Radar Range Calibrator

Type SI 101

ADMIRALTY PATTERN No. 104391

THE FUNCTION of the Radar Range Calibrator, Type SI 101, is to facilitate the accurate testing of range calibration and thereby the linearity of timebase circuits with reference to crystal standards.

FEATURES

Accuracy. The calibration markers are accurate to ±6 yards in 30,000 yards displayed range. A phasing control permits lining up with display range marks for accurate comparison.

Versatility. The variety of ranges and methods of synchronisation extends the scope of this equipment to cover most types of display systems in use today and envisaged for the future.

Accessibility. The outer cover is easily removed by releasing four clips, exposing all essential parts.

Portability. The instrument is sufficiently compact to permit easy carrying by means of the handle provided.

TECHNIQUE

Calibration markers. The output of a crystal oscillator, switched for two basic frequencies is fed, after shaping, to a count-down blocking oscillator giving all the required submultiples.

These pulses are then fed, *via* a cathode follower, to a phase splitter from which the positive or negative calibration marker output sockets are fed.

Synchronising pulses. The basis of the synchronising system is a valve connected so as to behave as an internal timing oscillator of preset frequency (unless trigger pulses are taken from the radar equipment when it reverts to an amplifier). Whatever the mode of operation the output from this valve triggers a bi-stable multivibrator which emits a pulse the termination of which is triggered from the count-down oscillator. This pulse operates a phantastron circuit of variable delay, whose output is taken *via* a Miller shaper, to the output stage. This provides positive and negative synchronising pulses with low output impedance by means of a centre-tapped transformer.

The system ensures that:

(*a*) the range calibration markers are locked to the display timebase (using the bi-stable multivibrator).

(*b*) the phasing previously referred to may be achieved by varying the phantastron delay.

DATA SUMMARY

CALIBRATION MARKERS

Ranges: 1000 yds, 5000 yds, 1, 5 and 10 nautical miles. Other ranges can be supplied to special order.

Range accuracy: ±0·02% (−20°C to +70°C).

Amplitude: Positive or negative and greater than 20 V.

Width: Less than 1 μs.

Output impedance:

Positive markers less than 150 Ω.

Negative markers less than 600 Ω.

SYNCHRONISING PULSES

Repetition rate:

Internal: (1) 40 to 500 p.p.s.
(2) 200 to 2000 p.p.s.

External: 200 to 2000 p.p.s.

External input amplitude: Positive or negative 3 to 150 volts.

Sync. output amplitude: Positive or negative greater than 40 volts.

Width: 6 μs.

Output impedance: Less than 100 Ω.

Phasing (delay range): 120 μs/10 nautical miles, nominal.

Power supplies: 110 to 120 or 200 to 250 volts AC 45 to 550 c/s and 180 volts AC 450 to 550 c/s. Consumption 50 watts (approx.)

Dimensions:

Height	Width	Depth	Weight
10½ in.	10½ in.	21 in.	45 lb
(26·7 cm)	(26·7 cm)	(53·5 cm)	(20·5 kg)

The Inter-Services reference number for this instrument is CT/379.

Marconi

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