

RDM-Apps - CSE00GL-10000 Constant Current Source / Sink Module.
Voltage to Current Converter Module. PCB Revs.7.xx

RDM-Apps

Capability Statement

Contact Information



Voltage Amplifier Modules ... Both Precision and High Speed Amplifiers

Current to Voltage Converter Modules... Pico-Amp, Nano-Amp, Milli-Amp ... 1A, 10A/V, 100A/V

Transimpedance Amplifiers... Pico-Amp, Nano-Amp, Milli-Amp ... 1A, 10A/V, 100A/V

Constant Current Source / Sink Modules... $\pm 10\text{pA}$ to 125mA, 1A, 5A & 10A full range output modules

Voltage to Constant Current Converter Modules... $\pm 10\text{pA}$ to 125mA, 1A, 5A & 10A full range output modules

Precision Isolation Amplifiers

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DOCUMENTATION**

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Specifications:

- Precision Adjustable $\pm 10\text{A}_{dc}$ / 20A (p-p) / 7.07A (rms) Bipolar Constant Current Source / Sink Output Module
.... Contact us for Higher Current Modules
- 150W Maximum Module Power Dissipation @ 135°F Maximum Recommended Module Operating Temperature
- Full scale Accuracy better than 0.1%
- Converts from input voltage to output constant current.
- Current Output Control:
 - a.) Option#1: $\pm 14\text{V}_{dc}$ input relative to applicable module full range current out.
 - b.) Option#2: Manual Trim-Potentiometer adjustment .
- Current output offset null & gain adjustment capability for calibration.
- Contact Higher Current Modules multi-range, multi-port or custom constant current modules / applications.
- Voltage Monitor Output relative to Constant Current Output. Grounded Load Modules Only !

Model CSE00GL-10000-18 Power Input requirements $\pm 11\text{V}_{dc}$ to $\pm 18\text{V}_{dc}$ @ 10A

Model CSE00GL-10000-30 Power Input requirements $\pm 18\text{V}_{dc}$ to $\pm 30\text{V}_{dc}$ @ 10A



CSE00xx-10000 ... Max. Load Current Values
-- Max. Load Voltage vs. Load Impedance --

Pwr. Supply	Max. Output Load Voltage	0.1 Ω	0.25 Ω	0.5 Ω	1.0 Ω	2.0 Ω	3.0 Ω
$\pm 30\text{V}$	$\pm 24\text{V}$	10.0A	10.0A	10.0A	10.0A	10.0A	8.0A
$\pm 18\text{V}$	$\pm 13.5\text{V}$	10.0A	10.0A	10.0A	10.0A	6.8A	4.5A

(Note: Voltage & Current values are DC / Peak AC)

[Module Selection Table \(10A to 10pA\) Constant Current Source / Sink Bidirectional Output Modules](#)

[Other Modules: Voltage Amplifiers, Current to Voltage Converters ...](#)

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Specifications		
Desc.	Value	Unit
Maximum. Module Power Dissipation @ 135°F Module Operating Temperature	150	W
Model CSE00GL-10000-18; Minimum Power Supply Voltage Input (Supply Must be Bipolar)	±11	Vdc
Model CSE00GL-10000-18; Maximum Power Supply Voltage Input (Supply Must be Bipolar)	±18	Vdc
Model CSE00GL-10000-30; Minimum Power Supply Voltage Input (Supply Must be Bipolar)	±18	Vdc
Model CSE00GL-10000-30; Maximum Power Supply Voltage Input (Supply Must be Bipolar)	±30	Vdc
Maximum Load Voltage ... Conditions: Pwr. Supply @ ±12Vdc	±8	Vdc
Maximum Load Voltage ... Conditions: Pwr. Supply @ ±18Vdc	±13.5	Vdc
Maximum Load Voltage ... Conditions: Pwr. Supply @ ±24Vdc	±19	Vdc
Maximum Load Voltage ... Conditions: Pwr. Supply @ ±30Vdc	±24.5	Vdc
Current Output Full Range	±10.0	Adc
Current Output vs. Voltage Input (Iout / V)	±1.0	A / V
Current Output vs. Voltage Monitor Output	±1.0	A / V
Current Output Accuracy; (@ 25C ±10°C) ... Better than	0.1	%
Current Out Adj. Resolution; Manual Control Mode	10.0	mA
Current Out Adj. Resolution; Voltage Control Mode ... Better than	1.0	mA
Voltage Monitor Output: Noise	50.0	uVp-p
Voltage Monitor Output: Impedance	600	ohm
Voltage Monitor Output: Max. load current	±10.0	mA
Frequency Response (-3dB): ... Better Than Conditions: 0 < Load impedance < 1.0Ω; L < 2uH; C < 1uF	50.0	KHz
Enclosure Dimensions (Refer to drawing for detail)	18.8 x 11.9 x 8.2	cm

Maximum CSE00 Module Power Dissipation ~ 150W

**(Note: Maximum Load Voltage is typically 4V
less than Power Input Voltage)**

**Power Supply must be Bipolar ! Call for
Pwr. Input Voltages larger than ±30V**

CSE00 Module Power Dissipation:
~ Load Current x (Vpwr – Vload)

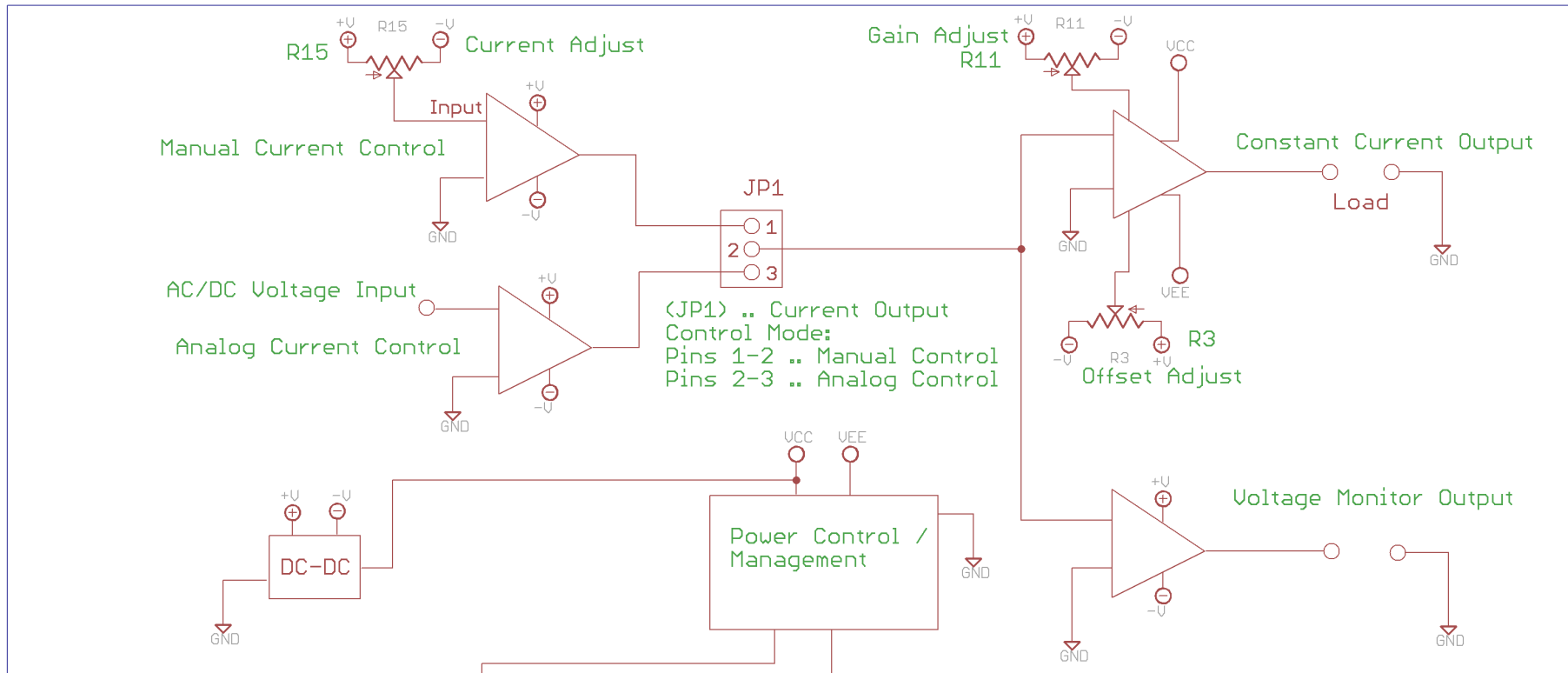
For example,
if power input is ±24V, Vload = 10V & Load current =
10A

then

CSE Pwr. Dissipation = 10A x (24V – 10V) = 140W

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Block Diagram
(Constant Current Generator / Voltage to Current Converter Module)



(JP1) .. Current Output Control Mode:
Pins 1-2 .. Manual Control
Pins 2-3 .. Analog Control

CSE00 Module Type 1: $\pm 11\text{Vdc}$ to $\pm 18\text{Vdc}$ @ 10A
CSE00 Module Type 2: $\pm 18\text{Vdc}$ to $\pm 29\text{Vdc}$ @ 10A

External Bipolar Power Supply

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TITLE: CSE00-Module Block Diagram-1

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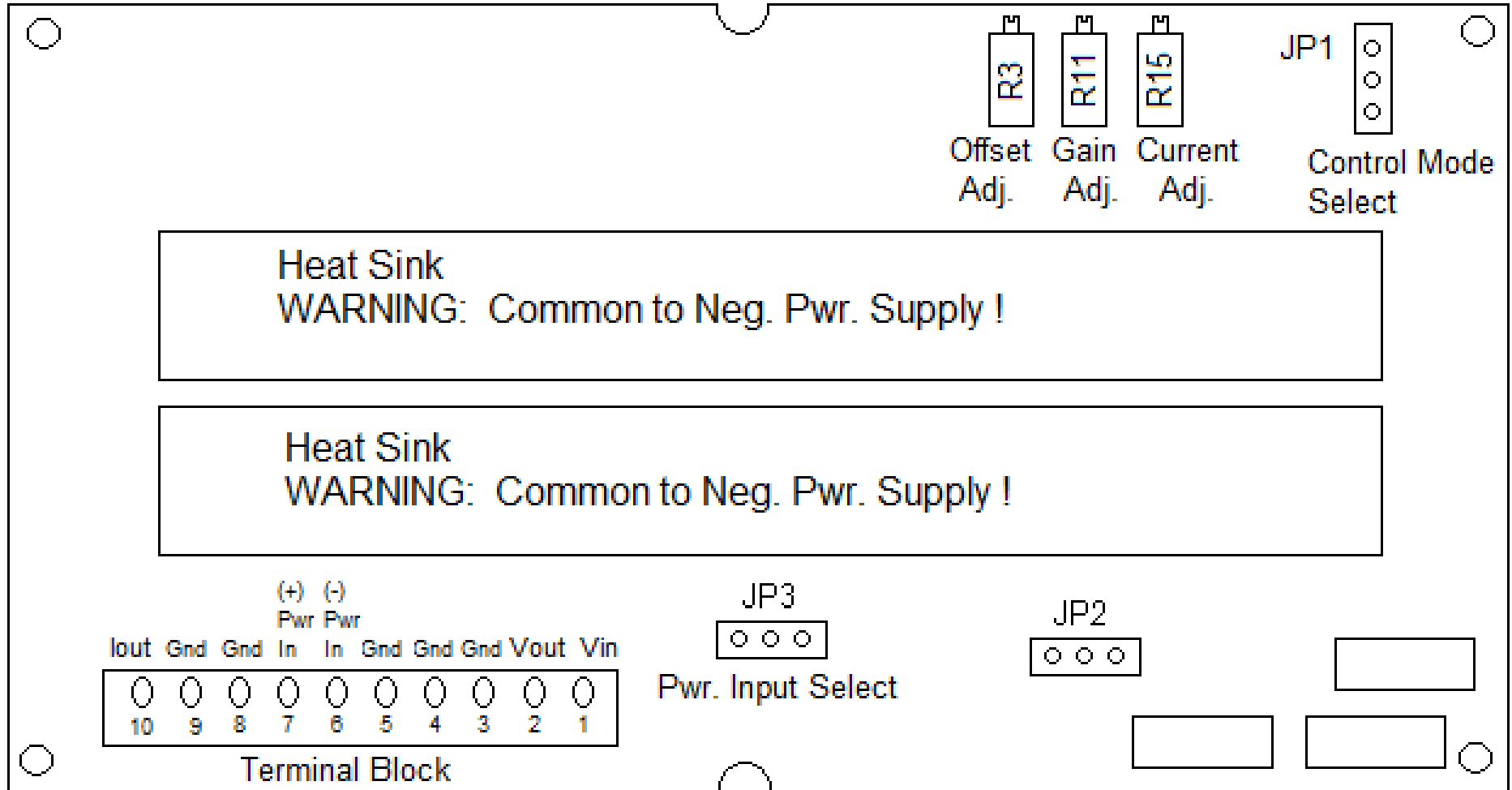
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PCB Lay-out:



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Gain / Offset Calibration Procedure:

Required equipment:

- 1.) An accurate $\pm 10\text{VDC}$ voltage source.
- 2.) A current meter with accuracy better than 0.1% of the CSE full current range output.

Required Conditions:

- 1.) CSE Module must be jumpered for Analog Voltage Control Mode (JP1 pins 2-3).
- 2.) CSE Module must have required DC power applied.
- 3.) Connect voltage source to CSE module voltage input (Vin) connector.
- 4.) Connect current meter to the applicable CSE module current output (Iout) connector.
- 5.) Allow CSE module to warm up for at least 3 mins. Before continuing to the procedure.

Procedure exclusively for Grounded or Floating current outputs:

- 1.) Use your voltage source to apply 0.000V to the CSE voltage input (Vin) connector. Adjust "OFFSET" trim-pot until the CSE module current output (current meter) reads zero amps ... within 0.1% of the CSE full range output.
- 2.) Apply +5VDC to the CSE voltage input and adjust "GAIN" trim-pot to the required output current. For example, if your CSE module has a full range output of $\pm 1000\text{mA}$ and the Vin / Iout (Input / Output) ratio is 1V/100mA then the current output should be +500mA. Conversely , a -5VDC input should result in a -500mA output.

Note(s): you will probably have to repeat procedure steps 1 and 2 a couple of times to assure proper calibration. If the Gain adjustment potentiometer is set to one of the extreme top or bottom extents extremely high or low gain states can occur which may cause confusion when making sequential offset and gain adjustments. Also, we advise you adjust the gain using input voltages that are mid-range values.



Terminal Block Plug-In:

Part# OSTTJ105153 (Digikey) or

Part# 1757093 (Mouser)

Pluggable Terminal Blocks 10 Pos 5.08mm pitch Plug 24-12 AWG Screw

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