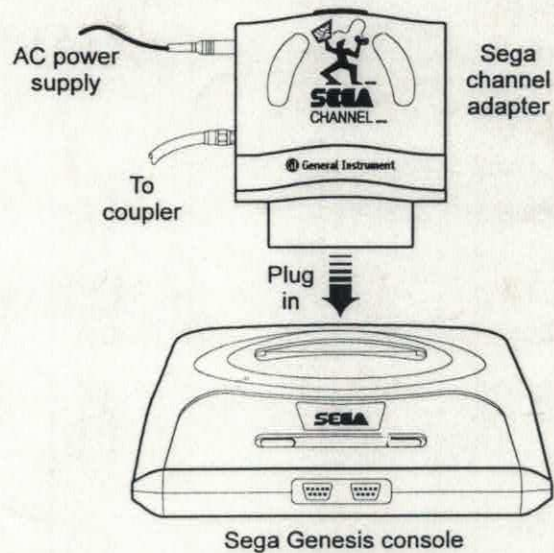


*DRAFT*

# *SEGA CHANNEL ADAPTER*

*MODEL SGT-3000*

## *INSTALLERS MANUAL*



**GENERAL INSTRUMENT**

# DRAFT

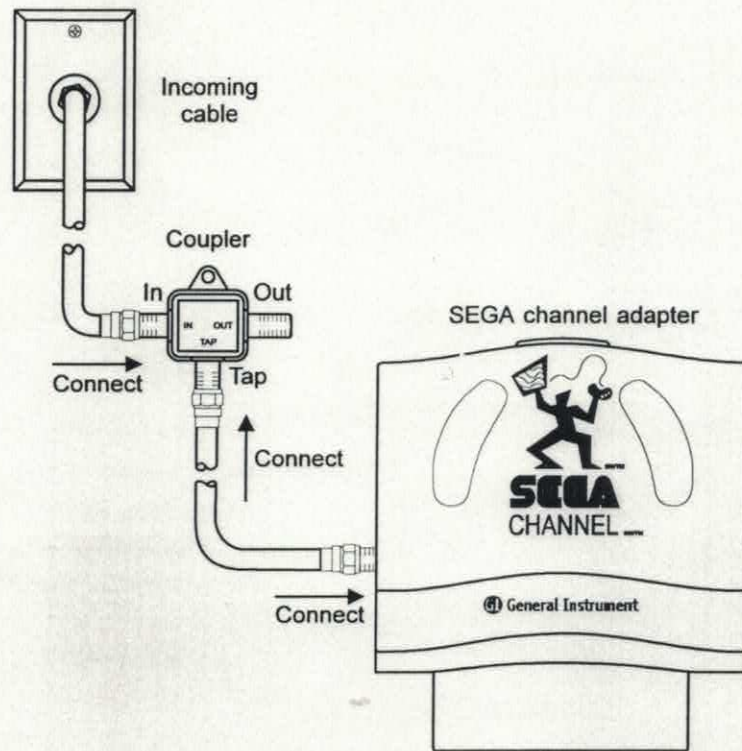
## SGT-3000 Installers Manual

### OVERVIEW

The Scope of this manual is designed to give the cable system technician an understanding of how the SGT-3000 Sega Channel Adapter operates. Along with listing of error codes, and detailed explanation of the diagnostic screen display provided by the SGT-3000 adapter.

**Please note:** that each adapter comes complete with a instructional manual designed to assist the cable TV subscriber in the self- installation of the Sega Channel adapter model SGT-3000.

Even ~~thou~~ the Sega Channel adapter is designed to be self-installed by the cable TV subscriber, there will undoubtedly be many questions raised by the subscriber who is having difficulty in getting their adapter to function properly. This manual should provide you with a better understanding of how the adapter operates, and hopefully assist you in diagnosing service issues.



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**FEATURES**

- AESTHETICALLY CONSISTENT DESIGN.
  - PARENTAL CONTROL CAPABLE.
  - SINGLE LED DIAGNOSTIC DISPLAY.
  - COMPATIBLE WITH ALL SEGA GENESIS<sup>SM</sup>/TM  
SEGA CDX SYSTEMS.
  - WIDE-BAND TUNER.
-



## *D R A F T*

GI's Sega Channel Game Adapter is an addressable device that allows your subscribers to select, download, and play games offered by the Sega Channel. It represents one piece in GI's entire Sega Channel delivery system, which includes headend and subscriber premises equipment. The adapter is extremely durable, and designed to withstand extended and repeated use. It operates with the Sega Genesis, Sega CDX, and Sega Megadrive game consoles. The adapter will operate in all video formats, such as PAL, NTSC, and SECAM. The adapter operates completely independent of all other customer premises equipment, such as a converter, or digital music terminal.

The Adapter SGT-3000 has a wideband tuner that covers 48.1 to 860 Mhz, this allows you to place your five Sega Game Data Carriers anywhere within your systems available spectrum. The SGT-3000 can fine tune to the small 1.2 Mhz wide Sega Game Data Carriers. The system uses two types of forward error correction to ensure flawless delivery of game data.

Within the adapter are 3 megabytes of memory. This is sufficient to accommodate the largest games offered on the Sega Channel. Once a subscriber has selected a game from the Sega Channel game menu, the download time is approximately one minute.

The Adapter has a single LED on it's top surface, which indicates proper operation when solid, and indicates adapter can not find carrier when it is not illuminated. The Adapter has built-in diagnostic features that can be accessed when troubleshooting is required. The Adapter also has built-in, password driven parental control features that allow parents to lock-out games based upon their rating. The button labeled "MENU" on top of the adapter allows the subscriber to return to the Sega Channel's game menu selection screen and select a new game. The adapter can support PAY PER PLAY features, which allows the operator to bill the subscriber based upon the particular game selected by the subscriber and the frequency of play.

Included with the adapter is the AC power transformer required to power adapter, as well as a sleeve that allows the adapter to connect properly with the various versions of Sega Genesis players that have been produced. Also included is an extremely detailed and well-written instruction manual that will keep truck-rolls to a minimum.

# D R A F T

## GENERAL INSTRUMENT SEGA CHANNEL<sup>SM/TM</sup> ADAPTER MODEL SGT-3000

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### SPECIFICATIONS

<b>SGT-3000</b> Game Adapter	Wideband Tuner 48.1 to 860 MHz.
POWER	300mA @ 115 VAC.
CONNECTOR	75 Ohm "F" type female.
ISOLATION	8dB.
RF INPUT LEVEL	0 to -30 dBmV.
CARRIER TO NOISE	-20 dB.
COMPOSITE TRIPLE BEAT	-20 dB.
MECHANICAL	Mates to all Genesis <sup>SM</sup> . game players adapter port
CONTROLS	Menu reset button
INDICATORS	Power/ Signal received LED.
CERTIFICATION	U.L. listed/ FCC Part 15.
ENVIRONMENTAL	59 degrees to 104 degrees Fahrenheit 5 to 95 % RH (non-condensing).



*D R A F T*

**DIAGNOSTIC SCREEN**

**SERIAL NUMBER: C5J5123456**  
**SOFTWARE VERSION: 1.2**  
**ERROR CODE: E0**  
**STATUS: FOOTC**  
**FER: 000000**

**FORCE TUNE FREQUENCY: 000.0 MHZ**

**CURRENT TUNED FREQ: 074.6 MHZ**

**CHANNEL MAP:**

<b>110.0</b>	<b>111.2</b>
<b>112.4</b>	<b>113.8</b>
<b>115.0</b>	<b>000.0</b>
<b>000.0</b>	<b>000.0</b>

**TO EXIT RESET THE ADAPTER**

**ERROR CODES:**

- E0= Adapter has been initialized, normal operating condition.**
- E1= F.M. Time out, adapter has not seen valid data in access of time-out value, (maximum of 384 hours).**
- E5= Default to factory address adapter is new and has not been initialized, or has received clear address command from the Addressable controller.**
- E8= Wrong site code, adapter is illegal and does not belong to this system.**
- E9= Corrupted firmware, requires factory repair.**
- EA= Bad check-sum, adapter should be re-initialized or returned for repair.**

**STATUS: F O O T C**

## *D R A F T*

The Status field is a real time dynamic field, in as much as the characters will change real time depending on system conditions.  
**STATUS FIELD**

The first character "F" Indicates Full frequency tuner.

The Second character "O" indicates good game data there are several possible values for this field, depending on the state the adapter is in, when the adapter is tuning to one of the five Sega Channel carriers in your system, it is unable to read the game data , and will display a value of "H" for loss of header. This is the most common display value when the adapter is not locked onto one of the five carriers. Other possible value is "G" for game encryption key error, indicating that adapter has seen invalid encryption data.

The Third character is the control data character, this value should most always be "O" indicating good access control data. There are several possible values for this field as well, They are as follows, an "E" indicates error in access control data stream, an "A" indicates that the adapter is currently being addressed from access control computer, finally a "-" indicates the adapter is not connected in the database of the access control computer.

the Forth character displayed as "T" under normal operation this will always be a "T" indicating adapter sees data tagging information required for authorization control.

The Fifth character the last in the string indicates connect status of adapter, this should always be a "C", unless the adapter has been disconnected in database of the access control computer, then value for character will display a "D" indicating a disconnect status.

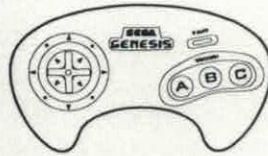


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**FORCE TUNE FREQUENCY: 110.0 MHZ**

When Sega Adapter is new to system it must be force tuned to one of the (5) Sega Channel carriers in order for the adapter to be initialized for operation in system.

Force tuning adapter is accomplished by using the Genesis hand held control pad



Use the arrow keys to direct cursor to proper digit for frequency selection, then use either the "A" key to decrement value or the "B" key to increment the value. After proper frequency has been selected, simply press the "C" key and the adapter will tune to desired frequency. This is verified by the red LED on adapter being illuminated.

**FER: 000000**

This field indicates real time forward error correction being inserted, indicating dynamic changes in cable plant and or signal level.

**Please Note:** When adapter is not locked onto one of the five Sega Channel carriers, the forward error correction numbers will exceed a value of over "2000", however when adapter successfully locks onto carrier the FER numbers will start rolling back down to a value lower than "50".



## *D R A F T*

### **CURRENT TUNED FREQUENCY: 110.0 MHZ**

The Current tuned frequency displays the carrier the adapter is currently tuned to. this display is dynamic, and will change if a new frequency is entered into adapter and the "C" key is pressed, forcing adapter to retune to desired frequency. At this point you will see the red LED on top of adapter turn off, and current tuned frequency will display desire frequency minus 100 KHZ and plus 100 KHZ then finally locking in on desired frequency then the red LED will be illuminated, indicating the adapter has locked onto carrier.

### **CHANNEL MAP:**

The Channel Map field is used as a visual display to show the operator what frequency map the adapter has received. This also acts as an indication that the box has successfully received it's initialization from the controller, as the map will be zeroed out then will filled in with the correct frequency map.

### **TO ACCESS THE DIAGNOSTIC SCREEN:**

To access the diagnostic screen requires the following key sequence

1. Press the Menu reset button on top of Adapter.
2. when the sonic character appears on the screen press and hold down the following keys on the Genesis Hand Held controller, until diagnostic screen appears.

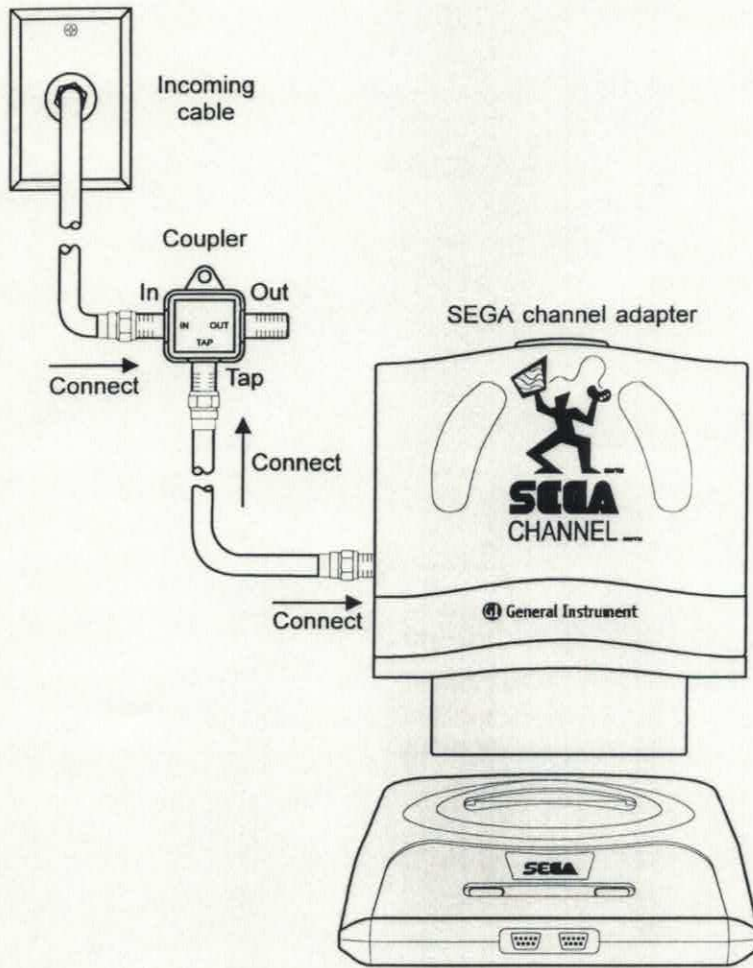
"A" key, "C" key, "START" key, and "→" (Right Arrow) Key.

## INSTALLING SGT-3000 ADAPTER

When installing the adapter it is always recommended that a directional coupler be used during the installation process. there are several reason for using a directional coupler only.

1. Typical cable drop level to back of cable ready TVs or Cable set-top converters is approx.: +3dB. if a 2-way splitter were to be used, the resulting level to the T.V. or converter would be -.5 dB, which would cause a noticeable degradation to the picture quality. This accures because Splitter 's have a high through loss. However the standard high bread directional coupler has less than a 1 dB through loss, minimizing the impact to picture quality.
2. The directional coupler provides high isolation between tap leg and output leg. as well as isolation between tap leg and input leg. This is important because all electronics devices that contains a tuner will generate local osolations back into the cable system. Because the input level to the adapter is at such a low level, we need to prevent any spurious osolations from stepping on top of the Sega Channel carrier and preventing successful game downloads.
3. the third reason is that the attenuated Tap leg insures that the rf input level to the adapter falls within the 0 to -30dBmv range.









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# GI's SEGA Channel Adapter Messages

Error Code	Displayed Message	Possible Reason(s)	Suggested Questions	Action
0001	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	Invalid DRAM configuration. Bad DRAM.	Is this the first time the adapter was installed? Have you tried a power reset? Have you tried several times?	Replace the adapter.
0003	Your SEGA Channel adapter is not receiving the signal properly. Please call your local cable company to reactivate your service.	Menu not authorized. Bad site code. Illegal adapter.	When was the adapter picked up or delivered? Are you a new subscriber? Did this adapter work before?	If not an illegal adapter, authorize the adapter with proper service code(s). If an error is consistent, replace the adapter. If not an illegal adapter, authorize the adapter with proper service code(s). If an error is consistent, replace the adapter.
0004	The game you have chosen is not currently available for play on your adapter. Press "START" to return to the menu.	Game not authorized. Bad site code. Illegal adapter.	Are you a new subscriber? Did this adapter work before? Was the cable disconnected or the unit powered off?	Check the signal quality at the adapter.
0005	Your SEGA Channel adapter is not receiving a signal. Please check your instruction guide to make sure your system is set up correctly. Then press the "MENU" button and try again. If this problem continues, please call your local cable company.	SEGA Channel carrier not found due to: Cable disconnected, cable outage, Headend transcoder failed, High error rate on SEGA channel carrier, wrong frequency map, or damaged adapter.	Is this the first time the adapter was installed? When was the adapter picked up or delivered? Did this adapter work before? Are you getting other cable channels OK? What is the status of the LED indicator of the adapter?	Check the signal quality at the adapter.
0006	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	Adapter was not successful downloading the game within two tries.	Is this the first time you downloaded the game? How often does this error occur? Did this adapter work before? Are you getting other cable channels OK? What is the status of the LED indicator of the adapter?	Check the signal quality at the adapter.

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### GI's SEGA Channel Adapter Messages

Error Code	Displayed Message	Possible Reason(s)	Suggested Questions	Action
0007 0008 0009 000A 000B 000C 000D 000F 0010 0011 0012 0013 0014 0015 0016 0029 002A 002D 002E	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	Fatal Adapter Error.	Is this the first time the adapter was installed ? When was the adapter picked up or delivered ? Did this adapter work before ? Have you tried a power reset ? Have you tried several times ?	Replace the adapter.
0017	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	SRAM failed.	Is this the first time the adapter was installed ? When was the adapter picked up or delivered ? Did this adapter work before ? Have you tried a power reset ? Have you tried several times ?	Replace the adapter.
002B	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	SEGA channel carrier not found in Auto-scan mode.	Is this the first time the adapter was installed ? When was the adapter picked up or delivered ? Did this adapter work before ? Have you tried a power reset ?	Check the signal quality at the adapter.





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### GI's SEGA Channel Adapter Messages

Error Code	Displayed Message	Possible Reason(s)	Suggested Questions	Action
002C	Your SEGA Channel adapter is now ready to receive the signal. To authorize your adapter: 1. Leave this message ON. 2. Write down your adapter number 3. Call your cable operator. Your adapter number is: "SERIAL NUMBER"	The adapter was not pre-initialized at the factory.	Have you tried several times ? Is this the first time the adapter was installed ? When was the adapter picked up or delivered ? What is the adapter number ?	Initialize the adapter.
002F	Your SEGA Channel adapter is not functioning properly. Press the "MENU" button and try again. If this problem continues, please call your local cable company.	Download time-out. The adapter may not be initialized with appropriate game decryption keys.	Did this adapter work before ? Have you tried a power reset ? Is this the first time you downloaded the game ? How often does this error occur ?	Check for the possible channel swapping at the headend. Initialize the adapter with proper game keys. Replace the adapter.



*D R A F T*

*General Instrument  
Sega Channel  
Headend Quick Install Guide*

1. Mount SSR-1 satellite receiver in EIA rack.  
Unit require (2) EIA rack spaces.

2. Mount the (3) SST-1 transcoders in EIA rack  
Each transcoder requires (1) EIA rack space.

NOTE: For optimum performance it is necessary to place  
one rack spacer between all units.

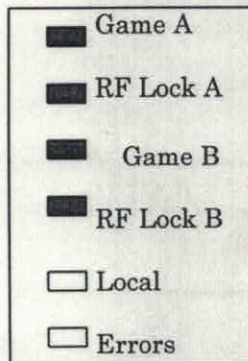
3. Apply power to all units (115 VAC @ 60 Hz.)

4. Insert LNB feed from Galaxy 7 Transponder 1 into 950 to 1450 Mhz  
input on rear of the SSR-1 satellite receiver.

NOTE: Front panel frequency should be set to 1425 Mhz.

5. Connect Ribbon cables supplied from data output channels 1 - 5  
on rear of SSR-1 to the "A" and "B" data inputs on rear of SST-1  
transcoders.

NOTE: With proper receiver input and valid frequencies selected  
on transcoder the following LED's should be illuminated.



6. Next press the down arrow key on front panel of the SST-1  
transcoder, the main menu display will appear, then press the



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enter key, the display will change back to frequency display with the first digit flashing. Using up and down arrow keys to increment or decrement the frequency, and left and right arrow keys to maneuver across frequency and modulators "A" or "B".

7. After setting desired frequencies press enter key again, display will flash "levels" and then display current level setting as value between (000) and (255). these are relative values and Do Not correspond to specific RF output levels. Therefore it is necessary to use a spectrum analyzer to set correct output level of data carriers. This can be accomplished by use up and down arrow keys on SST-1 Front panels to increment or decrement output level, the left and right arrow keys will move cursor across the "A" and "B" modulators.
8. After setting desired output level press the "enter key again, and the display will flash "NAT" for National or "LOCAL" for local addressability mode. Pressing the up or down arrow key will change display from current value.

NOTE: Under Normal conditions "Local" mode must always be selected.

9. Attach Bi-Phase data from ACC-2000 or ACC-4000 controller to Bi-Phase data input on rear of top transcoder and using short coaxial jumpers, loop control data through to the two subsequent SST-1 transcoders.

NOTE: Last transcoder in chain must be terminated.



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## Placement of Sega Carriers

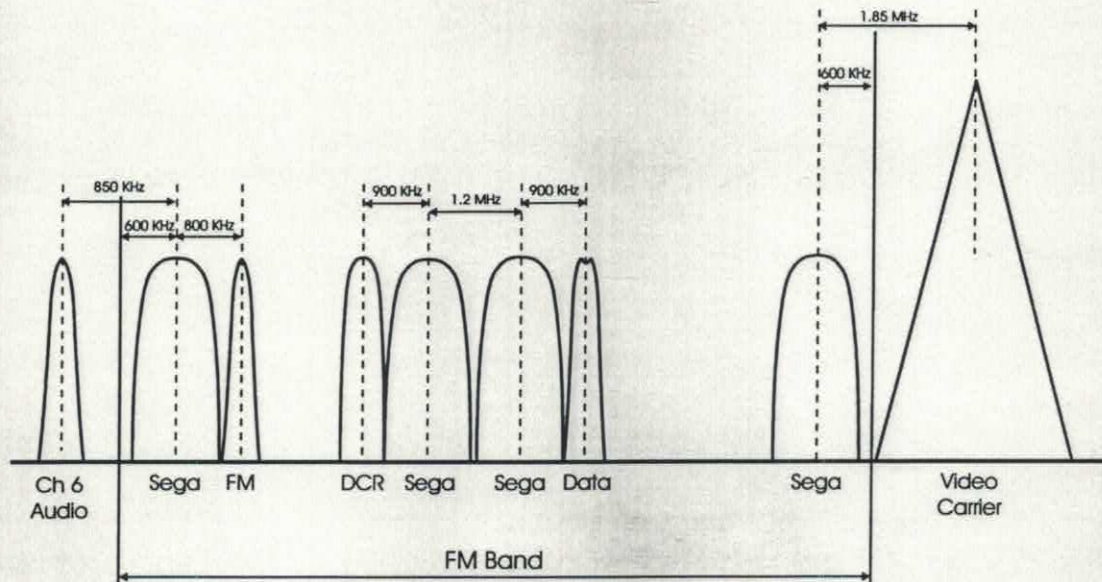
The following diagram depicts the recommended carrier separation for proper operation of the Sega Channel service on your system.

1. Sega carrier must be placed 850 Khz above lower adjacent audio carrier.
2. Sega carrier must be placed 1.85 Mhz below upper adjacent video carrier.
3. Sega carrier must be placed 800 Khz from adjacent on-cable F.M. carrier.
4. Sega carrier must be placed 1.2 Mhz from adjacent Sega Channel carrier.
5. Sega carrier must be placed 900 Khz from adjacent Music Choice carrier.

**NOTE:** If placing Sega carriers within the F.M. band, it is recommended to offset Sega carrier 600 Khz from strong off-air F.M. carrier.

If you have additional questions call: David Dolnick (GI app's engineer).  
(800)-523-6678-ext 8259.

### SEGA CARRIER SPACING



General Instrument





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