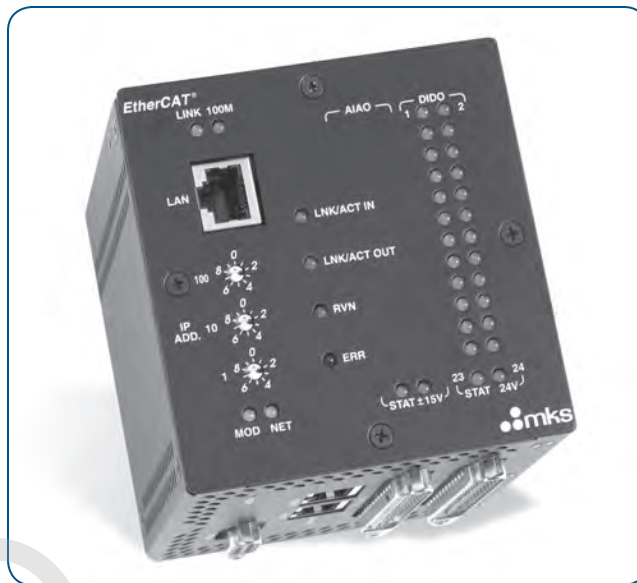




MacroNode™ I/O

COMPACT NETWORKED I/O WITH cLogic™ CONTROL ENGINE

The MacroNode™ I/O product line provides high density, compact and economical I/O solutions for common Industrial Networks. In addition, these modules contain cLogic™, an on-board C-compiler to handle the distribution of real-time logic tasks. No longer are you limited by network bandwidth, as you designate time critical tasks to your I/O modules, where they belong.

To best meet applications requirements, a variety of models are available with a mix of digital I/O, analog inputs, and analog outputs. MacroNode comes in sizes of 1- 4 slots, configured by you to meet your needs. Each I/O card provides high density, easy access to I/O through dual 37-pin D-Sub connectors.

Currently Supported Networks

- Ethernet: Modbus/TCP™ and Ethernet/IP™ (RJ45 interface)
- DeviceNet

I/O Configurations

- Up to 4 slots of I/O
- Each I/O card is Digital, Analog or Combo (Digital & Analog)

Features & Benefits

- High density analog, digital, or combination of I/O points in a compact and economical package
- cLogic™ distributed real-time logic engine
- Up to 96 I/O point over 4 slots
- Easy to install and configure, with monitoring LED's of status and each digital I/O point
- Analog input points are single-ended, 12-bit resolution, configurable for 0-10V, ±10V or ±5V input ranges
- DIN rail mounting, with I/O connectors top and bottom

Slave I/O Control Modules

Using standard TCP/IP - protocols, MacroNode Ethernet modules can provide reliable, high speed connectivity at up to 2msec output update timing. Units are ordered as Modbus/TCP or Ethernet/IP versions and utilize standard CAT 5 network cables. All Ethernet models contain web browser user interface for debug, manual control and data collection. Additional network interface includes DeviceNet.

cLogic™ Real-Time Control Engine

Modularize and distribute time critical tasks where they belong. MKS cLogic allows you to overcome TCP/IP network bandwidth concerns by distributing logic to the I/O modules. You designate your logic using standard C code, and then activate the MacroNodes on-board C-compiler. cLogic is only available on Ethernet models.

Examples of control logic include:

- Distributed sequences
- PID control
- Signal filtering and analysis
- Frequency, pulse width, count

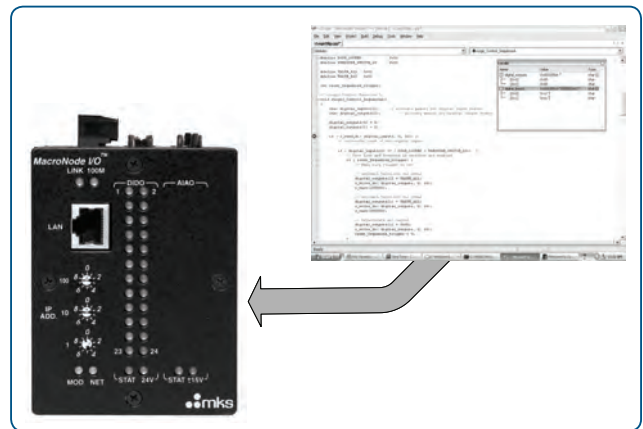
Web Browser User Interface

Each unit takes advantage of built-in web servers to provide a graphical user interface for setup and diagnostics. In addition to module status, each I/O point can be manually set and read using a standard web browser. Data can also be graphed in real time for complete diagnostics.

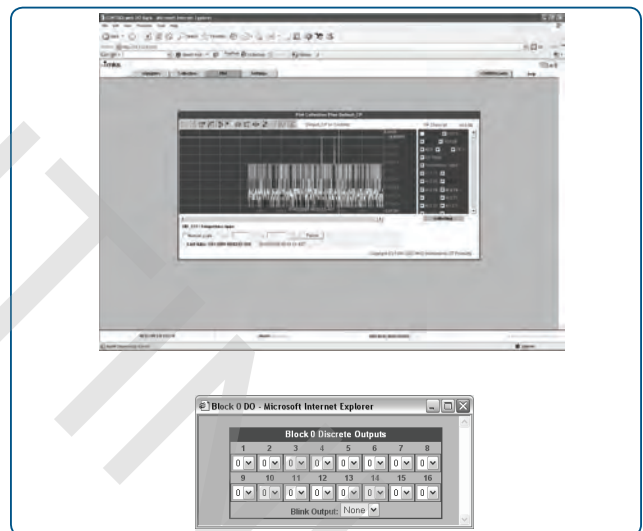
Mounting and Connection

Each MacroNode package is sized to accommodate 1 - 4 I/O cards. Each unit is built to your requirements. MacroNode snaps on to standard 35mm DIN rail, and contains D-Sub 37 I/O connectors on the top and bottom for high density connectivity. Each connector contains additional power and common points for easy system signal distribution. The front panel contains all configuration switches and setup LED's.

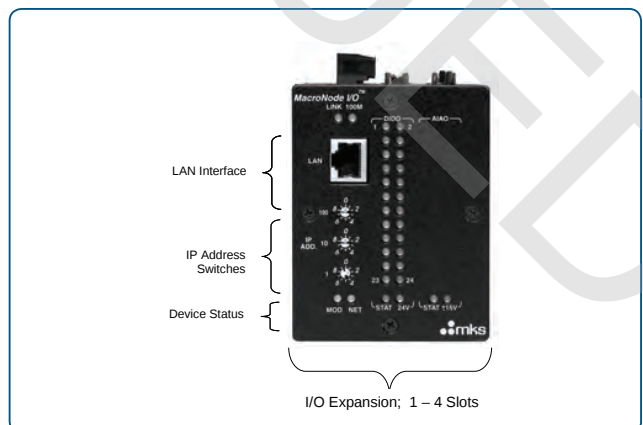
Each unit is 4"H x 4"D x 1.5"W plus 0.7" per I/O slot.



cLogic™ Control Engine —
Add real-time control to each module



Web Browser User Interface —
Manual control and real-time diagnostics



MacroNode™ I/O —
Configure with 1-4 I/O cards



Specifications

Physical Specifications (Ethernet Models)

Dimensions	4"H x 4"W x 1.5"D plus 0.7" per I/O slot
I/O Connector	37-pin male D-sub
Ethernet Connector	100 BaseT, RJ45 with EMI filter
RS-232 Connector	TXD, RXD; DB9 connector
Weight	600g (1.32 lb)

Environmental Specifications

Operating Temperature	0 to +55°C
Storage	-40 to +85°C
Humidity	5 to 95% non-condensing

Functional Specifications

BUS Interface	Ethernet - Modbus/TCP or Ethernet/IP; DeviceNet
Front Panel Indicators	Network Status, Module Status, LINK, 100MB
Rotary Switches	IP address, operating mode (MacID and Rate for DeviceNet models)

Power Specifications

Input	Powered from I/O connector +24VDC@120 mA min
Isolation	Choke Filtering

DIDO Card

Number of Digital I/O	24 points (input or output)
Digital Input	
Current Sinking	Active low - 1.5 mA min
Current Sourcing	Active high - 1.5 mA min
Digital Output	
Current Sinking	Active low, 200 mA max/channel
Current Sourcing	Active high, 200 mA max/channel
Current Max	750 mA per 6 DO

AIAO Card

Analog Input	16 single-ended points (8 in differential mode) 14 bit Range (-10 to +10V)
Analog Output	8 single-ended points 12 bit Range (-10 to +10V) 5mA/channel into a 2 K Ω load

COMBO Card

Number of Digital I/O	16 points (input or output)
Digital Input	
Current Sinking	Active low - 1.5 mA min
Current Sourcing	Active high - 1.5 mA min
Digital Output	
Current Sinking	Active low, 200 mA max/channel
Current Sourcing	Active high, 200 mA max/channel
Current Max	750 mA per 6 DO
Analog Input	8 single-ended points (4 in differential mode) 14 bit Range (-10 to +10V)
Analog Output	2 differential points 12 bit Range (-10 to +10V) 5mA/channel into a 2 K Ω load



Ordering Information

Model Code Description

The model code of MacroNode defines the features of the unit for hardware, software and other options:

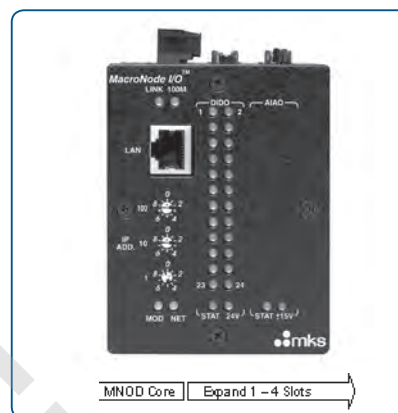
	BASE		OPTIONS		SLOT 1		SLOT 2		SLOT 3		SLOT 4	
Format	MNOD	-	E	-	DIDO	-	DIDO	-	DIDO	-	DIDO	
			DN		COMB		COMB		COMB		COMB	

Options

- E Ethernet, RJ45
- DN DeviceNet

Slot Designations

- DIDO 24 Channel Digital I/O Card
- AIAO 16 Channel Analog In,
8 Channel Analog Out
- ACAO 8 Analog Inputs (Current Type Inputs)
8 Analog Out (Voltage)
- COMB Combination: 16DIDO, 4AI-DIF, 2AO-DIF



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