



VIDICONS

THOMSON - CSF has developed a wide range of SPECIAL VIDICONS to meet a great variety of television requirements :

INDUSTRIAL - MEDICAL - NUCLEAR
SCIENTIFIC - MILITARY - SLOW SCAN and DELAYED T.V.

Depending on their focus and deflection modes, their photoconductive layers or their structure, these SPECIAL VIDICONS include 3 families :

- VIDICONS WITH STANDARD PHOTOCONDUCTIVE LAYER having focus and deflection fully electrostatic or hybrid.
- VIDICONS WITH SPECIAL PHOTOCONDUCTIVE LAYER sensitive to IR, X or UV radiations.
- SLOW SCAN AND STORAGE VIDICONS.

Furthermore, some VIDICONS can be equipped with F.O. face plate or with non browning radiation glass.

VIDICONS WITH STANDARD PHOTOCONDUCTIVE LAYER

TH 9813

Magnetic deflection. Electrostatic focus. Usable in 40 mm diameter camera. Excellent uniformity of resolution and good raster linearity. High quality of general characteristics : high sensitivity, low lag. Designed for all applications in closed-circuit transistorized Television.

TH 9823

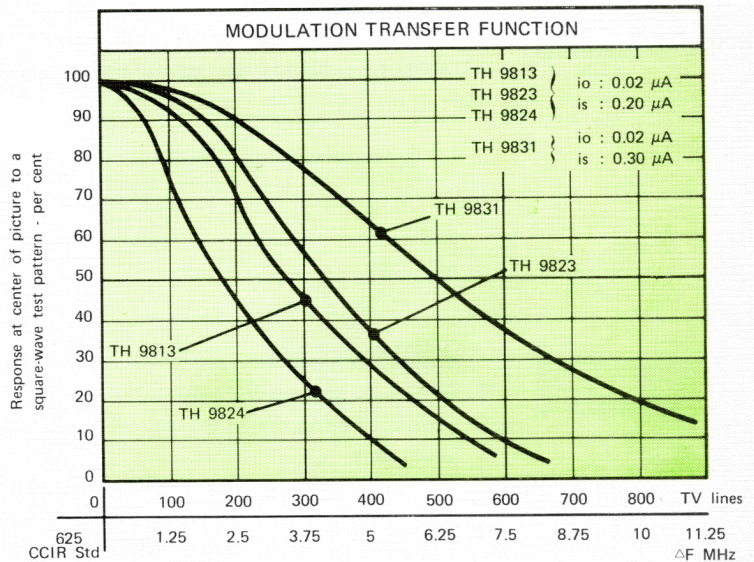
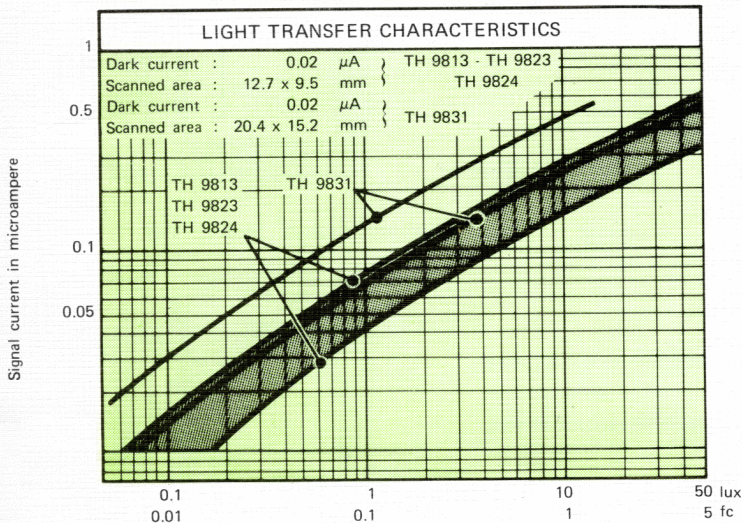
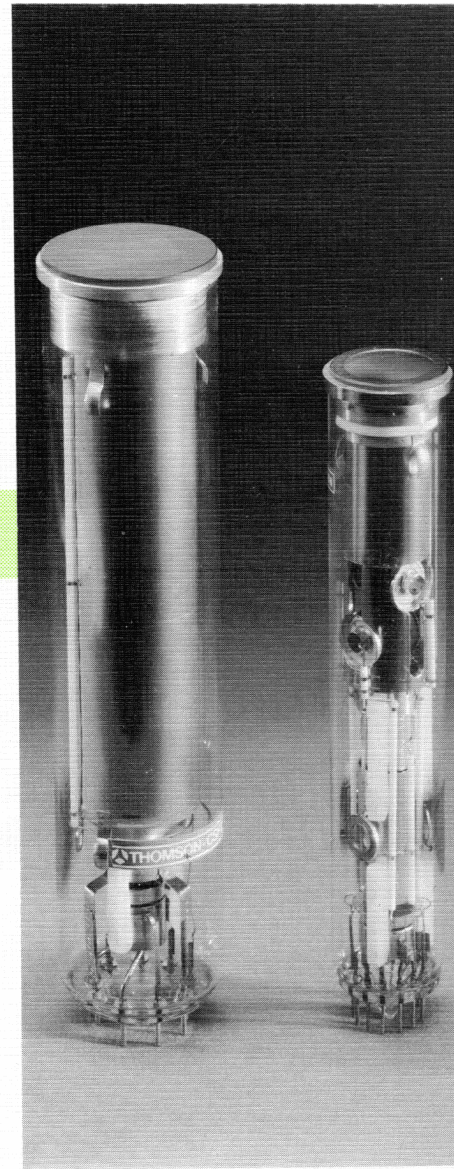
Electrostatic deflection and magnetic focus (when required by permanent magnet). High quality image due to magnetic focus and advantageous compactness due to electrostatic deflection. High resolution and excellent general performances. Especially intended for all Television system where small size and high quality of image are required.

TH 9824

Completely Electrostatic. Stability in operation and essential characteristics of image even in the case of high variations of electrode potential. Good resolution and raster linearity. High performances : sensitivity, lag. Ideally suited for all industrial Television requirements : very significant reduction in the dimensions and weight of the camera. Especially designed for applications where very small size is essential : Space Television, Military Television.

TH 9831

1 1/2" Vidicon. Magnetic deflection and electrostatic focus. Designed for professional equipments of very high quality. Very high performances. Excellent image quality and maximum resolution. Recommended for Black and White or color Broadcast Television, live scene pickup and Teleciné



Illumination on tube face in lux and foot-candle

Center resolution

VIDICONS WITH SPECIAL PHOTOCONDUCTIVE LAYER

TH 9890

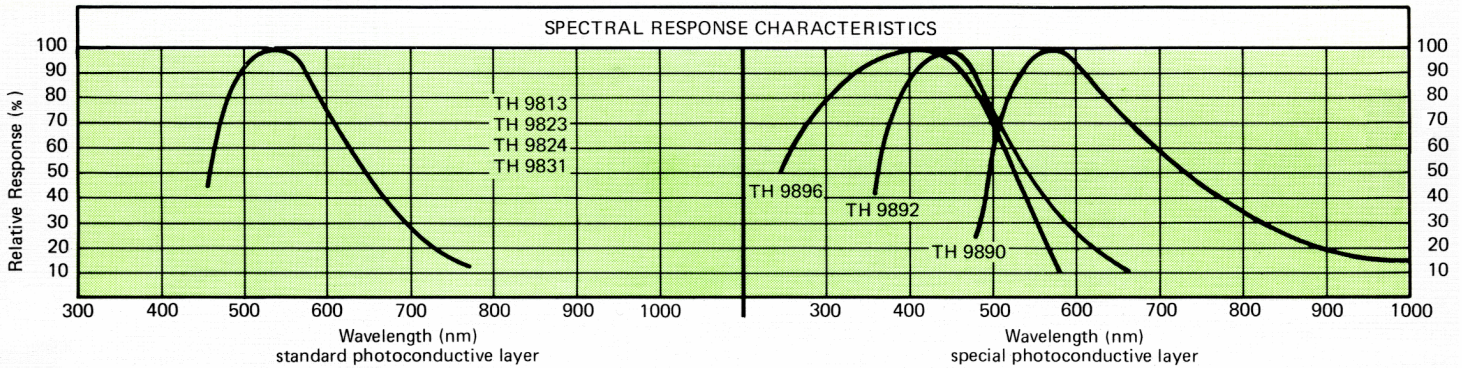
Magnetic focus and deflection. **Highly sensitive to infra-red radiation** with threshold wavelength extending over $2 \mu\text{m}$. Suitable both for **Television operation in infra-red light** and for **observation of hot body temperature**.

TH 9894

Magnetic focus and deflection. **X-ray sensitive Vidicon**. Designed for **non-destructive testing of components and assemblies**. Low lag layer capable of monitoring stationary or in-motion phenomena. High resolution.

TH 9896

Magnetic focus and deflection. Designed for **ultra-violet sensitive T.V. cameras**. With quartz window and special target allowing for high sensitivity in U.V. region of spectrum. Recommended for use in industry (**flame observation in daylight, gas injection in boilers**) or in biology (**U.V. television microscopy**). . .



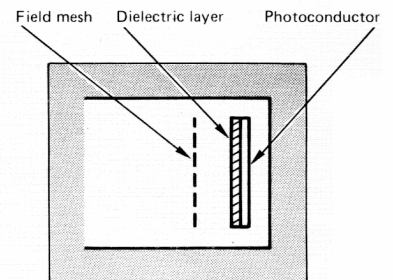
SLOW SCAN AND STORAGE VIDICONS

TH 9892

Magnetic focus and deflection. Designed for **slow scan or delayed readout**. Excellent light integration and storage characteristics. Suitable for slow scan pick-ups requiring high resolution such as for **space application**. Also suitable for narrow bandpass transmission (**high signal to noise ratio**) or very narrow bandpass (**transmission of video information over telephone lines**).

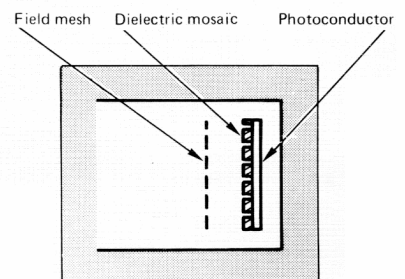
TH 9893

Magnetic focus and deflection. **Storage Vidicon with readout performed in one T.V. frame**. Storage time : several days. High resolution maintained after long storage time. Intended for **delayed transmission of transient phenomena**.



TH 9895

Magnetic focus and deflection. **Storage Vidicon with non-destructive readout** allowing for a 10 mn continuous reading. Excellent storage both in terms of resolution and duration of stored image. Intended for **long duration or repeated readout of high speed events**.



ESSENTIAL CHARACTERISTICS AND PERFORMANCES

General Characteristics

HEATER VOLTAGE	6.3 ± 10% V
HEATER CURRENT	0.15 A
TH 9813 - TH 9831	Electrostatic focus - magnetic deflection
TH 9823	Magnetic focus - electrostatic deflection
TH 9824	Electrostatic focus and deflection
TH 9890 - TH 9892 - TH 9893	Magnetic focus and deflection
TH 9894 - TH 9895 - TH 9896	

PHOTOCONDUCTIVE LAYER SPECTRAL RESPONSE

TH 9813 - TH 9823 - TH 9824 - TH 9831	max at 550 nm
TH 9892 - TH 9895	extending up to 2400 nm
TH 9890	max at 440 nm
TH 9892	max at 440 nm
TH 9894	X-Ray sensitive
TH 9896	max at 400 nm

Electrical Operation Modes

SCANNED AREA

TH 9813 - TH 9823 - TH 9824 - TH 9890	12.7 x 9.5 mm
TH 9892 - TH 9893 - TH 9894 - TH 9895	
TH 9896	20.4 x 15.2 mm
TH 9831	

ILLUMINATION	See light transfer curves.
TEMPERATURE	25° ± 5° C

FOCUS

TH 9813 - TH 9824 - TH 9831	Vg3 # 0.3 Vg4
TH 9823	Coil or permanent magnet
TH 9890 - TH 9892 - TH 9893 - TH 9894	Focus coil
TH 9895 - TH 9896	

ALIGNMENT	Coil
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SIGNAL CURRENT (max)

TH 9813 - TH 9823 - TH 9824 - TH 9890	0.2 μA
TH 9892 - TH 9893 - TH 9894 - TH 9896	0.1 μA
TH 9895	0.6 μA
TH 9831	0.6 μA

ELECTRODE VOLTAGES

	Post acceleration Voltage	Wall electrode Voltage
TH 9813	Vg5 500 V	Vg4 300 V
TH 9823	Vg5 450 to 600 V	Vg4 300 to 400 V
TH 9824	Vg5 500 to 600 V	Vg4 300 V
TH 9831	Vg5 1400 to 1500 V	Vg4 800 to 1000 V
TH 9890	Vg4 250 to 300 V	Vg3 250 to 300 V
TH 9892	Vg4 450 V	Vg3 300 V
TH 9893 - TH 9895	Vg4 400 V	Vg3 300 V
TH 9894	Vg4 750 V	Vg3 450 V
TH 9896	Vg4 400 to 450 V	Vg3 280 to 300 V

Typical Operations

	TH 9813 TH 9823 - TH 9824	TH 9831	TH 9890	TH 9892	TH 9894	TH 9896
AVERAGE SENSITIVITY						
Face plate illumination	10 lux	10 lux	10 I.R. lux	1 lux/s	100 R/mn	0.5 μw
Target voltage	20 to 50 V	20 to 50 V	20 to 100 V	30 V	50 V	10 to 20 V
Dark current	20 nA	20 nA	20 nA	0.6 nA	2 nA	0.5 nA
Signal current	200 nA	350 nA	120 nA	20 nA	100 nA	50 nA
				(ti = 1s)		
LAG						
Residual after 60 ms	20%	20%	45%	25%	-	-
Average gamma	0.65	0.65	0.65	0.9	0.9	0.9

Particular Performances

Allowed dimensional outline of the camera

DIAMETER

TH 9813 - TH 9823	40 mm
TH 9824	32 - 35 mm
TH 9831	60 mm

LENGTH	See mechanical characteristics
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FOCUS

TH 9813 - TH 9824 - TH 9831	Negligible energy
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DEFLECTION (for electrode voltages defined in Electrical Operation Modes)

TH 9813	Requires power 3 to 4 times less than TH 9812 (Magnetic focus)
TH 9831	Requires power 3 to 4 times less than TH 9830 (Magnetic focus)

VIDICON+CAMERA ESTIMATED WEIGHT

TH 9813	300 g
TH 9824	160 g
TH 9823	250 g
TH 9831	620 g

RESOLUTION (Electrical normal mode)

TH 9813	650
TH 9823	800
TH 9824	450
TH 9831	1000
TH 9890	550
TH 9894	35 lp/mm
TH 9896	800
TH 9892	800
TH 9893	600
TH 9895	600

Center limiting resolution (T.V. lines)

Percentage of modulation at 400 T.V. lines

650	25
800	40
450	15
1000	60
550	40
35 lp/mm	-
800	40
800	40
600	-
600	-

Mechanical Characteristics

LENGTH (A) (see drawing)

TH 9813 - TH 9824 - TH 9890 - TH 9892 - TH 9893	max 165 mm
TH 9894 - TH 9895 - TH 9896	max 112 mm
TH 9823	max 265 mm
TH 9831	max 265 mm

DIAMETER (B) (see drawing)

TH 9813 - TH 9824 - TH 9890 - TH 9892 - TH 9893	max 26.7 mm
TH 9894 - TH 9895 - TH 9896 - TH 9823	max 38.5 mm
TH 9831	max 38.5 mm

RECTANGULAR IMAGE MAXIMUM DIAGONAL

TH 9813 - TH 9823 - TH 9824 - TH 9890 - TH 9892	17 mm
TH 9893 - TH 9894 - TH 9895 - TH 9896	25.4 mm
TH 9831	25.4 mm

WEIGHT APPROXIMATE

TH 9813 - TH 9823 - TH 9824 - TH 9890 - TH 9892	60 g
TH 9893 - TH 9894 - TH 9895 - TH 9896	120 g
TH 9831	120 g

OPERATING POSITION any

SOCKET

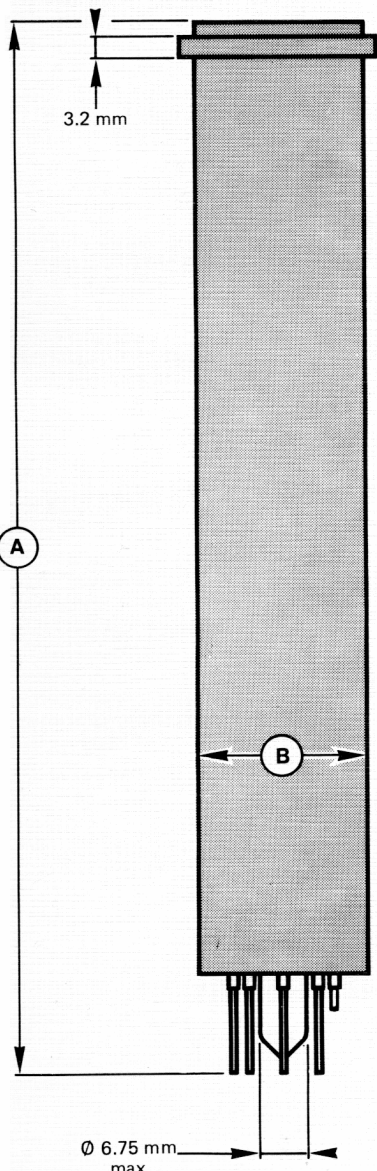
TH 9813 - TH 9890 - TH 9892 - TH 9893	Metox n° 30.250
TH 9894 - TH 9895 - TH 9896	Cinch n° 133-98-11 015
TH 9824	Cinch n° 203-62-13 031
	or equivalent Metox
TH 9823	E.F. Johnson C° n° 124 311.100
	or equivalent Metox
TH 9831	Alden n° 208 - SPEC
	or equivalent Metox

DEFLECTION, FOCUS, ALIGNMENT COILS

TH 9813	deflection and alignment assembly
	Gerhard BV 150/41
	Cleveland VYA 300
TH 9831	deflection and alignment assembly
	Celco TV 348-S450/352-F215 A280
	Cleveland 15 VYA 333
	Celco HV 356-S500/330 A280
TH 9890 - TH 9894 - TH 9896	deflection and focus assembly
TH 9892 - TH 9893 - TH 9895	Gerhard BV 200 1K1
	alignment coil
	Gerhard BV 80/3
	deflection-focus-alignment assembly
	Cleveland VYFA-355 2
	Celco BV 232-S500/300-F240-A283

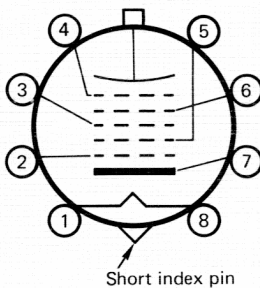
OUTLINE DRAWING

BASING DIAGRAMS (bottom view)



TH 9813

Base : Ditetrar 8 pins JEDEC E8-11



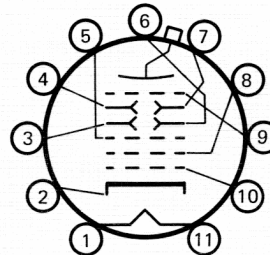
- 1 - Heater
- 2 - Electrode g1
- 3 - Electrode g3
- 4 - Electrode g5
- 5 - Electrode g2
- 6 - Electrode g4
- 7 - Cathode
- 8 - Heater

Flange : target

Short index pin

TH 9823

Base : Ditetrar 11 pins JEDEC E11-22

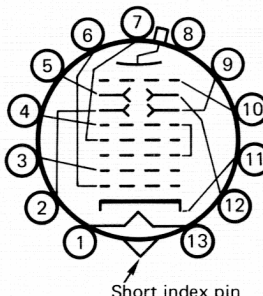


- 1 - Heater
- 2 - Cathode
- 3 - D1 - Deflector
- 4 - D4 - Deflector
- 5 - Electrode g3
- 6 - D2 - Deflector
- 7 - D3 - Deflector
- 8 - Electrode g2
- 9 - Electrode g4
- 10 - Electrode g1
- 11 - Heater

Flange : target

TH 9824

Base : Ditetrar 13 pins JEDEC E8-13



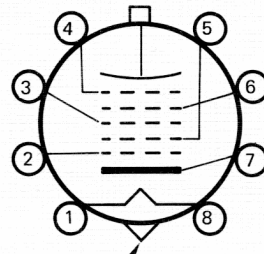
- 1 - Heater
- 2 - D1 - Horizontal deflector
- 3 - Electrode g2
- 4 - Electrode g4
- 5 - D4 - Vertical deflector
- 6 - Electrode g1
- 7 - Electrode g3
- 8 - Internal connection
- 9 - D2 - Horizontal deflector
- 10 - Electrode g5
- 11 - Cathode
- 12 - D3 - Vertical deflector
- 13 - Heater

Flange : target

Short index pin

TH 9831

Base : Super Ditetrar 8 pins JEDEC E8-78

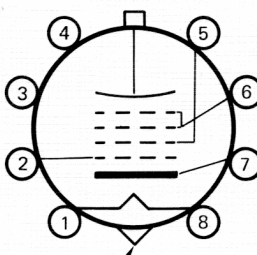


- 1 - Heater
- 2 - Electrode g1
- 3 - Electrode g3
- 4 - Electrode g5
- 5 - Electrode g2
- 6 - Electrode g4
- 7 - Cathode
- 8 - Heater

Flange : target

TH 9890

Base : Ditetrar 8 pins JEDEC E8-11



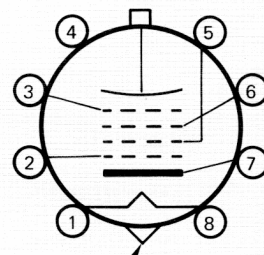
- 1 - Heater
- 2 - Electrode g1
- 3 - Internal connection
- 4 - Internal connection
- 5 - Electrode g2
- 6 - Electrodes g3 g4
- 7 - Cathode
- 8 - Heater

Flange : target

Short index pin

TH 9892 - TH 9893 - TH 9894 TH 9895 - TH 9896

Base : Ditetrar 8 pins JEDEC E8-11



- 1 - Heater
- 2 - Electrode g1
- 3 - Electrode g4
- 4 - Internal connection
- 5 - Electrode g2
- 6 - Electrode g3
- 7 - Cathode
- 8 - Heater

Flange : target

Short index pin