

**IRT Eurocard** 

# Type AVG-3091

# **Colour Bar / Message Generator & Switch**

Designed and manufactured in Australia

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

## **IRT Eurocard**

# Type AVG-3091

# Colour Bar / Message Generator & Switch

# **Instruction Book**

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This instruction book applies to units later than S/N 9512000.

## **GENERAL DESCRIPTION**



The AVG-3091 performs three distinct functions as can be seen by the block diagram above.

The AVG-3091 is a:Video 2 x 1 path switcherVideo sync failure detector andVideo signal generator with message overlay capability.

The module may be used to perform all of these tasks to provide automatic substitution of a failed input video signal with a valid video signal with a message indicating the failure. Alternatively it may be used to perform selected functions only; such as a stand alone black generator for synchronising equipment in small edit suites.

### Generator:

The AVG-3091 is capable of generating either standard colour bars or black. In addition a special display is available where the top 2/3 of the screen displays colour bars and the bottom 1/3 displays two lines of text against a coloured background.

#### Message generator:

A switch on the front panel enables or disables an internal overlay generator as necessary. Up to 8 different messages can be programmed into the AVG-3091 via a standard RS-232 link.

A switch and remote connector allow a choice of the displayed message or full screen colour bars.

The overlay generator displays two lines of 30 characters, 24 pixels high in the bottom third of the screen over a solid colour banner.

Programming is performed by connecting the AVG-3091 to a PC. Software is provided with the module to facilitate the programming function. Messages are stored in a non volatile memory which will retain data for >10 years.

## TECHNICAL SPECIFICATIONS IRT Eurocard module Type AVG-3091

## Video input:

Type Number Impedance

## Video output:

Type Number Impedance

## **Detector:**

Sensitivity Failure attack time Failure release time

#### Alarm output: Type

Configuration

Maximum rating

## **Control inputs:**

### **Generator output:**

Number Impedance DC Level Noise(unweighted) Patterns available: (PAL) Differential AC coupled.
1.
Looping to output when sync present.
75 Ω terminated on loss of input video sync.

Relay switched to video input or generator output. 1. Looped to video input or  $75 \ \Omega$  generator output.

6 dB below 1 Vp-p. 0.5 seconds. 1.5 seconds.

Opto isolated transistor. Selectable by link to: Floating Grounded emitter or Grounded collector. 30 Vdc at 8 mA.

LED test. Override. Switches generator output to video out regardless of video input condition.. Overlay OFF. Ground to remove overlay. Generator pattern select.

1 x contin	uous & 1 x switched.
75 $\Omega$ sour	ce terminated.
Adjustable	e to 0V.
< -70 dB	
Black	
Bars -	100% amplitude white
	75% amplitude colours
	75 % saturation.
Bars -	100% amplitude
	75% saturation.
Blue -	75 % amplitude
	100% saturation.
Banner -	Black, blue, grey, green or dark blue.
Text -	Grey, white, soft white, black or blue.

### Control / tally input / output:

Function Type Level Condition

### Message generator:

Messages Lines per message Characters per line Character size Selection

RS232 interface

**Connectors:** Video Control, alarms & alarms

## **Power Requirements:**

Power consumption

## **Other:**

Temperature range Mechanical

Finish: Front panel

Rear assembly

Dimensions

Standard accessories

Optional accessories

Tally / select generator pattern. Binary coded 4 bit. TTL. Normally high (4K7 Ohm pullup to +5 Vdc rail.)

8.
2.
30.
24 x 24 pixels.
Front panel rotary switch or
external 4 bit parallel code.
9600 Baud, no parity, 8 data bits and 1 stop bit.

#### BNC.

0.1" pin connectors for IDC sockets. Matching connectors supplied with module.

28 Vac CT (14-0-14) or ± 16V DC <6VA

0 - 50° C ambient Suitable for mounting in IRT 19" rack chassis types FR-700 & FR-722 with input output and power connections on the rear panel Grey enamel, silk screened black lettering & red IRT logo Detachable silk screened PCB with direct mount connectors to Eurocard and external signals 6 HP x 3 U x 220 mm IRT Eurocard

3091 rear connector assembly. Matching connectors for control inputs & outputs supplied.

Instruction manual TME-6 module extender card

## **TECHNICAL DESCRIPTION**

(More to follow)

#### Video failure Alarm

During normal operation, valid video present on the **video in** connector (SK 1) is passed to the **video out** connector. When the input video is lost or seriously degraded it is replaced with the AVG-3091's test signal.

The local generated test signal is only inserted only after 0.5 seconds of invalid video has been detected. This allows short interruptions (e.g. switching) to be tolerated. Upon valid video being restored, the input video is switched within 1.5 seconds. This process minimises interruption and provides good noise immunity.

Invalid video is assumed to occur when the video level is greater than **6 dB** below normal video levels (1 Vp-p). The video fail level is set by RV 1.

The video fail LED (**VID FAIL**) indicates that a valid video signal in not present and that the internal test signal has been inserted.

The **Generator** connector (SK 3) constantly produces the test signal so that a separate monitor can be used to verify the contents of the overlay and aid in programming.

If the AVG-3091 is removed from the frame, the relay on the rear assembly automatically connect the **video in** connector (SK 1) directly to **video out** connector (SK 2).

#### Bypass switch (To be redesignated as AUTO - BARS)

Located on the front panel, the bypass switch forces the test signal onto the switched video path regardless of the state of the video input.

## **PRE-INSTALLATION**

### Handling:

The modules used in this equipment contain 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 and 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 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 any case particular care should be taken to ensure that the frame is connected to earth for safety reasons.

**AC mains supply:** (FR-700/PT-700, FR-748A/PT-701, FR-722 and FR-722A) Chassis earth connection of the equipment is via the earth connection on the three pin mains input. This is a safety earth and must be connected.

**DC supply:** (FR-748A/PT-748A or FRU-1031) Chassis earth connection of the equipment is via the positive terminal on the DC input. The DC positive supply should be connected to earth at the supply . A separate chassis earth connection is available on the centre connector of the DC input connector which may be connected if desired.

**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 inputs:Internally connected to reference earth.Video outputs:Internally connected to reference earth.

## **INTERNAL ADJUSTMENTS**

The following adjustable resistors are factory set and should not be adjusted unless a component has been changed. They are not 'operational' controls.

- **RV 1:** Video failure level set.
- **RV 2:** Gain generator output.
- **RV 3:** Gain insert output.
- **RV 4:** DC offset insert output.
- **RV 6:** DC offset generator output.
- **VC 1:** Oscillator frequency adjust.

## CONFIGURATION

#### (More to follow)

#### **Changing Pages**

The AVG-3091 is capable of displaying 8 different 2 line text messages. The choice of message to be displayed is determined by the rotary switch on the front panel. The two remaining positions are reserved for full screen 75% 100% saturated colour bars and full screen black.

- LK 0: PSU strapping. (Located next to DC-DC converter.) DO NOT move this link. This is for prototype purposes only and will be removed on production units. (Position "B" is closest to edge of PCB.)
- **LK 1:** Opto isolator output grounding.

(Position "A" is closest to edge of PCB.)

- A Grounded collector.
- B Grounded emitter.
- OUT Floating.
- LK 2 & 3: Video signal formats

4 different video test signals are selected using LK 2 and LK 3. These can be set whilst the unit is in operation. The link positions are:

LK 2	LK 3	Generator output
out	out	75% amplitude, 100% saturated PAL/EBU colour bars
out	in	100% amplitude, 100% saturated PAL/EBU colour bars
in	out	75% amplitude, 100% saturated Blue frame
in	in	Black frame

SW 2: Text and banner colour scheme

The AVG-3091 allows the choice of 8 different colour schemes. The scheme is selected by **SW 2**. The following table shows the allowed settings.

2	3	4	TEXT	BANNER
			grey	no banner
		ON	white	black
	ON		white	blue
	ON	ON	soft white	blue
ON			black	grey
ON		ON	blue	grey
ON	ON		white	green
ON	ON	ON	white	dark blue

## **SW 4:** Signal options.

The AVG-3091 allows has a number of sophisticated options available which are not required by most users. SW 4 selects a number of these options and should not be changed from the factory set positions except on advice from IRT.

Normal settings are as follows:

	-	
1	ON	Normal programming with EOF markers.
2	OFF	Reserved for high resolution mode.
3	ON	Colour enabled. (OFF causes B/W output).
4	ON	Chroma filter disable.

## **INSTALLATION**

## **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.

## Installation in frame or chassis:

See details in separate manual for selected frame type.

## **Connections:**

## Main module:

### CON 1 - RS232 9 pin 'D' connector - Programming input.

Pin	Name	Description	
1	CD	Carrier detect	Internally connected to Gnd.
2	RD	Received data	
3	TD	Transmitted data	
4	DTR	Data terminal ready	
5	SG	Signal ground	Internally connected to Gnd.
6	DSR	Data set ready	Internally connected to Gnd.
7	Not conn	ected	
8	CTS	Clear to send	Internally connected to Gnd.
9	RI	Ring indicator	Internally connected to Gnd.

Interface cable to computer should be wired on a pin to pin basis.

Note that standard cables wired in this configuration are available from most computer accessory shops.

### **Rear assembly:**

#### J 2 - Alarms

- Pin Description
- 1 Gnd
- 2 LED test. Connecting to Gnd causes all LED's to light for checking purposes.
- 3 Alarm out. Opto isolator emitter.
- 4 Alarm out. Opto isolator collector.

### J 3 - Pattern - Control / remote tally.

Note: These connections are in parallel with connections to the front panel pattern select rotary switch.

As such they may be HI or LO according to the position of that switch. No switch position exists which allows all bits to be high and thus not all patterns may be selected via this connector.

Setting the front panel switch to position 8 results in a code of "0111" which allows selection of any of pages 1 to 8 inclusive.

Setting the front panel switch to "BLACK" results in a code of "1001" and allows selection of BLACK, BARS and pages 1 and 2 only.

Other positions of the front panel switch do not provide useful l codes and should not be used if remote selection is required.

This connector may also be used as a tally of the front panel switch position. Output levels are ECL compatible. All data lines use a pullup resistor of 4K7 Ohms to the internal 5 Vdc line.

- Pin Description
- 1 Gnd
- 2 Bit 0 LSB
- 3 Bit 1 4 Bit 2
- 4 Bit 2 5 Bit 3 - MSB

#### J 5 - Remote

- Pin Description
- 1 Gnd
- 2 Override. Connecting to Gnd causes generator output to be switched to VIDEO OUT regardless of state of input video signal.
- 3 Overlay OFF. Connecting to ground removes overlay when present.
- 4 Program. Factory use.

### SW 6 - Pattern select.

- Note: This DIP switch will be deleted from production units.
  - All 4 switches should be set to the OFF position.

## 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.



## PROGRAMMING

The AVG-3091 contains a non volatile memory (EEPROM) which stores the contents of each page of the overlay. Data retention will exceed 10 years and endure over 100,000 programming cycles.

The AVG-3091 emulates a dumb terminal. Messages are down loaded from a PC to the AVG-3091 via a standard RS232 connection. The programming process requires no specialised PC programs. A Message is created using a simple text editor (e.g. notepad, edit, EC etc.) then saved. The saved text files are then copied to a COM port connected to the AVG-3091.

Programming is performed by selecting the page number (1-8), and copying a the text file to the a COM port (e.g. copy file.? COM 1:). An internal character map converts the ASCII characters into a bit map which is then stored in the EEPROM. The new message will be saved into the currently selected page replacing the previous message.

The PC serial port should be configured to 9600 baud, 8 data bits, no parity and 1 stop bit. In DOS, the PC's serial communications port can be configured by typing

e.g. MODE COM1:9600,n,8,1

A bat file called *COM1CFG.bat*, *COM2CFG.bat* and *COM3CFG.bat* have been supplied to configure COM port 1, 2 and 3 respectively.

There are several methods of programming the AVG-3091, however, only one method is described. This method relies on the presence of an EOF character to signify the end of the ASCII file. When using the DOS copy command, the EOF flag can be removed by DOS. To prevent this possibility several BAT files are provided.

It is strongly recommended that these files be used and if additional text pages are required, that existing pages are edited and saved under different names.

### How to program a page:

#### Using DOS

- 1 configure the desired port
- e.g. cfgcom2.bat (configures port 2)
- 2 select the desired page (rotary switch on front panel)
- 3 Type SEND? *FILENAME.TXT* (? = 1,2,3 depending on port)
- e.g. SEND2 nl2p3.txt
- 4 The message should appear within 2 seconds
- 5 repeat steps 2 onwards to program other pages

#### Using Windows file manager

- 1 configure the desired port before entering windows
- e.g. cfgcom2.bat (configures port 2)
- 2 select the desired page (rotary switch on front panel)
- 3 Using file manager drag the desired message onto SEND?
- 4 The message should appear within 2 seconds
- 5 repeat steps 2 onwards to program other pages

Using windows also allows files with the extension .TXT to be auto associated with NOTEPAD.

#### How to clear a page

This process is performed by copying a blank file to the desired page. This can be done in several ways.

e.g. SEND2 CLR.TXT

or

execute the bat file CLRPAGE.BAT

#### How to use a text file without an EOF character

A program called **CONVERT.BAT** is supplied which copies the desired text file to another file called **TMP.TXT** and adds an EOF character. This file is then copied to the AVG-3091. e.g. convert FILENAME.TXT

Some text editors (e.g. EDIT) remove the EOF character upon saving. The EOF character must be replaced for proper operation. The file called **ADDEOF.BAT** adds the EOF to the file.

### e.g. ADDEOF FILENAME.TXT

Notepad does not remove the EOF character and is the preferred editor.

### **Programming rules:**

ASCII files used in programming can be generate using any text editor (e.g. EDIT, NOTEPAD, EC, EDLIN etc.).

Some simple guidelines should be observed when generating these test files.

- Upper and lower case letters are supported.
- Each line can display up to 30 characters. Excess characters on the first line are displayed on the second line.
- Control characters are ignored.
- Spaces should be used to move the text into the desired display position as tabs are ignored.
- The first carriage return detected changes to the second line. All subsequent carriage returns are ignored.
- After 60 valid characters have been detected, all following characters are ignored.
- Programming is concluded when an EOF character is detected.
- A message can be cleared by sending a file containing only one or more spaces. A file called *CLR.TXT* is included for this purpose.
- A message can be replaced by reprogramming the page with a new ASCII file.
- Files created by most text editors do not contain an EOF character. A file called convert or ADDEOF can be used (described above).
- Editing the existing messages using notepad preserves the EOF character and is recommended.

## **Programs supplied:**

COM1CFG.BAT	Configures COM port 1 to 9600 Baud, no parity, 8 data bits and 1 stop bit.
COM2CFG.BAT	Configures COM port 2 to 9600 Baud, no parity, 8 data bits and 1 stop bit.
FILENAME.TXT	These files are simple demonstration in ASCII format. Feel free to modify and try these files. These files can be simply be edited using any text editor (e.g. notepad, edit, EC etc.). Some files contain EOF characters.
SEND1.BAT	This is a simple batch file used to simplify the programming process by copying the following file to COM 1. e.g. SEND1 LETTERS.TXT
SEND2.BAT	This is a simple batch file used to simplify the programming process by copying the following file to COM 1. e.g. SEND2 SYMBOL.TXT
SENDEOF1.bat	This batch file copies a file to TXT.TMP and adds an EOF character. TXT.TMP is then copied to COM 1. This allows files without EOF characters to be used. e.g. SENDEOF1 LETTERS.TXT
SENDEOF2.bat	This batch file copies a file to TXT.TMP and adds an EOF character. TXT.TMP is then copied to COM 2. This allows files without EOF characters to be used. e.g. SENDEOF2 LETTERS.TXT
CLEAR.BAT	This is a simple text file containing spaces. This file is used clear a page rather than replacing it.
ADDEOF.BAT	This file add an EOF character to the desired text file. e.g. ADDEOF LETTERS.TXT

## **PROBLEM SOLVING**

### Problem 1

If the PC returns a message write fault error writing device COM 1 (or COM 2) Abort, Retry, Ignore, Fail?

#### Solution 1a

Either the PC is not connected to the AVG-3091 correctly or the wrong COM port is being accessed.

#### Solution 1b

The cable connecting the AVG-3091 is incorrect. Any standard serial cable can be used.

#### Problem 2

The file successfully copies to the COM port, however, the displayed data is incorrect.

#### Solution 2a

The port settings for the COM port are incorrect. Check the post settings are 9600 baud, 8 data bits, no parity and 1 stop bit. Run the files *COM1CFG.bat* (or *COM2CFG.bat*) to configure the appropriate port.

#### Solution 2b

When using windows, checking the PORT configurations, (MAIN, Control Panel, Ports) the setting may appear correct even though incorrect data is displayed. Running the port configuration programs (e.g. *COM1CFG.bat*) will have no effect. Correct operation can be established by either using DOS or a DOS shell or exiting windows, running the configuration programs then running windows again. I am looking at this problem.

#### Solution 2c

The text file does not contain an EOF character. Use CONVERT.BAT or ADDEOF.BAT to add the EOF character.

## **Message Templates:**

Message 1

Me	ssage	e 2														
Me	ssage	e 3														
Me	ssage	e 4														
Me	ssage	e 5														
Me	ssage	e 6														
Me	ssage	e 7														
Me	ssag	e 8	 									 			 	_

## 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 \$A100.00 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 \$A100.00 will apply, whether the equipment is within the warranty period or not.

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 3744Fax:61Email:service@irtelectronics.com

Fax: 61 2 9439 7439

## **DRAWING INDEX**

Drawing #	Sheet #	Description
803870	1	AVG-3091 block diagram.
803870	2	AVG-3091 main circuit diagram.
803870	3	AVG-3091 overlay generator, power supply oscillator & relay driver diagrams.
803870	4	AVG-3091 rear assembly diagram.









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0/05/96	THIRD PARTY THIRD PARTY WITHOUT WRITTEN CONSENT	SIZE A3	TITILE (REAR ASSY.) COLOR BAR GEERATOR	
	DRAWN R.K.		AVG-3091	
	CHECKED	SCALE	SHEET SIZE SHEET	
	ENG. APP.		4 OF	4
	CONTRACT No.	IRT EI	ectronics Pty. Ltd.	
		ARTARN	ION NSW AUSTRALIA 2064	
				1

SW6 0000 PAGEI 0010 PAGE3 0011 PAGE3 0101 PAGE3 0101 PAGE3 0110 PAGE3 0100 PAGE3 0000 PAGE3 00000 PAGE3 0000 PAGE3 0000 PAGE3 0000 PAGE3 0000 P







