

**Secondary Option N.**

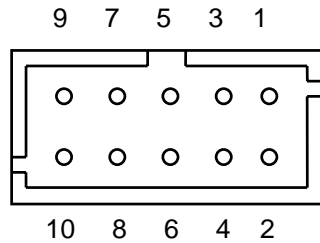
The N option is a factory fitted assembly, that can be specified for output modules. The option has the following function:

Module Good, output signal that indicates when the module is within 10% of the set voltage level.

Module Inhibit, this enables the individual module to be shut down by application of an inhibit signal.

Starpoint Paralleling, can be used in N+1 redundant applications to force paralleled modules to share the load current or can be used to parallel 2 or more modules to increase the available output current.

**N option for SINGLE, One and a Half and Dual slot modules.**



**Mating connector information:**  
 Note: housing and pins supplied with each power supply.  
 Housing: Molex 51110-1060  
 Crimp pin: Molex 50394-8051  
 Hand Crimp Tool: 69008-0959 (Europe or Japan) Or 11-01-0204(USA)

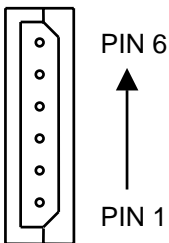
Viewed from rear of PSU

Pin No	Function
1	Module Inhibit +ve
2	Module Good Emitter
3	+Ve Sense. *1
4	Module Good Collector
5	Starpoint Parallel.
6	Module Good Collector
7	Starpoint Parallel.
8	Module Inhibit -Ve
9	-Ve Sense. *1
10	Module Inhibit +Ve

Note \*1: Option board +ve sense and module +ve sense (2pin molex) are internally connected.

**N option for TWIN (2 output) modules.**

There is one 6 pin connector for EACH output. The connector for that output is directly adjacent to the faston output terminals for that output.



Viewed from rear of PSU

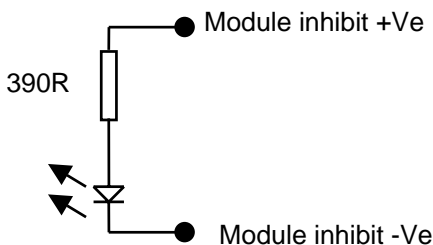
**Mating connector information:**

Note: housing and pins supplied with each power supply.  
 Housing: Molex 50-37-5063  
 Crimp pin: Molex 08-70-1039  
 Hand Crimp Tool: 11-26-0167 (Japan)  
 Or 11-01-0194(Europe or USA)

Pin No	Function
1	Module inhibit -Ve
2	Module inhibit +Ve
3	Module Good E
4	Module Good C
5	-Ve sense. *1
6	+Ve sense. *1

Note \*1 : option board +ve sense and module +ve sense (2pin molex) are internally connected.

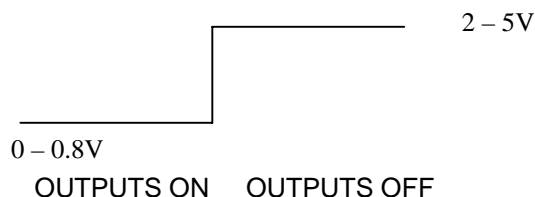
**Module Inhibit circuit connection**



Internal to the module inhibit is a 390ohm 1/8W resistor and the diode of an opto-coupler.

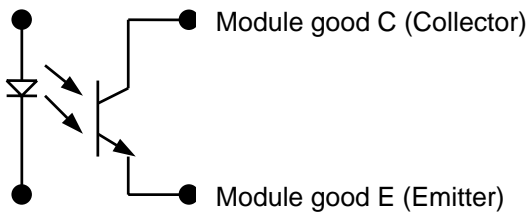
To INHIBIT the module apply 2-5V between +ve and -ve. Do not apply >6V or damage may result, although higher voltages may be used to drive the circuit in which case additional series resistor should be used to limit the current. A current of 1-10mA will inhibit the module. Ensure 13mA is not exceeded.

When a module is inhibited, there may be up to 0.6V remaining at the outputs of the module.



**Module Good Circuit connections.**

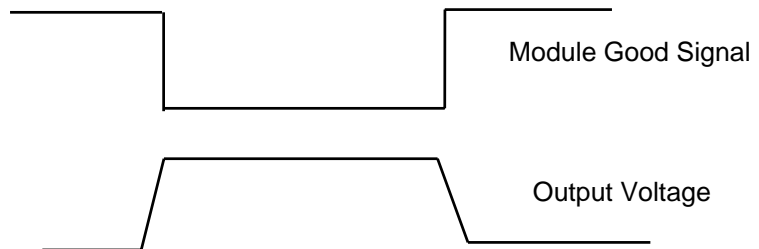
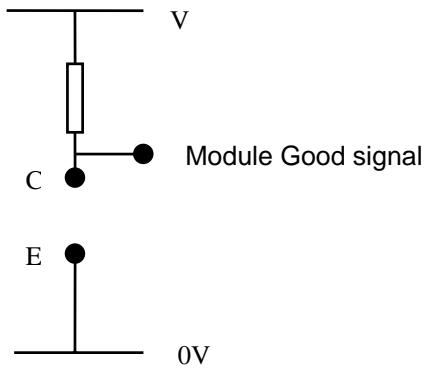
The output stage is an uncommitted transistor of an opto-coupler. The transistor is "ON" (saturated) when module is "GOOD".



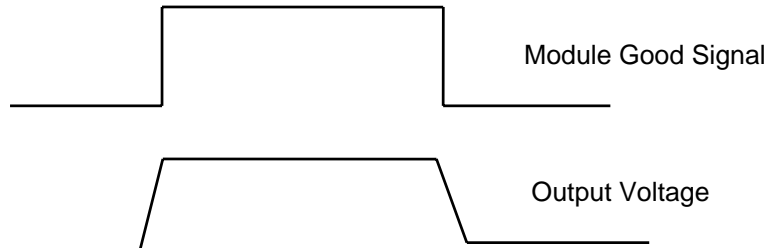
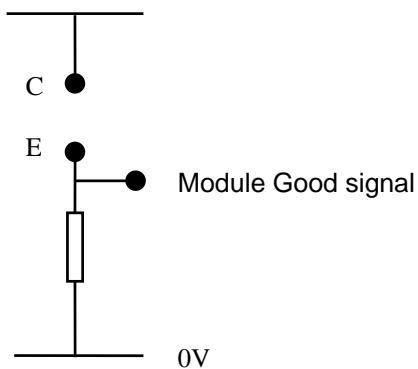
Module is GOOD when output voltage is between 90%(+/-5%) and 110%(+/-5%) of its factory set voltage.

Vce max	30V
Vce sat	<0.4V at 1mA current
Ic max	1mA

**"Low" when module good.**

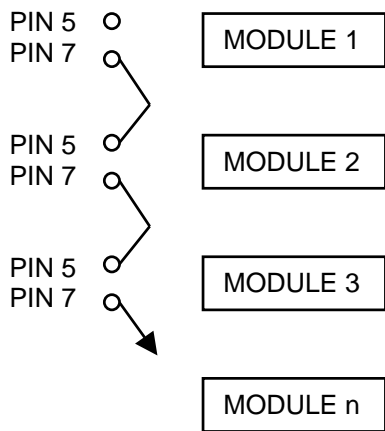


**"High" when module good.**



**Starpoint Parallel Circuit connection.**

Starpoint parallel circuit connection is achieved by "daisy chaining" all the parallel pins together in any group of modules required to share.



All the PIN 5 and PIN 7 perform the same function and are linked internally in the module.

Functionally, the shared parallel connection forces each module of a pair to drive approximately the same current. Whichever module is driving the least current has its voltage increased slightly to balance it. The load current is shared evenly amongst the modules. This improves the reliability by ensuring that no one module takes more stress than any others in a sharing group.

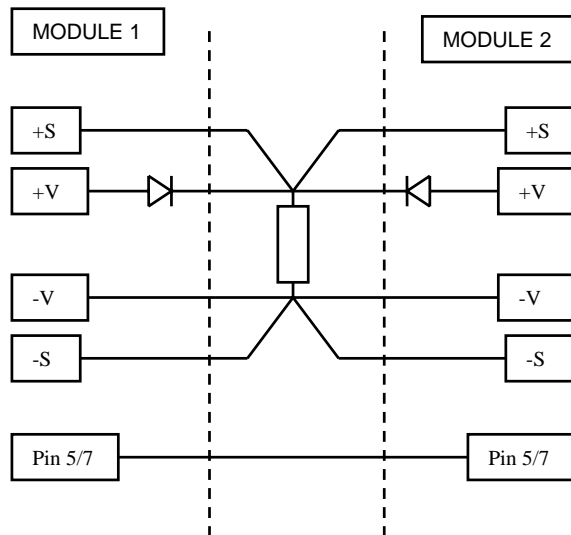
Sharing can take place from module to module within the same power supply or between modules configured in different power supplies.

**N+1 redundant & "Hot Swap"**

Vega power supplies can be connected in 1+1 redundant with active current share utilising the "N" option. This allows one of the power supplies to fail and the system remain running as the other power supply can drive the required current. Further, whilst both power supplies are running neither supplies more power than the other so the currents and hence stresses and heating effects are evenly shared. This principal can be extended to N+1 redundant where any number of power supplies can be connected in parallel actively sharing the required current such that the failure of one will not affect the system.

The principal can be extended further to "hot swap". This allows a failed power supply to be removed and replaced with the system fully live and driving the full load current. Normally a Vega power supply would be incorporated in a "shuttle" on sliding rails with a "hotswap" self aligning output which can be easily connected / disconnected from a system.

The diagram below shows a typical arrangement for 1+1 redundant system.



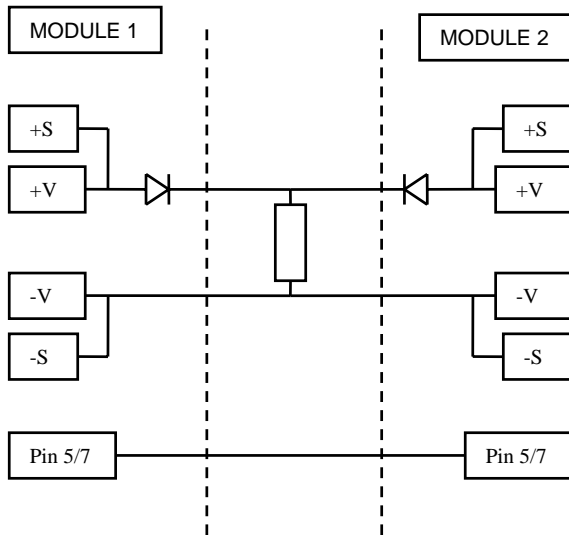
**1+1 Current sharing system Remote Sensed.**

Remote sense is NOT TRUE redundant function. Shuttle 1 or 2 failing can influence shuttle 2 via the sense lines.

Not shown are the L,N and Earth connections. It is important when designing connectors for hot swap applications that the EARTH is made first and broken last (ie use an extended earth pin).

The +S and -S should be made first and broken last also.

Remember a lot of heat may be dissipated by the blocking diodes. Be sure to rate them correctly.

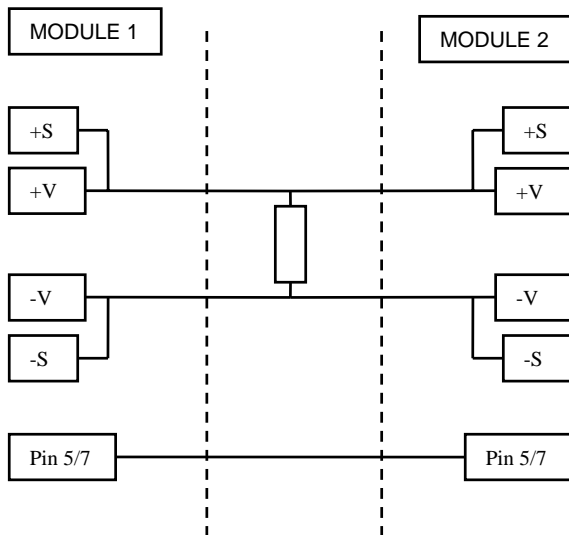


**1+1 Current sharing system Locally Sensed**

Locally sensed is TRUE redundant function. Shuttle 1 or 2 failing cannot influence the other shuttle. The system will always remain functional.

Not shown are the L,N and Earth connections. It is important when designing with connectors for hot swap applications that that EARTH is made first and broken last (ie use an extended earth pin).

Remember a lot of heat may be dissipated by the blocking diodes. Be sure to rate them correctly.



**Parallel for increased current : Not redundant.**

In the absence of blocking diodes, there is no redundancy. A short circuit in shuttle 1 will pull shuttle 2 down. This is normally used just to increase the available output current.

**Remote Sense option “R” (Twin output only)**

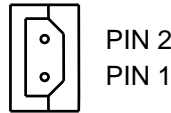
(All single, one and a half and dual slot single output modules have remote sense provided as standard, remote sense is also provided with “N” option fitted to twin output modules)

The “R” option is a factory fitted board that can be specified for twin (2 output) modules only. It enables remote sensing at the load. For twin output modules the “R” option is required to achieve remote sensing.

There is one 2 pin connector for each output. The connector for that output is directly adjacent to the faston output terminals for that output.

When connecting the remote sense leads to the load, always use cables twisted together at approx 1 twist per centimetre. This will minimise noise pickup.

Application note "Power Connection" has more detailed information on the recommended way to connect Vega to function with remote sense.



**Mating connector information:**  
 Note: housing and pins supplied with each power supply.  
 Housing: Molex 50-37-5023  
 Crimp pin: Molex 08-70-1039  
 Hand Crimp Tool: 11-26-0167 (Japan)  
 Or 11-01-0194(Europe or USA)

Pin No	Function
1	-ve sense
2	+ve sense