OASIS-4i Installation Guide

Warning!

This board contains static sensitive components. Please take the necessary precautions when handling and installing the board, to prevent damage or malfunction.

Do not plug or unplug motors while the board is powered-up, as this may damage the controller.

Introduction

Thank you for purchasing the OASIS-4i four axis stepper controller for the PCI bus! The OASIS-4i is an advanced, high-performance controller designed for the most demanding imaging and microscopy applications. The compact PCI form factor ensures a highly integrated solution for automation control.

This guide provides an overview of how to physically install the OASIS-4i card into your system, install the required driver software, and configure the controller for your particular setup.

Installation Requirements

In order to install the OASIS-4i card into your system, you will need the following:

- PC with one three-quarter length PCI slot available
- Windows® XP, Windows®Vista® or Windows® 7operating system
- CD-ROM drive
- One free (hard disk style), power connector, with 2A at 12V available
- Cross-head screwdriver
- OASIS-4i Installation CD

Installation Process

The OASIS-4i installation process consists of three distinct steps:

1. **Hardware Installation**. In this step, you will physically place the OASIS-4i card inside your computer.

2. **Driver Installation**. After installing the hardware, you need to install the driver software so that Windows recognizes the card and application software can use it.

3. **Configuration**. You will need to configure the OASIS-4i card to match your particular system setup.

Once these steps are complete, the OASIS-4i card is generally ready for use. However, if you are using a 3rd party application, you may need to install additional software so that your application package can use the OASIS-4i controller to drive the motorized components of your system. Refer to your application / system documentation for further details on how to configure the application for use with OASIS-4i.

Connector Identification

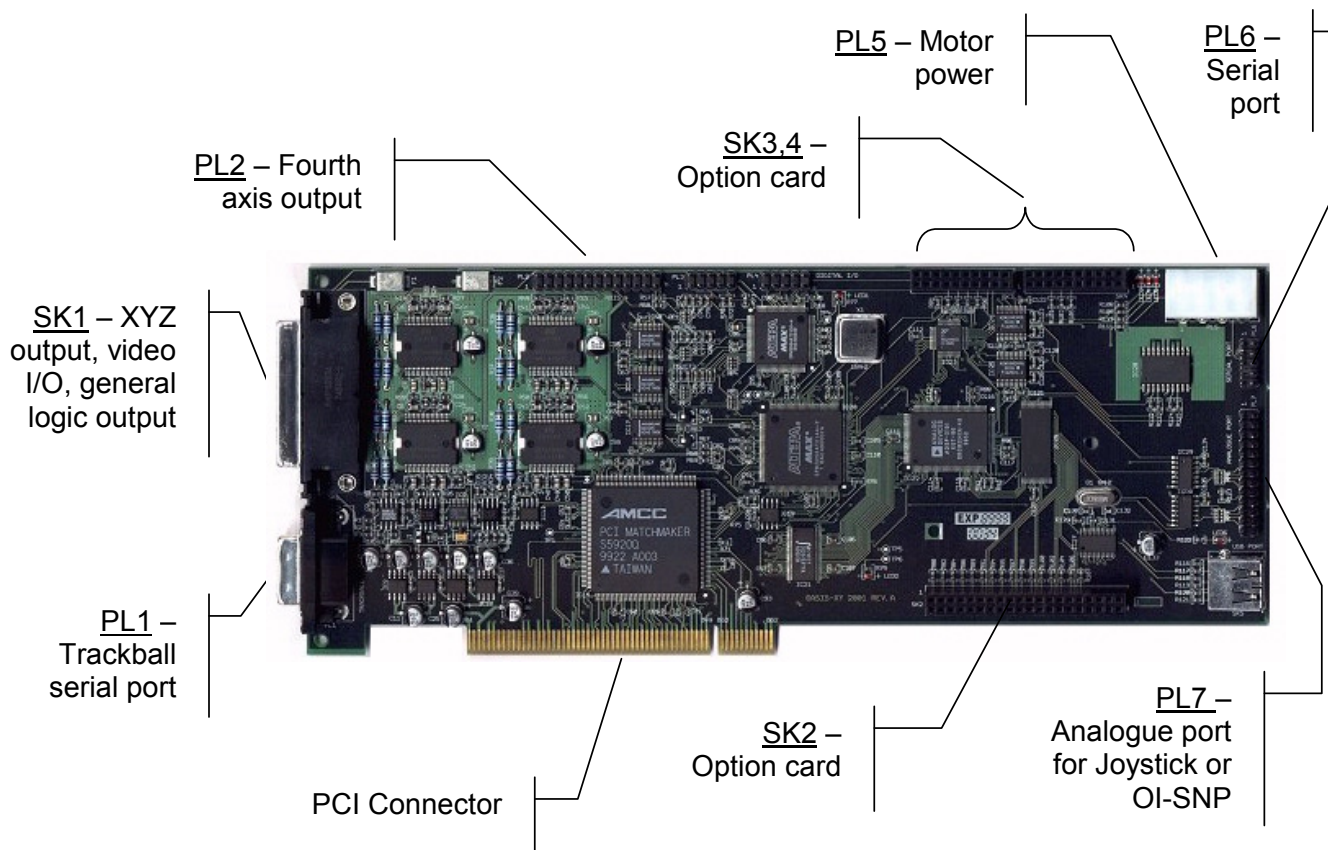Refer to the following diagram for information regarding the various connectors available on the OASIS-4i card.

Figure 1. OASIS-4i Connectors.

Hardware Installation Procedure

Preparing the PC case

1) Switch off the PC and unplug it from the mains to disable any standby power.

2) Remove the system unit cover or side panel.

3) Select a suitable PCI slot with no obstructions (preferably one with adequate air-flow from the auxiliary fan), and remove blanking panel as necessary.

Fitting the card

4) Ground yourself to an antistatic mat or other grounded source to discharge static electricity before handling the board.

5) Pick up the board (still in its anti-static sleeve), by grasping the metal edge bracket with one hand, and remove the sleeve.

6) Taking care to hold the edges of the board, avoiding contact with the electronic components, position it over the PCI slot and locate the tip of the metal bracket in the slot of the PC chassis, before pushing the board firmly but gently home with a slight rocking action.

7) Secure the bracket with a retaining screw.

Connecting power and options

8a) If intending to use the 4th axis, you will need to fit an adapter plate to another spare slot and the interconnecting cable to PL2 the 4th axis output. Be careful to attach pin 1 of the ribbon cable (with the red stripe), to pin 1 of PL2, which is marked on the board (towards metal bracket).

8b) If fitting a joystick or OI-SNP (Leica SmartMove interface), you will need to fit an adapter plate to another spare slot and the interconnection cable to PL7, the Analogue Port. Be careful to attach pin 1 of the ribbon cable (with the red stripe), to pin 1 of PL7, which is marked on the board (towards the power connector).

8c) If intending to use the OASIS-XA1 5th axis module, please refer to the OASIS-XA1 documentation for connection details.

8d) If intending to use the OASIS-DC1 module, please refer to the OASIS-DC1 documentation for connection details.

9) Connect a spare power connector from the PC power supply to PL5 at the rear of the board. Preferably the OASIS-4i should be the only device drawing power from this lead. The on-board motor drive components get their power via the +12V from this connector.

Making external connections

10) Replace PC system cover or side panel.

11) If using a Kensington Expert Mouse 5.0 serial trackball or other serial control device, connect it to PL1, the 9-pin trackball serial port below
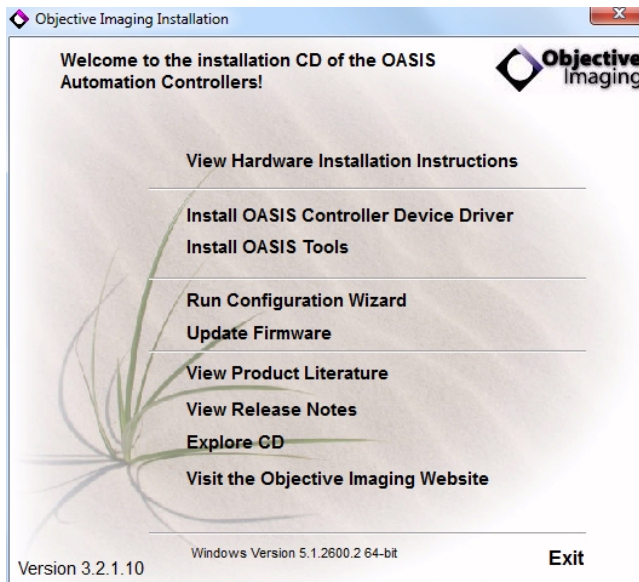
the 44-way main connector.

12) Connect the appropriate cable from SK1, the 44-way XYZ and video in/out connector, to your desired XY stage, focus adapter (Z) and video source as required. Notice that this 44 way connector is keyed to prevent insertion of an incorrect cable.

13) You are now ready to switch on the PC and proceed with the driver installation for your operating system.

Driver Installation

1) Switch on PC and boot into Windows.

2) If the 'Add New Hardware Wizard' appears, choose Cancel.

3) Insert the OASIS Installation CD or navigate to the folder where you downloaded and unzipped the installation download.

4) Run the Setup.exe from the main installation disk.

5) Click on the 'Install OASIS Controller Device Driver' option. A message will indicate the drivers were installed and registered correctly.

6) Click on the ' Install OASIS Tools' option to install the Configuration Wizard, the Flash Configuration program and the OASIS Application utility. These utilities will be useful in configuring the OASIS-blue controller for your particular hardware situation.

Configuring the OASIS-4i controller

The OASIS-4i controller is designed to work with a wide range of different types of automation hardware. For instance, there are a number of manufacturers of XY motorized stages for microscopes, and each manufacturer uses different styles of connectors, wirings for limit switch logic, and other features specific to their make and model of stage.

In order to drive these different types of hardware, the OASIS-4i controller must be configured accordingly. Most of these configuration settings are stored in the onboard flash memory of the OASIS-4i card, permitting the correct startup conditions when the card is powered up and initialised.

OASIS Configuration Wizard

The easiest way to configure the card is to run the OASIS Configuration Wizard (Figure 2). The wizard provides step-by-step instructions for defining the settings most appropriate for your particular system.

Figure 2. OASIS Configuration Wizard.

The wizard includes a listing of the various makes and models of XY stage, focus drives, and filter wheels, and can setup the card based on known default values for the particular device. The wizard can also auto-detect the settings of your particular systems—such as limit switch polarity, axis and limit directions, and encoder settings (if fitted)—by performing various movements to test and measure your system's characteristics.

OASIS Flash Memory Configuration Utility

Individual flash memory settings may be modified using the OASIS Flash Memory Configuration Utility (Figure 3).
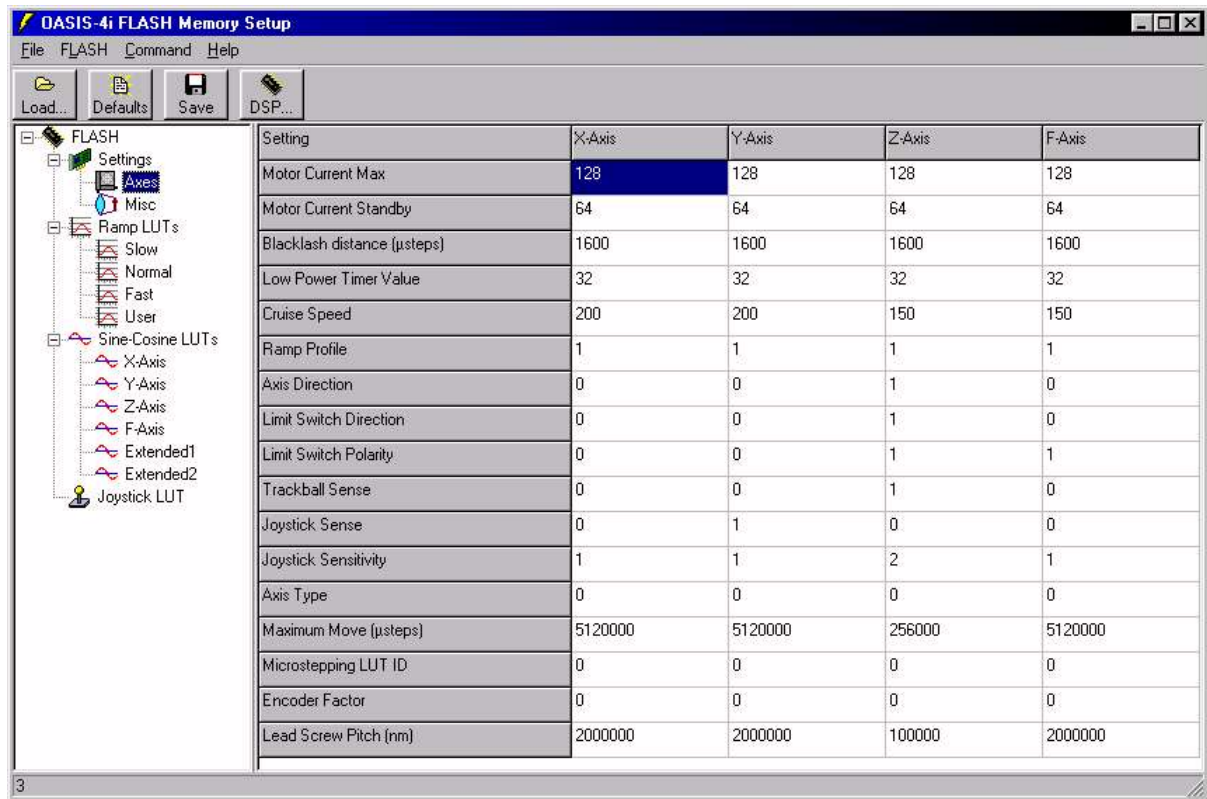
Figure 3. OASIS Flash Memory Configuration Utility.

The flash configuration utility provides a means to adjust the following settings for each axis:

- Maximum motor current
- Standby motor current
- Backlash correction distance
- Standby power timer interval
- Power-on cruise speed
- Power-on ramp profile
- Axis direction (clockwise or counter clockwise)
- Limit switch direction
- Limit switch polarity
- Trackball sense (direction)
- Joystick sense (direction)
- Joystick sensitivity
- Axis Type

- Maximum acceptable move command distance
- Microstepping setup
- Encoder setup
- Calibration leadscrew pitch

Also, advanced settings such as autofocus settings, acceleration ramp tables, motor drive tables, and joystick deflection tables are defined in the OASIS-4i flash memory.

What Next?

Once the OASIS-4i card has been installed and configured, the next step depends on your situation.

If you are the user of a 3rd party imaging application, you would next need to perform any further installation required to support the OASIS-4i card within you application. Please refer to your imaging application's documentation for further instructions.

If you are a developer of applications that will use the OASIS-4i controller, you should next install the OASIS-4i SDK from the OASIS CD. This will copy the full OASIS software utilities, libraries and include files, and support documentation to your development system. Please refer to the OASIS-4i SDK DLL manual for further details regarding integration of the OASIS-4i into your system software.

If You Need Help

As mentioned in the Introduction, if your OASIS-4i controller was provided as part of an integrated solution, your first contact should by to your system vendor. They will be most familiar with your overall system and any specialized configuration details.

To contact Objective Imaging directly, please visit *www.objectiveimaging.com* for contact details for your area.

Federal Communications Commission

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

Changes or modifications to this product not expressly approved by the party responsible for the compliance, could void the user's authority to operate the equipment.