1. W2 Programmable Module

1.1 The **single slot module W2** has a range of **0.25-7.5V DC** with a current capability of **30 amps**.
1.2 The **W2** Module **must** be fitted with any one of the control options listed in section. 2.1.
1.3 Select one of the following when designating the baseboard required: -

a. **W2TS**: - W2 module + tracking O/V + screw terminals
b. **W2TF**: - W2 module + tracking O/V + fastons
c. **W2FS**: - W2 module + fixed O/V + screw terminals
d. **W2FF**: - W2 module + fixed O/V + fastons

NOTE: for output voltages <1V a load of 500mA is required

2. Programmable Module Options.

2.1 Options: -

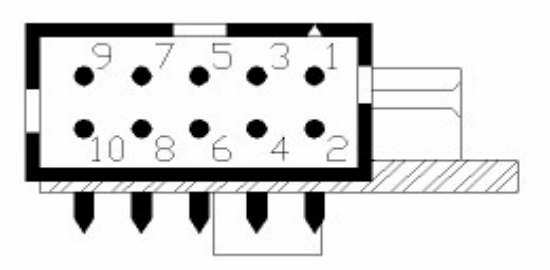
a. **V1**: - 0-5v programming + inhibit
b. **V2**: - 0-5v programming + current programming + inhibit
c. **V3**: - 0-5v programming + enable
d. **V4**: - 0-5v programming + current programming + enable
e. **V7**: - 0-5v programming + current programming + enable
f. **R1**: - 0-32k resistive programming + inhibit
g. **R2**: - 0-32k resistive programming + current programming + inhibit
h. **R3**: - 0-32k resistive programming + enable
i. **R4**: - 0-32k resistive programming + current programming + enable

2.2 Options brief description: -

a. **Subscript V**: - voltage programming, a **0-5 volt** input from an external DC source, connected between **pin 4** (+ 0-5V) and **pins 1-3** (0V) results in a linear **0.25-7.5** volt output.
b. **Subscript R**: - resistance programming, a **0-32kΩ** external resistance connected between **pin 6** and **pins 1-3** results in a linear **0.25-7.5** volt output **(1kΩ/0.234 volts)**.
c. **Digits 1-4**: - combinations of additional options including **programmable current limit** and **Inhibit** or **Enable** see **figure 4** for further details. The programmable current limit requires a **0-5 volt** input from an external DC source, connected between **pin 5** (+ 0-5V) and **pins 1-3** (0V) results in a linear current limit **0.8-30 amps**.

2.3 Programmable module configuration example "**W2TSV1**".

2.4 Molex connector fitted to option board, connection details



Pin 1, 2, & 3	Return circuit for pins 4, 5, & 6
Pin 4	0-5V external voltage programming pin
Pin 5	0-5V current programming pin
Pin 6	0-32kΩ Resistance programming pin
Pin 7,8	Module Inhibit -Ve
Pin 9,10	Module Inhibit +Ve

***Figure 1. Pin Layout & Description*.**

Abbreviations
W2: - **W**ide range, **2** turns
F or **T**: -**F**ixed or **T**racking O/V
S or **F**: - **S**crew terminals or **F**astons
V or **R**: -**V**oltage programming or **R**esistive programming
1-4,7: - Combinations of current programming and inhibit or enable

3. W5 Programmable Module

3.1 The **single slot module W5** has a range of **0.25-32V DC** with a current capability of **8.5 amps**.
3.2 The **W5** Module **must** be fitted with any one of the control options listed in section. 4.1.
3.3 Select one of the following when designating the baseboard required: -

a. **W5TS**: - W5 module + tracking O/V + screw terminals
b. **W5TF**: - W5 module + tracking O/V + fastons
c. **W5FS**: - W5 module + fixed O/V + screw terminals
d. **W5FF**: - W5 module + fixed O/V + fastons

NOTE: for output voltages <2V a load of 100mA is required

4. Programmable Module Options.

4.1 Options: -

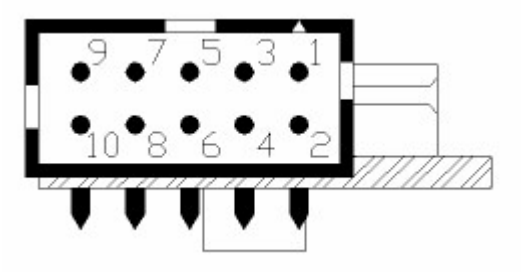
a. **V1**: - 0-5v programming + inhibit
b. **V2**: - 0-5v programming + current programming + inhibit
c. **V3**: - 0-5v programming + enable
d. **V4**: - 0-5v programming + current programming + enable
e. **R1**: - 0-32k resistive programming + inhibit
f. **R2**: - 0-32k resistive programming + current programming + inhibit
g. **R3**: - 0-32k resistive programming + enable
h. **R4**: - 0-32k resistive programming + current programming + enable

4.2 Options brief description: -

d. **Subscript V**: - voltage programming, a **0-5 volt** input from an external DC source, connected between **pin 4** (+ 0-5V) and **pins 1-3** (0V) results in a linear **0.25-32** volt output.
e. **Subscript R**: - resistance programming, a **0-32kΩ** external resistance connected between **pin 6** and **pins 1-3** results in a linear **0.25-32** volt output **(1kΩ/volt)**.
f. **Digits 1-4**: - combinations of additional options including **programmable current limit** and **Inhibit** or **Enable** see **figure 4** for further details. The programmable current limit requires a **0-5 volt** input from an external DC source, connected between **pin 5** (+ 0-5V) and **pins 1-3** (0V) results in a linear current limit **0.8-8 amps**.

4.3 Programmable module configuration example "**W5TSV1**".

4.4 Molex connector fitted to option board, connection details: -



Pin 1, 2, & 3	Return circuit for pins 4, 5, & 6
Pin 4	0-5V external voltage programming pin
Pin 5	0-5V current programming pin
Pin 6	0-32kΩ Resistance programming pin
Pin 7, 8	Module Inhibit or Enable –Ve
Pin 9, 10	Module Inhibit or Enable +Ve

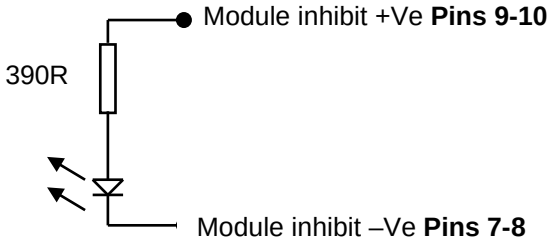
Figure 2. Pin Layout & Description.

Abbreviations
W5: - **W**ide range, **5** turns
F or **T**: -**F**ixed or **T**racking O/V
S or **F**: - **S**crew terminals or **F**astons
V or **R**: -**V**oltage programming or **R**esistive programming
1-4: - Combinations of current programming and inhibit or enable

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)

Figure 3. Module with required option board fitted.

Module Selection, Inhibit or Enable circuit connections



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

To INHIBIT/ENABLE 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 0.05V remaining at the outputs of the module.

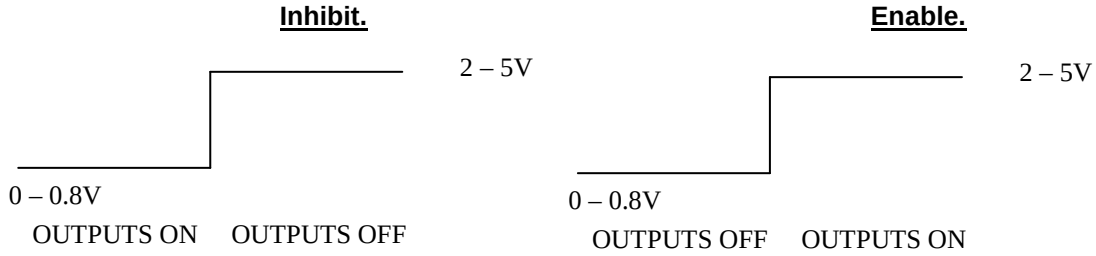


Figure 4.

General Installation

All switch mode power supplies can be sensitive to stray inductance in the power leads and specifically in remote sense leads if installed poorly. Poor transient response or high noise pickup and also intermittent tripping of Over-voltage protection are possible problems. Observing a few simple installation rules will ensure a trouble free function: -

When connecting Vega by means of a cable harness, run the remote sense as a twisted pair and power output cables as a twisted pair where possible. Keep cable runs as short as possible.

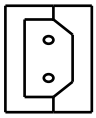
When connecting Vega to the load by means of a PCB back plane, run the power tracks "back to back" on the PCB to minimise the projected area of the loop connecting the positive and negative outputs. Run the remote sense and power connections as separate pairs, avoiding close parallel runs and only coming together at the load.

During emissions testing it was found beneficial to encircle all programming inputs with a ferrite bead. In some cases this may increase margins in accordance with EN55022 Conducted Emissions Class B.

The load should be de-coupled with 10uF of capacitance per Amp of load current. The greater the amount of de-coupling, the better the transient response of the system will be. (NB Max recommended de-coupling is 1000uF/Amp).

Remote Sense

All single output Vega modules are provided with remote sense connector as standard. The Molex connector viewed from the back of the power supply is:-



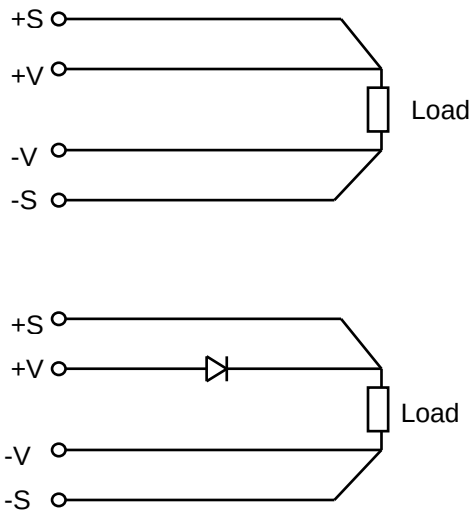
+Ve Sense
-Ve Sense

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: 69008-0959 (Europe or Japan) Or 11-01-0204(USA)

Figure 5.

Remote sense can be used to compensate for the drop in voltage along the load cables or for the drop in voltage across blocking diodes. The voltage at the output terminals will be higher than that at the load by an amount equal to the voltage drop due to load lead resistance and/or blocking diodes if used. The maximum voltage drop between the load and sense connections should not exceed the maximum voltage specified for that module.

Always observe the following general rules for remote sense operation: -



a. Ensure that the remote sense cables are twisted pairs.
b. PCB tracks for remote sense should be run back to back.
c. Ensure that the remote sense cables / tracks are as short as possible.
d. Ensure that the sense cables are not twisted together with the power cables.
e. PCB power tracks and remote sense tracks should be kept away from each other as far as is possible.
f. Do not fit components (resistor, inductor or diode) into remote sense lines. This could make the system unstable.
g. See the data sheets for each module to see the maximum voltage drop that remote sense can compensate for, do not exceed this value.