DM 21 Electronic indicator

The electronic indicator is the ideal device for tuning a receiver with the greatest possible accuracy and without the slightest time lag. In the past battery sets have been handicapped, compared with mains receivers, in that no electronic tuning indicators were available for battery operation, but the gap has now been filled by the DM 21.

This tube gives a reliable indication at an anode voltage of 90—120 V, but the lower of these two values should be regarded as absolute minimum; the DM 21 is therefore not suitable for receivers operating on 90 Volts battery.

Another advantage of the indicator is that it always shows that the set is switched on. In view of the possibility of feeding from a dry battery, it was necessary to take into account the fact that the tube should also work satisfactorily on a considerably reduced voltage and the lowest limit for the filament voltage is actually 1.1 V.

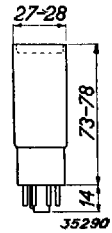
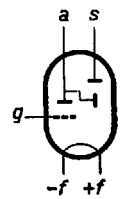


Fig. 1
Dimensions in mm.



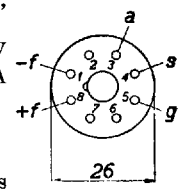


Fig. 2
Arrangement and sequence of contacts.

FILAMENT RATINGS

Heating: direct, from a dry battery, rectified alternating current, or D.C. Series or parallel supply.

Filament voltage	V_f	= 1.4 V
Filament current	I_f	= 0.025 A

OPERATING DATA

Battery voltage	V_b	= 120 V	90 V
Anode series-resistance	R_a	= 2 M Ohms	2 M Ohms
Screen current (V_g = 0 V)	I_s	= 0.25 mA	0.15 mA
Grid bias (Θ = 60°)	V_g	= 0 V	0 V
Grid bias (Θ = 5°)	V_g	= —4 V	—3 V

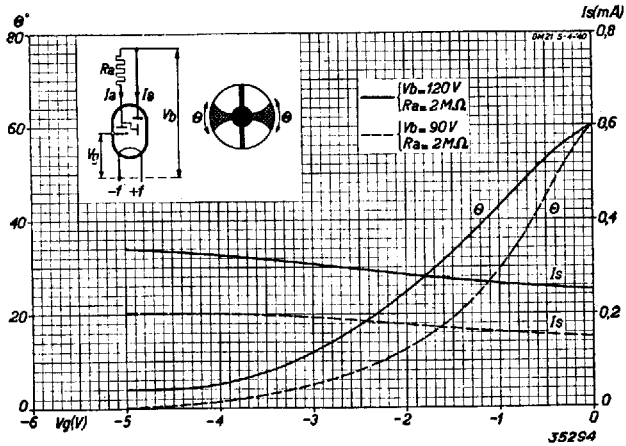


Fig. 3
Screen current I_s and shadow angle (Θ), measured at the edge of the screen, as function of grid bias at battery voltages of 120 V and 90 V.

MAXIMUM RATINGS

Anode voltage	V_a	= max. 135 V
Maximum screen voltage	V_s	= max. 135 V
Minimum screen voltage	V_s	= min. 90 V
Grid current commences at V_g (I_g = + 0.3 μA)		= 0 V
Max. external resistance in grid circuit	R_g	= max. 3 M Ohms
Minimum limit for the filament voltage	V_f	= min. 1.1 V
Maximum limit for the filament voltage	V_f	= max. 1.5 V

APPLICATIONS

As already stated, the DM 21 gives a reliable indication at an anode and screen voltage of 90—120 V. Since 90 V is the lowest permissible limit, this tube cannot be employed in receivers working on a maximum battery voltage of 90 V.
In the case of series-parallel circuits, precautions must be taken as given on p. 82.