

CURRENT MONITOR ON HP & KS UNITS

There are two current monitor options available for most of the HP series (**Precision** or **Stack Return**) but only **Stack Return** for the KS series.

HP SERIES HP1P, HP1N, HP2.5P, HP2.5N, HP5P, HP5N, HP10P, HP10N, HP20P, HP20N, HP30P, HP30N, HP60P & HP60N.
HP1R, HP2.5R, HP5R, HP10R, HP20R & HP30R.

KS SERIES KS5P, KS5N, KS10P, KS10N, KS20P, KS20N, KS30P & KS30N.

Precision current monitor. Power supplies that include this option have the circuitry (shown in b & c below) fitted internally to remove the internal feedback currents used to control the unit. The current monitor output is 0 to +10V represents 0 to true maximum current. If unused, a resistor is not required from pin 8 to pin 9.

Stack Return current monitor. Simple lower cost alternative to the Precision Current Monitor: current is measured between pin 8 (HPR reversible units use pin 1) and pin 9 (0 volt). The polarity of the voltage on pin 8 is opposite to the unit polarity.

If unused, pin 8 should be joined to pin 9. If this is not done then the internal neon bulb will flash periodically.

Protection during arcing is by an internal 1.0 uF capacitor and neon bulb. If a resistor is fitted between pins 8 (HPR units pin 1) & 9 then a voltage of up to 50 volts will be produced. A high voltage may degrade the load regulation of the unit.

The current measured includes internal feedback currents used to control the unit. These currents which are proportional to the output voltage, are 100 uA on the HP series (except HP10P, HP10N, HP10R = 50 uA, HP20P, HP20N & HP20R = 33 uA & HP30P, HP30N & HP30R = 50 uA) and 50 uA on the KS series.

Load current	Measured current	I monitor current
0 uA	100 uA	HP series at full voltage *
0 uA	50 uA	HP series at half voltage *
10 uA	110 uA	HP series at full voltage *
10 uA	60 uA	HP series at half voltage *
0 uA	50 uA	KS series at full voltage
0 uA	25 uA	KS series at half voltage
10 uA	60 uA	KS series at full voltage
10 uA	35 uA	KS series at half voltage

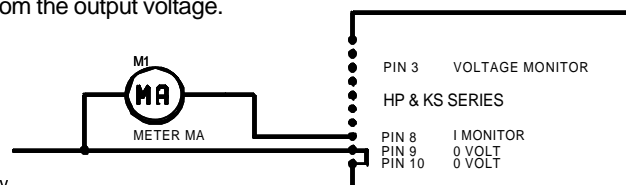
* Except HP10P, HP10N, HP10R, HP20P, HP20N, HP20R, HP30P & HP30N, HP30R.

The I monitor signal can be used in 3 ways:

- 1/ Simple use removing the feedback current by calculation.
- 2/ Feeding the signal to a computer which can compute the actual current from the output voltage.
- 3/ Feedback back-off circuit see diagram below.

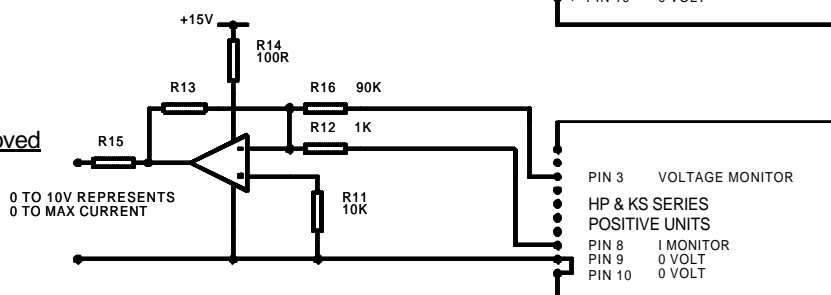
a) Simple current monitor

Meter reads actual current plus internal feedback current
(HP Series 100 uA, KS Series 50 uA at full output)



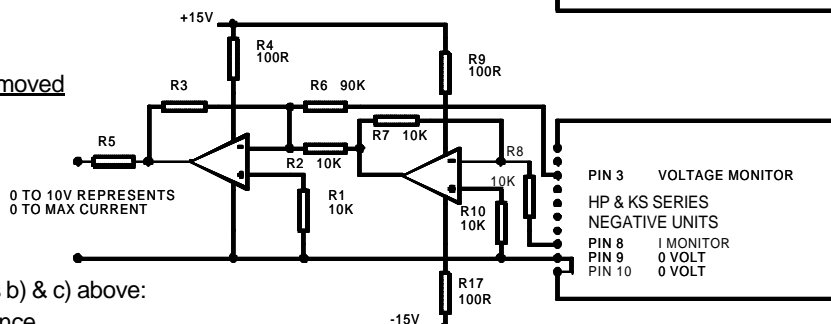
b) Current monitor with internal feedback current removed

Positive Polarity Units



c) Current Monitor with Internal Feedback Current Removed

Negative Polarity Units



Notes on removal of internal feedback currents, circuits b) & c) above:

- 1/ R6 & R16 total 100K including 10K source resistance..
For accurate measurements of less than 1uA replace with potentiometer & trim for accurate zero.
- 2/ Make R3 & R13 10K ohm to read 10V = 1 mA and 100K ohm to read 10V = 100 uA