SECTION 22

STANDARD LEVEL METER ME16/1

General

The Standard Level Meter ME16/1 is intended for lining up programme meters and amplifier-detectors, and provides a standard sending level of either zero or +10 dB at a frequency of 50 c/s with reference to 1 mW in 600 ohms. The unit may be supplied from either a 4-volt or 6·3-volt 50-c/s a.c. source, and is contained on a 19-inch panel suitable for rack mounting. (See Fig. 22.1.)

The ME16/1 is similar to the CAL/1 (Section 4) and CAL/1A, except that both these latter are on $22\frac{1}{8}$-inch panels and the CAL/1 is intended for operation from the mains.

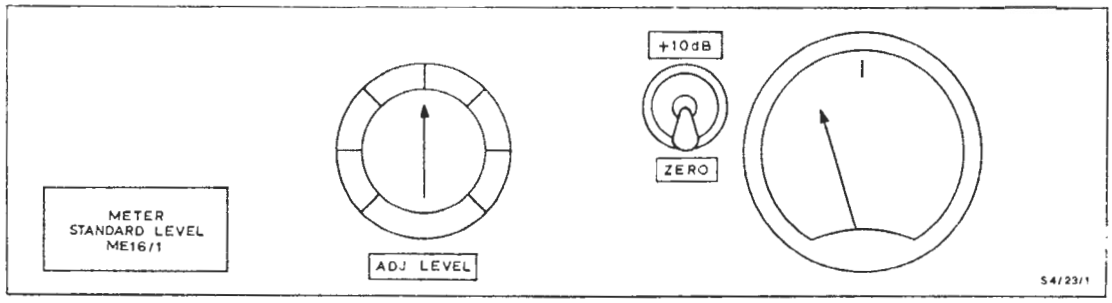

Fig. 22.1. Standard Level Meter ME16/1: Front Panel

Circuit Description (Fig. 22.2)

The 4-volt or 6·3-volt a.c. supply is connected to terminals 1 and 2 (Fig. 22.2) and is reduced to the required sending level by the potential divider network R1 to R5. If a 4-volt supply is used, the 13·8-ohm series dropping resistor R2 must be short-circuited.

The +10 dB output level is monitored by means of a moving-coil rectifier-type a.c. voltmeter which is connected in parallel with resistors R3 and R4. This meter is uncalibrated except for a zero mark and a mid-scale reference mark which indicates an r.m.s. voltage of 2·45 volts. The pointer may be accurately set to this reference mark by adjustment of the 0–7 ohm *Adj. Level* resistor R5. Resistors R3 and R4 are card-wound components of 10 ohms and 4·62 ohms respectively.

When the *+10 dB/Zero* selector-switch is set to *Zero*, the voltage developed across R4 only is connected to the output line. Under this condition the output voltage is 2·45 × (4·62/14·62), or 0·775 volt; this is the 0-dB reference level, because the square of 0·775 volt, divided by 600 ohms equals 1 mW.

When the switch is set to the *+10-dB* position, the output line is connected across both output resistors, and the full output voltage of 2·45 volts is obtainable at the output terminals; this represents a level of +10 dB, since $20 \log_{10} (2{\cdot}45/0{\cdot}775) = 10$.

In the *+10-dB* position, the voltage level will be correct for any load impedance.

In the *Zero* position the output impedance is about 3 ohms, which is sufficiently low to make the error when feeding into a 300-ohm impedance only 0·1 dB compared with the voltage level into an open circuit. For load impedances above 300

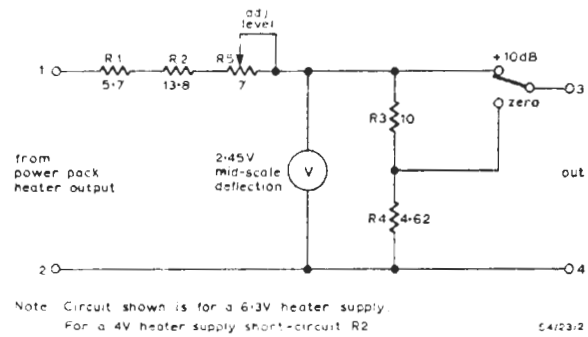

Fig. 22.2. Standard Level Meter ME16/1: Circuit
Drawing No. EA 9409: Issue 1

ohms, the output level error is less than 0·1 dB and may be ignored.

Operation

1. Connect terminals 1 and 2 to a 4-volt or 6·3-volt a.c. supply, taking care to short-circuit R2 if a 4-volt supply is used.
2. Vary the setting of *Adj. Level* control R5 until the meter indicates the mid-scale reference point.
3. The output sending level is now either +10 dB or zero, according to the position of the selector-switch.

C.W.P.M.(X) 8/65