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IRT Eurocard

Type VG-737

Video Sync Loss Detector

Designed and manufactured in Australia

IRT can be found on the Internet at:
http://www.irtelectronics.com

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Type VG-737

Video Sync Loss Detector

Instruction Book

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This instruction book applies to units later than S/N 0502001.

Operational Safety:

WARNING

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position. Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

General Description

The VG-737 video detector is designed to be used to indicate the presence of a video signal by detecting the vertical sync component of a composite video signal. The detection circuitry used ensures that noise alone will not trigger the detector.

The video input is a high impedance bridging differential input circuit with the input common raised above ground, this allows the VG-737 input to bridge a signal cable without affecting common mode rejection circuitry that may be incorporated in the equipment terminating the cable.

The video signal level threshold at which the VG-737 switches is set by an internal control and may be adjusted for a signal level in the range 0.4 V to 0.7 Vp-p at the input.

The detector circuitry consists of a sync separator and vertical integrator which triggers a dual mono stable circuit that allows the response time of the alarm circuit to be set. The response time is set by means of DIP switches in the RC timing circuit and is adjustable from 1 to 32 seconds for the VIDEO FAIL time out and 1 to 8 seconds for the VIDEO ON response time, the adjustment being made in 1 second steps.

The alarm circuitry consists of a latching circuit triggered by the detector circuit, which drives a relay whose contacts are available at the rear panel of the VG-737. The alarm circuit can be reset automatically upon return of the video signal or by a contact closure from the front panel or a remote circuit.

Visual indication of the state of the VG-737 detector and alarm circuits is provided by LED indicators on the front panel.

Standard features:

- Differential loop through input does not effect other equipment.
- Good noise immunity.
- Selectable alarm on and off timing.
- Automatic, manual or remote reset.
- 2 x Relay contact alarm outputs.
- Convenient Eurocard design.

Equipment provided:

Standard: VG-737 Video sync loss detector module.
VG-737 Rear assembly

Accessories available:-

3RU Eurocard module mounting frame	Mounts up to 10 Eurocard modules and two AC power supplies side by side in 134 mm of standard rack space (3 Rack Units).
1 RU chassis conversion/PSU	Converts Eurocards to a 1 rack unit format. The 1RU frame can be fitted with either one or two Eurocards in a horizontal side by side format. A single AC power supply is included to power the cards.

TME-6 Eurocard extender board.

Instruction Book.

Technical Specifications
IRT Eurocard module
Type VG-737

Video:

Video input level	0.7 to 1 Volt p-p composite video.
Input impedance	75 Ohm bridging loop input.
Return loss	>40 dB at 4.4 MHz.
Input connectors	BNC.

Performance:

Detection threshold	Internal preset adjustment in the range 0.4 to 0.7 Volts p-p composite video.
Response time	1 - 32 seconds for VIDEO FAIL condition. 1 - 8 seconds for VIDEO ON condition. Timing adjustable in 1 second steps using a PCB mounted DIP switch assembly.

Indicators & controls:

Visual indicators	VIDEO FAIL ALARM VIDEO PRESENT POWER
Control output	Relay circuits operated from alarm logic. Latching or auto-reset mode available. Make or break relay contacts available.
Control input	When operated in the LATCHING ALARM MODE internal logic alarm circuits can be reset by a front panel RESET pushbutton or by external 12V to 48V to a opto-isolator circuit used to isolate the internal logic circuit.
Control connectors	Krone insulation displacement.

Power Requirements:

	28 Vac CT (14-0-14) or ± 16V DC
Power consumption	1.5 VA.

Other:

Temperature range		0 - 50° C ambient
Mechanical		Suitable for mounting in IRT 19" rack chassis with input output and power connections on the rear panel
Finish:	Front panel	Grey background, black lettering & red IRT logo
	Rear assembly	Detachable silk screened PCB with direct mount connectors to Eurocard and external signals
Dimensions		6 HP x 3 U x 220 mm IRT Eurocard
Supplied accessories		Rear connector assembly with matching connectors for control input / alarm output.
Optional accessories		Instruction manual TME-6 module extender card

Pre-installation:

Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Power:

AC mains supply: Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.

DC supply: Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

Signal earth: For safety reasons a connection is made between signal earth and chassis earth. No attempt should be made to break this connection.

Video input: loop through differential type not connected directly to signal or chassis earth.

Internal Adjustments

The VG-737 detector is factory aligned for correct operation, with the detector threshold set at 0.5 Vp-p composite video input signal and the response times set for 1 second delay before a change in state occurs.

Detector threshold:

The video presence detector circuit contains controls for adjusting the detector threshold and the response time.

The detector threshold is set by VR 1 and is factory adjusted to respond to a 6 dB loss in signal level referenced to a 1 volt p-p composite video signal at the input with the looping connector terminated by 75 Ohms.

Adjustment of VR 1 can change the threshold level by approximately ±3 dB.

To adjust the threshold level:

1. Set the response time to minimum by setting SW 1 to SW 8 to the closed position.

2. Apply a 1 volt p-p video signal to the detector rear assembly with the detector operated on the bench from a 5 VA dual 12 Volts AC supply or on an extender board in the Eurocard frame.

3. Reduce the input level to the trip level by attenuating the input.

4. Adjust VR 1 so that the LED status indicator on the front panel just changes state.

Configuration

Alarm response time:

Alarm response time is the minimum time for which a failure must occur before the alarm output is activated. This setting is a compromise determined by the application and so provision has been made for the user to set any time between 1 and 32 seconds.

The response time should be set sufficiently long to avoid unnecessary triggering of the alarm by any glitches, which may occur in normal transmissions.
It should be set for a sufficiently short period so that the failure is reported by the alarm before the loss becomes intolerable.

Careful consideration should be given to these settings in relation to other equipment in the transmission chain and their response time.

For example: If a transmitter shutdown alarm is set for 5 seconds and the VG-737 is arranged to automatically switch a standby signal to the transmitter in the event of failure of the main signal and is set for greater than 5 seconds then the transmitter will shut down before the standby signal is switched and the automatic changeover facility is pointless.

The response time is set by DIP switches SW 1 to SW 5. These form an additive binary sequence as follows:

Switch	Time
SW 1	1 sec.
SW 2	2 sec.
SW 3	4 sec.
SW 4	8 sec.
SW 5	16 sec.

When no switches are open the default minimum time of 1 second is achieved. The VG-737 is factory set to 1 second.
In this way the timing of the delay before a video failure is detected can be adjusted from a minimum of 1 second to a maximum of 32 seconds.

If longer or shorter times are required these can be obtained by changing the value of C 12. For example changing C 12 to 5 μF will result in times from 0.5 seconds to 16 seconds in 0.5 second steps.

Alarm response time

Seconds	SW 1	SW 2	SW 3	SW 4	SW 5
1					
2	Open				
3		Open			
4	Open	Open			
5			Open		
6	Open		Open		
7		Open	Open		
8	Open	Open	Open		
9				Open	
10	Open			Open	
11		Open		Open	
12	Open	Open		Open	
13			Open	Open	
14	Open		Open	Open	
15		Open	Open	Open	
16	Open	Open	Open	Open	
17					Open
18	Open				Open
19		Open			Open
20	Open	Open			Open
21			Open		Open
22	Open		Open		Open
23		Open	Open		Open
24	Open	Open	Open		Open
25				Open	Open
26	Open			Open	Open
27		Open		Open	Open
28	Open	Open		Open	Open
29			Open	Open	Open
30	Open		Open	Open	Open
31		Open	Open	Open	Open
32	Open	Open	Open	Open	Open

Alarm release time:

The alarm release time is the time between a valid video signal being restored and the time at which the alarm is extinguished.
This time should be sufficiently long to avoid the alarm repeatedly triggering on an intermittent signal and short enough to restore normal operation of connected equipment without undue delay.

The time is set by DIP switches SW 6, SW 7 and SW 8 which give 1, 2 and 4 second steps, thus the alarm release time can be adjusted from 1 to 8 seconds in 1 second steps.

Alarm release time

Seconds	SW 6	SW 7	SW 8
1			
2	Open		
3		Open	
4	Open	Open	
5			Open
6	Open		Open
7		Open	Open
8	Open	Open	Open

Relay contacts:

The VG-737 has two sets of contacts available on the alarm relay RL 1. Each of these sets may be configured for Normally Open (N/O) or Normally Closed (N/C) operation. By wiring one set in each of the two ways a changeover contact set can be configured.

Settings are as follows:

Relay set A - links LK 1 A & LK 2 A.

N/O	LK 2 A IN	LK 1 A OUT	Contact closure on loss of video.
N/C	LK 2 A OUT	LK 1 A IN.	Contact closure when video present.

Relay set B - links LK 1 B & LK 2 B.

N/O	LK 2 B IN	LK 1 B OUT	Contact closure on loss of video.
N/C	LK 2 B OUT	LK 1 B IN	Contact closure when video present.

Changeover - links LK 1 A & LK 2 A.

LK 2 A OUT	LK 1 A IN	Contact closure on loss of video.
LK 2 B IN	LK 1 B OUT	Contact closed when video present.

Connect pins 2 & 4 on SK4 rear assembly control connector. This is the centre common connection.

Alarm latch:

To enable the alarm latch circuit leave link LK 3 OUT, this will ensure that if a failure occurs the relay contacts will register the fact until a manual or remote reset is applied. The remote reset can be initiated in different ways as set by links LK 4, 5 & 6.
For automatic reset link LK 3 should be IN.

Reset:

Positive reset:

To reset using a positive voltage in the range 12 to 48 Volts with the negative grounded insert links in positions link LK 4 and LK 5.
The reset voltage is applied to the control connector SK3 pins 2 and 1, with 2 being the ground and 1 being the positive control input.

Negative or isolated reset:

To reset using an isolated or positive grounded voltage in the range 12 to 48 Volts insert a link in position LK 5.
The reset voltage is applied to the control connector SK3 pins 2 and 1 with, 2 being the negative and 1 being the positive input.

Relay contact reset:

To reset using a grounding isolated relay contact the internal 12 Volts negative supply can be used, insert links in positions LK 4 and LK 6.
The relay contact is applied between pins 2 and 1 of the SK3 control connector, with 2 connected to ground in the VG-737.

Installation

Installation in frame or chassis:

See details in separate manual for selected frame type.

Video connections:

Video input connection is to a pair of BNC connectors on the rear panel. If the signal is not looped on to another circuit the unused connector must have a 75 Ohm termination plug fitted to terminate the video feed to the VG-737.

Control connections:

The control output and reset input connectors are krone insulation displacement types.

The connections are shown on the RB-737 drawing No. 803127.

SK3

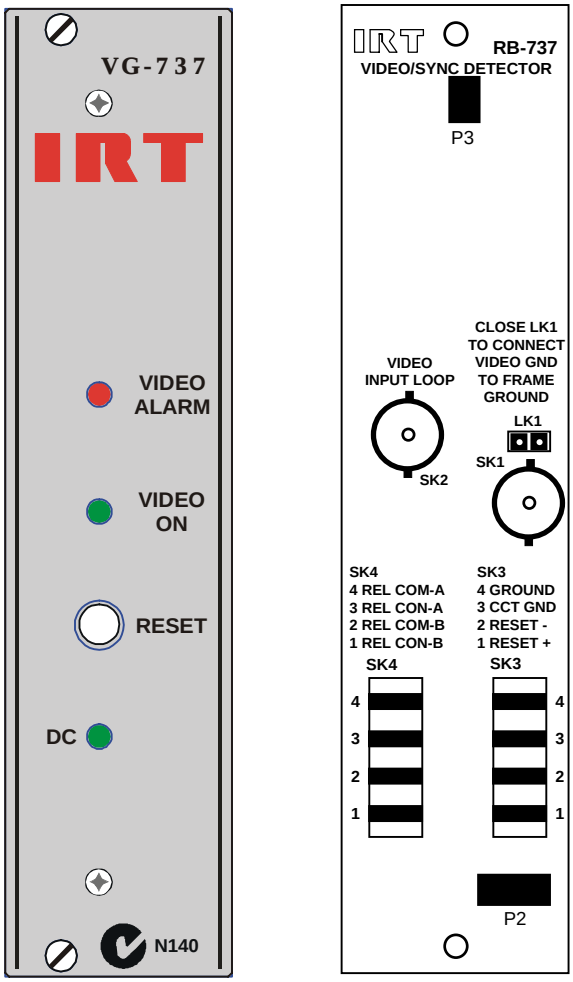
4 - Ground.
3 – Circuit Ground.
2 – Reset -.
1 – Reset +.

SK4

4 - Relay contact set A - common.
3 - Relay contact set A - contact NC or NO as set by links. See *Configuration*.
2 - Relay contact set B - common.
1 - Relay contact set B - contact NC or NO as set by links. See *Configuration*.

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show relative positions of connectors, indicators and controls only.



Maintenance & Storage

Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Warranty & Service

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour, at IRT's current labour charge rate, will apply, whether the equipment is within the warranty period or not.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

Equipment return:

Before arranging service, ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

1. A fault report should be included indicating the nature of the fault
2. The operating conditions under which the fault initially occurred.
3. Any additional information, which may be of assistance in fault location and remedy.
4. A contact name and telephone and fax numbers.
5. Details of payment method for items not covered by warranty.
6. Full return address.
7. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

Please note that all freight charges are the responsibility of the customer.

The equipment should be returned **to the agent who originally supplied the equipment** or, where this is not possible, to IRT direct as follows.

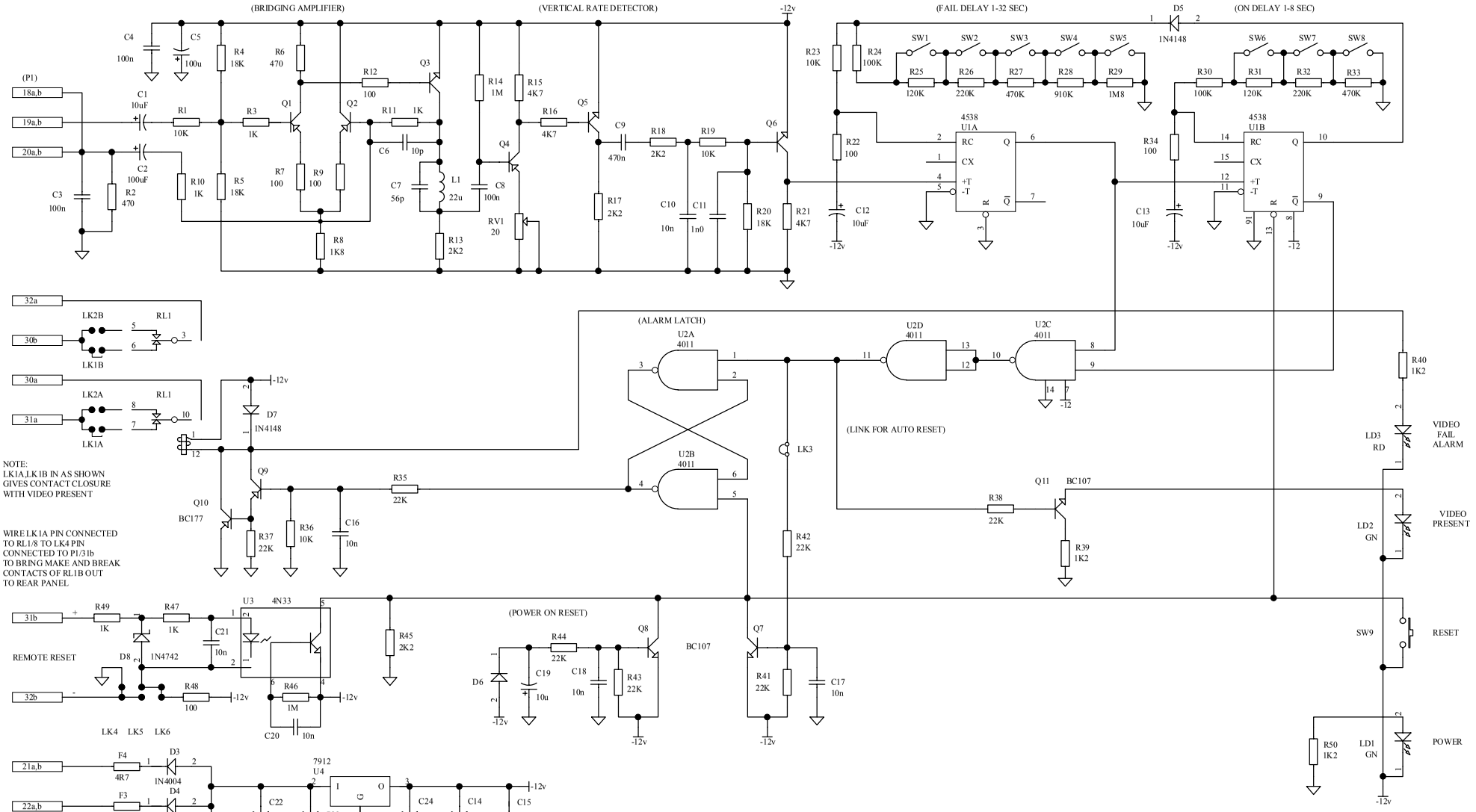
Equipment Service
IRT Electronics Pty Ltd
26 Hotham Parade
ARTARMON
N.S.W. 2064
AUSTRALIA

Phone: 61 2 9439 3744 Fax: 61 2 9439 7439
Email: service@irtelectronics.com

Drawing Index

Unless otherwise specified all references on diagrams to VG-637 refer equally to the VG-737.

Drawing #	Sheet #	Description
803124	1	VG-737 main circuit schematic.
803127		RB-737 Rear assembly.



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IRT

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TITLE
VG-637/VG-737
VIDEO DETECTOR

SCALE

DRAWING No. 803124

SHEET 1 OF 3

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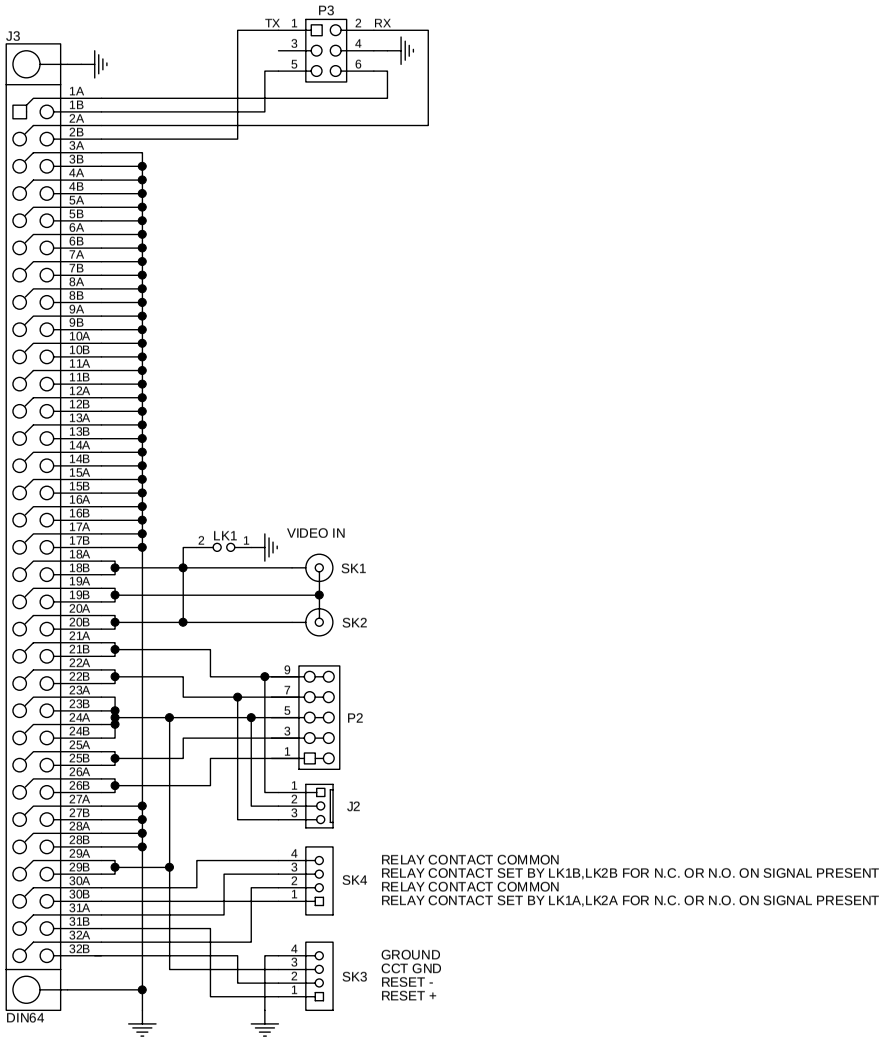

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Revision: 4
Date: 8-Aug-2008

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VG-737 REAR ESSEMBLY

SCALE N.T.S.

Drawing No. 803127

Sheet 1 of 1

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