Dialogic

Dialogic® Converged Services Platform Release 8.4.1 Engineering Release 3

Hardware Product Descriptions

February 2008

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Unless otherwise stated in an applicable product purchase agreement between the Customer and Dialogic, Dialogic warrants that during the Warranty Period, products will operate in substantial conformance with Dialogic's standard published documentation accompanying the product. If a product does not operate in accordance therewith during the Warranty Period, the Customer must promptly notify Dialogic. Dialogic, at its option, will either repair or replace the product without charge. The Customer has the right, as their exclusive remedy, to return the product for a refund of purchase price or license fee if Dialogic is unable to repair or replace it.

Warranty Period

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The Warranty Period begins on the date of shipment of any products or software by Dialogic.

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(i) repair, replace or correct the same at its manufacturing or repair facility or

(ii) if Dialogic determines that it is unable or impractical to repair, replace or correct the product or software, provide a refund or credit not to exceed the original purchase price or license fee.

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D. Dialogic makes no warranty with respect to defective conditions or non conformities resulting from any of the following: Customer's modifications, misuse, neglect, accident or abuse; improper wiring, repairing, splicing, alteration, installation, storage or maintenance performed in a manner not in accordance with Dialogic's or its vendor's specifications, or operating instructions; failure of Customer to apply Dialogic's previously applicable modifications or corrections; or items not manufactured by Dialogic or purchased by Dialogic pursuant to its procurement specifications. Dialogic makes no warranty with respect to products which have had their serial numbers removed or altered; with respect to expendable items, including, without limitation, fuses, light bulbs, motor brushes and the like; or with respect to defects related to Customer's data base errors. Improper packaging of product for repair will not be covered under this warranty agreement. No warranty is made that software will run uninterrupted or error free.

E. Warranty does not include:

a) Dialogic's assistance in diagnostic efforts;

b) access to Dialogic's Technical Support web sites, databases or tools;

c) product integration testing;

d) on-site assistance; or

e) product documentation updates.

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J. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

About this Publication

Purpose

This documentation provides guidelines for using the Dialogic® CSP.

Safety Labels

The following Safety labels may appear in this information product to alert customers to avoidable hazards. The following are in the order of priority:

DANGER

Danger indicates the presence of a hazard that will cause death or severe personal injury if the hazard is not avoided.

WARNING

Warning indicates the presence of a hazard that can cause death or severe personal injury if the hazard is not avoided.

CAUTION

Caution indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided. Caution can also indicate the possibility of data loss, loss of service, or that an application will fail.

Conventions used

This information product uses the text conventions explained below. In addition, hexadecimal numbers are preceded by a zero and small “x.” For example, the decimal number 15 is represented in hexadecimal as 0x0F.

Convention	Description
. . .	A horizontal ellipsis in an API message indicates fields of variable length.
:	A vertical ellipsis in an API message indicates that a block of information is repeated or is variable.
n	The letter *n* is a generic placeholder for a number.
`Sans serif mono space`	Indicates a command name, option, input, output, non-GUI error, and system messages.
`Sans serif monospace italic`	Indicates a parameter name in an input message. Example: `move *.dot a: c:` *`-s`* The *`-s`* is the parameter.
Serif italic	Indicates the name of a book, chapter, path, file, or API message. Example: *`UserDirectory/Config.exe`*
Boldface	Indicates keyboard keys, key combinations, and command buttons Example: **Ctrl+Alt+Del**
Sans serif boldface	Identifies text that is part of a graphical user interface (GUI). Example: Go to the **Configuration** menu and select **Card**->**Span Configuration**

Contents

1 Chassis

Purpose

This chapter provides descriptions of the Dialogic® Converged Services Platform (CSP) chassis and related components.

Compliance

The CSP 2040, 2090 and 2110 chassis comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1:2001
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1:2001
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZS 60950.1:2003
Switzerland	BAKOM
Japan	JATE
Hong Kong	OFTA
Taiwan	DGT

Compliance

The PSC-60 and PSC-150 power cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1:2001
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1:2001
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZS 60950.1:2003

Dialogic® CSP 2040 Chassis - CSN-CHA-1112/ CSN-CHA-1112R

Description

The Dialogic® CSP 2040, a compact chassis configuration of the Dialogic® Converged Services Platform (CSP) is designed to meet the demands of the telecommunication industry by delivering reliability, scalability and performance in a low-cost compact environment.

The CSP 2040 chassis accommodates up to 1,024 ports. The CSP 2040 is a compact chassis with seven front slots. The system is fully redundant and the cards are hot swappable. This chassis has one fan tray to ensure proper air flow and cooling. Blockout cards are required for proper air flow and cooling. Any unoccupied line card slot or I/O card slot should have a Blockout card installed.

The CSP 2040 can handle a maximum of 32 spans regardless of the line card type installed. It is compatible with the CSP 2090 hardware and software, allowing for easy expansion.

The CSP 2040 supports common channel signaling packet engines for both ISDN and SS7 communications. Line protocol cards include E1, T1 and J1 services. Standard and custom tone generation and reception, precise call analysis, conferencing and voice recorded announcements are provided through an advanced Digital Signal Processing unit available for the CSP.

Features

The CSP 2040 chassis consists of the following:

- One fan tray for cooling
- A midplane bus, which is a high-speed communication line for connecting individual line cards and I/O cards
- A seven card slot chassis (with dedicated CSP Matrix Series 3 cards slots and a Power card slot)
- Mounting brackets so the chassis can be mounted in a 19" or 23" rack.

Configuration Information

The part number, serial number, model number, and revision are located on the side of the chassis.

Specifications

The CSP 2040 chassis is designed to the following electrical, physical and environmental specifications.

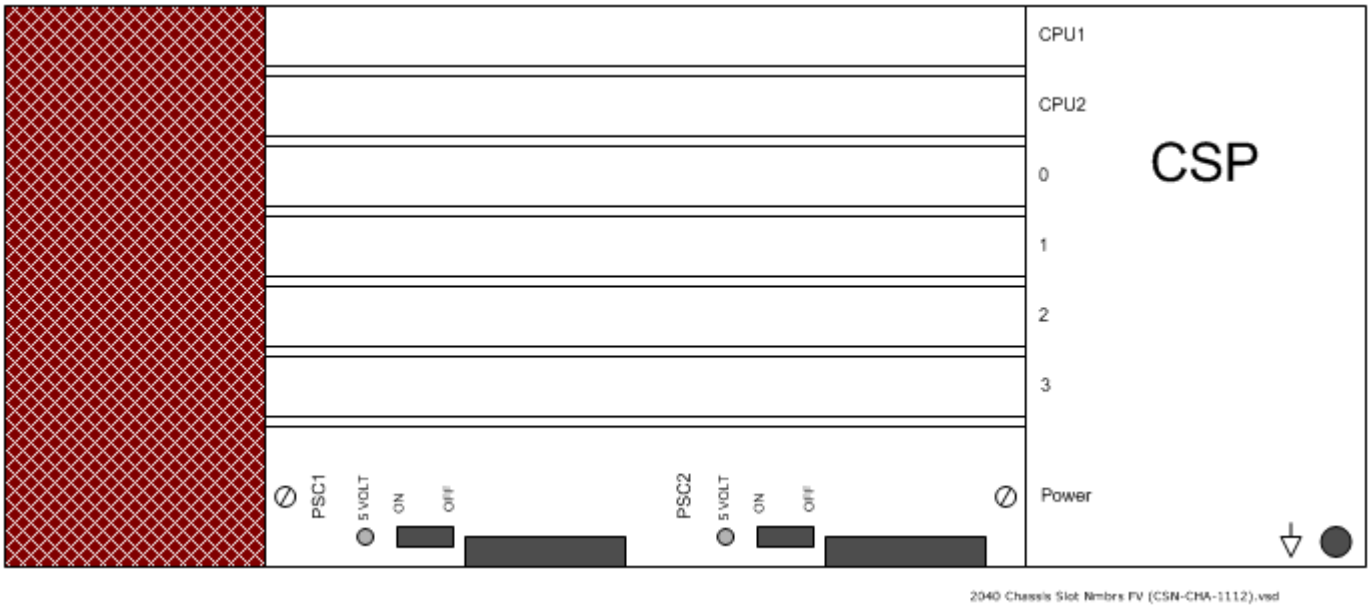
Electrical	Specification
Input Power Requirement	-48 V DC, 10A (maximum)
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	17.8 cm (7.0 in.)
Width	43.5 cm (17.125 in.)
Depth	48.2 cm (19.0 in.)
Weight	18 kg (40 lb.) (loaded chassis)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

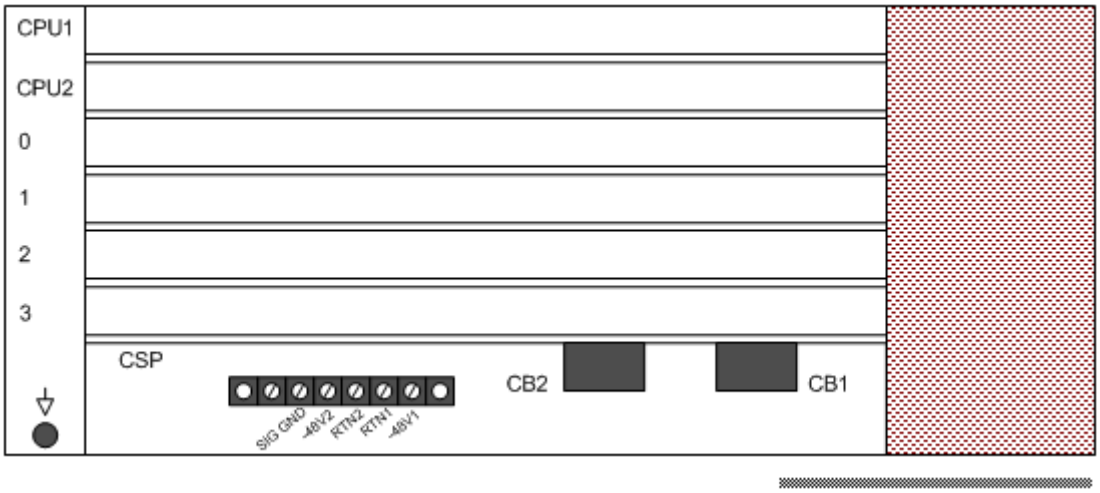
Front View

The front of the chassis has dedicated slots for two CSP Matrix Series 3 cards and one Power card. Slots 0-3 are for the other line cards.

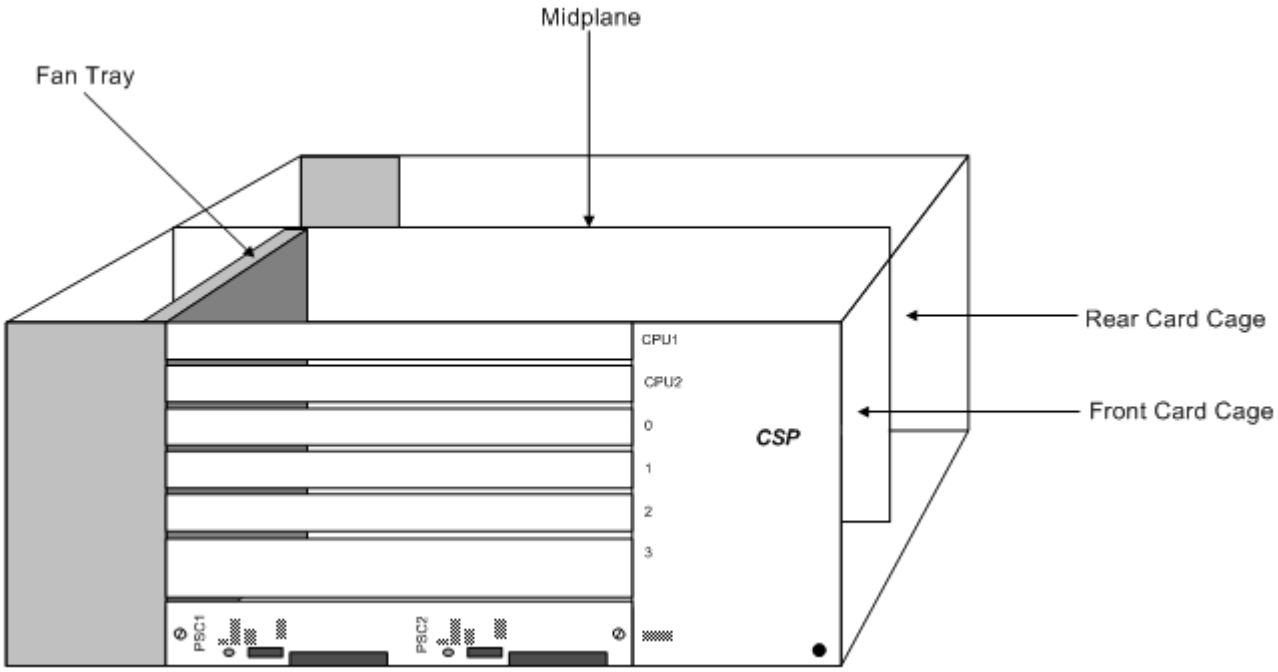


Rear View

The rear of the chassis has dedicated slots for the CSP Matrix Series 3 I/O cards. Slots 0-3 are for the other I/O cards. The power input panel is also located at the rear of the chassis



Cross Sectional View This shows the approximate location of the fan tray, midplane and front and rear card cages.



Dialogic® CSP 2090 Chassis - EXS-CHA-1100/EXS-CHA-1100R

Description

The Dialogic® CSP 2090, a mid-range chassis configuration of the Converged Services Platform (CSP) is designed to meet the demands of the telecommunication industry by delivering high performance, fault tolerant switching in a compact microprocessor-based design.

A typical CSP 2090 chassis can accommodate up to 2,048 ports, support matrix CPU cards, a fully configurable combination of line and services cards, and a host interface. The CSP supports redundancy and the cards are hot swappable. Blockout cards are required for proper air flow and cooling. Any unoccupied line card slot or I/O card slot should have a Blockout card installed.

The CSP 2090 supports common channel signaling packet engines for both ISDN and SS7 communications. Line protocol cards include E1, T1 and J1 services. Standard and custom tone generation and reception, precise call analysis, conferencing and voice recorded announcements are provided through an advanced Digital Signal Processing unit available for the CSP.

The CSP 2090 can operate as either a stand-alone unit, or as a unit in a larger system.

Features

The CSP 2090 chassis consists of the following:

- Two fan trays, front and rear
- A midplane bus, which is a high-speed communication line for connecting individual line cards and I/O cards
- A 20 card slot chassis (with dedicated CPU and power card slots)
- Mounting brackets so the chassis can be mounted in a 19" or 23" rack.

Configuration Information

The part number, serial number, model number, and revision are located on the side of the chassis.

Specifications

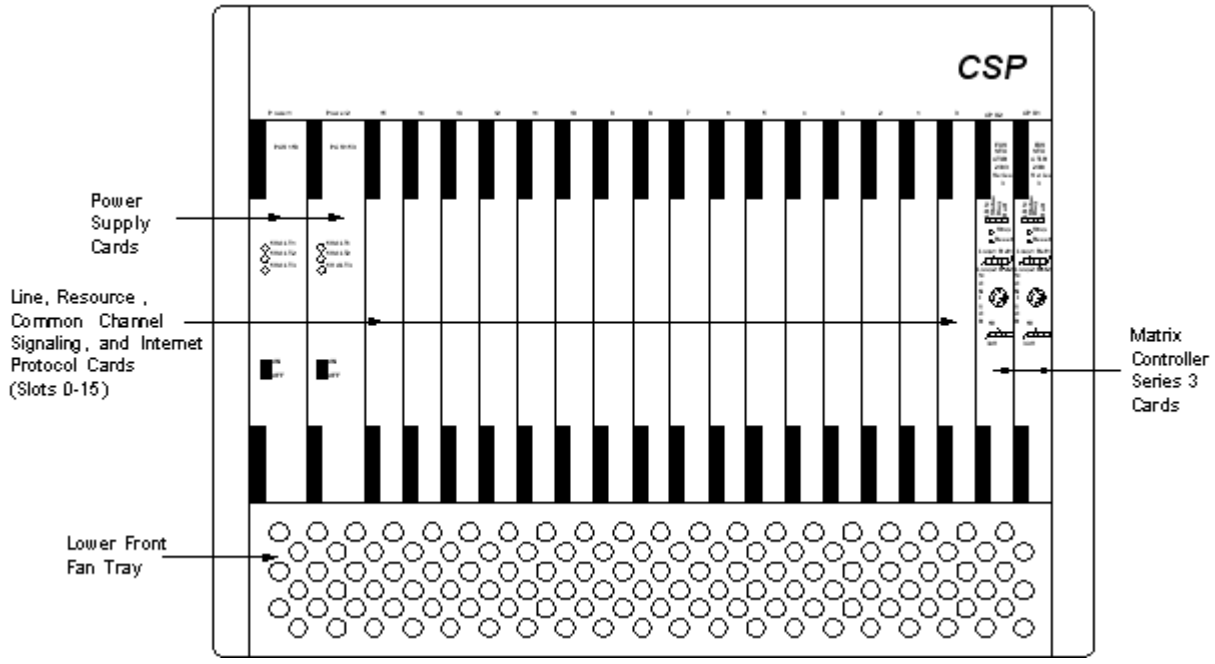
The CSP 2090 chassis is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC, 25A (maximum)
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	39.9 cm (15.7 in.)
Width	43.8 cm (17.25 in.)
Depth	48.6 cm (19.125 in.)
Weight	30 kg (65 lb.) (empty chassis with fan trays and blockout cards installed) 45 kg (100 lb.) (loaded chassis)

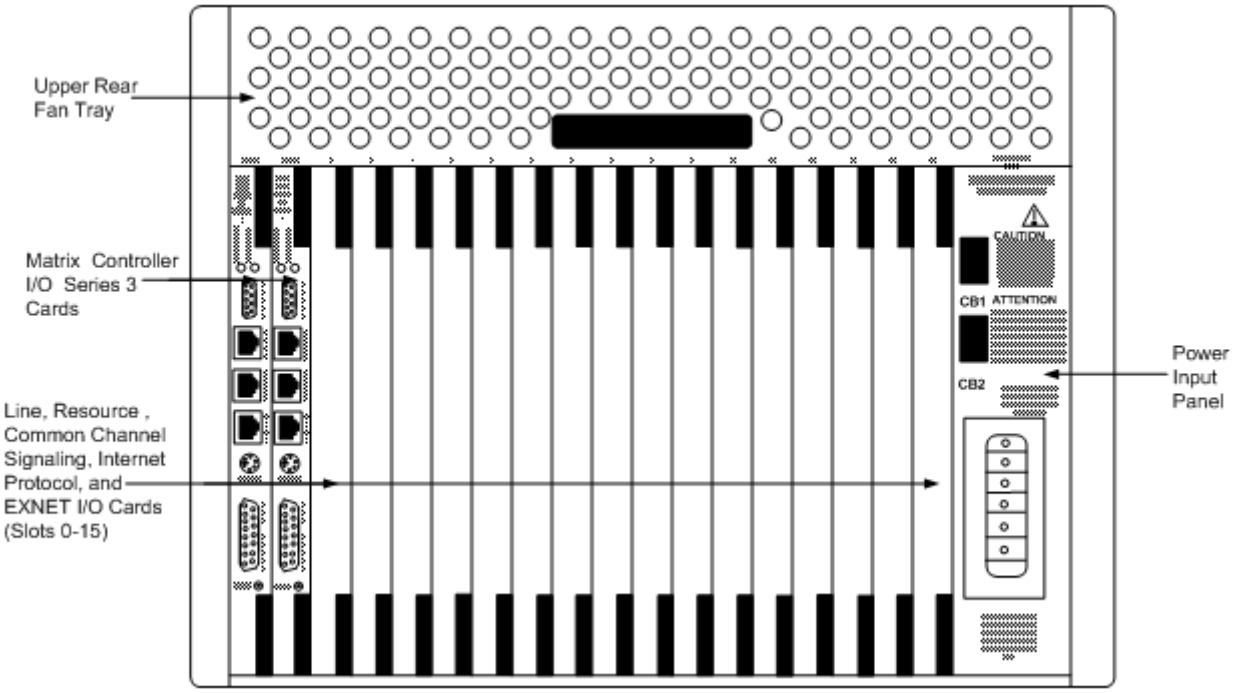
Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Front View The front of the chassis has dedicated slots for the CSP Matrix Series 3 and Power cards. Slots 0-15 are for the other line cards.



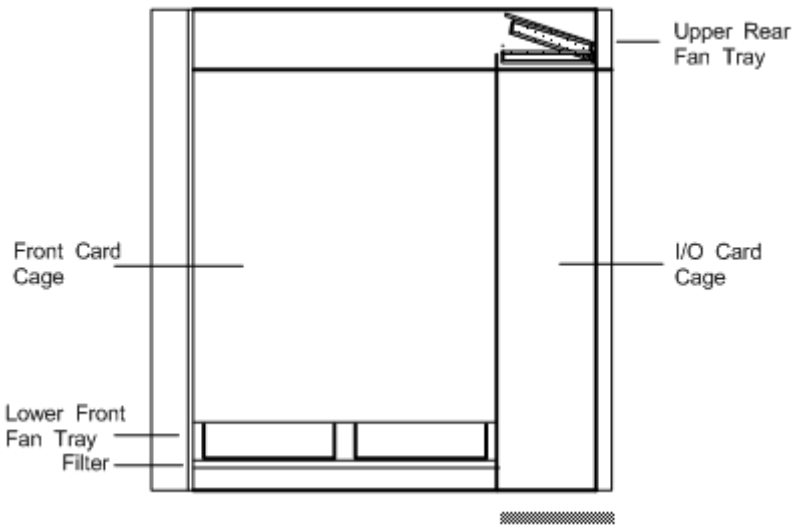
Rear View

The rear of the chassis has dedicated slots for the CSP Matrix Series 3 I/O cards. Slots 0-15 are for the other I/O cards. The power input panel is also located at the rear of the chassis



Cross Sectional View

This shows the approximate location of the fan trays and the front and rear card cages.



Dialogic® CSP 2110 Chassis - EXS-CHA-1201/EXS-CHA-1201R

Description

The CSP® 2110, a mid-range chassis configuration of the Converged Services Platform (CSP), is designed to meet the demands of the telecommunication industry by delivering high performance, fault tolerant switching in a compact microprocessor-based design. It provides additional power and cooling required, for example, by the Voice Data Access Concentrator (VDAC) cards.

A typical CSP 2110 chassis can accommodate up to 2,048 ports, support matrix CPU cards, a fully configurable combination of line and services cards, and a host interface. The CSP supports redundancy and the cards are hot swappable. Blockout cards are required for proper air flow and cooling. Any unoccupied line card slot or I/O card slot should have a Blockout card installed.

The CSP 2110 supports common channel signaling packet engines for both ISDN and SS7 communications; Voice Data Access Concentrator (VDAC) cards; and line protocol cards which include E1, T1 and J1 services. Standard and custom tone generation and reception, precise call analysis, conferencing and voice recorded announcements are provided through an advanced Digital Signal Processing unit available for the CSP.

The CSP 2110 can operate as either a stand-alone unit, or as a unit in a larger system.

Features

The CSP 2110 chassis consists of the following:

- Two fan trays, front and rear
- A midplane bus, which is a high-speed communication line for connecting individual line cards and I/O cards
- A 20 card slot chassis (with dedicated CPU and power card slots)
- Mounting brackets so the chassis can be mounted in a 19" or 23" rack

Configuration Information

The part number, serial number, model number, and revision are located on the side of the chassis.

Specifications

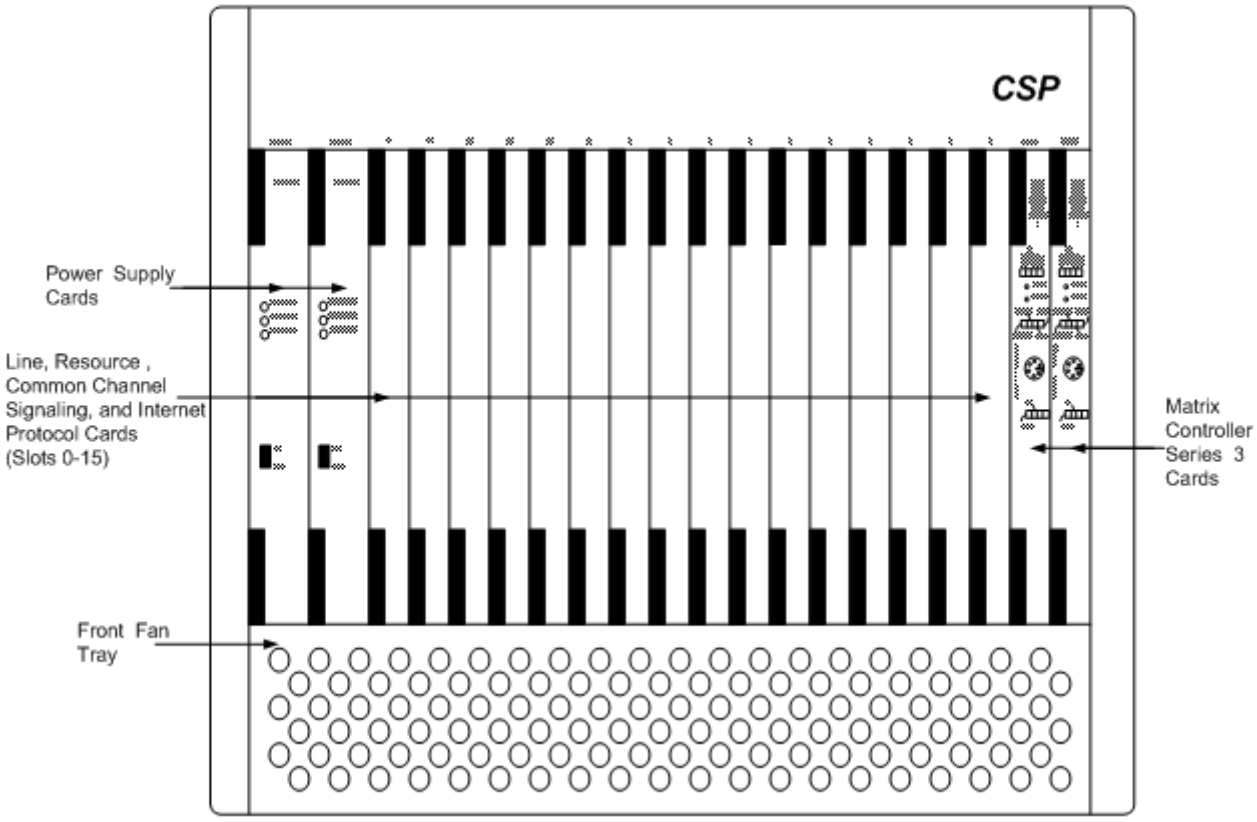
The CSP 2110 chassis is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC, 25A (maximum)
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	48.9 cm (19.25 in.)
Width	43.8 cm (17.25 in.)
Depth	48.6 cm (19.125 in.)
Weight	34 kg (75 lb.) (empty chassis with fan trays and blockout cards installed) 50 kg (110 lb.) (loaded chassis)

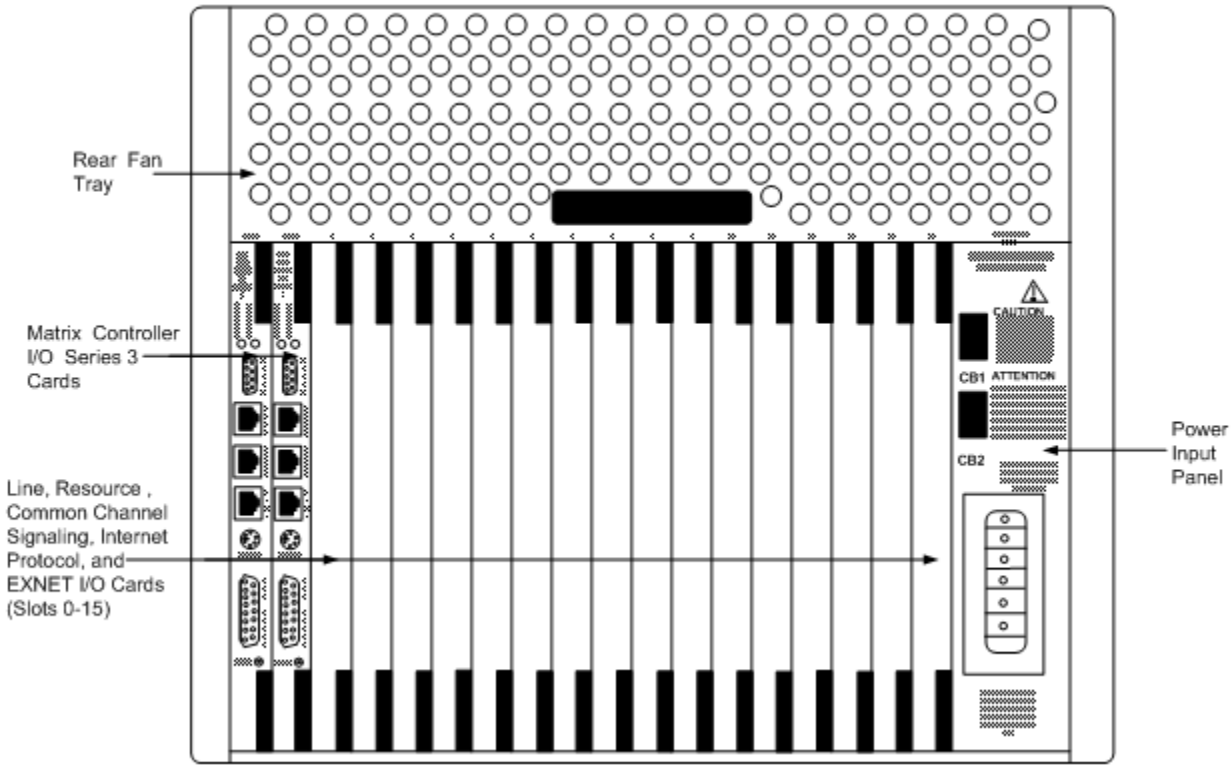
Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Front View The front of the chassis has dedicated slots for the CSP Matrix Series 3 and Power cards. Slots 0-15 are for the other line cards.



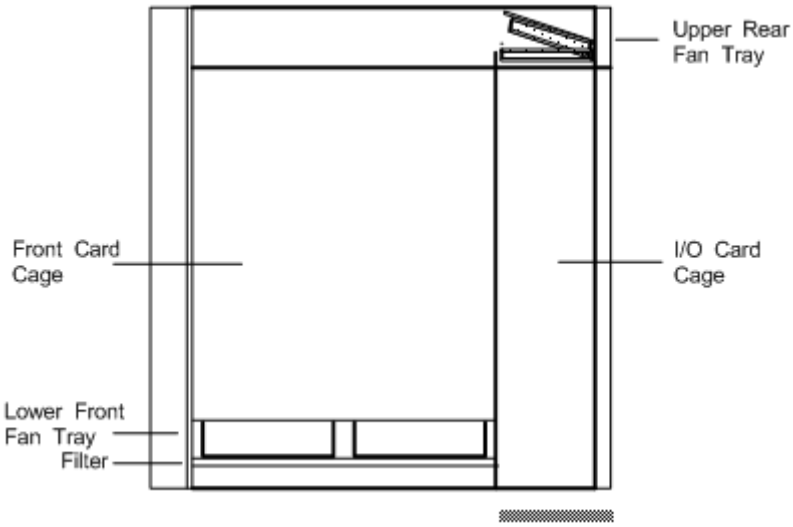
Rear View

The rear of the chassis has dedicated slots for the CSP Matrix Series 3 I/O cards. Slots 0-15 are for the other I/O cards. The power input panel is also located at the rear of the chassis



Cross Sectional View

This shows the approximate location of the fan trays and the front and rear card cages.



CSP 2090 Fan Tray, Front - LNX-FTL-0000/LNX-FTL-0000R

Description

The front fan tray and rear fan tray, as shown below, are both required to ensure proper air flow and cooling of the CSP 2090 chassis. The front fan tray is powered by the -48 V DC midplane bus. It can be removed with the power on. The front fan tray provides an air filter to remove particulate accumulation.

Air Filter

The air filter must be replaced periodically to remove particulate accumulation. Preventive maintenance schedules will vary depending on the chassis's environmental conditions. Refer to the *Hardware Installation and Maintenance Guide*, for filter removal and replacement procedures.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the fan tray.

Specifications

The front fan tray is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	7 cm (2.75 in.)
Width	42.5 (16.75 in.)
Depth	31.7 cm (12.5 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

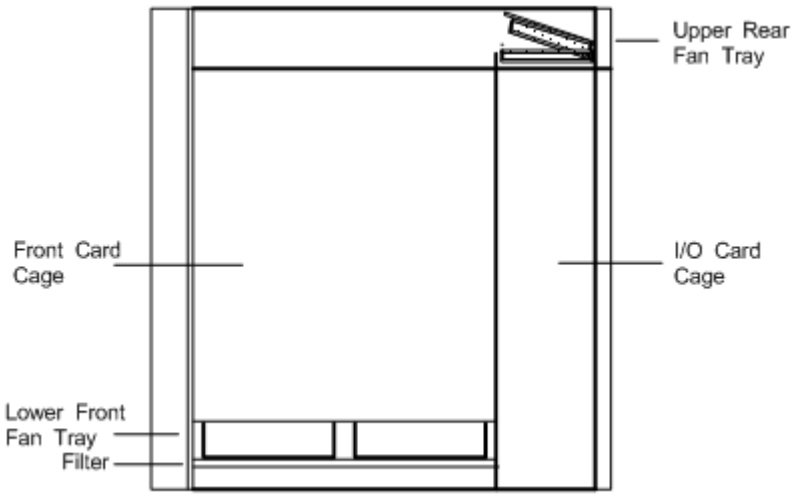
Related Products

The products related to the CSP 2090 front fan tray are listed below.

Product	Model No.	RoHS Model No.
CSP 2090 Chassis	EXS-CHA-1100	EXS-CHA-1100R

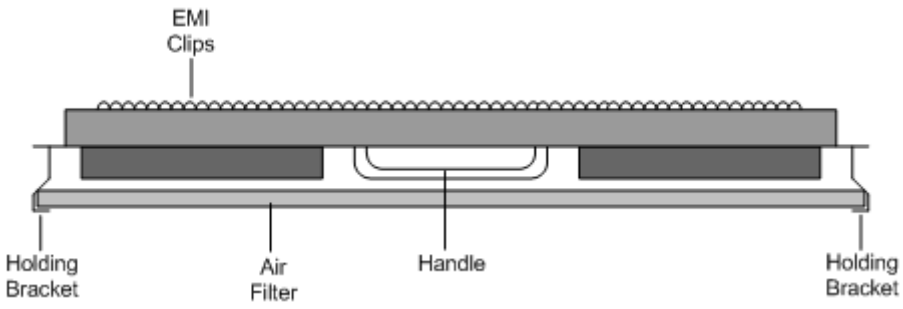
Fan Tray Locations

This drawing shows the location of the fan trays.



Front Fan Tray Components

The front fan tray components are shown below.



CSP 2090 Fan Tray, Rear - LNX-FTR-1000/LNX-FTR-1000R

Description

The rear fan tray and front fan tray, as shown below, are both required to ensure proper air flow and cooling of the CSP 2090 chassis. The rear fan tray is powered by the -48 V DC midplane bus. It can be removed with the power ON. The rear fan tray does not have an air filter, it is maintenance-free.

Refer to the *Hardware Installation and Maintenance Guide* to access the rear fan tray.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the fan tray.

Specifications

The rear fan tray is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	7.2 cm (2.85 in.)
Width	43.5 (17 in.)
Depth	21.0 cm (12.5 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.

Environmental	Specification
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

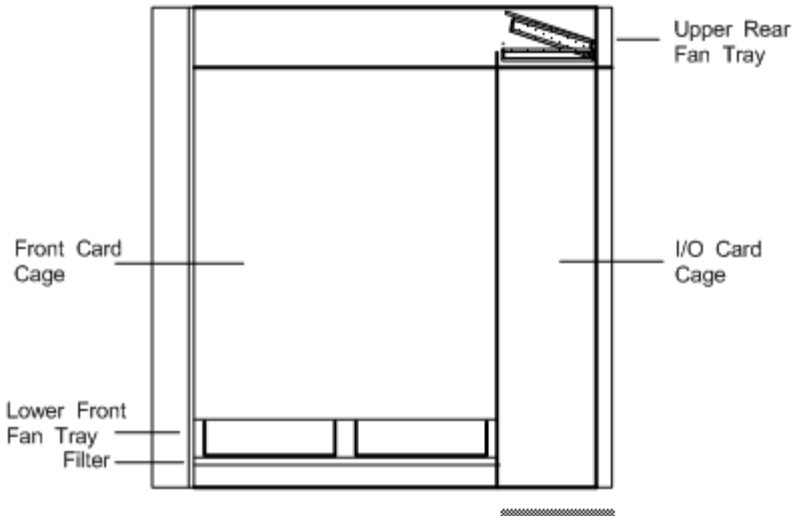
Related Products

The products related to the CSP 2090 rear fan tray are listed below.

Product	Model No.	RoHS Model No.
CSP 2090 Chassis	EXS-CHA-1100	EXS-CHA-1100R

Fan Tray Locations

This drawing shows the location of the fan trays.



CSP 2110 Fan Tray, Front - EXS-FTL-0111/EXS-FTL-0111R

Description

The front fan tray and rear fan tray, as shown below, are both required to ensure proper air flow and cooling of the CSP 2110 chassis. The front fan tray is powered by the -48 V DC midplane bus. It can be removed with the power on. The front fan tray provides an air filter to remove particulate accumulation.

Air Filter

The air filter must be replaced periodically to remove particulate accumulation. Preventive maintenance schedules will vary depending on the chassis's environmental conditions. Refer to the *Hardware Installation and Maintenance Guide*, for filter removal and replacement procedures.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the fan tray.

Specifications

The front fan tray is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	5.7 cm (2.25 in.)
Width	42.5 (16.75 in.)
Depth	31.7 cm (12.5 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

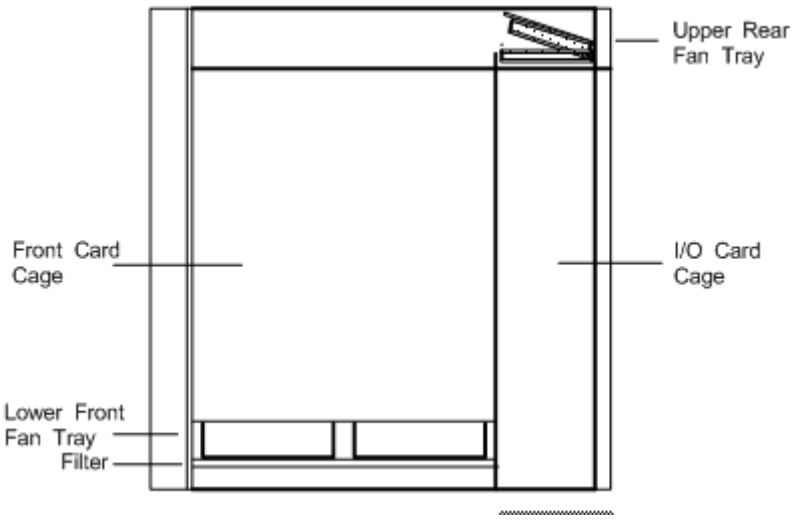
Related Products

The products related to the CSP 2110 front fan tray are listed below

Product	Model No.	RoHS Model No.
CSP 2110 Chassis	EXS-CHA-1201	EXS-CHA-1201R

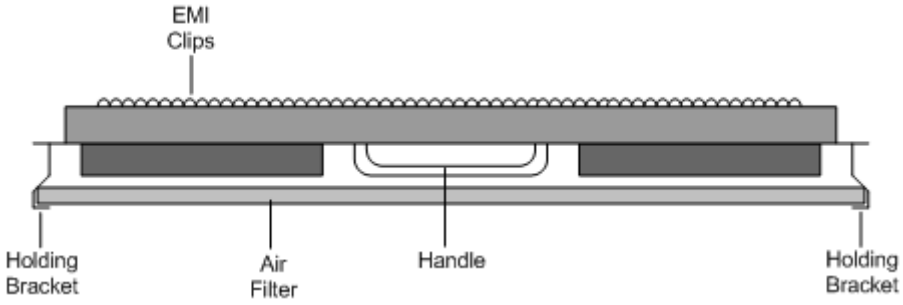
Fan Tray Locations

This shows the location of the fan trays.



Front Fan Tray Components

The front fan tray components are shown below.



CSP 2110 Fan Tray, Rear - EXS-FTR-1100/EXS-FTR-1100R

Description

The rear fan tray and front fan tray, as shown below, are both required to ensure proper air flow and cooling of the CSP 2110 chassis. The rear fan tray is powered by the -48 V DC midplane bus. It can be removed with the power ON. The rear fan tray does not have an air filter, it is maintenance-free.

Refer to the *Hardware Installation and Maintenance Guide* to access the rear fan tray.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the fan tray.

Specifications

The rear fan tray is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Input Power Requirement	-48 V DC
Input Voltage Range	-40 V DC to -60 V DC

Physical	Specification
Height	11.2 cm (4.4 in.)
Width	43.5 (17 in.)
Depth	21.0 cm 8.25 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.

Environmental	Specification
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

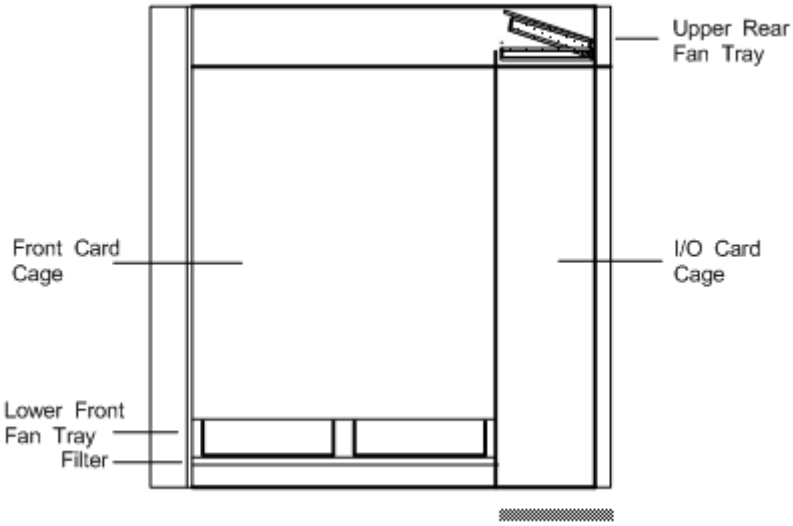
Related Products

The products related to the CSP 2110 rear fan tray are listed below.

Product	Model No.	RoHS Model No.
CSP 2110 Chassis	EXS-CHA-1201	EXS-CHA-1201R

Fan Tray Locations

This shows the location of the fan trays.



Dialogic® Power Supply Card 60 Card - CSN-PSC-1000/CSN-PSC-1000R

Description

The Dialogic® Power Supply Card-60 (hereafter referred to as the PSC-60) supports the CSP 2040 chassis. A second PSC-60 card provides redundancy. During normal operation, the LED is ON. If the power module fails, the LED blinks.

This card converts the -48 V DC input power to +5 V DC using a power module. During normal operation, the power module LED is ON. If a module fails, the LED blinks. The switch enables or disables voltage conversion.

Placement

The card is installed into a dedicated Power slot on the front of the CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The PSC-60 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	-48V
Supply Voltage, Vout	5.00V
Supply Current, Vcc @ 5.0V	60A (typical)

Physical	Specification
Height	101.6 mm (4.0 in.)
Depth	330.2 mm (13.0 in.)
Width	28.6 mm (1.125 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

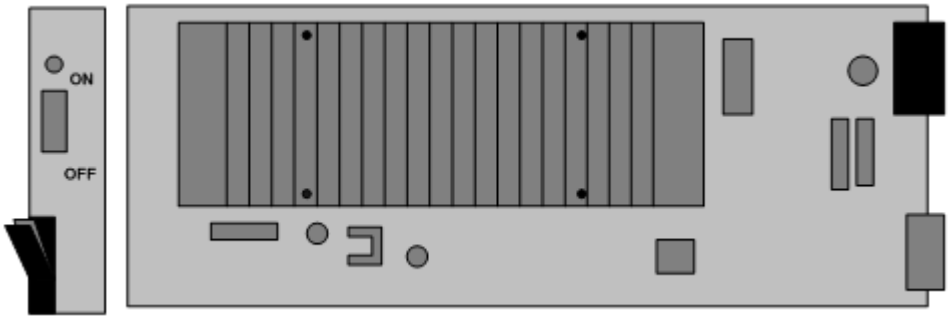
Related Products

The products related to the PSC-60 card are listed below.

Product	Model No.	RoHS Model No.
CSP 2040 Chassis	CSN-CHA-1112	CSN-CHA-1112R

Front and Side Views

The front view shows the LEDs and switches used to generate, monitor and control +5 V DC for line card and I/O card use.



Controls and Indicators

The table below describes the LEDs and switches as shown in the front view of the PSC-60 card.

5V LED	Color/Status	Description
	Green	Indicates normal operation of a power module
	Blinking Green	Indicates a power module is out of tolerance or disabled
	Off	Indicates a power module is turned off.
Switch	**Description**	

5V LED	Color/Status	Description
ON	Enables conversion of -48 V DC to +5 V DC.	
OFF	Disables conversion of -48 V DC to +5 V DC.	

Important! In a redundant configuration the LEDs blinks when the associated power source (CB1 or CB2) or power switch on the card front panel is set to OFF.

Dialogic® Power Supply Card 150 Card - EXS-PSC-1200/EXS-PSC-1200R

Description

The Dialogic® Power Supply 150 Card supports the power requirements of the standard CSP 2090 chassis and the CSP 2110 chassis. A second PSC-150 card provides redundancy. This card converts the -48 V DC input power to +5 V DC using three power modules.

During normal operation, all three power module LEDs are ON. If a module fails, the associated LED blinks. A switch enables or disables voltage conversion.

Placement

The card is installed into dedicated Power 1 and Power 2 front slots on the CSP 2090 and CSP 2110 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The PSC-150 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	-48V
Supply Voltage, Vout	5.00V
Supply Current, Vcc @ 5.0V	90A (typical) CSP 2090; 145A (typical) CSP 2110

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	31.8 mm (1.25 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

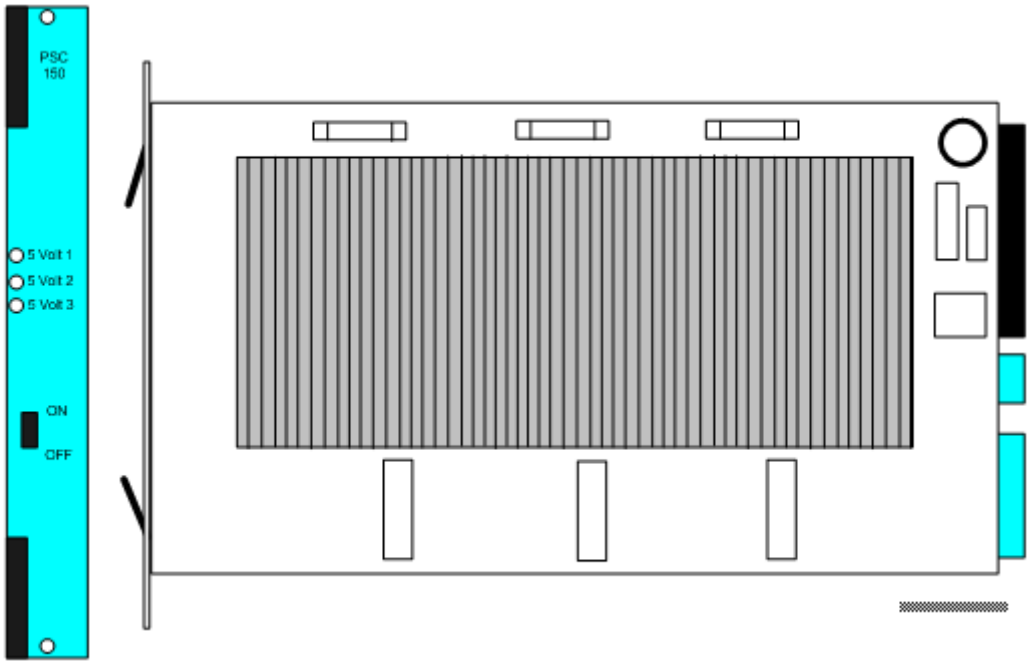
Related Products

The products related to the PSC-150 card are listed below.

Product	Model No.	RoHS Model No.
CSP 2090 Chassis	EXS-CHA-1100	EXS-CHA-1100R
CSP 2110 Chassis	EXS-CHA-1201	EXS-CHA-1201R

Front and Side Views

The front view shows the LEDs and switches used to generate, monitor and control +5 V DC for line card and I/O card use.



Controls and Indicators

The table below describes the LEDs and switches as shown in the front view of the PSC-150 card.

LEDs	Color/Status	Description
5 Volt 1	Green	Indicates normal operation of a power module
5 Volt 2	Blinking Green	Indicates a power module is out of tolerance or disabled
5 Volt 3	Off	Indicates a power module is turned off.
Switch	**Description**	
ON	Enables conversion of -48 V DC to +5 V DC.	
OFF	Disables conversion of -48 V DC to +5 V DC.	

In a redundant configuration all three LEDs blink when the associated power source (CB1 or CB2) or power switch on the card front panel is set to OFF.

CSP Blockout Cards and Panels - See Part Numbers

Description

Blockout cards and panels are required in the CSP 2090, CSP 2110, and CSP 2040 chassis to ensure proper air flow and cooling.

Front Blockout Cards

Install Front Blockout cards in all unoccupied card slots in the front of the chassis.

Rear Blockout Cards

Install Rear Blockout cards in all unoccupied I/O card slots in the rear of the chassis.

Power Blockout Panel

Install a Power Blockout panel over unused Power card slots.

Specifications

The blockout cards and panel are designed to the following physical specifications.

Front Blockout Card	Specification
Height	208.3 mm (8.2 in.)
Depth	309.9 mm (12.2 in.)
Width	14.5 mm (0.57 in.)

Rear Blockout Card	Specification
Height	288.3 mm (11.35 in.)
Depth	98.6 mm (3.88 in)
Width	14.5 mm (0.57 in.)

Power Blockout Panel	Specification
Height	236.2 mm (9.3 in.)
Width	31.8 mm (1.25 in.)

Part Numbers

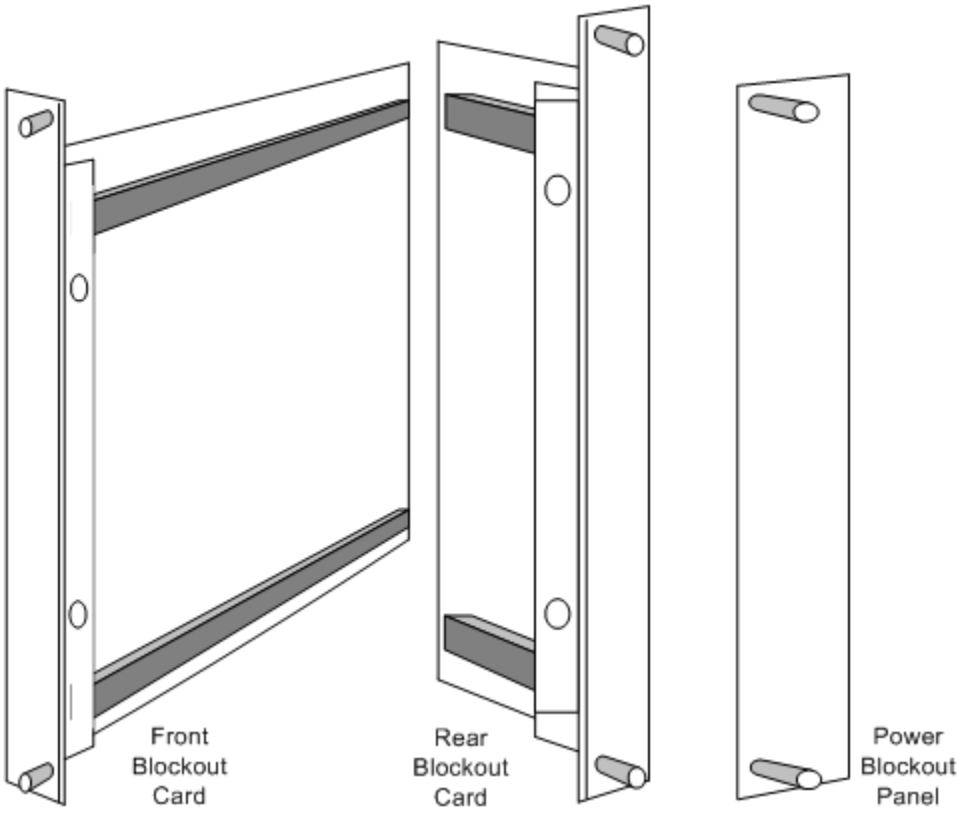
The Blockout card and panel part numbers are listed below.

Product	Part Number
CSP Front Blockout Card	71-0270-02
CSP Rear Blockout Card (I/O)	71-0271-02
CSP Power Blockout Card	71-0506-00

Related Products The products related to the Blockout cards and panel are listed below.

Product	Model No.	RoHS Model No.
CSP 2040 Chassis	CSN-CHA-1112	CSN-CHA-1112R
CSP 2090 Chassis	EXS-CHA-1100	EXS-CHA-1100R
CSP 2110 Chassis	EXS-CHA-1201	EXS-CHA-1201R

Views The following views show the Blockout cards and panel.



2 Dialogic® CSP Matrix Controller Series 3 Cards

Overview

Purpose

This chapter provides descriptions of the Dialogic® CSP Matrix Controller Series 3 Cards.

Compliance

The CSP Matrix Controller Series 3 Cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950-1

Dialogic® CSP Matrix Controller Series 3 Card - See Model Numbers

Description

The Dialogic® CSP Matrix Controller Series 3 Card is a high-performance CPU card for use on the CSP 2090, CSP 2110 and CSP 2040. This card is designed to be used with the CSP software release 7.0 and above. It is not backward compatible with any of the CSP 5.x releases.

Microprocessor

This card integrates the MPC750 CPU functionality. It uses external PCI peripherals for communications. It also provides host controller communications, system configuration control and monitoring, and system resource management.

Random Access Memory

The card has 512 MB of SDRAM which resides on the main circuit board.

Placement

The CSP Matrix Controller Series 3 Cards reside in the dedicated CPU1 and CPU2 front slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The CSP Matrix Controller Series 3 Cards is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	6.0A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Card Models

The available CSP Matrix Card models are listed below.

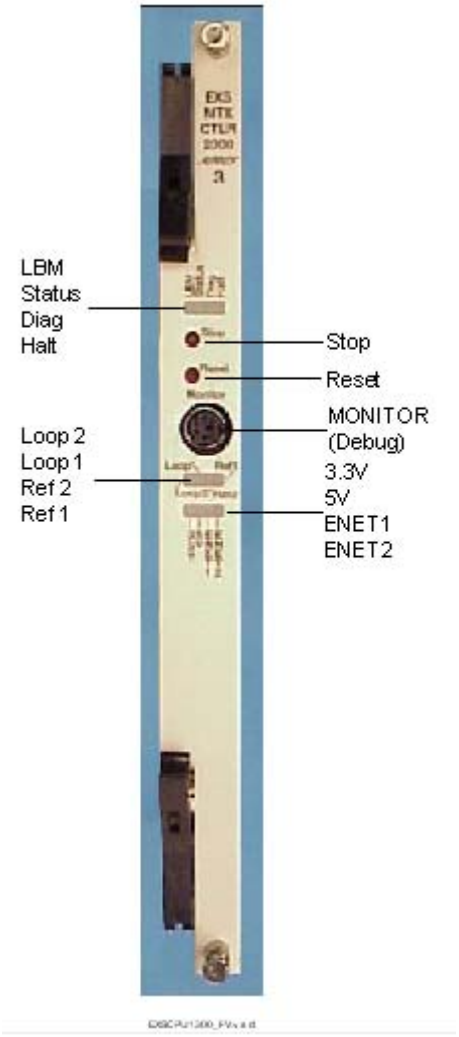
Product	Model No.	RoHS Model No.
Dialogic® CSP 2090 Matrix Controller Series 3 Card	EXS-CPU-1300	EXS-CPU-1301R
Dialogic® CSP 2040 Matrix Controller Series 3 Card	EXS-CPU-1350	EXS-CPU-1351R

Related Products

The products related to the CSP Matrix Card are listed below.

Product	Model No.	RoHS Model No.
Dialogic® CSP Matrix Controller I/O Series 3 Card	EXS-MIO-1300	EXS-MIO-1300R
Debug Cable	Part # 64-0046-00	Part # 164-0046-00

Front View The front view shows the LEDs, push button switches and Monitor connector.



Controls and Indicators

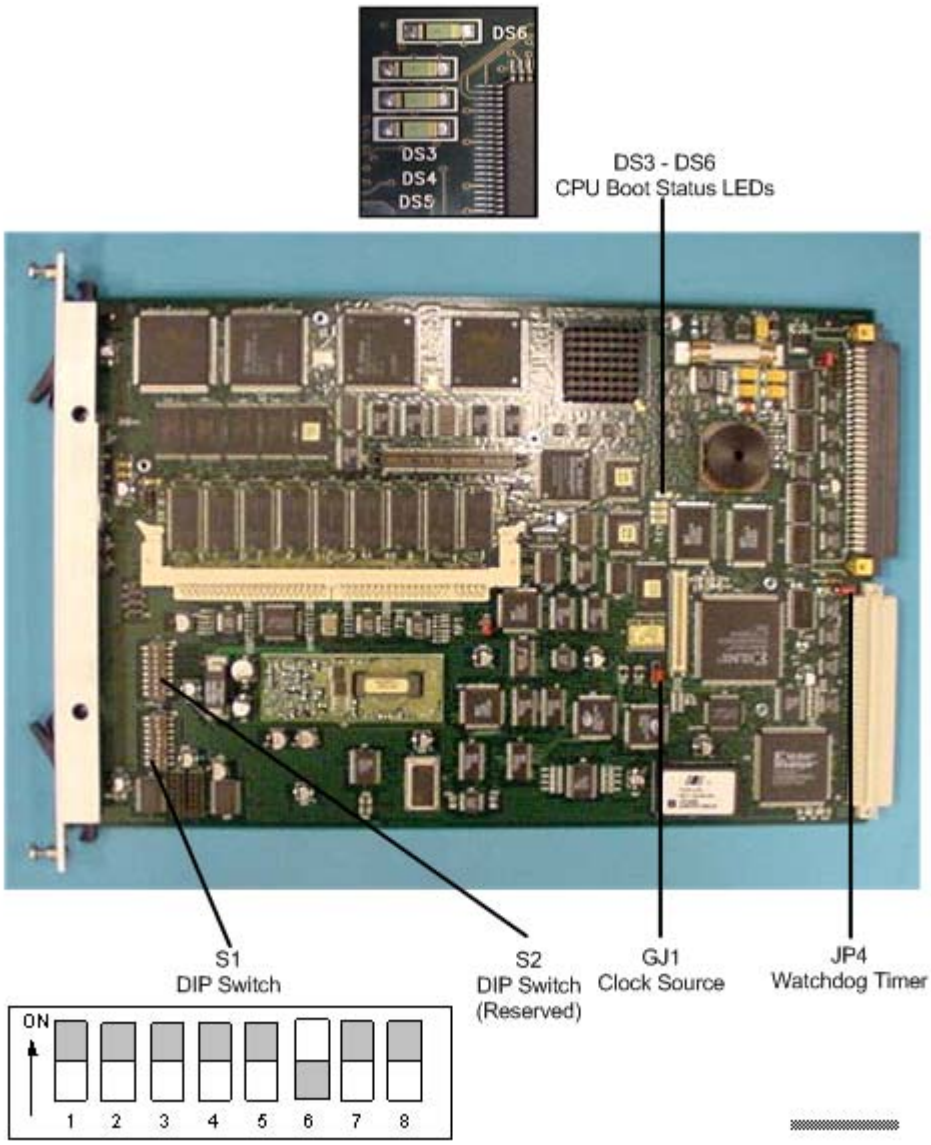
The table below describes the LEDs and push button switches as shown in the front view of the CSP Matrix Controller Series 3 Card.

LEDs	Color/Status	Description
LBM	Green	Bus Master
	Off	Standby
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses. (LBM LED must be illuminated green also.)
Diag	Red	The CPU has failed. The Reset button has been pressed. The CPU is resetting.
	Off	This LED is Off except during a card reset, when it goes Red.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Loop 2	Blinking Green	Timing source from E1 or T1 span is not available.
	Green	Timing source from E1 or T1 span is available.
Loop 1	Blinking Green	Timing source from E1 or T1 span is not available.
	Green	Timing source from E1 or T1 span is available.
Ref 2	Blinking Green	External timing source is not available.
	Green	External timing source is available.
Ref 1	Blinking Green	External timing source is not available.
	Green	External timing source is available.
3.3V	Green	3.3 volts is available
	Off	3.3 volts is not available

LEDs	Color/Status	Description
5V	Green	5 volts is available
	Off	5 volts is not available
ENET1	Blinking Green	Indicates Ethernet activity
	Off	No Ethernet activity
ENET2	Blinking Green	Indicates Ethernet activity
	Off	No Ethernet activity

Push-button	Description
Stop	Initiates a system management interrupt (SMI) of the CPU. It takes the card on and off of the system buses. Always press the Stop button before you remove a card from the chassis.
Reset	Initiates a soft reset of the CPU while depressed. A soft reset will not reload the processor configuration registers, the FPGA configuration data or corrupt external DRAM memory.
Reset/Stop	Pressing both switches causes a hard reset of the CPU. Hard reset reloads the processor configuration registers and the FPGA configuration data. The external DRAM memory could become corrupted.

Side View The side view shows the DIP switch, jumpers and CPU boot status LEDs.



DIP Switch S1

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Print to Terminal Disabled
	OFF	Print to Terminal Enabled
2	ON*	Reserved for future use
	OFF	Reserved for future use
3	ON*	Enables System Software
	OFF	Enables Probe
4	ON*	CSP Call Control call processing enabled
	OFF	CSP Services call processing enabled
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON	Reserved
	OFF*	API
7	ON*	At startup, Ethernet port 1 (ETH1) is only used.
	OFF**	At startup, both Ethernet ports (ETH1 and ETH2) can be used.
8	ON*	If RARP and BOOTP can not obtain an IP address, the static IP address will be used.
	OFF***	If RARP and BOOTP can not obtain an IP address, the static IP address will not be used.

** Enables Software Loading Using Second Ethernet Port feature.
*** Enables No Static IP Address feature.

Important! The baud rate is factory set at 19200.

DIP Switch S2

The table below describes the DIP switch S2 settings. The shading indicates factory-installed settings.

Position	Setting	Function
1	ON**	Ethernet Link, Force 100 Mbps/Full Duplex Mode
	OFF*	Ethernet Link, Auto-Negotiate Mode (Default)
2 - 8	ON	Reserved
	OFF*	Reserved

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

CPU Boot Status LEDs

The following table describes the boot status indicators.

LEDs	Color/Status	Description
DS3 - DS6	Green	Indicates boot status of the CPU. LEDs DS3 -DS5, when illuminated, indicates a normal condition.

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP3	Not Installed (default)	Factory use only
JP4	Not Installed (default)	Hardware Watchdog Timer enabled
JP5	Installed (default)	Factory use only
JP6	Not Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only
JP8	Not Installed (default)	Factory use only
JP9	Installed (default)	Factory use only
GJ1	Installed (default)	Installed in Sync position as clock source. Jumper is required on the bottom two pins (1 and 2).

CAUTION

When depressing a pushbutton switch on the front panel of a CSP card or setting a DIP switch position on the card, do not use a pen or pencil. The ink or lead can get into a switch causing the card to fail. For example, in some cases the card will not boot.

Dialogic® CSP Matrix Controller Series 3 I/O Card - EXS-MIO-1300/EXS-MIO-1300R

Description

The Dialogic® CSP Matrix Controller Series 3 I/O Card is required to provide communications between the switch and host, and system synchronization. This card connects to the host computer through an Ethernet connector.

DIP Switch S1

DIP switch (S1) is used to enable and disable the debug function and baud rates for the MONITOR (debug) port. It is also used to select the input reference clock speed.

Connectors

A reference clock port provides for two reference clock inputs. The clock choices are 2.048 (E1) Mbps and 1.544 (T1) Mbps.

A modem port provides connectivity from a modem to the CSP Matrix Series 3 card for remote diagnostics.

The High-level Data Link Control (HDLC) port, a high speed interface, is intended for future use.

This card connects to the host computer through Ethernet connectors ETH1 and ETH2. The ETH2 connector is set up as a redundant port to ETH1. This card supports both 10Base-T and 100Base-T and automatically selects the link that is present. Each connector must be connected to a separate external device (Ethernet switch, router, etc.).

Placement

The CSP Matrix Controller Series 3 I/O Card must always reside behind a CSP Matrix Controller Series 3 Card in the rear CPU1/CPU2 I/O card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The CSP Matrix Controller Series 3 I/O Card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.01A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

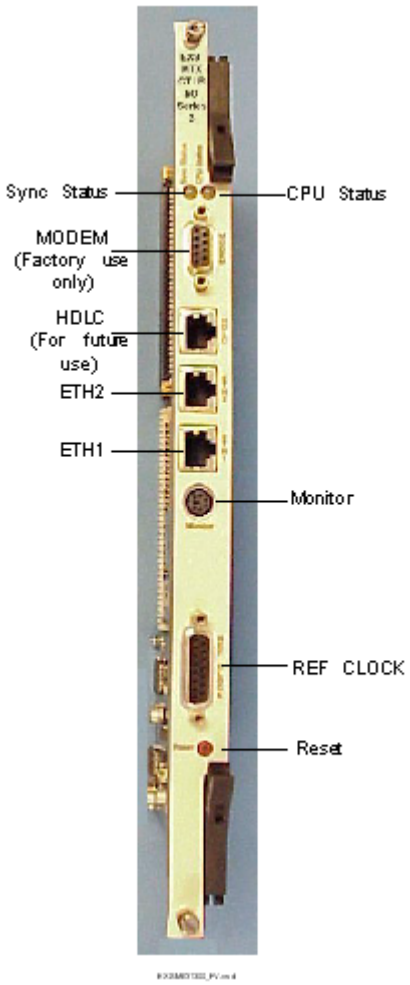
Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the CSP Matrix I/O Card are listed below.

Product	Model No.	RoHS Model No.
Dialogic® CSP Matrix Controller Series 3 Card	EXS-CPU-1300	EXS-CPU-1301R
Debug Cable	Part # 64-0046-00	Part # 164-0046-00

Front View The front view shows the LEDs, Reset push-button switch and connectors.



Controls and Indicators

The table below describes the LEDs as shown on the front view of the CSP Matrix Controller Series 3 I/O card.

LEDs	Color/Status	Description
Sync Status *	Red	The I/O card is in standby.
	Green	The I/O card is active.
	Off	No power
CPU Status	Red	The CPU has halted. The LED is red briefly during a card reset.
	Green	The CPU is running.
	Off	No power
Push-Button	**Description**	
Reset	Initiates CPU reset on card.	

* This functionality does not apply for hardware revisions below C8. For hardware revisions below C8 the Sync Status is always Green.

Connector Pinouts

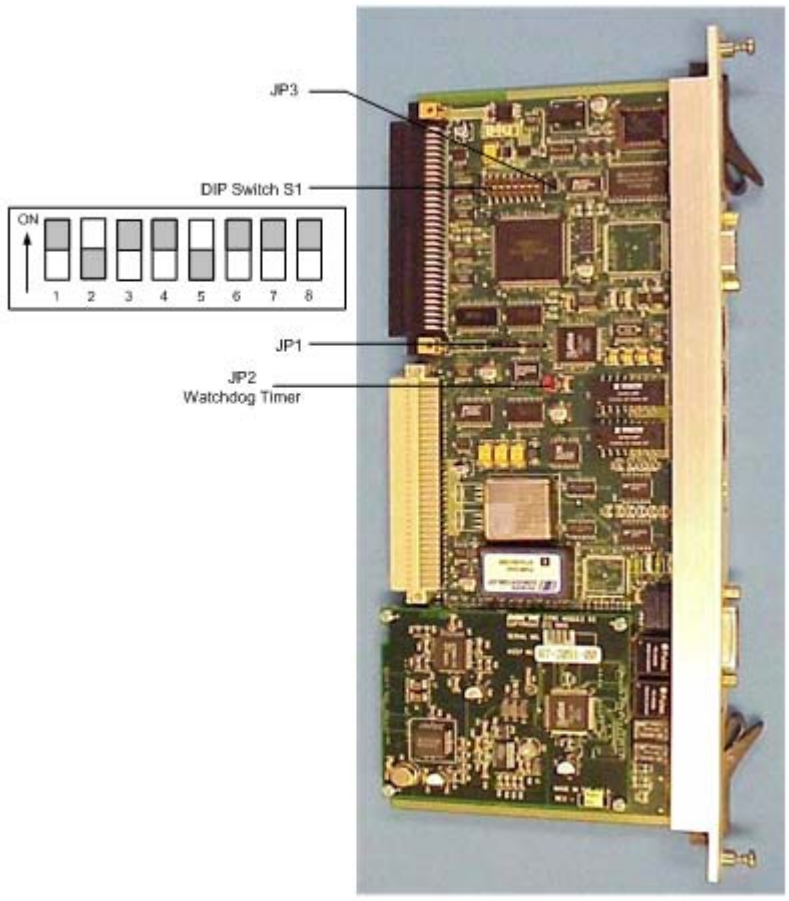
The tables below provide the connector pinouts as shown on the front view of the CSP Matrix Controller Series 3 I/O Card.

Modem DB-9 Connector (Factory Use Only)

Ref Clock DB- 15 Connector	
Pins	**Signal Name**
1 - 5	Not used
6	Receive Tip 1
7	Not used
8	Receive Ring 0
9 - 12	Not used
13	Receive Ring 1
14	Not used
15	Receive Tip 0

HDLC, ETH2 and ETH1 RJ-45 Connectors	
Connector	**Signal Name**
HDLC	High Speed HDLC (for future use)
ETH2	10/100 BaseT Ethernet (redundant port)
ETH1	10/100 BaseT Ethernet

Side View The side view shows the DIP switch S1 and jumpers.



DIP Switch S1

The table below describes the switch settings. The side view shows DIP switch S1. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables debug 1
	OFF	Enables debug 1
2	ON	Selects 9600 baud for debug port
	OFF*	Selects 19200 baud for debug port
3	ON*	Disables debug 2
	OFF	Enables debug 2
4	ON*	1.544 Mbps (T1) or 2.048 Mbps (E1) reference clock
	OFF	Reserved for future use
5	ON	2.048 Mbps (E1) reference clock
	OFF*	1.544 Mbps (T1) reference clock
6	ON*	Reserved for future use
	OFF	Reserved for future use
7	ON*	Reserved for future use
	OFF	Reserved for future use
8	ON*	Reserved for future use
	OFF	Reserved for future use

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Installed (default)	Hardware Watchdog Timer enabled
JP3	Installed (default)	Factory use only

Debug Cable Assembly - Part Nos. 64-0046-00/164-0046-00

Description

The debug cable is connected between the Monitor port on the CSP Matrix Controller Series 3 Card and the host to set the IP address. Also set DIP S1 Positions 1 and 3 to OFF on these cards when using the debug cable.

Specifications

The debug cable assembly is designed to the following specifications.

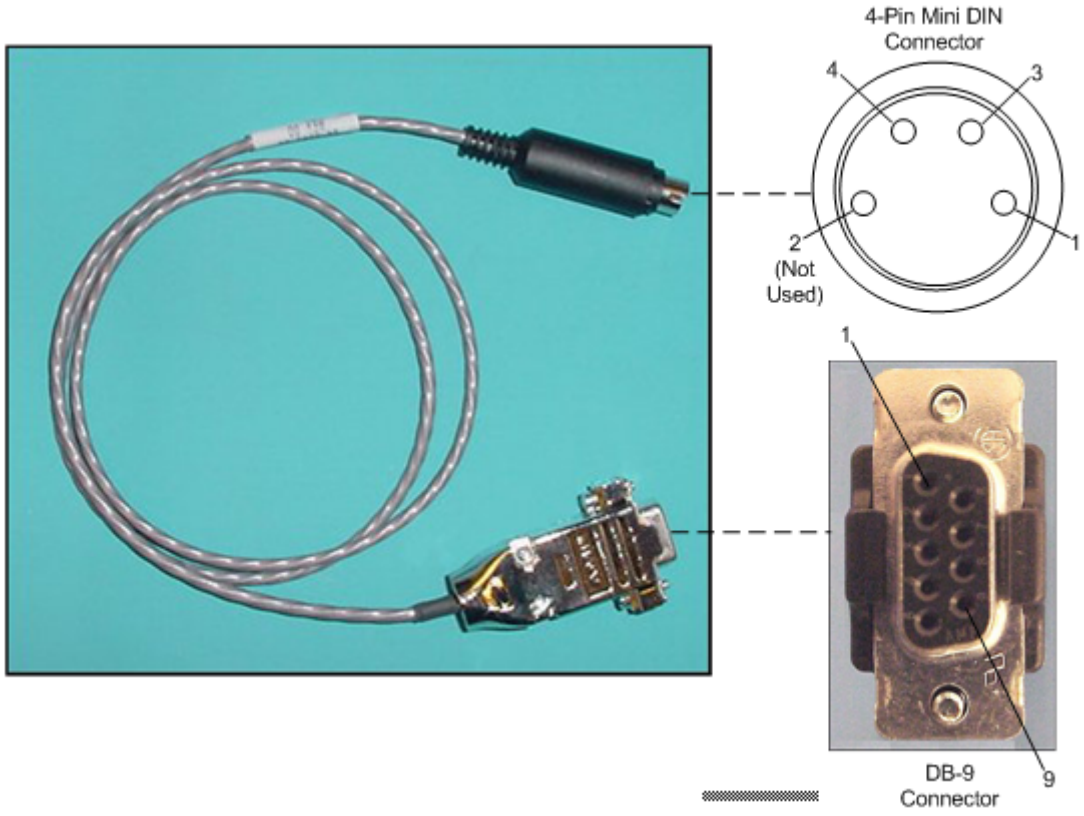
Parameter	Specification
Length	3 ft.
Connector Types	4-Pin Mini DIN, Keyed; DB-9 Connectors

Related Products

The products related to the debug cable assembly are listed below.

Product	Model No.	RoHS Model No.
Dialogic® CSP 2090 Matrix Controller Series 3 Card	EXS-CPU-1300	EXS-CPU-1300R

Debug Cable Assembly The debug cable assembly is made up of the following components.



Pinouts The debug cable assembly connector pinouts are listed below.

P1 Pinouts	Signal Name	DB-9
1	Receive (RCV) Data	3
3	Ground	5
4	Transmit (TX) Data	2

3 Line Cards

Purpose This chapter provides descriptions of the Network Interface Line cards.

Compliance The Network Interface Line cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1 Telecom FCC Part 68/IC CS03/T1.102
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)

Country/Standards Organization	Regulations
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1 Telecom TBR 4, 12, 13, G.703 NTR 11 Compliant • DPNSS/DASS2 package includes the E-ONE 75 Ohm interfaces. NTR 4 Compliant • E-ONE 75 Ohm LC, E-ONE 75 Ohm I/O, E-ONE 75 Ohm Redundant I/O, E-ONE 75 Ohm Standby I/O
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950-1 Telecom AS/ACIF S-016 and S-038

Dialogic® DS3 Card - EXS-DS3-1000/EXS-DS3-1000R

Description

The Dialogic® DS3 card brings the high speed and wide bandwidth of DS3 transport technology to the CSP. The card originates and terminates DS3-level signals, and functions as a high-density T1 line card.

Functions

The DS3 card performs frame synchronization, signaling supervision, signal processing, clock signal recovery, and alarm detection.

Spans and Channels

Each DS3 card can support 28 T1 spans, and each span supports 24 channels. The DS3 card multiplexes 28 incoming T1 spans up to the DS3 level, and de-multiplexes incoming DS3 spans down to 28 T1 spans.

Placement

Each CSP 2090 and CSP 2110 chassis can accommodate up to three active DS3 cards which reside in the front slots. Each CSP 2040 chassis can accommodate up to two active DS3 cards. The DS3 Standby card must reside in a slot numbered one greater than the Primary DS3 card. For example if the Primary DS3 card is in slot six, the standby DS3 card must be in slot seven.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the PC board.

Specifications

The DS3 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	2.10A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

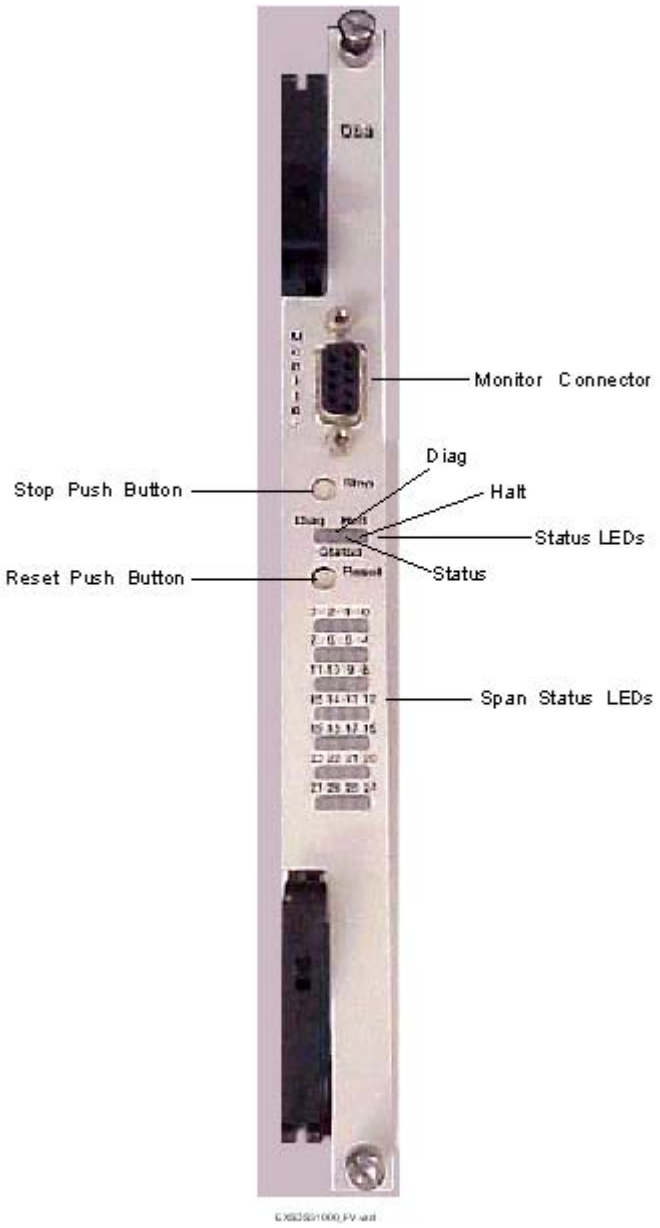
Related Products

The products related to the DS3 card are listed below.

Product	Model No.	RoHS Model No.
Standby DS3 I/O Card	EXS-DIO-1200	EXS-DIO-1200R

Front View

The front view shows the LEDs, push button switches and Monitor connector.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the DS3 Line Card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Span Status	Red	The span is in service and is receiving a Red Alarm or no span is connected.
	Green	The span is in service and is receiving valid data.
	Yellow	Receiving yellow alarm RAI
	Off	The span is out of service.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates CPU reset on the card.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Selects 9,600 baud rate for Monitor port
	OFF	Selects 19,200 baud rate for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Normal position (see Important!)
	OFF	Enables support for limited SS7 CIC traffic. In this position only physical spans 0-23 can be used for CICs (see Important!).
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Normal position (see Important!)
	OFF	Enables support for limited SS7 CIC traffic. In this position only physical spans 0-23 can be used for CICs (see Important!).
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

Important! The DS3 card supports SS7 CIC traffic using switches 4 and 6. Under normal operation, a DS3 line card can support 28 T-1 spans. Because a CSP chassis can support up to three DS3 line cards, the following conditions must be met when supporting SS7 CIC traffic:

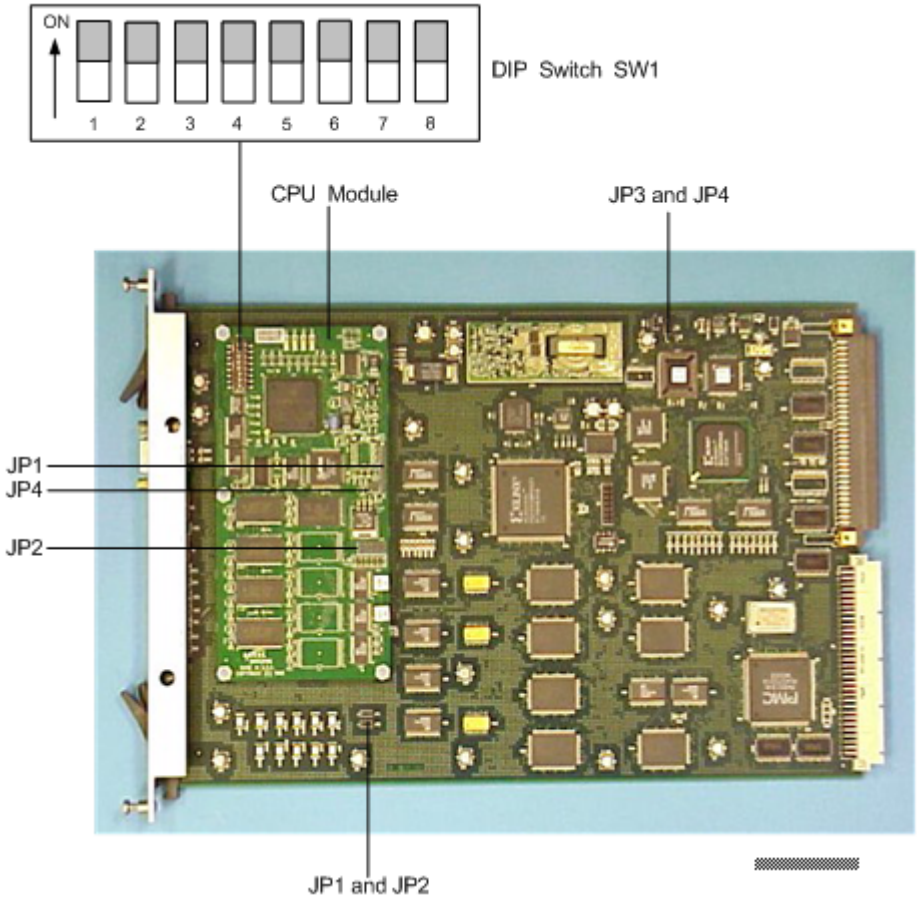
Important! If you support SS7 CIC traffic on one or two DS3 line cards, set switches 4 and 6 to ON.

If you support SS7 CIC traffic on all three line cards, you must reconfigure one of them to 24 (0-23) spans by setting switches 4 and 6 to OFF.

Jumpers The table below indicates the jumper settings.

Jumper	Setting	Description
The following jumpers are located on the main board.		
JP1	Not Installed (default)	Reserved
JP2	Not Installed (default)	Reserved
JP3	Not Installed (default)	Reserved
JP4	Not Installed (default)	Reserved
The following jumpers are located on the CPU module.		
JP1	Not Installed (default)	Reserved
JP2	Not Installed (default)	Reserved
JP4	Not Installed (default)	Hardware Watchdog Timer enabled

Side View The side view shows the DIP switch and jumpers.


ON
1 2 3 4 5 6 7 8
DIP Switch SW1
CPU Module
JP3 and JP4
JP1
JP4
JP2
JP1 and JP2

Dialogic® DS3 I/O Card - EXS-DS3-1100/EXS-DS3-1100R

Description

The Dialogic® DS3 I/O Card recovers clock and data from the incoming DS3 signal, and facilitates line protection for the DS3 line card. It also supports the Standby DS3 I/O card to deliver N+1 redundancy.

Placement

The DS3 I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis. The Standby DS3 I/O card must reside in a slot numbered one greater than the Primary DS3 I/O card. For example if the Primary DS3 I/O card is in slot six, the standby DS3 I/O card must be in slot seven.

Important! The DS3 I/O card supports line length of 0-225 feet.

Additional Equipment

Two DS3 cable assemblies are supplied with the DS3 I/O card to support redundancy. See the *DS3 Cable Assembly, Hardware Product Description.*

CAUTION

Always use the supplied DS3 cable assemblies when connecting the DS3 I/O card and a Standby DS3 I/O card for redundancy or when connecting a DS3 I/O card directly to the network. Using other cables may damage the connectors on the DS3 I/O and Standby I/O cards and cause a failure or intermittent operation.

Grounding

When interfacing the DS3 I/O and Standby I/O cards with any electrical equipment with the DS3 cable assembly, proper wiring and grounding procedures must be followed. If not, ground loops may result which are dangerous and can result in physical harm as well as possible signal interference. See *Chapter 4, Card Installation in the CSP Installation and Maintenance Guide.*

Configuration Information

The part number, serial number, model number, and revision are located on the back of the PC board.

Specifications

The DS3 I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.74A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the DS3 I/O card are listed below.

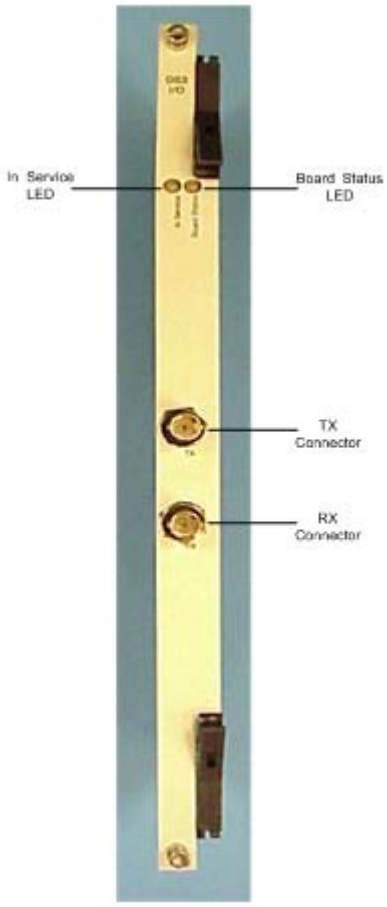
Product	Model No.	RoHS Model No.
DS3 Card	EXS-DS3-1000	EXS-DS3-1000R
Standby DS3 I/O Card	EXS-DIO-1200	EXS-DIO-1200R
DS3 Cable Assy, 75 Ohm BNC Y	Part No. 64-0124-00	Part No. 164-0124-00

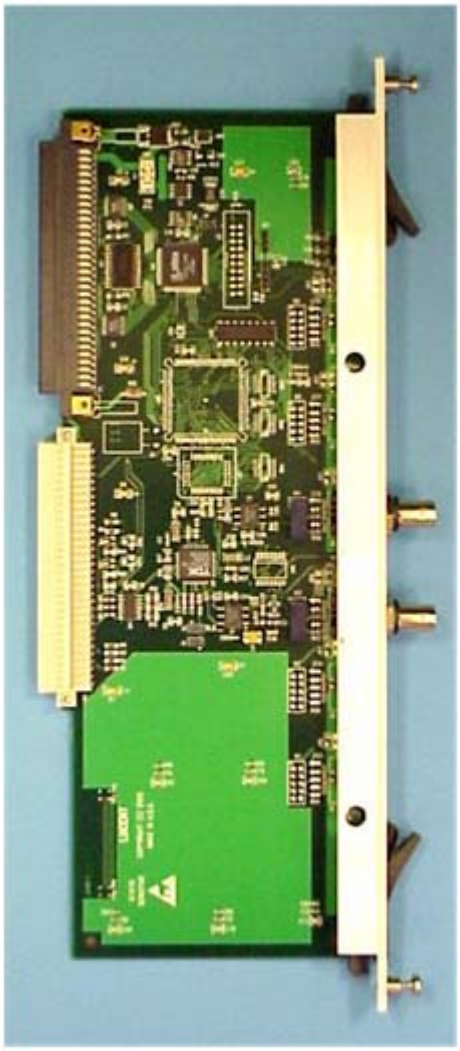
Controls and Indicators

The table below describes the LEDs as shown in the front view of the DS3 I/O Card.

LED	Color/Status	Description
IN Service	Green	Indicates normal operation
	Red	Indicates switchover (fault condition)
Board Status	Green	Indicates normal operation

Front and Side Views The front and side views show the LEDs and connectors.





Dialogic® Standby DS3 I/O Card - EXS-DIO-1200/ EXS-DIO-1200R

Description

The Dialogic® Standby DS3 I/O card is used in conjunction with the DS3 Redundant I/O card to deliver N+1 redundancy. To support redundancy, you must use the supplied DS3 cable assemblies. These cables are supplied with the DS3 I/O card. See the *DS3 Cable Assembly, Hardware Product Description.*

CAUTION

Always use the supplied DS3 cable assemblies when connecting the DS3 I/O card and a Standby DS3 I/O card for redundancy or when connecting a DS3 I/O card directly to the network. Using other cables may damage the connectors on the DS3 I/O and Standby I/O cards and cause a failure or intermittent operation.

Grounding

When interfacing the DS3 I/O and Standby I/O cards with any electrical equipment with the DS3 cable assembly, proper wiring and grounding procedures must be followed. If not, ground loops may result which are dangerous and can result in physical harm as well as possible signal interference. See *Chapter 4, Card Installation in the CSP Installation and Maintenance Guide*.

Placement

The Standby DS3 I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis. The Standby DS3 I/O card must reside in a slot numbered one greater than the Primary DS3 I/O card. For example if the Primary DS3 I/O card is in slot six, the standby DS3 I/O card must be in slot seven.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the PC board.

Specifications

The Standby DS3 I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.74A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the Standby DS3 I/O card are listed below.

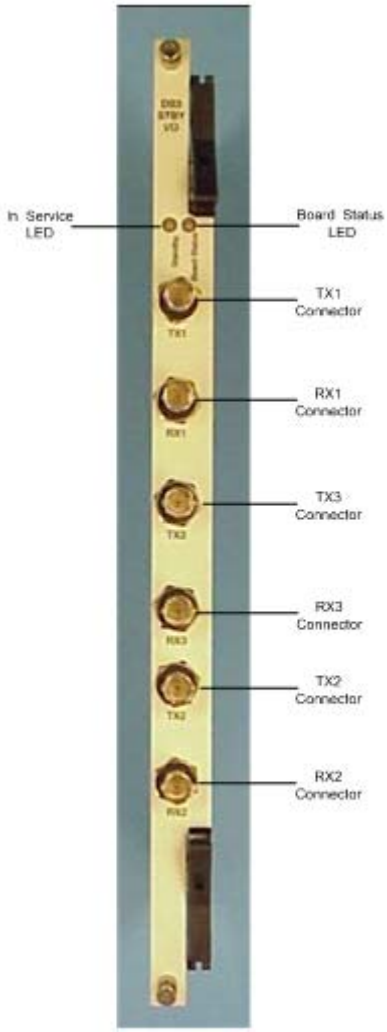
Product	Model No.	RoHS Model No.
DS3 Card	EXS-DS3-1000	EXS-DS3-1000R
DS3 I/O Card	EXS-DS3-1100	EXS-DS3-1100R
DS3 Cable Assy, 75 Ohm BNC Y	Part No. 64-0124-00	Part No. 164-0124-00

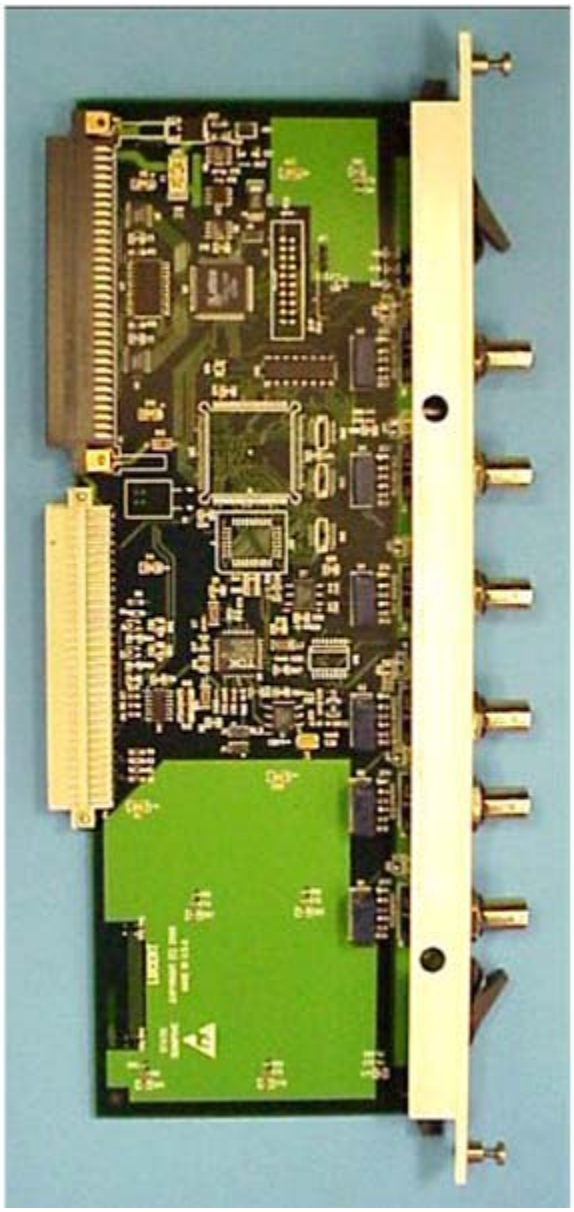
Controls and Indicators

The table below describes the LEDs as shown in the front view of the Standby DS3 I/O Card.

LED	Color/Status	Description
IN Service	Green	Indicates normal operation
	Red	Indicates switchover (fault condition)
Board Status	Green	Indicates normal operation

Front and Side Views The front and side views show the LEDs and connectors.





DS3 Cable Assembly - Part Nos. 64-0124-00/164-0124-00

Description

The DS3 cable assembly supports the DS3 I/O and Standby DS3 I/O cards to deliver N+1 redundancy or when connecting a DS3 I/O card directly to the network. Two DS3 cable assemblies are shipped with each DS3 I/O card.

Specifications

The DS3 cable assembly is designed to the following specifications.

Parameter	Specification
Length	209.5 cm (82.5 in.)
Type	75 ohm BNC Y

Related Products

The products related to the DS3 cable assembly are listed below.

Product	Model No.
DS3 Card	EXS-DS3-1000
DS3 I/O Card	EXS-DS3-1100
Standby DS3 I/O Card	EXS-DIO-1200

Cable Assembly Connections

The DS3 cable assemblies must be connected as shown in the diagram below. Refer to the CAUTION and connection diagram below.

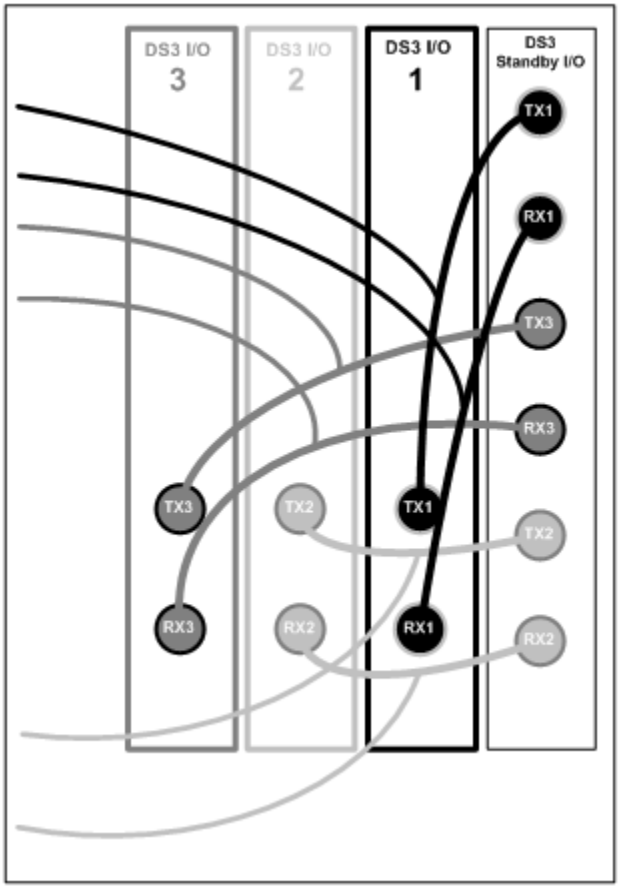
CAUTION

Always use the supplied DS3 cable assemblies when connecting the DS3 I/O card and a Standby DS3 I/O card for redundancy or when connecting a DS3 I/O card directly to the network. Using

other cables may damage the connectors on the DS3 I/O and Standby I/O cards and cause a failure or intermittent operation.

Important! Always connect Transmit (TX) port to Transmit port, and Receive (RX) port to Receive port. The Transmit port is always above the Receive port.

DS3 I/O Card	Standby DS3 I/O Card
Closest card (1) to Standby I/O card	Connects to the two top connectors
Next-closest card (2) to the Standby I/O	Connects to the two bottom connectors
Farthest card (3) from the Standby I/O	Connects to the middle two connectors



Dialogic® E-ONE Card - See Model Numbers

Description

The Dialogic® E-ONE card allows the CSP to operate in Conference of European Postal and Telecommunications Administrations (CEPT) rate environments. In addition to supporting switching and international signaling protocols, the E-ONE line card can be intermixed with T-ONE and ST1LC cards to provide rate conversion functions for existing T1 equipment.

Function

The E-ONE line card provides an intelligent interface between the E1 spans and CSP. E1 spans are available between 2 - 16 spans in even numbered, two span increments. An on-card high performance processor supports software configuration of E1 line format. It also supports per DS0 channel parameters. The processor also performs signal processing and carrier alarm supervision.

Placement

The E-ONE card resides in the front slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	3.15A (typical)

Physical	Specification
Height	9.3 inches (236.2 mm)
Depth	12.5 inches (317.5 mm)
Width	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/minute
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/minute
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

E-ONE Card Models

The available E-ONE card models are listed below.

Product	Model No.	RoHS Model No.
E-ONE 2 Span	EXS-E1C-1020	EXS-E1C-1020R
E-ONE 4 Span	EXS-E1C-1040	EXS-E1C-1040R
E-ONE 6 Span	EXS-E1C-1060	EXS-E1C-1060R
E-ONE 8 Span	EXS-E1C-1081	EXS-E1C-1081R
E-ONE 10 Span	EXS-E1C-1010	EXS-E1C-1010R
E-ONE 12 Span	EXS-E1C-1012	EXS-E1C-1012R
E-ONE 14 Span	EXS-E1C-1014	EXS-E1C-1014R
E-ONE 16 Span	EXS-E1C-1160	EXS-E1C-1160R

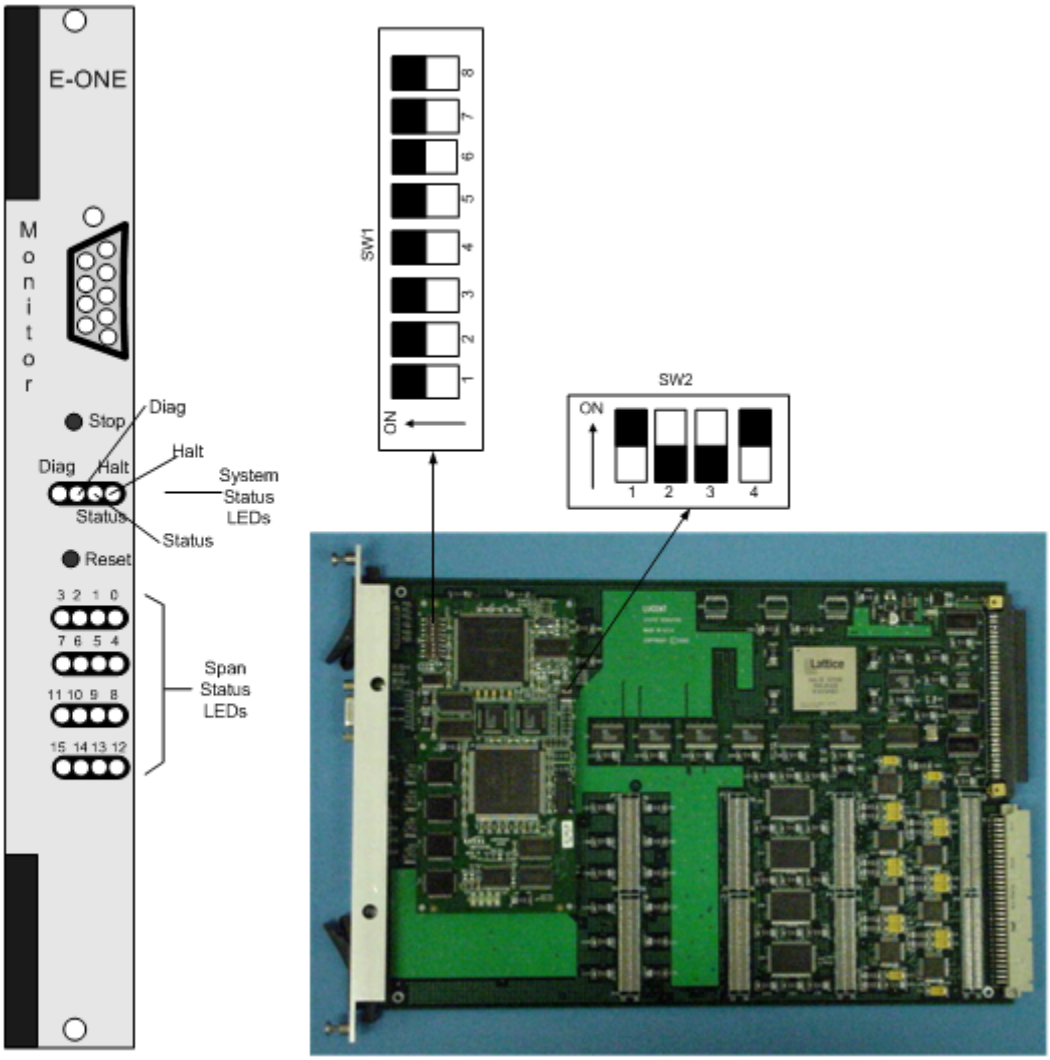
Related Products

The products related to the E-ONE card are listed below.

Product	Model No.	RoHS Mod. No.
E-ONE 120 Ohm I/O Card	EXS-EIO-1000	EXS-EIO-1000R
E-ONE 120 Ohm Red I/O Card	EXS-EIO-1200	EXS-EIO-1200R
E-ONE 120 Ohm Standby I/O Card	EXS-EIO-1300	EXS-EIO-1300R
E-ONE 75 Ohm I/O Card	EXS-EIO-1010	EXS-EIO-1010R
E-ONE 75 Ohm Red I/O Card	EXS-EIO-1210	EXS-EIO-1210R
E-ONE 75 Ohm Standby I/O Card	EXS-EIO-1310	EXS-EIO-1310R

Front and Side Views

The front and side views show the LEDs, push button switches, Monitor connector, and DIP switches.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the E-ONE Card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Span Status	Red	The span is in service and is receiving a Red Alarm or no span is connected.
	Green	The span is in service and is receiving valid data.
	Yellow	Receiving yellow alarm RAI
	Off	The span is out of service.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates CPU reset on the card. The software configuration is maintained.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)

Position	Setting	Function
2	ON*	Selects 9,600 baud rate for Monitor port
	OFF	Selects 19,200 baud rate for Monitor port
3	ON*	Disables Debug 2 Mode*
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF

Position	Setting	Function
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP11	Not Installed (default)	Factory use only

Dialogic® E-ONE 120 Ohm I/O Card - EXS-EIO-1000/EXS-EIO-1000R

Description

The Dialogic® E-ONE 120 Ohm I/O card connects the CSP to E1 lines and other telecommunications equipment.

Cabling

Use only 120 Ohm impedance shielded twisted-pair cable in compliance with UTI G.703. **Do not use flat wire.** Wire the interface connection in accordance with ANSI 50-position RJ48M pinout specifications.

Placement

The E-ONE 120 Ohm I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 120 Ohm I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

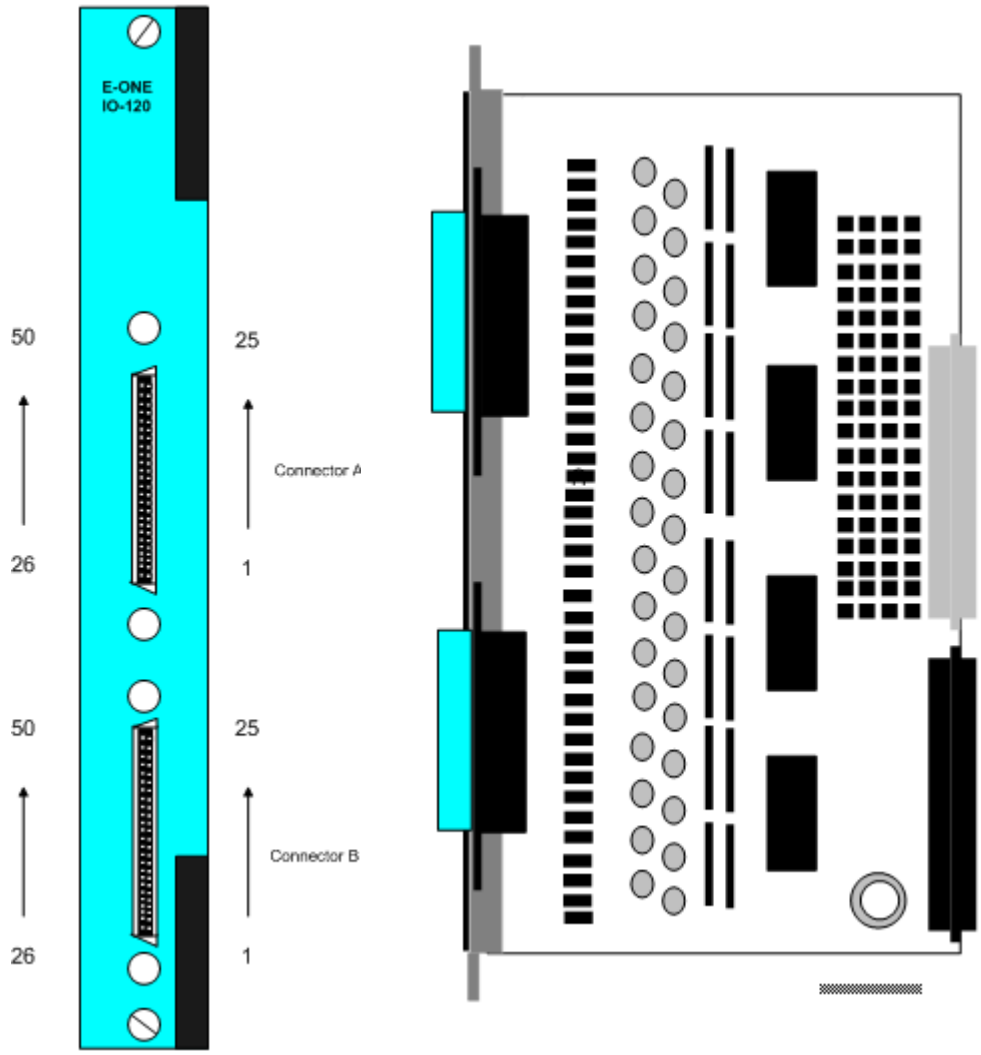
Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the E-ONE 120 Ohm I/O card are listed below.

Product	Model No.	RoHS Mod. No.
E-ONE Card	EXS-E1C-1160	EXS-E1C-1160R
E-ONE 120 Ohm Red I/O Card	EXS-EIO-1200	EXS-EIO-1200R
E-ONE 120 Ohm Standby I/O Card	EXS-EIO-1300	EXS-EIO-1300R

Front and Side Views The front and side views show the connectors.



E-ONE 16 Span 120 Ohm I/O Pinout

16 Span I/0 Pinout				
Span	**Transmit**		**Receive**	
No.	**Tip**	**Ring**	**Tip**	**Ring**
Connector A				
0	27	2	26	1
1	30	5	29	4
2	33	8	32	7
3	36	11	35	10
4	39	14	38	13
5	42	17	41	16
6	45	20	44	19
7	48	23	47	22
Connector B				
8	27	2	26	1
9	30	5	29	4
10	33	8	32	7
11	36	11	35	10
12	39	14	38	13
13	42	17	41	16
14	45	20	44	19
15	48	23	47	22

Dialogic® E-ONE 120 Ohm Red I/O Card - EXS-EIO-1200/ EXS-EIO-1200R

Description

The Dialogic® E-ONE 120 Ohm Redundant I/O card is used in conjunction with a Standby I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a standby line card. The software enables you to automate the switchover process or control it from a remote location.

Active or Switchover Mode

The card LED indicates whether the card is in Active or Switchover Mode. A red light indicates that the Standby card is active (Switchover Mode). A green light indicates that the Redundant card is active (Active Mode).

Placement

The card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 120 Ohm Redundant I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

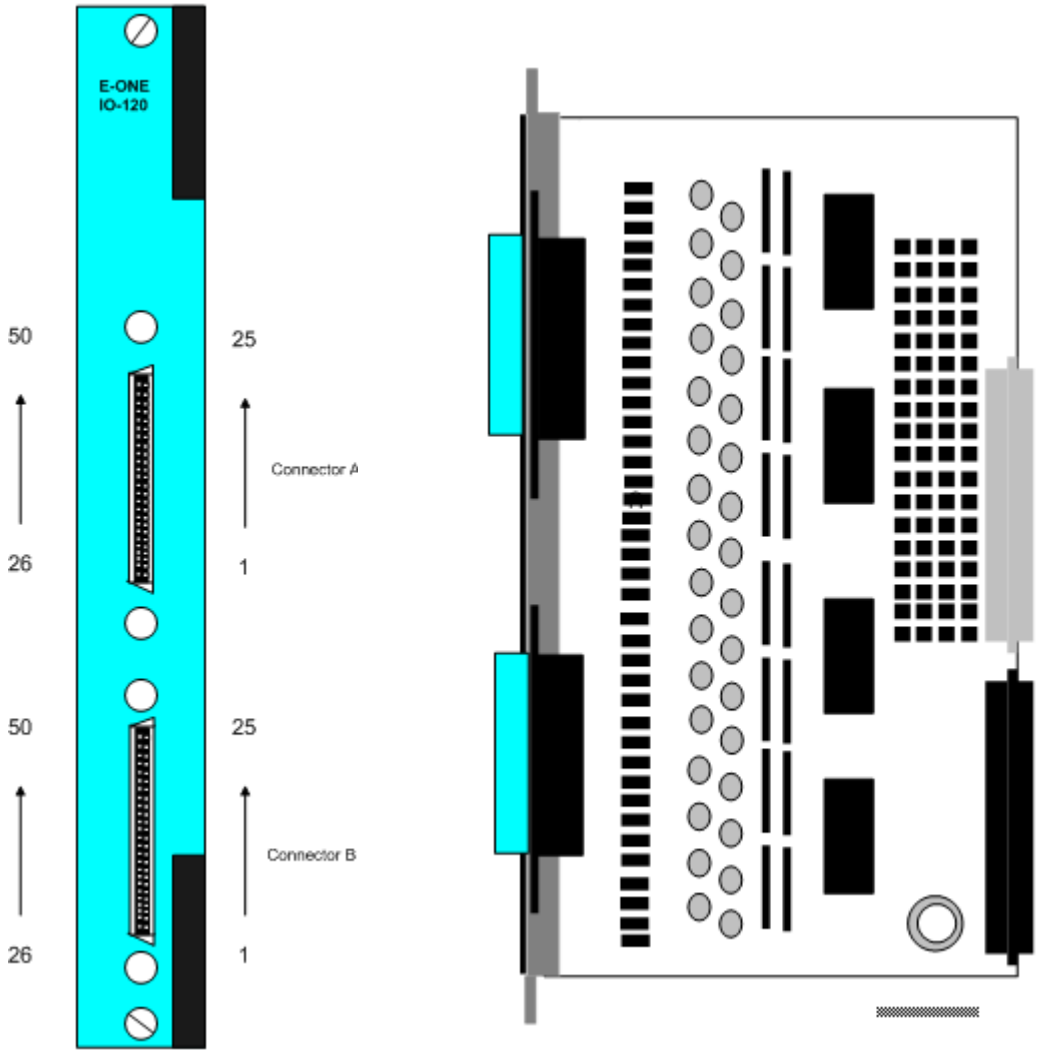
Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the E-ONE 120 Ohm Redundant I/O card are listed below.

Product	Model No.	RoHS Model No.
E-ONE Card	EXS-E1C-1160	EXS-E1C-1160R
E-ONE 120 Ohm I/O Card	EXS-EIO-1000	EXS-EIO-1000R
E-ONE 120 Ohm Standby I/O Card	EXS-EIO-1300	EXS-EIO-1300R

Front and Side Views The front and side views show the LED and connectors.



Controls and Indicators The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Active Mode	Redundant card is active
	Red/Switchover Mode	Standby card is active

E-ONE 16 Span 120 Ohm Redundant I/O Pinout

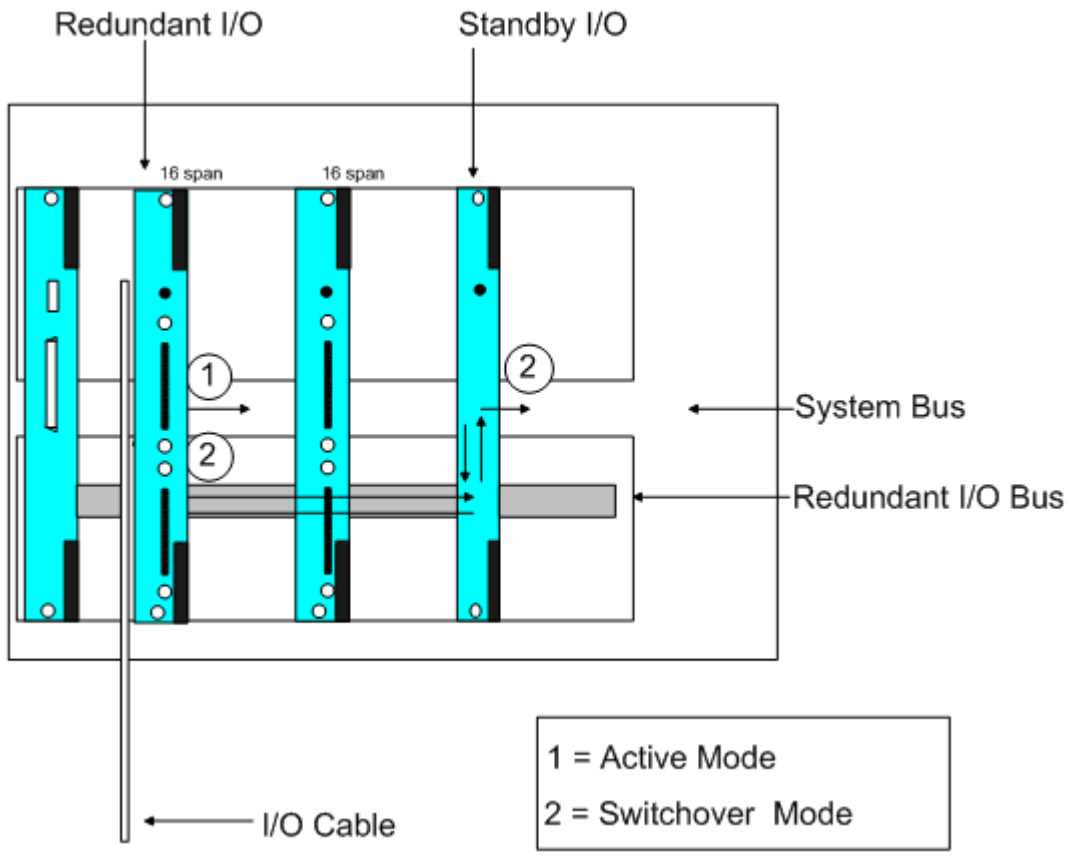
16 Span I/0 Pinout				
Span No.	**Transmit**		**Receive**	
	Tip	**Ring**	**Tip**	**Ring**
Connector A				
0	27	2	26	1
1	30	5	29	4
2	33	8	32	7
3	36	11	35	10
4	39	14	38	13
5	42	17	41	16
6	45	20	44	19
7	48	23	47	22
Connector B				
8	27	2	26	1
9	30	5	29	4
10	33	8	32	7
11	36	11	35	10
12	39	14	38	13
13	42	17	41	16
14	45	20	44	19
15	48	23	47	22

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the E1 span into the E-ONE 120 Ohm Redundant I/O card where they are switched to the system bus and routed to the active line card.

Symbol	Mode	Description
2	Switchover	Voice and data on the E-ONE 120 Ohm Redundant I/O card are switched to the Redundant I/O bus and routed to the E-ONE 120 Ohm Standby I/O card where they are switched to the system bus and routed to the Standby line card.



Dialogic® E-ONE 120 Ohm Standby I/O Card - EXS-EIO-1300/ EXS-EIO-1300R

Description

The Dialogic® E-ONE 120 Ohm Standby I/O card is used in conjunction with a Redundant I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby card. The software enables you to automate the switch-over process or control it from a remote location.The Standby I/O card has no external connections. All of its features and functionality are internal to the system.

Active or Switchover Mode

The Standby I/O card LED indicates whether the card is in Active or Switchover Mode. A red light indicates the Standby card is active (Switchover Mode). A green light indicates that the card is not active (Standby Mode).

Placement

The card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 120 Ohm Standby I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

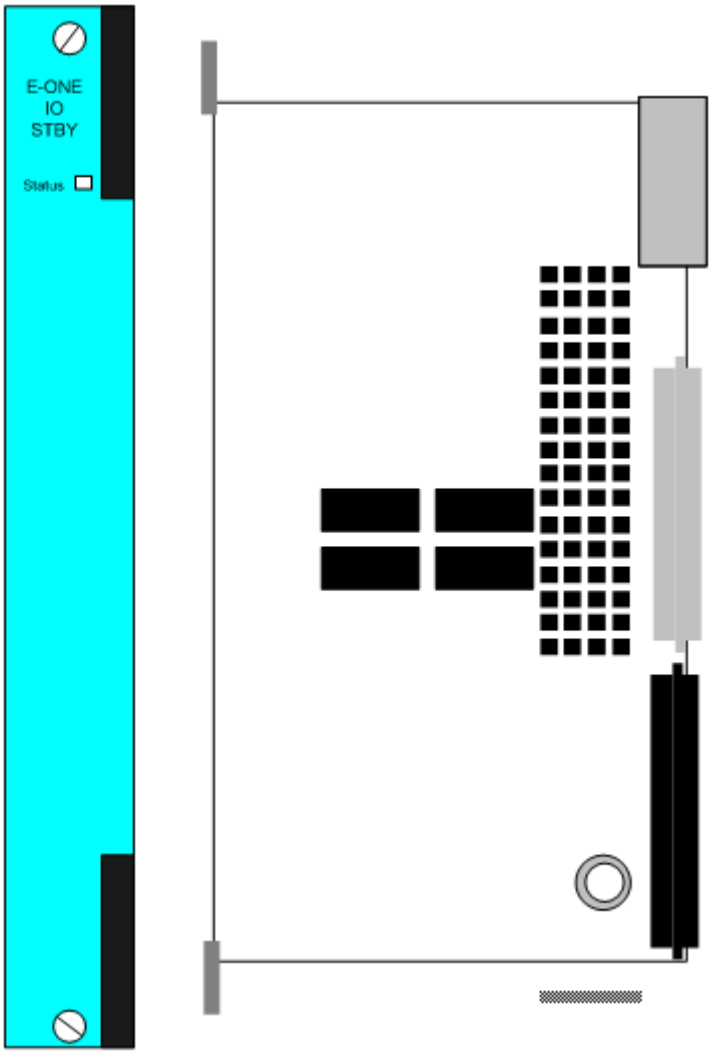
Related Products

The products related to the E-ONE 120 Ohm Standby I/O card are listed below.

Product	Model No.	RoHS Model No.
E-ONE Card	EXS-E1C-1160	EXS-E1C-1160R
E-ONE 120 Ohm I/O Card	EXS-EIO-1000	EXS-EIO-1000R
E-ONE 120 Ohm Red I/O Card	EXS-EIO-1200	EXS-EIO-1200R

Front and Side Views

The front view shows the Status LED.



Controls and Indicators

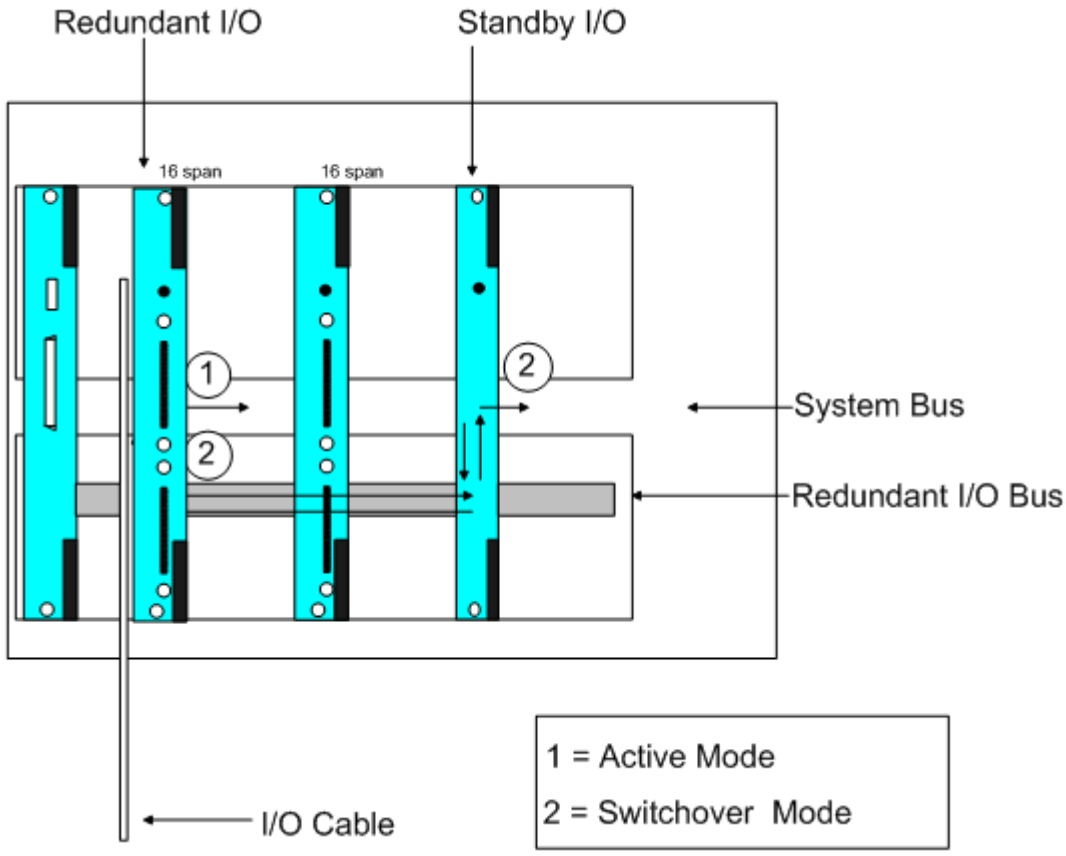
The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Standby Mode	Standby card is not active
	Red/Active Mode	Standby card is active

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the E1 span into the E-ONE 120 Ohm Redundant I/O card where they are switched to the system bus and routed to the active line card.
2	Switchover	Voice and data on the E-ONE 120 Ohm Redundant I/O card are switched to the Redundant I/O bus and routed to the E-ONE 120 Ohm Standby I/O card where they are switched to the system bus and routed to the Standby line card.



Dialogic® E-ONE 75 Ohm I/O Card - EXS-EIO-1010/ EXS-EIO-1010R

Description

The Dialogic® E-ONE 75 Ohm I/O card connects the CSP to eight E1 lines and other telecommunications equipment.

Cable

Use only 75 Ohm impedance coaxial cable fitted with BNC connectors in compliance with ITU-T G.703.

Placement

The card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 75 Ohm I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

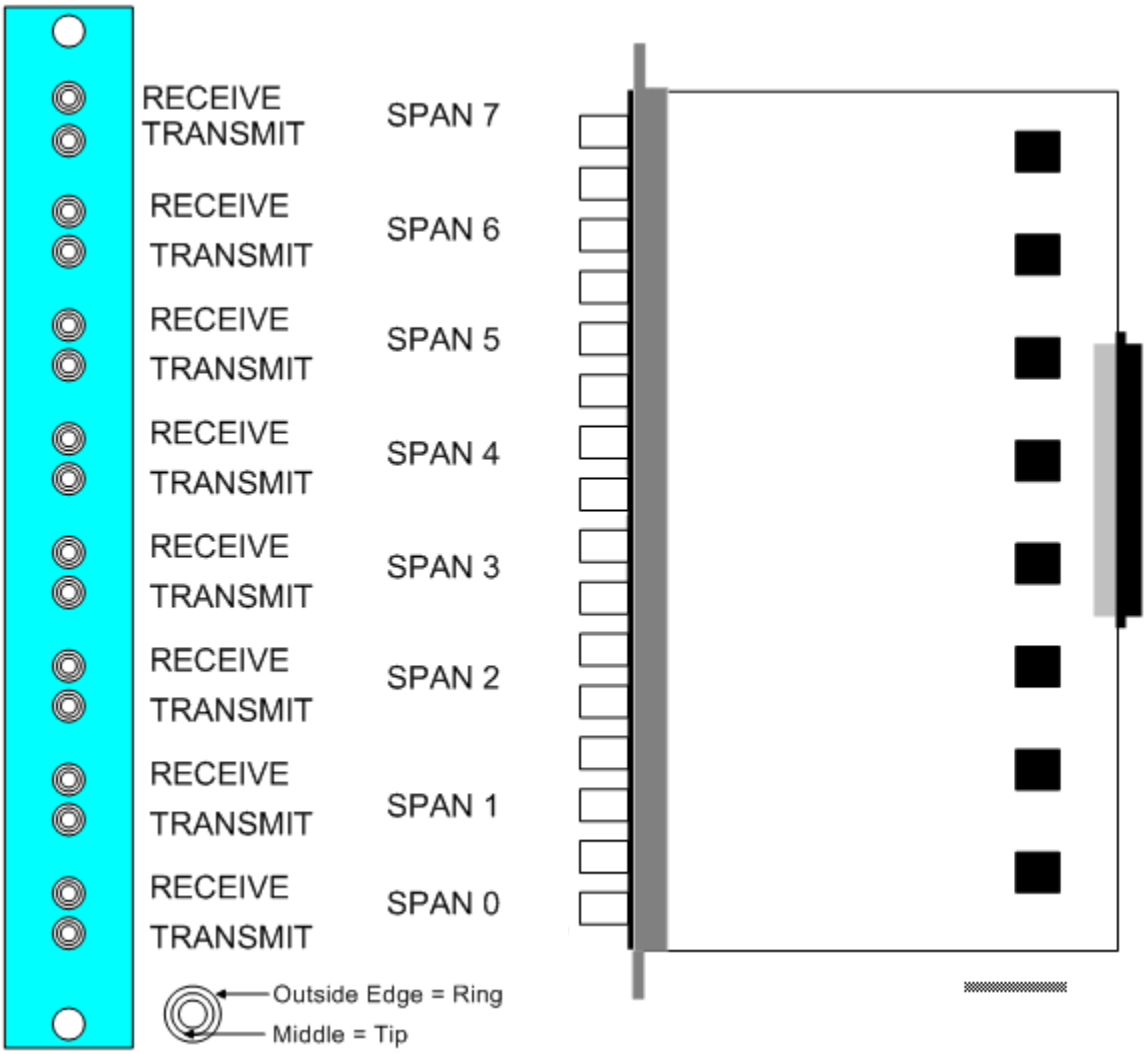
Related Products

The products related to the E-ONE 75 Ohm I/O card are listed below.

Product	Model No.	RoHS Model No.
E-ONE Card	EXS-E1C-1081	EXS-E1C-1081R
E-ONE 75 Ohm Red I/O Card	EXS-EIO-1210	EXS-EIO-1210R
E-ONE 75 Ohm Standby I/O Card	EXS-EIO-1310	EXS-EIO-1310R

Front and Side Views

The front and side views show the span transmit/receive connectors.


RECEIVE
TRANSMIT
SPAN 7
RECEIVE
TRANSMIT
SPAN 6
RECEIVE
TRANSMIT
SPAN 5
RECEIVE
TRANSMIT
SPAN 4
RECEIVE
TRANSMIT
SPAN 3
RECEIVE
TRANSMIT
SPAN 2
RECEIVE
TRANSMIT
SPAN 1
RECEIVE
TRANSMIT
SPAN 0
Outside Edge = Ring
Middle = Tip

Dialogic® E-ONE 75 Ohm Red I/O Card - EXS-EIO-1210/ EXS-EIO-1210R

Description

The Dialogic® E-ONE 75 Ohm Redundant I/O card is used in conjunction with an E-ONE 75 Ohm Standby I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a standby line card. The software enables you to automate the switchover process or control it from a remote location.

Cable

Use only 75 Ohm impedance coaxial cable fitted with BNC connectors in compliance with ITU-T G.703.

Placement

The card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 75 Ohm Redundant I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.53A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

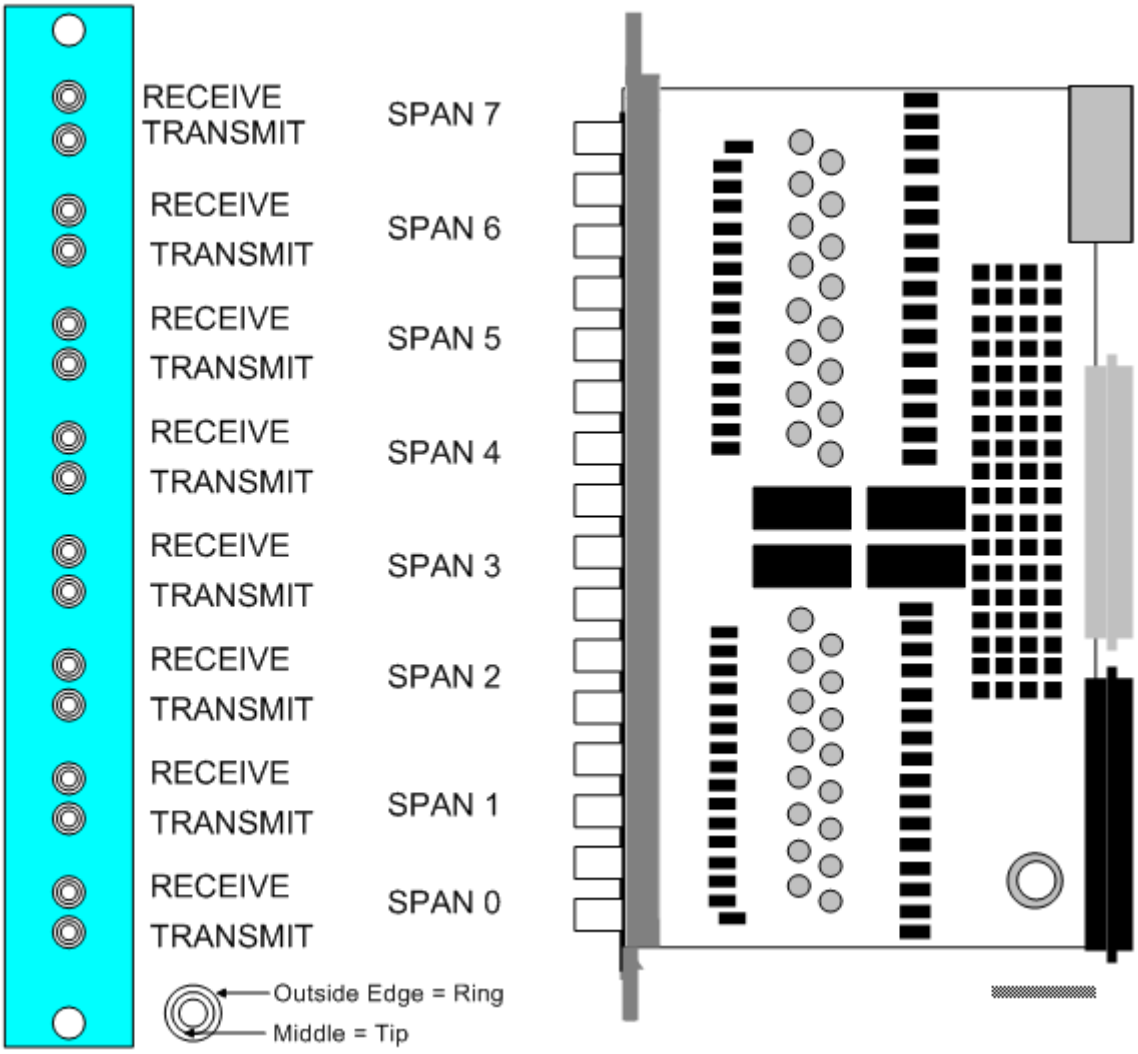
Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the E-ONE 75 Ohm Redundant I/O card are listed below.

Product	Model No.	RoHS Model No.
E-ONE Card	EXS-E1C-1081	EXS-E1C-1081R
E-ONE 75 Ohm I/O Card	EXS-EIO-1010	EXS-EIO-1010R
E-ONE 75 Ohm Standby I/O Card	EXS-EIO-1310	EXS-EIO-1310R

Front and Side Views The front and side views show the span transmit/receive connectors.



Dialogic® E-ONE 75 Ohm Standby I/O Card - EXS-EIO-1310/ EXS-EIO-1310R

Description

The Dialogic® E-ONE 75 Ohm Standby I/O card is used in conjunction with a Redundant I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby card. The software enables you to automate the switch-over process or control it from a remote location.

The Standby I/O card has no external connections. All of its features and functionality are internal to the system.

Active or Switchover Mode

The Standby I/O card LED indicates whether the card is in Active or Switchover Mode. A red light indicates the Standby card is active (Switchover Mode). A green light indicates that the card is not active (Standby Mode).

Placement

The card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The E-ONE 75 Ohm Standby I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.53A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

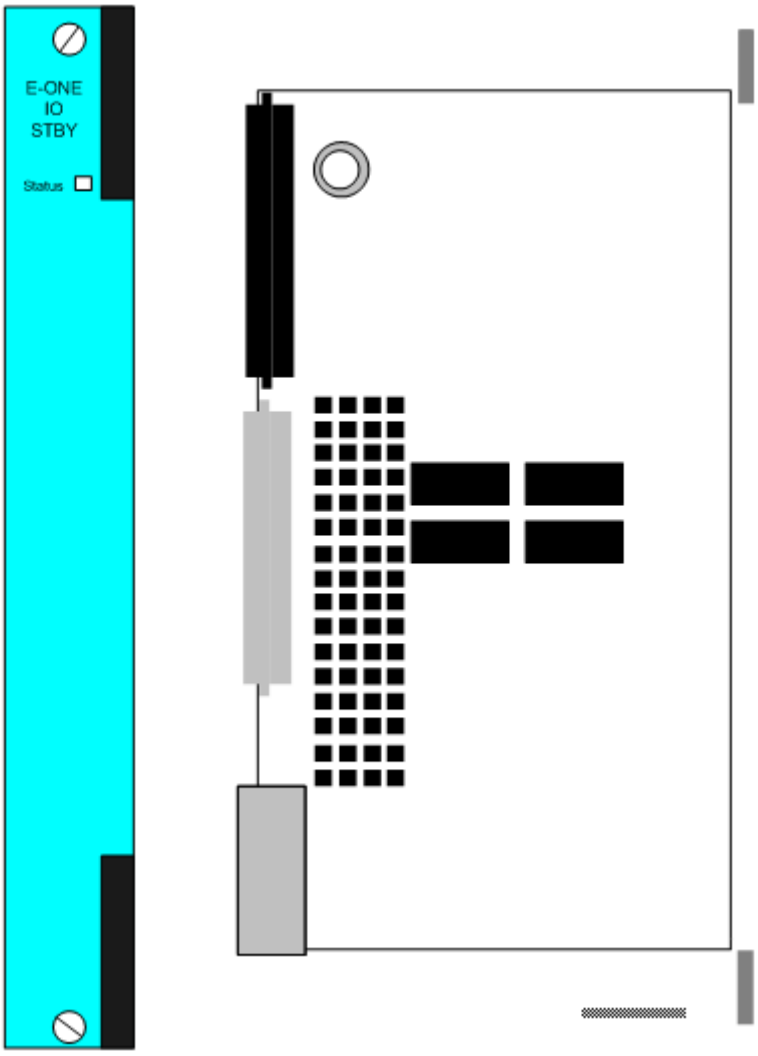
Related Products

The products related to the E-ONE 75 Ohm Standby I/O card are listed below.

Product	Model No.	RoHS Model No.
E-ONE Card	EXS-E1C-1081	EXS-E1C-1081R
E-ONE 75 Ohm I/O Card	EXS-EIO-1010	EXS-EIO-1010R
E-ONE 75 Ohm Red I/O Card	EXS-EIO-1210	EXS-EIO-1210R

Front and Side Views

The front view shows the Status LED.



Controls and Indicators

The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Standby Mode	Standby card is not active
	Red/Active Mode	Standby card is active

Dialogic® J-ONE Card - See Model Numbers

Description

The Dialogic® J-ONE card provides an intelligent interface between the matrix and up to sixteen J-ONE spans.

Function

A high performance processor, which resides on the card, supports card configuration, signal processing, signal supervision, and carrier alarm supervision. The processor also supports individual channel parameters.

Battery

The card has 4 Mb of battery-backed RAM and can be used in conjunction with line cards for rate conversion.

Placement

The J-ONE card resides in the front slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The J-ONE card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	2.98 (typical)

Physical	Specification
Height	9.3 inches (236.2 mm)
Depth	12.5 inches (317.5 mm)
Width	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

J-ONE Card Models

The available J-ONE card models are listed below.

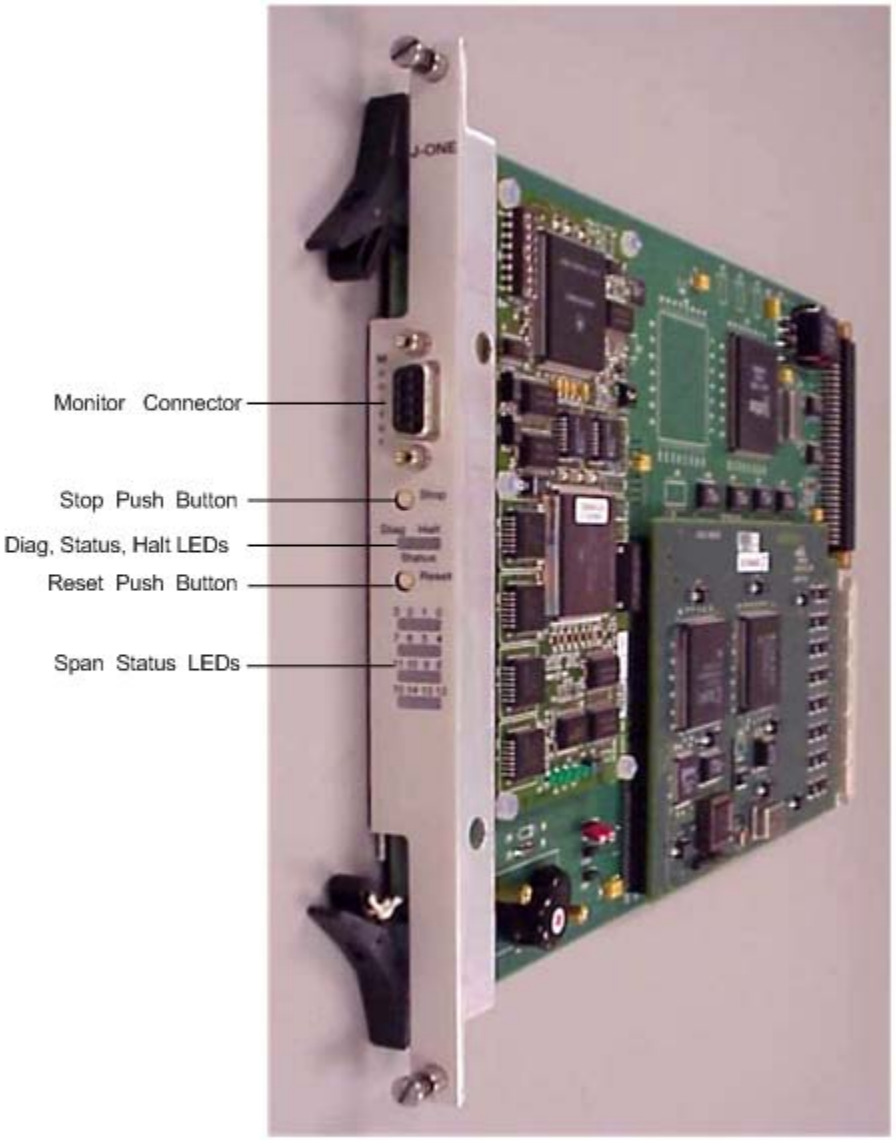
Product	Model No.	RoHS Model No.
J-ONE 2 Span	EXS-J1C-1020	Not Applicable
J-ONE 4 Span	EXS-J1C-1040	Not Applicable
J-ONE 6 Span	EXS-J1C-1060	Not Applicable0
J-ONE 8 Span	EXS-J1C-1080	Not Applicable
J-ONE 10 Span	EXS-J1C-1010	Not Applicable
J-ONE 12 Span	EXS-J1C-1012	Not Applicable
J-ONE 14 Span	EXS-J1C-1014	Not Applicable
J-ONE 16 Span	EXS-J1C-1160	Not Applicable

Related Products

The products related to the J-ONE card are listed below.

Product	Model No.	RoHS Model No.
J-ONE Redundant I/O Card	EXS-JIO-1200	Not Applicable
J-ONE Standby I/O Card	EXS-JIO-1300	Not Applicable

Front View The front shows the LEDs, push button switches and Monitor connector.



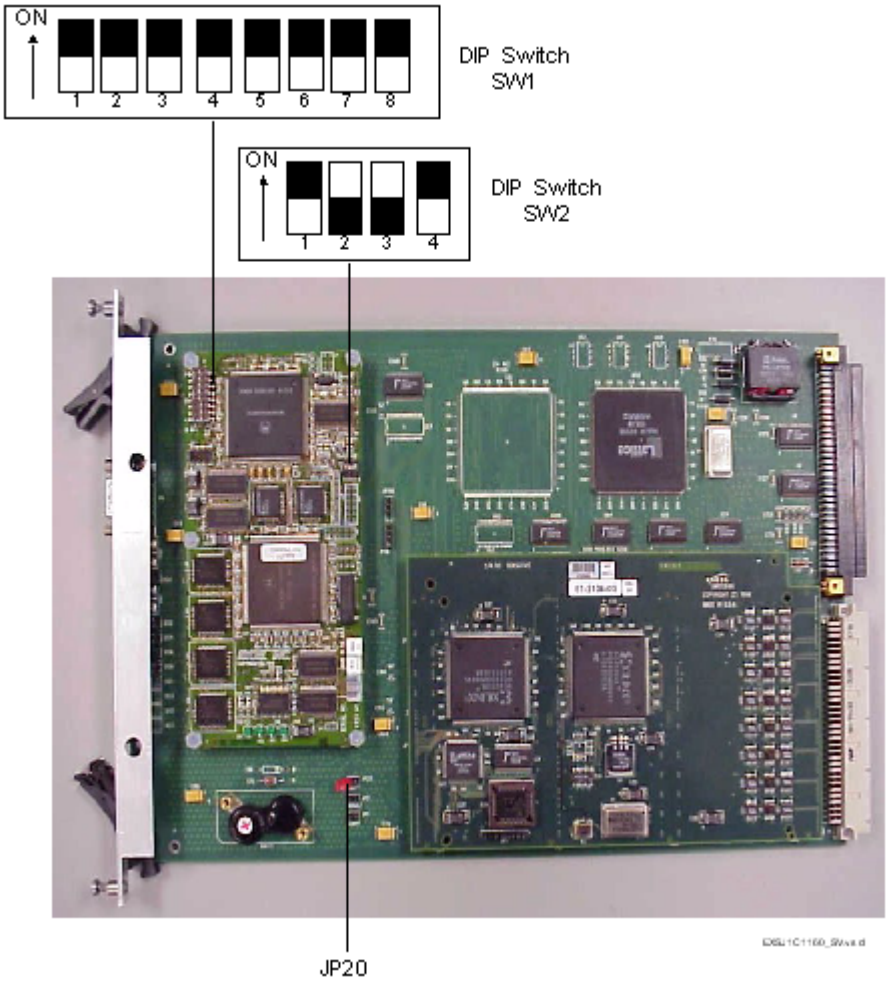
Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the J-ONE Card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Span Status	Red	The span is in service and is receiving a Red Alarm or no span is connected.
	Green	The span is in service and is receiving valid data.
	Yellow	Receiving yellow alarm RAI
	Off	The span is out of service.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates CPU reset on the card. The software configuration is maintained.	

Side View

The side view shows the DIP switches and the battery enable jumper JP20.



DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)

Position	Setting	Function
2	ON*	Selects 9600 baud for Monitor port
	OFF	Selects 19200 baud for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF

Position	Setting	Function
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumper The table below indicates the jumpers.

Jumper	Condition	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP11A	Not Installed (default)	Factory use only
JP11B	Not Installed (default)	Factory use only
JP20	Installed (default)	Enables battery backup

Dialogic® J-ONE Redundant I/O Card - EXS-JIO-1200

Description

The Dialogic® J-ONE Redundant I/O card is used in conjunction with a Standby I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby line card. The software enables you to automate the switchover process or control it from a remote location.

Active or Switchover Mode

The card LED indicates whether the card is in Active or Switchover Mode. A red light indicates that the Standby card is active (Switchover Mode). A green light indicates that the Redundant card is active (Active Mode).

Cabling

Use only 100 Ohm impedance shielded twisted-pair cable in compliance with ITU-T G703. **Do not use flat wire.** Wire the interface connection in accordance with ANSI 50-position RJ48M pinout specifications. The table below shows the J-ONE Redundant I/O pinout.

Placement

The J-ONE Redundant I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The J-ONE Redundant I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

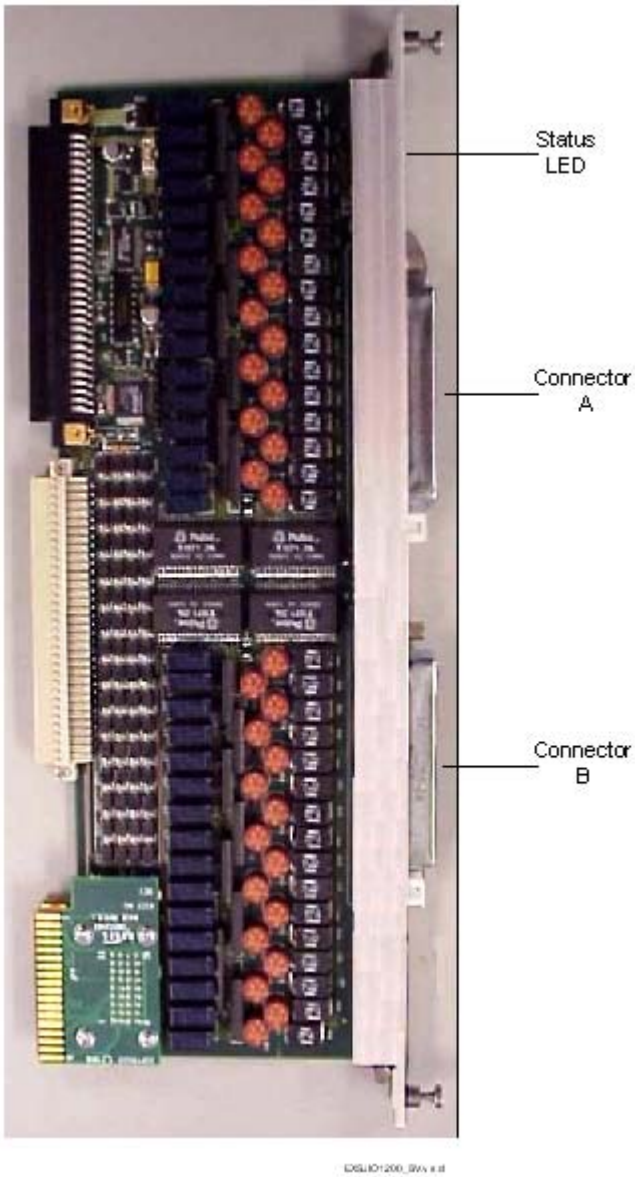
Related Products

The products related to the J-ONE Redundant I/O card are listed below.

Product	Model No.	RoHS Model No.
J-ONE Card	EXS-J1C-1160	Not Applicable
J-ONE Standby I/O Card	EXS-JIO-1300	Not Applicable

Front and Side Views

The front and side views show the connectors.



Controls and Indicators

The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Active Mode	Redundant card is active
	Red/Switchover Mode	Standby card is active

J-ONE Redundant I/O Pinout (16 Span)

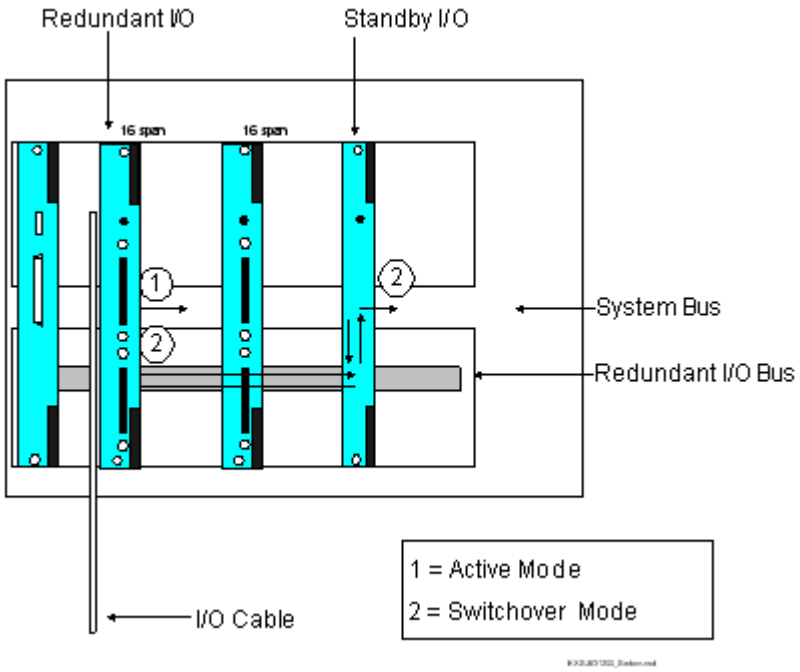
16 Span I/O Pinout				
Span No.	**Transmit**		**Receive**	
	Tip	**Ring**	**Tip**	**Ring**
Connector A				
0	27	2	26	1
1	30	5	29	4
2	33	8	32	7
3	36	11	35	10
4	39	14	38	13
5	42	17	41	16
6	45	20	44	19
7	48	23	47	22
Connector B				
8	27	27	26	1
9	30	30	29	4
10	33	8	32	7
11	36	11	35	10
12	39	14	38	13
13	42	17	41	16
14	45	20	44	19
15	48	23	47	22

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the J-ONE span into the J-ONE Redundant I/O card where they are switched to the system bus and routed to the active line card.

Symbol	Mode	Description
2	Switchover	Voice and data on the Redundant J-ONE I/O card are switched to the Redundant I/O bus and routed to the Standby I/O where they are switched to the system bus and routed to the Standby line card.



Dialogic® J-ONE Standby I/O Card - EXS-JIO-1300

Description

The Dialogic® J-ONE Standby I/O card is used in conjunction with a Redundant I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby card. The software enables you to automate the switch-over process or control it from a remote location.The Standby I/O card has no external connections. All of its features and functionality are internal to the system.

Active or Switchover Mode

The Standby I/O card Status LED indicates whether the card is in Active or Switchover Mode. A red light indicates the Standby card is active (Switchover Mode). A green light indicates that the card is not active (Standby Mode).

Placement

The card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The J-ONE Standby I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the J-ONE Standby I/O card are listed below.

Product	Model No.	RoHS Model No.
J-ONE Card	EXS-J1C-1160	Not Applicable
J-ONE 100 Ohm Red I/O Card	EXS-JIO-1200	Not Applicable

Front and Side Views

The front view shows the Status LED.

Controls and Indicators

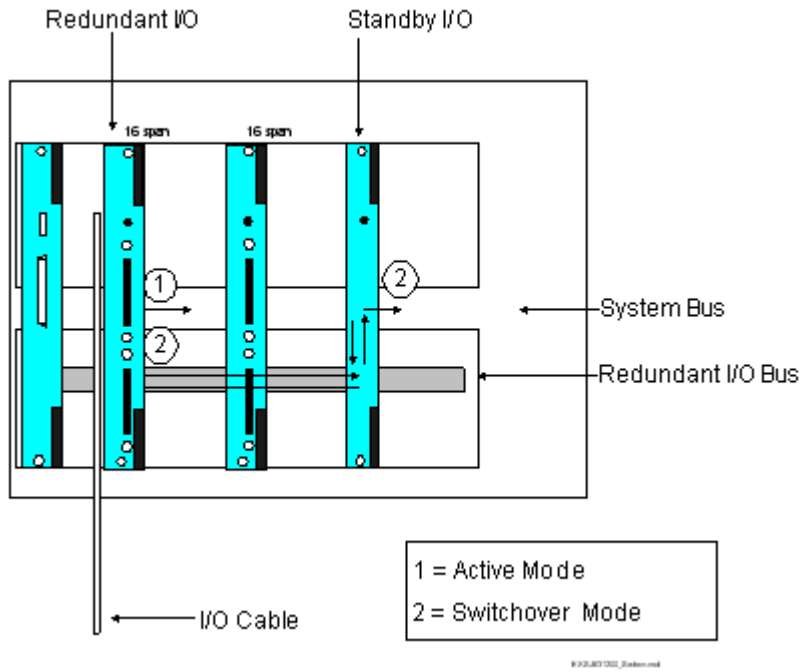
The table below describes the Status LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Standby Mode	Standby card is not active
	Red/Active Mode	Standby card is active

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the J-ONE span into the J-ONE Redundant I/O card where they are switched to the system bus and routed to the active line card.
2	Switchover	Voice and data on the Redundant J-ONE I/O card are switched to the Redundant I/O bus and routed to the Standby I/O where they are switched to the system bus and routed to the Standby line card.



Dialogic® T-ONE Card - See Model Numbers

Description

The Dialogic® T-ONE card provides an interface between T1 spans and the CSP. T1 spans are available between 2 - 16 spans in even two span increments. The T-ONE card interfaces with all T1 formats.

Function

The T-ONE card performs a variety of network interface functions including frame synchronization, signal processing, clock recovery, and alarm detection. In addition, the T-ONE line card can be intermixed with E-ONE and SE1LC cards to provide rate conversion functions for existing E1 equipment.

Placement

The T-ONE card resides in the front slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The T-ONE card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	3.05A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/minute
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/minute
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

T-ONE Card Models

The available T-ONE card models are listed below.

Product	Model No.	RoHS Model No.
T-ONE 2 Span	EXS-T1C-1020	EXS-T1C-1020R
T-ONE 4 Span	EXS-T1C-1040	EXS-T1C-1040R
T-ONE 6 Span	EXS-T1C-1060	EXS-T1C-1060R
T-ONE 8 Span	EXS-T1C-1080	EXS-T1C-1080R
T-ONE 10 Span	EXS-T1C-1010	EXS-T1C-1010R
T-ONE 12 Span	EXS-T1C-1012	EXS-T1C-1012R
T-ONE 14 Span	EXS-T1C-1014	EXS-T1C-1014R
T-ONE 16 Span	EXS-T1C-1160	EXS-T1C-1160R

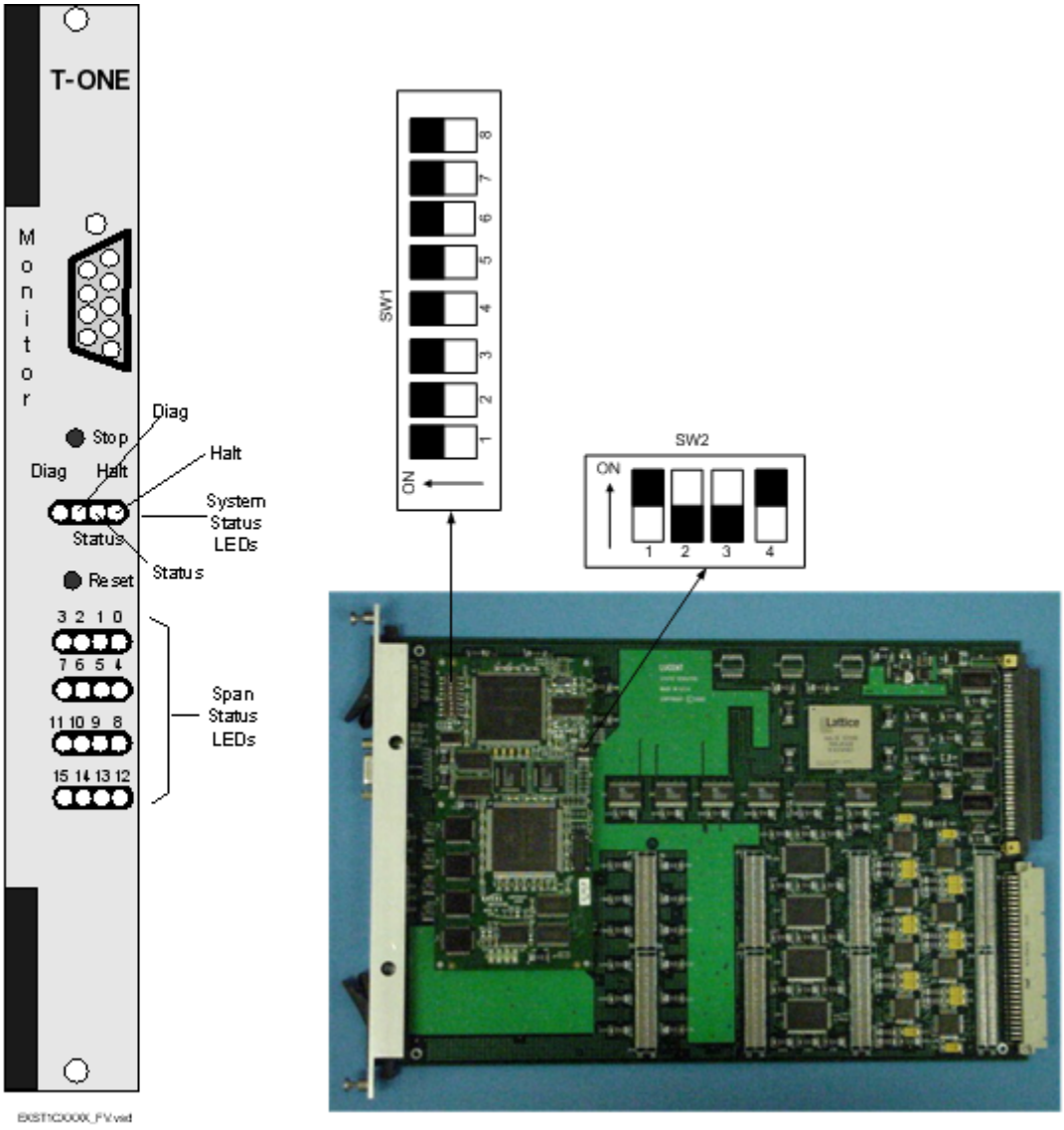
Related Products

The products related to the T-ONE card are listed below.

Product	Model No.	RoHS Model No.
T-ONE 100 Ohm I/O Card	EXS-TIO-1000	EXS-TIO-1000R
T-ONE 100 Ohm Red I/O Card	EXS-TIO-1200	EXS-TIO-1200R
T-ONE 100 Ohm Standby I/O Card	EXS-TIO-1300	EXS-TIO-1300R

Front and Side Views

The front and side views show the LEDs, push button switches, Monitor connector, and DIP switches.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the T-ONE Card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Span Status	Red	The span is in service and is receiving a Red Alarm or no span is connected.
	Green	The span is in service and is receiving valid data.
	Yellow	Receiving yellow alarm RAI
	Off	The span is out of service.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates CPU reset on the card. The software configuration is maintained.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Selects 9,600 baud rate for Monitor port
	OFF	Selects 19,200 baud rate for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Enables use of up to 64 T1 spans per CSP 2090 (see Important!)
	OFF	Enables use of up to 80 T1 spans per CSP 2090 (see Important!)
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

Important! To go beyond 64 T1 spans, set DIP switch SW1, position 4, to OFF for one T1 16 span card or two T1 8 span cards. The other cards must have DIP switch SW1, position 4, set to ON.

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP11	Not Installed (default)	Factory use only

Dialogic® T-ONE 100 Ohm I/O Card - EXS-TIO-1000/ EXS-TIO-1000R

Description

The Dialogic® T-ONE 100 Ohm I/O card connects the CSP to T1 lines and other telecommunications equipment.

Cabling

Use only 100 Ohm impedance shielded twisted-pair cable in compliance with ITU-T G703. **Do not use flat wire.** Wire the interface connection in accordance with ANSI 50-position RJ48M pinout specifications. The table below shows the T-ONE 120 Ohm I/O pinout.

Placement

The T-ONE 100 Ohm I/O card resides in the rear card slots of an CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The T-ONE 100 Ohm I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.11A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

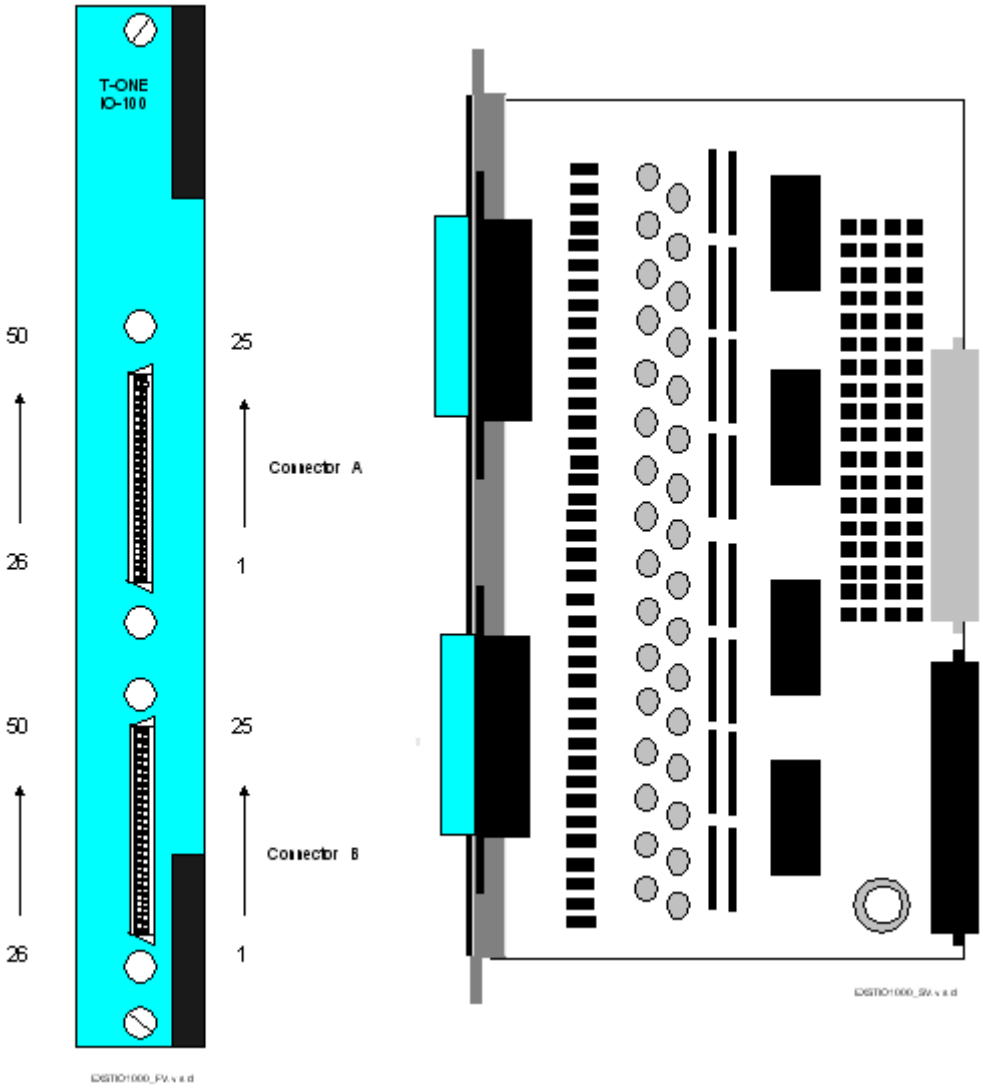
Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the T-ONE 100 Ohm I/O card are listed below.

Product	Model No.	RoHS Model No.
T-ONE Card	EXS-T1C-1160	EXS-T1C-1160R
T-ONE 100 Ohm Red I/O Card	EXS-TIO-1200	EXS-TIO-1200R
T-ONE 100 Ohm Standby I/O Card	EXS-TIO-1300	EXS-TIO-1300R

Front and Side Views The front and side views show the connectors.



T-ONE 100 Ohm I/O Pinout (16-Span)

16-Span I/O Pinout				
Span Number	**Transmit**		**Receive**	
	Tip	**Ring**	**Tip**	**Ring**
Connector A				
0	27	2	26	1
1	30	5	29	4
2	33	8	32	7
3	36	11	35	10
4	39	14	38	13
5	42	17	41	16
6	45	20	44	19
7	48	23	47	22
Connector B				
8	27	27	26	1
9	30	30	29	4
10	33	8	32	7
11	36	11	35	10
12	39	14	38	13
13	42	17	41	16
14	45	20	44	19
15	48	23	47	22

Dialogic® T-ONE 100 Ohm Red I/O Card - EXS-TIO-1200/ EXS-TIO-1200R

Description

The Dialogic® T-ONE 100 Ohm Redundant I/O card is used in conjunction with a Standby I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby line card. The software enables you to automate the switchover process or control it from a remote location.

Active or Switchover Mode

The card LED indicates whether the card is in Active or Switchover Mode. A red light indicates that the Standby card is active (Switchover Mode). A green light indicates that the Redundant card is active (Active Mode).

Cabling

Use only 100 Ohm impedance shielded twisted-pair cable in compliance with ITU-T G703. **Do not use flat wire.** Wire the interface connection in accordance with ANSI 50-position RJ48M pinout specifications. The table below shows the T-ONE 100 Ohm Redundant I/O pinout.

Placement

The T-ONE 100 Ohm Redundant I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The T-ONE 100 Ohm Redundant I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

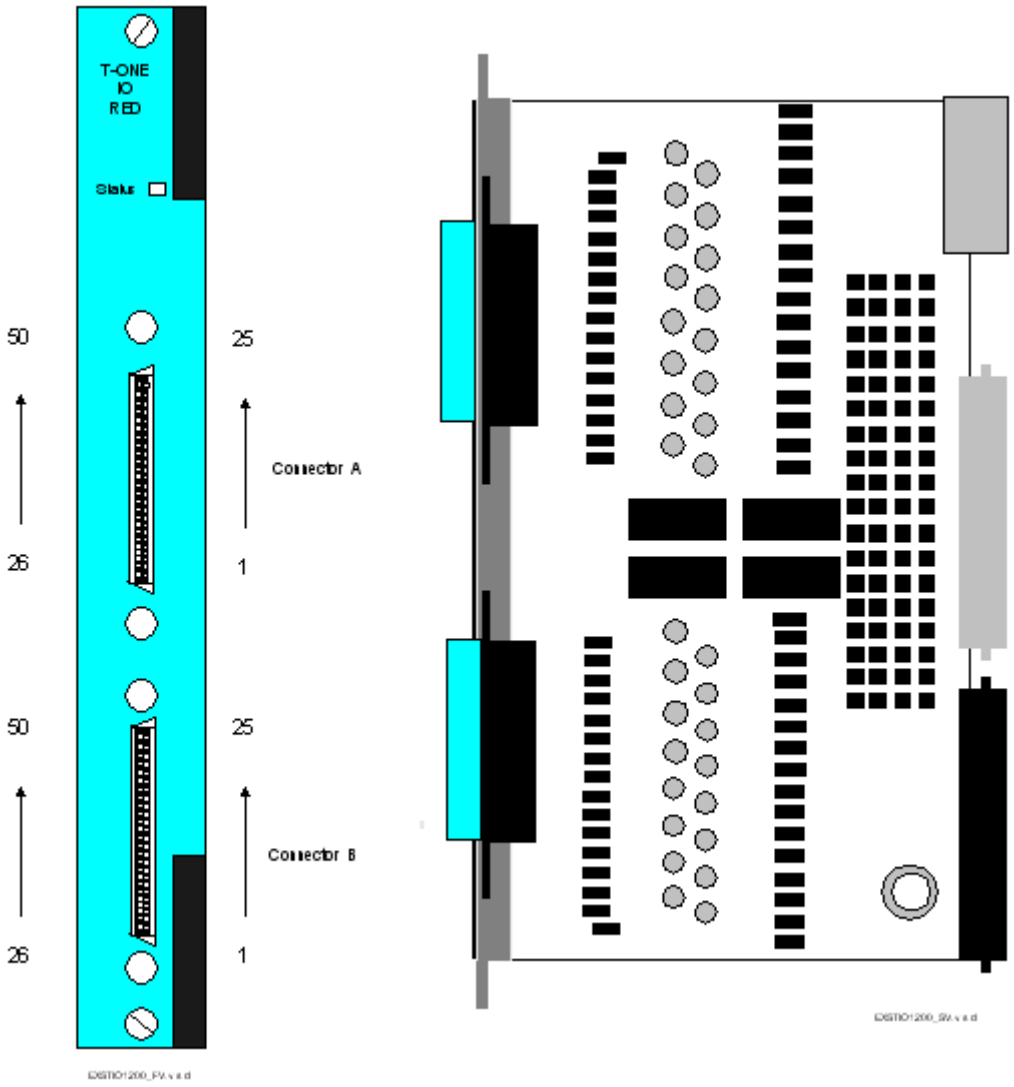
Related Products

The products related to the T-ONE 100 Ohm Redundant I/O card are listed below.

Product	Model No.	RoHS Model No.
T-ONE Card	EXS-T1C-1160	EXS-T1C-1160R
T-ONE 100 Ohm I/O Card	EXS-TIO-1000	EXS-TIO-1000R
T-ONE 100 Ohm Standby I/O Card	EXS-TIO-1300	EXS-TIO-1300R

Front and Side Views

The front and side views show the connectors.



Controls and Indicators

The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Active Mode	Redundant card is active
	Red/Switchover Mode	Standby card is active

T-ONE 100 Ohm Redundant I/O Pinout (16 Span)

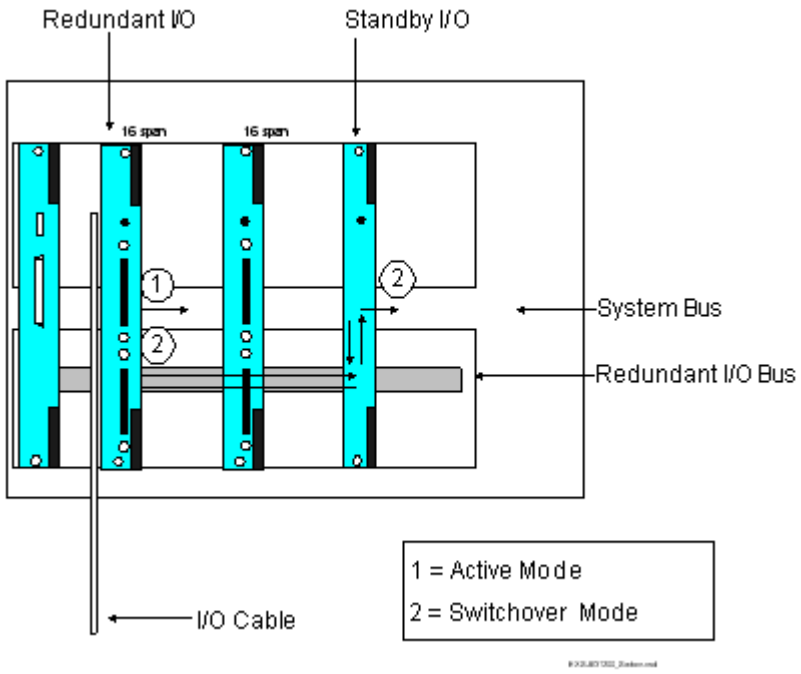
16 Span I/O Pinout				
Span No.	Transmit		Receive	
	Tip	Ring	Tip	Ring
Connector A				
0	27	2	26	1
1	30	5	29	4
2	33	8	32	7
3	36	11	35	10
4	39	14	38	13
5	42	17	41	16
6	45	20	44	19
7	48	23	47	22
Connector B				
8	27	2	26	1
9	30	5	29	4
10	33	8	32	7
11	36	11	35	10
12	39	14	38	13
13	42	17	41	16
14	45	20	44	19
15	48	23	47	22

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the T1 span into the T-ONE 120 Ohm Redundant I/O card where they are switched to the system bus and routed to the active line card.

Symbol	Mode	Description
2	Switchover	Voice and data on the T-ONE 120 Ohm Redundant I/O card are switched to the Redundant I/O bus and routed to the T-ONE 120 Ohm Standby I/O card where they are switched to the system bus and routed to the Standby line card.



Dialogic® T-ONE 100 Ohm Standby I/O Card - EXS-TIO-1300/ EXS-TIO-1300R

Description

The Dialogic® T-ONE 100 Ohm Standby I/O card is used in conjunction with a Redundant I/O card to deliver *N* + 1 redundancy to all system line cards. If an active line card fails, the affected data stream is rerouted to a Standby card. The software enables you to automate the switch-over process or control it from a remote location.The Standby I/O card has no external connections. All of its features and functionality are internal to the system.

Active or Switchover Mode

The Standby I/O card LED indicates whether the card is in Active or Switchover Mode. A red light indicates the Standby card is active (Switchover Mode). A green light indicates that the card is not active (Standby Mode).

Placement

The card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The T-ONE 100 Ohm Standby I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.95A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

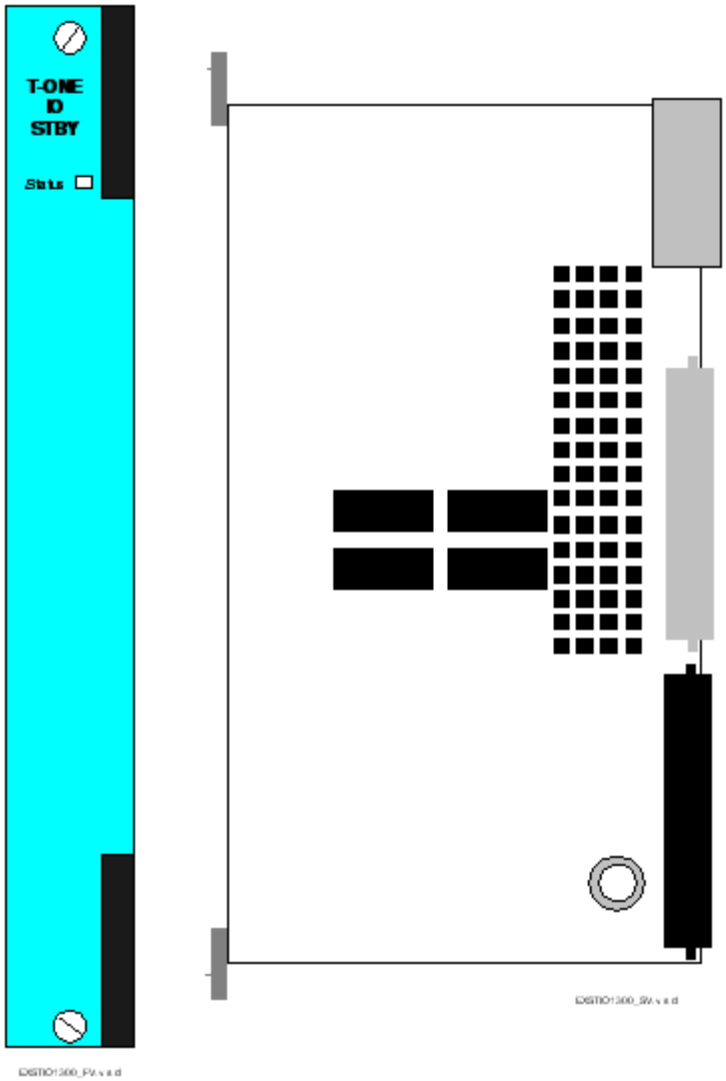
Related Products

The products related to the T-ONE 100 Ohm Standby I/O card are listed below.

Product	Model No.	RoHS Model No.
T-ONE Card	EXS-T1C-1160	EXS-T1C-1160R
T-ONE 100 Ohm I/O Card	EXS-TIO-1000	EXS-TIO-1000R
T-ONE 100 Ohm Red I/O Card	EXS-TIO-1200	EXS-TIO-1200R

Front and Side Views

The front view shows the Status LED.



Controls and Indicators

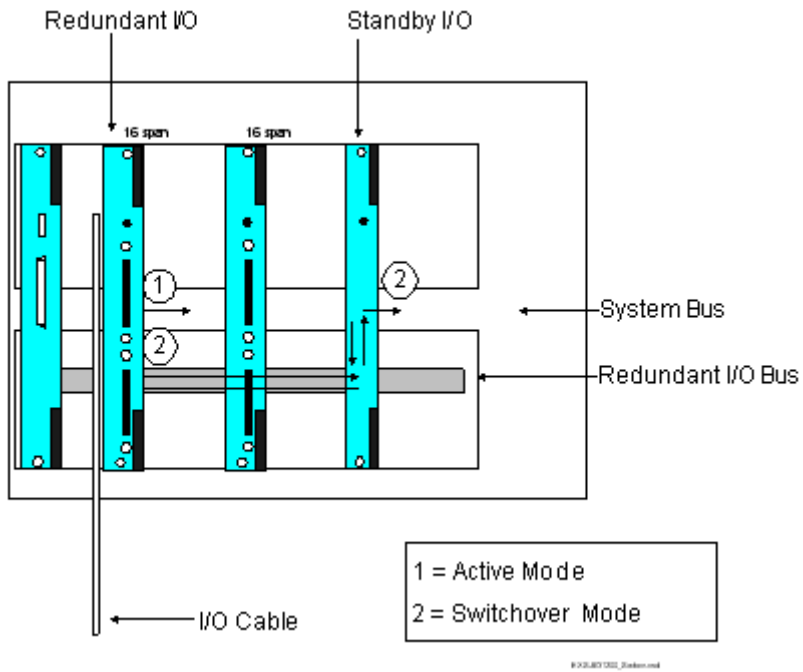
The table below describes the LED as shown in the front view.

LED	Color/Status	Description
Status	Green/Standby Mode	Standby card is not active
	Red/Active Mode	Standby card is active

Flow of Voice and Data in Active and Switchover Modes

The table below describes the Active and Switchover Modes.

Symbol	Mode	Description
1	Active	Voice and data flow from the T1 span into the T-ONE 120 Ohm Redundant I/O card where they are switched to the system bus and routed to the active line card.
2	Switchover	Voice and data on the T-ONE 120 Ohm Redundant I/O card are switched to the Redundant I/O bus and routed to the T-ONE 120 Ohm Standby I/O card where they are switched to the system bus and routed to the Standby line card.



Telco Cable Assembly - See Part Numbers

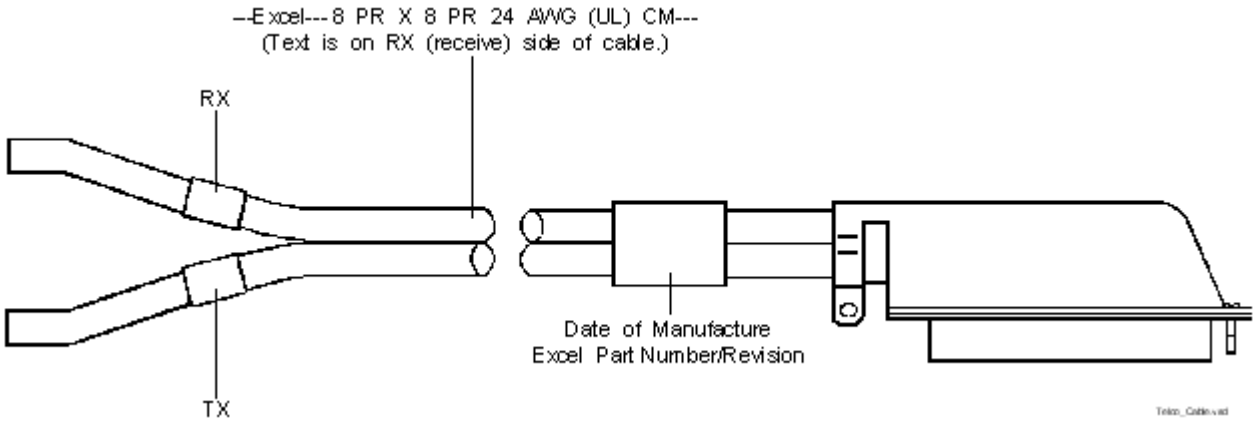
Description

The Telco cables, available from Dialogic, support the T-ONE I/O card interconnections with T1 lines and other Public Service Telephone Network (PSTN) telecommunications equipment.

Each Telco cable supports eight spans. Two cables are required to support 16 span I/O cards. The transmit (TX) and receive (RX) signals are separated into two insulated bundles. Each bundle consists of eight pairs of two twisted conductors.

Telco Cable Assembly Diagram

The Telco cable assembly is shown in the diagram below.



Electrical Specifications

The Telco cable assembly is designed to the following specifications.

Parameter	Specification
Impedance	100 Ohms
Mutual Capacitance	15 pF/ft. nominal

Telco Cable Lengths

The available Telco cable lengths are listed below.

Telco Cable Length	Part No.
50 ft.	64-0206-00
100 ft.	64-0207-00

Telco Cable Length	Part No.
150 ft.	64-0205-00
200 ft.	64-0208-00
300 ft.	64-0262-00
400 ft.	64-0263-00
500 ft.	64-0264-00
650 ft.	64-0265-00

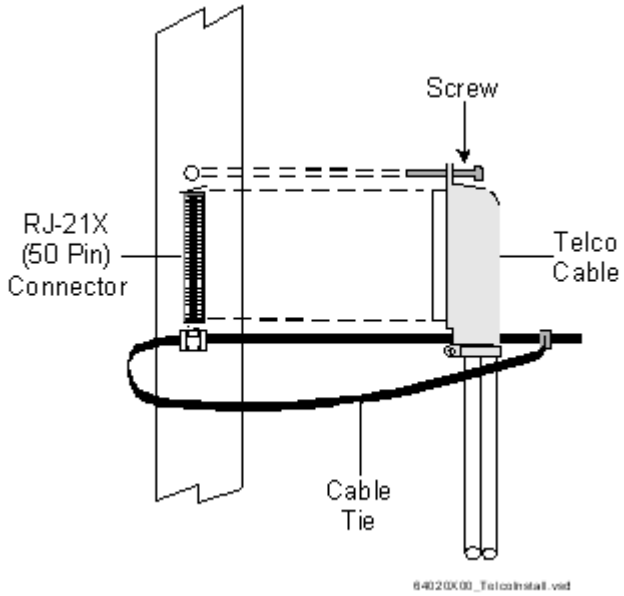
Related Products

The products related to the Telco cable assembly are listed below.

Product	Model No.
T-ONE 100 Ohm I/O Card	EXS-TIO-1000
T-ONE 100 Ohm Redundant I/O Card	EXS-TIO-1200

Telco Cable Assembly Installation Diagram

The Telco cable assembly installation drawing is shown below.



Telco Cable Assembly Pinouts

The Telco cable assembly pinouts are listed below.

Pin No.	Wire Color	Pair No.	Bundle
1	Blue/White	1	RX
26	White/Blue		
4	Orange/White	2	RX
29	White/Orange		
7	Green/White	3	RX
32	White/Green		
10	Brown/White	4	RX
35	White/Brown		
13	Gray/White	5	RX
38	White/Gray		
16	Blue/Red	6	RX
41	Red/Blue		
19	Orange/Red	7	RX
44	Red/Orange		
22	Green/Red	8	RX
47	Red/Green		
2	Blue/White	1	TX
27	White/Blue		
5	Orange/White	2	TX
30	White/Orange		
8	Green/White	3	TX
33	White/Green		
11	Brown/White	4	TX
36	White/Brown		
14	Gray/White	5	TX
39	White/Gray		

Pin No.	Wire Color	Pair No.	Bundle
17	Blue/Red	6	TX
42	Red/Blue		
20	Orange/Red	7	TX
45	Red/Orange		
23	Green/Red	8	TX
48	Red/Green		
3	Open	NA	NA
28	Open	NA	NA
6	Open	NA	NA
31	Open	NA	NA
9	Open	NA	NA
34	Open	NA	NA
12	Open	NA	NA
37	Open	NA	NA
15	Open	NA	NA
40	Open	NA	NA
18	Open	NA	NA
43	Open	NA	NA
21	Open	NA	NA
46	Open	NA	NA
24	Open	NA	NA
49	Open	NA	NA
25	Open	NA	NA
50	Open	NA	NA

4 Common Channel Signaling Cards

Purpose This chapter provides descriptions of the Common Channel Signaling (CCS) cards.

Compliance The Common Channel Signaling cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZS 60950.1:2003

Dialogic® Common Channel Signaling I/O Card - EXS-CCS-1000/EXS-CCS-1000R

Description

The Dialogic® Common Channel Signaling I/O card allows you to use the following Common Channel Signaling (CCS) card in a distributed environment on a CSP:

- SS7 PQ card

The single slot CCS I/O card is paired with the above card to support either a single 10Base-T or 10Base-2 Ethernet connection, auto-selected.

The Common Channel Signaling card call control at the Server Node matrix communicates with the CSP Matrix Series 3 Card on remote CSP nodes over the Ethernet using the CCS I/O card. A redundant CCS card connects to the remote matrix through the Ethernet, and to the primary CCS card through the HDLC bus.

LEDs on the front panel of the I/O card indicate Receive, Transmit, and Collision status.

The CCS I/O Redundancy Link cable serves as an independent HDLC link for redundancy between the adjacent CCS I/O cards.

> **Important!** Redundant configurations are optional. If selected, the removal of one of a pair of CCS I/O cards will not interrupt CCS system operation nor require user intervention.

Placement

The CCS I/O card resides in the rear card slot of a CSP 2090, CSP 2110, or CSP 2040 chassis directly behind the corresponding CCS card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The CCS I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.74A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

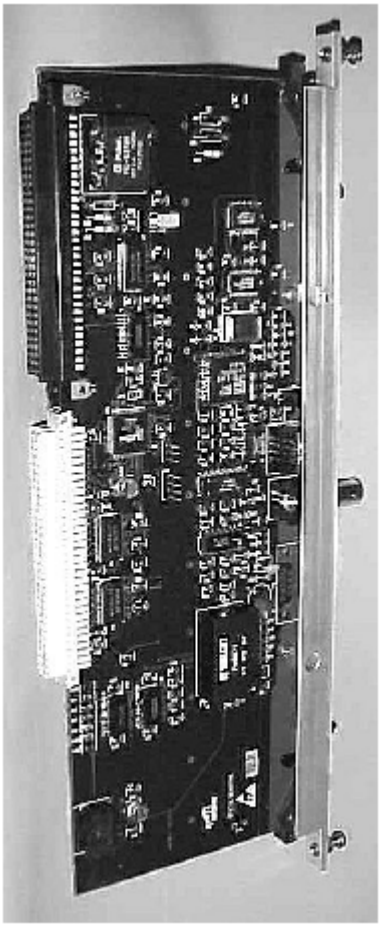
Related Products

The products related to the CCS I/O card are listed below.

Product	Model No.	RoHS Model No.
SS7 PQ Card	See SS7 PQ Card HPD	
CCS I/O Redundancy Cable	Part # 64-0123-00	Part # 164-0123-01

Front and Side Views

The front view shows the LEDs, Redundancy Link connector and Ethernet connectors.



Controls and Indicators

The table below describes the LEDs as shown in the front view of the CCS I/O card.

LEDs	Color/Status	Description
RX (Receive)	Green	Indicates Ethernet network receive activity
	Off	No activity
TX (Transmit)	Green	Indicates Ethernet network transmit activity
	Off	No activity
CD (Collision Detection)	Green	Indicates Ethernet network collision detection activity
	Off	No activity

Dialogic® CCS I/O Series 3 Card - EXS-7IO-1300/ EXS-7IO-1300R

Description

The Dialogic® Common Channel Signaling I/O Series 3 card allows you to use one of the following cards in a distributed environment on a CSP:

- SS7 Series 3 card
- ISDN Series 3 card
- IP Signaling Series 3 card

The single slot CCS I/O Series 3 card is paired with one of the above cards to support either a single 10 Base-T or 100 Base-T Ethernet connection, auto-selected.

The Common Channel Signaling card call control at the Server Node matrix communicates with the CSP Matrix Series 3 Card on remote nodes over the Ethernet via the CCS I/O Series 3 card. A redundant CCS card connects to the remote matrix through the Ethernet, and to the primary SS7 Series 3 card, ISDN Series 3 card, or IP Signaling Series 3 card through the CCS I/O Series 3 Redundancy Link cable.

The CCS I/O Series 3 Redundancy Link cable serves as an independent link for redundancy between the adjacent CCS I/O Series 3 cards.

> **Important!** Redundant configurations are optional. If selected, the removal of one of a pair of CCS I/O Series 3 cards will not interrupt CCS system operation nor require user intervention.

Placement

The CCS I/O Series 3 card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis directly behind the corresponding CCS card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The CCS I/O Series 3 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V

Electrical	Specification
Supply Current, Vcc @ 5.0V	0.74A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

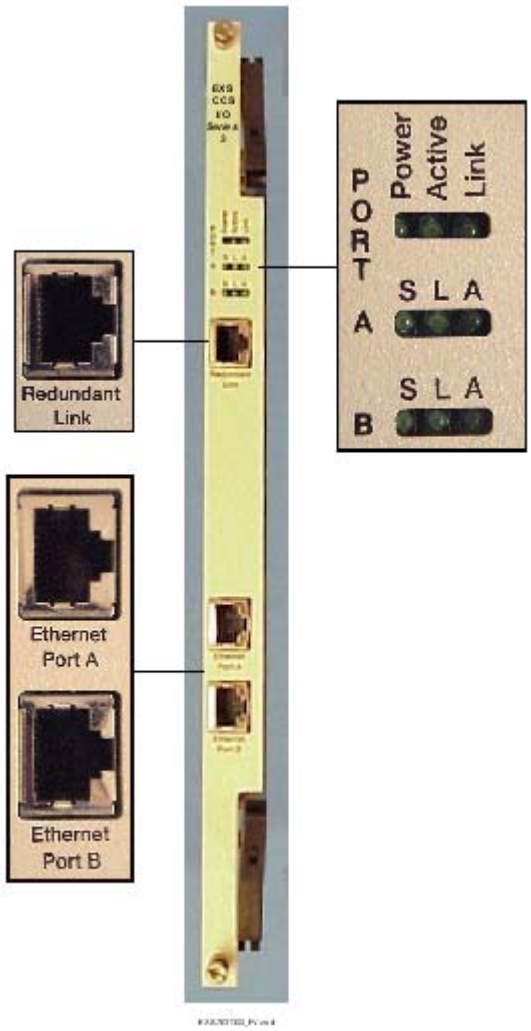
Related Products

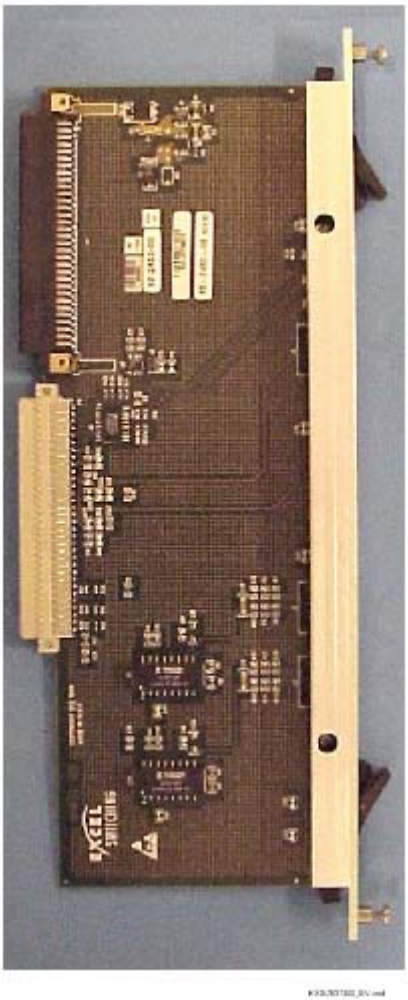
The products related to the CCS I/O Series 3 card are listed below.

Product	Model No.	RoHS Model No.
SS7 Series 3 Card	EXS-SS7-1360	EXS-SS7-1360R
ISDN Series 3 Card	EXS-PRI-1300	EXS-PRI-1300R
IP Call Server Card	EXS-SCS-1000	EXS-SCS-1000R
CCS I/O Series 3 Redundancy Cable	EXS-CBL-1000	EXS-CBL-1000R

Front and Side Views

The front view shows the LEDs, Redundancy Link connector and Ethernet connectors.





Controls and Indicators

The table below describes the LEDs as shown in the front view of the CCS I/O Series 3 card.

LEDs	Color/Status	Description
Power	Green	Power is within acceptable limits.
	Off	Power is not available or out of tolerance.
Activity	Green	CCS I/O Series 3 card is active.
	Off	CCS I/O Series 3 card is inactive.
Redundancy Link Status	Green	High speed redundant link is active.
	Off	High speed redundant link is inactive.
Port A	On (100 Base-T)	S-Speed
	On (10 Base-T)	
	On	L-Link
	Off	
	Blinking Green	A-Activity
	Off	
Port B (Reserved for future use)	On (100 Base-T)	S-Speed
	On (10 Base-T)	
	On	L-Link
	Off	
	Blinking Green	A-Activity
	Off	

CCS I/O Redundancy Cable Assembly - Part Nos. 64-0123-01/ 164-0123-01

Description

The CCS I/O Redundancy cable serves as an independent HDLC link for redundancy between the adjacent CCS I/O cards.

Specifications

The CCS I/O redundant cable assembly is designed to the following specifications.

Parameter	Specification
Length	10 in.
Connectors	DB-9 male

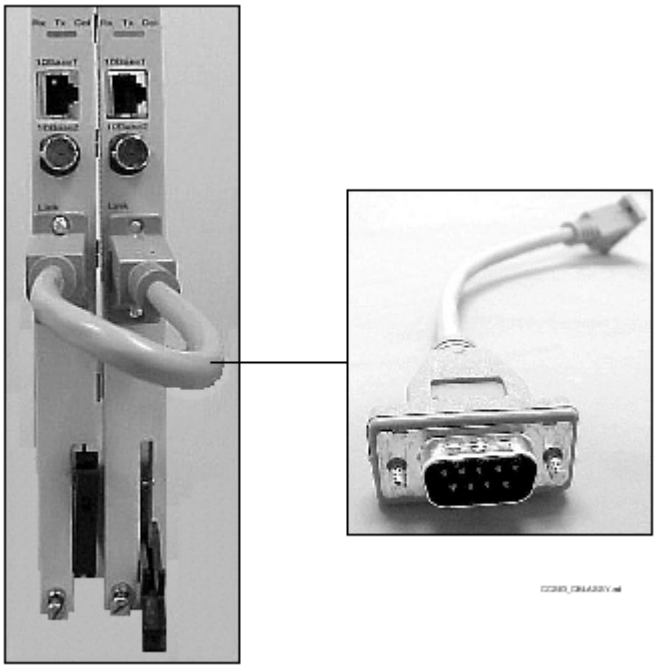
Related Product

The product related to the CCS I/O Redundancy cable assembly is listed below.

Product	Model No.	RoHS Model No.
CCS I/O Card	CSP-CCS-1001	CSP-CCS-1001R

Cable Assembly Connections

The CCS I/O Redundancy cable assembly is connected as shown in the diagram below.



CCS I/O Series 3 Red Cable - Part Nos. 64-3333-00/164-3333-00

Description

The CCS I/O Series 3 Redundancy Link cable assembly serves as an independent link for redundancy between the adjacent CCS I/O Series 3 cards using the Redundant Link connectors.

Specifications

The Redundancy Link cable is designed to the following specifications.

Parameter	Specification
Length	7 inches
Connector Types	8-Pin, RJ-45 connectors

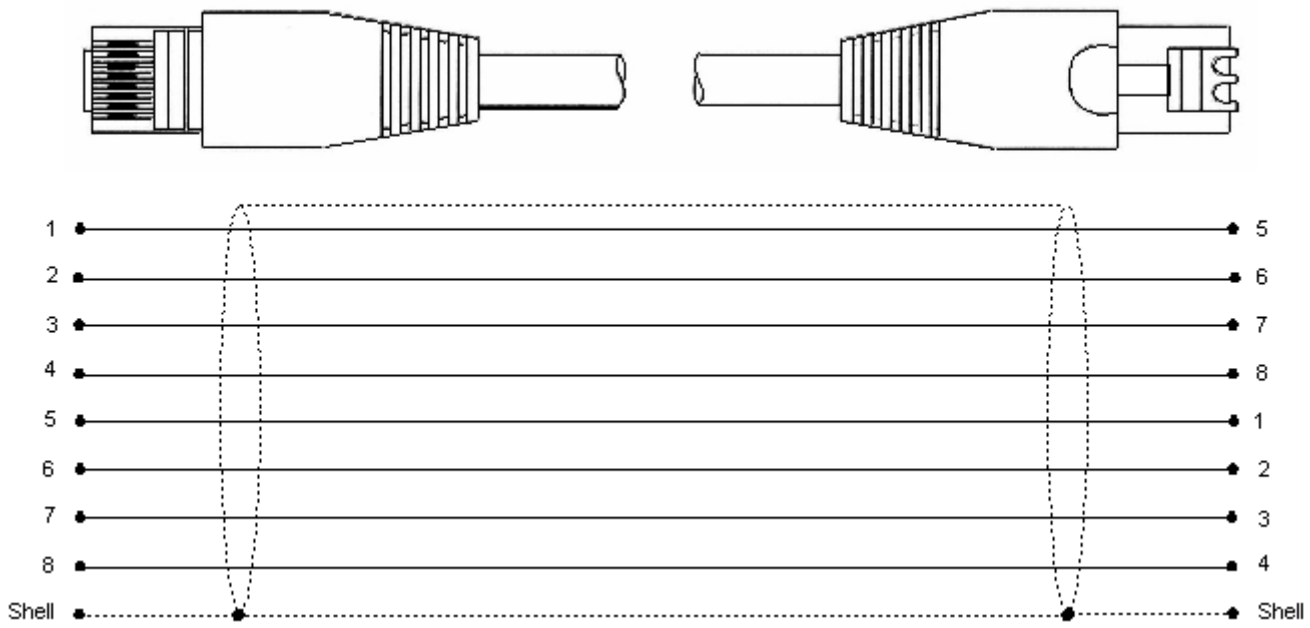
Related Products

The products related to the Redundancy Link cable are listed below.

Product	Model No.	RoHS Model No.
CCS I/O Series 3 Card	EXS-7IO-1300	EXS-7IO-1300R

Assembly Diagram and Pinouts

The Redundancy Link cable assembly and pinouts are shown below.



Dialogic® DASS2/DPNSS Card - EXS-DAS-1000

Description

The DASS2/DPNSS card (for Digital Access Signaling System2/ Digital Private Network Signaling System protocols) provides D channel packet processing and call control procedures. Both variants are similar to European ISDN Primary Rate Interface: They allow simplified Link Access Procedure (Layer 2) and call control of 30 B channels using a D channel on Timeslot 16 (30B + D) over a 64 Kbps interface.

Battery

The card has 4 Mb of battery-backed RAM and can be used in conjunction with line cards for rate conversion.

Placement

The DASS2/DPNSS card resides in the front slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The DASS2/DPNSS card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	6.70A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/minute
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/minute
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

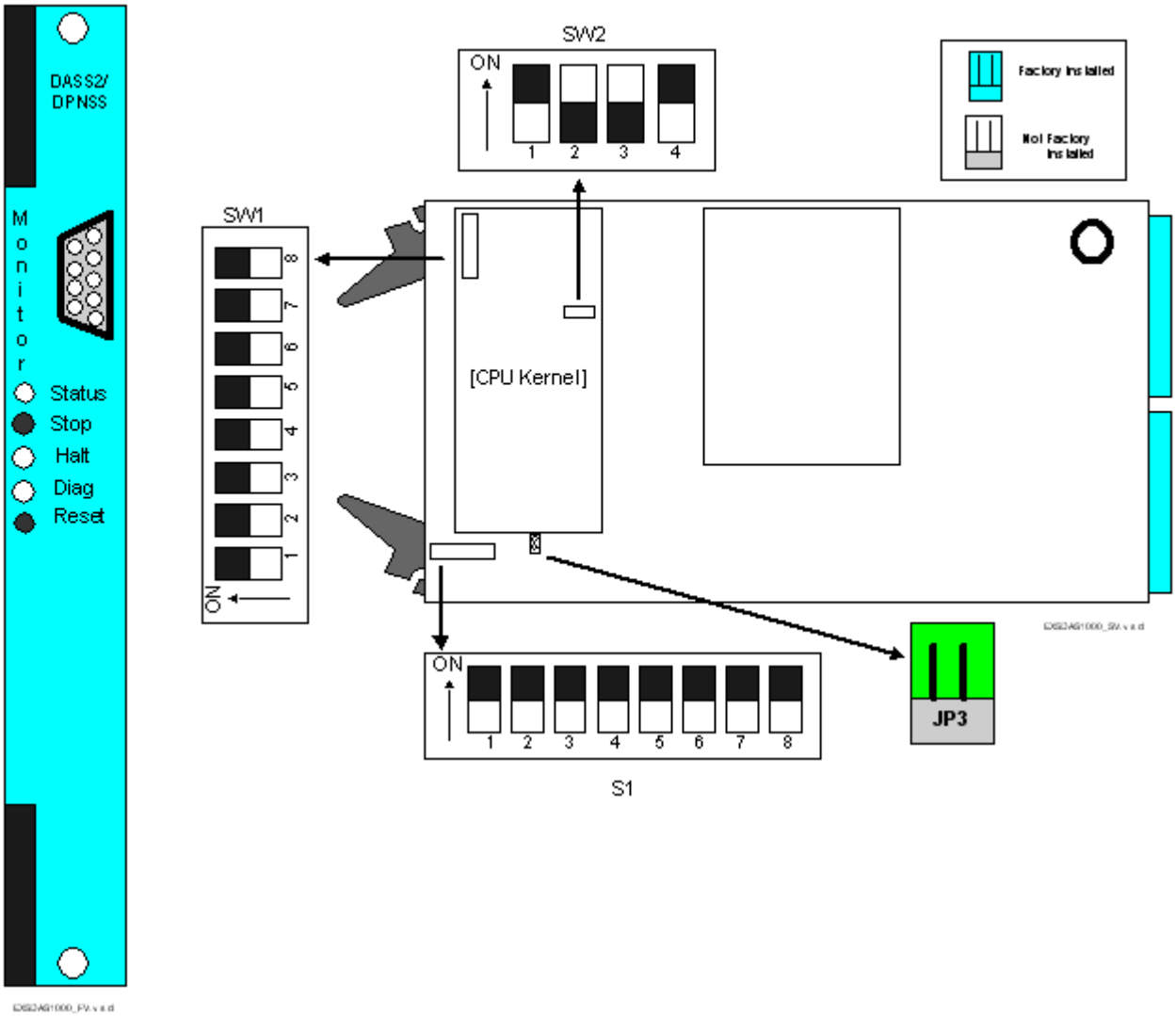
Related Products

The products related to the DASS2/DPNSS card are listed below.

Product	Model No.	RoHS Model No.
Not Applicable	Not Applicable	Not Applicable

Front and Side Views

The front and side views show the LEDs, push button switches, Monitor connector, DIP switches and jumpers.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
	Yellow	Redundancy has been configured. The card is in the standby mode.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates a hardware reset on the card. The software configuration is maintained.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	Selects 9,600 baud rate for Monitor port
	OFF	Selects 19,200 baud rate for Monitor port

Position	Setting	Function
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP3	Installed (default)	Enables battery backup
JP4	Not Installed (default)	Factory use only
JP5	Not Installed (default)	Factory use only

Dialogic® ISDN PRI Card - LNX-PRI-1100

Description

The Dialogic® ISDN PRI card provides full Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) capability. A single card manages up to 32 D channels and associated B channels on T1 and E1 spans.

You achieve redundancy by installing a pair of ISDN PRI cards and one ISDN PRI Redundant I/O.

Battery

The card has 4 Mb of battery-backed RAM and can be used in conjunction with line cards for rate conversion.

Placement

The ISDN PRI card resides in the front slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The ISDN PRI card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	2.84A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

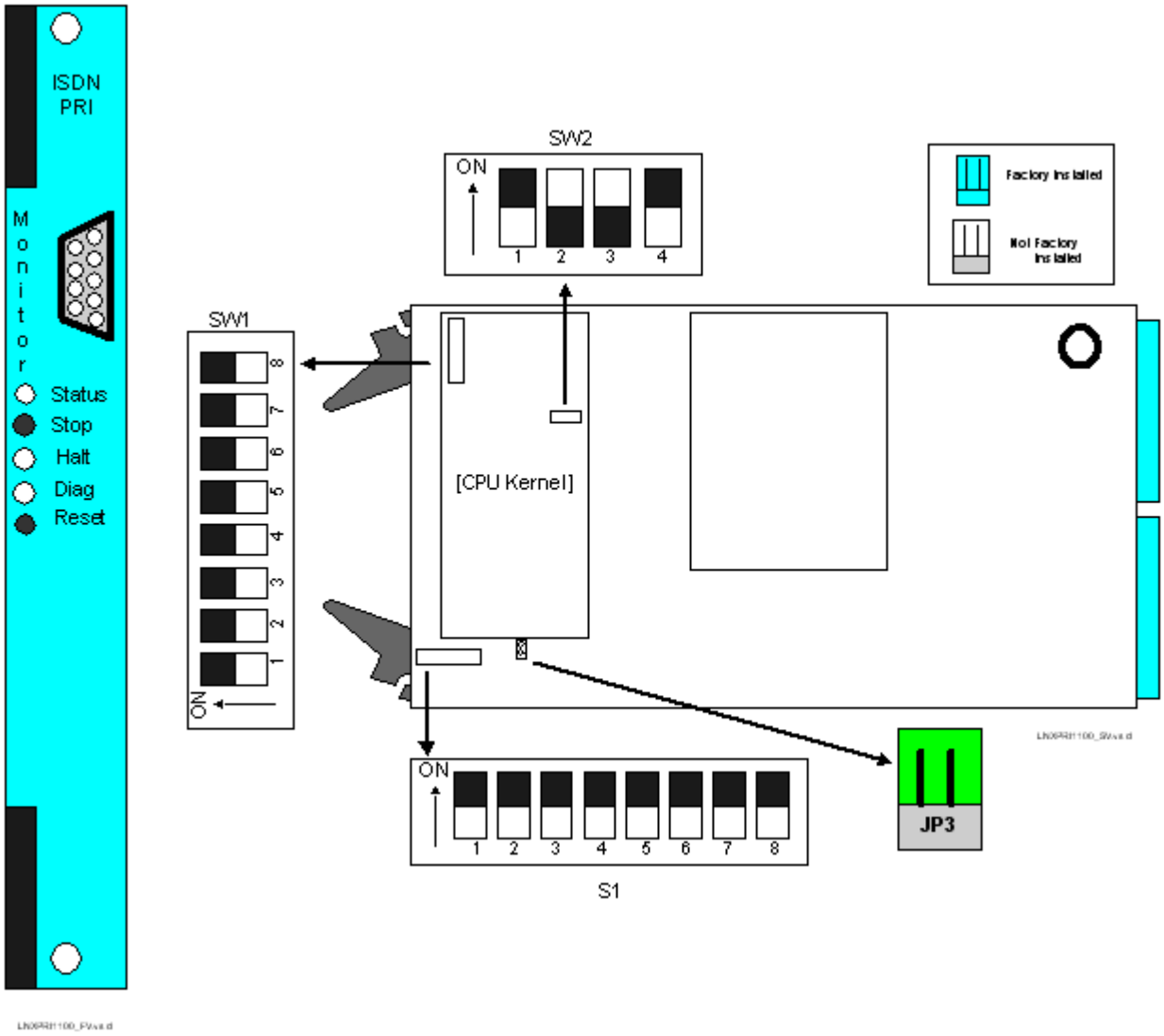
Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/minute
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/minute
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the ISDN PRI card are listed below.

Product	Model No.	RoHS Model No.
ISDN PRI Red I/O Card	LNX-PIO-1000	Not Applicable

Front and Side Views The front and side views show the LEDs, push button switches, Monitor connector, DIP switches and jumpers.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the ISDN PRI card.

LED/Push Button	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
	Yellow	Redundancy has been configured. The card is in the standby mode.
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates a hardware reset on the card. The software configuration is maintained.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	Selects 9,600 baud rate for Monitor port
	OFF	Selects 19,200 baud rate for Monitor port

Position	Setting	Function
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP3	Installed (default)	Enables battery backup
JP4	Not Installed (default)	Factory use only
JP5	Not Installed (default)	Factory use only

Dialogic® ISDN PRI Redundant I/O Card - LNX-PIO-1000

Description

The Dialogic® ISDN PRI Redundant I/O card is used with two ISDN PRI cards. It provides complete redundancy by replicating all 32 D channels on a standby card.

> **Important!** Only one I/O card is required for each pair of ISDN PRI cards.

The I/O card has no external connections. All of its features and functionality are internal to the system. A mirror image of the active card's primary and secondary D channels is copied to the standby card.

Active or Switchover Mode

If the active card fails or if you remove it, the standby card takes over and manages call processing. All calls in a connected state are retained while others are purged. If you reset the active card, it switches over to standby.

Placement

The I/O card resides in the rear card slots of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The ISDN PRI Redundant I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	0.32A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

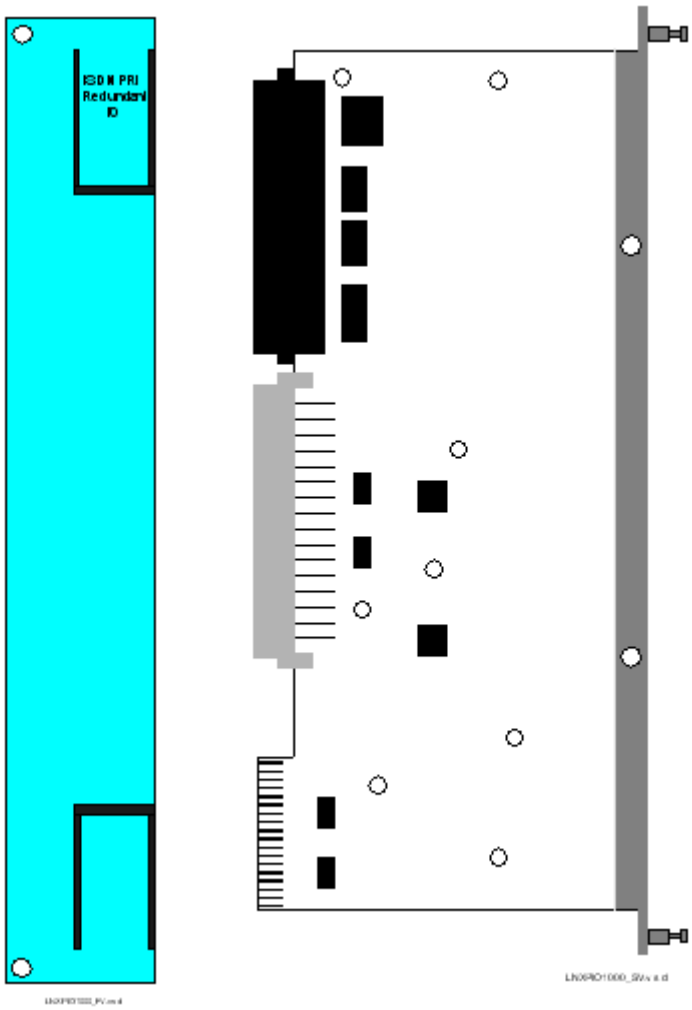
Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the ISDN PRI Redundant I/O card are listed below.

Product	Model No.	RoHS Model No.
ISDN PRI Card	LNX-PRI-1100	Not Applicable

Front and Side Views The front and side views show the connectors.



Dialogic® ISDN Series 3 Card - EXS-PRI-1300/EXS-PRI-1300R

Description

The Dialogic® ISDN Series 3 card provides ISDN services for the CSP fully integrating switching and advanced signaling applications. The ISDN Series 3 card enables the CSP to act as a Signaling Point (SP) in the ISDN network architecture.

Microprocessor

The ISDN Series 3 card is a Power PC-based ISDN controller card.

Redundancy

You achieve redundancy by installing, connecting and configuring a pair of ISDN Series 3 cards. Refer to the CCS I/O Series 3 card *Hardware Product Description* for more information on redundancy.

Placement

Each CSP 2090, CSP 2110 or CSP 2040 chassis can accommodate ISDN Series 3 cards which reside in the front line card slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The ISDN Series 3 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	5.5A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the ISDN Series 3 card are listed below.

Product	Model No.	Model No.
CCS I/O Series 3 Card	EXS-7IO-1300	EXS-7IO-1300
CCS I/O Series 3 Redundancy Cable	EXS-CBL-1000	EXS-CBL-1000R

Front View

The front view shows the LEDs, push button switches and Monitor connector.

Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly. This LED is normally OFF.
	Red	Redundancy has been configured.
	Off	No diagnostics running
Status	Green	The card is connected to the system buses.
	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Off	Not applicable.
Halt	Green	The CPU is running.
	Red	The CPU has halted. This LED is red briefly during card reset.
	Off	CPU hard reset
Power	Green	Good power
	Off	Bad power
Push Buttons	**Description**	
Stop	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Stop and S Reset together	Initiates a Hard Reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A Hard Reset also occurs when the Watchdog times out twice in a row.	
S Reset	Initiates a Soft Reset. The code running on the processor is reset, and the Flash is put into a read state.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	The Monitor port setting is 19200 baud.
	OFF	The Monitor port setting is 19200 baud.
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link, Auto-Negotiate Mode (Default)
	OFF**	Ethernet Link, Force 100 Mbps/Full Duplex Mode
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

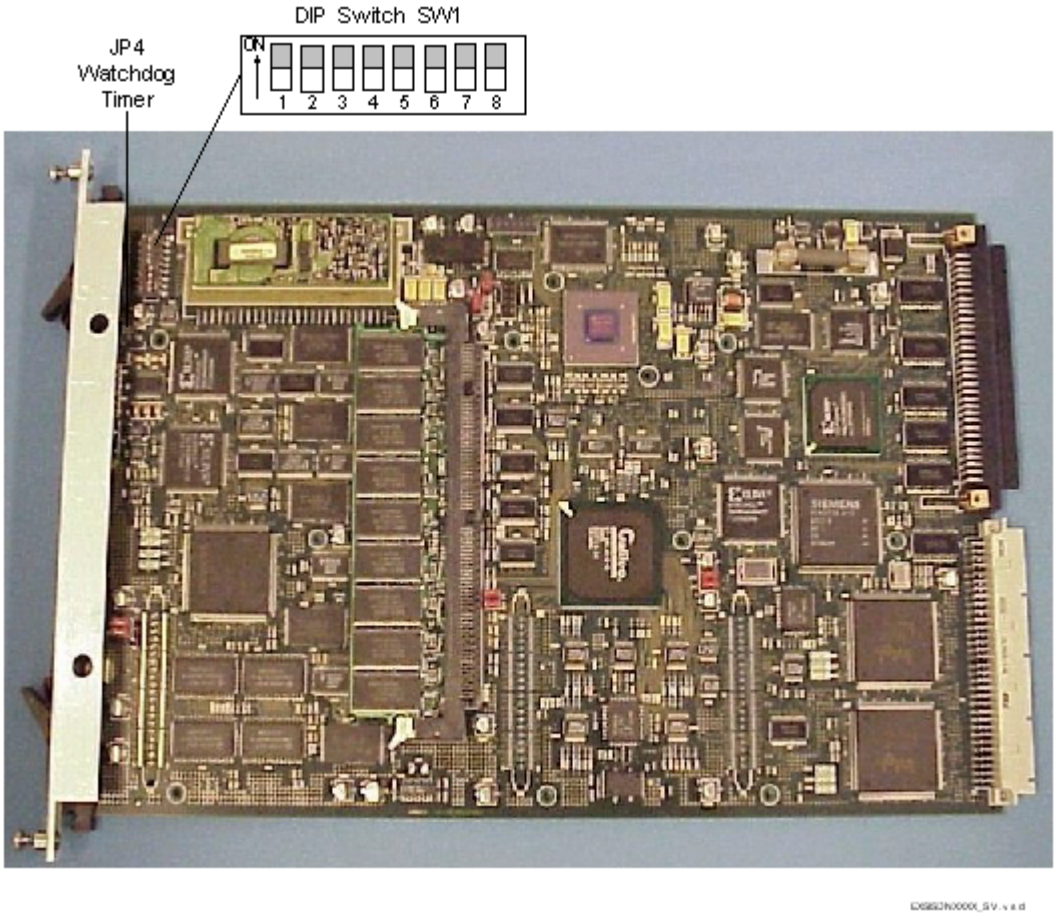
Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Installed (default)	Factory use only
JP2	Installed (default)	Factory use only
JP3	Installed (default)	Factory use only
JP4	Not Installed (default)	Hardware Watchdog Timer enabled
JP5	Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only

Jumper	Setting	Description
JP8	Installed (default)	Factory use only
JP9	Installed (default)	Factory use only
JP10	Installed (default)	Factory use only
JP11	Installed (default)	Factory use only

Side View This view shows DIP switch SW1 and jumper JP4.



Dialogic® SS7 Multi-Protocol I/O Card - EXS-7IC-1000

Description

The Dialogic® SS7 Multi-Protocol (M-P) I/O card provides a V.35 interface to the CSP for SS7 signaling links. This card resides in either a CSP 2090, CSP 2110 or CSP 2040 chassis and converts V.35 into PCM data. The maximum number of SS7 MP I/O cards per system is four (16 signaling links).

Up to four CSP 2090 channels can be connected to the V.35 interface via this card. It is equipped with DB-25 connectors (see pinouts for the connectors supplied in this document). The SS7 MP I/O handles 64/56/48 Kbps rates. Each of the four ports are individually configurable.

Important! The SS7 M-P I/O card can be placed in any I/O slot EXCEPT behind any card that has an associated I/O card. See the *Hardware Installation and Maintenance Guide* for installation information.

Placement

The SS7 M-P I/O card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The SS7 M-P I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	4.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

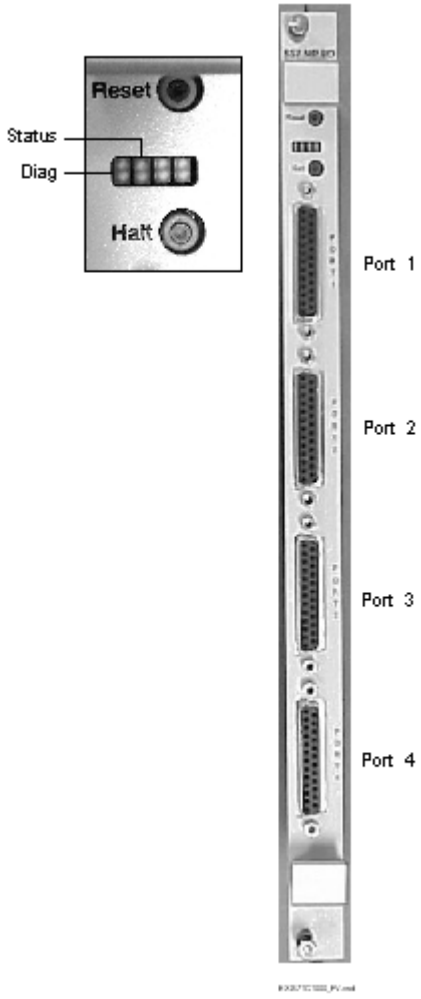
Related Products

The products related to the SS7 M-P I/O card are listed below.

Product	Model No.	RoHS Model No.
Not Applicable	Not Applicable	Not Applicable

Front View

The front view shows the LEDs, Reset push-button switch, Halt push-button switch, and connectors.



Controls and Indicators

The table below describes the LEDs as shown on the front view of the SS7 M-P I/O card.

LEDs	Color/Status	Description
Status	Red	The Halt button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
Diag	Red	The CPU has halted. The LED is red briefly during a card reset.
	Green	The CPU is running.
Push-Button	**Description**	
Reset	Initiates CPU reset on the card. The software configuration is maintained.	
Halt	Disconnects card from the system buses.	

Port Pinouts

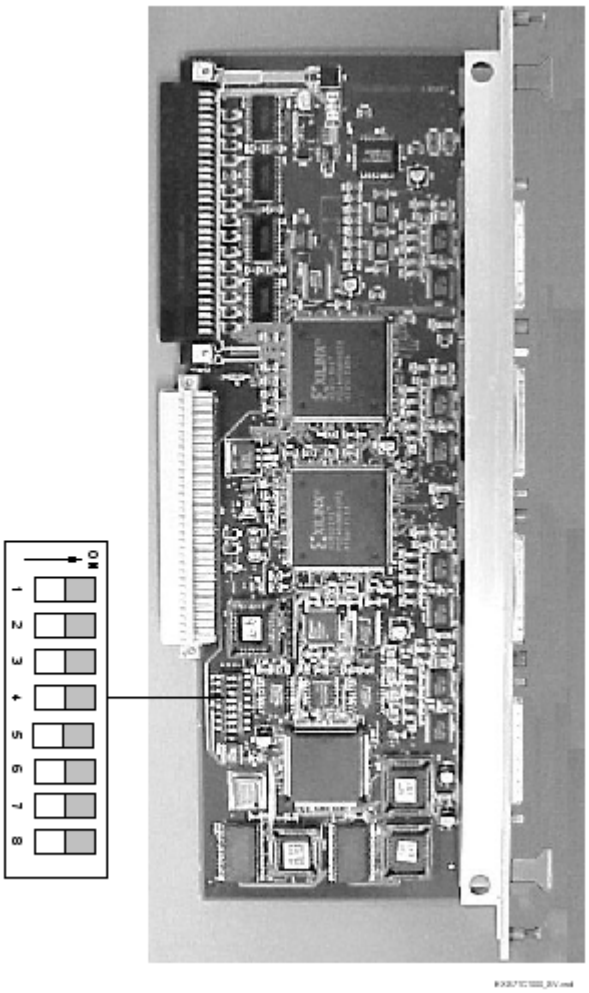
The tables below provide the Port 1 - 4 pinouts.

V.35	
Pins	**Signal Name**
1	Shield
2	TXD A
3	RXD A
4	RTS
5	CTS
6	DSR
7	Signal GND
8	DCD
9	RCLK B
10	
11	
12	TCLK B

V.35	
Pins	**Signal Name**
13	
14	TXD B
15	TCLKA
16	RXD B
17	RCLK A
18	LL
19	
20	DTR
21	
22	
23	
24	
25	

Side View

The side view shows the DIP switch S1 and jumpers.



DIP Switch S1

The table below describes the switch settings. The side view shows DIP switch S1. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables debug 1
	OFF	Enables debug 1
2	ON*	Selects 9600 baud for debug port
	OFF	Selects 19200 baud for debug port
3	ON*	Disables debug 2
	OFF	Enables debug 2

Position	Setting	Function
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Installed (default)	Hardware Watchdog Timer enabled
JP3	Not Installed (default)	Factory use only

Dialogic® Signaling System #7 PQ Card - See Model Numbers

Description

The Dialogic® Signaling System #7 PQ Card provides Signaling System 7 services for the CSP fully integrating switching and advanced signaling applications. The SS7 PQ card enables the CSP to act as a Signaling Point (SP) in the SS7 network architecture. The SS7 PQ card is available in 2, 4, 6, 8, 10, 12, 14, and 16-link versions.

Microprocessor

The SS7 PQ is a Power QUICC-based SS7 controller card.

Redundancy

You achieve redundancy by installing, connecting and configuring a pair of SS7 PQ cards. See the *API Developer's Guide: Common Channel Signaling* for information about SS7 software configuration. See also the "CCS I/O Redundancy Cable Installation" in the *Hardware Installation and Maintenance Guide*.

Placement

Each CSP 2090, CSP 2110 or CSP 2040 chassis can accommodate SS7 PQ cards which reside in the front slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The SS7 PQ card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	2.84A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

SS7 PQ Card Models

The available SS7 PQ card models are listed below.

Product	Model No.	RoHS Model No.
SS7 Line Card, 2 Link	CSP-SS7-1022	CSP-SS7-1022R
SS7 Line Card, 4 Link	CSP-SS7-1042	CSP-SS7-1042R
SS7 Line Card, 6 Link	CSP-SS7-1062	CSP-SS7-1062R
SS7 Line Card, 8 Link	CSP-SS7-1082	CSP-SS7-1082R
SS7 Line Card, 10 Link	CSP-SS7-1102	CSP-SS7-1102R
SS7 Line Card, 12 Link	CSP-SS7-1122	CSP-SS7-1122R
SS7 Line Card, 14 Link	CSP-SS7-1142	CSP-SS7-1142R
SS7 Line Card, 16 Link	CSP-SS7-1162	CSP-SS7-1162R

SS7 PQ Card Upgrade Licenses

The available SS7 PQ card upgrade licenses are listed below.

Product	Model No.
License SS7 2 Link Upgrade	EXS-SLC-1200
License SS7 4 Link Upgrade	EXS-SLC-1400
License SS7 6 Link Upgrade	EXS-SLC-1600
License SS7 8 Link Upgrade	EXS-SLC-1800
License SS7 10 Link Upgrade	EXS-SLC-1010
License SS7 12 Link Upgrade	EXS-SLC-1012
License SS7 14 Link Upgrade	EXS-SLC-1014

Related Products

The products related to the SS7 PQ card are listed below.

Product	Model No.	RoHS Model No.
CCS I/O Card	EXS-CCS-1000	EXS-CCS-1000R
CCS I/O Redundancy Cable	Part # 64-0123-00	Part # 164-0123-01
Debug Cable, MINI-DIN to DB-9	Part # 64-0046-00	Part # 164-0046-00

Front View

The front view shows the LEDs, push button switches and Monitor connector.

Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Status	Green	The card is connected to the system buses.
	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Yellow	Redundancy has been configured. The card is in the standby mode.
	Off	The card is resetting.
Halt	Green	The CPU is running.
	Red	The CPU has halted. This LED is red briefly during card reset.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly. This LED is normally OFF.
	Red	Redundancy has been configured. The card is in the standby mode.
Push Buttons	**Description**	
Stop	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset	Initiates a hardware reset on the card. The software configuration is maintained.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	Selects 9600 baud for Monitor port
	OFF	Selects 19200 baud for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

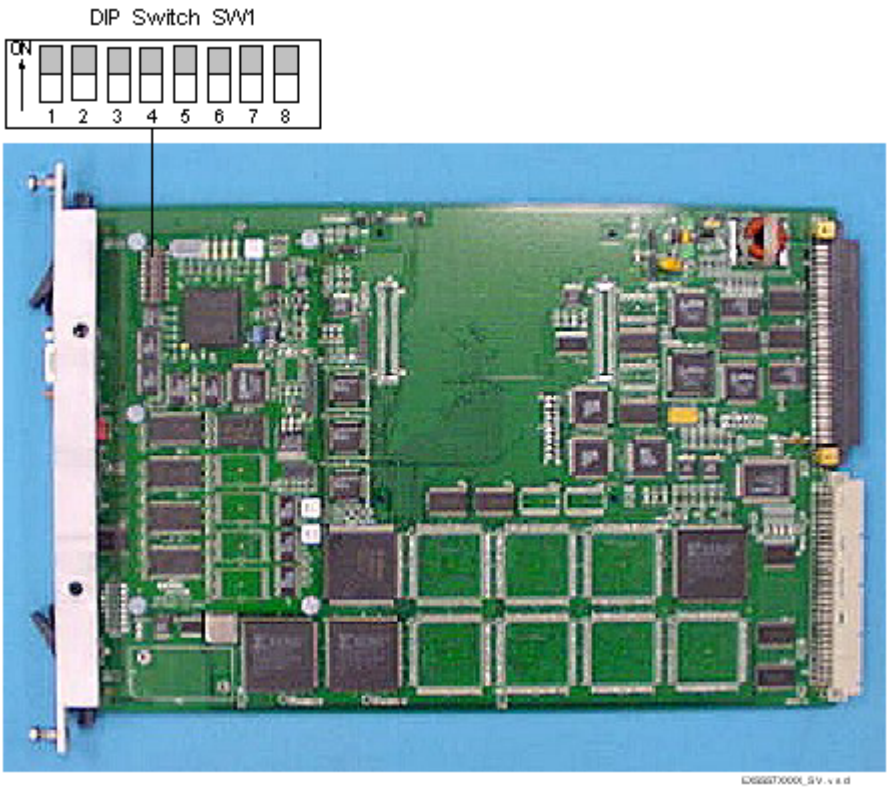
Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
The following jumpers are located on the main board.		
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP4	Not Installed (default)	Hardware Watchdog Timer enabled
JP5	Not Installed (default)	Factory use only
JP8	Not Installed (default)	Factory use only
JP9	Not Installed (default)	Factory use only
The following jumpers are located on the CPU module.		

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP4	Not Installed (default)	Factory use only

Side View The side view shows DIP switch SW1 and jumper JP4.



Dialogic® Signaling System #7 Series 3 Card - See Model Numbers

Description

The Dialogic® Signaling System #7 Series 3 card provides Signaling System 7 services for the CSP fully integrating switching and advanced signaling applications. The SS7 Series 3 card enables the CSP to act as a Signaling Point (SP) in the SS7 network architecture.

Microprocessor

The SS7 Series 3 card is a Power PC-based SS7 controller card.

Redundancy

You achieve redundancy by installing, connecting and configuring a pair of SS7 Series 3 cards. Refer to the CCS I/O Series 3 card *Hardware Product Description* for more information on redundancy.

Placement

Each CSP 2090, CSP 2110 or CSP 2040 chassis can accommodate SS7 Series 3 cards which reside in the front slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The SS7 Series 3 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	4.73A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

SS7 Series 3 Card Models

The available SS7 Series 3 card models are listed below.

Product	Model No.	RoHS Model No.
SS7 Line Card, 2 Link	CSP-SS7-1302	CSP-SS7-1302R
SS7 Line Card, 4 Link	CSP-SS7-1304	CSP-SS7-1304R
SS7 Line Card, 6 Link	CSP-SS7-1306	CSP-SS7-1306R
SS7 Line Card, 8 Link	CSP-SS7-1308	CSP-SS7-1308R
SS7 Line Card, 10 Link	CSP-SS7-1310	CSP-SS7-1310R
SS7 Line Card, 12 Link	CSP-SS7-1320	CSP-SS7-1320R
SS7 Line Card, 14 Link	CSP-SS7-1340	CSP-SS7-1340R
SS7 Line Card, 16 Link	CSP-SS7-1360	CSP-SS7-1360R

Related Products

The products related to the SS7 Series 3 card are listed below.

Product	Model No.	Model No.
CCS I/O Series 3 Card	EXS-7IO-1300	EXS-7IO-1300R
CCS I/O Series 3 Redundancy Cable	Part No. 64-3333-00	Part No. 64-3333-00

Front View The front view shows the LEDs, push button switches and Monitor connector.

Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly. This LED is normally OFF.
	Red	Redundancy has been configured.
	Off	No diagnostics running
Status	Green	The card is connected to the system buses.
	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Off	Not applicable.
Halt	Green	The CPU is running.
	Red	The CPU has halted. This LED is red briefly during card reset.
	Off	CPU hard reset
Power	Green	Good power
	Off	Bad power
Push Buttons	**Description**	
Stop	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Stop and S Reset together	Initiates a Hard Reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A Hard Reset also occurs when the Watchdog times out twice in a row.	
S Reset	Initiates a Soft Reset. The code running on the processor is reset, and the Flash is put into a read state.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	The Monitor port setting is 19200 baud.
	OFF	The Monitor port setting is 19200 baud.
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link, Auto-Negotiate Mode (Default)
	OFF**	Ethernet Link, Force 100 Mbps/Full Duplex Mode
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

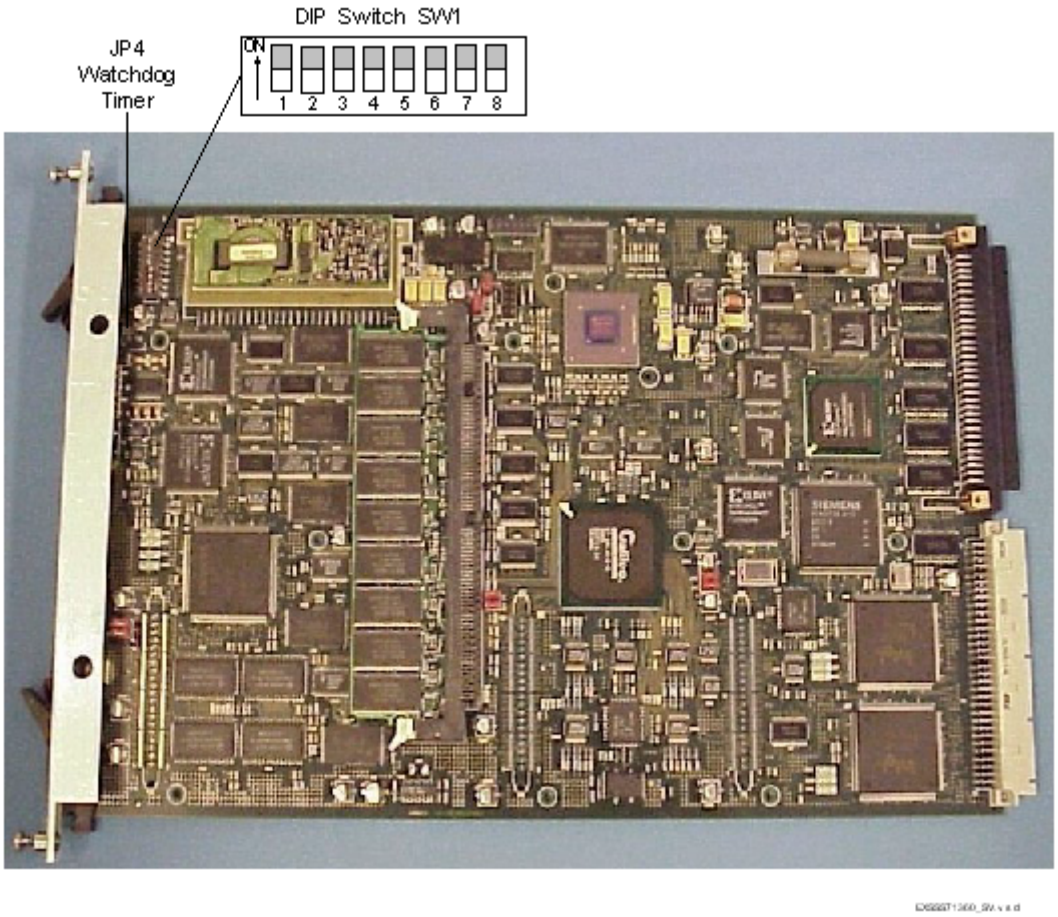
Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Installed (default)	Factory use only
JP2	Installed (default)	Factory use only
JP3	Installed (default)	Factory use only
JP4	Not Installed (default)	Hardware Watchdog Timer enabled
JP5	Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only

Jumper	Setting	Description
JP8	Installed (default)	Factory use only
JP9	Installed (default)	Factory use only
JP10	Installed (default)	Factory use only
JP11	Installed (default)	Factory use only

Side View The side view shows DIP switch SW1 and jumper JP4.



5 Internet Protocol Cards

Purpose This chapter provides descriptions of the Internet Protocol (IP) cards.

Compliance The Internet Protocol cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950-1

Dialogic® IP Signaling Series 3 Card - EXS-SCS-1001/EXS-SCS-1001R

Description

The Dialogic® IP Signaling Series 3 card provides call server services for the Converged Services Platform (CSP) fully integrating switching and call processing applications. The IP Signaling Series 3 card enables the CSP to communicate with H.323 gateways in the call server network architecture.

Microprocessor

The IP Signaling Series 3 card is a Power PC-based controller card.

Placement

Each CSP 2090, CSP 2110 or CSP 2040 chassis accommodate IP Signaling Series 3 cards which reside in the front line card slots.

I/O

The CCS I/O Series 3 card is the I/O card for the IP Signaling Series 3 card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The IP Signaling Series 3 card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	5.5A (typical)

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the IP Signaling Series 3 card are listed below.

Product	Model No.	Ro HS Model No.
CCS I/O Series 3 Card	EXS-7IO-1300	EXS-7IO-1300R

Front View

The front view shows the LEDs, push button switches and Monitor connector.

Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly. This LED is normally OFF.
	Red	Redundancy has been configured.
	Off	No diagnostics running
Status	Green	The card is connected to the system buses.
	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Off	Not applicable.
Halt	Green	The CPU is running.
	Red	The CPU has halted. This LED is red briefly during card reset.
	Off	CPU hard reset
Power	Green	Good power
	Off	Bad power
Push Buttons	**Description**	
Stop	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Stop and S Reset together	Initiates a Hard Reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A Hard Reset also occurs when the Watchdog times out twice in a row.	
S Reset	Initiates a Soft Reset. The code running on the processor is reset, and the Flash is put into a read state.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode
2	ON*	The Monitor port setting is 19200 baud and is not selectable.
	OFF	Reserved
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link, Auto-Negotiate Mode (Default)
	OFF**	Ethernet Link, Force 100 Mbps/Full Duplex Mode
5	ON*	Disables Layer 5
	OFF	Enables Layer 5
6	ON	Reserved
	OFF*	API
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	If RARP and BOOTP can not obtain an IP address, the static IP address will be used.
	OFF***	If RARP and BOOTP can not obtain an IP address, the static IP address will not be used.

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.
*** Enables No Static IP Address feature.

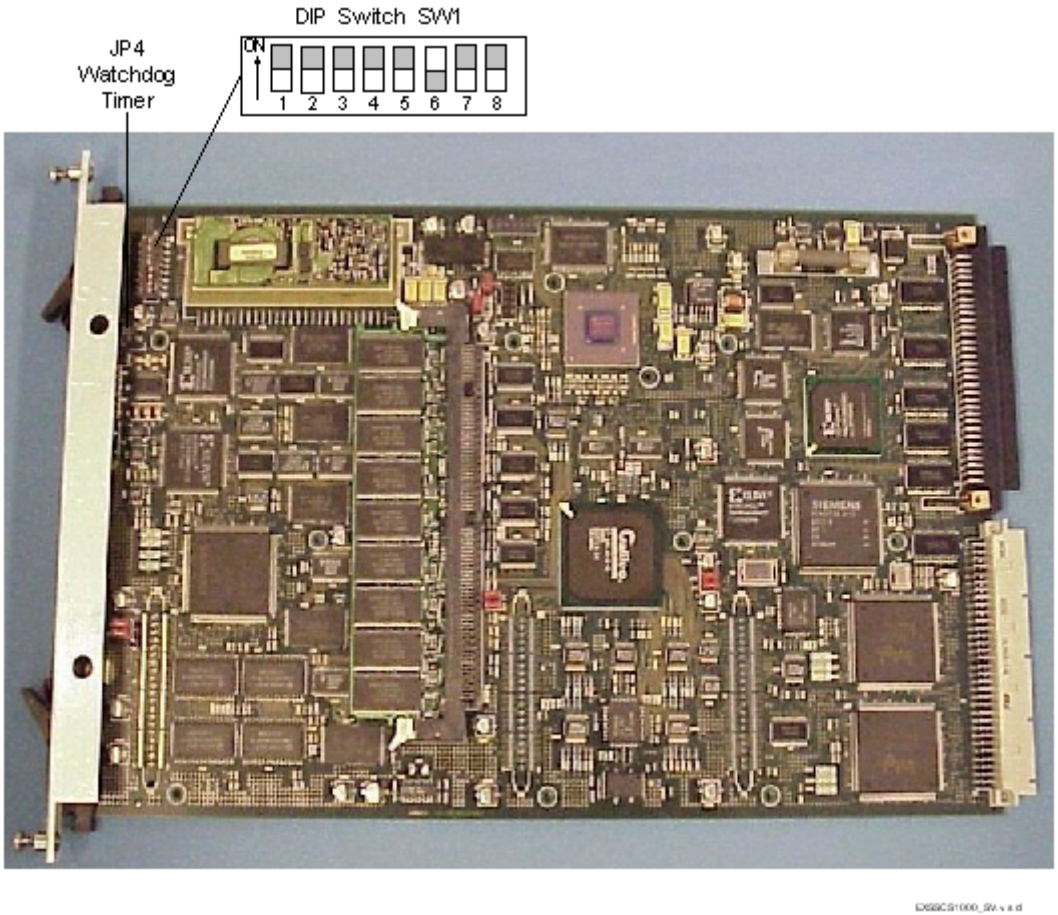
Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Installed (default)	Factory use only
JP2	Installed (default)	Factory use only
JP3	Installed (default)	Factory use only
JP4	Not Installed (default)	Hardware Watchdog Timer enabled

Jumper	Setting	Description
JP5	Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only
JP8	Installed (default)	Factory use only
JP9	Installed (default)	Factory use only
JP10	Installed (default)	Factory use only
JP11	Installed (default)	Factory use only

Side View The side view shows DIP switch SW1 and jumper JP4.



VDAC-ONE Card - See Model Numbers

Description

The Voice Data Access Concentrator (VDAC-ONE) card performs two-way conversion between circuit-switched data and packet-switched Ethernet data and supports packetized voice applications.

Microprocessor

The main board has a PowerQUICC 860 processor, with 64 MB of external synchronous SDRAM and 1 MB of Flash memory. A fully-populated VDAC-ONE card has a total of 37 processors. Only the PowerQUICC 860 communicates with the Matrix/CPU card.

Time Division Multiplex

The main board has its own Time Division Multiplex (TDM) controller, which transfers data between a dedicated Line-to-Switch Data (LSD) bus and the Digital Signal Processors (DSPs) on the card.

Ethernet Switch

It also has an Ethernet switch with eight 10 MB ports and two 100 Mb ports that pass through the midplane to a VDAC-ONE I/O card. Dedicated, full duplex Ethernet connections run from the Ethernet switch to the PowerQUICC 850 on each VoIP module.

VoIP Modules

The main board can hold up to four VoIP modules, each of which has its own PowerQUICC 850 processor and its own IP Address. The PowerQUICC 850 manages the RTP/RTCP packets, as well as the DSPs on the local VoIP module. The PowerQUICC 850 has 16 MB of SDRAM, with 1 MB in Flash memory.

Each VoIP module can hold up to eight DSPs. Each DSP has its own serial link for PCM data, and 64K x 16 of SDRAM. A TDM switch allows data transfer between the DSPs and the TDM bus. Each DSP supports five simultaneous voice channels, so a VoIP module (with eight DSPs) can support 40 channels. A fully-populated card (with 32 DSPs) can support a total of 160 channels.

N+1 Redundancy

The VDAC-ONE card uses resource pooling, and does not support true N+1 redundancy.

Remote Access Server Support

The VDAC-ONE card does not support the Remote Access Server (RAS).

Placement

Each CSP 2090, CSP 2110 or CSP 2040 chassis accommodate VDAC-ONE cards which reside in the front slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The VDAC-ONE card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	6.30A (typical) with four modules
	2.56A (typical) with no modules

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

VDAC-ONE Card Models

The available VDAC-ONE card models are listed below.

Product	Model No.	RoHS Model No.
VDAC-ONE with (2) VoIP Modules	EXS-VDC-1023	EXS-VDC-1023R

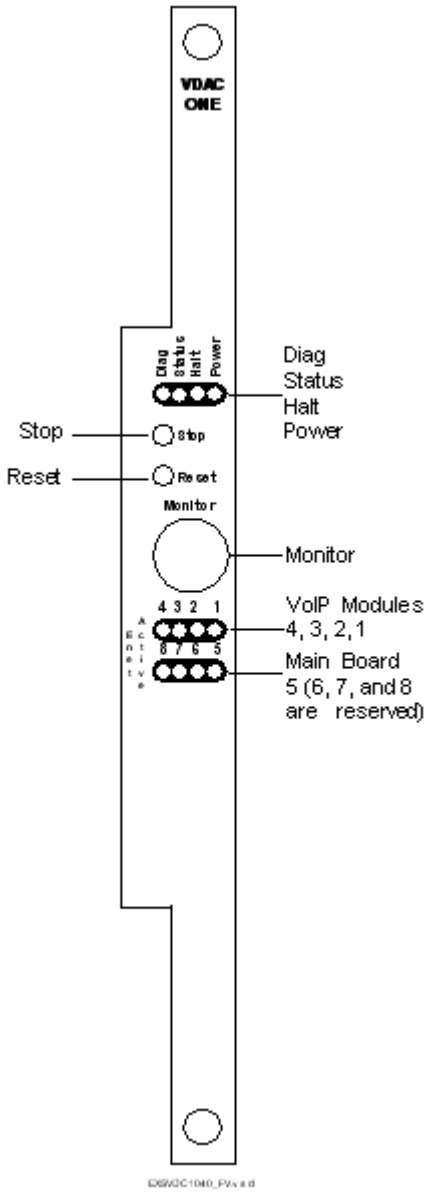
Product	Model No.	RoHS Model No.
VDAC-ONE with (4) VoIP Modules	EXS-VDC-1043	EXS-VDC-1043R

Related Products

The products related to the VDAC-ONE card are listed below.

Product	Model No.	RoHS Model No.
VDAC I/O Card	EXS-VIO-1000	EXS-VIO-1000R

Front View The front view shows the LEDs, push button switches and Monitor connector.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly. This LED is normally OFF.
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Power	Red	Upon insertion
	Green	The card is In Service.
	Off	The card is Out Of Service.
Active Enet LEDs	**Color/Status**	**Description**
1 VoIP Module 1	Steady Green	Default
	Flashing Green	Normal Activity
2 VoIP Module 2	Steady Green	Default
	Flashing Green	Normal Activity
3 VoIP Module 3	Steady Green	Default
	Flashing Green	Normal Activity
4 VoIP Module 4	Steady Green	Default
	Flashing Green	Normal Activity
5 Main Board	Steady Green	Default
	Flashing Green	Normal Activity

LED	Color/Status	Description
6 Reserved		
7 Reserved		
8 Reserved		

Push Button	Description	
Stop	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Stop and Reset together	Initiates a Hard Reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A Hard Reset also occurs when the Watchdog times out twice in a row.	
Reset	Initiates a Soft Reset. The code running on the processor is reset, and the Flash is put into a read state.	

DIP Switch 1 on Main Board

The table below describes the DIP switch 1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON	Selects 9600 baud for Monitor port
	OFF*	Selects 19200 baud for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON	Reserved, normally should be ON
	OFF*	Reserved, normally should be OFF

Position	Setting	Function
8	ON	Reserved, normally should be ON
	OFF*	Reserved, normally should be OFF

DIP Switch 1 on VoIP Modules

The table below describes the DIP switch 1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

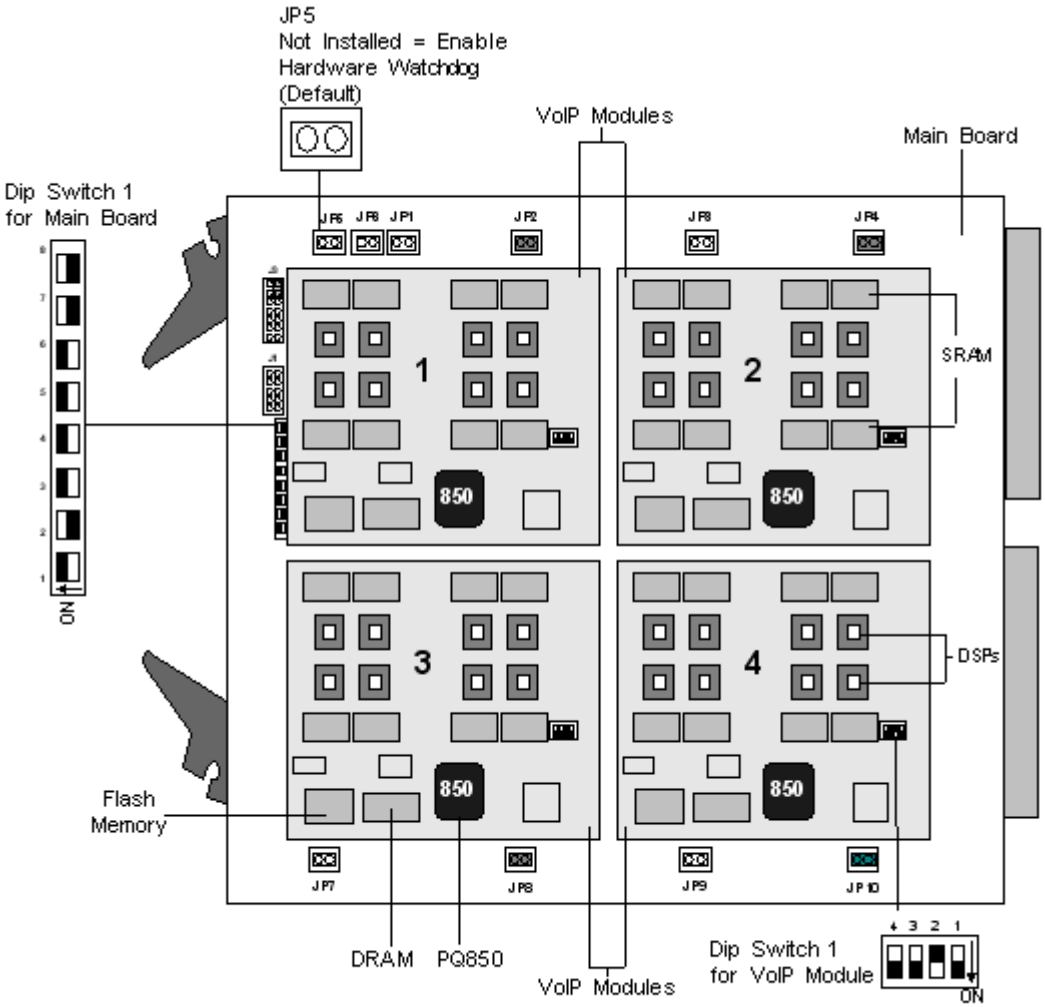
Position	Setting	Function
1	ON*	Disables Debug Printing
	OFF	Enables Debug Printing
2	ON	Reserved
	OFF*	Reserved, normally should be OFF.
3	ON*	Disables Debug Mode
	OFF	Enables Debug Mode
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Installed (default)	Factory use only
JP3	Not Installed (default)	Factory use only
JP4	Installed (default)	Factory use only
JP5	Not Installed (default)	Hardware Watchdog Timer enabled
JP6	Not Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only
JP8	Installed (default)	Factory use only
JP9	Not Installed (default)	Factory use only
JP10	Installed (default)	Factory use only
J1	Not Installed (default)	Factory use only
J3	Installed (default)	Factory use only

Side View The side view shows the DIP switches and jumpers.



Top of Main Board, with four VoIP Modules. The PQ860 is hidden below a VoIP Module.

VDAC I/O Card - EXS-VIO-1000/EXS-VIO-1000R

Description

The Voice Data Access Concentrator (VDAC) I/O card is required to operate the VDAC-ONE card. The VDAC-ONE line card connects to the I/O card through the chassis midplane.

This card connects to the host computer through Ethernet connectors NET1 and NET2. The NET2 connector is set up as a as redundant port to NET1. This card supports both 10Base-T and 100Base-T and automatically selects the link that is present. Each connector must be connected to a separate external device (Ethernet switch, router, etc.).

Placement

The VDAC I/O card resides in the rear card slot of a CSP 2090, CSP 2110 or CSP 2040 chassis directly behind the corresponding VDAC-ONE card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The VDAC I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.79A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

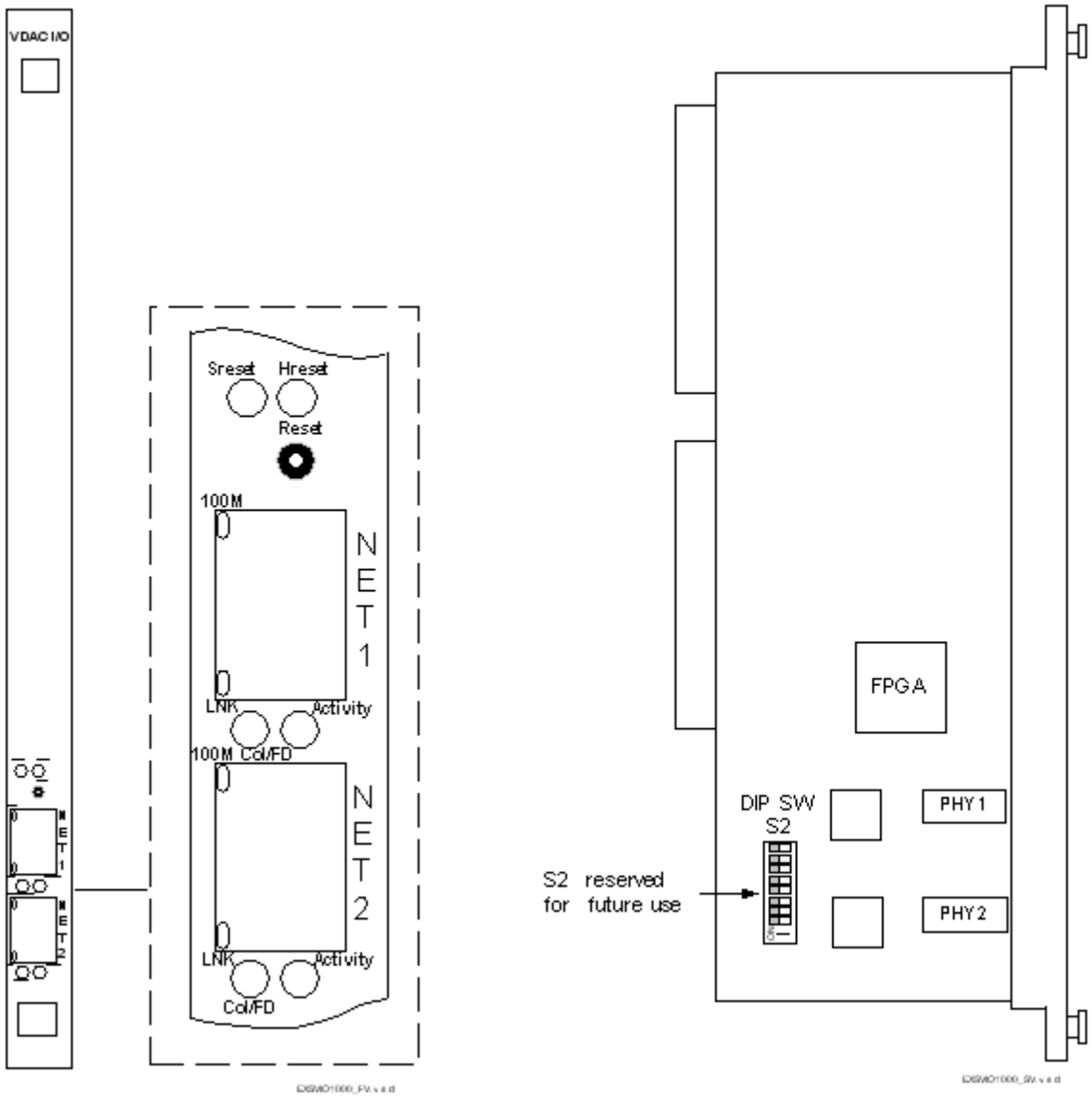
Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Related Products

The products related to the VDAC I/O card are listed below.

Product	Model No.	RoHS Model No.
VDAC-ONE with (2) VoIP Modules	EXS-VDC-1023	EXS-VDC-1023R
VDAC-ONE with (4) VoIP Modules	EXS-VDC-1043	EXS-VDC-1043R

Front and Side Views The front view shows the LEDs, push button switch and Ethernet connectors.



Controls and Indicators

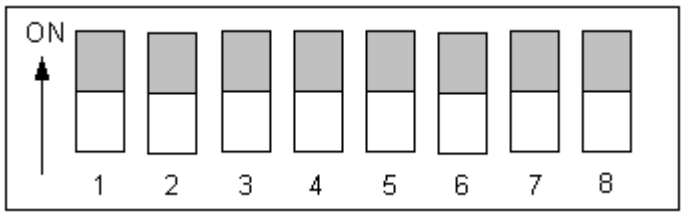
The table below describes the LEDs as shown in the front view of the VDAC I/O Card.

Reset LEDs/ Push Button	**Color/ Status**	**Description**
Sreset	Green	Indicates a Soft Reset. The code running on the processor is reset, and the Flash is put into a read state.
Rreset	Green	Indicates a Hard Reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A Hard Reset also occurs when the Watchdog times out twice in a row.
Reset	Initiates a reset	
Ethernet LEDs	**Color/ Status**	**Description**
Activity	Green	Indicates RX (receive) and/or TX (transmit) activity
	Off	Indicates no RX or TX activity
Col/FD (Collison/ Duplex)	Green	Indicates when collision occurs.
	Off	Indicates no collisions
LNK (Link)	Green	Flashes during auto-negotiation Continuous indication when a link is established Continuously blinks during network misconfiguration
	Off	Indicates loopback
100M (Speed)	Yellow	Indicates 100 Mbps link established
	Off	Indicates 10 Mbps link established

DIP Switch S2

Important! DIP Switch S2 is non-functional and reserved for future use. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON*	Reserved, normally should be ON
	OFF	Reserved
3	ON*	Reserved, normally should be ON
	OFF	Reserved
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved



Jumper

The table below indicates the jumper setting.

Jumper	Setting	Description
J7	Not Installed (default)	Factory use only

Dialogic® IP Network Interface Series 2 Card - See Model Numbers

Description

The Dialogic® IP Network Interface Series 2 Card performs two-way conversion between circuit-switched data and packet-switched Ethernet data. Packetized voice applications such as the Voice over Internet Protocol (VoIP) require this type of data conversion.

Microprocessor

The main circuit board processor has 128 MB of external synchronous SDRAM and 2 MB of Flash memory. Only the main board processor communicates with the CSP Matrix Series 3 Card.

Time Division Multiplex

The main board has its own Time Division Multiplex (TDM) controller, which transfers data between the system TDM bus and the voice processors on the modules.

Ethernet Switch

The IP Network Interface Series 2 card provides a stand alone, eight port 10/100Base-T Mbps Ethernet switch that provides:

- Eight 10/100Base-T Mbps auto-negotiated ports. (Five of the ports are internal and three are for external use.)
- Full duplex
- Full wirespeed Layer 2 switching on all eight ports
- Link Aggregation Group (trunking) support for a 300 Mbps link with auto fail-over switching.

The three external 100 Mbps Ethernet ports, located on the VDAC I/O Series 2 card, are automatically configured to form a single 300 Mbps Ethernet Link Aggregation Group (LAG). This LAG method, also referred to as “trunking”, can support up to a 300 Mbps link between a IP Network Interface Series 2 card and other network components, such as a router or switch.

> **Important!** The single 300 Mbps Ethernet pipe must be supported by a LAG compatible Ethernet switch in order to take advantage of the increased bandwidth.

The increased bandwidth supports combinations of VoIP coder types, packetization rates, packet redundancy levels, and call volume required by the IP Network Interface Series 2 card. If a single Ethernet port in the LAG configuration fails, all traffic will be diverted to the remaining Ethernet ports, reducing the bandwidth that is available.

VoIP Modules

The main circuit board contains up to two VoIP modules, each of which has its own dedicated 100Base-T Ethernet port and its own IP address. The voice processors on the modules manage the RTP/RTCP packets, as well as the packet-to-circuit conversion of voice streams.

Each VoIP module has four voice processors. Each voice processor has its own serial link for Pulse Coded Modulation (PCM) data. A TDM switch allows data transfer between the voice processors and the TDM bus. Each voice processor supports up to 128 simultaneous voice channels, so a VoIP module can support 512 channels. A fully-populated card with two VoIP modules can support a total of 1024 channels.

Redundancy

The IP Network Interface Series 2 card uses resource pooling similar to the VDAC-ONE card.

Placement

Each CSP 2090, CSP 2110, or CSP 2040 chassis accommodate IP Network Interface Series 2 cards which reside in the front slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The IP Network Interface Series 2 card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	6.25A (typical) with two modules
	4.5A (typical) with one module

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

IP Network Interface Series 2 Card Models

The available IP Network Interface Series 2 card models are listed below.

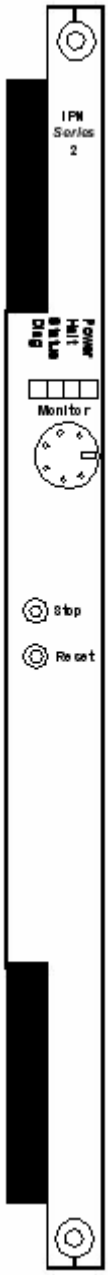
Product	Model No.	RoHS Model No.
IP Network Interface Series 2 with one VoIP module	EXS-VDC-1200	EXS-VDC-1200R
IP Network Interface Series 2 with two VoIP modules	EXS-VDC-1220	EXS-VDC-1220R

Related Products

The products related to the IP Network Interface Series 2 card are listed below.

Product	Model No.	RoHS Model No.
Multi-Function Media I/O Plus Card	CSPS-BIO-1000	CSP-BIO-1000R

Front View The front view shows the LEDs, push button switches, and Monitor connector.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Power	Red	The LED is red upon insertion
	Green	The card is In Service.
	Off	The card is Out Of Service.

Push Button	Description
Stop	Stops the system software and removes the card from the system buses. Always press the Stop push button before removing the card from the chassis.
Stop and Reset together	Initiates a hardware reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A hardware reset also occurs when the Watchdog times out twice in a row.
Reset	Initiates a software reset. The code running on the processor is reset, and the Flash is put into a read state.

Monitor (Debug) Connector

The Monitor port, a five-position, circular DIN connector, provides debug capability. This port operates at the RS232C electrical standard rate of 19200 Kbps, 8 data bits, no parity, and 1 stop bit.

Important! The 19200 Kbps baud is factory set.

DIP Switch S1 on Main Board

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON	Reserved
	OFF*	Reserved, normally should be OFF
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link Auto-Negotiate Mode
	OFF**	Ethernet Link Force 100 Mbps/Full Duplex Mode
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON	Reserved
	OFF*	Reserved, normally should be OFF
8	ON	Reserved
	OFF*	Reserved, normally should be OFF

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

Jumpers

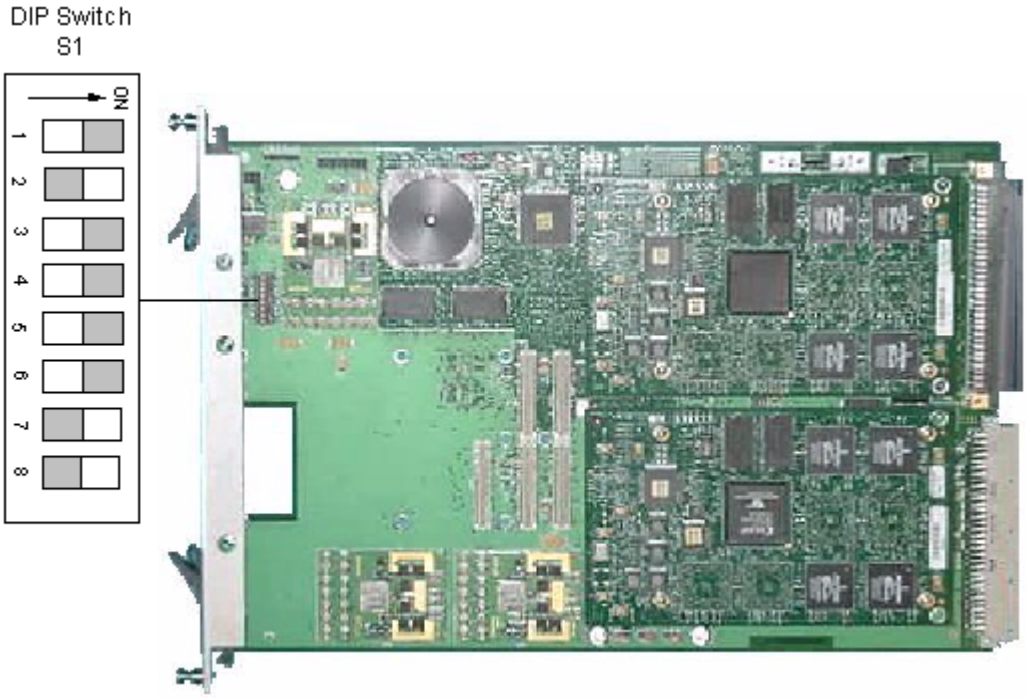
The table below indicates the default jumper settings. * For reference, pin 1 is indicated by a dot.

Important! Do not remove or reposition these jumpers. They are for factory use only.

Jumper	Setting	Description
J1009	Installed (*pins 1 and 2) (Disabled)	Mod 0
J1010	Installed (*pins 2 and 3) (Enabled)	Mod 1
J1011	Installed (*pins 2 and 3) (Enabled)	Mod 2

Jumper	Setting	Description
J1013	Not Installed	Development Header
J1014	Not Installed	JTAG Header
J1015	Not Installed	DSP JTAG
GJ1000	Installed (on one of the pins) (Standby)	Watch Dog
GJ1001	Not Installed (Enabled)	Interrupt Line

Side View The side view shows the DIP switch S1.



Dialogic® IP Network Interface Series 3 Card - See Model Numbers

Description

The Dialogic® IP Network Interface Series 3 card performs two-way conversion between circuit-switched data and packet-switched Ethernet data. Packetized voice applications such as the Voice over Internet Protocol (VoIP) require this type of data conversion.

Microprocessor

The main circuit board processor has 256 MB of external synchronous SDRAM and 2 MB of Flash memory. Only the main board processor communicates with the CSP Matrix Series 3 Card.

Time Division Multiplex

The main board has its own Time Division Multiplex (TDM) controller, which transfers data between the system TDM bus and the voice processors on the modules.

Ethernet Switch

The IP Network Interface Series 3 card provides a stand alone, nine port 10/100Base-T Mbps Ethernet switch that provides:

- Nine 10/100Base-T Mbps auto-negotiated ports. (Three of the ports are internal and six are for external use.
- Full duplex
- Full wirespeed Layer 2 switching on all eight ports
- Link Aggregation Group (trunking) support for a 300 Mbps link with auto fail-over switching.

The external 100 Mbps Ethernet ports, located on the Multi-Function Media I/O Plus card, are automatically configured to form a single 300 Mbps Ethernet Link Aggregation Group (LAG). This LAG method, also referred to as “trunking”, can support up to a 300 Mbps link between a IP Network Interface Series 3 card and other network components, such as a router or switch.

> **Important!** The single 300 Mbps Ethernet pipe must be supported by a LAG compatible Ethernet switch in order to take advantage of the increased bandwidth.

The increased bandwidth supports combinations of VoIP coder types, packetization rates, packet redundancy levels, and call volume required by the IP Network Interface Series 3 card. If a single Ethernet port in the LAG configuration fails, all traffic will be diverted to the remaining Ethernet ports, reducing the bandwidth that is available.

VoIP Modules

The main circuit board contains up to two VoIP modules, each of which has its own dedicated 100Base-T Ethernet port and its own IP address. The voice processors on the modules manage the RTP/RTCP packets, as well as the packet-to-circuit conversion of voice streams.

Each VoIP module has four voice processors. Each voice processor has its own serial link for Pulse Coded Modulation (PCM) data. A TDM switch allows data transfer between the voice processors and the TDM bus. Each voice processor supports up to 128 simultaneous voice channels, so a VoIP module can support 512 channels. A fully-populated card with two VoIP modules can support a total of 1024 channels.

Redundancy

The IP Network Interface Series 3 card uses resource pooling similar to the IPN-2 card.

Placement

Each CSP 2090, CSP 2110, or CSP 2040 chassis accommodate IP Network Interface Series 3 cards which reside in the front slots.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The IP Network Interface Series 3 card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	6.25A (typical) with two modules
	4.5A (typical) with one module

Physical	Specification
Height	236.2 mm (9.3 in.)
Depth	317.5 mm (12.5 in.)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

IP Network Interface Series 3 Card Models

The available IP Network Interface Series 3 card models are listed below.

Product	RoHS Model No.
IP Network Interface Series 3 with one VoIP module	CSP-IPN-3100R
IP Network Interface Series 3 with two VoIP modules	CSP-IPN-3200R

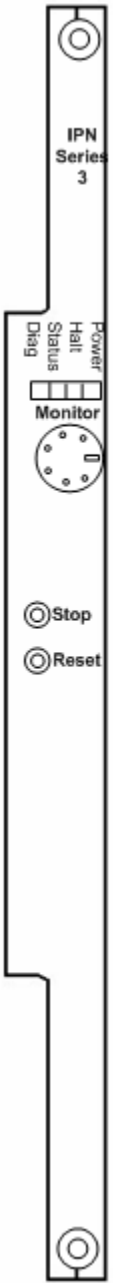
Related Products

The products related to the IP Network Interface Series 3 card are listed below.

Product	RoHS Model No.
Multi-Function Media I/O Card	CSP-BIO-1400R

Front View

The front view shows the LEDs, push button switches, and Monitor connector.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the card.

LED	Color/Status	Description
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Power	Red	The LED is red upon insertion
	Green	The card is In Service.
	Off	The card is Out Of Service.

Push Button	Description
Stop	Stops the system software and removes the card from the system buses. Always press the Stop push button before removing the card from the chassis.
Stop and Reset together	Initiates a hardware reset. The Flash and SDRAM are reset, as is the processor and all of its internal registers. A hardware reset also occurs when the Watchdog times out twice in a row.
Reset	Initiates a software reset. The code running on the processor is reset, and the Flash is put into a read state.

Monitor (Debug) Connector

The Monitor port, a five-position, circular DIN connector, provides debug capability. This port operates at the RS232C electrical standard rate of 19200 Kbps, 8 data bits, no parity, and 1 stop bit.

Important! The 19200 Kbps baud is factory set.

DIP Switch S1 on Main Board

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Reserved
	OFF	Reserved, normally should be OFF
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link Auto-Negotiate Mode
	OFF**	Ethernet Link Force 100 Mbps/Full Duplex Mode
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved
	OFF*	Reserved, normally should be OFF
8	ON*	Reserved
	OFF	Reserved, normally should be OFF

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

Jumpers

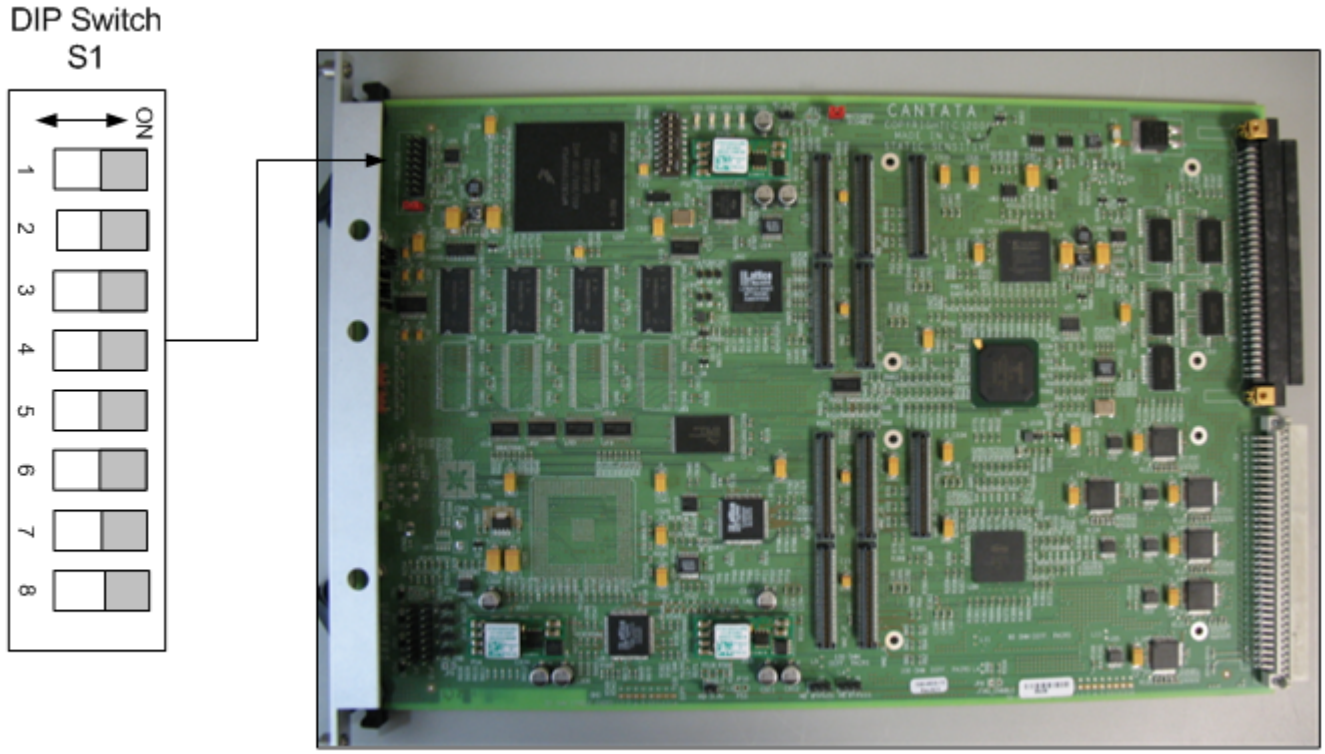
The table below indicates the default jumper settings. * For reference, pin 1 is indicated by a dot.

Important! Do not remove or reposition these jumpers. They are for factory use only.

Jumper	Setting	Description
J1009	Installed (*pins 1 and 2) (Disabled)	Mod 0
J1010	Installed (*pins 2 and 3) (Enabled)	Mod 1
J1011	Installed (*pins 2 and 3) (Enabled)	Mod 2

Jumper	Setting	Description
J1013	Not Installed	Development Header
J1014	Not Installed	JTAG Header
J1015	Not Installed	DSP JTAG
GJ1000	Installed (on one of the pins) (Standby)	Watch Dog
GJ1001	Not Installed (Enabled)	Interrupt Line

Side View The side view shows the DIP switch S1.



Dialogic® Multi-Function Media I/O Plus Card - CSP-BIO-1400R

Description

The Dialogic® Multi-Function Media I/O Plus card is required to provide Ethernet connectivity for the IP Network Interface Series 3 and DSP Series 2 Plus cards. This card connects to the IP Network Interface Series 2 and DSP Series 2 Plus cards through the chassis midplane.

Ethernet Ports

The Multi-Function Media I/O Plus card provides Ethernet ports for the following six 10/100 Base-T Ethernet auto-negotiating signals.

- Two Ethernet control signals that are available for NFS, matrix connectivity, RTP and redundancy
- Four Ethernet data signals that are disabled at this time and reserved for future use

Placement

The Multi-Function Media I/O Plus card resides in the rear card slot of a CSP 2090, CSP 2110, or CSP 2040 chassis directly behind the corresponding IP Network Interface Series 2 or DSP Series 2 Plus card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The Multi-Function Media I/O Plus card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Model Number

The Multi-Function Media Plus I/O card model number is listed below.

Product	Model No.	RoHS Model No.
Multi-Function Media Plus I/O	Not Applicable	CSP-BIO-1400R

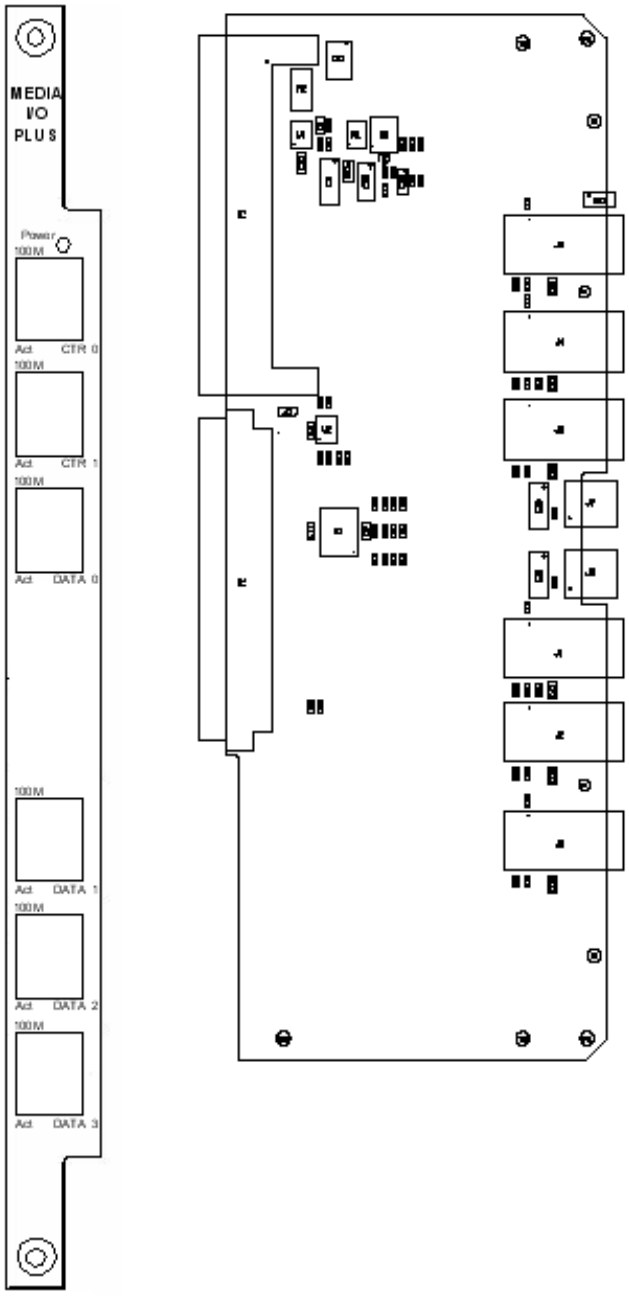
Related Products

The products related to the Multi-Function Media I/O Plus card are listed below.

Product	Model No.	RoHS Model No.
DSP Series 2 Plus card with one module	Not Applicable	CSP-DSP-1410R
DSP Series 2 Plus card with two modules	Not Applicable	CSP-DSP-1420R

Front and Side Views

The front view shows the LEDs, push button switch, and Ethernet connectors.



Controls and Indicators

The table below describes the LEDs as shown in the front view of the Multi-Function Media I/O Plus card.

Fault, Hreset LEDs/Reset Push Button	**Color/ Status**	**Description**
Fault	Off	Reserved
Hreset	Green	Indicates the I/O card is being reset.
Reset	Initiates a reset of the I/O card.	
Ethernet LEDs	**Color/ Status**	**Description**
Activity	Green	Indicates both RX (receive) and TX (transmit) activity (20ms on time)
	Off	Indicates no RX or TX activity
Col/FD (Collision/ Duplex)	Green	Flashes when collision occurs in half duplex mode (20ms on time) Continuous indication when in full duplex mode Flashes (10 Hz) during continuous collisions
	Off	Indicates no collisions
LNK (Link)	Green	Flashes during auto-negotiation Continuous indication when a link is established Continuously flashes during network misconfiguration
	Off	Indicates loopback
100M (Speed)	Yellow	Indicates 100Base-T (100 Mbps) link established
		Flashes (0.4 sec.) with no link established
	Off	10Base-T (10 Mbps) link not supported

Dialogic® Multi-Function Media I/O Card - CSP-BIO-1000/ CSP-BIO-1000R

Description

The Dialogic® Multi-Function Media I/O card is required to operate the IP Network Interface Series 2 and DSP Series 2 cards. The Multi-Function Media I/O card connects to the IP Network Interface Series 2 and DSP Series 2 cards through the chassis midplane.

Ethernet Ports

The Multi-Function Media I/O card provides three external 100Base-T (100 Mbps) Ethernet ports that can be used for redundancy.

Placement

The Multi-Function Media I/O card resides in the rear card slot of a CSP 2090, CSP 2110, or CSP 2040 chassis directly behind the corresponding IP Network Interface Series 2 or DSP Series 2 card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The Multi-Function Media I/O card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

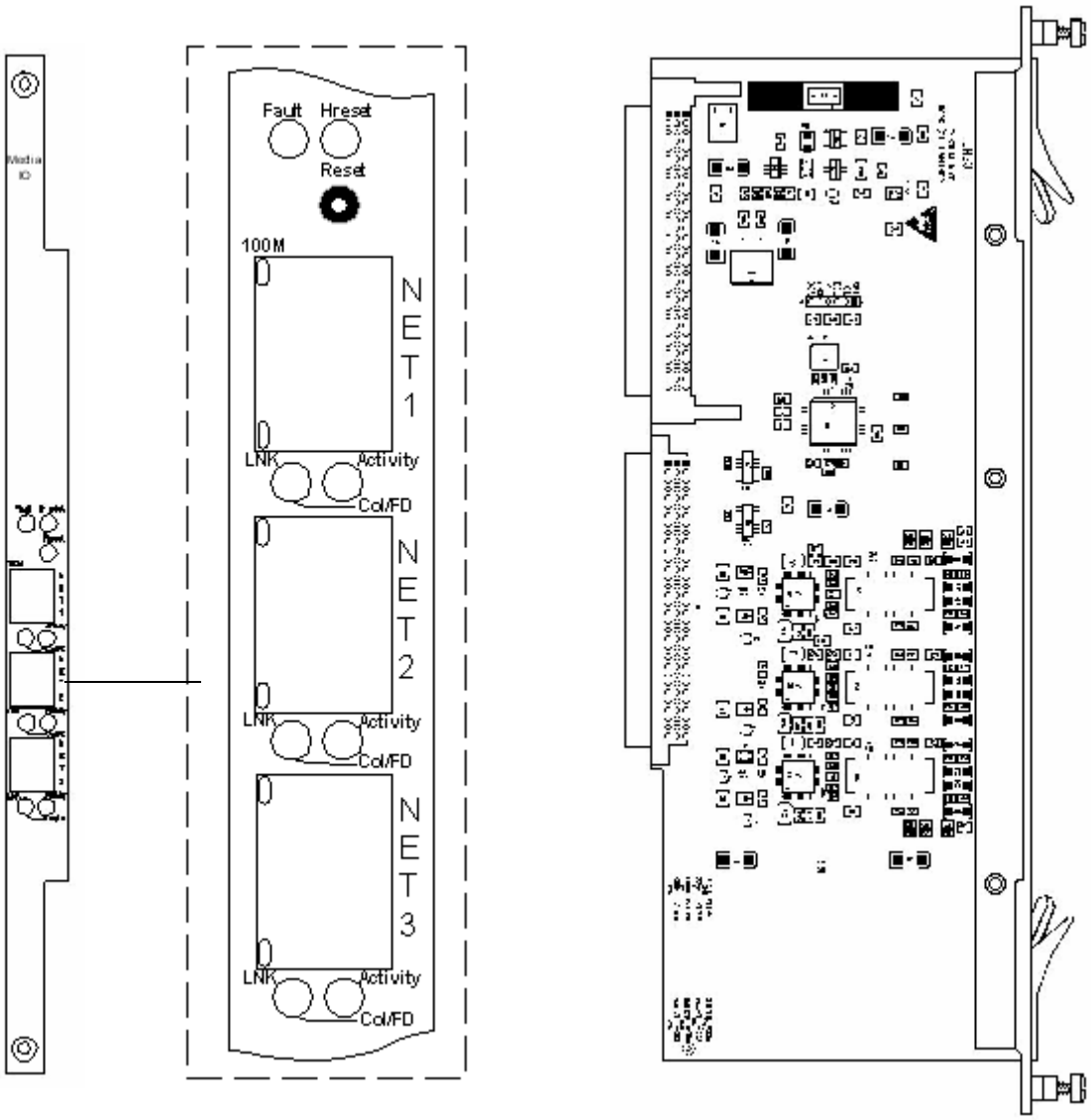
Related Products

The products related to the Multi-Function Media I/O card are listed below.

Product	Model No.	RoHS Model No.
IP Network Interface Series 2 with one VoIP module	EXS-VDC-1200	EXS-VDC-1200R
IP Network Interface Series 2 with two VoIP modules	EXS-VDC-1220	EXS-VDC-1220R
DSP Series 2 with one module	CSP-DSP 1310	CSP-DSP 1310R
DSP Series 2 with two modules	CSP-DSP 1320	CSP-DSP 1320R

Front and Side Views

The front view shows the LEDs, push button switch, and Ethernet connectors.



Controls and Indicators

The table below describes the LEDs as shown in the front view of the Multi-Function Media I/O card.

Fault, Hreset LEDs/Reset Push Button	**Color/ Status**	**Description**
Fault	Off	Reserved
Hreset	Green	Indicates the I/O card is being reset.
Reset	Initiates a reset of the I/O card.	
Ethernet LEDs	**Color/ Status**	**Description**
Activity	Green	Indicates RX (receive) and/or TX (transmit) activity
	Off	Indicates no RX or TX activity
Col/FD (Collision/ Duplex)	Green	Flashes when collision occurs.
	Off	Indicates no collisions
LNK (Link)	Green	Flashes during auto-negotiation Continuous indication when a link is established Continuously flashes during network misconfiguration
	Off	Indicates loopback
100M (Speed)	Yellow	Indicates 100Base-T (100 Mbps) link established
		Flashes (0.4 sec.) with no link established
	Off	10Base-T (10 Mbps) link not supported

6 Resource Cards

Purpose This chapter provides descriptions of the Resource cards.

Compliance The Resource cards comply with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950-1

Dialogic® Digital Signal Processing Series One Card - See Model Numbers

Description

The Dialogic® Digital Signal Processing Series One Card inserts a group of powerful DSPs into the Pulse Code Modulation (PCM) data path. Each DSP-ONE can provide the services of 22 Dual Tone Multi-Frequency (DTMF) receivers, permitting one DSP-ONE card to carry 352 DTMF receivers. You can populate each DSP-ONE card with up to 16 DSPs.

The DSPs are mounted on modules referred to as logical SIMMs, with up to eight DSPs per SIMM. Up to two SIMMs can be mounted on the DSP-ONE card, for a total of 16 DSPs per DSP-ONE card.

Function

The DSP-ONE card can perform a single function or many of the following functions:

- Tone generation
- Tone detection
- Conferencing
- Voice recorded announcements
- Signal energy detection
- Dial pulse detection

Battery

The card has 4 MB of battery-backed RAM.

Placement

The DSP-ONE card resides in the front slot of a CSP 2090, CSP 2110 or CSP 2040 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The DSP-ONE card is designed to the following electrical, physical and environmental specifications

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	7.6A (typical)

Physical	Specification
Height	9.3 inches (236.2 mm)
Depth	12.5 inches (317.5 mm)
Width	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

DSP-ONE Card Models

The available DSP-ONE card models are listed below.

Product	Model No.	RoHS Model No.
DSP-ONE with (1) C31-8 Module	CSP-DSP-1102	CSP-DSP-1102R
DSP-ONE with (2) C31-8 Modules	CSP-DSP-1202	CSP-DSP-1202R
DSP-ONE with (1) C31-8 and (1) C31-VRA Module	CSP-DSP-1112	CSP-DSP-1112R
DSP-ONE with (1) C31-VRA Module	CSP-DSP-1012	CSP-DSP-1012R
DSP-ONE with (2) C31-VRA Modules	CSP-DSP-1022	CSP-DSP-1022R

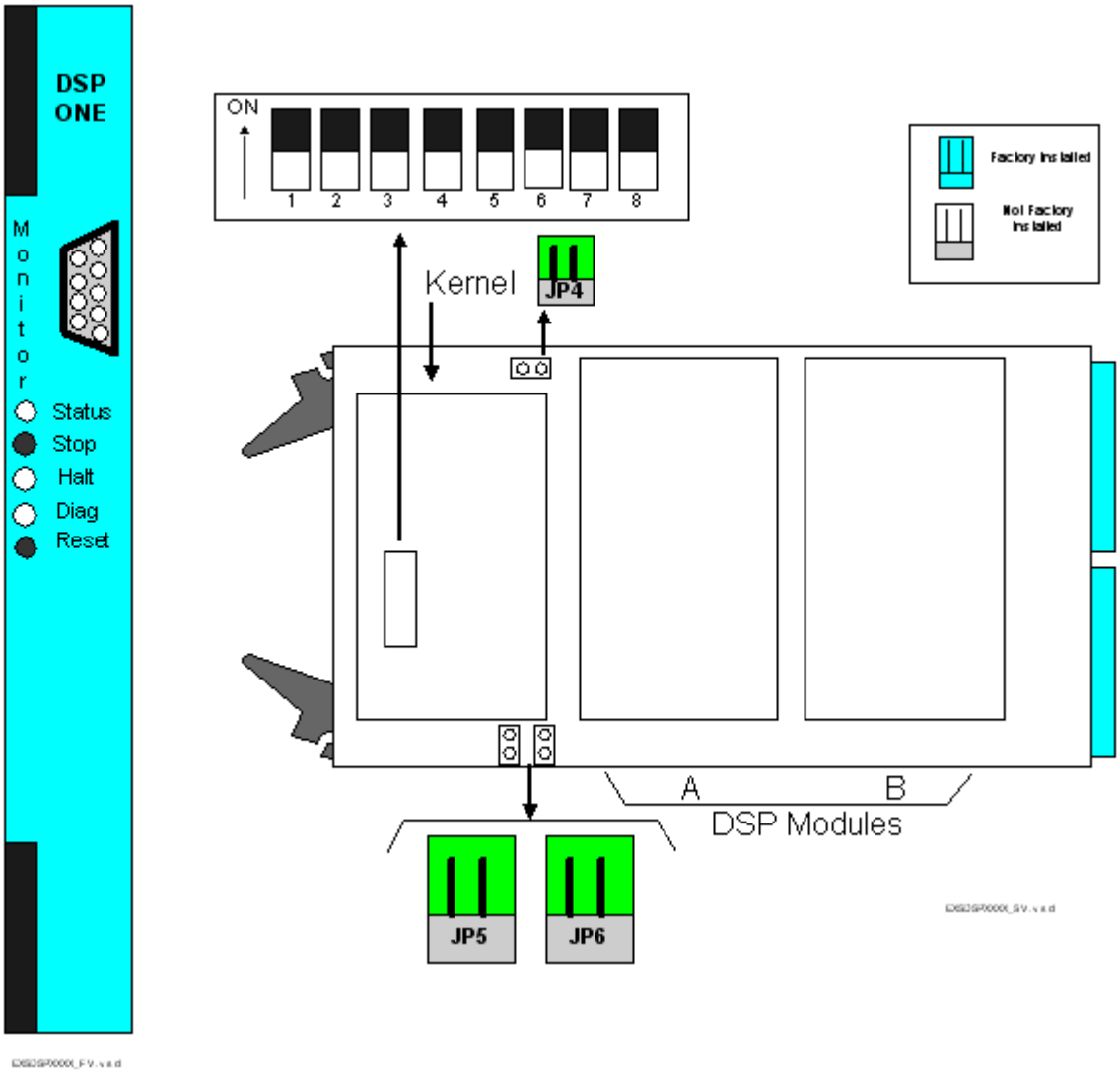
Related Products

The products related to the DSP-ONE card are listed below.

Product	Model No.	RoHS Model No.
Not Applicable	Not Applicable	Not Applicable

Front and Side Views

The front and side views show the LEDs, push button switches, Monitor connector, DIP switches, and jumpers.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the DSP-ONE Card.

LEDs	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.

LEDs	Color/Status	Description
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	This LED is green except during a card reset when this LED goes out briefly.
	Amber	This LED is amber during diagnostic tests.
Push Buttons	**Description**	
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates CPU reset on the card. The software configuration is maintained.	

DIP Switch S1

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Selects 9600 baud for Monitor port
	OFF	Selects 19200 baud for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved

Position	Setting	Function
8	ON*	Reserved, normally should be ON
	OFF	Reserved

Jumpers The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP3	Not Installed (default)	Factory use only
JP4	Installed (default)	Enables battery backup
JP5	Installed (default)	Factory use only
JP6	Installed (default)	Factory use only

Dialogic® Digital Signal Processing Series 2 Card - See Model Numbers

Description

You can order the Dialogic® Digital Signal Processing Series 2 Card with either one or two DSP modules. The one-module card is the CSP-DSP 1310. The two-module card is the CSP-DSP 1320. Each module consists of four DSP chips, for a total of either four or eight DSP chips per card. Each DSP chip has access to 512 timeslots of PCM. The 512 timeslots are arranged in two streams of 256 timeslots each. Each DSP is controlled through a host port interface mapped into the main board's memory space.

The DSP Series 2 card main board has 128 Mbyte of external synchronous SDRAM and 2 MBytes of Flash memory. The processor is a HIP4 8260 running at 83 Mhz.

Ethernet Switch

The main board has an internal Ethernet switch, and brings out three external 100 Base-T Ethernet ports to the I/O. These three ports can be used for redundancy.

Function

The DSP Series 2 card can perform a single function or a combination of the following functions:

- Tone generation
- Tone detection
- Conferencing
- File Playback/Record
- Signal energy detection

Placement

The DSP Series 2 card resides in the front slot of the following CSP chassis:

CSP 2040

Two fully-loaded DSP-2 cards can operate in an CSP 2040 Chassis.

CSP 2090 and CSP 2110

Five fully-loaded DSP-2 cards can operate in the CSP 2090 and CSP 2110 chassis.

Configuration Information

The part number, serial number, model number, and revision number are located on the back of the card.

Specifications

The DSP Series 2 card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	5.5A (typical)

Physical	Specification
Height	9.3 inches (236.2 mm)
Depth	12.5 inches (317.5 mm)
Width	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) at 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) at 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 meters (13,123 ft.)

Power Requirements

Configuration	Min. Current at 5V	Max Current at 5V	Minimum Power	Maximum Power
DSP Series 2 with one Module	4.2	4.4	21.0	22.0
DSP Series 2 with two Modules	5.2	5.5	26.0	27.5

DSP Series 2 Card Models

The available DSP Series 2 card models are listed below.

Product	Model No.	RoHS Model No.
DSP Series 2 with (1) Module	CSP-DSP 1310	CSP-DSP 1310R
DSP Series 2 with (2) Modules	CSP-DSP 1320	CSP-DSP 1320R

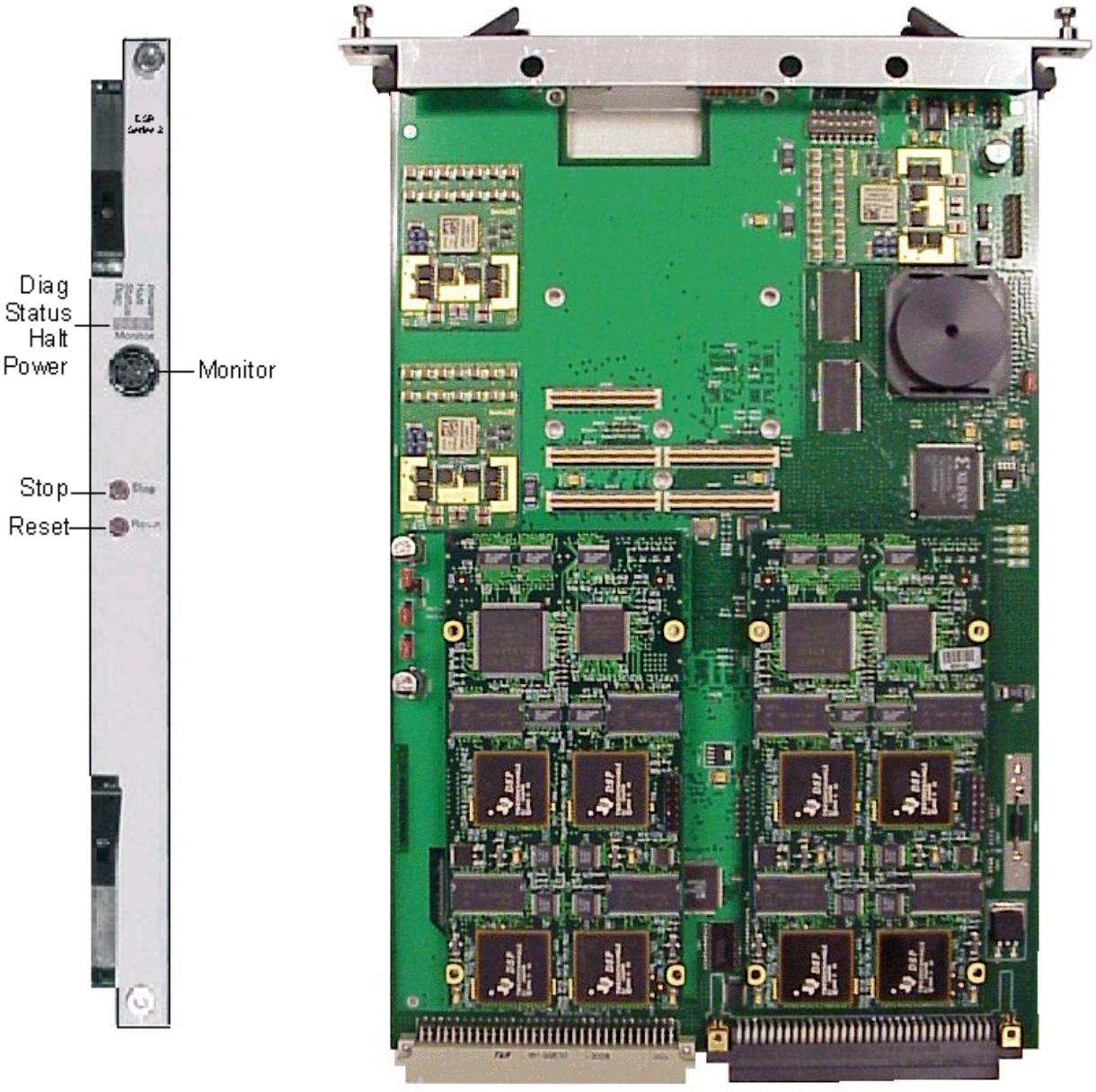
Related Products

The products related to the DSP Series 2 card are listed below.

Product	Model No.	RoHS Model No.
Multi-Function Media I/O	CSP-BIO-1000	CSP-BIO-1000R

Front and Top Views

The front and side views show the LEDs, push button switches, Monitor connector, DIP switches, and jumpers.



Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the DSP Series 2 card.

Status Indicators

LED indicators reference standard CPU run/halt/reset statuses.

LED	Color/Status	Description
Diag	Off	This LED is OFF except during a card reset, when this card flashes red briefly.
Status	Red	The LED is red briefly during card reset.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Power	Red	The LED is red upon insertion
	Green	The card is In Service.
	Off	The card is Out Of Service.

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
J1009	Installed (default)	Factory use only
J1010	Installed (default)	Factory use only
J1011	Installed (default)	Factory use only
J1013	Not Installed (default)	Factory use only
J1014	Not Installed (default)	Factory use only
J1015	Not Installed (default)	Factory use only
GJ1000	Not Installed (default)	Factory use only

DIP Switch S1 on Main Board

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Reserved, normally should be ON
	OFF	Reserved
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Ethernet Link, Auto-Negotiate Mode (Default)
	OFF**	Ethernet Link, Force 100 Mbps/Full Duplex Mode
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	HDLC Communications (Default)
	OFF	Ethernet Communications***
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

** Enables Ethernet Link, Force 100 Mbps/Full Duplex feature.

*** Enables Ethernet communication between the DSP Series 2 card and the CSP Matrix Series 3 Card.

Dialogic® Digital Signal Processing Series 2 Plus Card - See Model Numbers

Description

The latest cards in the DSP Series 2 family are the DSP Series 2 Plus card and its associated Multi-Function Media I/O Plus card.

The DSP Series 2 Plus card can perform a single function or a combination of the following functions:

- Conferencing
- Echo Cancellation
- File Playback/Record
- Frequency Shift Keying (FSK)
- Media Streaming over RTP
- Positive Voice Detection/Answering Machine Detection (PVD/AMD)
- Signal Energy Detection
- Tone Generation and Detection
- T.30 Fax

Hardware Architecture

DSP Modules

The DSP Series 2 Plus card supports either one or two DSP modules. Each module consists of four DSP chips, for a total of either four or eight DSP chips per card. Each DSP chip has access to 512 timeslots of PCM. The 512 timeslots are arranged in two streams of 256 timeslots each. Each DSP is controlled through a host port interface mapped into the main board's memory space.

RAM, Flash Memory and Processor Speeds

The DSP Series 2 Plus card main board has 256 Mbyte of external synchronous SDRAM and 4 MBytes of Flash memory. It also has a 450 Mhz processor. The I/O processor runs at 100 Mhz.

Ethernet Functionality

The main board has the capability of providing the following six 10/100 Base-T Ethernet auto-negotiating signals to the ports on the Multi-Function Media I/O Plus card.

- The processor provides two Ethernet control signals that are available for NFS, matrix connectivity, RTP and redundancy.
- The internal Ethernet switch provides four Ethernet data signals that are disabled at this time and reserved for future use.

Placement

The DSP Series 2 Plus card resides in the front slot of the following CSP chassis:

CSP 2040

Two DSP Series 2 Plus cards can operate in an CSP 2040 chassis.

CSP 2090 and CSP 2110

Five DSP Series 2 Plus cards can operate in the CSP 2090 and CSP 2110 chassis.

Configuration Information

The part number, serial number, model number, and revision number are located on the back of the card.

Specifications

The DSP Series 2 Plus card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	5.5A (typical)

Physical	Specification
Height	9.3 inches (236.2 mm)
Depth	12.5 inches (317.5 mm)
Width	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) at 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) at 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 meters (13.123 ft.)

Power Requirements

Configuration	Max. Current (Amps) at 5V	Max. Power (Watts)
DSP Series 2 Plus with one Module	5.6	28.0
DSP Series 2 Plus with two Modules	7.8	39.0

Model Numbers

The DSP Series 2 Plus card model numbers are listed below.

Product	Model No.	RoHS Model No.
DSP Series 2 Plus with (1) Module	Not Applicable	CSP-DSP-1410R
DSP Series 2 Plus with (2) Modules	Not Applicable	CSP-DSP-1420R

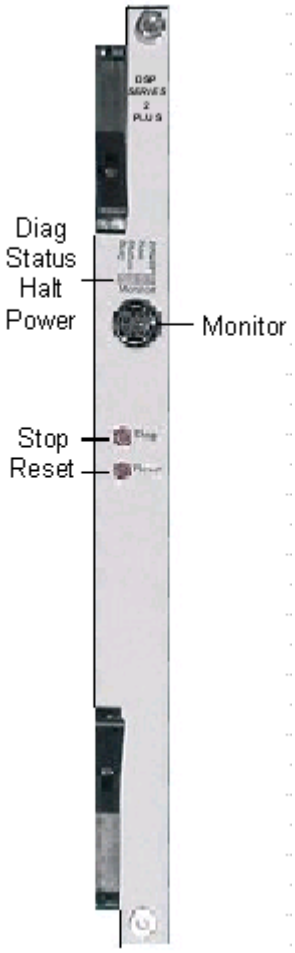
Related Products

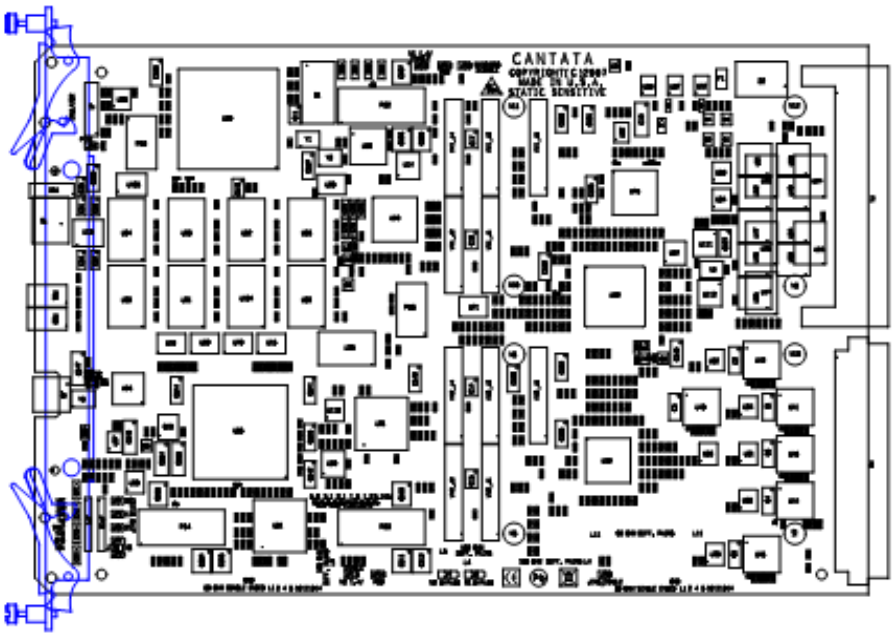
The products related to the DSP Series 2 Plus card are listed below.

Product	Model No.	RoHS Model No.
Multi-Function Media I/O Plus card	Not Applicable	CSP-BIO-1400R

Front and Top Views

The front and side views show the LEDs, push button switches, Monitor connector, DIP switches, and jumpers.





Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the DSP Series 2 Plus card.

Status Indicators

LED indicators reference standard CPU run/halt/reset statuses.

LED	Color/Status	Description
Diag	Off	This LED is OFF except during a card reset, when this card flashes red briefly.
Status	Red	The LED is red briefly during card reset.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Power	Red	The LED is red upon insertion
	Green	The card is In Service.
	Off	The card is Out Of Service.

Jumpers

The jumper settings are factory set and should not be changed.

Jumper	Setting	Description
JP3	Not Installed (default)	Watch Dog Timer Enabled
JP4	Not Installed (default)	Factory use only
JP5	Not Installed (default)	Factory use only
JP6	Not Installed (default)	Factory use only
JP7	Not Installed (default)	Factory use only
JP12	Installed	Factory use only
JP13	Installed	Factory use only

Jumper	Setting	Description
J6	Module 1*	Factory use only
J7	Module 2*	Factory use only

*Jumper on pins 1 and 2 indicates the module is not installed. Jumper on pins 2 and 3 indicates the module is installed.

DIP Switch S1 on Main Board

The table below describes the DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)
2	ON*	Reserved, normally should be ON
	OFF	Reserved
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

Dialogic® Multi-Function Media I/O Card - CSP-BIO-1000/ CSP-BIO-1000R

Description

The Dialogic® Multi-Function Media I/O card is required to operate the IP Network Interface Series 2 and DSP Series 2 cards. The Multi-Function Media I/O card connects to the IP Network Interface Series 2 and DSP Series 2 cards through the chassis midplane.

Ethernet Ports

The Multi-Function Media I/O card provides three external 100Base-T (100 Mbps) Ethernet ports that can be used for redundancy.

Placement

The Multi-Function Media I/O card resides in the rear card slot of a CSP 2090, CSP 2110, or CSP 2040 chassis directly behind the corresponding IP Network Interface Series 2/3 or DSP Series 2 card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The Multi-Function Media I/O card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)

Environmental	Specification
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

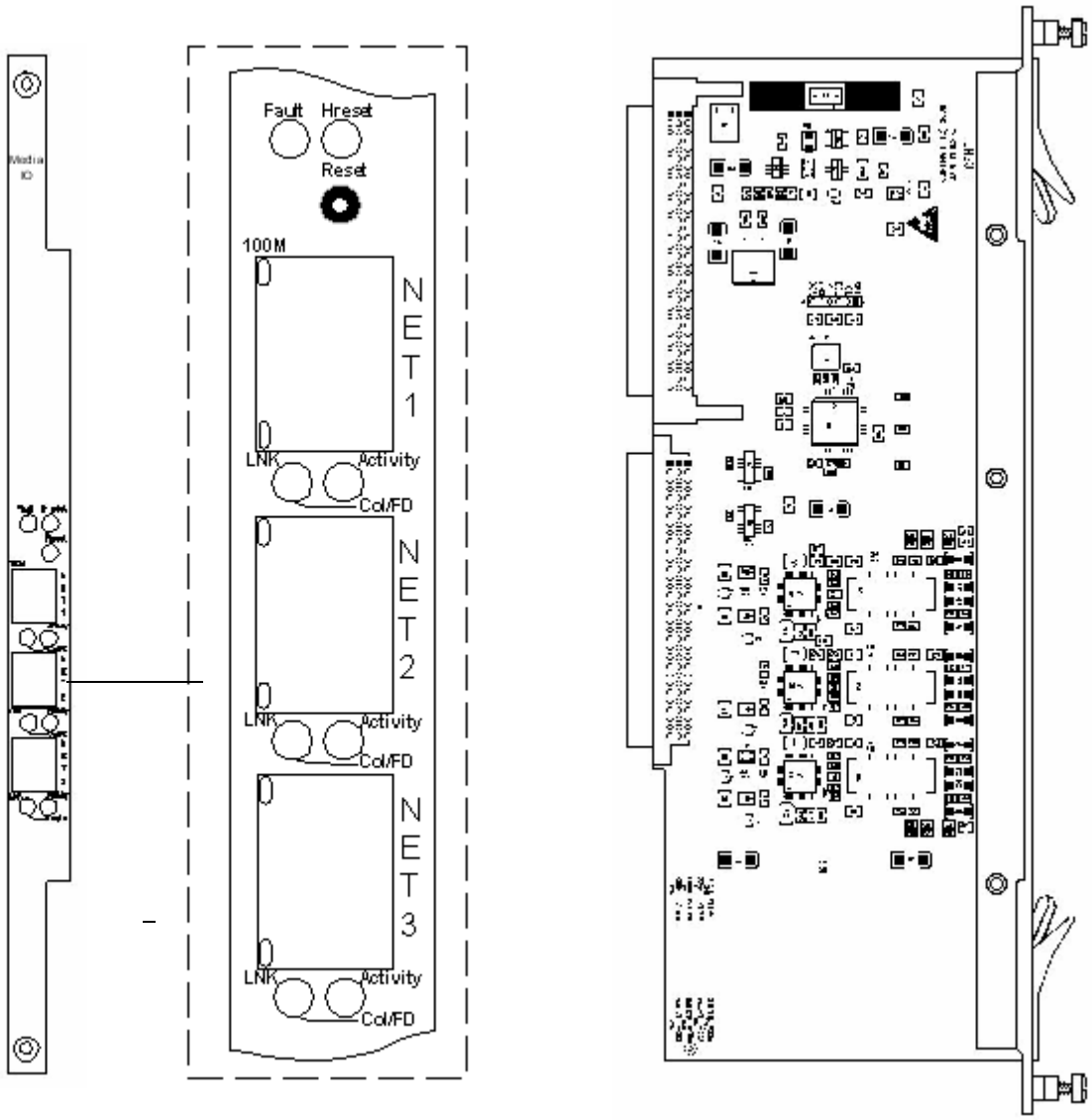
Related Products

The products related to the Multi-Function Media I/O card are listed below.

Product	Model No.	RoHS Model No.
IP Network Interface Series 2 with one VoIP module	EXS-VDC-1200	EXS-VDC-1200R
IP Network Interface Series 2 with two VoIP modules	EXS-VDC-1220	EXS-VDC-1220R
IP Network Interface Series 3 with one VoIP module	N/A	CSP-IPN-3100R
IP Network Interface Series 3 with two VoIP modules	N/A	CSP-IPN-3200R
DSP Series 2 with one module	CSP-DSP 1310	CSP-DSP 1310R
DSP Series 2 with two modules	CSP-DSP 1320	CSP-DSP 1320R

Front and Side Views

The front view shows the LEDs, push button switch, and Ethernet connectors.



Controls and Indicators

The table below describes the LEDs as shown in the front view of the Multi-Function Media I/O card.

Fault, Hreset LEDs/Reset Push Button	**Color/ Status**	**Description**
Fault	Off	Reserved
Hreset	Green	Indicates the I/O card is being reset.
Reset	Initiates a reset of the I/O card.	
Ethernet LEDs	**Color/ Status**	**Description**
Activity	Green	Indicates both RX (receive) and TX (transmit) activity (20ms on time)
	Off	Indicates no RX or TX activity
Col/FD (Collision/ Duplex)	Green	Flashes when collision occurs in half duplex mode (20ms on time) Continuous indication when in full duplex mode Flashes (10 Hz) during continuous collisions
	Off	Indicates no collisions
LNK (Link)	Green	Flashes during auto-negotiation Continuous indication when a link is established Continuously flashes during network misconfiguration
	Off	Indicates loopback
100M (Speed)	Yellow	Indicates 100Base-T (100 Mbps) link established
		Flashes (0.4 sec.) with no link established
	Off	10Base-T (10 Mbps) link not supported

Dialogic® Multi-Function Media I/O Plus Card - CSP-BIO-1400R

Description

The Dialogic® Multi-Function Media I/O Plus card is required to provide Ethernet connectivity for the IP Network Interface Series 3 and DSP Series 2 Plus cards. This card connects to the IP Network Interface Series 2 and DSP Series 2 Plus cards through the chassis midplane.

Ethernet Ports

The Multi-Function Media I/O Plus card provides Ethernet ports for the following six 10/100 Base-T Ethernet auto-negotiating signals.

- Two Ethernet control signals that are available for NFS, matrix connectivity, RTP and redundancy
- Four Ethernet data signals that are disabled at this time and reserved for future use

Placement

The Multi-Function Media I/O Plus card resides in the rear card slot of a CSP 2090, CSP 2110, or CSP 2040 chassis directly behind the corresponding IP Network Interface Series 2 or DSP Series 2 Plus card.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The Multi-Function Media I/O Plus card is designed to the following electrical, physical, and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	1.0A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

Model Number

The Multi-Function Media Plus I/O card model number is listed below.

Product	Model No.	RoHS Model No.
Multi-Function Media Plus I/O	Not Applicable	CSP-BIO-1400R

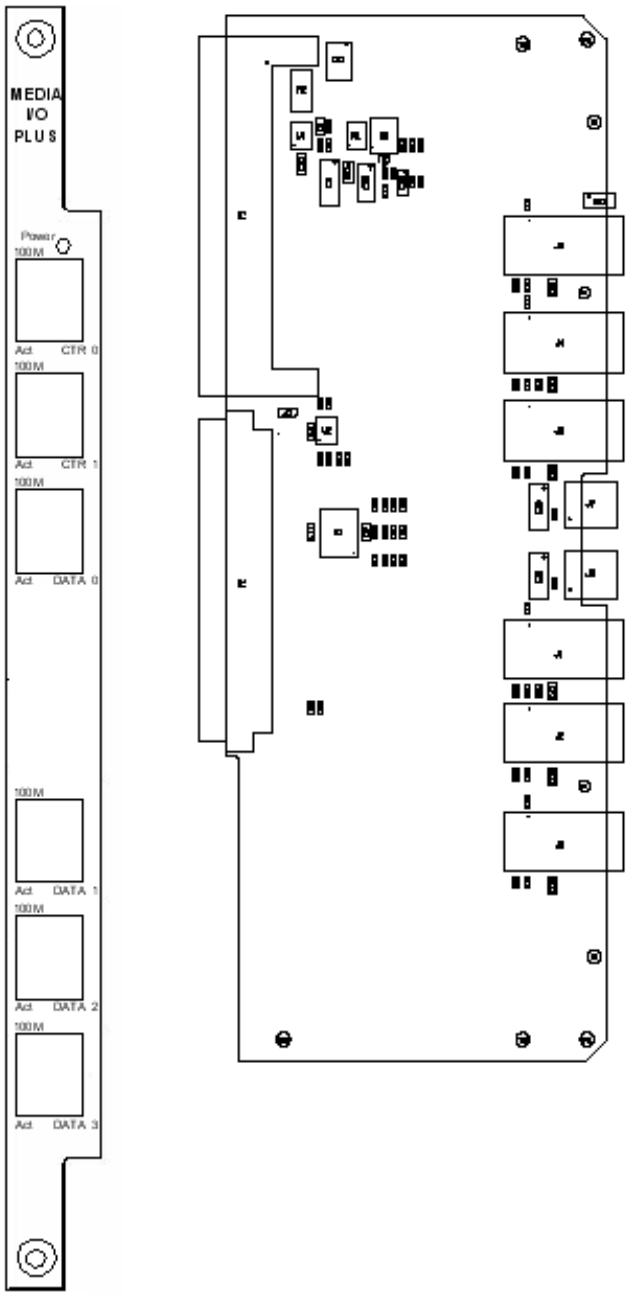
Related Products

The products related to the Multi-Function Media I/O Plus card are listed below.

Product	Model No.	RoHS Model No.
DSP Series 2 Plus card with one module	Not Applicable	CSP-DSP-1410R
DSP Series 2 Plus card with two modules	Not Applicable	CSP-DSP-1420R

Front and Side Views

The front view shows the LEDs, push button switch, and Ethernet connectors.



Controls and Indicators

The table below describes the LEDs as shown in the front view of the Multi-Function Media I/O Plus card.

Fault, Hreset LEDs/Reset Push Button	**Color/ Status**	**Description**
Fault	Off	Reserved
Hreset	Green	Indicates the I/O card is being reset.
Reset	Initiates a reset of the I/O card.	
Ethernet LEDs	**Color/ Status**	**Description**
Activity	Green	Indicates both RX (receive) and TX (transmit) activity (20ms on time)
	Off	Indicates no RX or TX activity
Col/FD (Collision/ Duplex)	Green	Flashes when collision occurs in half duplex mode (20ms on time) Continuous indication when in full duplex mode Flashes (10 Hz) during continuous collisions
	Off	Indicates no collisions
LNK (Link)	Green	Flashes during auto-negotiation Continuous indication when a link is established Continuously flashes during network misconfiguration
	Off	Indicates loopback
100M (Speed)	Yellow	Indicates 100Base-T (100 Mbps) link established
		Flashes (0.4 sec.) with no link established
	Off	10Base-T (10 Mbps) link not supported

Subrate Controller (SRC) Card - LNX-SRC-1000

Description

The Subrate Controller (SRC) card supports one-way and two-way connections and disconnections between any two subrate channels (non-blocking) across all 2048 timeslots in a CSP. The host is responsible for managing subrate channel connections and disconnections. This card is hot swappable. It does not require an associated I/O card.

Redundancy

The system supports SRC card redundancy. No more than two SRC cards can be installed in a switch.

Battery

The card has 4 Mb of battery-backed RAM.

Placement

The SRC card resides in the front slot of a CSP 2090 or CSP 2110 chassis.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The SRC card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	5.04A (typical)

Physical	Specification
Length	9.3 inches (236.2 mm)
Width	12.5 inches (317.5 mm)
Height	.775 inches (19.7 mm)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)

Environmental	Specification
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/minute
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°/minute
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

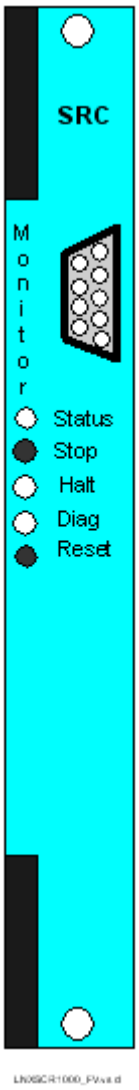
Related Products

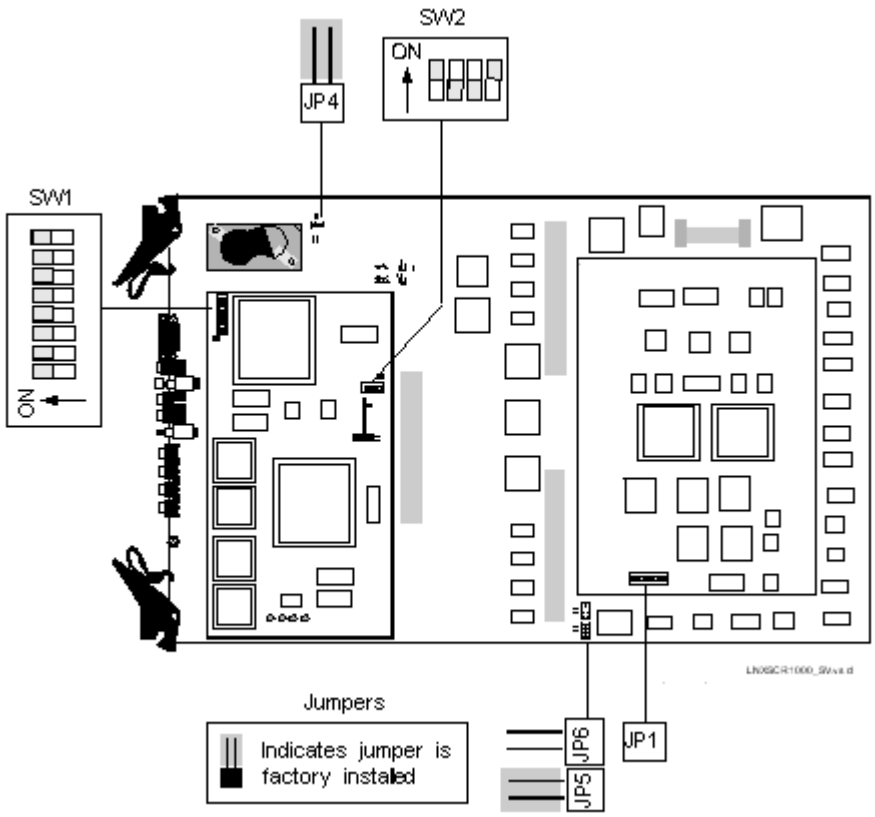
The products related to the SRC card are listed below.

Product	Model No.	RoHS Model No.
Not Applicable	Not Applicable	Not Applicable

Front and Side Views

The front and side views show the LEDs, push button switches, Monitor connector, DIP switches, and jumpers.





Controls and Indicators

The table below describes the LEDs and push button switches.

LEDs	Color/Status	Description
Status	Red	The Stop push button has been pressed. The card is disconnected from the system buses.
	Green	The card is connected to the system buses.
	Off	The card is resetting.
Halt	Red	The CPU has halted. This LED is red briefly during card reset.
	Green	The CPU is running.
Diag	Green	The SCR card is in the Active state and is managing subrate connections.
	Yellow	The SCR card is in the Standby state.
	OFF	The SCR card is synchronizing to the active subrate connections in the system. This should be a temporary condition.
Push Buttons	**Description**	
Stop push button	Removes card from the system buses. Always press the Stop push button before removing the card from the chassis.	
Reset push button	Initiates a hardware reset on the card.	

DIP Switch SW1

The table below describes the DIP switch SW1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1 Mode
	OFF	Enables Debug 1 Mode (printing)

Position	Setting	Function
2	ON*	Selects 9600 baud for Monitor port
	OFF	Selects 19200 baud for Monitor port
3	ON*	Disables Debug 2 Mode
	OFF	Enables Debug 2 Mode
4	ON*	Reserved, normally should be ON
	OFF	Reserved
5	ON*	Reserved, normally should be ON
	OFF	Reserved
6	ON*	Reserved, normally should be ON
	OFF	Reserved
7	ON*	Reserved, normally should be ON
	OFF	Reserved
8	ON*	Reserved, normally should be ON
	OFF	Reserved

DIP Switch SW2

The table below describes the DIP switch SW2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved, normally should be ON
	OFF	Reserved
2	ON	Reserved
	OFF*	Reserved, normally should be OFF

Position	Setting	Function
3	ON	Reserved
	OFF*	Reserved, normally should be OFF
4	ON*	Hardware Watchdog Enable
	OFF	Hardware Watchdog Disable

Jumpers The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP3	Not Installed (default)	Factory use only
JP4	Installed (default)	Enables battery backup
JP5	Installed (default)	Factory use only
JP6	Not Installed (default)	Factory use only

7 Dialogic® CSP Expansion and Interconnect ONE I/O Card

Purpose

This chapter provides the description of the Dialogic® CSP Expansion and Interconnect ONE I/O Card (hereafter referred to as the EXNET-ONE I/O card.)

Compliance

The EXNET-ONE I/O card complies with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CSA C22.2 No. 60950-1-3 CB Scheme IEC 60950-1
NEBS	NEBS Level 3 (GR-1089-CORE, GR-63-CORE)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950-1
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950-1

Dialogic® CSP Expansion and Interconnect ONE I/O Card - EXS-XIO-1200/EXS-XIO-1200R

Description

The EXNET-ONE I/O card controls node access to the EXNET® Ring and passes PCM data between nodes on the EXNET® Ring.

Placement

The card is installed into any CSP 2090, CSP 2110 or CSP 2040 I/O slot which does not have a corresponding line card. Install a Blockout Card in the corresponding slot in the front of the chassis. If any other card is installed in the front slot, the EXNET-ONE I/O card will not come in service and an alarm is sent to the host.

Configuration Information

The part number, serial number, model number, and revision are located on the back of the board.

Specifications

The EXNET-ONE I/O card is designed to the following electrical, physical and environmental specifications.

Electrical	Specification
Supply Voltage, Vcc	5.00V
Supply Current, Vcc @ 5.0V	4.41A (typical)

Physical	Specification
Height	318.5 mm (12.54 in.)
Depth	105.2 mm (4.14 in)
Width	19.7 mm (0.775 in.)

Environmental	Specification
Temperature - Storage	-40°C to 70°C (-40°F to 158°F)
Temperature - Operation	0°C to 50°C (32°F to 122°F)
Temperature Shock - Storage	-40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°C/min.

Environmental	Specification
Temperature Shock - Operation	0°C to 50°C (32°F to 122°F) @ 10°C/min.
Humidity - Operating	5% to 85%
Altitude	Up to 4000 m (13,123 ft.)

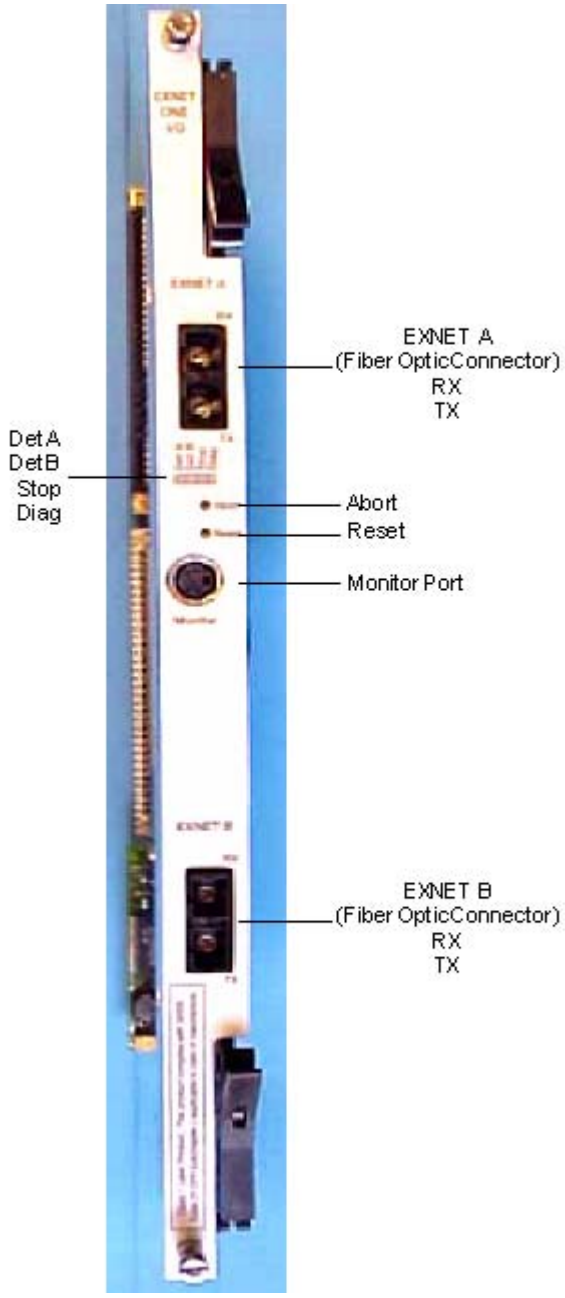
Related Products

The products related to the EXNET-ONE I/O card are listed below.

Product	Model No.	RoHS Model No.
Debug Cable	Part # 64-0046-00	Part # 164-0046-00

Front View

The front view shows the LEDs, push-button switches EXNET® fiber optic connectors, and Monitor port.


EXNET A
(Fiber OpticConnector)
RX
TX
DetA
DetB
Stop
Diag
Abort
Reset
Monitor Port
EXNET B
(Fiber OpticConnector)
RX
TX

Controls and Indicators

The table below describes the LEDs and push button switches as shown in the front view of the EXNET-ONE I/O card.

LEDs	Color/Status	Description
Det A	Red	Port A receiver does not detect signal
	Green	Port A receiver detects signal, port is open
	Green/Red	Port A receiver detects signal, port is looped back
Det B	Red	Port B receiver does not detect signal
	Green	Port B receiver detects signal, port is open
	Green/Red	Port B receiver detects signal, port is looped back
Stop	Red	EXNET-ONE I/O card has been aborted from the TDM bus.
	Green	EXNET-ONE I/O card is running on the TDM bus.
Diag	Off	EXNET-ONE I/O card is idle
	Green	Diagnostic has been completed successfully.
	Red	Diagnostic has failed
	Green/Red	Diagnostic is running
Push-button	**Description**	
Abort	Stops card operation and takes the card off the bus.	
Reset	Initiates a hardware reset of the card.	

EXNET A and B Connectors

The table below indicates the fiber optic connector signals. Refer to the front view to locate these connectors.

Connector	Description
EXNET A	
RX	Receiver Connector (Input)
TX	Transmit Connector (Output)

Connector	Description
EXNET B	
RX	Receiver Connector (Input)
TX	Transmit Connector (Output)

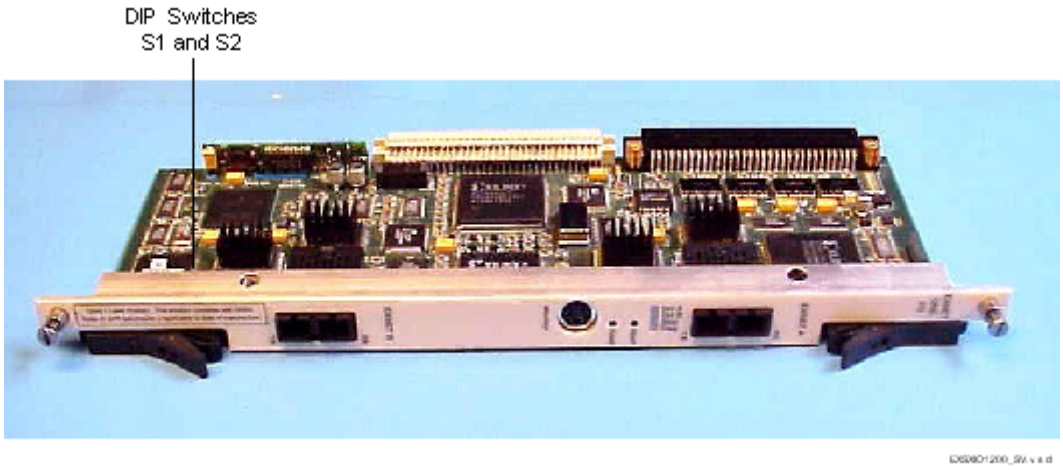
Monitor Port Pinouts

The table below indicates the pinouts of the Monitor port which is used for card test and debugging. Refer to the front view to locate this connector.

Pin	Description
1	Receive
2	Not Used
3	Ground
4	Transmit

Side View

The view shows the DIP switches and the jumpers.



DIP Switch S1

The table below describes DIP switch S1 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Disables Debug 1
	OFF	Enables Debug 1
2	ON*	Selects 9600 baud for monitor port
	OFF	Selects 19200 baud for monitor port
3	ON*	Disables Debug 2
	OFF	Enables Debug 2
4	ON*	Reserved for future use
	OFF	Reserved for future use

DIP Switch S2

The table below describes DIP switch S2 settings. The shading (asterisk* for html documents) indicates factory-installed settings.

Position	Setting	Function
1	ON*	Reserved for future use
	OFF	Reserved for future use
2	ON	Reserved for future use
	OFF*	API
3	ON*	Reserved for future use
	OFF	Reserved for future use
4	ON*	Reserved for future use
	OFF	Reserved for future use

Jumpers

The table below indicates the jumper settings.

Jumper	Setting	Description
JP1	Not Installed (default)	Factory use only
JP2	Not Installed (default)	Factory use only
JP4	Not Installed (default)	Factory use only
JP6	Not Installed (default)	Factory use only

EXNET® Fiber Optic Cable - See Part Numbers

Description

In a CSP, PCM data passes between nodes through the EXNET® ring, a proprietary 1.2 Gbps fiber optic network using a packet-based protocol. This section describes the physical aspects of the cable. Refer to the *Hardware Installation and Maintenance Guide* for complete CSP installation information.

Specifications

The cable supplied by Dialogic is a Duplex Zipcord fiber optic cable with the following specifications.

Parameter	Specification
Length	1, 2 and 5 meters
Connectors	SC
Multi-mode	850 nm
Fiber Size	62.5/125 microns
Insertion Loss	0.5 dB
Return Loss	Not Applicable

Cable Part Numbers

The EXNET® fiber optic cable part numbers are listed below.

Description	Part No.	RoHS Part No.
EXNET-Multi-Mode Fiber Optic Cable, 1 meter	16-5001-00	116-5001-00
EXNET-Multi-Mode Fiber Optic Cable, 2 meter	16-5008-00	116-5008-00
EXNET-Multi-Mode Fiber Optic Cable, 5 meter	16-5005-00	116-5005-00

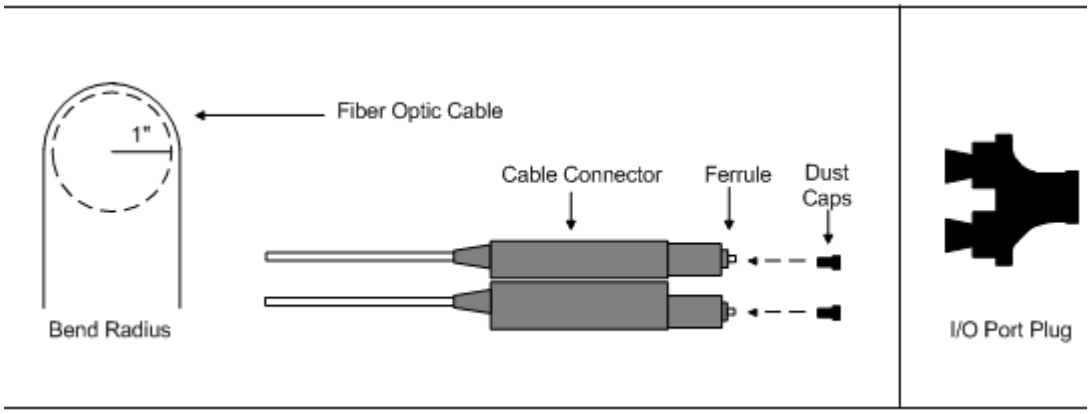
Related Products

The products related to the EXNET® fiber optic cable are listed below.

Product	Model No.	RoHS Model No.
EXNET-ONE I/O Card	EXS-XIO-1200	EXS-XIO-1200R

Fiber Optic Cable

The fiber optic cable is made up of the following components as shown below.



WARNING

The nodes communicate by sending a laser beam signal over the fiber optic cable. Once the EXNET-ONE I/O card is installed and the laser beam is active, do not look into the EXNET® ports. You may damage your eyes.

If you install an EXNET-ONE I/O card without the fiber optic cable inserted in the EXNET® ports, insert the plastic I/O Port Plug in the ports.

8 EXNET Connect PCI H.100 Card Hardware Product Description

Purpose This chapter provides the Hardware Product Description (HPD) for the EXNET Connect PCI H.100 card.

Compliance The EXNET Connect PCI H.100 card complies with all relevant regulations from the following standards organizations and governing bodies.

Country/Standards Organization	Regulations
United States and Canada	FCC Part 15 and ICES 003 CB Scheme IEC 60950 (all deviations)
European Union (CE Mark)	EN 55022: 1998/A1:2000/A2:2003 EN 55024: 1998/A1:2000/A2:2003 EN 300 386: Version 1.3.3 EN 60950
Australia/New Zealand	AS/NZS CISPR 22:2002 AS/NZ 60950

EXNET Connect - EXS-CON-1210

Product Description

The EXNET Connect PCI H.100 card allows the user to connect from remote CSP nodes to H.100 voice/media processing resources within the voice/media processing unit. The EXNET Connect card becomes a local switching matrix within the PC chassis. This enables switching traffic between the EXNET ring and the H.100 bus resources.

The card switches remote node data off the EXNET high-speed fiber optic ring and onto the H.100 bus. The data is then accessible to the voice/media resources in the EXNET Connect node. The card also performs the same function in reverse, switching local H.100 bus data onto the EXNET ring, making this data available to all remote CSP nodes.

A total of 4096 timeslots are available on the H.100 bus for data transmission and reception. The PCI H.100 provides two operating modes:

- In the SCSA compatibility mode, only 1024 timeslots are supported. It transmits over a maximum of 16 E1 logical spans or 21 T1 logical spans.
- In the full H.100 mode, all 4096 timeslots are available. It transmits over a maximum of 64 E1 logical spans or 80 T1 logical spans.

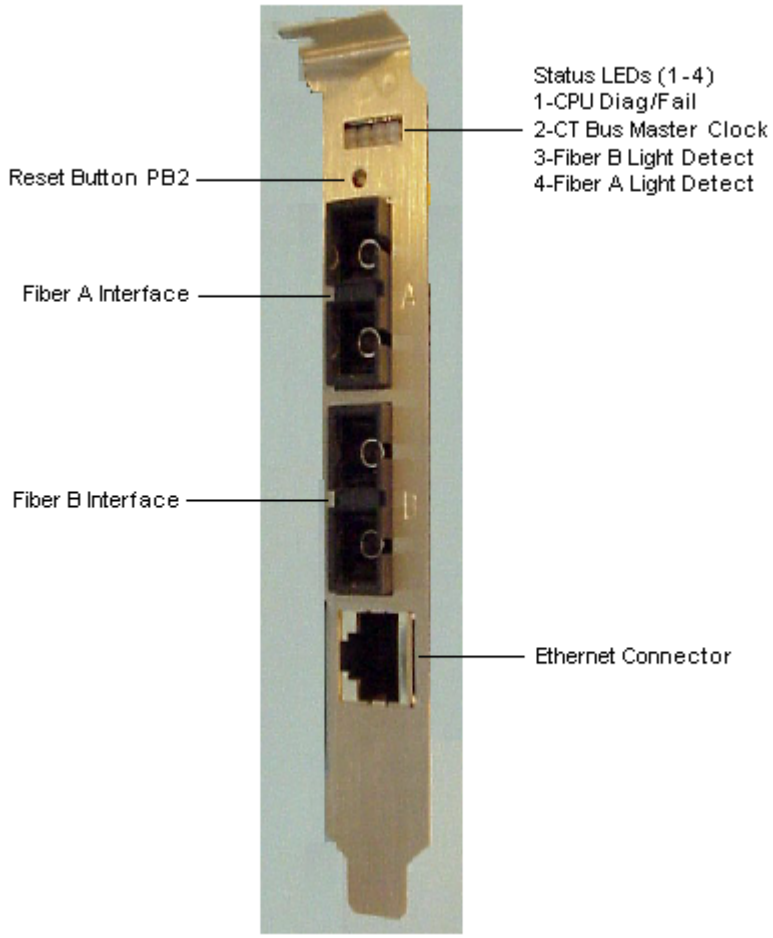
The PCI H.100 EXNET Connect card and the CSP must be running the same version of system software.

Environmental

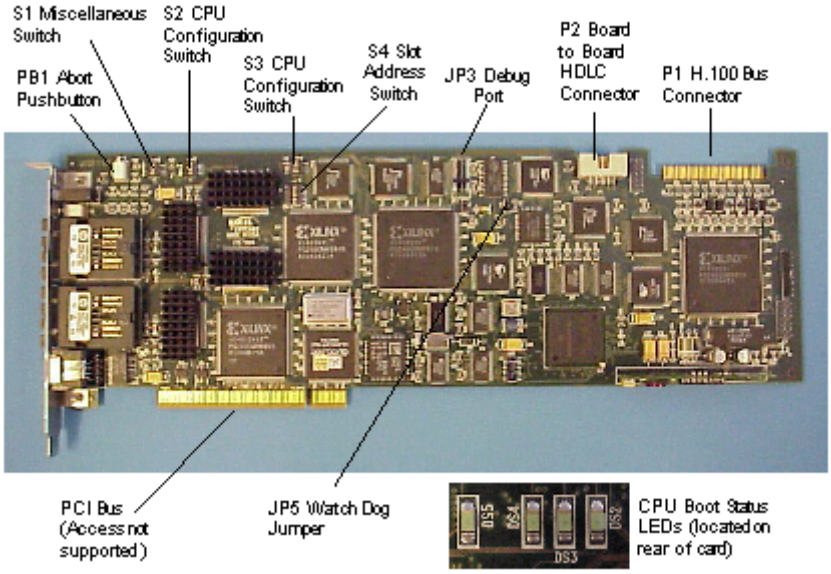
- Temperature - Storage
  40°C to 70°C (-40°F to 158°F)
- Temperature - Operation
  0°C to 50°C (32°F to 122°F)
- Temperature Shock - Storage
  -40°C to 70°C to -40°C (-40°F to 158°F to -40°F) @ 5°/minute
- Temperature Shock - Operation
  0°C to 50°C (32°F to 122°F)
  @ 10°/minute

- Humidity - Operating
  5% to 85%

Front Panel



Side View



Reset/Abort Switches

Pushbutton Reset

The pushbutton reset function causes a soft reset of the CPU for the duration of its depression. The pushbutton reset is on the faceplate of the EXNET Connect card. Soft reset does not reload the processor configuration registers, the Field Programmable Gate Array (FPGA) configuration data or corrupt external DRAM memory.

Pushbutton Abort

The pushbutton abort function causes a non-maskable interrupt (IRQ2) of the CPU. The pushbutton abort is on the top of the EXNET Connect card - it is not accessible when a system is closed up.

Hard Reset

Pressing both the pushbutton reset and pushbutton abort simultaneously causes a hard reset of the CPU. Hard reset reloads the processor's configuration registers and the FPGA configuration data, and also clears external DRAM memory.

Important! In the following DIP switch tables, the shading (asterisk* for html documents) indicates factory-installed settings.

DIP Switch S1 Settings: Miscellaneous

Position	Setting	Description
1	ON*	Reserved for future use
	OFF	Reserved for future use
2	ON*	Ethernet Enabled
	OFF	Host (PCI) Interface Enabled
3	ON*	Must be left in ON position
	OFF	For internal use only
4	ON	HDLC2 Bus Clock Slave
	OFF*	HDLC2 Bus Clock Master

DIP Switch S2 Settings: CPU Configuration

Position	Setting	Description
1	ON*	Full Boot
	OFF	Partial Boot
2	ON	Basic API
	OFF*	Extended API
3	ON*	Distributed Ring
	OFF	Local Ring
4	ON*	Distributed Ring
	OFF	Local Ring

DIP Switch S3 Settings: CPU Configuration

Position	Setting	Description
1	ON*	Debug print disabled
	OFF	Debug print enabled
2	ON	9,600 Baud
	OFF*	19,200 Baud
3	ON*	Debug disabled
	OFF	Debug enabled
4	ON	Reserved for future use
	OFF*	Reserved for future use

DIP Switch S4 Settings: Slot Address

Position	Setting	Description
1	ON*	Slot Address Geographic Address (Bit 0)
	OFF	Slot Address Geographic Address (Bit 0)
2	ON*	Slot Address Geographic Address (Bit 1)
	OFF	Slot Address Geographic Address (Bit 1)
3	ON*	Slot Address Geographic Address (Bit 2)
	OFF	Slot Address Geographic Address (Bit 2)
4	ON*	Slot Address Geographic Address (Bit 3)
	OFF	Slot Address Geographic Address (Bit 3)
5	ON*	Slot Address Geographic Address (Bit 4)
	OFF	Slot Address Geographic Address (Bit 4)
6	ON*	Reserved for future use
	OFF	Reserved for future use

EXNET Connect Status LEDs

CPU Status LEDs

Four CPU Status LEDs reflect the boot status of the CPU.

Card Status LEDs

Four card Status LEDs, located on the faceplate of the EXNET Connect, reflect the operating status of the EXNET Connect card.

LED	Color/Status	Description
	Red	Processor halted
1	Green	Processor running
	Red/Green	Diagnostics running
	Red	No H.100 Clock
2	Green	H.100 Clock Master
	OFF	H.100 Clock Slave
	Red	No Signal Detected Fiber Port B
3	Green	Signal Detected Fiber Port B
	Red/Green	Signal Detected but Fiber Port B disabled
	Red	No Signal Detected Fiber Port A
4	Green	Signal Detected Fiber Port A
	Red/Green	Signal Detected but Fiber Port A disabled

Front Panel Connectors

Connector	Description
Fiber Interface A	EXNET Fiber Optic Ring Connection
Fiber Interface B	EXNET Fiber Optic Ring Connection
Ethernet	10Base-T Cable Connection