Dolphin PCI Express IXH611

Adapter card users guide

Version 1.32

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Dolphin is minimizing the amount of printed documentation and software CDs in its shipments, please download additional documentation and software from www.dolphinics.com.

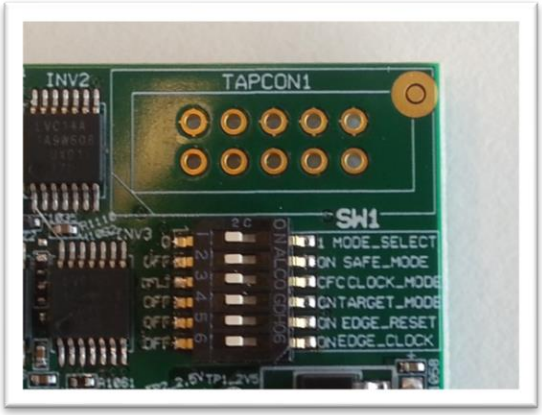
Quick install guide

The IXH611 can be installed in any compliant PCI Express x8 or x16, Gen1, Gen2 or Gen3 slot. The IXH611 does not support slot sizes smaller than an PCIe x8 slot.

Note: *Static electricity from your clothes or work environment can damage your PCI Express adapter card or your PC. Always wear a grounded antistatic wrist strap while opening the PC and when the card is removed from the anti-static bag.*

IXH611 Operating Modes

The Dolphin PCI Express IXH611 card has two main operational modes, transparent and NTB mode. The mode is controlled by the MODE SELECT DIP-switch labeled SW1 that can be found close to the upper edge of the board. The two mode configuration options are found in table 1 below. DIP-switch position 1 controls setting the board in transparent or non-transparent mode (NTB). The DIP-switch can be seen on Picture 1.



Picture 1: DIP Switch SW1 location

SW1 – MODE SELECT Setting	Configuration
ON	**Transparent mode**
OFF	**NTB mode**

Table 1: Main configuration settings, MODE Select, SW1

The IXH611 supports both HOST and TARGET operations in transparent mode. The transparent target mode is enabled by setting the TARGET MODE DIP to ON and setting MODE SELECT to ON.

All other DIP switches should normally be left in the factory default setting. More details on DIP-switch settings can be found on page 10 in this document.

Cable Connections

The IXH611 requires a x8 iPass™ or PCI Express standard cable. A single x8 cable is used to connect to other devices including transparent I/O devices, another PC with an IXH611 card or an IXS600 8 port switch.

Picture 2: IPASS connector on IXH611

To install they cable, match the male portion on the x8 cable with the female connector on the IXH611 board. Use even pressure to insert the connector until it is secure. Adhere to ESD guidelines when installing the cable ensure not to damage the board. The IXH611 supports both copper and active fiber cables. Copper cables are supported up to 7 meters and active fiber cables are supported up to 300 meters.

A x8 to x4 transition cable available from Dolphin can be used to connect the card to PCI Express equipment having a x4 IPASS connector.

Dolphin Software

The Dolphin Express IXH611 adapter card is compliant with Dolphins extensive software package for the IX product line and the IDT Demo software. Please visit http://www.dolphinics.com/support to download the latest documentation and software.

Dolphin provides software and documentation for several product families; **please remember to select the IX product family before downloading.**

The software download requires a password to log in. The password will automatically be emailed to you if you follow the instructions found on the getting started guide bundled with the adapter card.

Transparent mode (Host or Target operation) does not require any special software.

Overview

This document describes the new Dolphin PCI Express IX interconnect family and the IXH611 PCI Express Gen2 adapter card. The card is based on the PES24NT6G2 PCI Express Gen2 chipset from IDT. The IX product family consists of the following products:

- IXH610 PCI Express Gen2 x8 Host adapter card
- IXH611 PCI Express Gen2 x8 Host and Target adapter card
- IXS620 XMC PCI Express Gen2 Host and Target XMC adapter card
- IXS600 8 port PCI Express rack mount switch
- IXE60X PCI Express expansion products (contact Dolphin for details)
- IXC1M 1 Meter PCIe Gen2 Copper Cable
- IXC2M 2 Meter PCIe Gen2 Copper Cable
- IXC5M 5 Meter PCIe Gen2 Copper Cable
- IXC448-2M 2 Meter x8 to x4 PCIe Gen2 Transition Copper Cable
- IXFC848-10M 10 Meter x4 Gen2 Fiber Optic Cable with x8 connectors
- IXFCXMX Meter x8 Gen2 Fiber Optic Cable (Contact Dolphin for details)

The IXH611 adapter can be used to connect to any of the above products or to any compliant existing PCI Express downstream device having a standard PCI Express x8 connector (PCI Express Gen 1 or Gen2, auto detect).

All Dolphin PCI Express IXH adapters support the complete suite of Dolphin NTB Software including Dolphin SuperSockets™, optimized TCP/IP drivers, and SISCI Embedded software. It is also compliant with the PXImc software specification.

Dolphin SuperSockets is a Berkeley compliant Sockets library which provides socket latency below 2 microseconds and close to the wire speed streaming bandwidth for networked applications. SuperSockets™ is currently available on Linux and Windows. It is a 100% transparent plug and play solutions for commercial and embedded applications. More on SuperSockets can be found at http://www.dolphinics.com/products/dolphin-supersockets.html

Dolphin's optimized TCP/IP driver enables PCI Express to be used as a traditional 10G Ethernet / 40G Ethernet replacement for e.g. NFS sharing and legacy networking that does not need the low latency provided by SuperSockets. The TCP/IP driver supports gateway functionality.

The SISCI software provides well defined, easy to use shared memory / reflective memory programming API for PCI Express over cable. More on SISCI can be found at http://www.dolphinics.com/products/embedded-sisci-developers-kit.html

More information about the software provided for the Dolphin IXH adapter cards can be found on http://www.dolphinics.com/products.

Dolphin Express Adapter card - IXH611

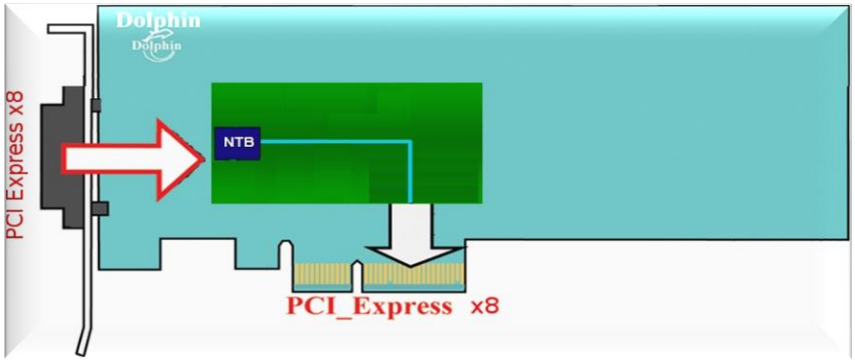


Illustration 1: Low profile, single PCI Express Gen2 x8 HBA

The IXH611 is a PCI Express Gen2 x8 adapter card available from Dolphin providing an easy to use, multi functional solution.

IXH611 high level specification

- PCI Express Gen2 5.0 Gbps per lane signaling– 40 Gbps total signaling.
- PCI Express Gen2 x8 edge connector. The card installs in any PCI Express slot that has a physical x8 or x16 connector.
- Compliant with PCI Express Gen1 and Gen3 computers and IO systems, auto detection.
- Supports NTB connections to other hosts and transparent connections to IO systems as a transparent P2P device.
- PCI Express Base Specification Rev 2.1
- PCI Express External Cabling Specification, Rev. 1.0
- One PCI Express Gen2 x8 IPASS Cable connection.
- Copper cables tested successfully up to 7 meters
- Support for Active Optical Fibers, up to 300 meters.
- Low Profile - PCI Express Electromechanical Specification, Rev 2.0
- Comes with both low profile and standard profile PCI Express bracket.
- PIO and Direct DMA capabilities
- Host clock isolation. Automatic support for host running CFC or SSC mode.
- Generates high quality, low jitter CFC of SSC CREFCLK (DIP switch selectable)
- Support for hot plugging of the PCI Express cable (NTB mode, SISCI and SuperSockets)
- Dual 128 KB EEPROM for boot up configuration data.
- EEPROM recovery option.
- Optional Software utility for reprogramming of EEPROM content.
- No PCI Express power domain isolation.
- Supports Dolphin SuperSockets, TCP/IP driver and SISCI software. Linux and Windows support.
- Power Consumption: 12 Volt: Max 6 Watt. 3.3 Volt: Max 1 Watt.
- Operating temperature 0°C to 55°C
- Relative Humidity 5% - 95% non-condensing
- JTAG programming and test
- RoHS compliant
- Compliant to EN-55022, EN 55024-A1&A2, EN 61000-6-2
- CE Mark

LEDs

The card has two bi-color LEDs visible through the PCI Express front bracket.

Name	dark	yellow	Green	Green - blinking
Link	Power off or failure	Power on, Link down	Power on, Link Up	Power on, Link active, data transmitted
NTB	Transparent mode	Transparent Target	NTB mode (PXImc/SISCI/SuperSockets/TCP/IP mode)	NA

Table 2: LED overview

The NTB link LED is controlled by software. Both LEDs depends on GPIO registers initialized by EEPROM. An incorrect EEPROM can cause dark LEDs. DIP-switch SW1 "safe mode ON" will cause all LEDs to be dark. More details on DIP-switch settings can be found below.

Use cases

The IXH611 card may be used in the following use cases. The use cases are summarized in Table 3 Adapter use cases on page 10.

Use case A: Transparent IO

The Dolphin IXH610, IXH611 or IXH620 HCA connects to any standardized PCI Express x8 downstream device. No special device driver is required for the IXH611 card. Any device in the PCI Express IO system will operate using its standard device driver. IXH adapter card operates in Host transparent mode.

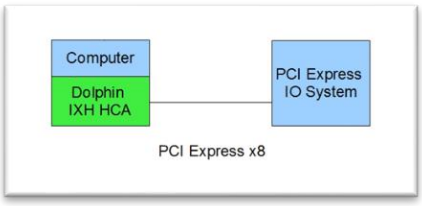


Illustration 2: IXH Adapter used to connect to a remote PCI Express IO System

Use case B - 2 Node Configuration - NTB Mode (Unbalanced)

2 node unbalanced "NTB" mode- The Dolphin PCI Express IXH61, IXH611 or IXH620 adapter connects to a remote upstream subsystem (with root complex) that may have a transparent re-driver card only. This configuration is not fully supported by Dolphin software.

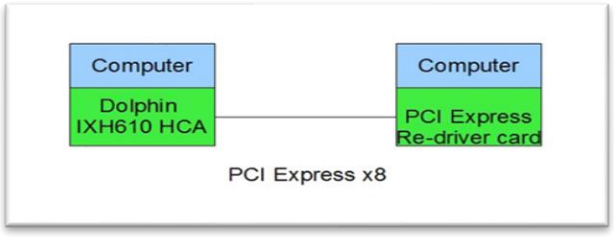


Illustration 3: IXH610 Adapter card used to connect to a remote host using a re-driver card.

Use case C - 2 Node Configuration – NTB Mode (Balanced)

Each node has a Dolphin PCI Express IXH610, IXH611 or IXH620 adapter direct connection to remote host using a PCI Express Gen2 x8 cable. This configuration is fully supported by all Dolphin software. IXH adapter card operates in NTB mode.

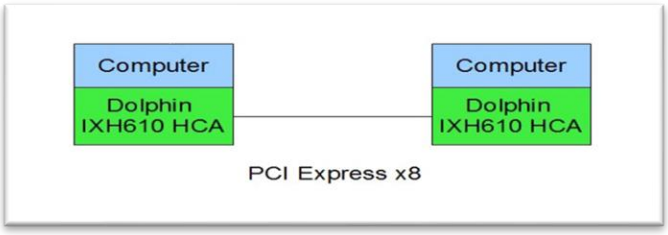


Illustration 4: IXH610 Adapter card used to build a two node configuration.

Use case D - Switch Configuration

Each node has a Dolphin Express IXH610, IXH611 or IXH620 adapter card. Up to 8 systems can be connected to the Dolphin IXS600 8 port PCI Express Gen2 switch, larger configurations can be built by cascading switches using a standard iPass cable. IXH adapter card operates in NTB mode.

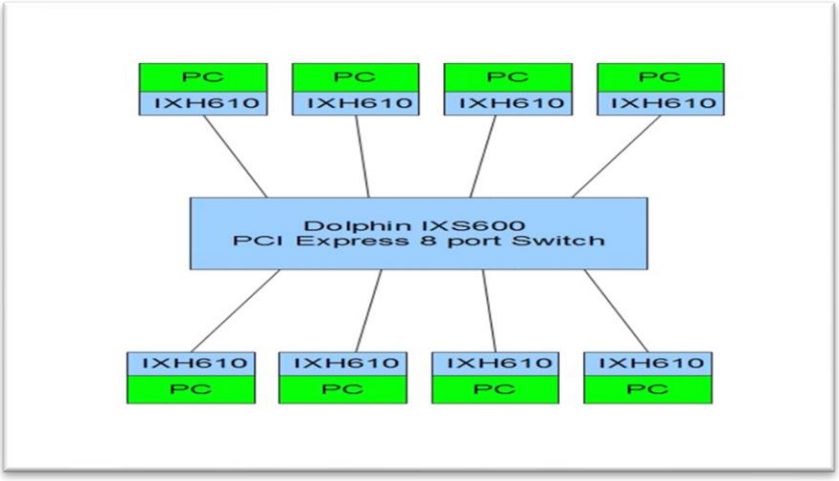


Illustration 4: Basic switch configuration

Use case E – Downstream target

The IXH611 and IXH620 XMC adapter can be used as a downstream target adapter. The IXH adapter card operates in transparent target mode.

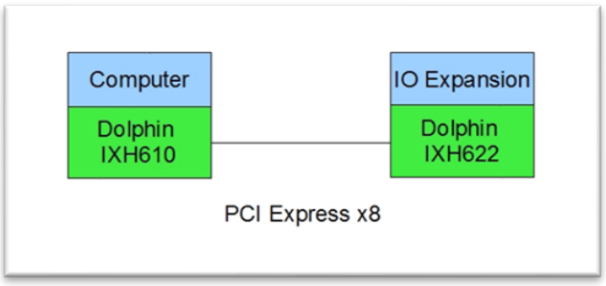


Illustration 5: IXS620 as target mode

Configuration and DIP-switches

The IXH611 has one bank of DIP switches. The location of the DIP switches on the card is shown as SW1 on the figure 5 below. The Default factory setting is a transparent configuration, upstream mode (see Use case A: Transparent IO). The IXH611 will also support NTB use cases (see Use case C - 2 Node Configuration – NTB Mode (Balanced) and Use case D - Switch Configuration, All Dolphin Software using default setting).

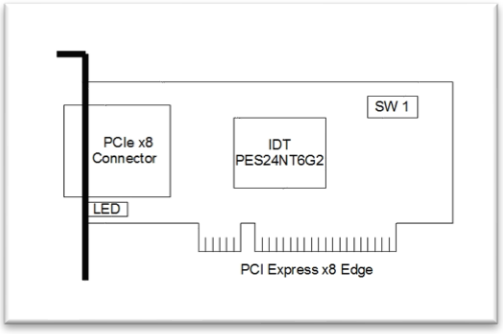
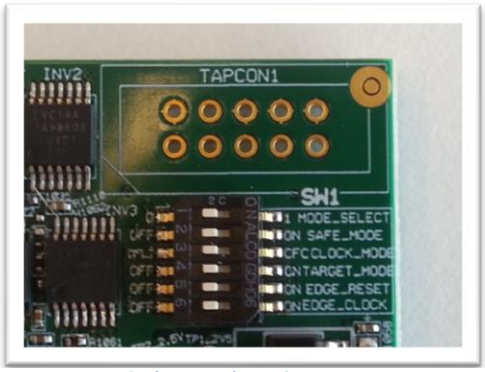


Illustration 6 : IXH611 overview

The IXH611 has DIP-switches for setting special modes or operations. Please carefully read the documentation before modifying any DIP-switch settings. Please carefully pay attention to ON and OFF positions written on the DIP switch.

DIP switch bank SW 1 – Configuration



Picture 3: DIP Switch SW1 location

This DIP Switch is used to configure transparent and non-transparent modes, set and select the clock source.

DIP no	Name	Description	ON	OFF	Default
1	MODE Select	Used to select EEPROM 1 or 2 as boot image.	Load configuration from EEPROM 2 Factory default is TRANSPARENT mode	Load configuration from EEPROM 1 Factory default is NTB mode	off
2	SAFE MODE	Enables the card to boot if EEPROM content is corrupted	Default chip configuration selected. Host must provide CFC to enable adapter to operate.	Configuration loaded from selected EEPROM	off
3	CLOCK MODE	Select CFC or SSC link clock generation	CFC link clock will be generated	SSC link clock will be generated	off
4	TARGET MODE	Select Host or Target mode	Adapter is downstream target.	Adapter is upstream Host	off
5	EDGE RESET	Enable IXH611 to activate EDGE RESET in target mode when CRST is received through the PCI Cable	Adapter card drives RST on finger connector	No reset generated	off
6	EDGE CLOCK	Enable IXH611 to generate REFCLK on finger connector in target mode	Adapter card drives REFCLK on finger connector	No CREFCLK generated	off

Note: Some DIP switch configuration options may be removed in the future versions. Please always consult the user guide for details.

Use cases summary and settings

The table below gives an overview of the various use cases, settings and limitations.

Use case	Description	NTB	DIP-switch setting	Clock source	Cable pull	Power Sequence requirements	Software/Driver
A	Downstream – Dolphin adapter card connects to downstream IO	no	SW 1 - MODE select ON	Adapter card drives CREFCLK	Not supported by legacy device drivers	IO system must power on first	No driver required for IXH611 card. Legacy drivers for IO Devices
C	Dolphin Host – Host. Both connected systems has Dolphin adapter card.	yes	SW 1 - MODE select OFF		Fully supported	No limitations	Dolphin SISCI, SuperSockets, TCP/IP, PXImc
D	Dolphin Switch configuration. All connected hosts have Dolphin adapter card	yes	SW 1 - MODE select OFF	Adapter card transmits clock on PCI Express cable	Fully supported	No limitations	Dolphin SISCI, SuperSockets, TCP/IP, PXImc
E	Downstream target – Requires a IXH611 adapter and special firmware (marked Target)	no	SW 1 - MODE select ON	Adapter card receives clock from PCI Express cable	Not supported by legacy device drivers	IO system must power on first	No driver required for IXH611 card. Legacy drivers for IO Devices

Table 3: Adapter use cases

Installation

Static electricity from your clothes or work environment can damage your PCI Express adapter card or your PC. Always wear a grounded antistatic wrist strap while opening the PC and when the IXH611 is removed from the anti- static bag.

Changing the PCI Express bracket

The IXH611 package includes a standard and low-profile PCI Express bracket. By default, the standard height bracket is installed on the board. If you need to replace the mounted bracket with a low-profile bracket, carefully unscrew the two mounting screws to remove the full height bracket. Save the two mounting screws and replace the bracket with the low-profile bracket. Use the two mounting screws to install the low-profile bracket. The screws should be carefully tightened. Be careful not to overtighten.

Installing the Adapter card

Before installing the adapter card, make sure you are properly grounded to avoid static discharges that may destroy your computer or the adapter card. Ensure you are properly grounded before opening your computer or the anti-static bag containing the IXH611. Please follow your computer's manual on how to install a PCI Express card.

The IXH611 Adapter card can be installed into any PCI Express x8 or x16 slot. The IXH611 supports both PCI Express Gen2 and Gen1 signaling. *NOTE: A Gen2 slot is recommended as it typically doubles the performance compared to a Gen1 slot*. The IXH611 is a x8 card so no additional performance can be obtained using a x16 slot. The IXH611 can be installed in a PCI Express Gen3 slot but will operate at Gen2 speed.

The IXH611 supports both hosts using spread spectrum and constant frequency clocking. The card implements clock isolation and will provide a high quality CREFCLK signal on the cable. CREFCLK can be CFC or SSC. Please refer to the DIP switch settings for CREFCLK configuration information.

Installing and removing the cable

The IXH611 supports PCI Express x8 Gen2 cables. Installing and removing cables should be done with both upstream and downstream devices powered off. The Dolphin SuperSockets, TCP/IP drivers and SISCI fully support hot plugging (*Note: installation and removal) of cables while the system is running*. Standard PCI Express cables are not designed for a high number of installations and removals; the gold applied to the connector head may wear out and cause loss of communication. Please contact your Dolphin if you intend to continuously connect and disconnect the PCI Express cables.

Connecting the cable

Please carefully install the PCI Express cable connector into the connector housing on the IXH611 adapter card or IXS600 Switch box. Computer cables should always use stain relief to protect the connected equipment from excessive force via the cable. This is especially important for cables between racks.

Disconnecting the cable

Please carefully pull back the thumb tab to release the cable from the connector house and pull back the cable.

EEPROM Programming

Dolphin may from time to time publish updated firmware. Current firmware is normally included in the Dolphin software distribution and published on www.dolphinics.com/support. Please consult the software documentation for information on firmware upgrades or Dolphin support if assistance is required.

Software installation

More information on installing Dolphins SuperSockets, SISCI or TCP/IP driver software can be found at http://www.dolphinics.com/support/installation-ix.html

Identifying the card

The card has a label-sticker with the serial-number in the format 'IXHXXX-YY-ZZZZZZ', where XXX denotes the card-type (*e.g. 611*), YY denotes the card revision (*e.g. CD*) and ZZZZZZ denotes the serialized production number (*e.g. 012345*) – this whole string makes up the serial number of the card (*i.e. IXH611-CD-012345*).

With the DIS software installed and loaded, you can get this serial-number with the ixdiag command;

The top of this output will show information about the card (example from an IXH610-card);

```
Adapter 0 > Type                      : IXH610
            NodeId                    : 4
            Serial number             : IXH610-DE-001352
            IXH chipId                : 0x8091111d
            IXH chip revision         : 0x00000002 (ZC)
            EEPROM version NTB mode   : 0024
            EEPROM version transp mode : 0009
            EEPROM swmode[3:0]        : 1100
            EEPROM images             : 0001
            Card revision             : DE
```

Here you will see both the whole serial-number string, as well as the decoded card-type and card-revision identifiers. The 'EEPROM version NTB mode' may be of interest – this shows the firmware-version of the card.

You can also get this information without ixdiag (for instance when the drivers are not loaded or the card is in transparent mode), using lspci in Linux;

First run lspci, and identify the card. It will show up as something like

```
02:00.0 PCI bridge: Integrated Device Technology, Inc. Device 8091 (rev 02)
02:00.1 Bridge: Integrated Device Technology, Inc. Device 8091 (rev 02)
02:00.2 System peripheral: Integrated Device Technology, Inc. Device 8091 (rev 02)
```

Second, do an lspci –vvv –s <device> , and look for the 'Serial' –string

```
# lspci -s 02:00.0 -vvv | grep Serial
        Capabilities: [180 v1] Device Serial Number 00-00-44-45-00-00-05-48
```

This shows the card as revision 0x4445 (*hexadecimal values of the 'DE' letters in the ASCII table*), with the production number 0x00000548 (*001352 in decimal*).

In Windows, we export the serial-number through the event-log through the transparent-mode driver is loaded (v 1.0.1 or later required). This driver is available through the download-section at http://www.dolphinics.com/support/index_support_ix.html

```
PS C:\> Get-EventLog System -Source IXH_T -Newest 1

  Index Time          EntryType   Source InstanceID Message
  ----- ----          ---------   ------ ---------- -------
  34206 Oct 25 23:02  Information IXH_T 1074069505 Serial number is IXH610-CC-000101.
```

Support

More information about the product, support and software download can be found at http://www.dolphinics.com.

For general support questions, please contact Dolphin via the Jira Service Management portal: https://www.dolphinics.com/csp.

Technical information

PCI-Express 8x Finger Connector Pin-Out

Pin	Side B Connector		Side A Connector	
#	Name	Description	Name	Description
1	+12v	+12 volt power	PRSNT#1	Hot plug presence detect
2	+12v	+12 volt power	+12v	+12 volt power
3	RSVD	Reserved	+12v	+12 volt power
4	GND	Ground	GND	Ground
5	SMCLK	SMBus clock	JTAG2	TCK
6	SMDAT	SMBus data	JTAG3	TDI
7	GND	Ground	JTAG4	TDO
8	+3.3v	+3.3 volt power	JTAG5	TMS
9	JTAG1	+TRST#	+3.3v	+3.3 volt power
10	+3.3V	3.3v volt power	+3.3v	+3.3 volt power
11	WAKE#	Link Reactivation	PERST#	Reset
Mechanical Key				
12	RSVD	Reserved	GND	Ground
13	GND	Ground	REFCLK+	Reference Clock Differential pair
14	PETp(0)	Transmitter Lane 0, Differential pair	REFCLK-	
15	PETn(0)		GND	Ground
16	GND	Ground	PERp(0)	Receiver Lane 0, Differential pair
17	PRSNT#2	Hotplug detect	PERn(0)	
18	GND	Ground	GND	Ground
19	PETp(1)	Transmitter Lane 1, Differential pair	RSVD	Reserved
20	PETn(1)		GND	Ground
21	GND	Ground	PERp(1)	Receiver Lane 1, Differential pair
22	GND	Ground	PERn(1)	
23	PETp(2)	Transmitter Lane 2, Differential pair	GND	Ground
24	PETn(2)		GND	Ground
25	GND	Ground	PERp(2)	Receiver Lane 2, Differential pair
26	GND	Ground	PERn(2)	
27	PETp(3)	Transmitter Lane 3, Differential pair	GND	Ground
28	PETn(3)		GND	Ground
29	GND	Ground	PERp(3)	Receiver Lane 3, Differential pair
30	RSVD	Reserved	PERn(3)	
31	PRSNT#2	Hot plug detect	GND	Ground
32	GND	Ground	RSVD	Reserved
33	PETp(4)	Transmitter Lane 4, Differential pair	RSVD	Reserved
34	PETn(4)		GND	Ground
35	GND	Ground	PERp(4)	Receiver Lane 4, Differential pair
36	GND	Ground	PERn(4)	
37	PETp(5)	Transmitter Lane 5, Differential pair	GND	Ground
38	PETn(5)		GND	Ground
39	GND	Ground	PERp(5)	Receiver Lane 5, Differential pair
40	GND	Ground	PERn(5)	
41	PETp(6)	Transmitter Lane 6, Differential pair	GND	Ground
42	PETn(6)		GND	Ground
43	GND	Ground	PERp(6)	Receiver Lane 6, Differential pair
44	GND	Ground	PERn(6)	
45	PETp(7)	Transmitter Lane 7, Differential pair	GND	Ground
46	PETn(7)		GND	Ground
47	GND	Ground	PERp(7)	Receiver Lane 7, Differential pair
48	PRSNT#2	Hot plug detect	PERn(7)	
49	GND	Ground	GND	Ground

PCIe iPass Cable Connector pinout

PIN#	Row A Signal Name	Row B Signal Name
1	GND	GND
2	PETp(0)	PERp(0)
3	PETn(0)	PERn(0)
4	GND	GND
5	PETp(1)	PERp(1)
6	PETn(1)	PERn(1)
7	GND	GND
8	PETp(2)	PERp(2)
9	PETn(2)	PERn(2)
10	GND	GND
11	PETp(3)	PERp(3)
12	PETn(3)	PERn(3)
13	GND	GND
14	CREFCLOCK+	+3,3V POWER
15	CREFCLOCK-	+3,3V POWER
16	GND	+3,3V POWER
17	RESERVED	POWER RET
18	RESERVED	POWER RET
19	SIDEBAND RETURN	POWER RET
20	CPRESNT#	CWAKE#[1]
21	CPWRON	CPERST#
22	GND	GND
23	PET(p4)	PERp(4)
24	PET(n4)	PERn(4)
25	GND	GND
26	PET(p5)	PERp(5)
27	PET(n5)	PERn(5)
28	GND	GND
29	PETp(6)	PERp(6)
30	PETn(6)	PERn(6)
31	GND	GND
32	PETp(7)	PERp(7)
33	PETn(7)	PERn(7)
34	GND	GND

[1] CWAKE is optional and not used on IXH611

Compliance and regulatory testing

EMC Compliance

The Dolphin PCI Express IXH611 adapter is tested and found to comply with the following relevant test standards for PCI Express cards, Telecommunication and Industry equipments installed in a standard PC:

EN 55022 (2010)
EN 55024 (1998) + A1 (2001) + A2 (2003)
EN 61000-6-2 (2005)

This does not ensure that it will comply with these standards in any random PC. It is the responsibility of the integrator to ensure that their products are compliant with all regulations where their product will be used.

RoHS Compliance

The Dolphin IXH611 is RoHS compliant. A Compliance certificate issued by the Manufacturer is available upon request.

Limited Warranty

Dolphin Interconnect Solutions warrants this Product to be free from manufacturing defects under the following terms:

Warranty Period

The warranty applies for one (1) year from the date of purchase. Extended warranty is available.

Coverage

To the extent permitted by applicable law, this warranty does not apply to:

- Damage caused by operator error or non-compliance with instructions available for the product.
- Use or attempt to use or program firmware not approved by Dolphin.
- Damage due to accidents, abuse, misuse, improper handling or installation, moisture, corrosive environments, high voltage surges, shipping, or abnormal working conditions.
- Damage caused by acts of nature, e.g. floods, storms, fire, or earthquakes.
- Damage caused by any power source out of range or not provided with the product.
- Normal wear and tear.
- Attempts to repair, modify, open, or upgrade the product by personnel or agents not authorized by Dolphin.
- Products for which the serial number label has been tampered with or removed.
- Damage to the product caused by products not supplied by Dolphin.

Service Procedure

In the event that the product proves defective during the Warranty Period, you should contact the seller that supplied you with the product, or if you purchased it directly from Dolphin, visit https://www.dolphinics.com/csp to obtain a valid RMA number and instructions. Products returned to Dolphin without a proper RMA number will not be serviced under this warranty.

Limitations

TO THE FULLEST EXTENT PERMITTED BY LAW, DOLPHIN WILL NOT BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS, LOST DATA, OR LOSS OF USE) ARISING OUT OF ANY USE DOLPHINS PRODUCTS, SOFTWARE OR SERVICE PROVIDED. DOLPHINS MAXIMUM LIABILITY WILL NOT EXCEED THE
TOTAL AMOUNT PAID FOR THE PRODUCT BY PURCHASER.