

RDM-Apps - CSE00 SERIES $\pm 100\text{mA}$ & $\pm 300\text{mA}$ Constant Current Source / Sink Modules.
Voltage to Current Converter Module. PCB Revs.2.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

**CONTINUE TO NEXT PAGE FOR
DOCUMENTATION**

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General Features:

- **DUAL OUTPUT**
- Independent Analog & Manual control for each current output channel.
- Current Output Control:
 - a.) Option#1: $\pm 12\text{V}$ input relative to applicable module full range current out for each channel.
 - b.) Option#2: Manual Trim-Potentiometer adjustment .
- 15W Maximum Module Power Dissipation @ 135°F Maximum Recommended Module Operating Temperature
- Full scale Accuracy better than 0.1%
- Voltage Monitor Output relative to Constant Current Output for ea. channel
- Current output offset null & gain adjustment for ea. Channel for cal.
- Contact Higher Current Modules multi-range, multi-port or custom constant current modules / applications.

We Recommend GROUNDED LOAD modules for most applications.

*** Common for Most Applications**



Contact us for Modules with Higher Output Current or Higher Load Voltage requirements

[Product Selection Table ... Other Current Source-Sink Modules ... 10A to 10pA](#)

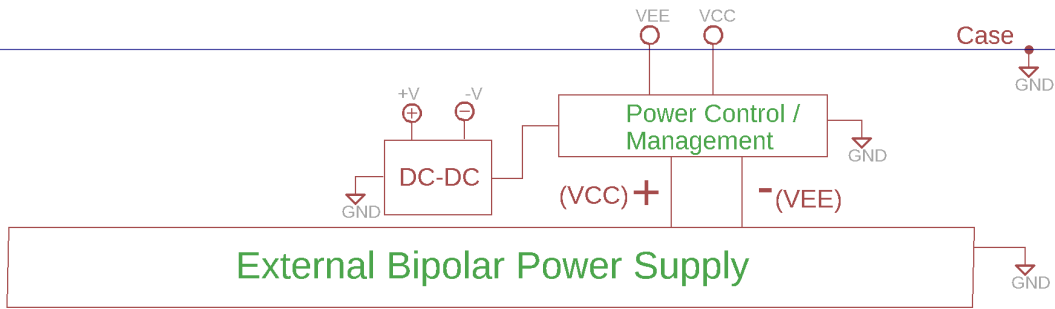
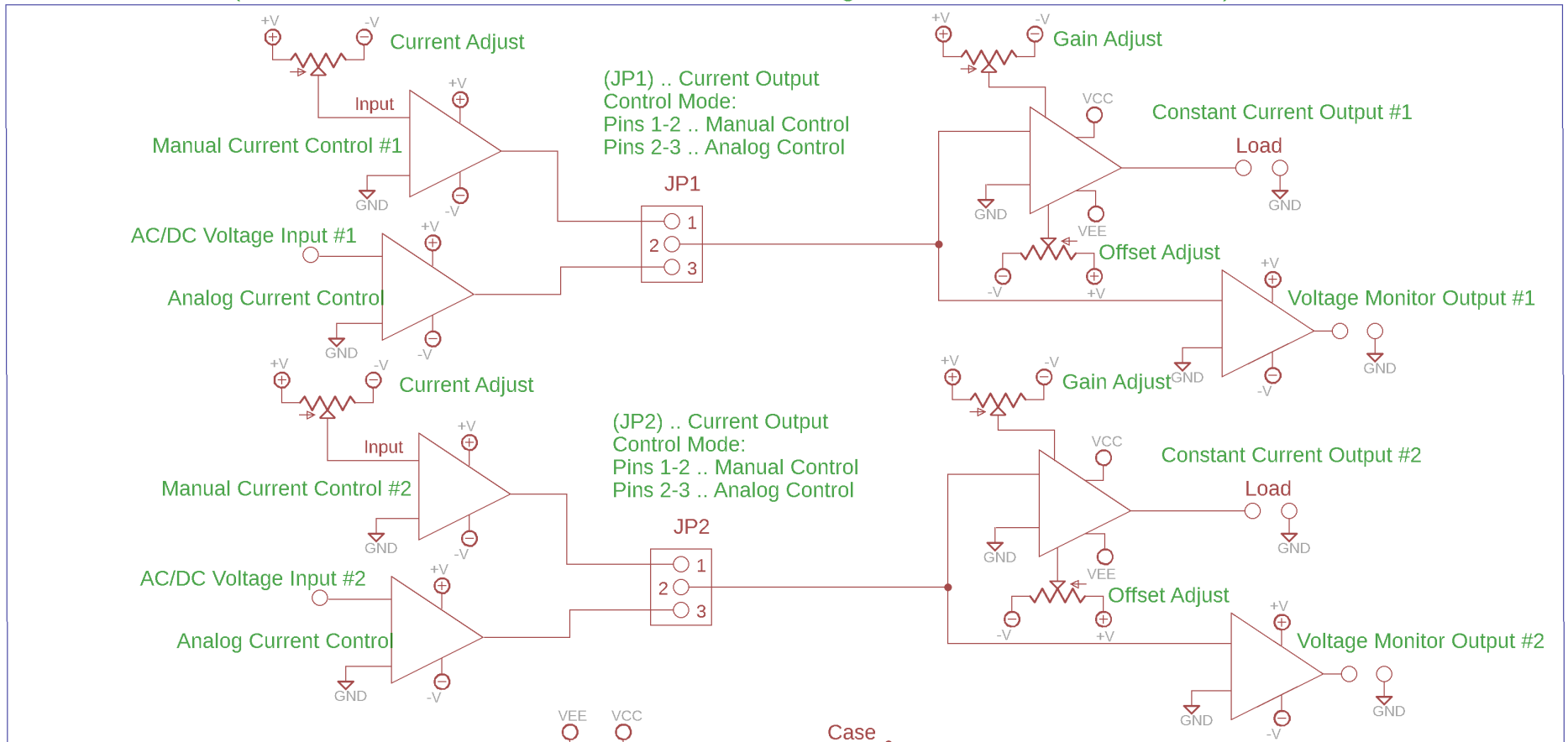
Full Size High Current Modules	Output Type	Current Output Range	Output Type	Required <u>External</u> Bipolar Power Supply	Max. Load Compliance Voltage
Cse00GL-100-35V-30V	Grounded	$\pm 100\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Grounded	Bipolar Power Supply: $\pm 9\text{V}$ to $\pm 35\text{V}$ (Dual Output)	$\pm 30\text{V}$
Cse00FL-100-35V-30V	Floating	$\pm 100\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Floating	Bipolar Power Supply: $\pm 9\text{V}$ to $\pm 35\text{V}$ (Dual Output)	$\pm 30\text{V}$
Cse00GL-300-35V-30V	Grounded	$\pm 300\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Grounded	Bipolar Power Supply: $\pm 9\text{V}$ to $\pm 35\text{V}$ (Dual Output)	$\pm 30\text{V}$
Cse00FL-300-35V-30V	Floating	$\pm 300\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Floating	Bipolar Power Supply: $\pm 9\text{V}$ to $\pm 35\text{V}$ (Dual Output)	$\pm 30\text{V}$
Cse00GL-100-36V-12V	Grounded	$\pm 100\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Grounded	AC Adapter: $+9\text{V}$ to $+36\text{V}$ (Single Output)	$\pm 11.5\text{V}$
Cse00GL-300-36V-12V	Grounded	$\pm 300\text{mA}_{\text{dc}} / \pm 0.71\text{A}_{\text{(rms)}}$	Grounded	AC Adapter: $+9\text{V}$ to $+36\text{V}$ (Single Output)	$\pm 11.5\text{V}$

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Block Diagram

(DUAL OUTPUT Constant Current Generator / Voltage to Current Converter Module)



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TITLE: CSE00-100-Module Block Diagram

Document Number: REV: 2.0

Date: 2/25/2019 1:19 AM Sheet: 1/1

RDM-Apps - CSE00 SERIES ±100mA & ±300mA Constant Current Source / Sink Modules.

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CSE00xx-100-36V-12V (Power Input requirement ... +9Vdc to +36Vdc AC Adapter) **Max. Load Current Values -- Max. Load Voltage vs. Load Impedance --**

Pwr. Supply	Max. Output Load Voltage	0.1Ω	100Ω	250Ω	500Ω	1000Ω			
+9V to 36V	±11.5V	115mA	115mA	45mA	22mA	10mA			

CSE00xx-100-35V-30V (Power Input requirement ... bipolar ±9Vdc to ±35Vdc) **Max. Load Current Values -- Max. Load Voltage vs. Load Impedance --**

Pwr. Supply	Max. Output Load Voltage	0.1Ω	100Ω	250Ω	500Ω	1000Ω	2000Ω			
±35V	±30V	115mA	115mA	115mA	60mA	30mA	15mA			

CSE00xx-300-36V-12V (Power Input requirement ... +9Vdc to +36Vdc AC Adapter) **Max. Load Current Values -- Max. Load Voltage vs. Load Impedance --**



Pwr. Supply	Max. Output Load Voltage	0.1Ω	100Ω	150Ω	250Ω	500Ω	1000Ω			
+9V to 36V	±11.5V	300mA	300mA	75mA	50mA	22mA	10mA			



CSE00xx-300-35V-30V (Power Input requirement ... bipolar ±9Vdc to ±35Vdc) **Max. Load Current Values -- Max. Load Voltage vs. Load Impedance --**

Pwr. Supply	Max. Output Load Voltage	0.1Ω	50Ω	100Ω	500Ω	1000Ω	2000Ω			
±35V	±30V	300mA	300mA	300mA	150mA	75mA	35mA			

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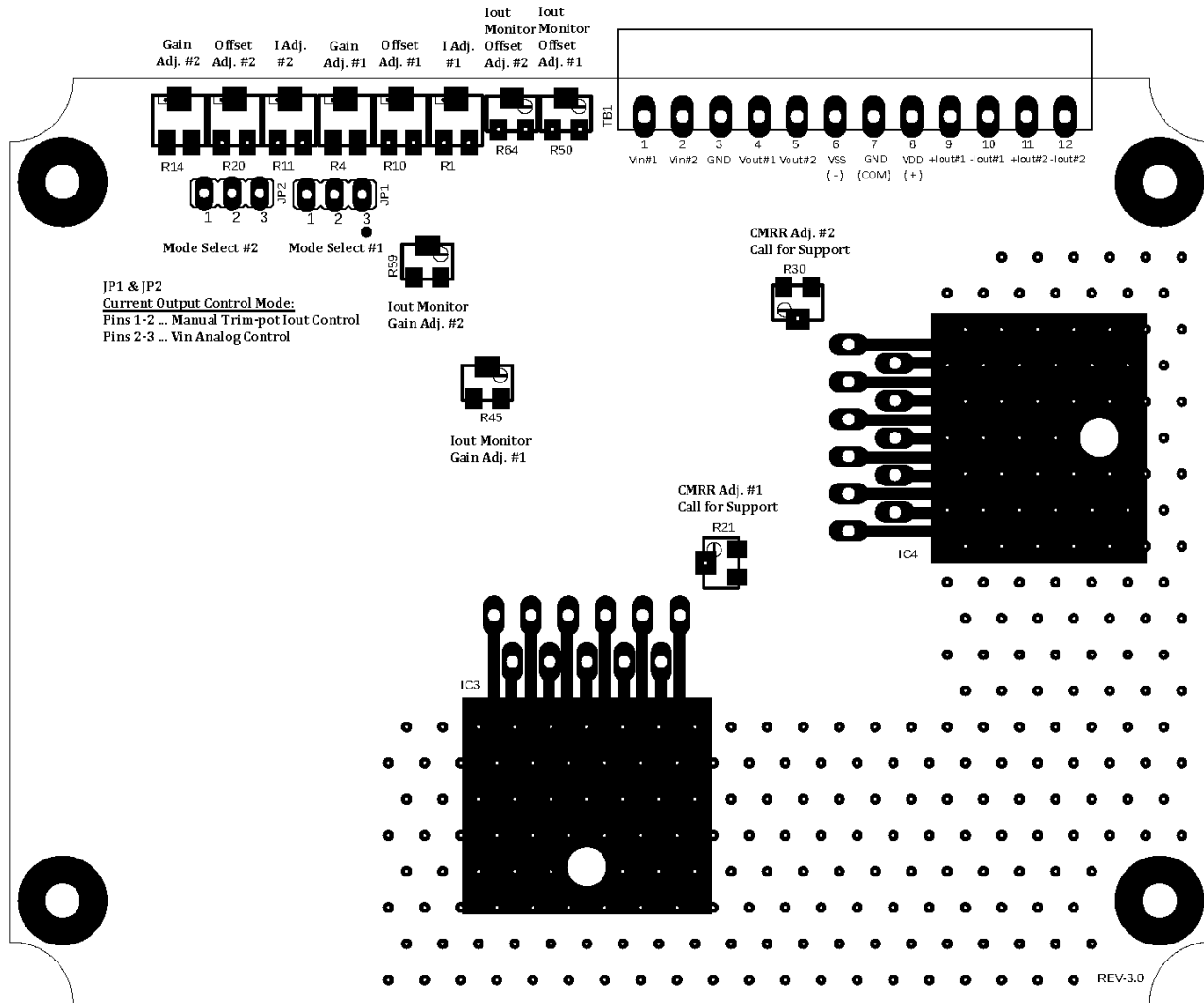
Specifications			
Desc.	CSE00xx-100-36V-12V	CSE00xx-100-35V-30V	Unit
Current Output Full Range	±100	±100	mA
Current Output vs. Voltage Input (Iout / V)	±10mA / 1V	±10mA / 1V	mA / V
Current Output vs. Voltage Monitor Output	±10mA / 1V	±10mA / 1V	mA / V
Current Output Accuracy; (@ 25C ±5C) ... Better than	0.1	0.1	%
Frequency Response (-3dB): ... Better Than Conditions: 0 < Load impedance < 1.0Ω; L < 2uH; C < 1uF	25	20	KHz
Current Out Adj. Resolution; Manual Control Mode Better Than	100	100	uA
Current Out Adj. Resolution; Voltage Control Mode; Better Than	10	10	uA
Voltage Monitor Output: Noise	50.0	50.0	uVp-p
Voltage Monitor Output: Impedance	600	600	ohm
Voltage Monitor Output: Max. load current	±10.0	±10.0	mA
Enclosure Dimensions (L x W x H)			cm

Specifications			
Desc.	CSE00xx-300-36V-12V	CSE00xx-300-35V-30V	Unit
Current Output Full Range	±300	±300	mA
Current Output vs. Voltage Input (Iout / V)	±30mA / 1V	±30mA / 1V	mA / V
Current Output vs. Voltage Monitor Output	±30mA / 1V	±30mA / 1V	mA / V
Current Output Accuracy; (@ 25C ±5C) ... Better than	0.1	0.1	%
Frequency Response (-3dB): ... Better Than Conditions: 0 < Load impedance < 1.0Ω; L < 2uH; C < 1uF	25	20	KHz
Current Out Adj. Resolution; Manual Control Mode Better Than	100	100	uA
Current Out Adj. Resolution; Voltage Control Mode; Better Than	10	10	uA
Voltage Monitor Output: Noise	50.0	50.0	uVp-p
Voltage Monitor Output: Impedance	600	600	ohm
Voltage Monitor Output: Max. load current	±10.0	±10.0	mA
Enclosure Dimensions (L x W x H)			cm

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Voltage to Current Converter Module. PCB Revs.2.xx

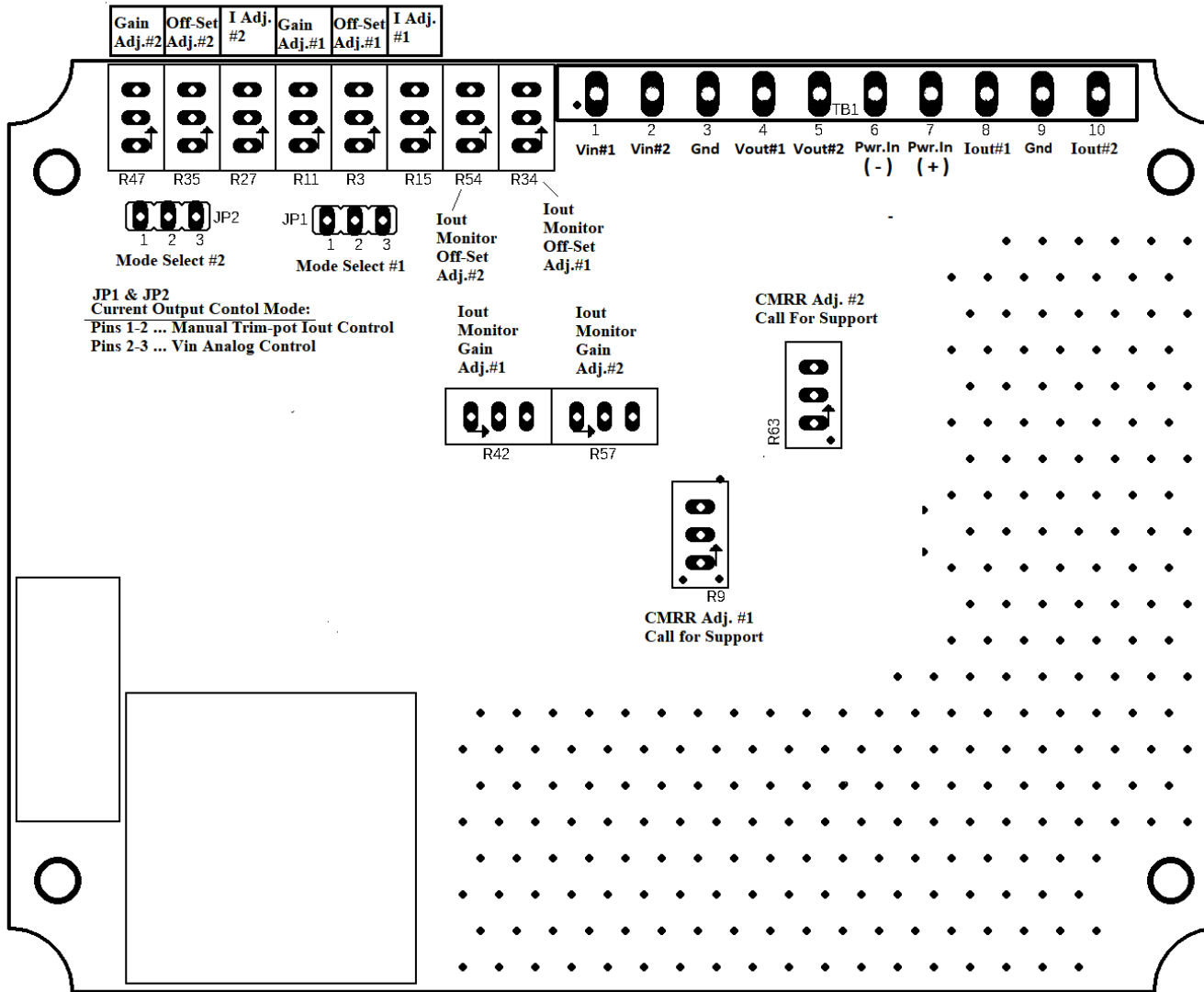
CSE00xx-xxx-35V-30V PCB



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CSE00xx-xxx-36V-12V PCB



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Gain / Offset Calibration Procedure for single channel (repeat for all other channels):

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 ... for example channel 1 (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 $\pm 100\text{mA}$ and the Vin / Iout (Input / Output) ratio is 1V/10mA then the current output should be +50mA. 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 ... Cse00xx-xxx-36V-12V:



Terminal Block Plug-In:
Part# OSTTJ105153 (Digikey) or
Part# 1757093 (Mouser)

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

Terminal Block Plug-in for Cse00xx-xxx-35V-30V:



Terminal Block Plug-In:
Part# OSTTJ1231530 (Digikey) or
Part# 1827224 (Mouser)

Pluggable Terminal Blocks 12 Pos 3.81mm pitch Plug 28-16 AWG Screw