OPERATING MANUAL

VA-391 AND VA-392
OPTICAL TRANSMITTER AND RECEIVER

Covering VA-391 and VA-392 serial #9107012 upwards

SERIAL 352/71
ISS.2

CONTENTS

1.GENERAL INFORMATION

The OPTICAL TRANSMISSION SYSTEM comprises a VA-391 Transmitter and a VA-392 Receiver, each requiring 1.75" of 19" rack mounting space. Both units are based on the VA-390 Modular Optical Transmission System. The VA-391 and VA-392 provide optical transmission and reception of one channel of video and can be configured to carry up to four channels of audio.

The system has been designed to operate in the second window (1300nm region) and to use single mode optical fibre.

Front Panel

The front panels of the VA-391 and VA-392 have the same format. The power ON switch appears on the right hand side of the panel. The status indicators appear to the left of the IRT logo. Next to these is a gain control and monitor output. On the VA-391 an adjustment for cable equalisation also appears. These two adjustments, gain and equalisation, are the only operational adjustments provided.

Rear panel

The system inputs and outputs appear on the rear panels. On the VA-391 Transmitter the video input is via two looping BNC connectors on the right of the rear panel. The unused input must either be terminated by 75 Ohms or may be used as a signal loop to another terminated video input. There are four XLR female sockets for audio input. In the middle of these is a 15 Way D Connector for alarm outputs and clamp control input. To the left of the audio inputs is a DIN 47256 Standard connector for optical output. Next to this, the fused mains input. On the VA-392, the connector positions are the same but the video, audio, and optical signal flow is reversed. In this case the XLR connectors are male.

Links are available in the appropriate unit to allow for :-

- The insertion or removal of the audio sub-carrier and associated filters from the system.
- The muting of the video and audio outputs upon receiver signal loss.

The System has been designed to operate within the specification for optical path losses up to 24 dB. For safety reasons, the optical power has been restricted to -10 dBm with an alarm indicating any increase above -7 dBm.

The System uses a wide band FM modulator capable of modulating baseband signals from 20 Hz to 12 MHz (-1 dB). This allows for the addition to the video of two FM sub-carriers of 7.5 and 8.3 MHz for the carrying of two high quality audio channels suitable for stereo operation. Further FM sub-carriers may be included to provide up to two more audio channels. The audio can be disabled and the audio/video separation filters removed to allow wide-band operation, should this be required.

FEATURES

1. Input and output video signal gain adjustable from front panel

2. Input cable equalisation 0 to 100 metres

3. Video clamp on the back porch of the video input

4. Video clamp on the back porch of the video output

5. The VA-392 Video and Audio Output is muted on loss of signal

6. Front Panel alarms indicate optical signal losses and proper transmission and reception of the video signal.

7. Opto-isolated alarm signals are provided.

8. Selectable 5MHz Video Bandwidth with Audio or 10 MHz bandwidth with no Audio.

CAUTION

Linearity adjustments on the modulator and demodulator should not be altered. Any alterations to these adjustments may adversely affect the system performance. All adjustments for normal operation of the equipment are available on the front panels.

2.SPECIFICATIONS

DIMENSIONS :-

Height	44.5mm
Width (including mounting bracket)	483mm
Depth	445mm

VIDEO INPUT / OUTPUT CONNECTORS :- BNC

AUDIO INPUT / OUTPUT CONNECTORS :- XLR
PIN 1 GND
PIN 2 +
PIN 3 -

ALARM OUTPUT CONNECTORS :- 15 PIN D-CONNECTOR

POWER INPUT CONNECTORS :- 240V AC Option IEC320

OPTICAL INPUT / OUTPUT CONNECTORS :- DIN 47256

The following performance data is for optical path losses of 0 to 24 dB with an optical power output of -10 dBm (0.1 mW) and with pre-emphasis and de-emphasis connected. Band stop filters are inserted.

POWER REQUIREMENTS :-

Nominal	240 Vrms AC
Nominal current	0.75 A

VIDEO :- - at a video input level of 1V P-P.

1. Insertion Gain < +/- 0.2 dB

2. Noise
   To CCIR Rec 567-1
   Continuous random noise < -63 dB RMS
   Periodic noise
   Power supply hum
   (including harmonics) < -45 dB
   1 kHz to 5.5 MHz < -60 dB

3. Overall gain < Unity +/-3 dB
   Adjustable from front panel

4. Frequency Response +/-0.1 dB to 5MHz
   +/-0.5 dB to 10MHz (no Audio)

5. Differential Gain at 4.43 MHz <1.0%

6. Differential Phase at 4.43 MHz <1.0%

7. Pulse to Bar K-factor <=0.5%K

8. Luminance/Chrominance Inequality
   Delay <20ns
   Gain <2%

VA-391 VIDEO INPUT CHARACTERISTICS

9. Input Impedance: Looping Bridging

10. Input Signal: Composite or a MAC style of signal.

11. Input common mode rejection > 40 dB

VA-392 VIDEO OUTPUT CHARACTERISTICS

12. Output Impedance 75 Ohms

AUDIO :-

13. Frequency response +0.15/-0.75 dB (30 Hz to 15 kHz)

14. Total harmonic distortion
measured @ +17 dBm < 4 kHz
+14 dBm => 4 kHz
30 Hz to 7.5 kHz < 0.2 %

15. Intelligible crosstalk ratio > 80 dB

16. Gain difference between channels

30 Hz to 10 kHz	<	0.2 dB
10 kHz to 14 kHz	<	0.4 dB
14 kHz to 15 kHz	<	0.8 dB

17. Phase difference between channels

30 Hz to 4 kHz	<	3.75^{o}
14 kHz	<	7.5^{o}
15 kHz	<	10^{o}

18. Noise < -52 dBm

20. Audio input

Impedance	600 ohm, balanced
Nominal input level	+8 dBm
Input gain range	+/- 3 dB
Input common mode	> 50 dB

21. Audio output

Impedance approx. 40 ohms, balanced (aligned for load impedances of 600 ohms or greater.)	
Nominal output level	+8 dBm
Output gain range	+/- 3 dB

OPTICAL INPUT/OUTPUT:-

22. Laser Wavelength 1300nm

23. Launch Power -10 dBm (Single Mode Cable)

24. Path Loss Up to 24 dB path attenuation allowable to meet published specification

3.BRIEF TECHNICAL DESCRIPTION

The VA-391/VA-392 Transmitter/Receiver pair is a single mode fibre optic link operating at 1300 nm meeting Telecom 5 Vc (local link) performance with fibre losses of up to 24dB. Refer to the block diagram of the transmitter provided. The video input is amplified, pre-emphasised and back porch clamped. In order to reduce any unwanted signal at frequencies above the video bandwidth that would appear at the audio output, the video signal is passed through a bandstop filter that attenuates at audio subcarrier frequencies prior to the insertion of the audio subcarriers.

The audio subcarriers for the two audio channels are generated by varactor modulators operating at 7.5 MHz and 8.3 MHz. The audio from the input is emphasized prior to modulating the subcarriers. Stability of these modulators is of paramount importance to ensure that maximum deviation can be achieved and to simplify insertion and extraction from the video without video degradation.

The video and the audio subcarriers are then pre-emphasized and used to modulate a wide band modulator which has excellent linearity over the full modulation bandwidth . The modulator frequency, without deviation, is approximately 30 MHz.

The modulated signal then drives the low powered laser that has been optically output stabilised using the detection diode integrated into the laser housing. The optical power output is set to -10 dBm and connected to the external fibre cable via a DIN 47256 connector.

Refer to the block diagram of the receiver provided. The optical signal received at the receiver is connected via a DIN 47256 connector to an avalanche photo diode (APD). The APD has a DC voltage connected to it that varies with the input light level. This voltage rises to a maximum across the APD at low light level. The DC maximum is set to be just below the point of APD avalanche to achieve the optimum signal to noise ratio. The signal detected by the APD is then amplified and fed to an AGC amplifier which maintains a constant RF output level over the received optical signal range. The signal is then fed to a limiter and demodulator.

The output from the discriminator first bandlimited to 14 MHz. It is then amplified, de-emphasized and then passed to a splitting circuit that extracts the audio subcarriers.

The video signal is band stop filtered to remove the audio subcarriers and clamped before passing to the video output via the mute switch.

The audio subcarriers from the splitter are fed to the 7.5MHz 8.3MHz audio demodulator circuits. Each subcarrier is filtered, and mixed using a crystal oscillator to give an IF of approximately 10.7 MHz. The signal is then limited, quadrature demodulated using dual tuned circuits for linearity. The audio output from the demodulator is de-emphasized, low pass filtered at 15 kHz, amplified and finally electronically balanced.

4.User Variable Configurations

Refer to the block diagrams provided.

VA-391 Transmitter.
Video plus Two Channel Audio.

-insert the video band-stop filter (Assembly 803023).
- connect LK 7 to 'ON' position to insert the audio subcarrier(s).
- LK 8,9,12 must be inserted.

Wideband Video:

Without Audio Subcarrier(s)

- replace the video band-stop filter with the 1.1 dB pad provided.
- place LK 7 in 'OFF' position.

VA-392
Video plus Two Channel Audio

- insert the video band-stop filter
- insert LK 9 and 10 to pass the audio subcarrier(s) to the output

Wideband Video

Without Audio Subcarrier(s)

- replace the video band-stop filter with the 1.1 dB pad provided.
- LK 9-13 disconnected

4a. Wideband/Video+Audio Switching from rear panel.

VA-391/VA-392 units with serial no. 9203033 and above are fitted with additional components to facilitate Wide Band/Video+Audio selection from the rear panel. Refer to the section **Remote Wideband switching Facility** in the Appendix of this Manual.

5.Link Locations and Function

Refer to the block diagrams. The links, when inserted, provide the following connections:

VA-391

LK1 to LK4 - Audio Preemphasis - **Do not remove.**

LK5 -Combined Video/Audio Subcarriers to Baseband Modulator.

LK6 - Not Used.

LK7 - Audio Subcarriers to Combiner. Position ON/OFF

LK8-11 Audio Modulators to Audio RF Mixer.

LK12 - External Subcarrier input. Not Used.

CLAMP - OFF position disables clamp and rear panel control.
ON position enables control of clamp from rear panel.
See Section 6.Alarms

VA-392

LK1 - Not Used.

LK2 - Video Deemphasis - **Do not remove.**

LK3 - Audio and Video Mute on loss of received RF signal.

LK4 - Video Fail Indicator from rear panel Alarm output activated by mute condition. If this link is removed, the video fail condition only occurs when the vertical block is lost.

LK5 to LK8 - Audio Deemphasis. **Do not remove.**

LK9 to LK 12 - Audio Subcarrier RF splitter to Audio Demodulators

LK13 - External Subcarrier Output. Not used.

CLAMP - OFF position disables clamp and rear panel control.
ON position enables control of clamp from rear panel.
See Section 6.Alarms

	LINK SETTINGS OPTICAL TRANSMITTER VA391					LINK SETTINGS OPTICAL RECEIVER VA392				
	NOTE 1 VID. + 1 SOUND	NOTE 1 VID. + 2 SOUND	NOTE 1 VID. + 3 SOUND	NOTE 1 VID. + 4 SOUND	NOTE 2 WIDEBAND VID.	NOTE 1 VID. + 1 SOUND	NOTE 1 VID. + 2 SOUND	NOTE 1 VID. + 3 SOUND	NOTE 1 VID. + 4 SOUND	NOTE 2 WIDEBAND VID.
LK 1	I	I	I	I	X	N I	N I	N I	N I	N I
LK 2	X	I	I	I	X	I	I	I	I	I
LK 3	X	X	I	I	X	I NOTE 3	I NOTE 3	I NOTE 3	I NOTE 3	I NOTE 3
LK 4	X	X	X	I	X	N I	N I	N I	N I	N I
LK 5	I	I	I	I	I	I	I	I	I	X
LK 6	N I	N I	N I	N I	N I	X	I	I	I	X
LK 7	I	I	I	I	N I	X	X	I	I	X
LK 8	I	I	I	I	N I	X	X	X	I	X
LK 9	N I	I	I	I	N I	I	I	I	I	N I
LK 10	N I	N I	I	I	N I	N I	I	I	I	N I
LK 11	N I	N I	N I	I	N I	N I	N I	I	I	N I
LK 12	N I	N I	N I	N I	N I	N I	N I	N I	I	N I
LK 13	N I	N I	N I	N I	N I	N I	N I	N I	N I	N I
LK 14						N I	N I	N I	N I	N I

I = LINK INSERTED
N I = LINK NOT INSTALLED
X = LINK CAN BE INSERTED OR NOT INSERTED

NOTE 1 DEPENDING UPON THE NUMBER OF AUDIO CHANNELS, THE VIDEO FILTER MAY NEED TO BE ALTERED. TWO AND THREE AUDIO CHANNELS COULD BE ACCOMODATED USING THE BAND-STOP FILTER. FOUR CHANNELS OR THOSE SYSTEMS REQUIRING WIDELY SEPERATED SUBCARRIERS WOULD REQUIRE LOW-PASS FILTERS IN BOTH THE VA391 AND VA392

NOTE 2 FOR WIDE BAND APPLICATIONS THE VIDEO FILTERS IN BOTH THE VA391 AND VA392 MUST BE REMOVED AND EACH REPLACED BY A 75 OHM PAD (ASSY. 803306 IS RECOMMENDED FOR THIS PURPOSE). IF B-MAC IS TO PASS THROUGH THE VA391/392 THEN THE VIDEO CLAMPS SHOULD BE INHIBITED

NOTE 3 CAN BE USED WITHOUT THE LINK BEING INSERTED. THE NOISE PERFORMANCE HOWEVER DEGRADES CONTINUALLY WITH PATH ATTENUATION AFTER APPROX 24DB. THE MUTE WILL OPERATE IF IF CONNECTED IN THE RANGE 26 TO 32 DB PATH ATTENUATION

6.ALARMS

The alarm outputs are available from the rear panel of the VA-391 and VA-392 at the connector labelled 'ALARM OUTPUTS'. The alarms consist of unterminated 4N33 opto-couplers which can form the switch in an alarm circuit to suit the needs of the user. For instance, if a LED alarm is required then the emitter of the 4N33 can be connected to ground while the collector is connected to a suitable voltage via a load resistor.

The alarms available in the VA-391 are:

Laser High Power. This is triggered when the Laser exceeds -7 dBm output power. A LED ,labelled 'HI PWR',is turned on on the front panel and an opto-coupler is activated. Pin 11 is the emitter, pin 4 is the collector of the 4N33.

Laser Fail. If the current drawn by the Optics Laser drops below a threshold equivalent to an output power of -15 dBm, then a LED , labelled 'LASER FAIL', is turned on on the front panel and an opto-coupler is activated. Pin 10 emitter, pin 3 collector.

Video Fail. If Video Vertical Block is not detected then the 'VIDEO PRES' LED on the front panel is turned off and an opto-coupler is activated. Pin 12 emitter, pin 5 collector.

Other controls available from the alarm output:

Clamp Disable. On the alarm output, if pin 13 is connected to pin 1, the Video Clamp on the Video Input Amplifier is disabled and the 'CLAMP' LED on the front panel is turned off.

The alarms available in the VA-392 are:

Receiver Loss. If the light received at the detector falls below a power level of approx. -26 dBm, the AGC can no longer correct for decreasing signal level. A LED, labelled 'RX LOSS' is turned on on the front panel and an opto-coupler is activated. Pin 10 is the emitter, pin 3 is the collector of the opto-coupler.

Video/Audio Mute. LK 3 and 4 are normally in place in the VA-392. When a Receiver Loss condition occurs, the video and audio signals are muted. A LED, labelled 'MUTE', is turned on on the front panel. The video signal is still available at the monitor output on the front panel under mute conditions.

Video Fail. If the Video Vertical Block is not detected then the 'VIDEO PRES' LED on the front panel is turned off and the 'video fail' opto-coupler is activated. The video fail alarm at the alarm output is also activated by the Video mute (Receiver loss condition). Vertical block can still be detected for further decreasing signals under this condition. Therefore, the 'VIDEO PRES' indicator on the front panel will still indicate detection of the vertical block when 'RX LOSS' and 'MUTE' are on. However,

the Video Fail alarm at the rear panel will be on because it is activated by both the loss of video block and the video mute (receiver loss) condition whichever occurs first. The 'Video Fail' alarm opto-coupler is at the alarm output pin 11 (emitter) and pin 4 (collector).

Other controls available from the alarm output:

Clamp Disable. On the alarm output, if pin 12 is connected to pin 1, the Video Clamp on the Video Input Amplifier is disabled and the 'CLAMP' LED on the front panel is turned off.

7. Operational Adjustments

The only adjustments necessary for proper operation of the VA-391, VA-392 are input gain and cable equalisation.

Input Gain: The gain on the VA391 front panel should be adjusted so that the video signal at the VA-391 MONITOR output is 1 Vpp (sync. to Bar.)

Cable Equalisation. If a long run of cable is used to feed the input to the VA-391 then the cable equaliser should be adjusted to give a properly equalised video signal at the MONITOR output on the VA-391.

The VA-391 Video input must be terminated in 75 Ohms.

8.INPUT/OUTPUT CONTROLS AND INDICATORS

VA-391 (PL9 - D CONNECTOR REAR)

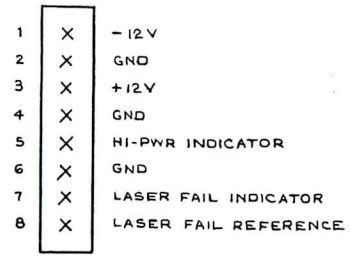
D15 REAR CONNECTOR

PIN	1	GND	PIN	9	WIDEBAND (CONT GND ACTIVE)
	2	GND		10	LASER FAIL (IND) -
	3	LASER FAIL (IND) +		11	HI-PWR (IND) -
	4	HI-PWR (IND) +		12	VIDEO FAIL (IND) -
	5	VIDEO FAIL (IND) +		13	CLAMP OFF(CONT.GND ACTIVE)
	6	N/C		14	N/C
	7	N/C		15	N/C
	8	N/C			

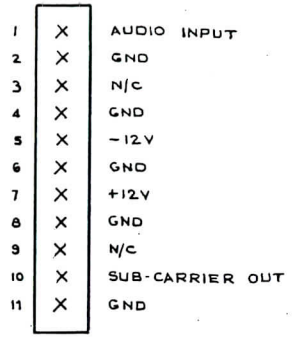
VA-392 (PL3 - D CONNECTOR REAR)

D15 REAR CONNECTOR

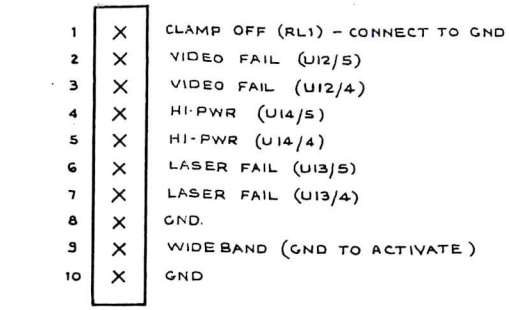
PIN	1	GND	PIN	9	WIDEBAND (CONT GND ACTIVE)
	2	N/C		10	RX LOSS (IND) -
	3	RX LOSS (IND) +		11	VIDEO FAIL (IND) -
	4	VIDEO FAIL (IND) +		12	CLAMP OFF(CONT.GND ACTIVE)
	5	N/C		13	N/C
	6	N/C		14	N/C
	7	N/C		15	N/C
	8	N/C			



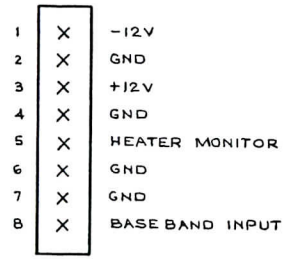
PL1
MAIN P.C.B TO LASER ASSY.



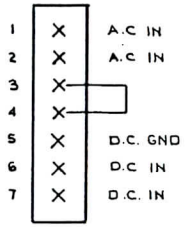
PL4 - PL7
MAIN PCB TO AUDIO MODULATORS



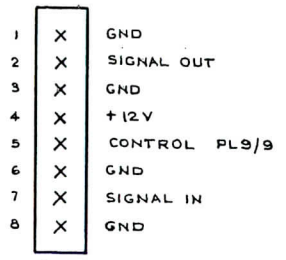
PL9
REAR PANEL ALARMS.



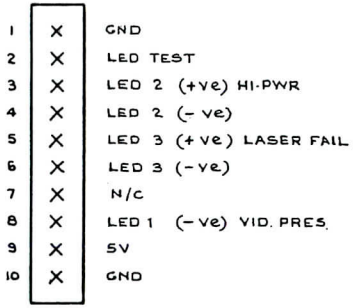
PL2
MAIN P.C.B TO BASEBAND MODULATOR



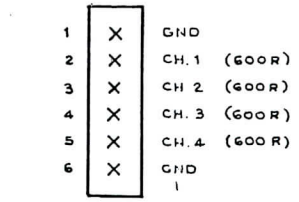
PWR.1
POWER



PL3
VIDEO FILTER OR PAD



PL8
FRONT PANEL INDICATORS



PL11
AUDIO MONITORS

FOR USE WITH PCB 803098 ISS. 6.

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		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM FRACTIONS DECIMALS ANGLES	CONTRACT NO	DRAWING NO. 803097	SHEET 8 of 9
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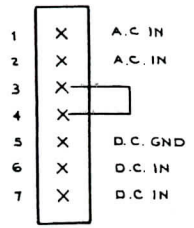
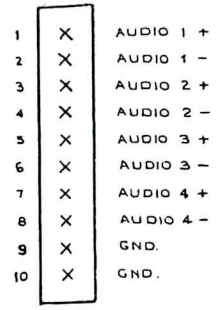
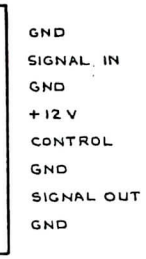


PWR.1
POWER

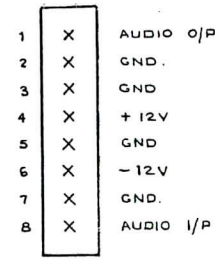


PL 9
AUDIO MONITOR

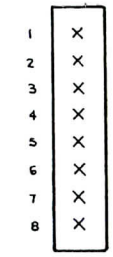
PL2
FRONT PANEL INDICATORS



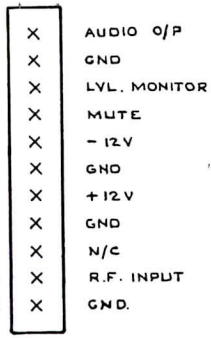
PL 4
VIDEO FILTER OR PAD



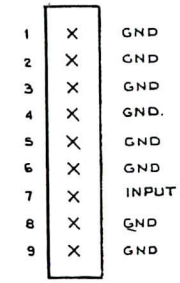
PL10 - PL13
AUDIO FILTER



PL3
REAR ALARM PANEL



PL5 - PL8
MAIN PCB TO AUDIO DEMODULATORS



PL 14
CABLE EQUALISER
(OPTIONAL)

FOR USE WITH PCB 803102, ISSUE 5

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13.4.92	ORIGINAL ISSUE
	DATE 4.9.91

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MM
FRACTIONS DECIMALS ANGLES

IRT

TITLE VA-392
OPTICAL RECEIVER
CONNECTOR LISTING

SIZE SCALE

CONTRACT NO

DRAWING NO 803101

SHEET 8 OF 9

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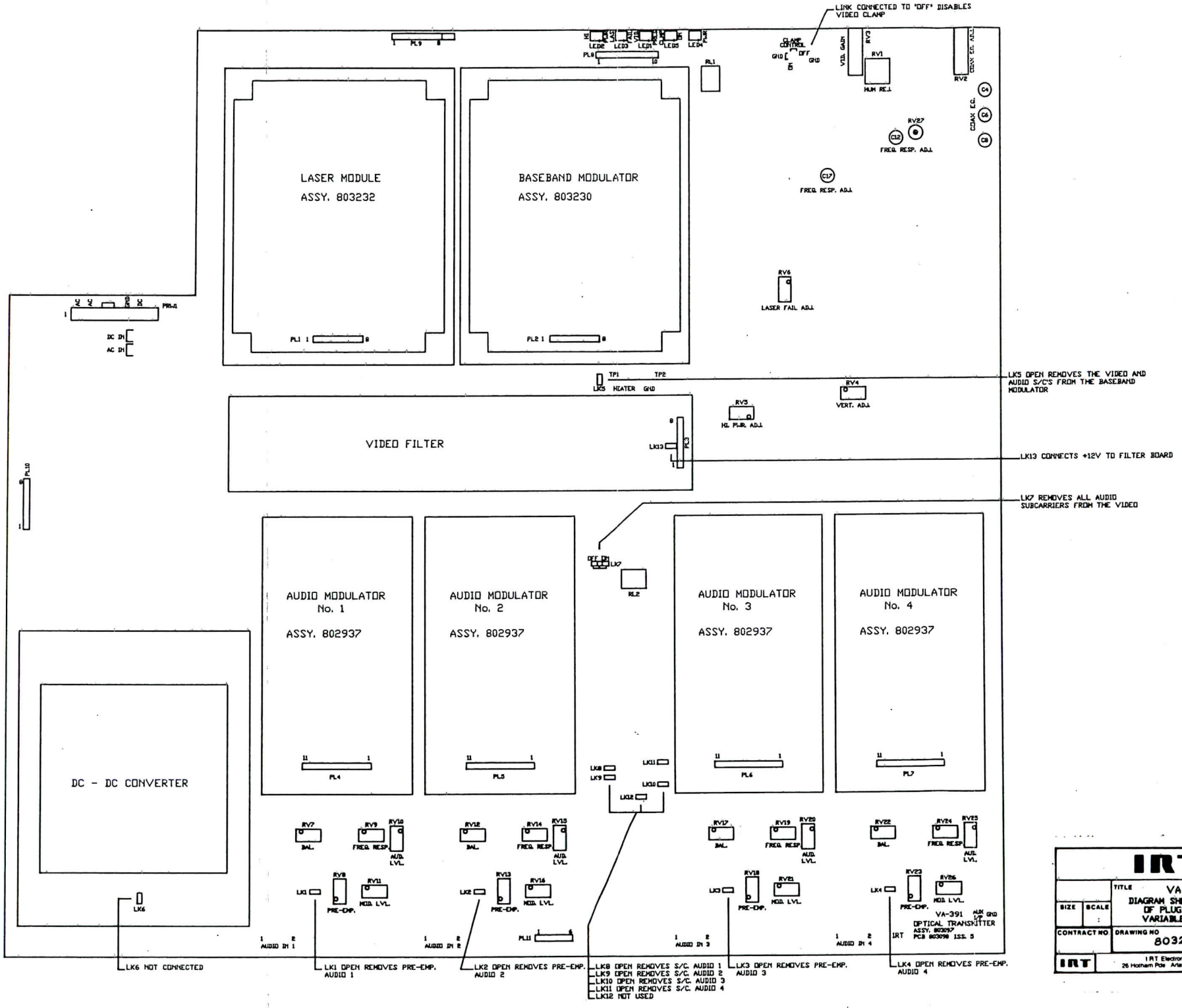
26 Hotham Pde. Artarmon Australia 2064


LINK CONNECTED TO "OFF" DISABLES VIDEO CLAMP
LASER MODULE
ASSY. 803232
BASEBAND MODULATOR
ASSY. 803230
VIDEO FILTER
AUDIO MODULATOR No. 1
ASSY. 802937
AUDIO MODULATOR No. 2
ASSY. 802937
AUDIO MODULATOR No. 3
ASSY. 802937
AUDIO MODULATOR No. 4
ASSY. 802937
DC - DC CONVERTER
LK5 OPEN REMOVES THE VIDEO AND AUDIO S/C'S FROM THE BASEBAND MODULATOR
LK13 CONNECTS +12V TO FILTER BOARD
LK7 REMOVES ALL AUDIO SUBCARRIERS FROM THE VIDEO
LK6 NOT CONNECTED
LK1 OPEN REMOVES PRE-EMP. AUDIO 1
LK2 OPEN REMOVES PRE-EMP. AUDIO 2
LK3 OPEN REMOVES PRE-EMP. AUDIO 3
LK4 OPEN REMOVES PRE-EMP. AUDIO 4
LK8 OPEN REMOVES S/C. AUDIO 1
LK9 OPEN REMOVES S/C. AUDIO 2
LK10 OPEN REMOVES S/C. AUDIO 3
LK11 OPEN REMOVES S/C. AUDIO 4
LK12 NOT USED
VA-391
OPTICAL TRANSMITTER
ASSY. 803097
PCB 803098 ISS. 5
IRT
VA - 391
DIAGRAM SHOWING LOCATION OF PLUGS, LINKS AND VARIABLE COMPONENTS
803265
3 OF 8
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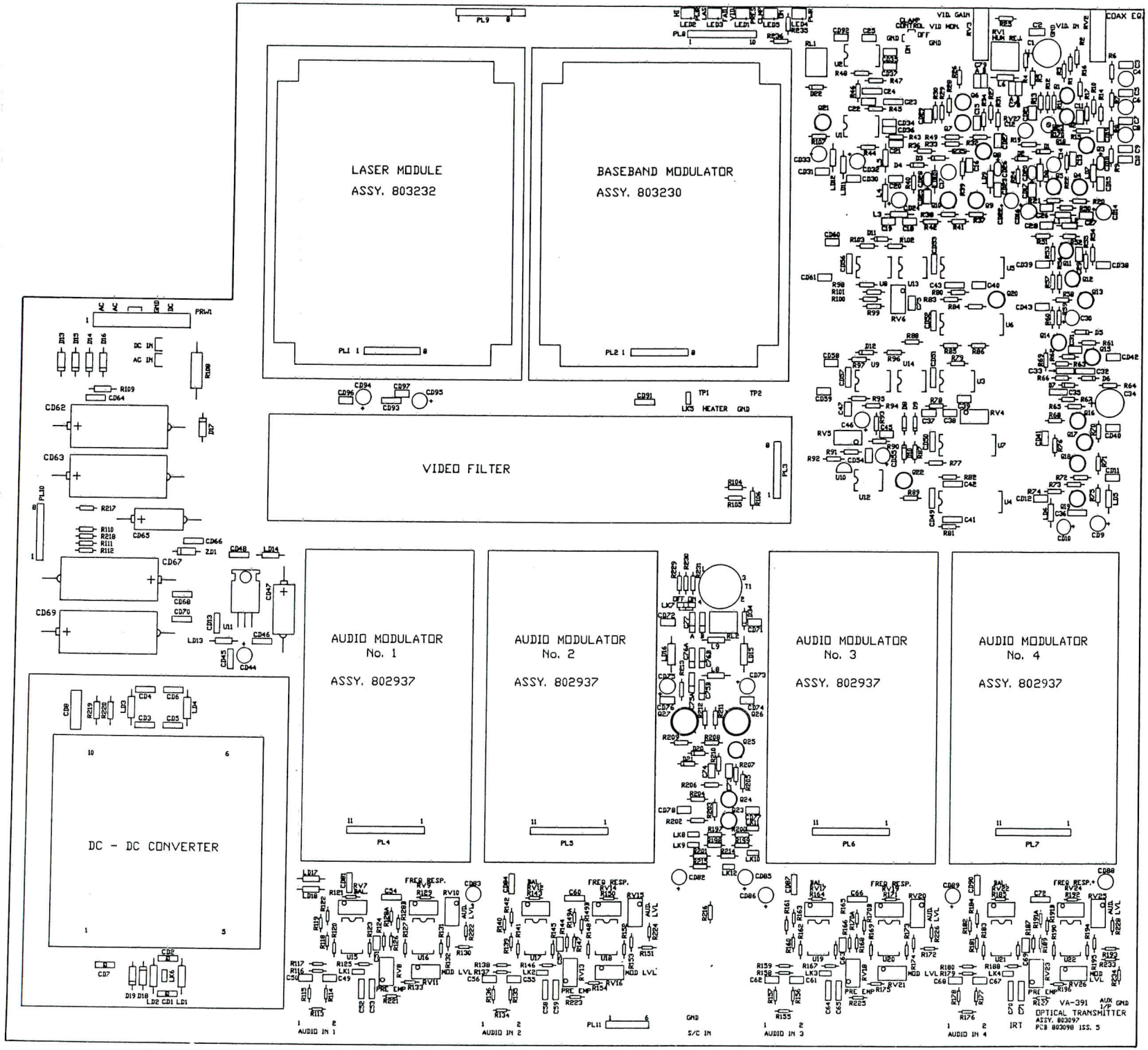

IRT		
SIZE	SCALE	TITLE: VA-391 COMPONENT LAYOUT
CONTRACT NO.		DRAWING NO: 803097
		SHEET: 9 OF 10

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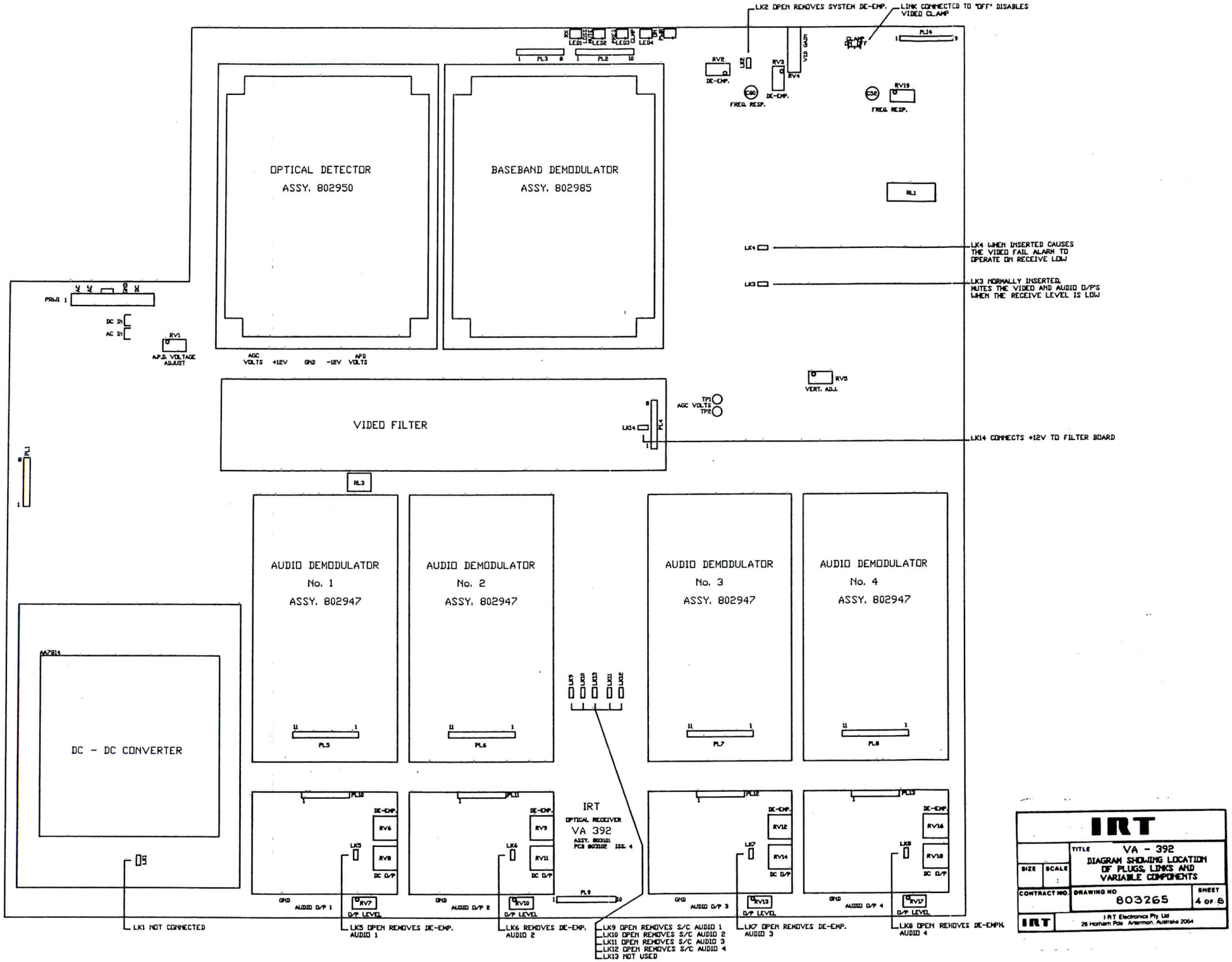
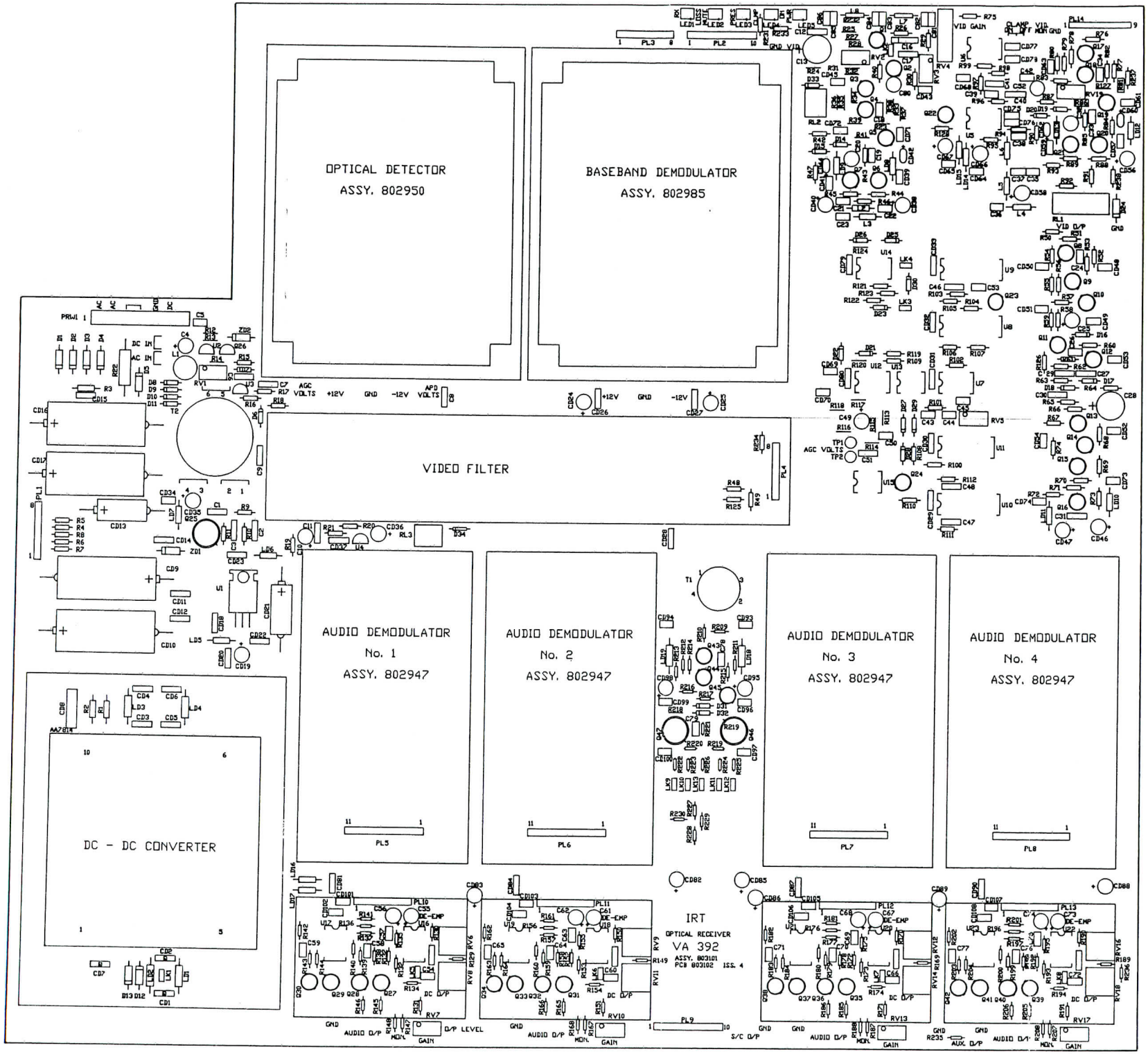


IRT	
TITLE	VA - 392 DIAGRAM SHOWING LOCATION OF PLUGS, LINKS AND VARIABLE COMPONENTS
SIZE / SCALE	
CONTRACT NO	
DRAWING NO	803265
SHEET	4 OF 8
IRT	IRT Electronics Pty Ltd, 26 Hotham Pde Artarmon, Australia 2064



IRT		
SIZE	SCALE	TITLE: VA-392 COMPONENT LAYOUT.
CONTRACT NO	DRAWING NO: 803101	SHEET: 9 of 10
IRT	IRT Electronics Pty Ltd, 26 Hotham Pde Artarmon Australia 2064	

12.Appendix

Remote Wideband switching Facility

VA-391/VA-392 units with serial no. 9203033 and above are fitted with additional components to facilitate Wide Band/Video+Audio selection from the rear panel. When this is done the following operations are effective:

VA-391- Connect pin 9 of the rear panel D-connector to ground (pin 1) to bypass the Video Bandstop filter allowing Wideband (10 MHz) operation of the unit. The Audio subcarriers are also turned off.

VA-392 - Connect pin 9 of the rear panel D-connector to ground (pin 1) to bypass the Video Bandstop filter allowing Wideband (10 MHz) operation of the unit. The Audio outputs are also muted.

Note:

Units with this feature must only have the following video filters installed:

Video LPF assy 803112 Iss 3 and Higher

Video BSF assy 803023 Iss 3 and Higher

Insertion of earlier issues of either assy 803112 or 803023 will result in loss of Audio signals.

Four Channel Audio.

Units fitted with four audio channels use different audio subcarrier frequencies ie

7.36 MHz
7.765 MHz
8.215 MHz
8.71 MHz

The Audio configuration is as follows:

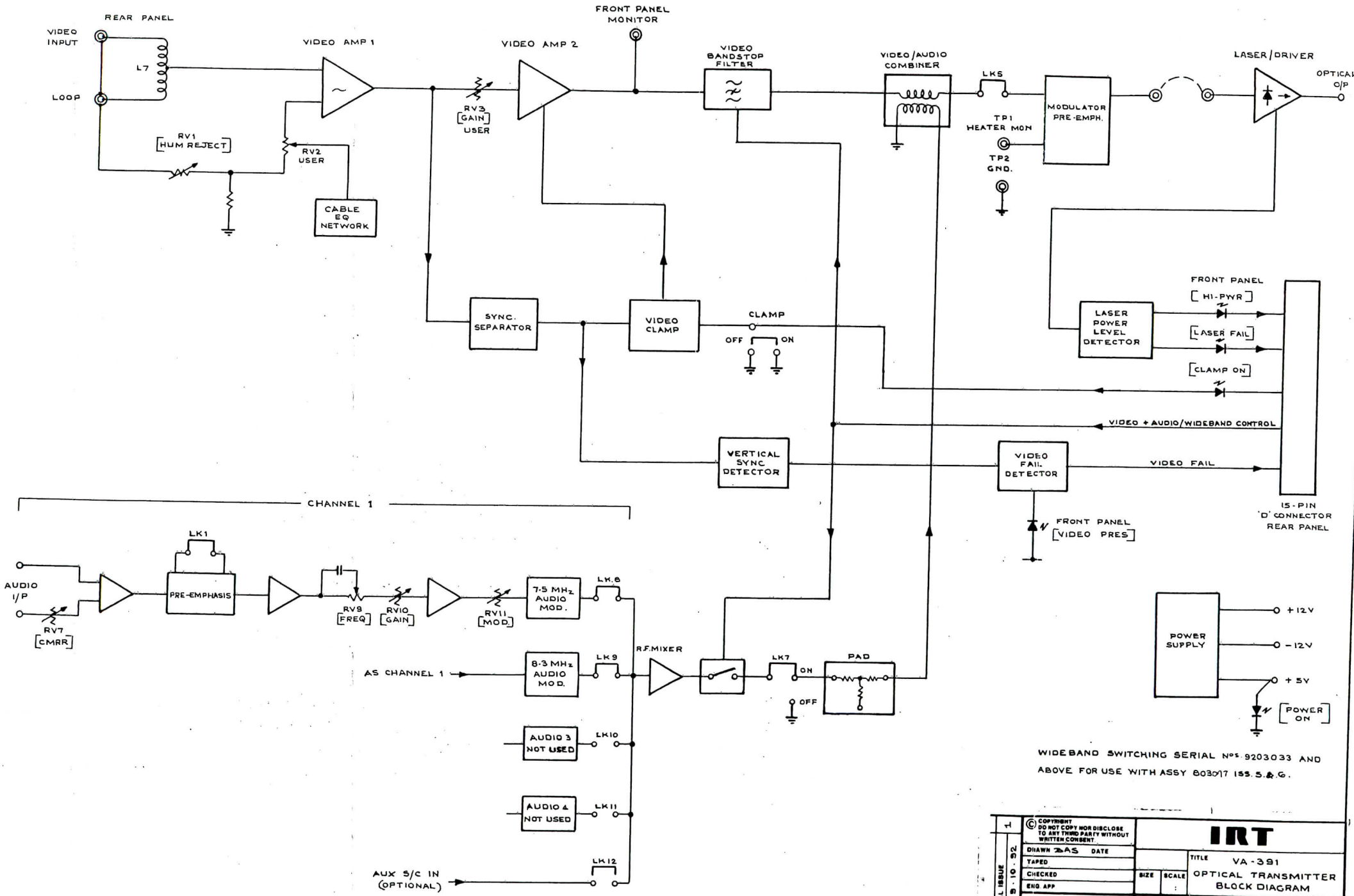
VA-391:
LK8-11 IN

VA-392:
LK9-12 IN

See page 12 for a complete listing of link positions

The video filter in these units is changed from a Bandstop Filter assy 803023 to a Low Pass Filter 803112.

The following two pages show a block diagram for the units with Four Audio Channels.



WIDEBAND SWITCHING SERIAL Nos. 9203033 AND ABOVE FOR USE WITH ASSY 803017 ISS. 5. & 6.

ORIGINAL ISSUE	1
DATE	9.10.92
DRAWN	AS DATE
TAPED	
CHECKED	
ENG APP	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM FRACTIONS DECIMALS ANGLES	
SIZE	A
SCALE	
TITLE	VA-391 OPTICAL TRANSMITTER BLOCK DIAGRAM
CONTRACT NO	
DRAWING NO	803265
SHEET	7 OF 8

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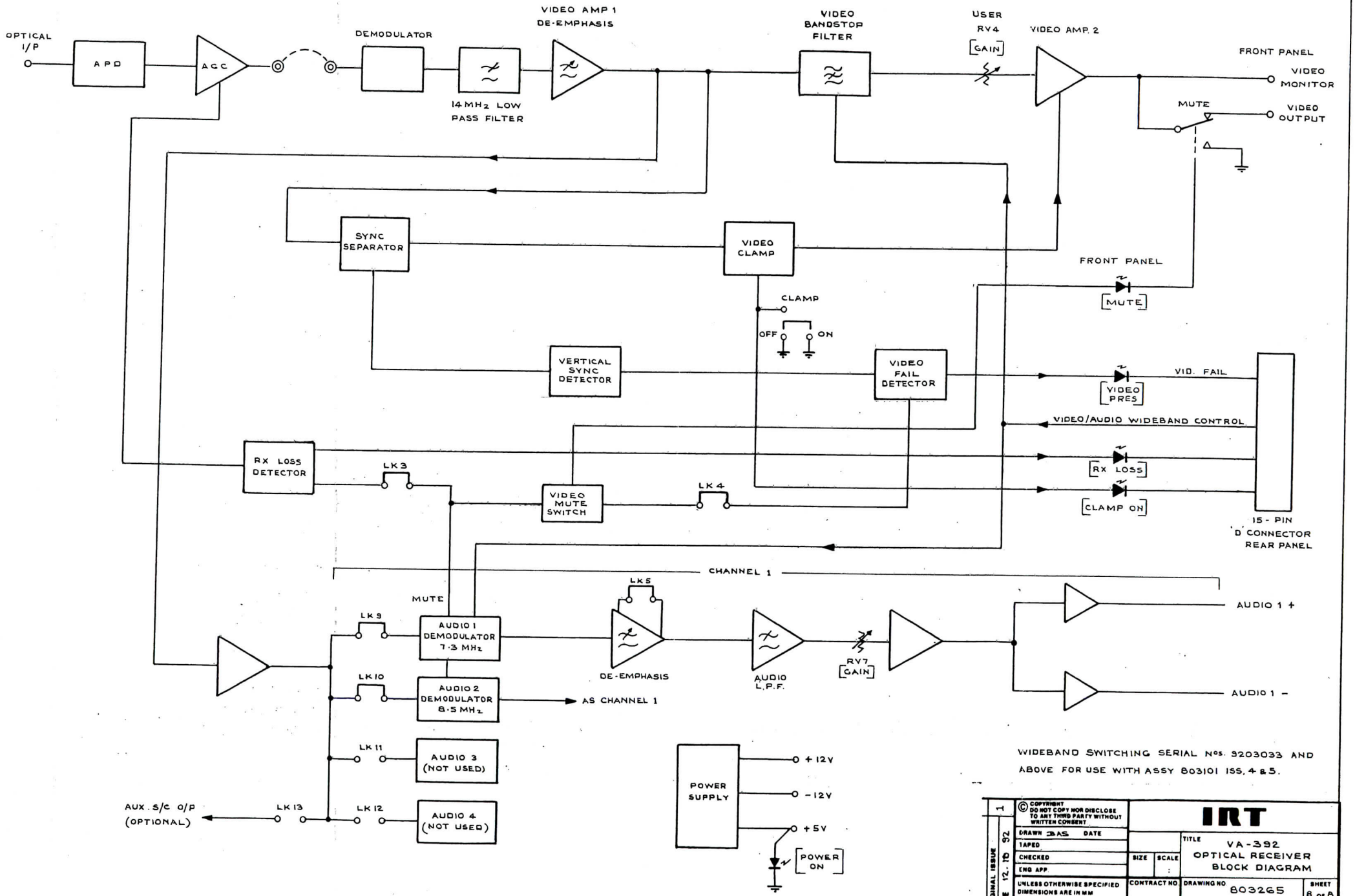

WIDEBAND SWITCHING SERIAL Nos. 9203033 AND ABOVE FOR USE WITH ASSY 803101 ISS. 4 & 5.

ORIGINAL ISSUE 1
DATE 12. 10. 92
DRAWN BAS DATE
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CHECKED
ENG APP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM
FRACTIONS DECIMALS ANGLES

IRT

TITLE
VA-392
OPTICAL RECEIVER
BLOCK DIAGRAM

SIZE SCALE

CONTRACT NO. DRAWING NO 803265 SHEET 8 OF 8

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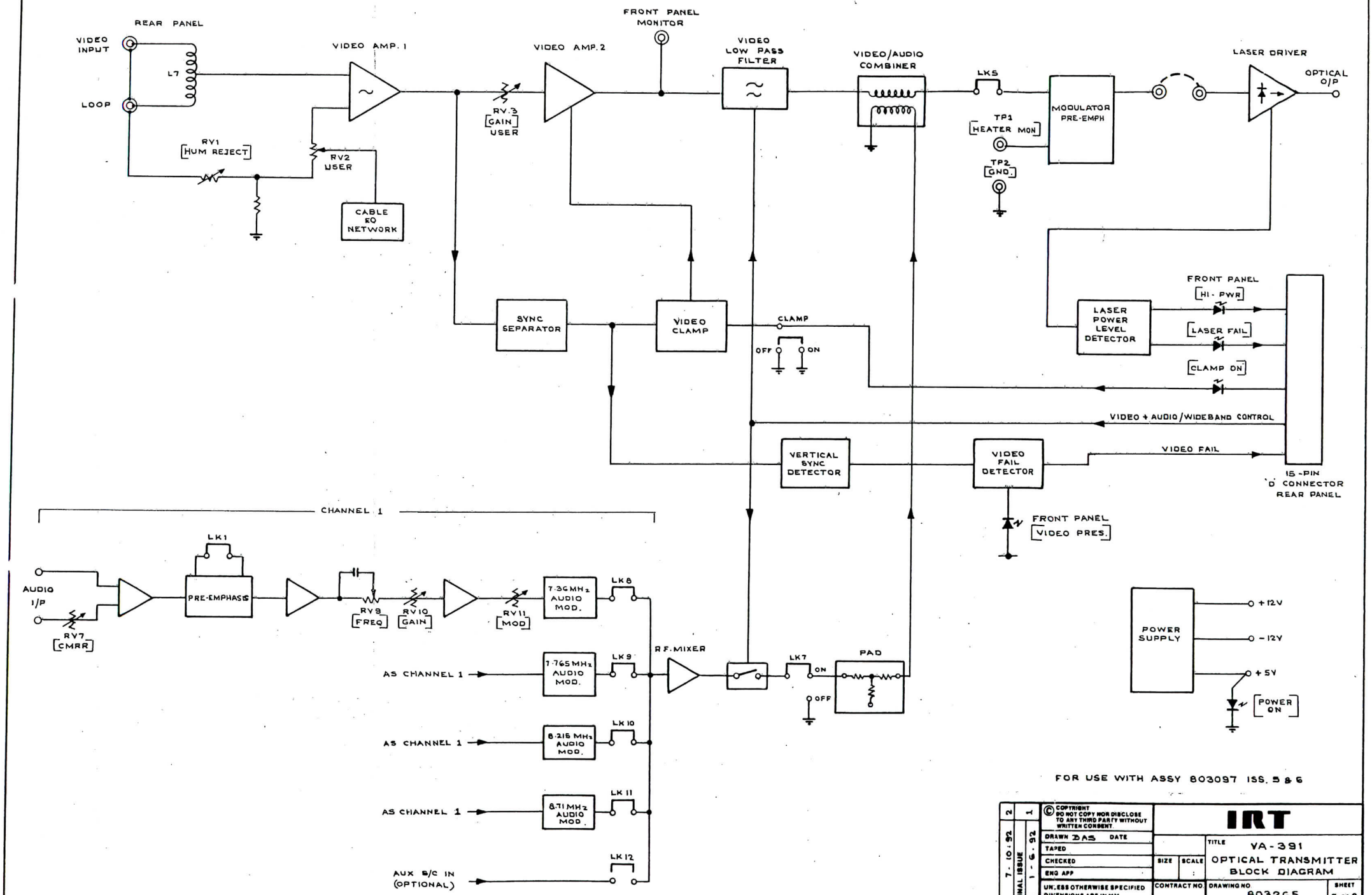

FOR USE WITH ASSY 803097 ISS. 5 & 6

ISSUE	2 / 1
DATE	7-10-92 / 1-6-92
ORIGINAL ISSUE	
DRAWN	DAS DATE
TRACED	
CHECKED	
ENG APP	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM FRACTIONS DECIMALS ANGLES	
TITLE	VA-391 OPTICAL TRANSMITTER BLOCK DIAGRAM
SIZE / SCALE	
CONTRACT NO.	
DRAWING NO.	803265
SHEET	5 of 8

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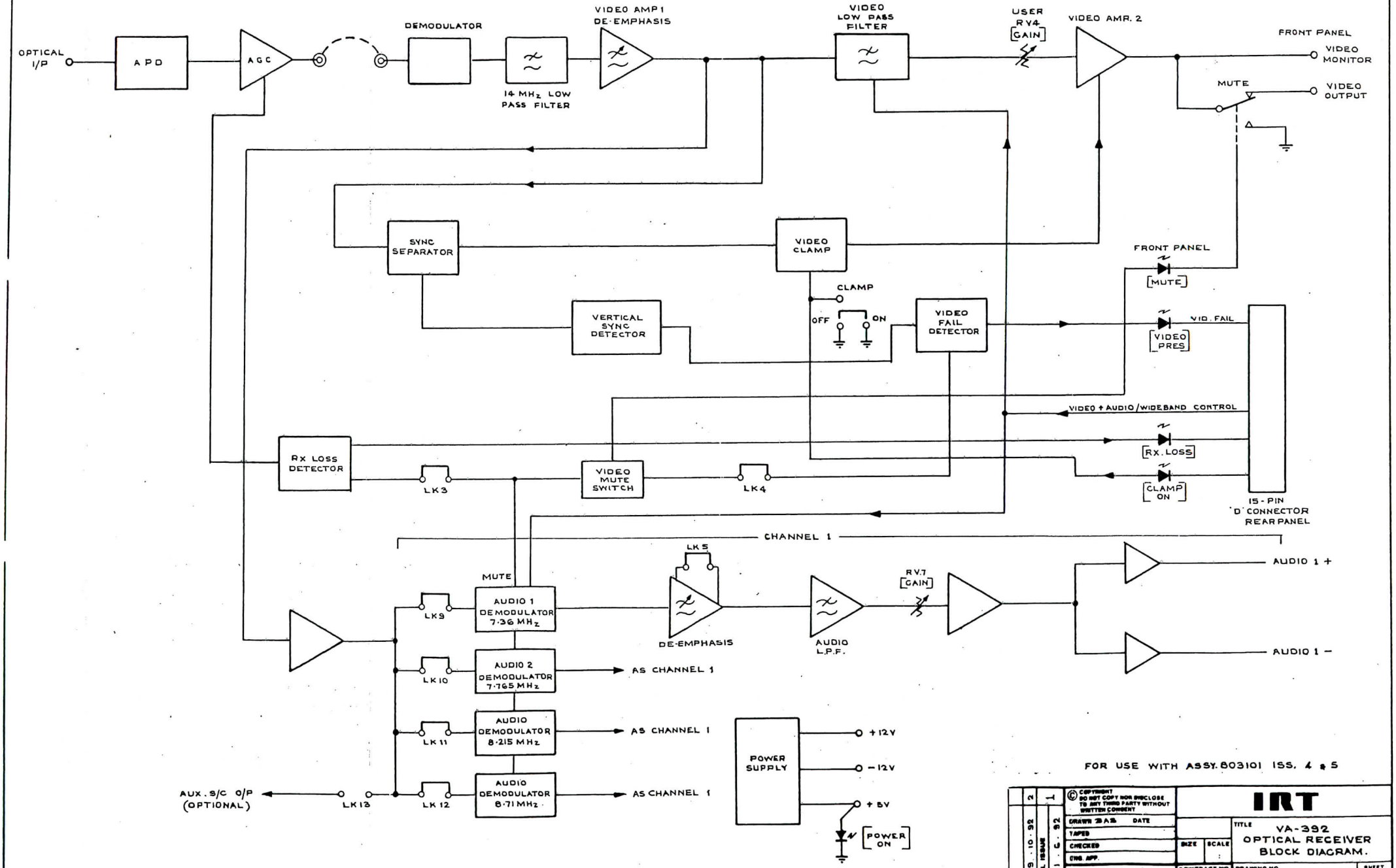

FOR USE WITH ASSY. 803101 ISS. 4 & 5

2	9·10·92	ORIGINAL ISSUE	
1	1·C·92	DATE	

DRAWN BAS DATE
TRACED
CHECKED
ENG. APP.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM FRACTIONS DECIMALS ANGLES

IRT

TITLE: VA-392 OPTICAL RECEIVER BLOCK DIAGRAM.

SIZE | SCALE

CONTRACT NO.

DRAWING NO 803265

SHEET 6 OF 8

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