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# VC2124

## Two Axis Voltage-to-Current Converter

DATASHEET




**The VC2124 voltage-to-current converter transforms ±10V signals into current signals capable of driving hydraulic servo valves or similar loads. It also provides a convenient way to set the full scale current to match valve requirements, limit maximum current, or set optimum working ranges.**

## Features

- Two channels of voltage-to-current conversion
- Full scale output current switch-selectable from ±10mA to ±100mA in 10mA steps (each channel set independently)
- Inputs and outputs can be paralleled for output current up to ±200mA
- Dual-color LEDs indicate input polarity and amplitude
- LEDs indicate output saturation (typically caused by loss of connection to the valve or excessively high load resistance)
- Outputs protected against inductive voltage spikes and short circuits
- Compact DIN-rail mount package
- Powered by single 24V supply
- 24V power supply isolated from inputs and outputs

| | |
|---|---|
| **Inputs** | |
| Input Voltage Range | ±10V |
| Indicators | 1 dual color LED per channel; Green = positive input, Amber = negative, intensity indicates amplitude. 1 red LED per channel indicates saturation. |
| Input Impedance | 50kΩ |
| Overvoltage Protection | ±25V |
| **Outputs** | |
| Output Current Range | ±10mA to ±100mA, switch-selectable (see the Output Characteristics table for more information). Inputs and outputs can be paralleled for current up to 200 mA. |
| Indicators | 1 red LED per channel for output saturation indication (open circuit or excessive load resistance). |
| Rise Time (square wave input) | 100 µs typical, 10% to 90% (100mA setting, 50Ω resistive load) |
| 3dB frequency | 2.5 kHz typical (±2V in, 100mA setting, 50Ω resistive load) |
| Conversion Accuracy | 0.6% full scale, typical, all ranges |
| Offset | 20 µA typical |
| Max Load Inductance | 1H |
| **Power Supply Requirements** | |
| Voltage | 24Vdc ± 20% |
| Current | 200 mA |
| Isolation | Power supply is isolated from all inputs and outputs. All inputs and outputs share a common. |
| Protection | Power supply inputs are protected against over-voltage, spikes, and reverse voltage. Fuse 24Vdc input with 5A maximum, UL-listed, fast-blow fuse. |
| **Mechanical** | |
| Dimensions | 1.00 x 4.65 x 1.95 in (W x H X D) |
| Weight | 5.5 oz (160 g) |
| Mounting | Mounts directly to DIN rail or panel |
| Connectors | 8-pin unpluggable terminal block |
| **Environment** | |
| Operating Temperature | +32 to +140 °F (0 to +60 °C) |
| Storage Temperature | -40 to +185 °F (-40 to +85 °C) |
| Agency Compliance | CE, UL and CUL File# E141684<br>For use in Type I enclosure. |

DELTA COMPUTER SYSTEMS

# Specifications

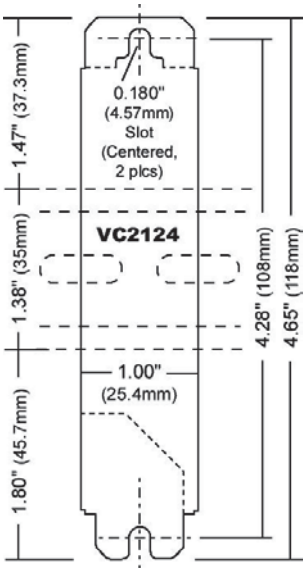
## Wiring

| Terminal Block | | |
|---|---|---|
| **Pin** | **Label** | **Function** |
| 1 | In 0 | ±10V Input |
| 2 | Cmn | Common |
| 3 | Out 0 | Current Out |
| 4 | In 1 | ±10V Input |
| 5 | Cmn | Common |
| 6 | Out 1 | Current Out |
| 7 | 24Vdc | 24Vdc Power Supply |
| 8 | PS Ret | Power Supply Return |

**Note:** Pins 2 and 5 are electrically the same.

## Mounting Dimensions

Mount vertically with 3 inches clearance above and below for airflow.
Drawing is not a 1:1 scale.




## Ordering Information

Part Number: VC2124 – Includes unpluggable terminal block

## Company Profile

Delta Computer Systems, Inc. manufactures motion controllers, color sensors, and other industrial controls providing high-performance automation solutions to a wide range of industries.

## Output Characteristics

The minimum output drive voltage and maximum load resistance is dependent on output current.

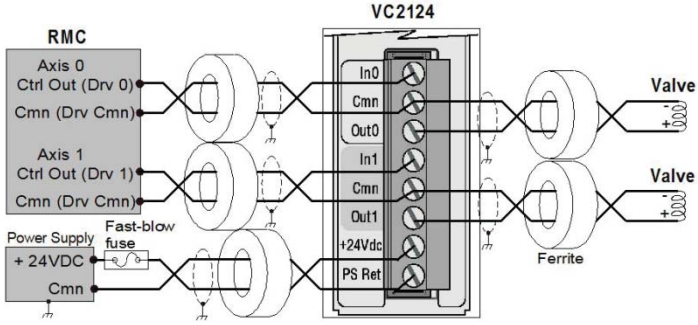
| Minimum Output Voltage and Maximum Load Resistance | | | |
|---|---|---|---|
| **Output Current (mA)** | **$V_{out}$ Typical (V)** | **$V_{out}$ Minimum (V)** | **Maximum Load Resistance (Ω)** |
| 10 | 11.0 | 10.4 | 1040 |
| 20 | 10.8 | 10.1 | 505 |
| 30 | 10.5 | 9.9 | 330 |
| 40 | 10.3 | 9.6 | 240 |
| 50 | 10.0 | 9.3 | 186 |
| 60 | 9.7 | 9.1 | 152 |
| 70 | 9.5 | 8.0 | 126 |
| 80 | 9.2 | 8.5 | 106 |
| 90 | 9.0 | 8.3 | 92 |
| 100 | 8.7 | 8.0 | 80 |

The VC2124 can drive a short circuit to common—the current is internally limited. The output amplifier will shut down under severe overload (such as driving a short to a power supply).

Minimum load resistance is dictated by ambient temperature and output current (average of absolute value over 30 seconds).

| Ambient Temperature and Minimum Load Resistance | | |
|---|---|---|
| **Average Current (mA)** | **Min Load at 60°C (Ω)** | **Min Load at 50°C (Ω)** |
| 90 | 36 | 12 |
| 80 | 29 | 0 |
| 70 | 16 | 0 |
| 60 | 0 | 0 |

## Sample Wiring Diagram




Fuse 24Vdc input with 5A maximum, UL-listed, fast-blow fuse. One fuse suffices for up to 10 VC2124s. For maximum protection, use one 500mA fuse per VC2124.

For noise immunity, use twisted, shielded pairs for all connections (twisted pair with overall shield is acceptable). For best noise immunity, keep wires from the RMC to the VC2124 as short as possible and less than 98ft (30m), and place ferrites on all cables as close to the VC2124 as possible. Sample ferrite part numbers from Steward: 28A2029-0A0 or 0A2, 28A5131-0A2, 28A0593-0A2, 28A0807-0A2, 28A3851-0A2, 28A2024-0A0 or 0A2.

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