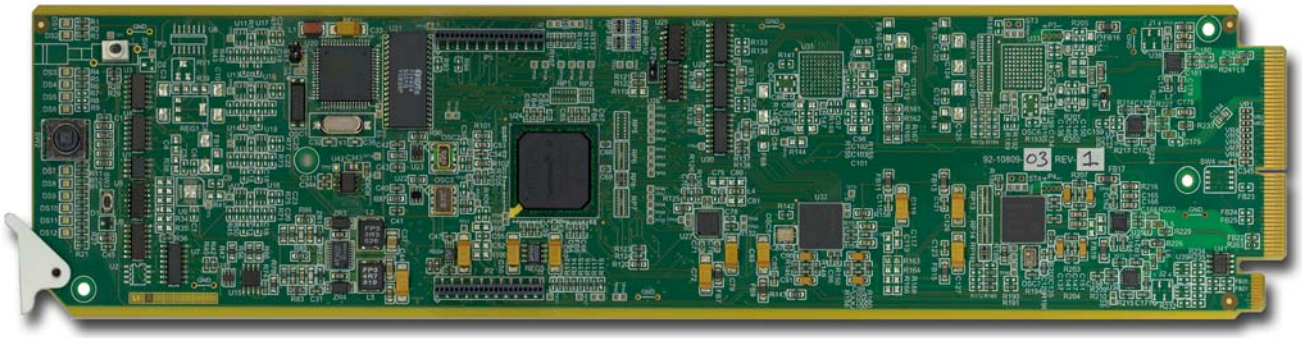
openGear

TSI-100

Transport Stream Identifier

User Manual



ROSS

Video Production Technology

TSI-100 User Manual

- Ross Part Number: TSI100DR-004-03
- Release Date: May 10, 2012.

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Important Regulatory and Safety Notices to Service Personnel

Before using this product and nay associated equipment, refer to the "**Important Safety Instructions**" listed below to avoid personnel injury and to prevent product damage.

Product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage to persons or equipment.

Warning — *The symbol with the word "**Warning**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.*

Caution — *The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.*

Notice — *The symbol with the word "**Notice**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.*

ESD Susceptability — *This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.*

Important Safety Instructions

Caution — *This product is inteded to be a component product of the DFR-8300 series frame. Refer to the DFR-8300 Series Frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.*

Warning — *Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing this area.*

Warning — *Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.*
This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained with the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair. To reduce the risk of fire, replacement fuses must be the same time and rating. Only use attachments/accessories specified by the manufacturer.

EMC Notices

United States of America
FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

Cet appariel numerique de la classe "A" est conforme a la norme NMB-003 du Canada.

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This equipment is in compliance with the essential requirements and other relevant provisions of CE Directive 93/68/EEC.

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This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, and found to comply with the limits for a Class A Digital device.

Notice — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

Maintenance/User Serviceable Parts

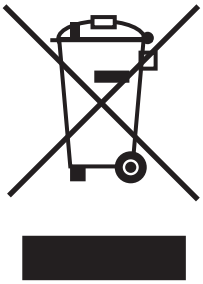
Routine maintenance to this openGear product is not required. This product contains no user servicable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products are covered by a generous 5-year warranty and will be repaired without charge for materials or labor within this period. See the "Warranty and Repair Policy" section in this manual for details.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminsh the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed out wheelie bin symbol invites you to use these systems.



If you need more information on the collection, resuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performance of our products.

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Contents

Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- User Interfaces
- Documentation Terms and Conventions

A Word of Thanks

Congratulations on choosing an openGear TSI-100 Transport Stream Identifier. Your TSI-100 is part of a full line of Digital Products within the openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new TSI-100 fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your TSI-100, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

The TSI-1000 extracts the Transport Stream Identifier (TSID) from an ATSC ASI transport stream and closes GPIO contacts when the value doesn't match a user supplied value. This makes it an ideal device for signaling a modulator that a transport stream is present and is for the correct television channel.

The TSI-100 monitors the ASI transport stream and provides a GPIO output when the TSID is not correct. This signal may be used to control other devices or to signal the fault.

The TSI-100 is ideally suited for use in remote television broadcast translators to mute or power off the re-transmitter when the main broadcast goes off the air. It may also be used in a cable head-end for the same purpose.

Features

The following features make the TSI-100 ideal solution for detecting a change in a transport stream source:

- Signals a remote device or alarm when an incorrect transport stream or no transport stream is present
- Simple setup, enter the TSID of the transport stream
- Two GPIOs provide both normally open and normally closed signaling
- SNMP capable for monitoring with third-party systems
- User configurable "must match" TSID
- Adjustable triggering on the detection of an incorrect TSID
- Adjustable triggering on the loss of the transport stream
- Frame-accurate triggering: each trigger is delivered within one video frame time
- On screen display for setup so that no LAN or PC is required
- Fits DFR-8300 series frames

Functional Block Diagram

This section provides the functional block diagram that outlines the workflow of the TSI-100.

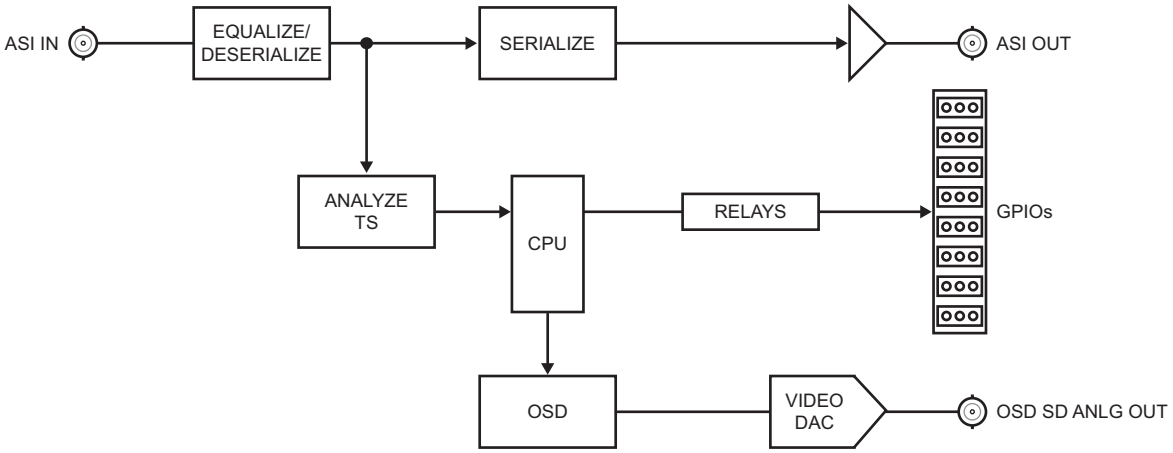


Figure 1.1 *Simplified Block Diagram*

User Interfaces

The TSI-100 includes three user interfaces.

DashBoard Control System™

The DashBoard Control System™ enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the DFR-8300 series frame through the Network Controller Card. The DashBoard Control System software and manual are available for download from our website.

For More Information...

- on the TSI-100 menus in DashBoard, refer to the chapter "**Configuration**" on page 4-1.
- on using DashBoard, refer to the ***DashBoard User Manual*** available from our website.

On-screen Menu System

For maximum flexibility of configuration, the TSI-100 also provides a Heads-Up Display on an analog video output. When activated, card status and parameters can be viewed and adjusted using the card-mounted finger joystick and an easy to use menu system.

For More Information...

- on the card-edge controls, refer to the section "**Card Overview**" on page 3-2.
- on the on-screen menu system, refer to the chapter "**Using the On-Screen Menus**" on page 5-1.

SNMP Monitoring and Control

The MFC-8300 Series Network Controller Card in the DFR-8300 series frame provides optional support for remote monitoring of your frame and using the Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

For More Information...

- on the SNMP controls on this card, refer to your TSI-100 Management Information Base (MIB) file.
- on SNMP Monitoring and Control, refer to the ***MFC-8300 Series User Manual***.

Documentation Terms and Conventions

The following terms and conventions are used throughout this manual:

- "**Board**" and "**Card**" refer to the TSI-100 card itself, including all components and switches.
- "**DashBoard**" refers to the DashBoard Control System™.
- "**Frame**" refers to the DFR-8300 series frame that houses the TSI-100 card.
- "**GPIO**" means General Purpose Input-Output. This term is commonly used in the broadcast industry to refer to DC signals used by one device to control another.
- "**Operating Tip**" and "**Note**" boxes provide additional information.
- "**Operator**" and "**User**" refer to the person who uses the TSI-100.
- "**Rear Module**" refers to the connector module at the rear of the frame, into which the TSI-100 is inserted.
- "**System**" and "**Video system**" refer to the mix of interconnected production and terminal equipment in which the TSI-100 operates.

Installation

In This Chapter

This chapter provides instructions for installing the TSI-100, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Quick Start
- Installing the TSI-100
- Cabling for the TSI-100
- Software Upgrades

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your DFR-8300 series frame is properly installed according to the instructions in the ***DFR-8300 Series User Manual***.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Unpacking

Unpack each TSI-100 you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Quick Start

Assuming you have an openGear DFR-8300 series frame, a TSI-100 card, and a suitable rear module, the following steps will allow you to start matching transport stream identifiers.

Installing the TSI-100

1. Connect the DFR-8300 series frame to your LAN. Refer to the ***DFR-8300 Series User Manual*** and the ***MFC-8300 Series User Manual*** for details.
2. Install the DashBoard client on a computer connected to the LAN. The DashBoard Control System™ software and user manual is available from the Ross Video website.
3. Install the required Full Rear Module in the frame as described in the section "**Installing a Rear Module**" on page 2-4.
4. Install a TSI-100 into the rear module as described in the section "**Installing the TSI-100**" on page 2-5.
5. Connect a video signal to the SDI IN BNC on the rear module of the TSI-100 as described in the section "**Cabling for the TSI-100**" on page 2-6.
6. Power on the frame.

Configuring the TSI-100

1. Launch the DashBoard client on your computer.
   - DashBoard should automatically find your frame within a minute or two.
   - Expand the frame node you installed the TSI-100 to display a list of cards in the frame.
   - Double-click the node for the TSI-100 you wish to configure for encoding. A tab for the card displays in the **Device View** of the DashBoard client.
2. Re-name the card as follows:
   - Select the **Settings** tab.
   - Re-name the card. This will make the card easily identifiable within DashBoard especially when there is more than one card to configure.
   - Click **Apply**.
3. Select the **TSID Setup** tab.
4. In the **TSID Value** field, enter the 4-digit TSID you wish to match on.
5. In the **Wrong TSID Count** field, specify the number of invalid TSIDs that are needed to trigger a change in the GPIO state.
6. In the **No TSID Timeout** field, specify the amount of time without a TSID before triggering a change in GPIO state.
7. Connect the GPIO 1 or GPIO2 output of the TSI-100 to the device you wish to trigger. GPIO1will be low and GPIO2 will be high when the transport stream is present and the TSID is correct.

Installing the TSI-100

This section outlines how to install a rear module and card in a DFR-8300 series frame. Refer to the section "**Cabling for the TSI-100**" on page 2-6 for cabling details.

Rear Modules for the TSI-100

When installing the TSI-100:

- **DFR-8310 series frames** — The **MDL-R02** Full Rear Module is required. The TSI-100 is not compatible with the DFR-8310-BNC frames.
- **DFR-8321 series frames** — The **MDL-R22** Full Rear Module is required.

Installing a Rear Module

If the Rear Module is installed, proceed to the section "**Installing the TSI-100**" on page 2-5.

Use the following procedure to install a Rear Module in your DFR-8300 series frame:

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the TSI-100 installation.
3. Install the bottom of the Rear Module in the **Module Seating Slot** at the base of the frame's back plane. (**Figure 2.1**)

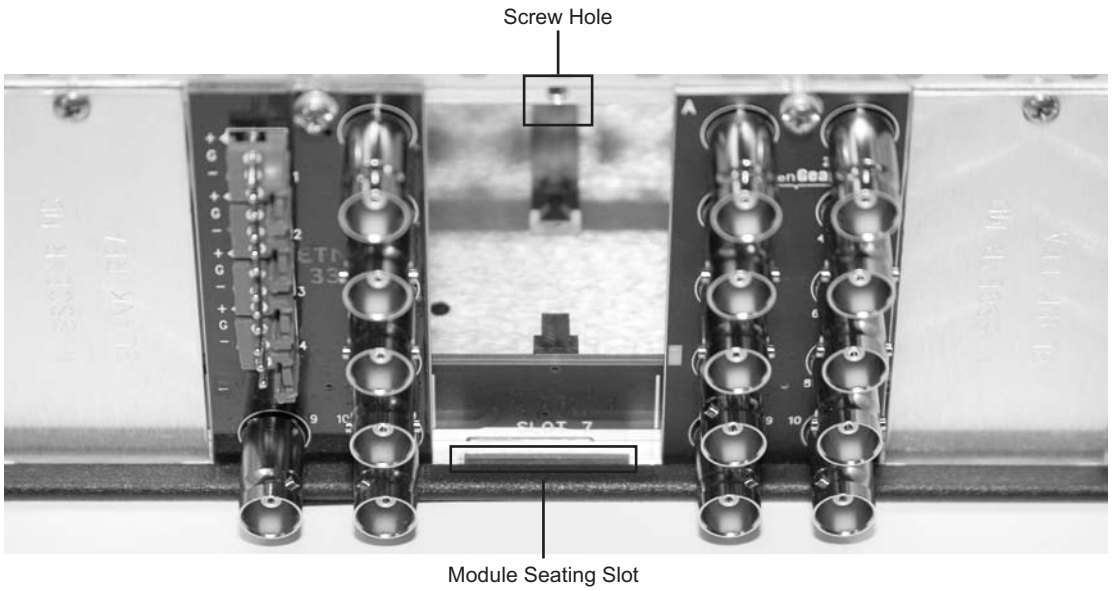


Figure 2.1 *Rear Module Installation in a DFR-8300 Series Frame (TSI-100 not shown)*

4. Align the top hole of the Rear Module with the screw on the top-edge of the frame back plane.
5. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

This completes the procedure for installing a Rear Module in your DFR-8300 series frame.

Installing the TSI-100

Use the following procedure to install the TSI-100 in a DFR-8300 series frame:

1. Locate the Rear Module you installed in the procedure "**Installing a Rear Module**" on page 2-4.

Notice — *Heat and power distribution requirements within a frame may dictate specific slot placements of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using convectional cooling.*

2. Hold the TSI-100 by the edges and carefully align the card-edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plus is properly seated in the Rear Module.
4. Verify whether your rear module label is self-adhesive by checking the back of the label for a thin wax sheet. You must remove this wax sheet before affixing the label.
5. Affix the supplied rear module label to the BNC area of the Rear Module.

This completes the procedure for installing the TSI-100 in a DFR-8300 series frame.

Cabling for the TSI-100

This section provides information for connecting cables to the installed rear modules on the frame backplane. Connect the input and output cables according to the following diagram. It is not necessary to terminate unused outputs.

Rear Module Cabling

This section provides cabling diagrams for the rear modules. The type of rear module depends on the frame the card is installed in.

DFR-8310 Series Frames

Each **MDL-R02** occupies one slot and accommodates one card. Each rear module provides one ASI input, one ASI output, one analog output for on-screen display, and relay-isolated GPIO outputs. (**Figure 2.2**)

DFR-8321 Series Frames

Each **MDL-R22** occupies two slots and accommodates one card. Each rear module provides one ASI input, one ASI output, one analog output for on-screen display, and relay-isolated GPIO outputs. (**Figure 2.2**)

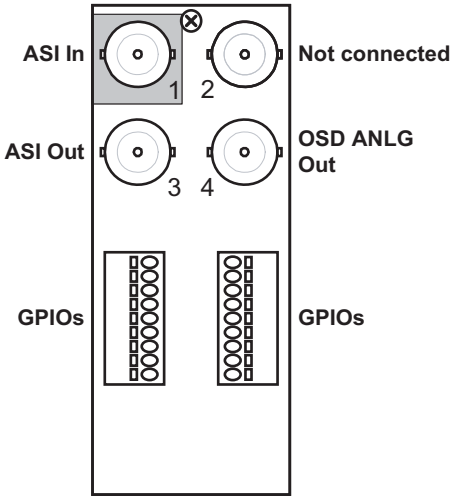


Figure 2.2 *Cabling for the MDL-R02 and MDL-R22 Rear Modules*

Connections Overview

This section briefly outlines the types of connections available on the rear modules.

ASI In — BNC 1

BNC 1 accepts an ASI video signal. The TSI-100 requires this input in all cases. For convenience, it routes a reclocked copy of this signal to **BNC 3**. The input signal is internally terminated in 75ohms when the TSI-100 is installed.

ASI Out — BNC 3

BNC 3 carries a reclocked copy of the ASI signal applied to **BNC 1**.

OSD ANLG Out — BNC 4

BNC 4 carries an analog video signal (NTSC/525 or PAL/625) that can be connected to an analog composite video monitor for setup of operating parameters, in conjunction with the TSI-100's **Menu** switch (**SW2**).

GPIOs

Two blocks of relay-isolated GPIO outputs are provided on each rear module. Refer to **Figure 2.3** for **MDL-R02** pinouts and **Figure 2.4** for **MDL-R22** pinouts.

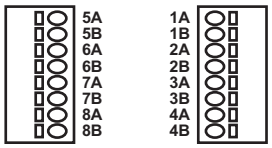


Figure 2.3 *GPIO Pinouts for the MDL-R02 Rear Module*

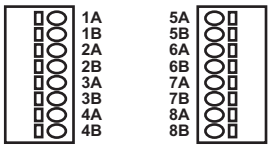


Figure 2.4 *GPIO Pinouts for the MDL-R22 Rear Module*

Software Upgrades

This section provides instructions for upgrading the software for your TSI-100 using the DashBoard Control System™.

Use the following procedure to upgrade the software on a TSI-100:

1. Contact Ross Technical Support for the latest software version file.
2. Launch the DashBoard client on your computer.
3. Display a tab for the card you wish to upgrade by double-clicking its status indicator in the **Basic Tree View**.
4. From the **Device** tab, click **Upload** to display the **Select File for upload** dialog box.
5. Navigate to the ***.bin** upload file you wish to upload.
6. Click **Open** and follow the on-screen instructions.
7. Click **Finish** to start the upgrade.
8. Monitor the upgrade.
   - A **Upload Status** dialog enables you to monitor the upgrade process.
   - The card reboots automatically once the file is uploaded. The card is temporarily taken offline.
   - The reboot process is complete once the status indicators for the **Card State** and **Connection** return to their previous status.

Operating Tip — *If you are running DashBoard version 2.3.0 or lower, you must click **Reboot** in the **Device** tab to complete the upgrade process.*

This completes the procedure for upgrading the software on a TSI-100.

Troubleshooting

If you encounter problems when upgrading your card software, verify the following:

- Ethernet cable is properly connected if you are uploading the file via a network connection.
- The file you are attempting to load is a ***.bin** file that is for the card you are upgrading.

User Controls

In This Chapter

This chapter provides a general overview of the user controls available on the TSI-100.

The following topics are discussed:

- Card Overview
- Control and Monitoring Features

Card Overview

This section provides a general overview of the TSI-100 card components.

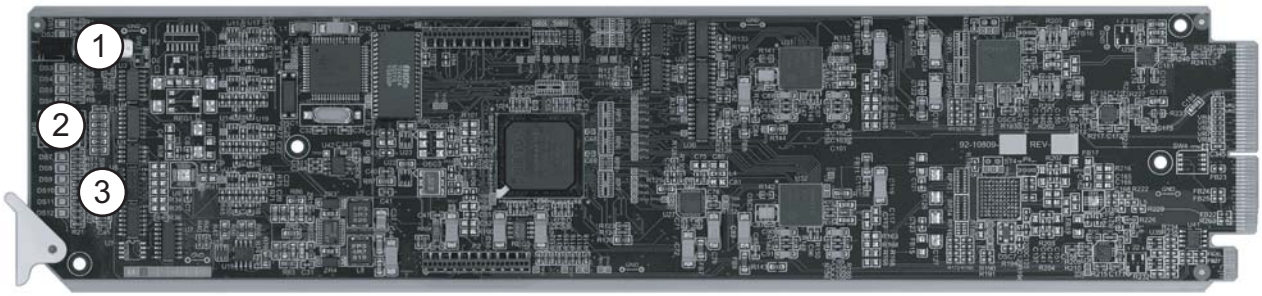


Figure 3.1 *TSI-100 — Components*

1) Bypass Switch (SW1)	2) Menu Switch (SW2)	3) Reset Switch (SW3)

1. Bypass Switch (SW1)

If the TSI-100 is installed in a rear module that has a bypass relay, this two-position push-button is used to control the relay.

- When the push-button is in the **IN** position, the TSI-100 is in the video signal path. It is recommended to set **SW1** in the **IN** position at all times.
- Pressing it once moves the switch to the **OUT** position and bypasses the TSI-100.
- Pressing it again restores the TSI-100 to its active state.

2. Menu Switch (SW2)

The recommended user interface for the TSI-100 is the DashBoard Control System™, running on a computer connected to the DFR-8300 series frame through an Ethernet connection. If your frame does not have the LAN option, or you do not have access to a computer with DashBoard, you can use the on-screen display (OSD) in conjunction with the Menu Switch (**SW2**). This requires either an SDI or analog monitor (NSTC or PAL) to be connected to the TSI-100.

For More Information...

- on using **SW2** and the OSD, refer to the chapter "**Using the On-Screen Menus**" on page 5-1.

3. Reset Switch (SW3)

This button is used for rebooting the card. Refer to the section "**Reset Button**" on page 7-2 for details on using this button.

For More Information...

- on the LEDs available on the card-edge, refer to the section "**Control and Monitoring Features**" on page 3-3.

Control and Monitoring Features

This section provides information on the card-edge LEDs for the TSI-100. Refer to **Figure 3.2** for the location of the LEDs.

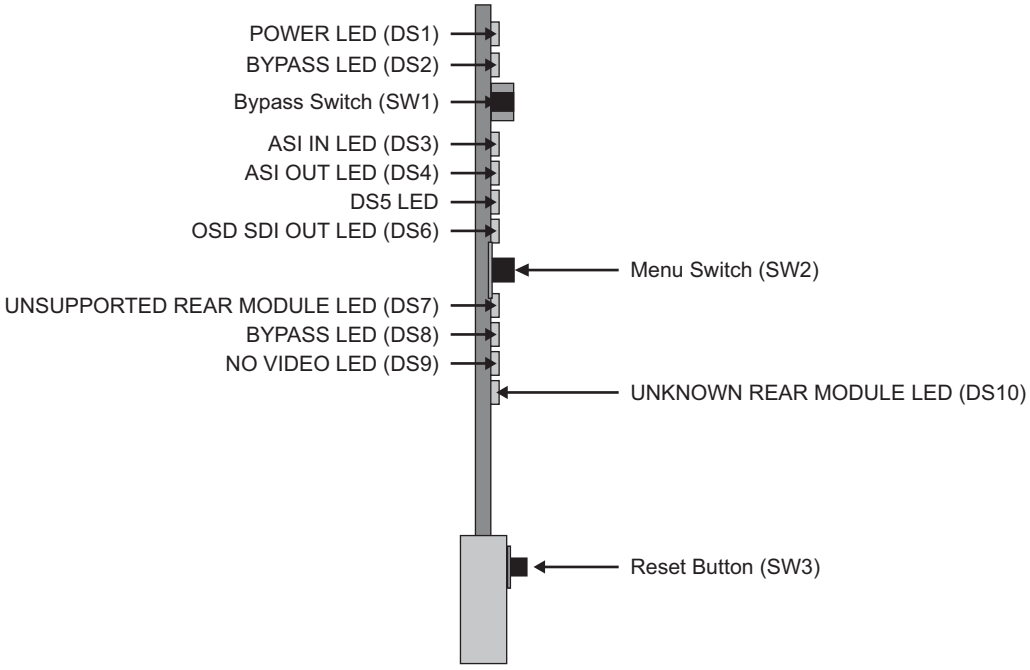


Figure 3.2 *TSI-100 Card-edge Controls*

Status and Selection LEDs on the TSI-100

The front-edge of the TSI-100 has LED indicators for communication activity. Basic LED displays and descriptions are provided in **Table 3.1**.

Table 3.1 LEDs on the TSI-100

LED	Color	Display and Description
POWER (DS1)	Green	When lit green, this LED indicates that the card is running with a valid input.
	Flashing Green	When flashing green, this LED indicates that the bootloader is waiting for a software upload.
	Yellow	When lit yellow, this LED indicates there is a warning for a signal or a configuration error is occurring.
	Red	When lit red, this LED indicates that the card is not operational. This will occur if, for example, there is not video input.
	Off	When off, this LED indicates that there is no power.
BYPASS (DS2)	Red	When lit red, this LED indicates the card is in bypass mode.
	Off	When off, this LED indicates the card is in the video path and is capable of inserting data.

Table 3.1 LEDs on the TSI-100

LED	Color	Display and Description
ASI IN (DS3)	Green	When lit green, this LED indicates the ASI input is present and valid.
	Off	When not lit, this LED indicates that no valid input is present. This typically means that the input cable is disconnected or the signal is not ASI (e.g. SDI or HD-SDI).
ASI OUT (DS4)	Green	When lit green, this LED indicates the ASI output serializer is locked to a valid input.
DS5		This LED is not implemented.
OSD SDI Out (DS6)	Green	When lit green, this LED indicates the OSD output serializer is locked to the on-board oscillator.
Unsupported Rear Module (DS7)	Green	When lit green, this LED indicates correct operation.
	Red	When lit red, this LED indicates that the rear module connected to the TSI-100 is not supported by the software. Operation will not be correct.
BYPASS (DS8)	Green	When lit green, this LED indicates correct operation.
	Red	When lit red, this LED indicates the TSI-100's ASI is bypassed (redundant with DS2).
NO VIDEO (DS9)	Green	When lit green, this LED indicates correct operation.
	Red	When lit red, this LED indicates no valid input is present (redundant with DS3).
UKNOWN REAR MODULE (DS10)	Green	When lit green, this LED indicates correct operation.
	Orange	When lit orange, this LED indicates that the rear module connected to the TSI-100 is not recognized by the software. Operation may not be correct.

Configuration

In This Chapter

This chapter explains how to use the user interface to set up the TSI-100. This discussion is based on the use of DashBoard through a network connection. The order of sections in this chapter follows the workflow required to setup the TSI-100 for operation. It is recommended that you proceed through the following sections in order to achieve the best possible understanding of the product.

The following topics are discussed:

- Configuration
- TSID Setup
- Monitoring

Configuration

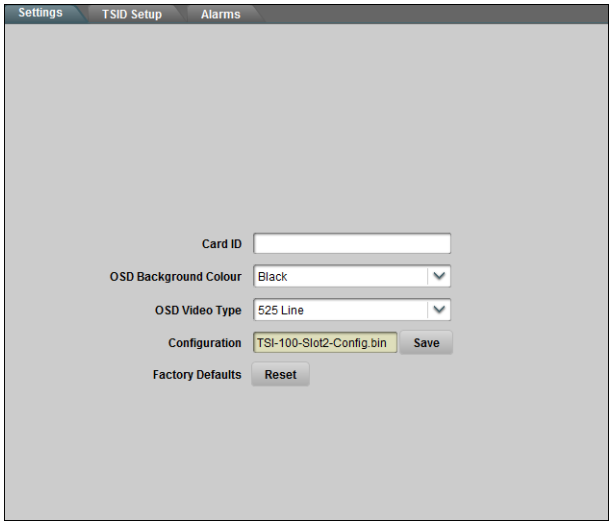
This section provides a summary of the initial tasks you may wish to perform before configuring your card for detecting a change in a transport stream source.

General Settings

Before proceeding to any of the other sections, please ensure that these settings are correct, as they will have an effect on the operation of the other functions.

To configure the general settings

1. Select the **Settings** tab.



Settings Tab

2. Type a unique name for your card in the **Card ID** field. This is especially useful if you have more than one TSI-100 in a frame. If this field is blank, the name is just “TSI-100”.
3. If required, configure the Heads-up Display as follows:
   - The **OSD Background Color** is normally black, but other selections are available for your convenience. If the video input is a standard definition SMPTE 259 signal (480i 59.94 or 576i 50), you can select Overlay as the background color. This causes the menus to be keyed over the video background. If you select Overlay when the video input is HD or absent, the background is black.
   - Set the **OSD Video Type** to suit your picture monitor.
4. You can save the **Configuration** of the card to a file on a PC by clicking **Save**.
5. The Factory Defaults **Reset** button clears all configuration settings and restores the settings to as they were shipped from the factory.

TSID Setup

This section outlines how to configure the card for matching transport stream identifiers.

To set up the card to detect TSID

1. Select the **TSID Setup** tab.
2. Set the **TSID Value** (4 digit hex value). If the incoming signal contains a TSID that doesn't match this value, the GPIOs become active.
3. Set the **Wrong TSID Count** value. This specifies the number of consecutive invalid TSIDs to process before activating the GPIOs.
4. Set the **No TSID Timeout** value. This specifies the amount of time, in 1/10th of a second, to wait with no incoming TSID before activating the GPIOs.

Monitoring

The TSI-100 has several alarms that can affect the overall status of the card. This section outlines the three status tabs for the TSI-100. These Status tabs provide read-only information to help monitor the TSI-100 via DashBoard. The indicators in the Status tabs can vary in severity from green (valid) to red (alarm). DashBoard reports the most severe alarm for a single field.

Product Status

The **Product** tab provides read-only information, such as board revision, serial number, and rear module type. This information is helpful to a Ross Video technician when there are questions about the operation of the unit.

Alarms Status

The **Alarms** status reports the current state of all the signals that can cause alarms. If you wish to disable an individual alarm clear the corresponding box in the **Alarms** setup tab. The following fields are displayed in the **Alarms** status tab:

- **Card Status** — This field reports error conditions as specified in the **Alarms** setup tab.
- **Incoming ASI** — This field reports the length and speed of the incoming ASI packet.
- **Video Bypass** — This field reports if the card is in Active or Bypass mode (based on how **SW1** is set on the card-edge).
- **Video** — This field reports when a valid input signal is connected or not to the rear module.
- **Rear Module** — This field reports when an unsupported rear module is installed with the TSI-100.
- **TSID** — This field reports the four digit hex number (Transport Stream Identification).

GPIO Output Status

The following fields are displayed in the **GPIO Output** tab:

- **Card Status** — This field reports if the GPIO connection are valid (green), or if no video source or unsupported rear module is connected.
- **Incoming ASI** — This field reports the length and speed of the packet.
- **Bypass State** — This field reports if the card is in Active or Bypass mode (based on how SW1 is set on the card-edge)
- **GPIO #** — This field reports the state of the specified GPIO. The TSI-100 has two active GPIOs. GPIO 1 is active high and GPIO 2 is active low. An active GPIO output produces a switch closure on the rear module.

Using the On-Screen Menus

In This Chapter

This chapter explains how to use the **Menu** switch (**SW3**) functions available on the On-screen Display (OSD) of the TSI-100. It does not describe each available menu; for information on these, refer to the chapter "**Configuration**" on page 4-1. The purpose of this chapter is to explain how to navigate the menus and access the available functions and settings.

The following topics are discussed:

- On-screen Display Overview
- OSD Layout and Navigation
- Using the Menus

On-screen Display Overview

This section briefly describes how to access and navigate through the menus in the on-screen display (OSD). The OSD feature is displayed on a separate composite monitoring output. When activated, the card status and parameters can be viewed and adjusted using the card-mounted menu switch and an easy to use menu system.

For More Information...

- on the switch locations on the card-edge, refer to the section "**Card Overview**" on page 3-2.

OSD Switch Overview

The **Menu** switch is used to navigate the TSI-100 menu system and configure item parameters. This switch is a five-direction, square, finger joystick located near the front edge of the TSI-100 card.

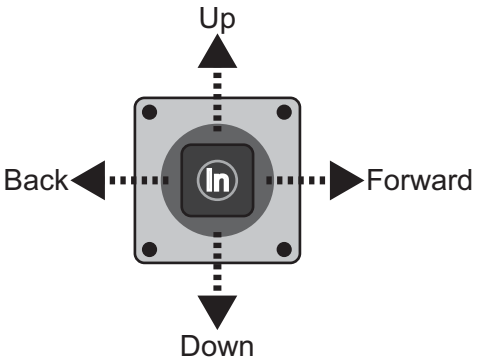


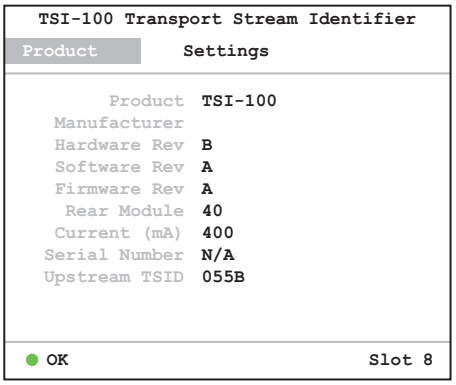
Figure 5.1 *Menu Switch*

With the card-edge facing you, use the following menu switch actions and **Figure 5.1** to navigate the menu parameters:

- **In** — pressing once brings the menu system onto the monitor output, holding for two seconds exits the menu system. This position is also used to enter the menu values and parameters.
- **Up** — pressing once selects the menu, item, or value *above* the current selection, holding scrolls to the top of the available selections.
- **Down** — pressing once selects the menu, item, or value *below* the current selection, holding scrolls to the bottom of the available selections.
- **Forward** — pressing once moves from menu to item, or item to value.
- **Back** — pressing once moves from value to item, or item to menu.

OSD Layout and Navigation

When the TSI-100's front OSD switch is in the normal "in" position, the OSD is off and its output jack is the output from the card. To use the OSD, move it to the "out" position (closer to the front-edge of the card). A menu, similar shown below, is displayed on the OSD output.



Main OSD Screen — Product Status

The top line of the screen has three items (from left to right): Product, Settings, and Exit.

Product

This is the first in a list of Status screens. To view these screens, press the **Menu** switch **In** to highlight the word Product, then press **Menu** switch **Down** once to view the GPIO Status screen, and **Down** again for the next screen in the sequence. These are the same **Status** fields described in the section "**Monitoring**" on page 4-4.

Settings

This is the first in a list of Setup menus. To view these, press the **Menu** switch **Forward** to advance the selection bar to the word Settings, then press the **Menu** switch **In** to highlight it. Now press the **Menu** switch **Down** once to view the Alarms menu, and **Down** again for the next menu in the sequence. These are the same Setup menus described in the chapter "**Configuration**" on page 4-1

Note — *While editing numeric fields, Forward and Back allow you to select individual digits, while Up and Down change the value of the selected digit. Numeric entry is completed by pressing the **Menu** switch **In**. This also applies to editing alphanumeric values in the **Edit Strings** menu.*

Exit

To turn off the OSD: press the **Menu** switch **Forward** to advance the selection bar to the word **Exit**, then press the **Menu** switch **In**.

To turn the OSD back on, press the **Menu** switch **In** again. This selection is somewhat redundant, since you should return the front OSD switch to the "in" position anyway to turn the OSD off.

Using the Menus

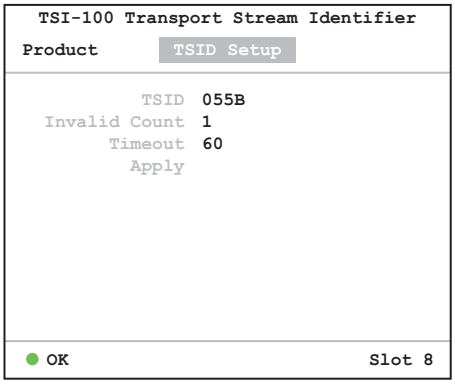
The available menus that can be selected via the OSD are described in **Table 5.1**.

Table 5.1 Available Menus

Status (left column)	Setup Menus (center column)	Exit (right)
Product	TSID Setup	Exit
Alarms	Alarms	
GPIO Output	Setting	

The use of the menus to change settings will be illustrated by the following example:

1. Navigate to the **Setup Menus** entry on the top row, as discussed previously, by using the **Forward** and **Back** positions of **SW2**.
2. If the **Menu** name (for example, **TSID Setup**) is highlighted (brighter than other text), skip to step 3. If it is not highlighted, press **SW2** switch to **In** to highlight it.
3. Press **SW2** switch to **Down** or **Up** to step through the available menus.
4. When you reach **Settings**, select it by pressing **SW2** switch to **In**. The display should be similar to the one shown below.



TSID Setup Menu

5. Press **SW2** switch **Down** or **Up** to step through the available items that you can set on this menu.
6. When you reach the **TSID** item, select it by pressing the **SW2** switch **In**.
7. Press the **SW2** switch **Down** or **Up** to step through the available values for this item. Note that the background color changes at each step.
8. When you reach the desired value, skip to the next digit by pressing the **SW2** switch **Right**.
9. Repeat steps 7-8 to select all 4 digits for the TSID.
10. Move down the list to select **Apply** and press the **SW2** Switch **In**. The TSID is now set.
11. To switch to a different menu: press the **SW2** switch **Up** or **Down** repeatedly until the selection bar moves to the title. Press the **SW2** switch **In**. Return to step 3.

Specifications

In This Chapter

This chapter provides the technical specification information for the TSI-100. Note that technical specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications

Technical Specifications

This section provides technical specifications for the TSI-100.

Table 6.1 TSI-100 Technical Specifications

Category	Parameter	Specification
Transport Stream Inputs	Number of Inputs	1
	Input Signal Standard Accommodated	DVB-ASI (EN 50083-9)
	Impedance	75ohm terminating in Active mode
	Equalization	>100 m of Belden 1694A cable
	Return Loss	>15dB to 270 MHz
Transport Stream Outputs	Number of Outputs	1 ASI input monitor
	Impedance	75ohm
	Return Loss	>10dB to 270 MHz
	Signal Level	800mV ±10%
	DC Offset	0V ±50mV
	Rise & Fall Time (20-80%)	700ps. typical
	Overshoot	<8%
Analog Video Output	Number of outputs	1 on-screen display (OSD) output
	Impedance	75ohm
	Signal level	1.0 v
	Formats	NTSC-M or PAL-B/G
GPIO Outputs	Number and Type of Inputs or Outputs	8 pairs of isolated contacts. (Max 0.1A)
Power	Maximum Power Consumption	5W

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your TSI-100, the following basic troubleshooting checklist may help identify the source of the problem. If the frame still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the "**Contact Us**" section.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check** — Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Re-seat the Card in the Frame** — Eject the card and re-insert it into the frame.
4. **Check Control Settings** — Refer to the Installation and User Controls sections of this manual to verify all user-adjustable component settings
5. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
7. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.

Reset Button

In the unlikely event of a complete card failure, you may be instructed by a Ross Technical Support specialist to perform a complete software reload on the TSI-100.

Use the following procedure to reload the software on a TSI-100:

1. Press and hold the **Menu** switch.
2. While holding the **Menu** switch, press the **Reset** button in.
3. Release the **Reset** button and then the **Menu** switch.
    - The **POWER** LED will flash green while the card is waiting for a new software load.
    - If a new software load is not sent to the card within 60 seconds, the card will attempt to restart with its last operational software load.
    - Software loads can be sent to the TSI-100 via the connection on the rear of the frame.

This completes the procedure for reload the software on a TSI-100.

Warranty and Repair Policy

The TSI-100 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your TSI-100 proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this TSI-100 has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This TSI-100 User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the TSI-100 are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your TSI-100, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your TSI-100. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

Technical Support	Telephone:	+1 613 • 652 • 4886
	After Hours Emergency:	+1 613 • 349 • 0006
	Email:	techsupport@rossvideo.com
General Information	Telephone:	+1 613 • 652 • 4886
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	Email:	solutions@rossvideo.com
	Website:	http://www.rossvideo.com

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