

AIR COOLED V.H.F. POWER TETRODE

Forced air cooled coaxial power tetrode in metal-ceramic construction primarily intended for use as a linear broad-band amplifier in T V transmitters in the bands I and III. This type is also very suitable for A. M. and F. M broadcast, A. F. modulator applications, and in T V transposer service.

QUICK REFERENCE DATA			
Frequency	f	175, 25	MHz
Anode voltage	V_a	7	kV
Output power in load	W_l	18, 4	kW
Power gain	G	25	
Class B amplifier			
Frequency	f	260	MHz
Anode voltage	V_a	7, 5	kV
Output power in load	W_l	13	kW
Power gain	G	32, 5	
R. F. Class C telegraphy or F. M. telephony			
Frequency	f	260	MHz
Anode voltage	V_a	8	kV
Output power in load	W_l	18	kW
Power gain	G	30	
TV transposer service			
Frequency	f	175 to 225	MHz
Anode voltage	V_a	6	kV
Output power in load	W_l	7	kW
Power gain	G	32	

HEATING : direct; filament thoriated tungsten, mesh type.

Filament voltage	V_f	8	$V \pm 5\%$
Filament current	I_f	120	A
Filament peak starting current	I_{fp}	max. 750	A
Cold filament starting current	R_{fo}	7, 5	m Ω
Waiting time	T_w	min. 1	s

TYPICAL CHARACTERISTICS

Anode voltage	V_a	6	kV
Grid no. 2 voltage	V_{g2}	650	V
Anode current	I_a	2, 4	A
Transconductance	S	45	mA/V
Amplification factor	μ_{g2g1}	8, 5	

CAPACITANCES

	grounded cathode		grounded grid	
Input	$C_{g1(a)}$	110	$C_{f(a)}$	55 pF
Output	$C_{a(g1)}$	17, 5	$C_{a(f)}$	18 pF
Anode to grid no. 1	C_{ag1}	0, 7		pF
Anode to filament			C_{af}	0, 2 pF

TEMPERATURE LIMITS

Absolute max. envelope temperature	t_{env}	max.	240	$^{\circ}C$
Recommended max. seal temperature	t	max.	200	$^{\circ}C$

COOLING

See curves.
 Direction of air flow: see drawing.

ACCESSORIES

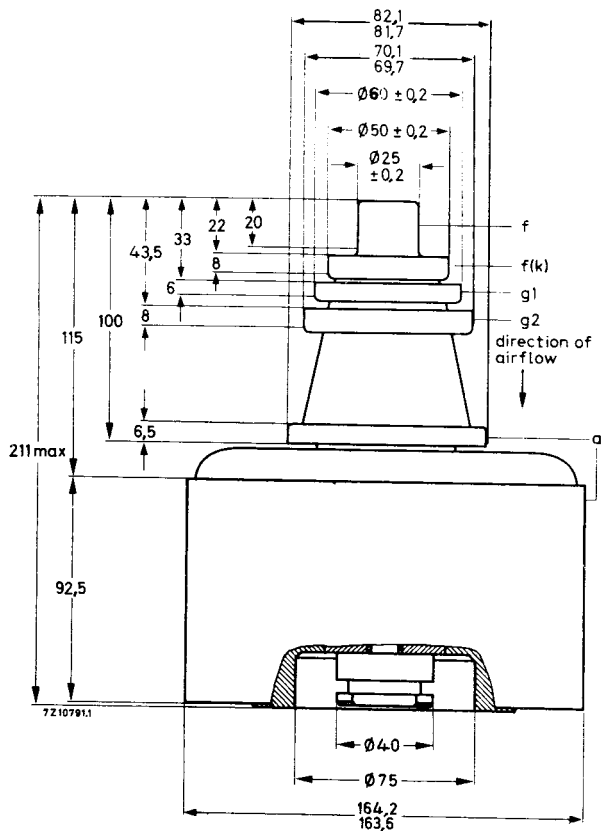
Band I amplifier circuit assembly (vision)	type 40759
Band II amplifier circuit assembly (sound)	type 40760
Band III amplifier circuit assembly (vision)	type 40747
Band III amplifier circuit assembly (sound)	type 40748

MECHANICAL DATA

Dimensions in mm

Net weight: approx. 11 kg

Mounting position: vertical with anode up or down



R.F. CLASS B SERVICE

Unless otherwise stated the voltages are specified with respect to cathode

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V_a	max.	9	kV
Grid no. 2 voltage	V_{g2}	max.	1	kV
Grid no. 1 voltage	$-V_{g1}$	max.	500	V
Anode current	I_a	max.	5	A
Anode input power	W_{ia}	max.	24	kW
Anode dissipation	W_a	max.	12	kW
Grid no. 2 dissipation	W_{g2}	max.	100	W
Grid no. 1 dissipation	W_{g1}	max.	50	W
Cathode current	I_k	max.	6	A

OPERATING CONDITIONS , grounded grid

Frequency	f	up to	260	MHz
Anode voltage	V_a		7,5	kV
Grid no. 2 voltage	V_{g2}		650	V
Grid no. 1 voltage	V_{g1}		-125	V ¹⁾
Anode current, no signal condition	I_a		0,1	A
Anode current	I_a		2,5	A
Grid no. 2 current	I_{g2}		80	mA
Grid no. 1 current	I_{g1}		90	mA
Anode input power	W_{ia}		18,75	kW
Anode dissipation	W_a		5	kW
Output power in load	W_l		13	kW
Efficiency, total	η		69,3	%
Driving power	W_{dr}		400	W
Power gain	$\frac{W_l}{W_{dr}}$		32,5	

Note see page 9

R.F. CLASS AB LINEAR AMPLIFIER FOR TELEVISION SERVICE +

Negative modulation, positive synchronization (C.C.I.R. system)

Unless otherwise specified the voltages are given with respect to the cathode.

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V_a	max.	9	kV
Grid no. 2 voltage	V_{g2}	max.	1	kV
Grid no. 1 voltage	$-V_{g1}$	max.	500	V
Anode current, black	I_a black	max.	3,5	A
Anode input power, black	W_{i_a} black	max.	24	kW
Anode dissipation	W_a	max.	12	kW
Grid no. 2 dissipation	W_{g2}	max.	100	W
Grid no. 1 dissipation	W_{g1}	max.	50	W
Cathode current	I_k	max.	6	A

OPERATING CONDITIONS , grounded grid

Frequency of vision carrier	f		175, 25	MHz
Bandwidth (-1 dB)	B	7	7	MHz 2)
Anode voltage	V_a	7	6	kV
Grid no. 2 voltage	V_{g2}	700	650	V
Grid no. 1 voltage	V_{g1}	-85	-70	V 1)
Anode current, no signal condition	I_a	750	900	mA
Anode current, black	I_{ab1}	2,9	2,5	A 3)
Grid no. 2 current, black	I_{g2b1}	45	25	mA 3)
Grid no. 1 current, black	I_{g1b1}	170	90	mA 3)
Output power in load, sync	W_{ℓ} sync	18,4	12,5	kW
black	W_{ℓ} black	11	7,5	kW 3)
Driving power, sync	W_{dr} sync	720	415	W
black	W_{dr} black	370	225	W 2)
Gain, sync	G_{sync}	25	30	
black	G_{black}	29,7	33	
Sync compression	sync in/out	30/25	28/25	4)
Differential phase		< 3	< 3	o 5)
Differential gain		≥ 85	≥ 85	% 5)
Anode resistance	$R_a \sim$	1050	1050	Ω 2)

Notes see page 9

+Detailed information on definitions of terms and application suggestions are available on request.

R.F. CLASS AB AMPLIFIER FOR TELEVISION TRANSPOSER SERVICE , grounded grid

LIMITING VALUES

See page 5

OPERATING CONDITIONS , grounded grid

Negative modulation, positive synchronization, combined sound and vision
(CCIR standard G)

Frequency	f	175 to 225	MHz
Bandwidth (-1 dB)	B	8	MHz
Anode voltage	V_a	6	kV
Grid no. 2 voltage	V_{g2}	800	V
Grid no. 1 voltage	V_{g1}	-80	V
Anode current, no signal condition	I_a	1, 2	A
Anode current	I_a	2, 5	A
Grid no. 2 current	I_{g2}	30	mA
Grid no. 1 current	I_{g1}	50	mA
Driving power, sync	W_{dr}	220	W
Output power in load, sync	W_f	7	kW
Power gain	G	32	
Intermodulation products	d	-52	dB

Notes: see page 9

R.F. CLASS C TELEGRAPHY or F.M. TELEPHONY

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V_a	max.	9,5	kV
Grid no. 2 voltage	V_{g2}	max.	1	kV
Grid no. 1 voltage	$-V_{g1}$	max.	500	V
Anode current	I_a	max.	5	A
Anode input power	W_{ja}	max.	30	kW
Anode dissipation	W_a	max.	12	kW
Grid no. 2 dissipation	W_{g2}	max.	100	W
Grid no. 1 dissipation	W_{g1}	max.	50	W
Cathode current	I_k	max.	6	A

OPERATING CONDITIONS

Frequency	f	260	MHz
Anode voltage	V_a	8	kV
Grid no. 2 voltage	V_{g2}	700	V
Grid no. 1 voltage	V_{g1}	-115	V ¹⁾
Anode current, no signal condition	I_a	300	mA
Anode current	I_a	3.5	A
Grid no. 2 current	I_{g2}	100	mA
Grid no. 1 current	I_{g1}	300	mA
Anode input power	W_{ia}	28	kW
Anode dissipation	W_a	10	kW
Output power in load	W_f	18	kW
Efficiency, total	η	64,3	%
Driving power	W_{dr}	600	W
Power gain	$\frac{W_f}{W_{dr}}$	30	

¹⁾ see page 9

NOTES

- 1) To be adjusted for the stated no signal anode current.
- 2) With double tuned circuit.
- 3) Black signal including line sync pulses.
- 4) A picture/sync ratio of 72/25 for the outgoing signal requires a ratio of max. 70/30 for the incoming signal in which case the sync compression sync in/out = 30/25.
- 5) Measured with a saw tooth amplitude, running from 17% to 75% of the peak sync value, with superimposed a 4,43 MHz sine wave with a 10% peak to peak value.
- 6) At c.w. output power = 7 kW
- 7) Three-tone test method (vision carrier -8 dB, sound carrier -7 dB, sideband signal -17 dB with respect to peak sync = 0 dB).

