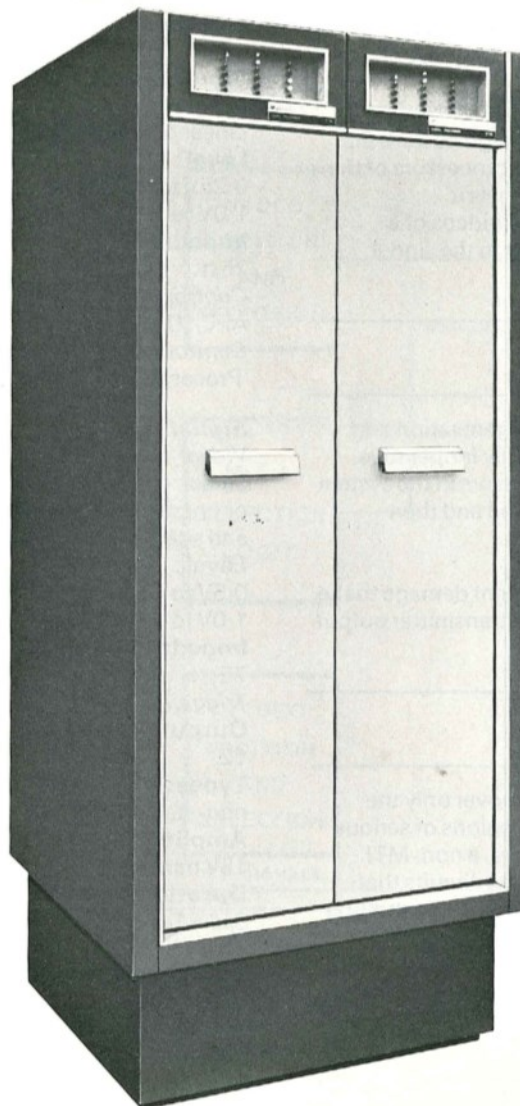


**Marconi Radar
Data Sheet c7**

**Video Combining
Unit Type S7102**



Automatic video selection
Standby trigger generator
Diplexer protection

The Marconi Type S7102 Video Combining Unit is used with the Marconi Type S7100 Digital Signal Processor in diversity systems. The S7102 provides control of the whole radar complex.

Mechanical Features

The equipment is housed in a welded framework of square tubular steel sections with a front panel on which indicator lights are mounted. The whole framework is then runner mounted in a lightweight cabinet with one of its associated S7100 processors, as described in Marconi Radar Data Sheet C3.

Electrical Features

Video Control

The equipment receives control signals from the transmitter/receivers and signal processors of the diversity system. From these signals it automatically selects which two videos of a particular type are to be fed back to the signal processors.

Timing

The equipment contains trigger generation and drive equipment which is normally inoperative. Should both of the signal processors in the system fail, this timing system is activated and then controls the radar complex.

Circuits are included that prevent damage to the high power diplexer, should the transmitter output pulses overlap.

Range Gate

In most systems, MTI is required over only the limited range that contains the regions of serious clutter density. Beyond this range, a non-MTI video is used. The S7102 includes circuits that generate the necessary waveforms for controlling the switching actions in the associated S7100 signal processors.

Signal Switching

Supplied with the combining unit are switch boxes for incorporation in system wiring. These boxes provide relay switching of the various videos and triggers in the overall system.

Remote Control

When switched to remote control, a 24V supply is available to be routed through a remote control panel back to the combining unit for control of the following functions:

- 1) VCU ON/OFF.
- 2) 1, 2 or auto video outputs for MTI, linear or logarithmic video.

- 3) P.R.F.S., P.R.F.D., range gating, clutter CFAR, clutter switch, ghosting in the associated signal processors.

Data Summary

Power input:

110V or 220V or 240V $\pm 10\%$, 45 to 65Hz; 1-phase, 100VA maximum.

Transmitter types:

any of the S2000 range.

PRF:

200 to 1000 p.p.s.

Pulse spacing:

normally 8 μ s.

Signal inputs

Video from each transmitter/receiver

Linear or Log/PLD, or Log, or ECCM.

Level:

0.25V to 1.0V noise.

1.0V to 5.0V signal.

Impedance:

75 Ω .

Control signals from each transmitter/receiver

AFC, 'On-tune', 'Remote'.

Control signals from each signal processor

'Processor operational', 'Remote'.

Signal outputs

Video:

Linear, or Log/PLD, or Log, or ECCM, combined or uncombined depending on transmitter/receiver and signal processor state.

Level:

0.5V to 1.0V noise.

1.0V to 5.0V signal.

Impedance:

75 Ω .

Triggers

Outputs:

12.

Types:

non-staggered.

Amplitude:

18V minimum.

Duration:

3 μ s \pm 1 μ s.

Rise time:

(10% to 90%) 100ns.

Impedance:

75 Ω .

Delay variation:

200 μ s.

Inputs

Types:

one from each transmitter receiver (for diplexer protection).

Level:

5V minimum.

Impedance:

75 Ω .

Duration:

1 μ s to 10 μ s.

Environment

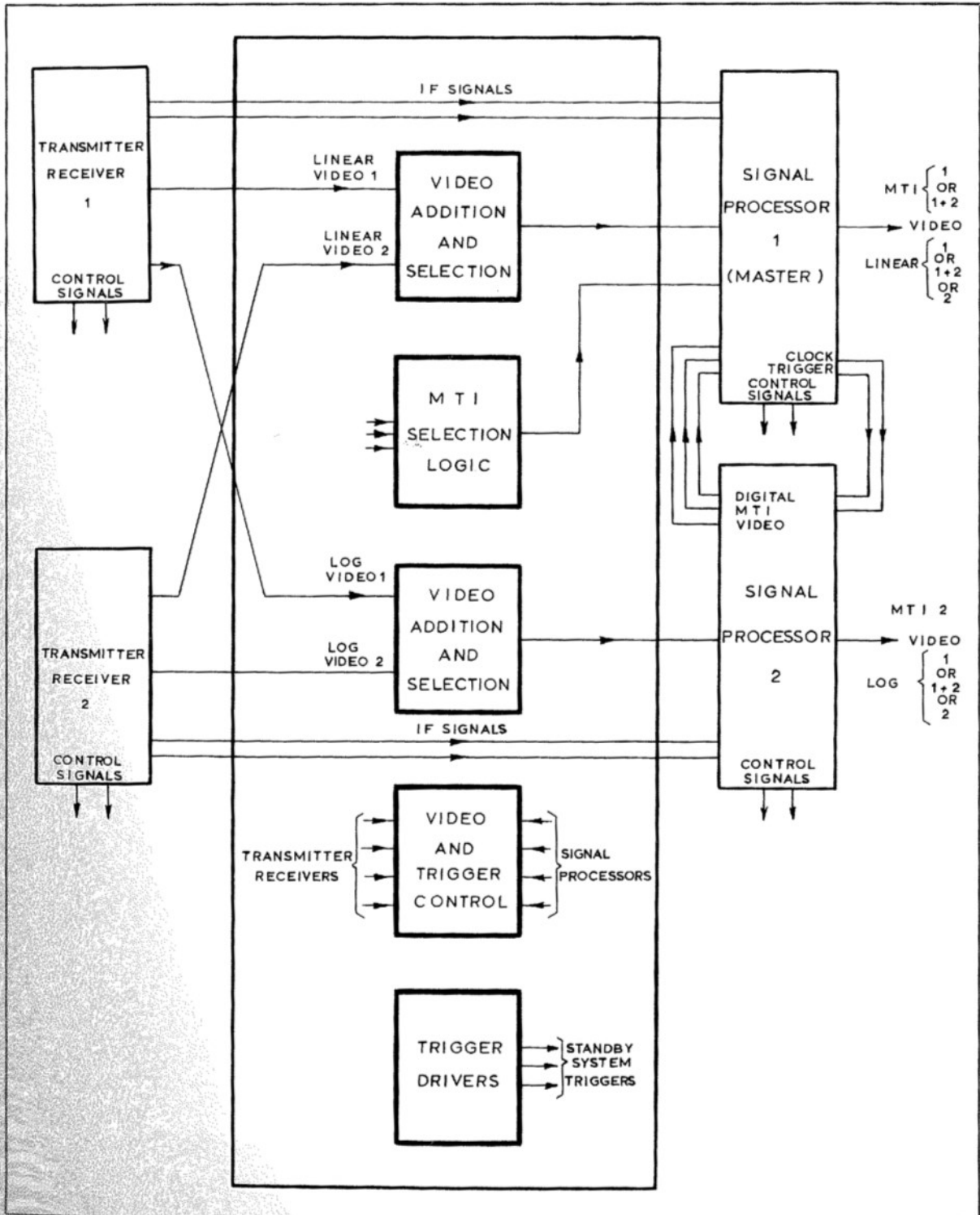
Temperature:

Operational: 0°C to +50°C.

Survival: -40°C to +65°C.

Relative humidity:
 Operational : 95% at 25°C.
 Survival : 95% at 40°C.
Pressure:
 Operational : 750mb.
 Survival : 420mb.

Dimensions (Cabinet)
Height:
 1-675mm (5ft 6in).
Width:
 686mm (2ft 3in).
Depth:
 646mm (2ft 1½in).
Weight:
 including one combiner and processor:
 272kg (600lb).



Video Combining Unit Type S7102 functional block diagram