



S.E.M.

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CASTLETOWN
ISLE OF MAN
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Manufacturers and Suppliers of Communications Equipment

S.E.M. Z MATCH 80 - 10 METRES

TECHNICAL DATA

Matching range - 15 - 5000 Ohms
Frequency range - 3.5 - 30MHz
Power rating - 1,000 watts into
50 Ohms.

Size: $8\frac{3}{4}$ " x 4" front panel, $7\frac{1}{4}$ " deep.
Weight: 2Kg. (4.4 lbs)

Rear connectors - SO239 from transmitter,
SO239s and 2m.m screw terminals for co-ax
or wire fed aeriads, 2m.m earth terminals.



The S.E.M. Z Match is designed for matching an aerial which can be balanced or unbalanced, into the 50 - 75 Ohms required to terminate correctly modern transmitters and receivers.

It is most important to terminate the modern S.S.B. P.A. stage with the correct non reactive impedance.

The three main reasons are:-

1. The P.A. tank circuit components have a restricted matching range and may not be capable of matching the aerial over the whole band.
2. The P.A. components are rated only for the design output impedance and a high S.W.R. may damage them.
3. If the correct impedance cannot be presented to the P.A. valves, they are either over loaded or under loaded. If they are over loaded, the efficiency decreases and the anodes of the valves overheat. If they are under loaded, the efficiency increases, but the screen current rises to a high value and grid emission results. This is observed as an inability to keep the standing current steady and is only cured with new valves.

If the transmitter is not presented with the correct load, the harmonic output may increase. Not only will the S.E.M. Z Match correct this, but it will also greatly improve the harmonic suppression.

The Z Match circuit is inherently a "balun" so no separate balun is required. The two front panel controls are adjusted to remove the reactance and to adjust the impedance. They are both driven by slow motion drives calibrated in 100 divisions and once the settings have been noted for each band, they can be reset to the correct position when band changing.

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S.E.M. Z MATCH INSTRUCTIONS

ANTENNA CONNECTIONS

Connect a co-axial line from the transmitter or receiver to the input socket at the bottom of the Z Match. There is a choice of arial connections either the coloured plastic terminals or the adjacent coaxial socket may be used depending on the type of arial in use.

1. 80 or 40 metres - use the black terminals or the adjacent coaxial socket.
2. 20-15 or 10 metres - use the red terminal or their adjacent coaxial socket.

Different types of arial require different connections as follows:-

1. Coaxial cable fed arials. Plug the arial into the appropriate (for the band in use) co-ax socket, connect a wire from the plastic terminal to the earth lug.
2. Balance twin feeders. Connect the feeder wires to the appropriate plastic covered terminals. No connection to earth terminal.
3. End fed arials. Connect the arial wire to one of the appropriate terminals. Connect the other terminal to the earth tag.

ADJUSTMENT

Receiving Peak up the two front panel capacitor controls for maximum signal strength on receive.

Transmitting Connect an SWR meter or impedance bridge between the transmitter and the Z Match. Turn the sensitivity control of the bridge to maximum. Put a small amount of R.F. into the system to obtain a reading on the bridge and adjust the controls on the matching unit for minimum reflected power. Increasing the R.F. to maintain a reading on the meter. The transmitter should be adjusted for correct loading after the matching unit has been set correctly. If a double meter SWR bridge is being used, try to ignore the changing reading of the forward meter.

Make a note of the dial readings for each arial on each band to ease future adjustment.

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