

# 2501 8in/4out Analog Module



## Specifications

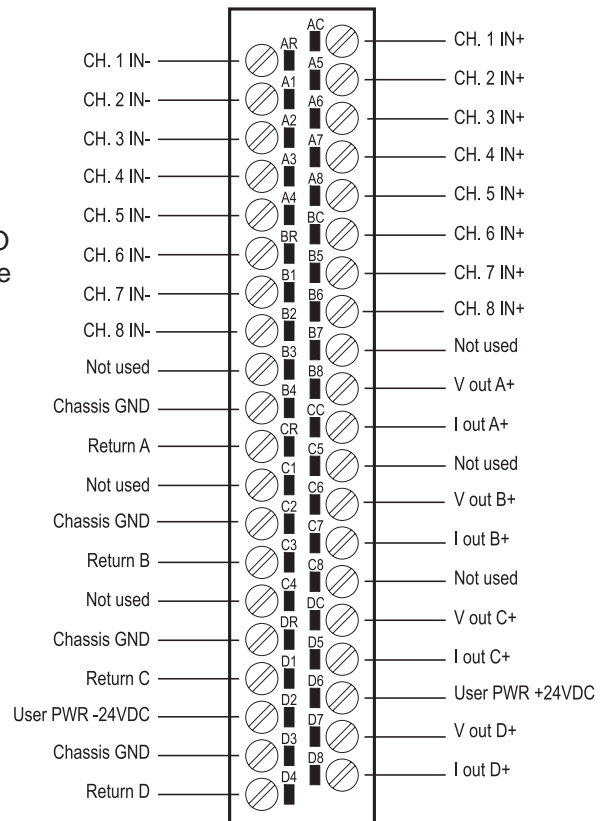
- Update Time:** 6 mSec - LO density  
7 mSec - HI density  
(all channels including settling time)
- Operating Temperature:** 0° to 60°C (32° to 140°F)
- Storage Temperature:** -40° to 85°C (-40° to 185°F)
- Relative Humidity:** 5% to 95% (non-condensing)
- Connector:** Removable
- Backplane Power:** 3 Watts (maximum)
- Wire Gauge:** 14-22 AWG
- Module Size:** Single-wide
- Shipping Weight:** 1.5 lb. (0.68 Kg)
- Agency Approvals:** UL, ULC, Class 1 - Div. 2, CE

## Description

The 2501 module provides an eight channel analog input and four channel analog output design in a compact, single-wide module to fit in the CTI 2500 Series™ or Simatic® 505 Series I/O base. It is useful in applications such as machine control, loop temperature control and weighing systems. The 2501 replaces Siemens® 505-7012 and 505-7016 modules, except in applications which use the built-in scaling feature.

## Features

- CTI 2500 Series™ or Simatic® 505 base format
- Fast 6 mSec update time for all channels
- Selectable input/output or input only operating mode
- Bipolar or unipolar inputs per channel
- Inputs: 1500VDC channel-to-PLC isolation
- Outputs:
  - 1500V channel-to-channel isolation
  - Voltage and current outputs available simultaneously
  - Bipolar or unipolar outputs per channel



2501 Wiring Connector



Control Technology Inc.

5734 Middlebrook Pike, Knoxville, TN 37921-5962  
Phone: 865/584-0440 Fax: 865/584-5720 www.controltechnology.com

## Input Specifications:

**Input Channels:** 8 analog input channels

### Signal Range:

Unipolar: 0 to 5VDC, 0 to 10VDC, or 0 to 20mA

Bipolar: -5 to +5VDC, -10 to +10VDC, or -20 to +20mA

### Resolution:

Unipolar 15 bits plus sign:

0 - 5VDC range =  $156\mu\text{V}/\text{step}$

0 - 10VDC range =  $312\mu\text{V}/\text{step}$

0 - 20mA range =  $.625\mu\text{A}/\text{step}$

Bipolar 15 bits plus sign:

-5 to +5VDC range =  $156\mu\text{V}/\text{step}$

-10 to +10VDC range =  $312\mu\text{V}/\text{step}$

-20 to +20mA range =  $.625\mu\text{A}/\text{step}$

### Accuracy:

Voltage mode: 0.125% of full scale from  $0^\circ$  to  $60^\circ\text{C}$

Current mode: 0.225% of full scale from  $0^\circ$  to  $60^\circ\text{C}$

**Digital Filtering Time Constant:** 0.3 Sec

### DC Input Resistance:

Voltage mode:  $780\text{k}\Omega$

Current mode:  $250\Omega$

**Repeatability:** 0.003125%

### Common Mode Rejection:

>120db @ 60Hz (digital filtering disabled)

### Normal Mode Rejection:

>40db @ 500Hz (digital filtering enabled)

### Isolation:

1500VDC channel-to-PLC

140Vrms channel-to-channel

## Output Specifications:

**Output Channels:** 4 analog output channels

### Output Range:

Unipolar: 0 to 5VDC, 0 to 10VDC, or 0 to 20mA

Bipolar: -5 to +5VDC, -10 to +10VDC, or -20 to +20mA

### Resolution:

Unipolar 12 bits:

0 - 5VDC range =  $1.25\text{mV}/\text{step}$

0 - 10VDC range =  $2.5\text{mV}/\text{step}$

0 - 20mA range =  $5\mu\text{A}/\text{step}$

Bipolar 12 bits:

-5 to +5VDC range =  $2.5\text{mV}/\text{step}$

0 - 10VDC range =  $5.0\text{mV}/\text{step}$

-20 to +20mA range =  $10\mu\text{A}/\text{step}$

### Accuracy:

Voltage mode: 0.125% of full scale from  $0^\circ$  to  $60^\circ\text{C}$  over total load range

Current mode: 0.225% of full scale from  $0^\circ$  to  $60^\circ\text{C}$  over total load range

**Capacitance Drive:** 0.01 microfarad

### Load Resistance:

Voltage mode:  $1\text{k}\Omega$  minimum, no maximum

Current mode:  $0\Omega$  to  $1\text{k}\Omega$  max. @ 24VDC or greater

**User Supply:** 20 to 30VDC @ 0.25 Amps

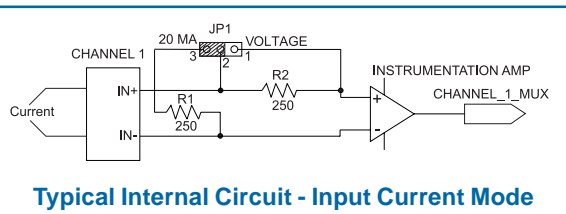
(maximum ripple of 0.4V)

UL Class 2 power supply

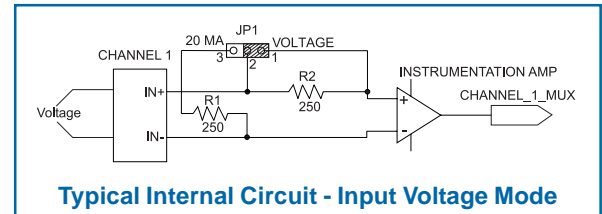
### Isolation:

1500VDC channel-to-channel

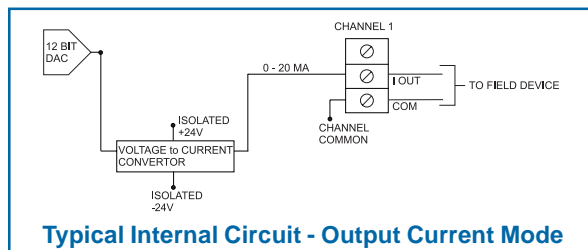
1500VDC channel-to-PLC



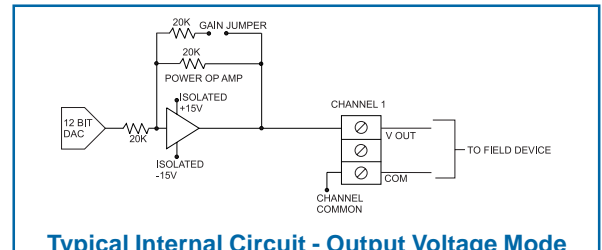
Typical Internal Circuit - Input Current Mode



Typical Internal Circuit - Input Voltage Mode



Typical Internal Circuit - Output Current Mode



Typical Internal Circuit - Output Voltage Mode