M SERIES

1-7 Outputs
250-1500 Watts

FEATURES

- ***UL, CSA, TÜV (IEC, EN), CE***
- ***6 watts per cubic inch***
- ***1-7 outputs, 250-1500 watts***
- ***VXI rated specialty models***
- ***120 kilohertz MOSFET design***
- ***All outputs:***
  - *Adjustable*
  - *Fully regulated*
  - *Floating*
  - *Overload and short circuit protected*
  - *Overvoltage protected*
- ***Standard features include:***
  - *System inhibit*
  - *Load proportional DC fan output*
- ***Options include:***
  - *Auto ranger*
  - *Power fail monitor*
  - *End fan cover*
  - *Top fan cover*
  - *Zero preload*
- ***Fast delivery***
- ***Replaces expensive high density systems using potted modules***

DESCRIPTION

The M Series is a comprehensive line of open frame power supplies assembled from Deltron's Moduflex® standard modules. M Series supplies feature "State of the Art" topology, a meticulous thermal structure, and the use of high-efficiency circuits and components to attain the desired power density. The modular system concept reduces manufacturing to sub-module assembly, yielding high volume production with a superior quality level at moderate costs.

DELIVERY

For fastest delivery, specify only stocked modules for your power supply. For normal delivery, create a model that meets your specific requirements from *any* of the module types and configurations presented on the following page. Contact factory for delivery on models derived from non-stocked modules.

TYPICAL MODEL SELECTION

425 WATT

Output 1	Output 2	Output 3	Output 4	Model
3.3V @ 50A	5V @ 20A	12V @ 6A	12V @ 6A	M44R1233-YYN
5V @ 50A	3.3V @ 20A	12V @ 6A	12V @ 6A	M44R2133-YYN
5V @ 50A	24V @ 6A	12V @ 6A	12V @ 6A	M44R2633-YYN

600 WATT

Output 1	Output 2	Output 3	Output 4	Model
3.3V @ 60A	5V @ 20A	12V @ 12A	12V @ 12A	M48C1233-YYN
5V @ 60A	3.3V @ 20A	12V @ 12A	12V @ 12A	M48C2133-YYN
5V @ 60A	24V @ 6A	12V @ 12A	12V @ 12A	M48C2633-YYN

750 WATT

Output 1	Output 2	Output 3	Output 4	Model
3.3V @ 75A	5V @ 20A	12V @ 12A	12V @ 12A	M48D1233-YYN
5V @ 75A	3.3V @ 20A	12V @ 12A	12V @ 12A	M48D2133-YYN
5V @ 75A	24V @ 6A	12V @ 12A	12V @ 12A	M48D2633-YYN

OPTIONS

Option Code	Function
00	None
01	Power Fail Monitor
02	Auto Ranger
08	Zero Preload
32	End Fan Cover*
64	Top Fan Cover

Replace the YY in the model number with the sum of the Option Codes.
**600 & 750 watt units require Case 5.*

Deltron Inc.
290 Wissahickon Avenue, North Wales, PA 19454
Phone: 800.523.2332 Fax: 215.699.2310
Email: sales@deltroninc.com
Website: www.deltroninc.com

Manufacturing facilities ISO 9001-2000 registered.

MODEL SELECTION

Models are available in power ratings of 250 to 1500 watts, with corresponding code letters P, R and A through D. See Power Codes table. Contact factory for 1000 to 1500 watt models.

Output modules are available in six types—J, K, L, M, N and P in nominal power outputs of 75-500 watts. Type M, N, and P modules are variable power rated depending upon the unit power rating. The M, N, and P Module table directly below shows the corresponding multiplier applicable to the output current ratings of the M modules and allowable power ratings for the N and P modules. For example, a 750 watt multiple will have its M type module configured to produce 120A @ 5V or 12A @ 48V. The voltage and current rating of output modules are listed in the table of output types. This table assigns an alpha-numeric code designating the nominal voltage rating of the module.

Power Code	Unit Power Rating	M Module Current Multipliers		N/P Module*
		Single Output	Multiple Output	Allowable Power Rating
P	250W	0.5	0.3	175W
R	425W	0.85	0.5	250W
A	400W	0.8	0.6	250W
B	500W	1.0	0.8	300W
C	600W	1.2	1.0	400W
D	750W	1.5	1.2	500W

**When an N or P module is used as the main output, the allowable power and the module current ratings must not be exceeded.*

OUTPUT TYPES*						
Output		Module Type				
Code	Volts	J Amps	K Amps	L Amps	M Amps	N/P Amps
0	2	10	20	30	100	75
1	3.3	10	20	30	100	75
2	5	10	20	30	100	75
3	12	6	12	24	42	42
4	15	5	10	20	33	33
5	18	4	8	16	28	28
6	24	3	6	12	21	21
7	28	2.5	5	10	18	18
8	36	2	4	8	14	14
9	48	1.5	3	6	10	10
A	2.2	10	20	30	100	75
B	2.4	10	20	30	100	75
C	2.7	10	20	30	100	75
D	3	10	20	30	100	75
E	3.6	10	20	30	100	75
F	4	10	20	30	100	75
G	4.5	10	20	30	100	75
H	5.7	10	20	30	90	75
J	6.3	10	20	30	80	50
K	7	9	18	30	70	50
L	8	8	16	30	62	50
M	9	8	15	30	56	50
N	10	7	14	30	50	50
P	11	7	13	27	45	45
Q	13.5	6	11	22	37	37
R	17	5	9	18	30	30
S	19	4	8	16	26	26
T	21	4	7	14	24	24
U	23	4	7	13	22	22
V	26	3	6	12	19	19
W	29	3	5	10	17	17
X	32	2	5	9	16	16
Y	40	2	4	8	13	13
Z	44	2	4	7	12	12

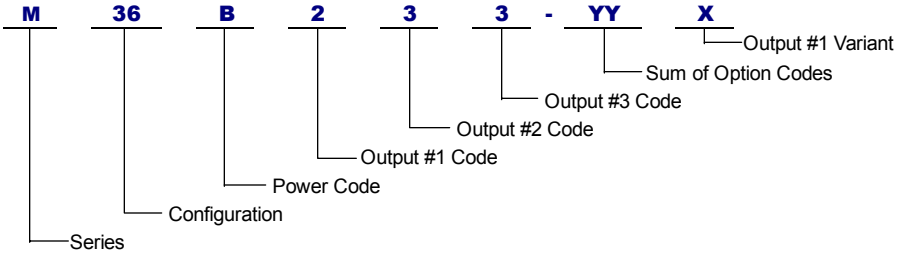
Multiple output modules of a given type are arranged in ascending order by voltage magnitude in the same sense as the output number sequence in the configuration diagrams.

**Shaded ratings are stock.*

HOW TO ORDER

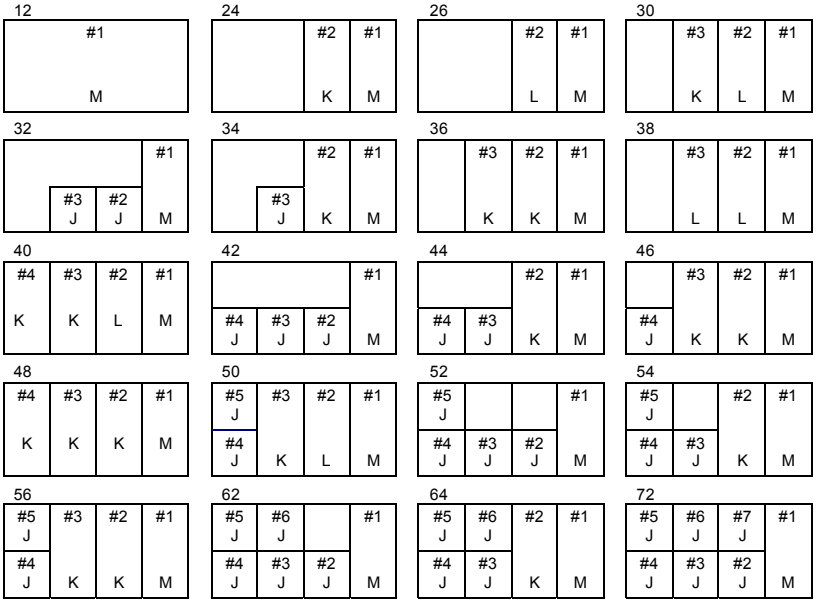
To form the proper model number defining a custom requirement, begin with the letter M to designate the series. Then choose the desired configuration of output modules and list the configuration code. Insert the power code letter for the power level, and follow with the output code numbers or letters for each specific output. Enter a dash and, from the Option Table, insert the sum of the option codes desired. If a lower power rating is desired for the M type main module in a multiple output unit, use the variant position and insert the Power Code letter N, P, R, A, B, or C. If no preload is available for the main output, choose Option Code 08 and specify Power Code N, P, R, A, or B as the variant.

MODUFLEX® 500W TRIPLE OUTPUT SWITCHER



OUTPUT CONFIGURATIONS

The boxes below are diagrammatic representations of the power supplies as viewed from the output end. The two-digit numbers above the boxes are the configuration codes.



Refer to the table below for allowable configurations by series.

Output Config.	Unit Power Rating					
	250W	400W	425W	500W	600W	750W
12	x	x	x	x	x	x
24	x	x	x	x	x	x
26					x	x
30					x	x
32	x	x	x	x	x	x
34	x	x	x	x	x	x
36		x	x	x	x	x
38					x	x
40						x
42	x	x	x	x	x	x
44		x	x	x	x	x
46		x		x	x	x
48		x			x	x
50						x
52		x	x	x	x	x
54		x		x	x	x
56		x			x	x
62		x		x	x	x
64		x			x	x
72		x			x	x

x Represents allowable configurations for the M Series.

M SERIES SPECIFICATIONS

INPUT
90-132 VAC or 180-264 VAC, 47-63 Hz. Strappable.

EMISSIONS
FCC 20780 Part 15, EN 55022, Class A Conducted. EN 61000-3-3, Voltage Fluctuations.

IMMUNITY
EN 61000-4-2, Level 3 Electrostatic Discharge. EN 61000-4-3, Level 3 Radiated Field. EN 61000-4-4, Level 3 Electrical Fast Transients. EN 61000-4-5, Level 3 Surge. EN 61000-4-6, Level 3 Conducted Field.

INPUT SURGE
34 amps peak from cold start for units under 400 watts, 68 amps for other models.

EFFICIENCY
75% typical.

HOLDUP TIME
20 milliseconds from loss of nominal AC power.

OUTPUTS
See model selection table. Outputs are trim adjustable ±5%.

OUTPUT POLARITY
All outputs are floating from chassis and each other and can be referenced to each other or ground, as required.

LINE REGULATION
Less than ±0.1% or ±5mV for input changes from nominal to min. or max. rated values.

LOAD REGULATION
±0.2% or ±10mV for load changes from 50% to 0% or 100% of max. rated values.

MINIMUM LOAD
Main output requires a 10% minimum load for full output from auxiliaries. Use Option 08 if no minimum load is available. Singles require no minimum load.

RIPPLE & NOISE
1% or 100 mV, pk.-pk., 20 MHz bandwidth.

OPERATING TEMPERATURE
0-70°C. Derate 2.5%/°C above 50°C.

COOLING
A minimum of 6 LFS* for models under 400 watts, 10 LFS for others, directed over the unit for full rating. two test locations on chassis rated for max. temperature of 90°C. For convection ratings consult factory.
**Linear feet/second.*

TEMPERATURE COEFFICIENT
±0.02%/°C typical.

DYNAMIC RESPONSE
Peak transient less than ±2% or ±100 mV for a step load change from 75% to 50% or 100% max. Outputs recover within 300 microseconds.

SAFETY
Units meet UL 1950/60950, CSA 22.2 No. 60950-00, EN 60 950, IEC 950.

DIELECTRIC WITHSTAND
3000 VRMS input to ground.
3000 VRMS input to output.
700 VDC output to ground.

SPACING
5 mm primary to secondary, 2.5 mm to ground.

LEAKAGE CURRENT
0.75 mA at 115 VAC, 60 Hz. input.

INPUT UNDERVOLTAGE
Protects against damage from under voltage operation.

SOFT START
Units have soft start feature to protect critical components.

OVERVOLTAGE PROTECTION
Standard on all outputs. Latching action.

REVERSE VOLTAGE PROTECTION
All outputs are protected up to load ratings.

OVERLOAD & SHORT CIRCUIT
All outputs are protected by foldback current limiting with automatic recovery.

THERMAL SHUTDOWN
Circuit cuts off supply in case of local over temperature. Units reset automatically when temperature returns to normal.

FAN OUTPUT
Nominal 12 VDC @ 12 watts maximum.

INHIBIT
TTL compatible system inhibit provided.

REMOTE SENSING
On all outputs greater than 75 watts.

SHOCK & VIBRATION
Shock per MIL-STD 810-E Method 516.4, Procedure I. Vibration per MIL-STD 810-E Method 514.4, Category 1, Procedure I.

MECHANICAL

Case	Watts	H	x	W	x	L
1	250W/425W	2.50"	x	4.15"	x	8.00"
2	400W/500W	2.50"	x	5.05"	x	9.00"
3	600W/750W	2.50"	x	5.20"	x	9.63"
4	600W/750W	2.50"	x	6.50"	x	9.63" *
5	600W/750W	2.50"	x	6.00"	x	9.63" **
6	1000W	5.00"	x	5.05"	x	10.40"
7	1500W	5.00"	x	5.20"	x	11.00"

* *Configurations 40 & 50 only.*
** *Option 32 only.*

OPTIONS

POWER FAIL MONITOR *(Code 01)*
Optional circuit provides isolated TTL and VME compatible ACFAIL signal providing 4 milliseconds warning before main output drops by 5% after an input failure.

AUTO RANGER *(Code 02)*
Optional circuit provides automatic operation at specified input ranges without strapping.

ZERO PRELOAD *(Code 08)*
Optional circuit removes need for preload on main output. Available for mains up to 500 watts.

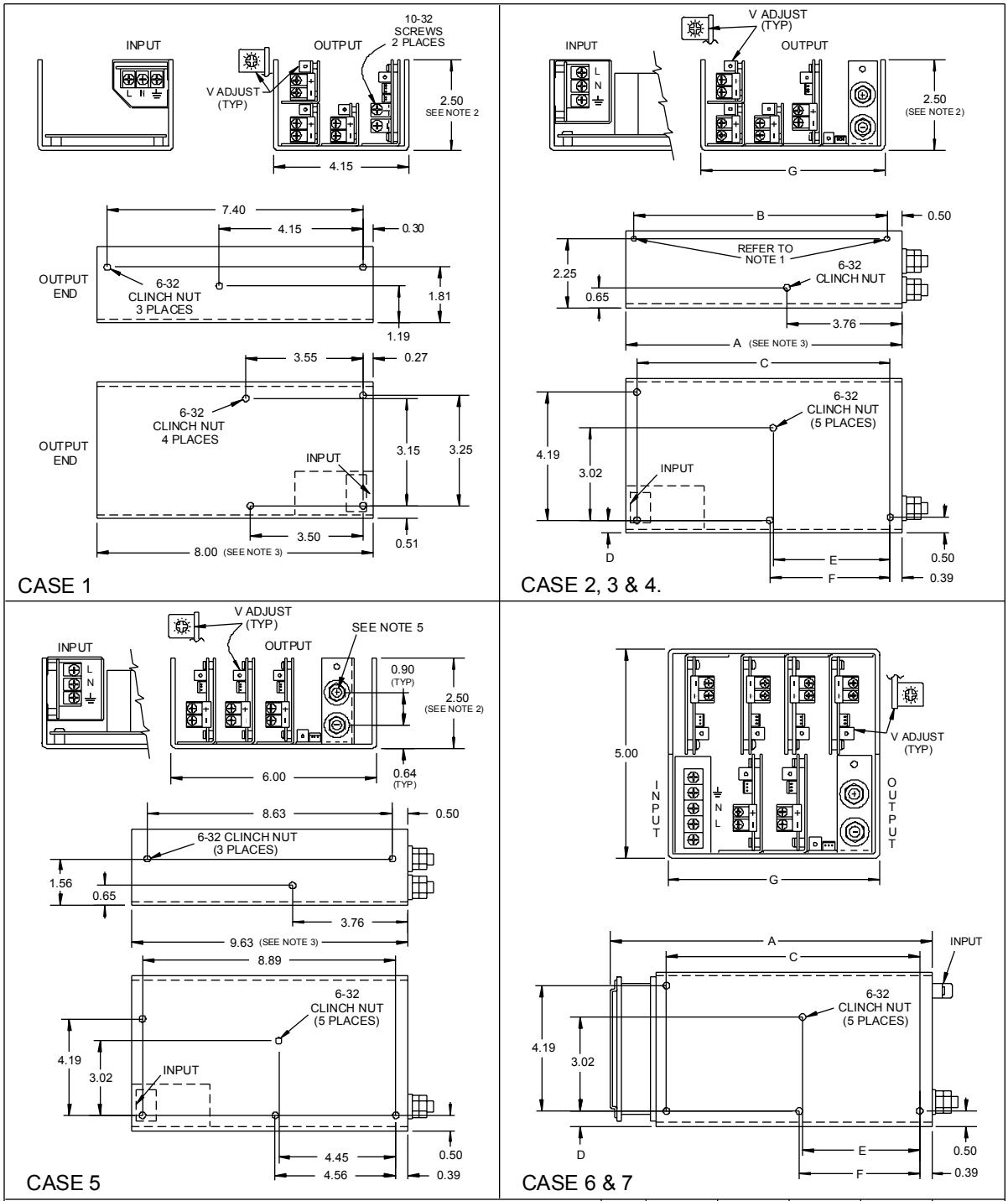
END FAN COVER *(Code 32)*
Optional cover with brushless DC ball bearing fan which provides the required air flow for full rating of Moduflex® power supplies.

TOP FAN COVER *(Code 64)*
Same as above, with fan cover mounted on top of the power supply.

Specifications subject to change without notice.

Deltron inc.

M SERIES DIMENSIONS



NOTES:

(1) WITH FAN COVER (6-32), W/O COVER (.15 DIA.)
(2) WITH TOP FAN COVER ADD 1.38" TO HEIGHT.
(3) WITH END FAN COVER ADD 1.38" TO LENGTH.
(4) TERMINAL BLOCKS (6-32) UNLESS NOTED OTHERWISE
(5) STUDS (1/4-20) UNLESS NOTED OTHERWISE

CASE	2	3	4	6	7
WATTS	400/500	600/750	600/750	1000	1500
A	9.00	9.63	9.63	10.40	11.00
B	8.25	8.88	8.88	—	—
C	8.26	8.89	8.89	8.26	8.89
D	0.41	0.50	1.80	0.41	0.50
E	3.82	4.45	4.45	3.82	4.45
F	3.93	4.56	4.56	3.93	4.56
G	5.05	5.20	6.50	5.05	5.20