DAC488/4™

12-Bit D/A Converter with Digital I/O & IEEE 488

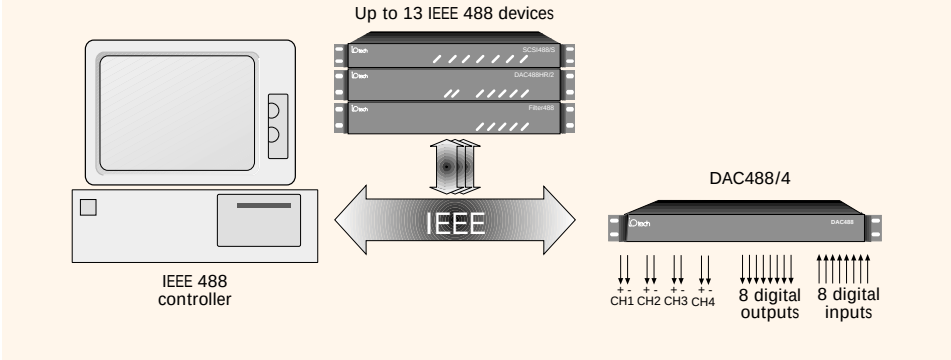
Features

- **Four 12-bit plus sign isolated D/A converters**
- **Programmable range or auto ranging, ±1, ±5, or ±10 VFS**
- **Built-in 8192-point waveform buffer with 1-kHz update rate**
- **Sequenced output based on either a periodic interval or trigger condition**
- **Three trigger conditions: External, TRG commands, & GET command**
- **500V isolation from IEEE 488 common & from other analog channels**
- **8-bit digital input port & 8-bit digital output port**

The DAC488/4 includes all the features necessary to control analog devices from the IEEE bus

DAC488/4™ is an IEEE 488 to 12-bit plus-sign analog output converter. The unit has four analog output channels that are isolated from IEEE 488 common and from other analog channels by up to 500V. Each channel can be programmed for full-scale output of ±1V, ±5V, or ± 10V. You can program each channel for output in increments of 1 part in 4096 plus sign. Outputs can be specified in either volts or bits from the IEEE 488 bus. A quick-disconnect terminal block provides convenient signal connection.

An 8 Ksample waveform buffer allows you to store waveforms for each channel with a maximum update rate of 1 kHz per sample. Each waveform can be output in sequence, based on either a periodic interval or one of three trigger conditions: an external trigger, a trigger command, or the group execute command (GET) IEEE 488 bus command. Each port can be triggered independently via any of the trigger conditions.



Calibration of the DAC488/4 is accomplished by storing calibration constants in the unit's nonvolatile memory. No mechanical adjustments of potentiometers are required. Each channel has a separate calibration constant. Calibration can be accomplished automatically by connecting the DAC488/4 to a Keithley 199™ scanning digital multimeter. In this calibration mode, the DAC488/4 becomes the system controller and automatically reads the Keithley multimeter to obtain the calibration constants. The DAC488/4 can also be calibrated by using an IEEE 488 controller with any precision digital multimeter.

Eight bits of digital input and eight bits of digital output are also provided. These are TTL-level non-isolated lines that can be programmed from the IEEE 488 bus.

DAC488/4™

Specifications & Ordering Information

Command Summary

Command	Code	Description
Trigger	@	Commanded trigger. Triggers the channels in the command trigger mask (Tm).
Autorange	An	Enable/Disable autoranging for selected port.
	A?	Returns current autorange setting.
Buffer Data	Brng,volts	Write volts value in buffer location.
	Brng,#sval	Write bit value in buffer location.
	B?	Returns the range and value at the location pointer.
Control Mode	Cn	Direct mode trigger on value command.
Digital Output	Dval	Outputs the value on the digital output port.
	D?	Returns the current value of the digital output port.
First Location	Floc,num	Specifies first and number of location used and number in the sequence buffer.
	F?	Returns the first and number of locations used in the sequence buffer.
Offset Calibration	Hval	Specifies the offset constant for selected range.
	H?	Returns the offset constant for selected range.
Interval	Ival	Specify time interval used with the waveform control mode.
	I?	Returns the current interval.
Gain Calibration	Jval,val	Specifies the gain constant for both polarities of the selected range.
	J?	Returns the gain constants for selected range.
Sequence Location	Lval	Specifies the current sequence location.
	L?	Returns the current sequence location.
Output Format	On	Select output format.
	O?	Returns current output format selected.
Port Select	Pn	Select DAC port n.
	P?	Returns currently selected port.
Range Select	Rn	Select DAC range.
	R?	Returns DAC volt range.
System Defaults	S0	Restores the factory default values to NVRAM.
	S1	Saves the current settings as default values to NVRAM.
	S2	Saves calibration constants to calibration NVRAM.
	S?	Returns the last D command executed.
Value Output	Vvolts	Write volts value for selected DAC port.
	V#val	Write bit value for selected DAC port.
	V?	Returns current value for selected port.

Specifications

Analog Output

Number of Channels: 4
DC Output Voltage/Resolution
1V Range: ±1.0000V, 500 µV/bit
5V Range: ±5.0000V, 2.5 mV
10V Range: ±10.000V, 5.0 mV
DC Output Current: ±10 mA max
Accuracy (25 ±5˚C)
1V Range: ±0.05% ±1 mV
5V Range: ±0.05% ±3 mV
10V Range: ±0.05% ±10 mV
Temperature Coefficient: (±0.002% ±100 µV)/˚C; 0˚ to 20˚C, 20˚ to 30˚C, 30˚ to 50˚C
Channel-to-Channel Isolation: 500V max, 10^5 V-Hz
Channel-to-Digital Low Isolation: 500V max, 10^5 V-Hz
Connector: Quick-disconnect terminal block with screw connections

Digital I/O

Number of Inputs: 8 bits, TTL level compatible
Number of Outputs: 8 bits, selectable TTL level compatible or open collector with 100 mA drive
Service Request Input: 1 bit, TTL level compatible
Connector: One 20-pin card-edge; mating connector supplied

IEEE 488 Specifications

Interface Subsets: SH1, AH1, T4, TE0, L4, LE0, SR1, PP0, RL0, DC1, DT0, C0, E1
Connector: Standard IEEE 488 connector with metric studs

General

Power: 105 to 125 or 210 to 250 VAC, 50/60 Hz; 20 VA max
Environment: 0˚ to 50˚C; 0 to 95% RH, non-condensing
Controls: Power switch, external dip switch for IEEE address
Dimensions: 425 mm W x 305 mm D x 45 mm H (16.75" x 12" x 1.75")
Weight: 3.2 kg (7 lbs)

Ordering Information

Description	Part No.
4-channel isolated analog output converter with mating screw-terminal connector; analog output connector; digital I/O port connector; and rack-mount kit	DAC488/4
Shielded IEEE 488 cable, 6 ft.	CA-7-3

Related Products

Hardware

ADC488/16A	p. 324
ADC488/8SA	p. 326
DAC488HR/4	p. 328
Personal488 Series	p. 345