

## IP230-x 16-Bit D/A Analog Output

IP230 modules have a 16-bit D/A converter (DAC) to provide highly-accurate analog voltage outputs.

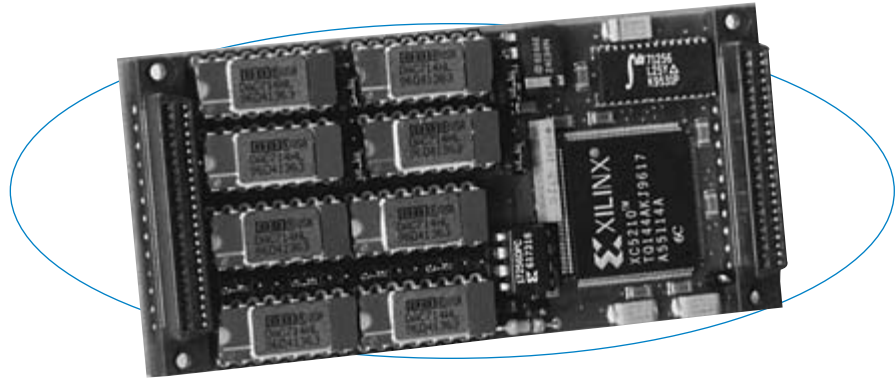
Jumper-selectable output ranges give you the choice of unipolar or bipolar voltage output. And for greater flexibility, the IP230 module accepts conversion start triggers from software commands, or from external sources for synchronization to specific events.

### Features

- IP230-4: 4 analog voltage output channels  
IP230-8: 8 analog voltage output channels
- Individual 16-bit D/A converters per channel
- 10 $\mu$ S settling time (100KHz throughput)
- Three output ranges:  $\pm 5V$ ,  $\pm 10V$ , 0 to 10V (jumper-selectable)
- Two trigger modes (software or external trigger)
- External trigger output
- Extended temperature option (-40 to 85°C)

### Benefits

- High channel density saves card cage slots.
- Internally stored calibration coefficients ensure accuracy.
- Flexible output control allows single cycle updating of individual channels or all channels simultaneously.
- Hardware jumpers allow output range selection on an individual channel basis.



*Independent D/A converters on each channel provide better performance and smoother operation.*

### Specifications

#### Analog Outputs

Output configuration: 4 (IP230-4/4E) or 8 (-8/8E).

D/A Resolution: 16 bits.

Output ranges:  $\pm 5V$ ,  $\pm 10V$ , 0 to 10V (jumper-selectable).

Maximum throughput rate:

Outputs can be updated simultaneously or individually.

One channel: 100KHz (10 $\mu$ S/conversion)

Four channels (IP235-4): 100KHz (10 $\mu$ S/4 ch)

Eight channels (IP235-8): 100KHz (10 $\mu$ S/8 ch).

DAC programming: Immediate (transparently programmed to DAC output); simultaneous (input latches of multiple DACs are loaded with new data before simultaneously updating outputs).

System accuracy: 0.0061% of 20V span maximum corrected error (i.e. calibrated) at 25°C with the output unloaded.

Output at reset: 0V for bipolar output, 5V for unipolar.

Output current: -5 to +5mA (maximum).

Short circuit protection: Indefinite at 25°C.

#### IP Compliance (ANSI/VITA 4)

Meets IP specifications per ANSI/VITA 4-1995.

IP data transfer cycle types supported:

Input/output (IOSel\*), ID read (IDSel\*).

Access Times (8MHz clock):

All functions: 1 wait state (375nS cycle).

#### Environmental

Operating temperature: 0 to 70°C (IP230-4/8) or -40 to 85°C (IP230-4E/8E models).

Storage temperature: -55 to 125°C (all models).

Relative humidity: 5 to 95% non-condensing

Power: +5V ( $\pm 5\%$ ): 200mA maximum.

$\pm 12V$  ( $\pm 5\%$ ) from P1: 150mA maximum.

MTBF: 815,720 hrs. at 25°C, MIL-HDBK-217E, notice 2.

### Ordering Information

#### Industry Pack Modules

##### IP230-4

Four high-resolution voltage outputs

##### IP230-4E

Same as IP230-4 plus extended temp. range

##### IP230-8

Eight high-resolution voltage outputs

##### IP230-8E

Same as IP230-8 plus extended temp. range

For Industry Pack Carrier Cards, see Page 5.

#### Software (see Page 81)

##### IPSW-API-VXW

VxWorks® software support package

##### IPSW-API-QNX

QNX® software support package

##### IPSW-ATX-PCI

ActiveX®/OLE Controls 2.0 software package

##### IPSW-LINUX

Linux® support (website download only)

For accessories information, see Page 87.