INTELLIGENT INSTRUMENTATION®

EDAS® CE

OPEN ARCHITECTURE MONITORING AND CONTROL SYSTEMS

AUTOMATION AND CONTROL APPLICATIONS

- ▲ Factory Automation
- ▲ Process Monitoring and Control
- ▲ Machine Monitoring and Control
- ▲ Laboratory Automation
- ▲ Networked or Stand-alone Data Logging
- ▲ Environmental Monitoring and Control
- ▲ Remote Data Acquisition
- ▲ Embedded Machine Controllers

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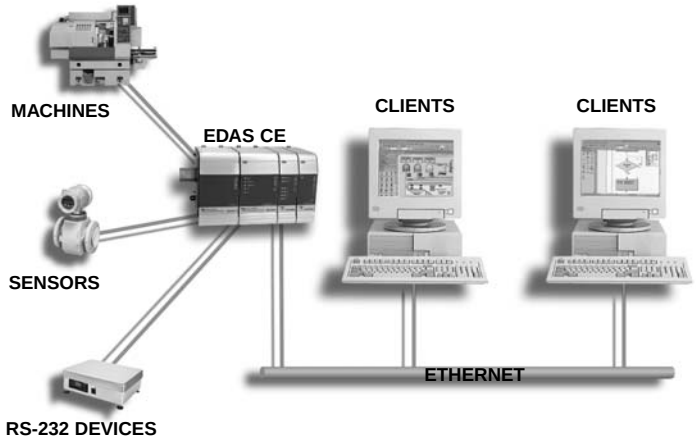
EDASCE – Open Architecture Monitoring and Control Systems

EDAS CE



EDAS-2000E SERIES

OPEN ARCHITECTURE MONITORING AND CONTROL SYSTEMS

KEY FEATURES/BENEFITS

▲ Open Architecture

Leverage open standards for lower total cost of ownership. Open systems environment provides easy interface to existing and future plant-wide systems. Take advantage of existing network infrastructure, lower cost network components and trained staff for networking and application development.

▲ Windows CE

Easy application development using Microsoft's eMbedded Visual C++. Windows CE 3.0 provides true multitasking, allowing both control and monitoring functions to run simultaneously on an EDAS CE system.

▲ Modular I/O

Industrial modular case design provides 8 to 192 channels of isolated I/O per base unit. Supports any combination of analog and digital I/O, and RS-232 data, giving EDAS CE the flexibility to create a wide range of automation and control applications.

▲ Ethernet Connectivity

Ethernet delivers high-speed networking with 10 and 100 Mb/s. Most facilities already have Ethernet installed and components are widely available at very low cost. Ethernet and TCP/IP are standard, integrated components of the PC, Windows, and the Internet.

▲ Network Standards

EDAS CE supports TCP/IP, UDP, SNMP, DHCP, HTTP and time synchronization.

▲ Non-Volatile Storage

EDAS CE can support up to 500 MB of non-volatile storage allowing it to be used in stand-alone data logging applications or to continue operating and logging data in the event of a network disruption.

Open Architecture Industrial I/O
The EDAS® CE is designed using open architecture standards allowing for easy development and deployment into exiting and future automation systems. By leveraging the efficiencies of standard technology, you are ensuring a lower total cost of ownership. With EDAS CE, you can take advantage of your existing network infrastructure, lower cost components and trained staff for networking and application development. Digital I/O, analog I/O, RS-232, 10/100BaseT Ethernet, and Windows CE, all in an industrial modular package, make EDAS CE the ideal solution for a wide range of applications in today's open architecture manufacturing environment.

Modular I/O Offers Flexibility
The modular architecture of EDAS CE allows you to mix and match I/O as necessary to meet the needs of a wide range of automation, control, and measurement applications. Each EDAS CE system supports up to 12 modules allowing for systems from 8 to 192 I/O points per base unit.

The modules provide connectivity to virtually all sensors including temperature, pressure, flow, voltage, current, contact closures and RS-232 devices. All in a rugged and reliable industrial DIN-rail mount package.

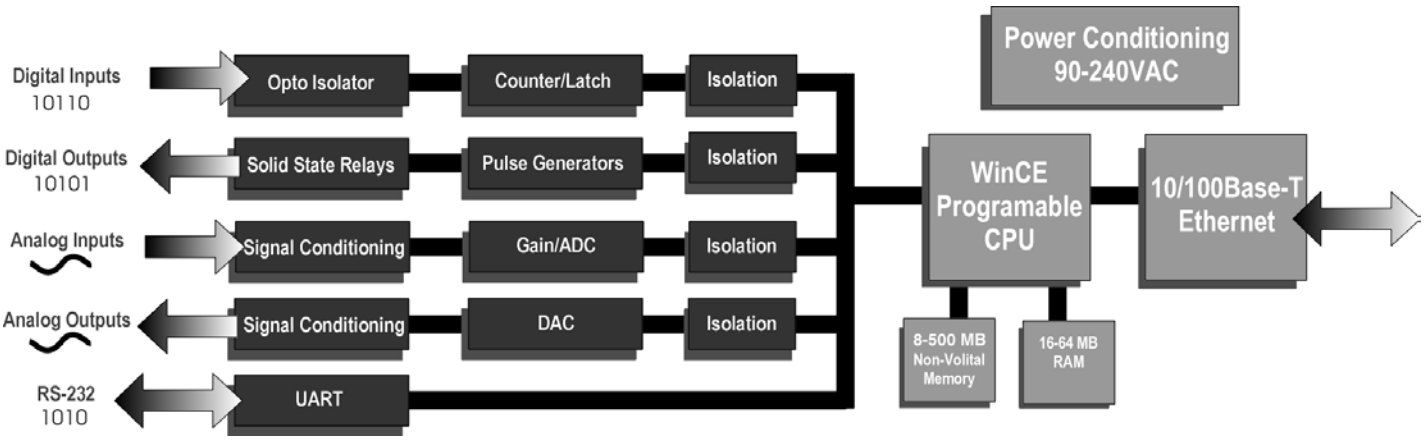
Networked and Stand-Alone Operation
With built-in 10/100BaseT Ethernet the EDAS CE is ready to run networked applications, providing connectivity across your enterprise. Other networked devices can communicate with the EDAS CE to read and write its I/O points or an application can be downloaded to run directly on the unit. Applications running on the EDAS CE can operate stand-alone allowing the unit to provide real-time control during network downtime. The EDAS CE supports Compact Flash cards with up to 500 Mbytes of non-volatile local storage, making it ideal for stand-alone or remote data logging applications.

Now Available with Entivity Studio
EDAS CE is now available with the Entivity Studio™ runtime. Applications developed with Studio can now be targeted for the EDAS CE as an embedded application.

Entivity Studio offers a complete automation and control software solution with transparent control scalability across a full range of Microsoft Windows platforms, built-in productivity analysis, enterprise connectivity, and a Unified Development Environment incorporating Microsoft® Visio® drawing technology for control logic and human-machine interface (HMI).

Microsoft eMbedded Development Tools
With EDAS CE, applications can be developed using Microsoft's eMbedded™ Visual Tools. These tools allow users to write, download and debug applications for the EDAS CE using the popular eMbedded Visual C++ programming environment. The built-in networking, including a TCP/IP stack, allows applications running on EDAS CE to communicate with other computers and other EDAS CE units on your network as part of a plant-wide control and monitoring solution.

The Windows CE 3.0 operating system provides true multitasking with 256 priority levels allowing both high priority and lower priority tasks to be run simultaneously on the same device. This enables a single EDAS CE system to function as both the machine/process control system, and to also function as the machine monitoring system, providing real-time machine and process information to the company's manufacturing execution systems.



eMBEDDED VISUAL TOOLS SDK

For developing applications for the EDAS CE using Microsoft's eMbedded Visual tools and the eMbedded Visual C programming environment we supply a Software Developers Kit (SDK). The SDK when installed on a PC with eMbedded Visual tools, provides all the necessary interface and API's to allow users to develop embedded, distributed, networked, and client/server applications for the EDAS CE. The CE Link API provides access to all of the optional I/O modules. Serial I/O, TCP/IP interface, and other networked client/server program development are done using the standard Win32 API.

WEBDEVICE

The EDAS CE includes an embedded Web server, called WebDevice. WebDevice can serve both static and dynamic web pages. Dynamic web pages can include raw or processed data from the I/O modules, serial ports, and non-volatile storage. WebDevice supports push-technology allowing data from the EDAS CE to be pushed to real-time display applets running on remote computers. WebDevice can interface with Windows 98/Me/NT/2000/XP machines that use ODBC to store or retrieve data from databases. WebDevice can also interface with other Web servers running on a wide range of platforms, allowing real-time data to be posted to ASP, PHP, CGI, or other server side form processors.

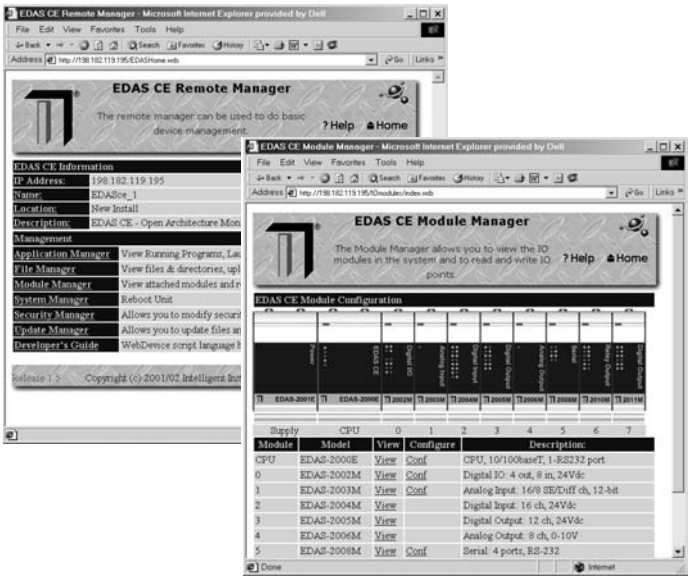
REMOTE MANAGER

The Remote Manager is a Web application that runs on WebDevice. It allows user interaction with the EDAS CE through a standard browser interface. The Remote Manager allows users to:

- Up/download files
- Run/terminate/view applications running on the EDAS CE
- Configure and View module I/O
- Reboot the EDAS CE
- Download updates to the EDAS CE
- Access documentation of server side scripting

TIME SYNCHRONIZATION

The Time Synchronization program allows the EDAS CE to synchronize its local real-time clock to a network clock standard.



Embedded Web server provides remote management of EDAS CE systems with a standard browser interface

SERIAL SOCKET

The Serial Socket application can be run on the EDAS CE to provide an Ethernet socket to serial port connection. When Serial Socket is running and configured, a remote device can open a socket connection to the EDAS CE over Ethernet and send and receive data through the RS-232 serial ports on the EDAS CE.

LCMDSET

The LCmdSet application runs on the EDAS CE and allows a user to connect to the EDAS CE using a Telnet client over Ethernet. From the Telnet client the user can reconfigure the EDAS CE networking parameters (IP address, subnet mask, DHCP settings, etc), reconfigure the EDAS CE serial port settings (baud rate, parity, etc), run and terminate applications, and reboot the unit.

NET LINK API

The EDAS CE is provided with a server program (supcate.exe) and the Net Link API, which allow users to develop client applications for remote computers to connect to the EDAS CE and to read and write the EDAS CE I/O and serial ports. The Net Link API is compatible with both the EDAS and the EDAS CE product lines. The Net Link API supports Visual C/C++ and Visual Basic programming environments.

Base Units

Each system requires one EDAS-200E-1, -2, or -3 Series Base (processor) Unit Module. The base unit modules include the CPU, Ethernet connectivity, and an RS-232 serial port. The 32-bit embedded processor runs the Windows CE 3.0 operating system, providing real-time and multi-tasking capabilities.

EDAS-2000E-2 Base Unit with NV-RAM
The EDAS-2000E-2 Base Unit is available with 128 Kbytes of non-volatile Battery RAM. The non-volatile RAM allows control applications to store state variables or other data with persistence through power outages.

EDAS-2000E-3 Base Unit with Entivity Studio 7.0 Runtime
The EDAS-2000E-3 Base Unit includes an Entivity Studio 7.0 runtime kernel, which allows automation and control applications developed with Entivity Studio to be downloaded and executed on the EDAS CE system. The EDAS2000E-3 Base Unit also includes the 128 Kbytes of non-volatile Battery RAM for persistence state variable storage.

BASE UNIT- EDAS-2000E-1,2,3

Operating System:	Windows CE 3.0
Processor	AMD Elan SC400, 32-bit, 66 MHz
Ethernet	10/100baseT
DRAM	16MB – expandable to 64MB
Non-volatile Storage Compact Flash	 8MB – expandable to 500+ MB
Battery RAM EDAS-2000E-1 EDAS-2000E-2 EDAS-2000E-3	 0 128 kB 128 kB
Serial Ports	1, RS-232 (Up to 115K Baud)
Power	5VDC @ 1 A max
Dimensions	4.55 D x 5.9 H x 3.35 W (inches) 116 D x 150 H x 85 W (mm)
Operating Temperature	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

Power Supply Module

The EDAS-2001E Power Supply Module provides power for the base unit and the attached I/O modules. The EDAS-2001E can accept worldwide line voltages of 90 - 260 VAC @ 50 - 60 Hz. The EDAS-2001E has a standard IEC power connector.

POWER MODULE: EDAS-2001E-1

PARAMETER	CONDITIONS	SPECIFICATION
Input		90-260VAC, 50-60Hz
Connector		IEC
Output Voltage		5VDC, ± 5%
Output Current		10A max
Dimensions	Inches mm	4.55 D x 5.9 H x 3.35 W 116 D x 150 H x 85 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

Digital IO Module

The EDAS-2002M Digital I//O Module has 8 digital inputs and 4 digital outputs. The digital I/O are designed for 24 VDC operation. The digital I/O provide 500 V channel to channel isolation with one return per channel. Digital inputs can be individually configured for normal (high/low), counter or latched operation. Digital outputs can be individually configured for normal (open/closed), pulsed, delayed and squarewave output.

Digital Input Functions

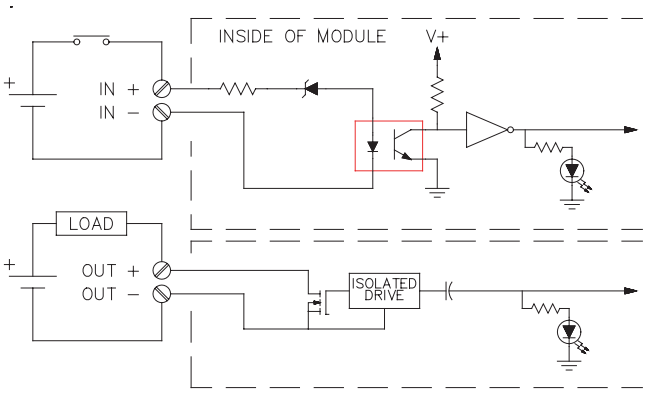
The inputs can be configured on a channel by channel basis.

- Normal: Reads the current sates of the input (low/high).
- Counter: 24 bit up/down counter, 250 Hz maximum count rate.
- Latched: The input is latch on a low-to-high, high-to-low, or any change of state.
- High Speed Counter: Channel 0 only, 16-bit counter to 20 kHz maximum count rate.

Digital Output Functions

The outputs can be configured on a channel by channel basis.

- Normal: Set output to desired state (open/closed)
- Pulsed: Set output active for a specified amount of time.
- Delayed: Set output active after the specified time delay.
- Square wave: Generate a square wave with the specified period, 250 Hz maximum.



DIGITAL I/O MODULE- ENT-2002M-1

PARAMETER	CONDITIONS	SPECIFICATION
Inputs	8 Inputs	
Levels	Low High	0-3 VDC 9 VDC min, 30 VDC max
Current	Low Vin = 0.5VDC High Vin = 24VDC	< 500 nA 5 mA max
Modes	Normal Up counter Down counter Latch low Latch high Latch state change High speed counter	 24-bit, 250Hz max channels 0 - 7 24-bit, 250Hz max channels 0 -7 16-bit, 20 kHz max, channel 0 only
Outputs	FET output	4 Outputs
On	Resistance Current Voltage	0.03 Ω 0.5 A max 0.8 V max
Off	Voltage	27 VDC max
Modes	Normal Squarewave Pulse High Pulse Low Delayed High Delayed	 250Hz max 2ms min 2ms min 2ms min 2ms min
Power On State		Selectable
Isolation	Channel to channel input to output	500V 1500V
Current Consumption	5 VDC	200 mA max
Dimensions	Inches Mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25°C unless otherwise noted.

EDAS CE 16 SE or 8 Dif-Channel Analog Input Module

Analog Input Module

The EDAS-2003M Analog Input Module can be configured to read voltage, current, or thermocouple inputs. Voltage, current, and thermocouple readings can be configured on a channel by channel basis allowing one analog input module to read a combination of voltage, current, and thermocouple inputs.

Voltage Readings

16 single-ended, 8 differential or a combination may be read. The input ranges for voltages are +/-10V, +/-1V, +/-100mV, 0-10V, 0-1V, 0-100mV.

Current Readings

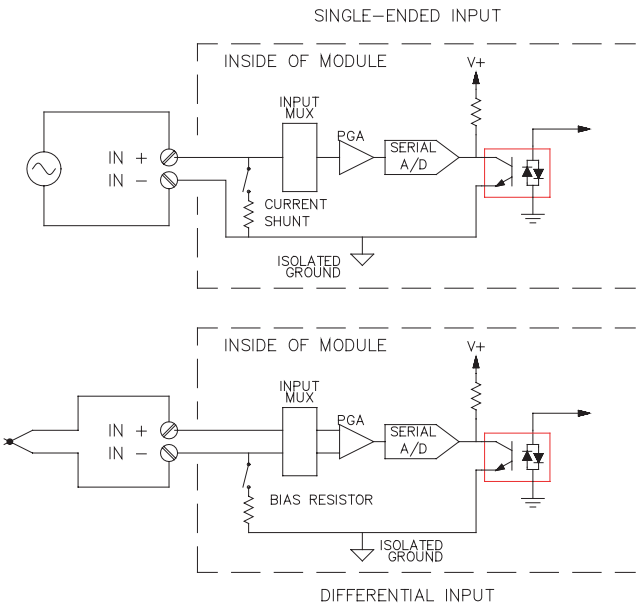
Current readings of 0-20mA can be made with this module by switching on the 487 ohm between the input and ground. Up to 16 current readings can be made per module.

Thermocouple

The module includes Cold Junction Compensation (CJC) input on channel 0 and input bias resistors that support up to 7 thermocouples directly connected to the module. Software linearization supports type J, K and T thermocouples. Thermocouple support EDAS-2003M-3.

Waveform Capture

The module has a hardware pacer, channel scanner circuitry, and triggering that allows the module to capture waveform data. This allows the EDAS CE systems to perform high-speed data capture, transient analysis, FFT processing, and other waveform based measurements.



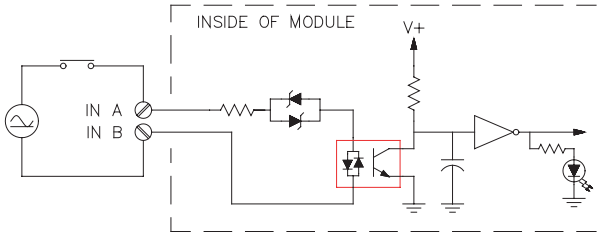
ANALOG INPUT MODULE: EDAS-2003M-1,-2,-3

PRAMETER	CONITIONS	SPECIFICATION
Inputs		16 Single ended 8 Differential
Resolution		12-bits (1 in 4096)
Voltage Ranges	Gain =1 Gain =10 Gain =100	± 10V, 0 to 10V ± 1.0V, 0 to 1.0V ± 100mV, 0 to 100mV
Over Voltage Protection	Power on or off	-40V to +55V
Gain Accuracy	Gain =1 Gain =10 Gain =100	± 0.012% ± 0.05% typical, ± 0.25% max ± 0.05% typical, ± 0.25% max
Offset Voltage	Gain =1 Gain =10 Gain =100	± 1.2mV ± 0.12mV ± 0.012mV
Input Bias Current		500pA
Input Impedance	Voltage mode Current mode	10 GΩ || 3pF 487 Ω
Common Mode Range		± 10V
Common Mode Rejection	Gain =1 Gain =10 Gain =100	80dB 86dB 92dB
Noise	Gain = 1	0.5 LSB (RMS) 2 LSB (peak to peak)
Linearity		± 1 LSB
Monotonicity	No missing codes	12 bits
Waveform Cature max sample rate	3M-1 3M-2, 3M-3	2kHz 200kHz
Rate Generator	Resolution Output Frequency	250 nS 0.238 Hz to 200kHz
Isolation	input to output VAC rms for 60 s	1500V
Power Consumption	5 VDC	400 mA
Dimensions	inches mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

Digital Input Modules

The EDAS-2004M Digital Input Modules provide 16 channels of 24 V, 120 V or 240 V input. The 16 channels are arranged as two 8 bit ports Port 0 and Port 1. The digital inputs have 500 V channel to channel isolation with one return per channel. The modules provides 1500 V input to output isolation.



DIGITAL INPUT MODULES EDAS-2004M-1,2,3 - 24V, 120V, 240V

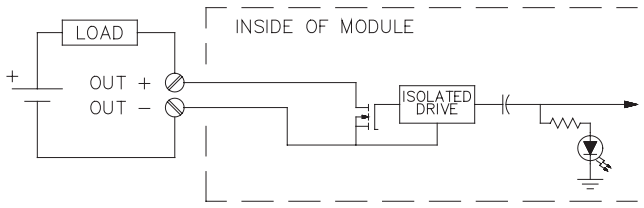
PARAMETER	CONDITIONS	SPECIFICATION
Digital Input	Opto Isolators	16 Inputs
EDAS-2004-1, 24V Levels	Low High	0-3 VAC/DC max 9-30 VAC/DC max
EDAS-2004-1, 24V Current	Vin = 24V	2 mA max
EDAS-2004-2, 120V Levels	Low High	0-20 VAC/DC max 70-130 VAC/DC max
EDAS-2004-2, 120V Current	Vin = 120V	2 mA max
EDAS-2004-3, 240V Levels	Low High	0-40 VAC/DC max 140-250 VAC/DC max
EDAS-2004-3, 240V Current	Vin = 240V	2 mA max
Turn-on time Turn-off time		6 mS min 35 mS max
Isolation	Channel - channel Input to output	500V 1500V
Current Consumption	5 VDC	500 mA max
Dimensions	Inches mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25°C unless otherwise noted.

Digital Output Module

The EDAS-2005M Digital Output Module provides 12 channels of open drain, 24 VDC digital outputs. The 12 channels are arranged as two ports. Port 0 has 8 channels and Port 1 has 4 channels. This module supports read back allowing the software to determine the output's present state. Each channel has a hardware switch that determines the channels power-on state.

The digital outputs have 500 V channel to channel isolation with one return per channel. The module provides 1500 V input to output isolation.



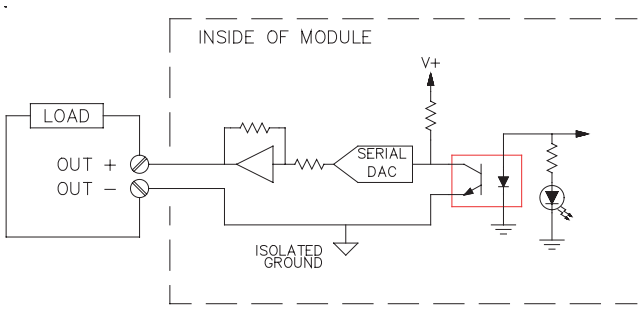
DIGITAL OUTPUT MODULE: EDAS-2005M-1

PARAMETER	CONDITIONS	SPECIFICATION
Digital Output		12 Outputs, 24VDC
On	Resistance	.03 Ω
	Current	0.5A max
	Voltage	0.8V max
Off	Voltage	27V max
Isolation	Channel - channel Input to output	500V 1500V
Current Consumption	5 VDC	160 mA max
Dimensions	Inches Mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

Analog Output Module

The EDAS-2006M Analog Output Module provides 8 channels of 0 to 10 V analog outputs. Each channel is capable of supplying up to 10 mA. The module provides 1500 V input to output isolation.



ANALOG OUTPUT MODULE: EDAS-2006M-1

PARAMETER	CONDITIONS	SPECIFICATION
Analog Output		8 Outputs
Range	All channels	0 to 10 V
Output Current	Each channel	10 mA max
Resolution	All channels	12-bits (1 in 4096)
Isolation	Input to output	1500V
Current Consumption	5 VDC	450 mA max
Dimensions	Inches Mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

EDAS CE RS-232
4 PORT SERIAL MODULE

Serial Port Module

The EDAS-2008M Serial Port Module provides four RS-232 serial ports. The serial ports use standard 9-pin D-subminiature connectors. Each EDAS-2000E base unit can support up to two EDAS-2008M Serial Port Modules for a total of nine COM ports, one COM port on the base unit and eight COM ports on the two Serial Port Modules.

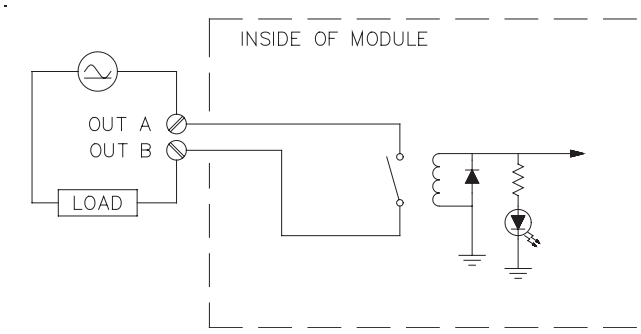
SERIAL PORT MODULE: EDAS-2008M-1

PARAMETER	CONDITIONS	SPECIFICATION
Serial		
RS-232C		4 ports
Connector		DE-9
Communication		ASCII, Binary
Supply Voltages	3KΩ load	± 6V TX, RTS Active
Baud Rate		300 - 115K Baud
Serial Output		
Output voltage low	3KΩ load	-5.0V max
Output voltage high	3KΩ load	+5.0V min
Serial Inputs		
Input impedance		3KΩ min 7KΩ max
Input threshold low		.08V min
Input threshold high		2.4V max
Current Consumption	5 VDC	200 mA max
Dimensions	Inches	4.55 D x 5.9 H x 1.74 W
	mm	116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25°C unless otherwise noted.

Relay Output Module

The EDAS-2010M Relay Output Module provides 12 channels of single-pole/single-throw normally open relay contacts capable of switching 2 A at either 250 VAC or 30 VDC. This module has power-up initialization hardware allowing users to configure the power-up state of each output. The relay outputs have 500 V channel to channel isolation with one return per channel. The module provides 1500 V input to output isolation.



RELAY OUTPUT MODULE: EDAS-2010M-1

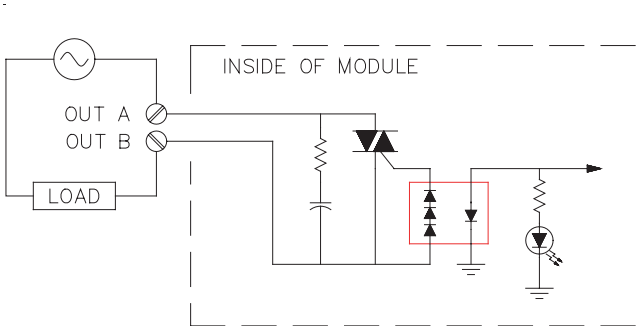
PARAMETER	CONDITIONS	SPECIFICATION
Relay Output	Contact closure	12 channels
Single Pole / Single Throw	All channels	
AC		2A @ 250VAC
DC		2A @ 30VDC
Closed Resistance		.03 Ω
Isolation	Channel - channel Input to output	500V 1500V
Current Consumption	5 VDC	450 mA max
Dimensions	Inches mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25°C unless otherwise noted.

EDAS CE 12-Channel Triac Digital Output Module

Digital Output (Triac) Module

The EDAS-2011M Digital Output Module provides 12 solid state (triac) outputs capable of switching 1 A at 24 VAC to 240 VAC. This module has power-up initialization hardware allowing users to configure the power-up state of each output. The digital outputs have 500 V channel to channel isolation with one return per channel. The module provides 1500 V input to output isolation.



RELAY OUTPUT MODULE: EDAS-2011M-1

PARAMETER	CONDITIONS	SPECIFICATION
Relay Output	Contact closure	12 Triac Outputs
AC		1A @ 24VAC to 250VAC
Closed Resistance		.03 Ω
Isolation	Channel - channel Input to output	500V 1500V
Current Consumption	5 VDC	200 mA max
Dimensions	Inches Mm	4.55 D x 5.9 H x 1.74 W 116 D x 150 H x 42 W
Temperature Range	Operating	0-60ºC

All specifications are typical at 25ºC unless otherwise noted.

Intelligent Instrumentation's complete EDAS CE product line information is available online at **www.EDASce.com**.

- Detailed Product Specifications
- Current US Pricing
- New Product Announcements
- Demo Software
- Application Notes
- Configuration Examples
- Technical Support Tips
- User Reference Documentation

PART NUMBER	MODULE	DESCRIPTION
EDAS-2000E-1	Base unit	Windows CE 3.0 10/100BaseT Ethernet 16MB RAM (expandable to 64MB) 8MB Compact Flash (500 MB max) RS-232 serial port
EDAS-2000E-2 EDAS-2000E-3	Base Unit Base Unit	EDAS-2000E-1 with 128 kB battery RAM EDAS-2000E-1 with Entivity Studio Runtime & 128kB battery RAM
EDAS-2001E-1	Power Supply	90-260VAC, 50-60Hz
EDAS-2002M-1	Digital I/O	8 inputs, 24VDC 4 outputs, 24VDC 500V channel to channel isolation 1500V input to output isolation
EDAS-2003M-1 3M-1 3M-2, 3M-3	Analog Input	16 single ended or 8 differential channels 12-bit resolution voltage, current (-1, -2 models) and thermocouple inputs (-3 model) 1500V input to output isolation waveform capture 2kHz waveform capture 200kHz
EDAS-2004M-1 EDAS-2004M-2 EDAS-2004M-3	Digital Input	16 inputs, 24V 16 inputs, 120 V 16 inputs, 240 V 500V channel to channel isolation 1500V input to output isolation
EDAS-2005M-1	Digital Output	8 outputs, solid state relay, 24VDC 500V channel to channel isolation 1500V input to output isolation
EDAS-2006M-1	Analog Output	8 outputs 0 to 10V 1500V input to output isolation
EDAS-2008M-1	Serial port	4 RS-232 serial ports
EDAS-2010M-1	Relay Out	12 relays, 2A @ 250VAC, 2A @ 30VDC
EDAS-2011M-1	Digital Output	12 triac outputs, 1 A @ 24VAC to 240VAC
Development-Software		
EDAS-2014A-1	Starter Kit - USA*	Microsoft eMbedded Visual Tools v3.0, EDAS CE software development kit (SDK), user manual, null modem cable, power cord, Ethernet crossover adapter and cable.
EDAS-2014A-2	Starter Kit - International*	Microsoft eMbedded Visual Tools v3.0, EDAS CE software development kit (SDK), user manual, null modem cable, Ethernet crossover adapter and cable.

** EDAS CE software development kit (SDK), Microsoft eMbedded Visual Tools v3.0, and user reference manuals available for download at* **www.EDASce.com/techsupport.asp.**

Intelligent Instrumentation products are sold and supported in more than 30 countries through a worldwide network of Intelligent Instrumentation Regional Marketing Centers, value added resellers and system integrators. For your convenience, Intelligent Instrumentation maintains an electronic sales and support directory on our Web site. To contact the local office nearest you anywhere in the world visit our web site at www.edasce.com.

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