

# webDAQ/100™

## Complete Distributed Data Acquisition System

Analog Inputs	
-207	V1B: -1.806
2.182	V2B: -.404
-.778	V3B: -1.244
1.777	V4B: 1.12
-1.422	V5B: -1.66
2.187	V6B: 1.403
2.038	V7B: 2.787
1.222	V8B: 2.22
-.982	V9B: .07

Vo1 3.0  
Vo2  
Vo3

Download Reports  
Report format: All channels  
Time interval: All data

[Click here to download data](#)

cec webDAQ/100  
Acq. Setup

Inlet Temp. (degC)

IN1A  
IN1B  
IN2A  
IN2B  
IN3A  
IN3B  
IN4A  
IN4B  
IN5A  
IN5B  
IN6A  
IN6B  
IN7A  
IN7B

Flow (cfm)

Airflow (cfm)

Square, 500Hz

Valve1 (%)

Valve2 (%)

Sampling rate: 100000

Additional rates:

Rate 2 = Rate1 / 2

Rate 3 = Rate2 / 5

Rate 4 = Rate3 / 2



**Any Data,  
Any Time,  
Anywhere**

Data Acquisition From A Web Browser  
500 KHz, 32 Channels, 12 Bits, with 8 D/A Outputs

## Any Data

Measure temperature, pressure, voltage, current, resistance, and more... just connect sensors and configure channels using your web browser.

## Any Time

Information delivered when you want it, the way you want it. Download on demand in a web browser or have webDAQ/100 e-mail it or put it on your file server.

## Anywhere

webDAQ/100 does distributed data acquisition anywhere on your network, whether it's in the field with a portable computer, throughout a factory on a local-area net, or worldwide with standard TCP/IP networking technology.

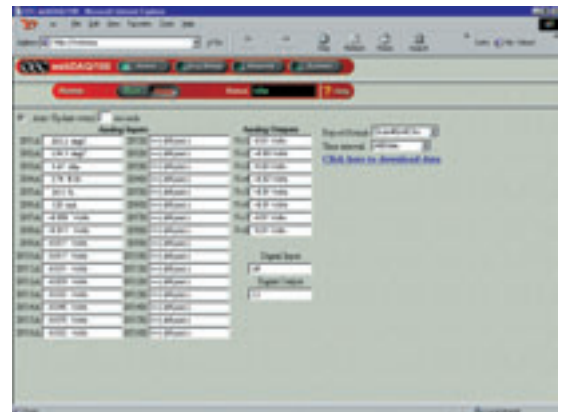
## A complete data acquisition system

- No boards to plug into a computer
- No computer - it's built in
- No driver software to install
- No programming required

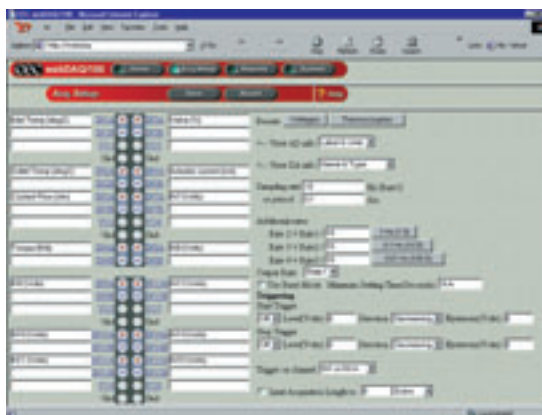
Every webDAQ/100 contains a complete computer and web server built right into the box. Just connect it to your network, or direct to an Ethernet card in your computer, and open your web browser. You get complete control over channels, rates and other acquisition parameters, a dynamic view of your data, and direct download in a variety of formats.

## Exactly how does it work?

As soon as you type webDAQ's address into your browser, the built-in web server shows you a **home** page, containing a numeric display of every input channel and controls for setting outputs and downloading data. This web page is fully interactive - just click on the Run button to start webDAQ acquiring data for you.



webDAQ/100 home page



webDAQ/100 acquisition setup page

Want to configure channels, rates, gains, and other options? A single click takes you to the **acquisition setup** web page, where a picture of the screw terminals on the webDAQ makes configuration completely intuitive. Need more information? Click the help button for online web help screens. Other pages allow you to configure custom data file formats, request data to be sent via web, FTP, or email, and to schedule automatic reports.

## How do I retrieve data?

Click and download. Your browser retrieves the acquired data to your computer in the same way you would download any file from the internet. The data file can be imported into spreadsheets or other programs.



# Features

## Applications

### Distributed

Factory Process Monitoring  
Environmental Monitoring  
Remote Data Collection  
Remote Diagnostics

### Portable

Field Service  
Data Logging

- **Configurable Report Formats**

webDAQ/100's report setup screens allow creating, naming, and saving multiple report formats that can then be retrieved at any time. Formatting provides control over the data channels to be included, numeric formats, headers and labels, time-stamps for data, and more. Time intervals for data retrieval can also be pre-defined, so it is easy to call up such items as all the data, the last 10 minutes, all of the first shift in a factory, or any time span you choose.

- **E-Mail Data Reports and FTP (File Transfer Protocol)**

Need your data sent to you? webDAQ/100 can e-mail any report to the address of your choice. Or have webDAQ/100 upload data to a corporate FTP server for later use.

- **Scheduled Automatic Reports**

Configure webDAQ/100 for unattended report generation on any schedule you choose. Schedules can be based on time of day or desired intervals. Reports can be sent automatically via e-mail or FTP upload to a server. Scheduled reports saved on a secure server ensure your data against loss if your network goes down.

- **Multiple-user support for workgroups**

webDAQ/100 can act as a workgroup server, with multiple users accessing data reports. It also can be configured to restrict access to some features using passwords.

- **Command-line interface and programming**

Every feature of webDAQ/100 can also be controlled from a command line with simple text commands. If you wish to create a custom program in C or BASIC to control webDAQ/100, just open a TCP/IP connection and use the command-line interface. Examples are included showing how to control webDAQ/100 from TestPoint, C, Visual BASIC, LabView and Java programming environments as well as Microsoft Excel macros.



- **High Performance: 500 KHz, 32 Channels, 12 Bit Accuracy**

webDAQ/100 uses the highest quality analog components together with digital signal processor (DSP) technology to bring you top performance. Up to 32 separate signals can be acquired simultaneously, or terminals can be combined in differential input pairs for higher noise rejection. Any combination of single-ended and differential pairs can be used.



- **Multiple Sampling Rates**

Most data acquisition products have a single sampling clock. But real-world signals don't all happen at the same rate. That's why webDAQ/100 provides up to four sampling rates during a single acquisition.

- **Averaging**

webDAQ/100 can smooth out noise in the incoming signal using the built-in averaging feature. You can choose the base sampling rate and the averaging period to suit your needs.



- **Sensor Conversions**

Your sensors don't all measure volts and bits - they sense temperature, pressure, resistance, strain, and more. webDAQ/100 provides acquired data directly in engineering units. You can configure a webDAQ/100 channel to process your inputs using your choice of scaling: linear, quadratic, current, resistance divider, RTD, and thermocouples (B,E,J,K,R,S,T,N).

- **Extensive Triggering Options**

webDAQ/100 offers both digital and analog triggering. In fact, acquisition can be configured to start or to stop on either type of trigger, or to stop after a desired amount of data has been collected.



- **8 Analog Outputs For Circuit Stimulus**

With eight independent waveform-quality D/A outputs, webDAQ offers far more capability than most data acquisition products. Some sensors such as RTDs require an excitation voltage source, which can easily be provided directly by webDAQ. The outputs are conveniently grouped with the input terminals.

## Customized web pages

webDAQ/100 makes it easy to display your data in custom web screens, designed for your application. Show measurements numerically, as bar graphs, or custom graphics. **No programming required.** All you need is a web-page editing tool such as Microsoft FrontPage, Adobe PageMill, or similar programs.

### What can I display?

Your custom pages can contain any type of background graphic images, company logos, process diagrams, .. anything you can put in a JPG or GIF image file.

For display of sensor data, you can insert any of these items anywhere on your page, and have the information updated as often as once a second:

#### Numeric display

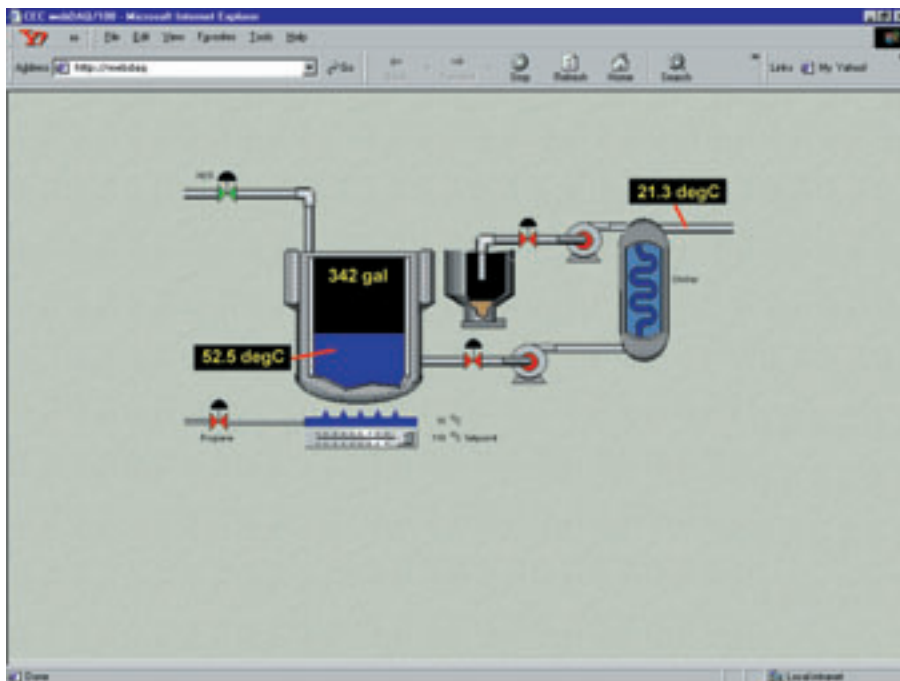
Numeric values in any desired font and color.

#### Bar graph

Horizontal or vertical bars of any specified color, numeric range, and size.

#### Custom graphic

Indicators which change depending on specified input levels. Up to 8 different custom bitmap images can be displayed.



### How do I create custom pages?

It's easy...

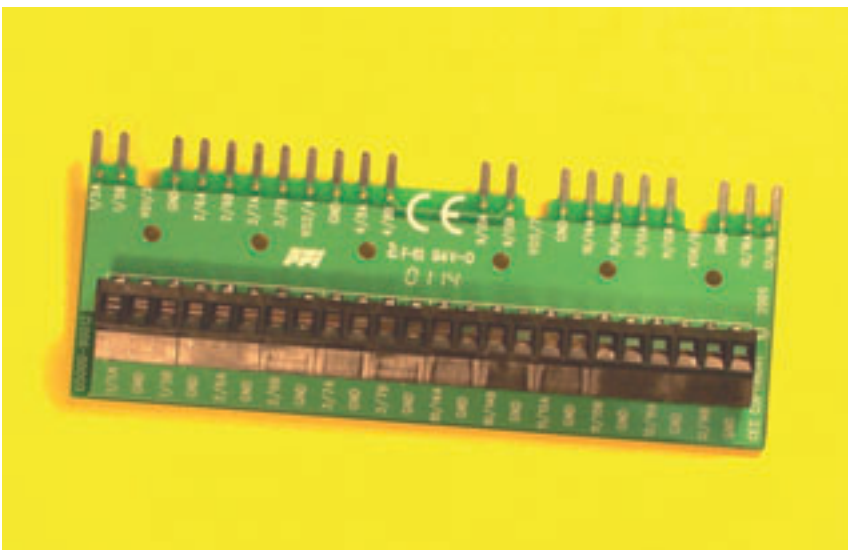
1. Create graphics for the background using any drawing tool (Paint, Photoshop, or similar).
2. Decide where you want to display updating sensor information on the screen.
3. Create a web page using any web editing tool. Make a table containing pieces of your background image and then insert "applet" tags where you want the displays to appear. (An applet tag is just a standard web page item that describes what you want to display - the channel number, update period, colors, fonts, and so forth).
4. Using your web browser, upload your JPG and HTML files to webDAQ. The web server built into webDAQ includes 256KB of user file space which can contain any web pages and graphics you want. You can even replace the built-in home page of webDAQ with one of your own design.

### Can I do even more customizing?

Of course! Everything already described above can be done without any programming at all, with just a web page editor. If you wish to create your own ways of presenting sensor data, you can write your own Java code, and upload that to webDAQ as well. We include Java source code for the built-in numeric, bar graph, and custom image displays to get you started.

## webDAQ/100 Thermocouple Adapter

Everything you need to make thermocouple temperature measurements plug-and-play



- Connects up to 12 thermocouples (12 using single-ended wiring, or 6 using differential wiring)
- Use one or two adapters per webDAQ/100 unit
- Built-in cold-junction compensation (CJC) using a precision RTD sensor
- Isothermal contacts (typically within 0.1 deg C)

### Simple one-screen setup through your web browser

Select the type of thermocouple sensor you are using, your desired temperature scale, a few other options, and click OK. webDAQ/100 is fully configured to measure temperatures, including built-in averaging to eliminate noise.



## Specifications

Part# 05000-90012

Overall temperature accuracy +/- 1 degree C

Thermocouple types supported: B, E, J, K, R, S, T, N

Software version required in webDAQ/100: v1.4 or higher  
(can be downloaded to units in the field)

(+/-1 degC applies to types J,K,T,E, and N. +/-2.5 degC for R,S types.  
+/- 3 degC for B type at 400 degC and above. Accuracy is based on webDAQ/thermocouple adapter combined system digitization and CJC sensor errors. Assumes ambient temperature in the range 15 to 30 degC. Does not include error due to thermocouple sensor itself.)

# SCM5B Signal Conditioning Modules

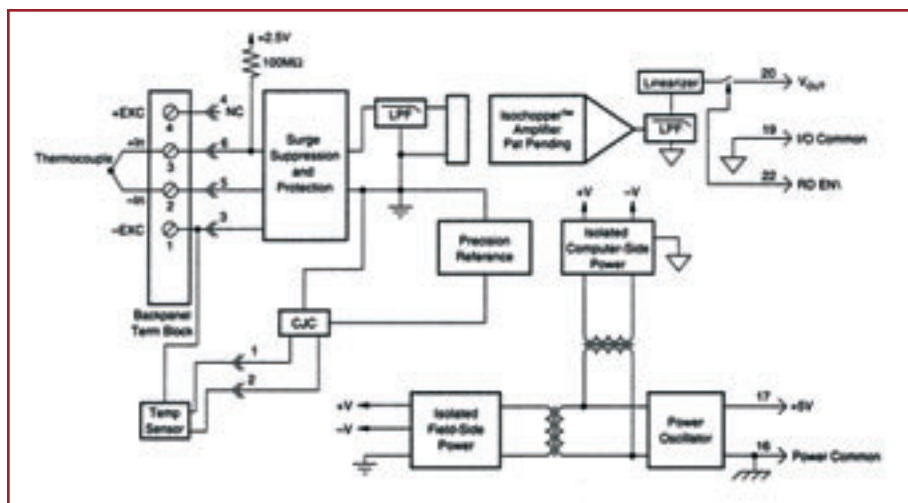
## Analog input and output isolation and filtering for industrial environments

### Featuring:

- 1500V Isolation
- Accuracy 0.05%
- 6-pole Input Filtering for CMRR of 160dB, NMR of 95 dB
- Transient Protection (ANSI C37.90.1-1989)
- Operating temperature range -40 to 85 degC
- Operate on +5V power
- CSA certified, FM approved, CE approved



The SCM5B series of signal conditioning modules takes your sensor input, filters and amplifies it, providing an accurate, linear voltage output for connection to webDAQ/100's screw terminals. Some modules, such as the strain gage units, also provide appropriate sensor excitation voltages. All sensor circuits are fully transformer isolated to 1500V for industrial use.



Block diagram of a typical module

A complete system will usually consist of a webDAQ/100 data acquisition unit, one or more SCMPB07 module backplanes, a module power supply, and an appropriate assortment of SCM5B modules.

A full list of modules is given on page 9.

Check our web site for complete specs ([www.cec488.com/sig\\_cond.html](http://www.cec488.com/sig_cond.html))

# Part Numbers and Ordering Information

## webDAQ/100

05000-60100	<i>webDAQ/100 Data Acquisition System</i> 32 channels of 12-bit A/D input, 8 channels of 10-bit D/A output, 4 digital input, 4 digital output, Ethernet and serial ports with built-in web server, email, FTP, Java applets, and report scheduler
	AC adapter included, works on 110/220V, 50/60Hz (autosensing) - <b>specify U.S. or European power cord when ordering</b>

## Accessories

swi36-51515	<i>Spare AC power adapter</i>
elfp12210	<i>Extra 12-position terminal block</i>
elfp05210	<i>Extra 5-position terminal block</i>

## Thermocouple / Temperature Measurement

05000-90012	<i>Thermocouple adapter board</i> 12 single-ended thermocouple inputs (or 6 differential), with built-in cold-junction compensation sensor
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## Configuration Tips

- \* webDAQ/100 comes with detachable screw terminals for direct signal connections
- \* For thermocouple temperature measurements, a 05000-90012 adapter is recommended. Each adapter can take either 6 or 12 thermocouples depending on wiring choice (single-ended or differential). Up to two adapters can be used per webDAQ/100.
- \* If you require high voltage isolation, surge protection, and filtering, use SCM5B series modules (one per channel)
- \* When using SCM5B series modules, a module carrier board and a power supply are required. Most modules require 30 mA of current from the power supply, but some require more. Full specifications are available online at [www.cec488.com/sig\\_cond.htm](http://www.cec488.com/sig_cond.htm).



## 5B Series Signal Conditioning Modules

### Analog voltage input (4 Hz bandwidth)

SCM5B30-01	+/- 10 mV
SCM5B30-02	+/- 50 mV
SCM5B30-03	+/- 100 mV

### Analog voltage input (10 kHz bandwidth)

SCM5B40-01	+/- 10 mV
SCM5B40-02	+/- 50 mV
SCM5B40-03	+/- 100 mV
SCM5B41-01	+/- 1 V
SCM5B41-02	+/- 5 V
SCM5B41-03	+/- 10 V
SCM5B41-07	+/- 20 V
SCM5B41-09	+/- 40 V

### Analog current input

SCM5B32-01	4 to 20 mA (4 Hz bandwidth)
SCM5B392-13	4 to 20 mA (1 kHz bandwidth)

### True RMS input

SCM5B33-01	0 to 100 mV
SCM5B33-02	0 to 1 V
SCM5B33-03	0 to 10 V
SCM5B33-04	0 to 150 V
SCM5B33-05	0 to 300 V
SCM5B33-06	0 to 1 A
SCM5B33-07	0 to 5 A

### Linearized 2 or 3-wire RTD input, 100 Ohm Pt

SCM5B34-01	-100 to +100 degC
SCM5B34-02	0 to +100 degC
SCM5B34-03	0 to +200 degC
SCM5B34-04	0 to +600 degC

### Linearized 4-wire RTD input, 100 Ohm Pt

SCM5B35-01	-100 to +100 degC
SCM5B35-02	0 to +100 degC
SCM5B35-03	0 to +200 degC
SCM5B35-04	0 to +600 degC

### Potentiometer input (4 Hz bandwidth)

SCM5B36-01	0 to 100 Ohm
SCM5B36-02	0 to 500 Ohm
SCM5B36-03	0 to 1 kOhm
SCM5B36-04	0 to 10 kOhm

### Frequency input

SCM5B45-01	0 to 500 Hz
SCM5B45-02	0 to 1 kHz
SCM5B45-03	0 to 3 kHz
SCM5B45-04	0 to 5 kHz
SCM5B45-05	0 to 10 kHz
SCM5B45-06	0 to 25 kHz
SCM5B45-07	0 to 50 kHz
SCM5B45-08	0 to 100 kHz

### Linearized thermocouple input (4 Hz bandwidth)

SCM5B47J-01	type J	0 to 760 degC
SCM5B47J-02	type J	-100 to 300 degC
SCM5B47J-03	type J	0 to 500 degC
SCM5B47K-04	type K	0 to 1000 degC
SCM5B47K-05	type K	0 to 500 degC
SCM5B47T-06	type T	-100 to 400 degC
SCM5B47T-07	type T	0 to 200 degC
SCM5B47E-08	type E	0 to 1000 degC
SCM5B47R-09	type R	500 to 1750 degC
SCM5B47S-10	type S	500 to 1750 degC
SCM5B47B-11	type B	500 to 1800 degC
SCM5B47J-12	type J	-100 to 760 degC
SCM5B47K-13	type K	-100 to 1350 degC
SCM5B47K-14	type K	0 to 1200 degC
SCM5B47N-15	type N	-100 to 1300 degC

### Strain gage input (10 kHz bandwidth)

SCM5B38-01	+/-10mV full, 100-10kOhm, 3.333V exc.
SCM5B38-02	+/-30mV full, 300-10kOhm, 10V exc.
SCM5B38-03	+/-10mV half, 100-10kOhm, 3.333V exc.
SCM5B38-04	+/-30mV half, 300-10kOhm, 10V exc.
SCM5B38-05	+/-20mV full, 300-10kOhm, 10V exc.
SCM5B38-06	+/-33mV full, 100-10kOhm, 3.333V exc.
SCM5B38-07	+/-100mV full, 300-10kOhm, 10V exc.

### General-purpose input with DC excitation output (all have 10.00V, 40mA excitation output)

SCM5B43-01	+/- 1V	SCM5B43-06	+/- 6V
SCM5B43-02	+/- 2V	SCM5B43-07	+/- 7V
SCM5B43-03	+/- 3V	SCM5B43-08	+/- 8V
SCM5B43-04	+/- 4V	SCM5B43-09	+/- 9V
SCM5B43-05	+/- 5V	SCM5B43-10	+/- 10V

### Voltage output (50 mA drive)

SCM5B49-05	+/- 10 V
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### Analog current output

SCM5B39-01	4 to 20 mA (400 Hz bandwidth)
SCM5B39-03	0 to 20 mA (400 Hz bandwidth)
SCM5B39-07	+/- 20 mA (275 Hz bandwidth)
SCM5B392-03	4 to 20 mA (1 kHz bandwidth)

### Module carrier panels

SCMPB07	8 position module panel
SCMPB07-1	8 position module panel without CJC
SCMPB07-2	8 position panel with DIN rail mount
SCMPB07-3	8 position panel w/ DIN rail, w/o CJC

### Power supplies

SCMXPRT-001	+5V, 1A power supply (120 VAC)
SCMXPRT-001	+5V, 1A power supply (220 VAC)
SCMXPRT-003	+5V, 6A power supply (120 VAC)
SCMXPRT-003	+5V, 6A power supply (220 VAC)

## Specifications

### A/D

12-bit resolution, 500 KHz max. total sampling rate (#ch \* rate), 32 channels (16 differential)

Maximum input range +/- 10 Volts

Gains: 1, 4, 10, 40, 100, 400

Triggering: digital or analog start or stop trigger

Data rate for client computer download: 5 to 10 Ksamples/sec (binary mode), depending on format options

### D/A

10-bit resolution, 33 KHz per channel, 8 channels

Function generation: constant, sine, triangle, square

Output range +/- 10 Volts

Max. current 5 mA

### Digital I/O

4 bits input, can be time-sampled, standard TTL logic voltage levels

4 bits output, can do timed pattern generation

standard TTL logic levels, current drive capability: -15mA source, 24mA sink

### Ethernet

10-baseT with RJ45 connector

### Serial (RS-232)

9-pin connector, DTE, default set to 38400 baud, 8 bits, no parity, 1 stop bit

### RAM memory

· Used for acquired data storage (2 bytes per sample, approx. 1MB used for other data)

· 72-pin page-mode SIMM module, 70 nsec or less access time

· size: 4MB, 8MB, 16MB, 32MB, 64MB

### Power supply

· 90 - 264 VAC, 47 to 63 Hz, approx. 18 watts power consumption

### Size and Weight

Dimensions	7.5" x 10.375" x 2.675"	(19cm x 26.5cm x 7cm)
Weight	34 oz.	(965 gm)
Shipping box	12.375" x 14.5" x 5"	(31.5cm x 37cm x 13cm)
	4.6 lb.	(2.1 kg)
Power supply	2.125" x 4.5" x 1.75"	(5.5cm x 11.5cm x 4.5cm)
	20 oz with line cord	(570 gm)

### Environmental

operating: 0 degrees C to +40 degrees C. 0% to 90% relative humidity (non-condensing)

non-operating: -10 degrees C to +70 degrees C.

#### Details/notes:

Factory and self-calibration adjust the D/A range and offset to provide accurate output. In the process, the D/A bit resolution may be adjusted slightly, so the minimum D/A step size can vary from approx. 21.5 mV to 23.5 mV. This product is not designed with components of a level of reliability suitable for use in treatment or diagnosis of humans, life support or clinical applications.

### Detailed Analog Specifications

Unless otherwise noted specs are worst case maximum at instrument calibration temperature. Values are preliminary, and will be updated to include typical values when that information is available. All LSB units are expressed in terms of a 12-bit resolution least-significant-bit (e.g., 4.88mV at gain 1, or 48.8 uV at gain 100).

ABSOLUTE ACCURACY	1.1 LSB
COMMON-MODE REJECTION RATIO: (at 60 Hz)	
System Gain 1, 4:	80 dB min 100 dB typical
System Gain 10, 40:	86 dB min 110 dB typical
System Gain 100, 400:	92 dB min 120 dB typical
COMMON-MODE INPUT RANGE:	+/- 10 Volts
INPUT BIAS CURRENT:	53.2 nA max
INPUT IMPEDANCE:	2 MegOhms
INPUT CLAMPING LEVEL:	11 to 13.15 Volts
ANALOG INPUT OVERVOLTAGE CLAMPING CURRENT:	
Non repetitive surge current:	2.0 Amp max per pin for 0.1 msec.
Non repetitive surge current:	7.0 Amp max (sum of all pins) for 0.1 msec.
Overvoltage input clamping current:	+/- 90 mA continuous (sum of all pins)
TEMPERATURE DEPENDENCE:	
OFFSET	
(at gain = 1):	83 uVolts/degree C. = 0.02 LSB/degree C.
(at gain = 4):	281 uVolts/degree C. = 0.23 LSB/degree C.
(at gain = 10):	29 uVolts/degree C. = 0.06 LSB/degree C.
(at gain = 40):	65 uVolts/degree C. = 0.54 LSB/degree C.
(at gain = 100):	24 uVolts/degree C. = 0.49 LSB/degree C.
(at gain = 400):	43 uVolts/degree C. = 3.52 LSB/degree C.
GAIN	
Gains 1, 4, 10, 40:	0.12 LSB/degree C.
Gains 100, 400:	0.51 LSB/degree C.
SYSTEM NONLINEARITY:	
Integral nonlinearity	1.1 LSB
Differential nonlinearity	0.45 LSB



# webDAQ/100

## Distributed Data Acquisition System

Any Data,  
Any Time,  
Anywhere

[www.cec488.com](http://www.cec488.com)

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