

## SM-25

# Module for Series / Parallel or Stand-Alone Applications

## Owners Guide

*(These instructions are intended for use by a technician familiar with electronic products)*



- Adjustable DC output voltage
- 110 / 220 VAC input switch selectable
- Short circuit / over load/ over temperature protections
- Forced air temperature controlled fan cooling
- Rail mount bracket included
- Manufactured to ISO 9001 Quality Assurance
- 3 year warranty

### DESCRIPTION

The SM-25 power block module is designed for series, parallel or stand alone applications. It has switch selectable AC input Voltage. The SM series holds ISO 9001 Quality Assurance.

### SPECIFICATIONS

DC Output Voltage.....	13.8 V
Output Voltage Tolerance .....	+/- 1 pct
Output amperage, max continuous.....	20 A
Maximum Output Amperage, Single Surge .....	25 A
Maximum Power, continuous.....	275 Watts
Output Voltage Adjustment.....	+10 pct, -15 pct
Maximum ripple and noise.....	150 mV p-p max, 10 mV RMS typical
Input voltage range (Switch Selectable) .....	90-130 or 180-280 VAC
Input frequency range.....	47-63 Hz
Maximum AC current .....	5.5 A/120 VAC; 3 A/240 VAC
Typical Efficiency .....	80 pct
Max inrush current, single cycle .....	35 A
Short Circuit protection .....	Foldback Limiting
Overload Protection (operates).....	typical 110-120 pct
Line Regulation.....	50 mV
Load Regulation.....	100 mV (20-100 pct load)
Fan Control.....	Heat sink temp >140 F (60 C) = ON
Over Temperature .....	>195 F (90 C) auto output shutdown
Rise Time following ON .....	50 mS
Hold Time following OFF .....	10 mS
Working Temperature range.....	-4 - 140 F (-20 - +60 C)
Storage Temperature.....	-40 - 185 F (-40 - +85 C)
Withstand Voltage* .....	1.5 KV @ 10 ma(I/P-O/P, I/P-FG)/1 min
(Continued) .....	500 V @ 10 ma(O/P-FG)/1 min
Dimensions .....	3.3H x 5.9W x 5.5D inches, nominal
Weight.....	3 lbs, nominal

\*Input MOVs ZNR 4 & 5 removed

## **INSTALLER NOTES**

Parallel screw terminals for the output are provided to ensure overheating of the barrier screw terminal does not occur. **ALWAYS USE BOTH SCREW TERMINALS WITH PARALLELED CONDUCTORS FOR BOTH POSITIVE AND NEGATIVE.**

The smallest recommended wire for the output is paralleled conductors of #16 AWG size for BOTH positive and negative leads. #16 AWG is rated for 22 amps continuous in the open and 13 amps when in conduit or in a tight bundle.

The outputs are NOT referenced to the chassis. The SM-25 Modular System can be used either positive or negative ground. Run a short jumper from the FG terminal to the -V or +V terminal, as desired.

DO NOT block any of the cooling vents on the sides and always allow adequate ventilation by not installing the unit inside tightly closed spaces. Physical mounting position is not critical but the cooling vents and the thermostatically controlled cooling fan must not be blocked.

When installing modules in parallel, ALWAYS connect the "P" terminals together. The module with the highest voltage setting will control / set the output voltage for the rest of the modules.

Make certain the input voltage switch is set to the correct voltage BEFORE applying AC power to the module(s). The S-25 module can be parallel / series connected to provide the following outputs from a single rack mount:

- 12 volt nominal (13.8 VDC) @ 20/40/60/80 amp nominal continuous
- 24 volt nominal (27.6 VDC) @ 20/40 amp nominal continuous
- 36 volt nominal (41.4 VDC) @ 20 amp nominal continuous
- 48 volt nominal (55.2 VDC) @ 20 amp nominal continuous

The noise/ripple rating will increase when units are series connected. IE: 24 volt will be double the 12 volt rating.

### Connection Labels and Meaning / Use

Input and output connections of the SM-25 are via a 9 place screw type barrier terminal strip.

Starting from the left:

L .....	Line Input in 120 VAC systems or A leg in 240 VAC
N .....	System Neutral in 120 VAC systems or B leg in 240 VAC
FG .....	Chassis or frame ground (system safety ground)
NC .....	No Connection
P .....	Parallel Connection feed back, unit to unit load share
-V .....	Negative Output terminals
+V .....	Positive Output terminals
V ADJ .....	Output Voltage Adjustment
Green LED .....	Output Indicator LED

## **CONDUCTOR PRETREATMENT**

All kinds of copper conductors can be clamped without treatment. DO NOT solder tin stranded conductors. The solder yields and fractures under high pressure. The result is increased contact resistance and excessive temperature rise. Additionally, corrosion has been observed due to the fluxes. Notch fractures at the transition from the rigid tinned part to the flexible conductors are also possible. Ferrules can be used as a protection when wiring stranded conductors. Copper ferrules prevent the current transfer from being influenced by dissimilar metals and remove the risk of corrosion. Always use the correct tool to crimp the ferrule.

## **RECOMMENDED COPPER WIRE SIZE FOR CURRENT CAPACITY**

(Insulated Wire, Single Conductor in free air)

<b><u>Current Level in Amperes</u></b>	<b><u>Wire Size</u></b>
<7 AMPERES	20 AWG Up to 5 feet 18 AWG Up to 10 feet
14 AMPERES	18 AWG Up to 5 feet 16 AWG Up to 10 feet
20 AMPERES	16 AWG Up to 5 feet 14 AWG Up to 10 feet
30 AMPERES	14 AWG Up to 5 feet 12 AWG Up to 10 feet
40 AMPERES	12 AWG Up to 5 feet 10 AWG Up to 10 feet
50 AMPERES	10 AWG Up to 5 feet 8 AWG Up to 10 feet
70 AMPERES	8 AWG Up to 5 feet 6 AWG Up to 10 feet
100 AMPERES	6 AWG Up to 5 feet 4 AWG Up to 10 feet

## **LIMITED WARRANTY**

*DuraComm warrants to the initial end user, each power supply manufactured by DuraComm to be free from defects in material and workmanship, when in normal use and service for a period of three years from the date of purchase, from an authorized DuraComm dealer.*

*Should a product manufactured by DuraComm fail or malfunction due to manufacturing defect, or faulty component, DuraComm, at its option, will repair or replace the faulty product or parts thereof, which, after examination by DuraComm, prove to be defective or not operational according to specifications in effect at the time of sale to the initial end user. The product that is replaced or repaired under the provisions of this warranty, will be warranted for the remainder of the original warranty period, only, and will not extend into a new three year warranty period.*

*The limited warranty does not extend to any DuraComm product which has been subject to misuse, accidental damage, neglect, incorrect wiring not associated with manufacture, improper charging voltages, or any product which has had the serial number removed, altered, defaced, or changed in any way.*

*DuraComm reserves the right to change, alter, or improve the specifications of its products at any time, and by so doing, incurs no obligation to install or retrofit any such changes or improvements in or on products manufactured prior to inclusion of such changes.*

*DuraComm requires any product needing in or out of warranty service to be returned to DuraComm. All requests for warranty service must be accompanied by proof of purchase, such as bill of sale with purchase date identified. DuraComm is not responsible for any expenses or payments incurred for the removal of the product from its place of use, transportation or shipping expenses to the place of repair, or return expenses of a repaired or replacement product to its place of use.*

*The implied warranties which the law imposes on the sale of this product are expressly LIMITED, in duration, to the three (3) year time period specified herein. DuraComm will not be liable for damages, consequential or otherwise, resulting from the use and operation of this product, or from the breach of this LIMITED WARRANTY.*

*Some states do not allow limitations on the duration of the implied warranty or exclusions or limitations of incidental or consequential damages, so said limitations or exclusions may not apply to you. This warranty gives you specific legal rights which vary from state to state.*

*This warranty is given in lieu of all other warranties, whether expressed, implied, or by law. All other warranties, including WITHOUT LIMITATION, warranties of merchantability and fitness or suitability for a particular purpose, are specifically excluded. DuraComm reserves the right to change or modify its warranty and service programs without prior notice.*

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