

ELECTRONIC TUBE REFERENCE

14RP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Short-length P4 direct-view cathode-ray display tube using electrostatic focusing and wide-angle magnetic deflection, with white short-to-medium persistence, ion-trap operation, and typical 12 kV anode supply.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	15400 V
CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.	

The Sylvania 14RP4 is a 14-inch television picture tube with electrostatic focus and magnetic deflection.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1940 RCA

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1940 RCA

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
ected screen area of	108	ected screen area of 108 square inches.
ULTOR® VOLTAGE + &+ « & « « & & & « . & & & «	13000 V	ULTOR® VOLTAGE + &+ « & « « & & & « . 13000 max. volts
Employing wide~angle [(	4	Employing wide~angle [(900) deflection, the GRID—No.4 VOLTAGE:
14RP4 has a very short length---a length approx- Positive value . . +	500 V	14RP4 has a very short length---a length approx- Positive value . . + v « . v ¢ v . . 500 max. volts
imately	500 V	imately 2 inches shorter than a type having the Negative value « + + v v &« o & v o . 500 max. volts
GRID-No	400 V	GRID-No.2 VOLTAGE. 400 max. volts
same size faceplate and	1	same size faceplate and 700 deflection. Other GRID-No.1 VOLTAGE:
design features of the	160 V	design features of the 4RP4 include an external Negative peak value. 160 max. volts
Negative bias value. . « . « + «	110 V	Negative bias value. . « . « + « . . 110 max. volts
conductive bulb coating which with the internal Positive bias value	0 V	conductive bulb coating which with the internal Positive bias value. 0 max. volts
conductive coating forms a supplementary filter Positive peak valu€. « « o« + o« o o & + o« o o &	2 V	conductive coating forms a supplementary filter Positive peak valu€. « « o« + o« o o & 2 max. volts
Heater negative with respect to cathode	180 V	Heater negative with respect to cathode 180 max., volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
ternal, single-field magnet. Heater positivewith respect tocathode	180 V	ternal, single-field magnet. Heater positivewith respect tocathode 180 max. volts
With any ultor voltage (E._	8000	With any ultor voltage (E._3) between 8000% With any ultor-to-grid-No.1 voltage
Y g Hlesk and	14000 V	Y g Hlesk and 14000 volts (Bogg,) betuween 8000% and 14000 volts
and grid-¥o	2 V	and grid-¥o.2 voltage (E.,p) between 200 and 400 volts and grid-No.2-to-grid-No.1 voltage
Grid-No	510 V	Grid—No.4 Voltage Required for Focus: (Bcog,) between 225 and 510 volts
30 volts for each 1000-volt change in Ecgke voltage Required for Focus	1000 V	30 volts for each 1000-volt change in Ecgke voltage Required for Focus:
10 volts for each 100-volt change in Ecoke 30 volts for each 1000-volt	1000 V	10 volts for each 100-volt change in Ecoke 30 volts for each 1000-volt change in Ecggq.
proximately	100 V	proximately 25 volts for each 50-uamp change in ultor 10 volts for each 100-volt change in Ecpgy-
see Exanples of Use of Design Ranges. proximately	50 V	see Exanples of Use of Design Ranges. proximately 25 volts for each 50—uamp change in ultor
Grid-No	1	Grid-No.1 Voltage (Ec) for
Visual Extinction	1	Visual Extinction 1 For typical values, see Examples of Use of Design Ranges.
for Grid=Drive Service Cathode-to~Grid-No	1	for Grid=Drive Service Cathode-to~Grid-No.1 Voltage (Ekg1)
Grid-No	25	Grid-No.4 Current. . . -25 to +25 pamp
Grid-No	15	Grid-No.2 Current. . . -15 to +15 pamp
Grid-No	25	Grid-No.4 Current. . . -25 to +25 pamp
Current (Average) ^{™*} . qlEcsk/	15 mA	Current (Average) ^{™*} . qlEcsk/1uooo X 38 ma Grid-No.2 Current, . . . -15 to +15 pamp
of PM lon~Trap Average) .\Ecsgllluooo X	38 mA	of PM lon~Trap Average) .\Ecsgll1uooo X 38 ma
W¥ith ultor voltage of	14000 V	W¥ith ultor voltage of 10000 14000 volts Examples of Use of Design Ranges:
voltage of	14000 V	voltage of 300 300 volts voltage of 10000 14000 volts
Grid-No	2	Grid-No.4 Voltage for and grid-No.2-to-grid-

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focus with Ultor ¥o.l voltage of	300 V	Focus with Ultor ¥o.l voltage of 300 300 volts
Current of	1 V	Current of 100 pamp. . . =50 to +350 +70 to +470 volts Grid—No, 4—to~Grid—No.1
Grid-No	1	Grid-No.1 Voltage for Voltage for Focus with
Focused Raster =	47 V	Focused Raster =26 to =70 =26 to -70 volts 100 gamp .+ + ... -50 to +350 +70 to+47¢C volts
White-level value Raster . . «	59 V	White-level value Raster . . « 26 to 59 26 to 59 volts
(Peak positive)	1 V	(Peak positive). . . 26 to 70 26 to 70 volts Cathode-to-Grid-No.1
Maximum Circuit Values! (Peak negative)	59 V	Maximum Circuit Values! (Peak negative). . 26 to 59 26 to 59 volts
Grid-No	1.5	Grid-No.1-Circuit Resistance 1.5 max, megohms Min, Field Strength of
CATHODE-DRIVE™ SERVICE Grid-No	1.5	CATHODE-DRIVE™ SERVICE Grid-No.1-Circuit Resistance 1.5 max. megohms
ULTOR.—TO—GRID—NO.1 VOLTAGE.,	14000 V	ULTOR.—TO—GRID—NO.1 VOLTAGE., ... 14000 max. volts the electrons in the beam prior to its deflection. In
GRID~NO	5	GRID~NO.4~TO~GRID—=NO.1 VOLTAGE: the 14RP4, the ultor function is performed by grid No.5.
Positive value + « ¢ v & « v & & &	14 V	Positive value + « ¢ v & « v & & & 500 max. volts together within the 14RPY, they are collectively re=-
Negative value « . «	500 V	Negative value « . « . . 500 max., volts ferred to simply as "ultor"™ for convenience inpresent-
GR	510 V	GR 1D-N00.2-TO~GRID—=NO.1 VOLTAGE . . 510 max., volts ing data and curves.
CATHODE~TO-GRID-No	1	CATHODE~TO-GRID-No.1 VOLTAGE: A& Grid drive is the operating condition in which the
Positive peak value	1 V	Positive peak value. 160 max. volts videosignal varies the grid No.1 potential with respect
Positive bias value. « + « + « » &	110 V	Positive bias value. « + « + « » & 110 max. volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Negative bias value	0 V	Negative bias value. 0 max. volts # Brilliance and definition decrease with decreasing
ultor voltage or ultor-to- grid-No	1	ultor voltage or ultor-to-grid-No.1 voltage. In general,
Negative peak value. « «	1 V	Negative peak value. « « 4« v « + & 2 max, volts the ultor voltage or ultor-to-grid-No.1 voltage should
PEAK HEATER—CATHODE VOLTAGE: not be less than	8000 V	PEAK HEATER—CATHODE VOLTAGE: not be less than 8000 volts.
to cathode	180 V	to cathode. 180 max. volts with the trailing edge of the pole pieces located over
to cathode	180 V	to cathode. 180 max. volts give maximum brightness.
of the PM ion-trap magnet shoulg be added to the within £	10	of the PM ion-trap magnet shoulg be added to the within £ 10 per cent of line-center voltage
should not exceed the specified minimum value by more value of	17 V	should not exceed the specified minimum value by more value of 17 volts.
ratings permit} up to	16	ratings permit} up to 16 kilovolts {absolute
OPERATING CONSIDERATIONS posure at close range. Above 	6	OPERATING CONSIDERATIONS posure at close range. Above 6 kilovolts,
iiEf.—	6.3 V	iiEf.— 6.3 YOLTS tHEç = 6.3 VOLTS
[ULTOR VOLTS =	14000 V	[ULTOR VOLTS = 8000 TO 14000 FH ULTOR- TO-GRID-NO.1 VOLTS = 8000 TO 14000
1 GRID-No.4 VOLTS ADJUSTED FOR FOCUS 5 GRID-No.4-TO- GRID-No.1 VOLTS AD	1 V	1 GRID-No.4 VOLTS ADJUSTED FOR FOCUS 5 GRID-No.4-TO-GRID-No.1 VOLTS ADJUSTED FOR FOCUSi
GRID-No	1 V	GRID-No.1 VOLTS
GRID-No	1 V	GRID-No.2 VOLTS GRID-No.2-TO-GRID-No.1 VOLTS
ultor voltage, ultor current, and grid-No	2	ultor voltage, ultor current, and grid-No.2 I. Calculate the maximum focusing-voltage
designers flexibility in determining the approx- from	12000 V	designers flexibility in determining the approx- from 10000 to 12000 volts by applying the rule
particular requirements. the rate of approximately	1000 V	particular requirements. the rate of approximately 30 volts for each 1000~
Ef =	6.3 V	Ef =63 VOLTS Ef =63 VOLTS [Eç=6.3 YOLTS Ef=6.3 VOLTS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
ULTOR-TO-GRID-N#	1 V	ULTOR-TO-GRID-N#1 VOLTS = 10000 ULTOR VOLTS = 10000 FULTOR-TO-GRID-No. 1 ULTOR VOLTS=



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1950 SYLVANIA

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	15400 V	—
Typical Anode Voltage	12000 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor	P4	—
Focusing Method	Electrostatic	—
Deflecting Method	Magnetic	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Sylvania Electronic Tubes Vol3

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Current	600 mA	—
Focusing Method	Electrostatic text	—
Deflection Method	Magnetic text	—
Fluorescence	White text	—
Persistence	Short to Medium text	—
Phosphor	P4 text	—
Horizontal Deflection Angle	85 deg	Approximate
Diagonal Deflection Angle	90 deg	Approximate
Light Transmittance	78 percent	Approximate
Ion Trap	External Single Field text	—
Cathode-to-All Capacitance	5 pF	Approximate
Grid1-to-All Capacitance	6 pF	Approximate
External Coating-to-Anode Capacitance Minimum	800 pF	—
External Coating-to-Anode Capacitance Maximum	1200 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	12000 V	—
Grid2 Voltage	300 V	—
Ion Trap Magnet Current	35 mA	Representative
Ion Trap Field Strength	40 gauss	—
Maximum Anode Voltage	15400 V	—
Maximum Grid2 Voltage	440 V	—
Focus Voltage Minimum	-50 V	Grid4
Focus Voltage Maximum	350 V	Grid4
Grid1 Cutoff Voltage Minimum	-70 V	—
Grid1 Cutoff Voltage Maximum	-26 V	—
Maximum Grid1 Circuit Resistance	1.5 Mohm	—

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

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