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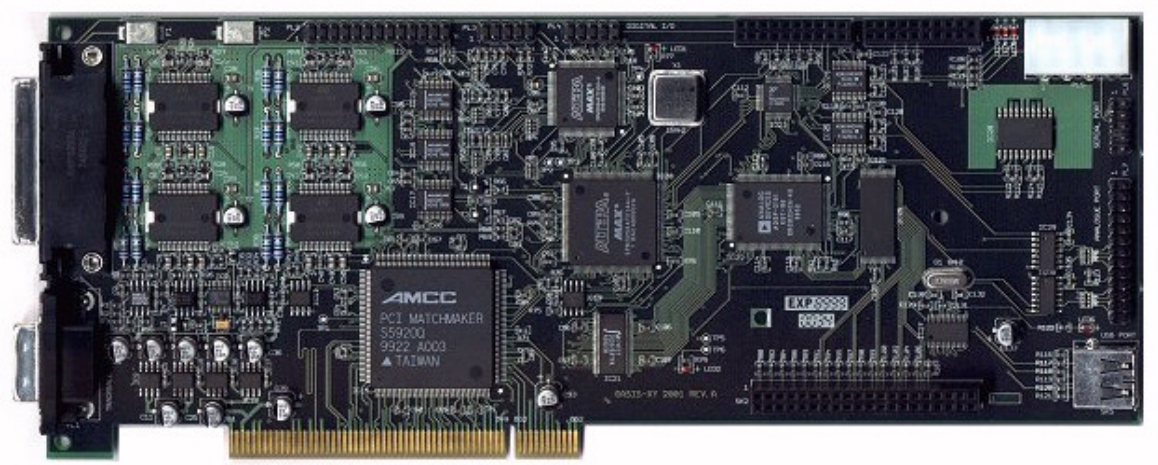
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OASIS-4i Four Axis Controller

The OASIS-4i controller is a PCI compliant plug-in board that provides control of up to four micro-stepping motors. This allows precise movement of X-Y stages and focus mechanisms (the Z axis). The fourth axis controller may be used to automate additional peripheral devices, such as filter wheels. As the OASIS-4i controller does not require any external power supplies or amplifiers it is the complete solution for economical and efficient microscope control.



FEATURES

- Easily installed plug-and-play PCI board
- Motor drive via PC power supply – efficient and economical
- Versatile 4 axis micro-stepping controller for independent and simultaneous axis control
- Extensive library of motion control software
- Powerful DSP processor for optimal speed and performance
- Read / write flash memory for secure configuration settings
- Positive or negative drive sense for each axis with multiple acceleration profiles, backlash correction and limit switch sensing
- Joystick or mouse control options plus dual serial I/O ports
- Critical safety features for thermal and current protection
- Optional auto-focus daughter board (OASIS-AF) fits directly via high-speed interface

DESCRIPTION

The OASIS-4i Four Axis Controller was conceived and designed to provide economical and highly optimised solutions for diverse applications in automated microscopy. The result is exceptional performance and functionality without high cost or complexity.

Experience in performance critical applications is evident in every aspect of our hardware and software design, with a strong emphasis on reliability, precision and processing speed. To ensure that the OASIS-4i controller will form the foundation for high-powered automated imaging systems, we have gone far beyond optimised motor control. Our optional plug-in OASIS-AF module provides real-time video processing for full autofocus capability and specialised on-board image analysis for improved throughput.

Objective Imaging's reliable and fast hardware combined with our highly optimised and innovative software make the OASIS range of automation solutions the perfect choice for system integrators and application developers

Accurate and repeatable open loop operation gives excellent results without costly encoders. The closed loop option supports encoders for the ultimate in positional accuracy for critical applications.

To enable optimised usage in a diverse range of applications the OASIS-4i controller provides easy access to operational parameters and configuration settings. This allows the hardware to be perfectly matched to the physical characteristics of the system and the needs of the task to be performed.

Safety, security and reliability are of primary importance and our hardware incorporates many features to ensure full user satisfaction.

OASIS-4i : Technical Specification

Stepper Performance	Axes	4 (Independently controlled)
	Micro-step resolution	1/64 Full-step (0.028 degrees with 200 step/rev motor)
	Maximum speed	512 KHz (micro-steps/sec), 8 KHz (half-steps/sec)
	Minimum speed	32 Hz (micro-steps/sec), 1 Hz (half-steps/sec)
	Maximum motor current	0.5A to 1.25A/phase in 5mA steps
	Maximum motor supply voltage	+28V (typically +12V)
	Minimum motor supply voltage	+10V
	Command overhead (Move XYZ)	<10 µs
	Controller Response time (Move XYZ)	<20 µs
	Acceleration/deceleration profiles	Preset slow/normal/fast or user definable
	Position counter accuracy	32 bits
	Maximum move size	2^32 micro-steps
Servo Performance	Contact Objective Imaging for details	
General	Processor (DSP)	ADSP-2181
	Processor clock frequency	32 MHz
	Non-volatile memory	1-Mbit Flash for program and user configuration storage
	Reset method	Hardware watchdog, software, (PC reset selectable as required)
	Switch-on time	<1 s - fully functional
Bus Interface	Type	PCI 2.2 Compliant
	Bus-master	No
	Operating Frequency	to 33 MHz
System Safety	Watchdog timer function	Resets board on processor fail
	Watchdog timeout	1.6 s
	Drive current limit	4 A max per motor
	Drive current limit response time	4 ms (typical)
	Thermal shutdown	Yes
	Temperature monitor	Yes
	Drive voltage monitor	Yes
	Hardware limit switch inputs	Definable N/O or N/C
	Software limits	User defined
	Software	Stop individual or all axes command
I/O	Encoder inputs	Phase-quadrature, +5V, each axis
	Maximum count rate	512 KHz
	O/C output - current limited	1 (100 Ohm in series)
	O/C output - unprotected	1 (100 mA max)
	Home input (filter-wheel)	1 (10k pull-up to +5V)
	General Purpose I/O	4 (3.3V)
	+12V	Via 44-way connector (resettable fuse protected 1.1A)
	+5V	Via 44-way connector (resettable fuse protected 1.1A)
	S232 ports	2 (1 used for Trackball/mouse control of XYZ axes)
	Analogue port	1 (joystick interface)
	Phase-quadrature I/P	1 (for Z axis control)
	SVHS video I/P	1 (75R terminated for use with optional Autofocus module)
	SVHS video O/P	1 (buffered video in, 75R drive)
Power Reqm't (Max)	+5 V (±5%)	1.75A
	+12 V (±5%)	100 mA
	–12 V (±5%)	50 mA
	10-28V (motor supply)	1.4 x motor phase current x number of axes driven simultaneously
	PC Power Supply	PC power of 250W or higher is required (in some models the fitting of an additional cooling fan is recommended)
Connectors	Drive / Encoder / Limit I/O connector	44-way female high-density d-type with screw fixings
	Trackball / Mouse connector	9-way male d-type (standard serial port)
	4th axis	25-way female d-type with screw fixings (optional)
	RS232	9-way male d-type (standard serial port) (optional)
	Motor power	4-way male disk-drive power connector (normally connected to PC power supply)
Physical Dimensions	Length / Height (excluding connectors)	301 mm x 102 mm (12" x 4")
Environment	Operating temperature	0 to 35 °C (ambient)
	Storage temperature	0 to 70 °C

Objective Imaging

Innovative Solutions for Automated Microscopy

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