CONTROLLERS
MicroDAC (Optomux)

FEATURES
- Each Unit Controls/Monitors up to 32 Analog (G5 Only) and/or Digital I/O Modules
- Executes On-Board Programs Created With Borland C
- Network up to 64 MicroDACs per Host Serial Port, Each Separated by as Much as 4000 Feet
- Communicate Over RS-422/485 at Speeds From 1200 Bd to 115.2 KB
- 100% Optomux™ Compatible, With Expanded Command Set
- I/O Update Rates of 500 µSec per 32 Digital I/O, and 10 mS per Analog Input or 2 Analog Outputs
- BASIC and C Drivers for the PC
- DIN Rail or Panel Mountable Metal Enclosure
- Hardware Expansion With SBX Port
- Real Time Clock Option (Y2K Compliant)

APPLICATIONS

- Stand Alone Control
- Local Control & I/O
- Remote I/O
- Distributed I/O
- SCADA
- RTU

ANALOG & DIGITAL I/O
A 50 conductor ribbon cable is supplied to connect MicroDACs to any 8,16,24, or 32 module mounting rack. If connected to a G5 rack, any combination of analog and digital I/O modules may be used. OpenLine®, standard and mini racks permit only a combination of digital modules. MicroDACs can be networked to a PC which runs programs that monitor the input signals and control the outputs. In addition to simple ON/OFF instructions, commands are included which permit you to:
- Sample analog signals at 10 mS per input
- Flag values above or below prescribed levels
- Capture min/max values
- Calculate the average input signal levels
- Provide linearized thermocouple and RTD temperature values
- Determine the width of input pulses
- Count pulses at frequencies up to 1000 Hz
- Detect rising or falling edges
- Latch momentary input events
- Set the level of analog outputs
- Provide delayed-on or delayed-off outputs
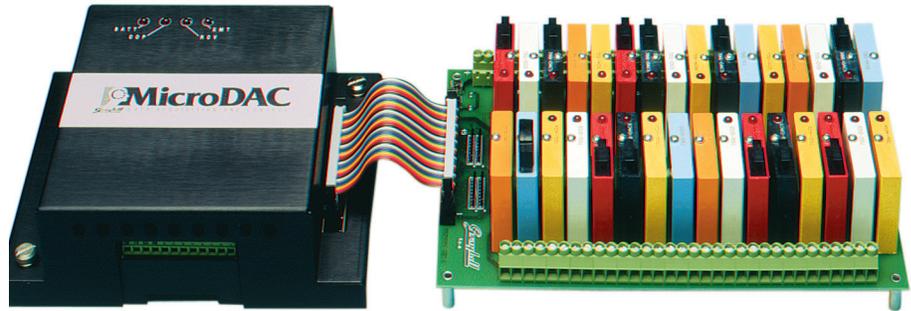
COMMUNICATIONS
The host PC and MicroDAC(s) communicate serially over one or two pair of twisted wires per RS-422/485 in either a multi-drop or repeat configuration. They use Optomux™ ASCII format to code the command and the response messages. Application programs running on the host PC issue commands and then await responses from the MicroDAC. The communications speed is selectable between 1.2 and 115.2 KBaud. Each controller on the network is assigned a unique base address. You can separate units from one another by as much as 4,000 feet.

EMBEDDED CONTROL PROGRAMS
By specifying MicroDAC(s) with the optional 64KB of flash memory, you can develop and download C language programs to any of the networked controllers.

Even while an Embedded Control Program (ECP) is running on MicroDAC, any Optomux™ command it receives from the host will be processed as usual, which allows you to delegate some or all of the control and data acquisition responsibility from the host PC. This reduces communications time and improves system response.

For embedded or stand-alone applications, downloaded ECP routines can be initiated on power-up. Where redundant control or process shutdown procedures are vital, ECP initiation can be tied to the communications watchdog timer. In the event the host computer goes off line, the ECP automatically begins executing.

Libraries and the appropriate download utility are included with the ECP Programmers Manual.

SOFTWARE
Software drivers are available which simplify the task of interfacing host programs written in Visual Basic or C. Sample programs, set-up and debug utilities are included on the disk with the drivers. Interface drivers for most third party software packages are available through their distributors. Our MicroDAC DDE Server dramatically simplifies data sharing between MicroDACs and Windows applications, such as Microsoft Excel (see Optomux Software). Our DLL will assist you in building custom Windows Man-Machine Interfaces or control programs using Visual Basic, Visual C/C++, or Borland compilers.

OTHER FEATURES/OPTIONS
The RS-232 serial port provides a connection for remote RS-232 devices. You can use this port to read information from input devices such as bar code readers or keyboards or to write information to output devices such as operator interfaces, intelligent displays or printers.

The optional real time clock permits ECP routines to be executed based on date or time of day. It also allows data that is collected to be time stamped and stored in battery backed RAM memory.

DIMENSIONS In inches (and millimeters)

Unless otherwise specified, tolerances are ± .010 (0,25).
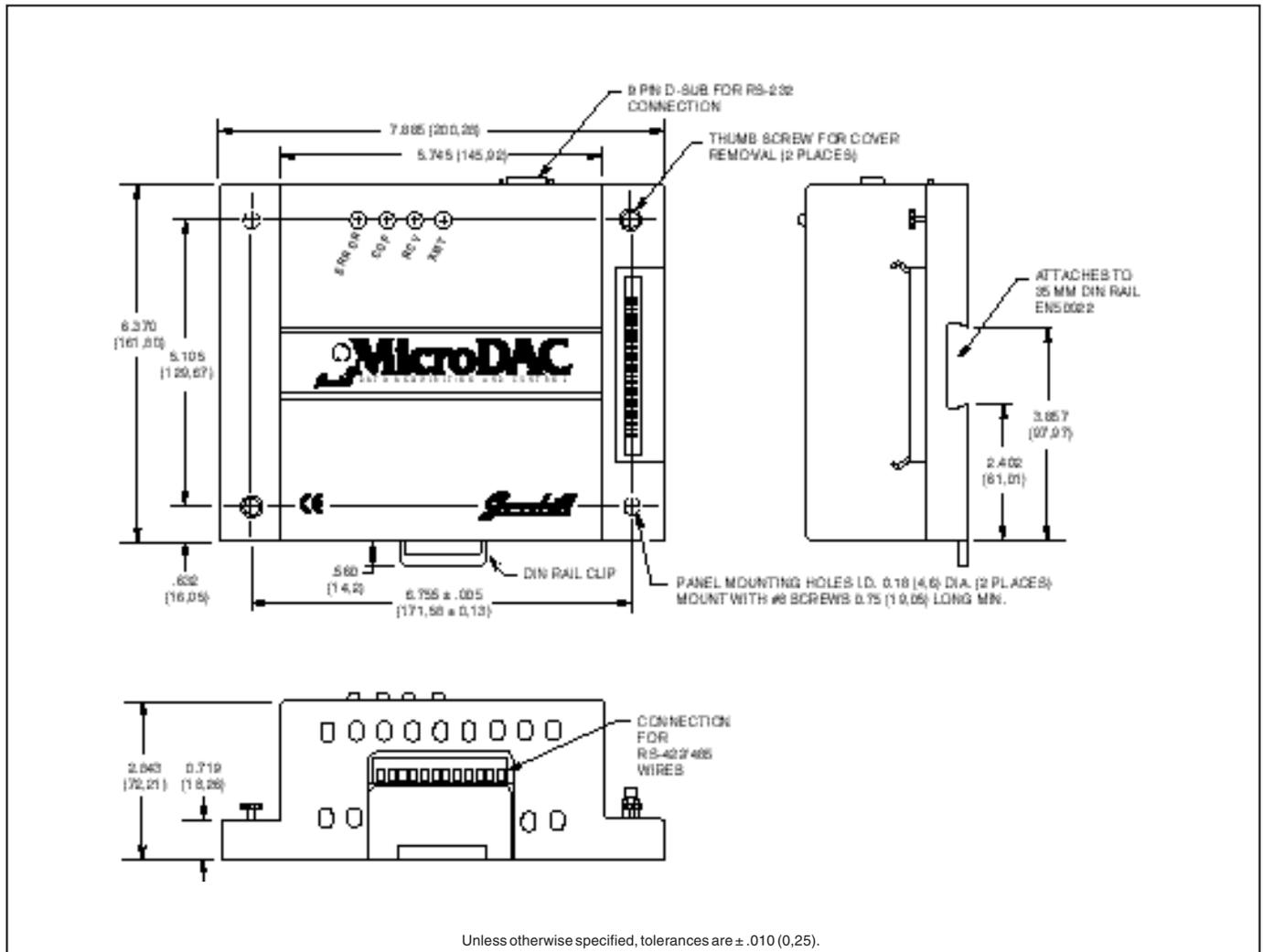
SPECIFICATIONS

Power Supply: 4.75 to 5.25 Vdc
Supply Current (less modules): 1A maximum
Operating Temperature: 0 to 60°C
Humidity: 95% non-condensing
Housing Material: Anodized Aluminum
Microprocessor: V25 @ 10 MHz
Connections:
RS-422/485: 12 position terminal block
RS-232 (DCE or DTE): 9-pin D-Sub (male)
SBX: 36-pin dual row (female)
Rack: 50-pin male header
Serial Data:
Format: 10-Bit ASCII, 1 Start, 1 Stop, 8 Data
Integrity: Message Checksum or 4 Pass + CS
Range of Network: Compliant with EIA/TIA RS-485-A (1 standard load per controller). Operates in multi-drop or repeat mode. 64 DIP switch selectable addresses. May require RS485 repeaters for lengths over 4,000 feet or more than 32 controllers in multi-drop mode. Consult factory for special configurations.

ORDERING INFORMATION

Part Number	Description
MicroDAC Controllers	
72-MDC-32ADC	Analog/Digital MicroDAC with RS-232 and SBX ports, 64K batt. backed RAM, 64K flash for C ECP storage, and real time clock.
MicroDAC User's Manuals and Software	
72-UMM	Introduction to MicroDAC
72-UMM-D	Driver development and protocol definition. Includes driver source code
72-UMM-DDE	Optomux DDE Server for Windows 3.1
72-UMM-DLL	Optomux DLL for Windows 3.1
72-UMM-DLL32	Optomux DLL for Windows 95/98/NT
72-UMM-E	C language ECP manual with libraries
72-UMM-H	Programmers manual with Basic and C host drivers & examples
72-UMM-IL	Hardware installation and set-up. Includes set-up and debug programs.
7W-UM-MDL32	Windows ECP download Utility

Available from your local authorized Grayhill Distributor.

For prices and discounts, contact your local sales office, an authorized Distributor, or Grayhill.

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