

**RDM-Apps Setup** – PCB Revs.1.x – **High Voltage** CSM Type Constant Current Source / Sink Modules.  
Voltage to Current Converter Module.

**RDM-Apps**

Capability Statement

Contact Information



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**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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Other Related Constant Modules:

[Other Current Constant Current Source / Sink Bidirectional output Modules](#)

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

Don't waste your time designing and/or packaging a Constant Current output Op-Amp or Voltage to Current Conversion amplifier circuit for your application. Utilize one of our self contained Ready Modules for your application or simply use in conjunction with a basic Multimeter as an inexpensive alternative to an expensive Constant Current Source.




- ◆ Adjustable Constant Current Output
- ◆ Floating and Grounded Constant Current Outputs
- ◆ Output Current Ranges:  $\pm 10\text{pA}$ ,  $\pm 100\text{pA}$ ,  $\pm 1\text{nA}$ ,  $\pm 10\text{nA}$ ,  $\pm 100\text{nA}$ ,  $\pm 1\mu\text{A}$ ,  $\pm 10\mu\text{A}$ ,  $\pm 100\mu\text{A}$ ,  $\pm 1\text{mA}$ ,  $\pm 10\text{mA}$
- ◆ Current Output Monitor;  $V_{out}$  proportional to current out.
- ◆ Converts from input voltage to output constant current.
- ◆ Current Output Control:
  - a.) Option#1:  $\pm 10\text{V}$  input relative to applicable full range current out.
  - b.) Option#2: Manual Trim-Potentiometer adjustment .
- ◆ Offset Null Capability for calibration.
- ◆ Load Compliance Voltage  $\leq \pm 180\text{V}$
- ◆ Current Output Compliance Voltage Slew Rate =  $20\text{V}/\mu\text{s}$
- ◆ Constant within a wide temperature range
- ◆ Low Power Consumption
- ◆ Contact us for multi-range or custom constant current modules.
- ◆ Contact us for single supply or lower power consumptive constant current modules.

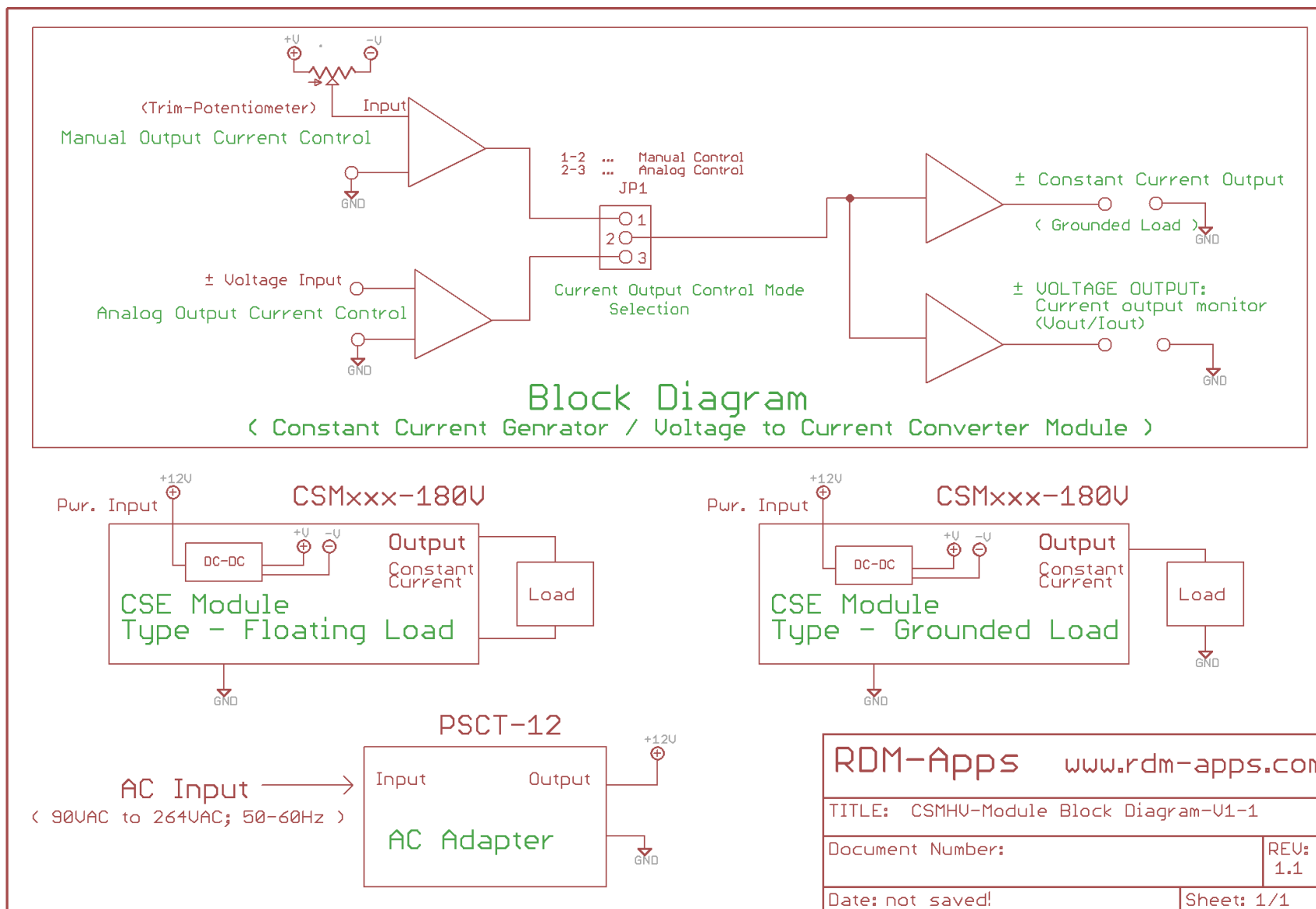
( 2 weeks Delivery, Call for order quantities greater than 5 )

**General Specifications ...**

**CSM-180V High Voltage Type Module**

Desc.	Value	Unit
Operating Temperature	10 to 40	C
DC Supply Voltage	+12V; 2A (12V to 14V)	VDC
Dimensions ( L x H x W )		

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**The CSM-180V PCB inter-connections should be shielded! Insufficient shielding could increase the noise-signal ratio which will result in inaccurate CSM-180V output.**

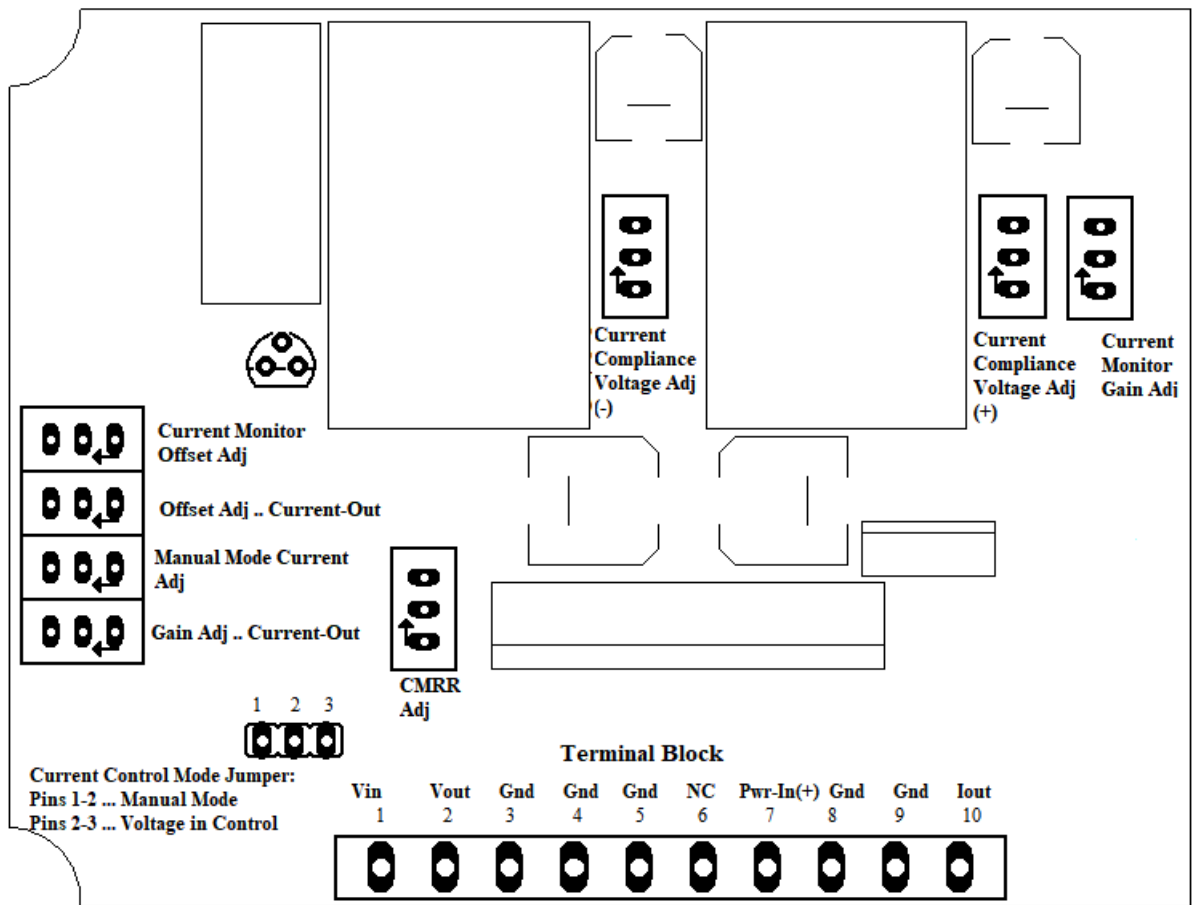
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Specifications				
Desc.	CSM11PV-180V	CSE10PV-180V	CSE09NV-180V	Unit
Current Output Adjustment Range	±10	±100	±1000	pA
Current Output vs. Voltage Monitor Output	±1.0	±10.0	±100	pA / V
Current Output Max. Load Impedance	18T	1.8T	180G	Ohm
Current Output Accuracy; BETTER THAN ( @ 25C ±5C ) Rload < 90% of Max.	0.75	0.75	0.25	%
Current Output Manual Adj. Resolution	0.02	0.2	2	pA
Current Output: Drift; less than	0.02	0.02	0.1	pA / Deg.C
Voltage Monitor Output: Drift	20.0	20.0	20.0	uV / Deg.C
Voltage Monitor Output: Noise	20.0	20.0	20.0	uVp-p
Voltage Monitor Output: Impedance	1.0	1.0	1.0	K ohm
Voltage Monitor Output: Max. load current	±10.0	±10.0	±10.0	mA

Specifications				
Desc.	CSE08NV-180V	CSE07NV-180V	CSE06UV-180V	Unit
Current Output Adjustment Range	±10	±100	±1000	nA
Current Output vs. Voltage Monitor Output	±1.0	±10.0	±100	nA / V
Max. Load Impedance	18G	1.8G	180M	Ohm
Current Output Accuracy; BETTER THAN ( @ 25C ±5C ) Rload < 90% of Max.	0.25	0.25	0.25	%
Current Output Manual Adj. Resolution	0.02	0.2	2	nA
Current Output: Drift; less than	0.01	0.01	0.01	nA / Deg.C
Voltage Output: Drift	20.0	20.0	20.0	uV / Deg.C
Voltage Output: Noise	20.0	20.0	20.0	uVp-p
Voltage Monitor Output: Impedance	1.0	1.0	1.0	K ohm
Voltage Monitor Output: Max. load current	±10.0	±10.0	±10.0	mA

Specifications					
Desc.	CSE05UV-180V	CSE04UV-180V	CSE03MV-180V	CSE02MV-180V	Unit
Current Output Adjustment Range	±10	±100	±1000 ( ±1mA)	±10,000 ( ±10mA)	uA
Current Output vs. Voltage Monitor Output	±1.0	±10.0	±100	±1000	uA / V
Max. Load Impedance	18M	1.8M	180K	18K	Ohm
Current Output Accuracy; BETTER THAN ( @ 25C ±5C ) Rload < 90% of Max.	0.25	0.25	0.25	0.25	%
Current Output Manual Adj. Resolution	0.02	0.2	2	0.02	uA
Current Output: Drift; less than	0.1	0.1	1.0	2.0	nA / Deg.C
Voltage Output: Drift	20.0	20.0	20.0	30.0	uV / Deg.C
Voltage Output: Noise	20.0	20.0	20.0	35.0	uVp-p
Voltage Monitor Output: Impedance	1.0	1.0	1.0	1.0	K ohm
Voltage Monitor Output: Max. load current	±10.0	±10.0	±10.0	±20.0	mA

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## ***RDM-Apps*** Setup – PCB Revs.1.x – **High Voltage** CSM Type Constant Current Source / Sink Modules. Voltage to Current Converter Module.

### 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  $\pm 10\mu\text{A}$  and the Vin / Iout (Input / Output) ratio is 1V/ $\mu\text{A}$  then the current output should be +5 $\mu\text{A}$ . Conversely , a -5VDC input should result in a -5 $\mu\text{A}$  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.

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