



Cisco Connected Grid DSL GRWICs Hardware Installation Guide

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This document provides a hardware overview for Cisco Connected Grid Digital Subscriber Line (DSL) interface cards that provide connectivity to the Wide Area Network (WAN) for the Cisco 2010 Connected Grid Router (*hereafter* referred to as the Cisco CGR 2010).

This document includes the following sections:

- [Information About the Connected Grid DSL GRWICs, page 1](#)
- [Hardware Overview, page 2](#)
- [Installing and Removing the Connected Grid DSL GRWICs, page 5](#)
- [Connecting Connected Grid DSL GRWICs to the Network, page 8](#)
- [Software Configuration, page 8](#)
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Information About the Connected Grid DSL GRWICs

Each of the following DSL interface cards is a single-wide, grid router WAN interface card (GRWIC).

- Cisco Connected Grid 2-Pair Symmetric High-Bit-Rate Digital Subscriber Line (G.2SHDSL) card
- Cisco Multimode ADSL/ADSL2/ADSL2+/VDSL2 Annex A (VA-DSL-A)
- Cisco Multimode ADSL/ADSL2/ADSL2+/VDSL2 Annex B (VA-DSL-B)
- Cisco Multimode ADSL/ADSL2/ADSL2+/VDSL2 Annex M (VA-DSL-M)



Note

For details on software configuration for these GRWICS, please refer to the appropriate document listed in [Software Configuration, page 8](#).



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Hardware Overview

This section covers the following topics:

- [Hardware Features](#)
- [Hardware Specifications](#)
- [Front Panels](#)
- [LEDs](#)

Hardware Features

[Table 1](#) summarizes the features of the four Connected Grid DSL GRWICs supported on the Cisco CGR 2010 router.

Table 1 *Hardware Features Supported on the DSL GRWICs*

Feature	G.2SHDSL	VA-DSL-A	VA-DSL-B	VA-DSL-M
Hardware Dying Gasp for loss of power (see ITU G.991.2, section 7.1.2.5.3)	Yes	No	No	No
Wetting Current (see section A.5.3.3 of G.991.2)	Yes	No	No	No

Hardware Specifications

Table 2 summarizes the hardware specifications of the four Connected Grid DSL GRWICs supported on the Cisco CGR 2010 router.

Table 2 *Hardware Specifications for the Connected Grid DSL GRWICs*

Item	G.2SHDSL	VA-DSL-A	VA-DSL-B	VA-DSL-M
Dimensions (H x W x D) (inches)	3 x 2 x 6.5	3 x 2 x 6.5	3 x 2 x 6.5	3 x 2 x 6.5
Slot Restrictions	None	None	None	None
Number of ports	1-port	1-port	1-port	1-port
Connector	RJ-11	RJ-11	RJ-11	RJ-11
2-and 4-wire support	Yes	No	No	No
Subscriber service	ATM	ADSL/ADSL2/A DSL2+/VDSL2 over POTS Annex A	ADSL/ADSL2/A DSL2+/VDSL2 over ISDN Annex B	ADSL/ADSL2/A DSL2+/VDSL2 over POTS Annex M
Transport rate	2-wire(1-pair)– Rates from 192 kb/s to 2.304 Mb/s	Maximum Downstream rate:100 Mb/s	Maximum Downstream rate:100 Mb/s	Maximum Downstream rate:100 Mb/s
	4-wire(2-pair)– Rates from 384 kb/s to 4.608 Mb/s	Maximum Upstream rate: 50 Mb/s	Maximum Upstream rate: 50 Mb/s	Maximum Upstream rate: 50 Mb/s
Operating temperature (external to chassis)	0C to 40C	0C to 40C	0C to 40C	0C to 40C
Temperature sensor	Yes	Yes	Yes	Yes
Indicates when operating temperature of the GRWIC is exceeded.				

Front Panels

Figure 1 shows the front panel for the Connected Grid G.2SHDSL GRWIC.

Figure 2 shows the front panel for the Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex A.

Figure 3 shows the front panel for the Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex B.

Figure 4 shows the front panel for the Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex M.

Figure 1 Front Panel for Connected Grid G.2SHDSL GRWIC

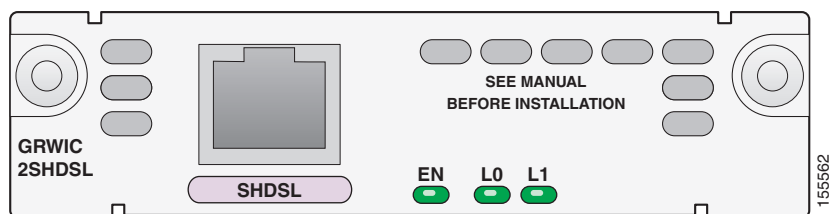


Figure 2 Front Panel for Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex A

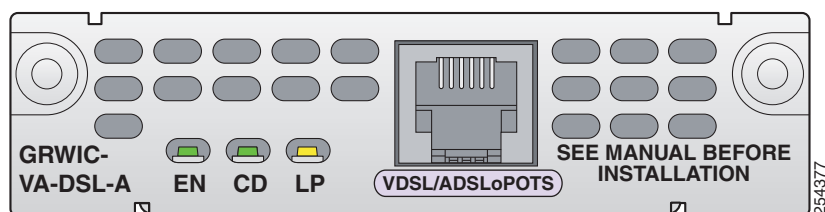


Figure 3 Front Panel for Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex B

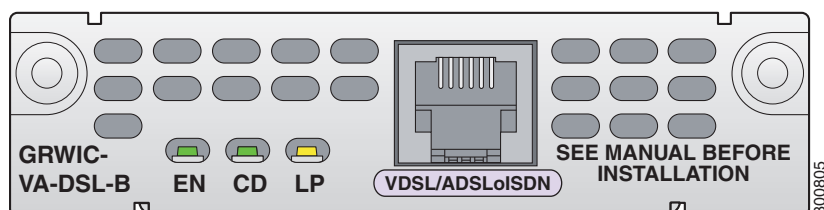
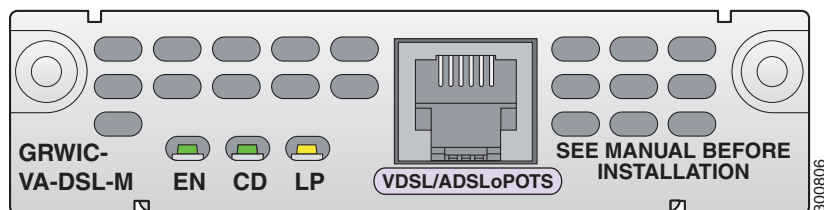


Figure 4 Front Panel for Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWIC Annex M



LEDs

Table 3 shows the LEDs for the Connected Grid G.2SHDSL GRWIC.

Table 4 shows the LEDs for the Connected Grid ADSL/ADSL2/2+/VDSL2 GRWICs.

Table 3 LEDs for Connected Grid G.2SHDSL GRWIC

LED	Color	Description
EN	Green	Operating system is running on the GRWIC.
	Amber	GRWIC is resetting.
	Blinking	System is initializing on the GRWIC.
L0, L1		Link status: <ul style="list-style-type: none"> On—Link is active. Off—Link is inactive (disabled). Blinking—Link is training / Link alarm.

Table 4 LEDs for Connected Grid Multimode ADSL/ADSL2/2+/VDSL2 GRWICs

LED	Color	Description
CD	Green	GRWIC is connected to the network and operating normally. For ADSL GRWICs only, this LED blinks while training with DSLAMs.
EN	Green	Operating system is running on the GRWIC.
	Amber	GRWIC is resetting.
	Blinking	System is initializing on the GRWIC.
LP	Yellow	Loopback status. Yellow—Indicates DSL card is in loopback mode.
	Off	Normal operation. No active loopback.

Installing and Removing the Connected Grid DSL GRWICs

This section describes how to install and remove a Connected Grid DSL GRWIC in the Cisco CGR 2010 router and includes the following topics:

- [Safety Warnings](#)
- [Installing a Connected Grid Single-Wide DSL GRWIC](#)
- [Removing a Connected Grid Single-Wide DSL GRWIC](#)

Safety Warnings

This section includes the basic installation warning statements. For regulatory compliance and safety information for the Cisco CGR 2010, refer to the *Connected Grid Router 2000 Series Regulatory Compliance and Safety Information* document.

<http://www.cisco.com/en/US/docs/routers/access/2000/CGR2010/hardware/rcsi/rcsiCGR2000series.html>



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Statement 1030



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity.
Statement 1001



Warning

Read the installation instructions before connecting the system to the power source. Statement 1004



Warning

Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first. Statement 1026

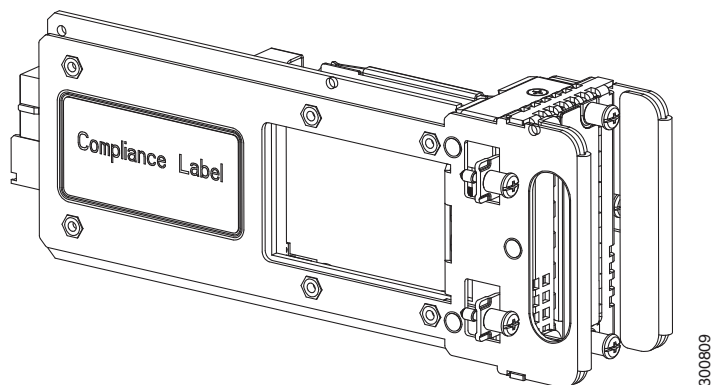
Installing a Connected Grid Single-Wide DSL GRWIC

All of the Connected Grid DSL GRWICs are single-wide interface cards. The router can accommodate four single-wide GRWICs or two single-wide GRWICs with one double-wide GRWIC, or two double-wide GRWICs at any one time.

A single-wide GRWIC installs in to one of four slots on the cable side of the router.

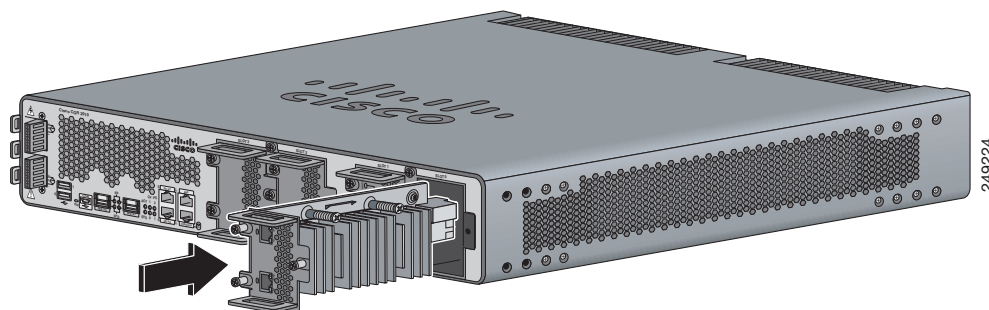
Each GRWIC is enclosed within a carrier enclosure with bars that extend outward from the front panel (see [Figure 5](#)).

Figure 5 **Side View of GRWIC Carrier Enclosure**



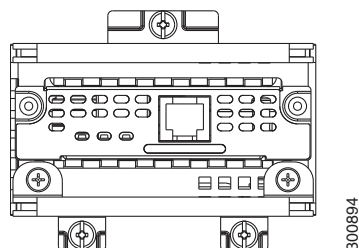
- Step 1** Stand the GRWIC on end to slide the single-wide GRWIC in to the router slot (see [Figure 6](#)).

Figure 6 *Installing a Single-wide GRWIC in the Cisco 2010 Router*



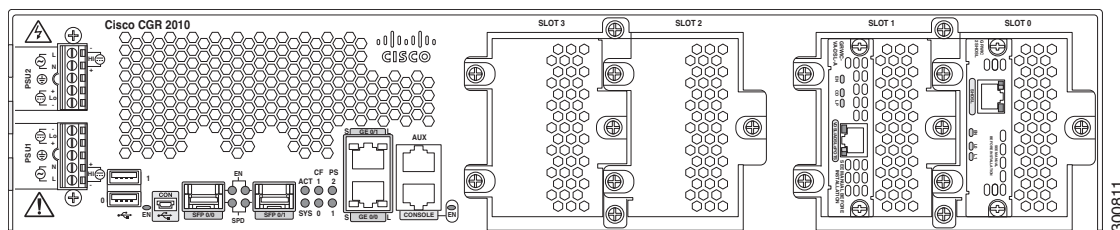
- Step 2** Tighten the three captive screws on the front of the GRWIC (see [Figure 7](#)).

Figure 7 *Front View of GRWIC Within Carrier Enclosure*



Note When installing multiple GRWICs at a time, the GRWICS must overlap as seen in [Figure 8](#).

Figure 8 *Installing Multiple GRWICs*



Removing a Connected Grid Single-Wide DSL GRWIC

**Caution**

The module CANNOT be hot swapped—to install the module, you must first power down the system.

- Step 1** Using a screwdriver, loosen the three captive screws on the Connected Grid DSL GRWIC.
- Step 2** Gently pull the module out of the slot.

Connecting Connected Grid DSL GRWICs to the Network

To connect the DSL GRWICs to the network, use a standard *RJ-11* straight-through cable to establish connection between the GRWIC and the network device.

[Table 5](#) shows the ADSL/ADSL2/2+/VDSL2 GRWIC pinouts.

Table 5 *ADSL/ADSL2/2+/VDSL2 GRWIC Pinouts*

Pin	Signal
3	Tip
4	Ring

**Note**

If you are connecting an ADSL interface card to an RJ-11 wall jack that has the DSL pair wired for pins 2 and 5, you must use an RJ-11 crossover cable (lavender with blue stripe). The RJ-11 crossover cable can be ordered separately as a spare.

Software Configuration

For details on configuring the Connected Grid DSL GRWICs, refer to the following configuration guides.

For software configuration details for the Connected Grid G.2SHDSL GRWIC, see [Configuring Cisco G.SHDSL HWICs in Cisco Access Routers](#).

For software configuration details for the Connected Grid VDSL2 functionality, see [Configuring the HWIC-VDSL](#).

For software configuration details for the Connected Grid ADSL functionality, see [Configuring ADSL](#) in the *Cisco 860 Series, Cisco 880 Series, and Cisco 890 Series Integrated Services Routers Software Configuration Guide*.

Related Documentation

For hardware details on the Cisco 2000 Series Connected Grid Routers, see *Cisco Connected Grid Routers 2010 Hardware Installation Guide*

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at: <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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