

OMEGABUS® Computer-to-Analog Output Modules

D3000 and D4000



D3141 shown actual size.

- ✓ Analog Output Ranges: 0 to 1 V, ± 1 V, 0 to 5 V, ± 5 V, 0 to 10 V, ± 10 V, 0 to 20 mA, 4 to 20 mA
- ✓ Programmable High/Low Output Limits
- ✓ 500 V rms Output Isolation
- ✓ Scaling in Engineering Units
- ✓ 12-Bit Resolution
- ✓ Baud Rates: 300 to 38,400
- ✓ Output Protection: 240 Vac (Current Output), ± 30 V (Voltage Outputs)



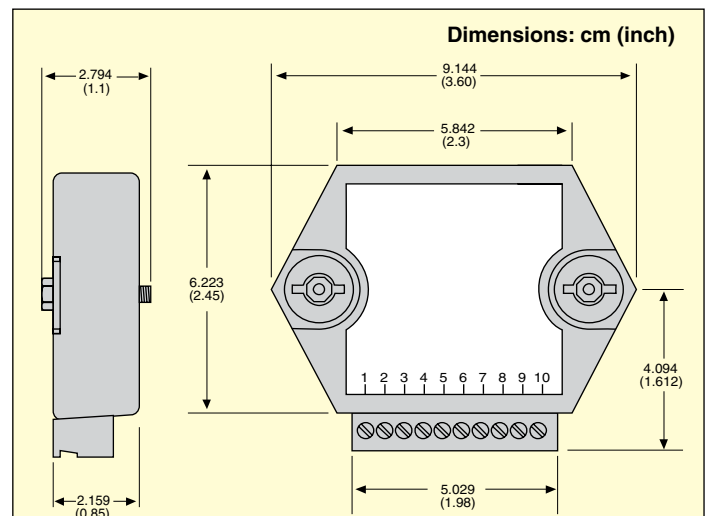
The D3000 and D4000 computer-to-analog output interfaces are designed to be mounted remotely from a host computer and communicate with standard RS232 and RS485 serial ports. Simple ASCII commands are used to control a 12-bit digital-to-analog converter that is scaled to provide commonly used current and voltage ranges. An on-board microprocessor provides the communications interface and many intelligent analog output functions. These modules offer an extremely flexible, easy-to-use, and cost-effective approach to data acquisition.

The D3000 and D4000 are compatible with the OMEGABUS® D1000 and D2000 and may be used in any combination. Up to 124 modules may be strung on one set of wires. All modules are supplied with screw terminal plug connectors and captive mounting hardware. The connectors allow system expansion, reconfiguration, or repair without disturbing field wiring. Their small size allows them to be mounted in virtually any location or position including explosion-proof housings and DIN rails. Utility software (D1000-SW) is available for free download.

The D4000 modules offer several additional features. A slew rate may be programmed, which causes the output to ramp at an adjustable rate in either an increasing or decreasing direction. The ramp can be initiated and maintained by commands from the computer or with external switch closures to the module. The D4000 module provides a readback feature which allows the computer to verify the integrity of the output.

The D4000 modules also include a watchdog timer circuit that can be set such that if the computer fails to communicate with the module after a preset time period, the module will reset itself to an adjustable default value. This feature minimizes the risks of communication failure.

The A1000 RS232 to RS485 converter and repeater can be used if an RS485 port is not available in your PC, and it is necessary to communicate long distances away. The A1000 also provides power for the modules. RS232 modules can be used for distances less than 15.2 m (50').





The D3000 and D4000 modules may be stacked for multiple outputs

Common Specifications, D3000 and D4000

ANALOG OUTPUT

- Single channel analog output
Voltage: 0 to 1V, $\pm 1V$, 0 to 5V, $\pm 5V$, 0 to 10V, $\pm 10V$
Current: 0 to 20 mA
- Input isolation to 500 V rms
- 12-bit measurement resolution
- Accuracy (integral and differential non-linearity): 0.1% FSR (maximum)
- Zero drift: $\pm 30 \mu V/^\circ C$ (voltage output)
 $\pm 1.0 \mu A/^\circ C$ (current output)
- 1000 conversions per second
- Settling time to 0.1% FS 300 μs typical (1 ms maximum)
- Programmable output slew rate: 0.01V/s (mA/s) to 10,000 V/s (mA/s) (D4000 only)
- Autozero and autocalibration-no adjustment pots
- Voltage compliance: $\pm 12V$
- Output current, short circuit current: 5 mA minimum, 10 mA maximum

ANALOG OUTPUT READBACK (D4000)

- 8-bit analog-to-digital converter

D3000 Series Output Module

To Order		
Model No.	Output Range	Input
Voltage Output		
D3121	$\pm 1V$	RS232C
D3122	$\pm 1V$	RS485
D3131	$\pm 5V$	RS232C
D3132	$\pm 5V$	RS485
D3141	$\pm 10V$	RS232C
D3142	$\pm 10V$	RS485
D3161	0 to 1V	RS232C
D3162	0 to 1V	RS485
D3171	0 to 5V	RS232C
D3172	0 to 5V	RS485
D3181	0 to 10V	RS232C
D3182	0 to 10V	RS485
Current Output		
D3251	0 to 20 mA	RS232C
D3252	0 to 20 mA	RS485

Comes complete operator's manual and Windows setup software on CD. D1000 Series digital transmitters are also available with Modbus RTU protocol. To order transmitters Modbus RTU protocol, add suffix "M" at the end of the model number, no additional charge.

DIGITAL INPUTS

- Voltage levels: $\pm 30V$ without damage
- Three digital inputs (all models)
- Switching levels: High, 3.5V minimum, low, 1.0V maximum
- Internal pull-up resistors for direct switch input

COMMUNICATIONS

- RS232, RS485
- Up to 124 modules with A1000 converter/repeater, 32 without A1000
- User selectable channel address (via software command)
- Selectable baud rates: 300, 600, 1200, 2400, 4800, 9600, 19.2K, 38.4K
- ASCII format command/response protocol
- Parity: odd, even, none
- All communications setups (address, baud rate, parity) stored in nonvolatile memory using EEPROM
- Checksum can be added to any command or response
- Communications distance up to 10,000 feet with RS485 modules

Power Requirements: Unregulated 10V to 30 Vdc, 0.75 W maximum (voltage output), 1.0 W maximum (current output)

Case: ABS with captive mounting hardware

Connectors: screw terminal barrier plug (supplied)

Temperature Range

Operating: -25 to 70°C (-13 to 158°F)

Storage: -25 to 85°C (-13 to 185°F)

Relative Humidity: 0 to 95% non-condensing



OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARESM covers parts, labor and equivalent loaners.

D4000 Series Output Module

To Order		
Model No.	Output Range	Input
Voltage Output		
D4121	$\pm 1V$	RS232C
D4122	$\pm 1V$	RS485
D4131	$\pm 5V$	RS232C
D4132	$\pm 5V$	RS485
D4141	$\pm 10V$	RS232C
D4142	$\pm 10V$	RS485
D4161	0 to 1V	RS232C
D4162	0 to 1V	RS485
D4171	0 to 5V	RS232C
D4172	0 to 5V	RS485
D4181	0 to 10V	RS232C
D4182	0 to 10V	RS485
Current Output		
D4251	0 to 20 mA	RS232C
D4252	0 to 20 mA	RS485

Accessories

Model No.	Description
A1000	RS232 to RS485 converter
A1000-CABLE	RS232 9-pin cable

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• Flow and Level

Air Velocity Indicators, Doppler Flowmeters, Level Measurement, Magnetic Flowmeters, Mass Flowmeters, Pitot Tubes, Pumps, Rotameters, Turbine and Paddle Wheel Flowmeters, Ultrasonic Flowmeters, Valves, Variable Area Flowmeters, Vortex Shedding Flowmeters

• pH and Conductivity

Conductivity Instrumentation, Dissolved Oxygen Instrumentation, Environmental Instrumentation, pH Electrodes and Instruments, Water and Soil Analysis Instrumentation

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Communication Products and Converters, Data Acquisition and Analysis Software, Data Loggers Plug-in Cards, Signal Conditioners, USB, RS232, RS485, Ethernet and Parallel Port Data Acquisition Systems, Wireless Transmitters and Receivers

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Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters