



M AND N SERIES Single and Dual Output

- Low Noise
- Pi Input Filter
- Triple Fault Protection
- Linear Regulation
- Efficiency to 71%
- Six-Sided Shield

The M and N Series consist of 15 single output and 10 dual output DC/DC converters that provide 10 watts total output power. Both series operate at efficiencies up to 71% with 500 VDC isolation and only 1 mV RMS (40 mV P-P) output ripple and noise. All models are encapsulated in a compact 3.0 × 2.56 × 0.75 inch cases. Designed for maximum noise containment, the units feature a six-sided continuous package shield and transformer shield for EMI/RFI suppression, plus a Pi input filter to minimize reflected input ripple current. All models offer a number of fault protection features, including an internal thermal shutdown circuit designed to limit output current when case temperature exceeds a predetermined point. An internal overvoltage clamp is also standard on M Series units.



(617) 268-1170

SPECIFICATIONS

T-57-11

All Specifications Typical at Nominal Line, Full Load, and 25°C Unless Otherwise Noted.

OUTPUT SPECIFICATIONS

Voltage Accuracy ±1.0%, max.
 Voltage Balance, N Series ±1.0%, max.
 Ripple and Noise, 20 MHz BW 1 mV RMS, max.
 40 mV P-P, max.
 Temperature Coefficient ±0.01%/°C, max.
 Voltage Stability, 24 hrs..... ±0.05%, max.
 Transient Recovery Time, ±0.5% Error Band
 FL-NL, M Series 250 μsec., max.
 FL-NL, N Series..... 150 μsec., max.
 Short Circuit Protection
 M Series..... Output to Common
 N Series..... Either Output to Output Common
 Overvoltage Protection, M Series See Table

INPUT SPECIFICATIONS

Input Voltage Range See Table
 Input Filter Pi Network

GENERAL SPECIFICATIONS

Efficiency See Table
 Isolation Voltage..... 500 VDC, min.
 Isolation Resistance..... 10⁹ ohms, min.
 Switching Frequency..... 20 kHz

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature Range ... -25°C to +71°C
 Derating None
 Storage Temperature Range ... -40°C to +100°C
 Case Temp. Rise Above Ambient 5°C/watt Diss.
 Overtemperature Protection
 Thermal Shutdown..... Automatic Restart
 Cooling..... Free-Air Convection
 EMI/RFI Six-Sided Continuous Shield
 Transformer Shield

PHYSICAL SPECIFICATIONS

Weight 12 oz. (336 grams)
 Case Material Black Coated Copper with
 Non-Conductive Base
 Mating Socket..... MS-X

| Input Voltage Ranges | | |
|----------------------|-----------|------------------|
| Nominal | Range | Case Connections |
| 5V | 4.5- 5.5V | Output Common |
| 12V | 10-14.5V | Minus Input |
| 24V | 21-28V | Minus Input |
| 28V | 24-32V | Minus Input |
| 48V | 42-56V | Plus Input |

| Overvoltage Ranges (M Series) | |
|-------------------------------|-------------|
| Output | OVP Setting |
| 5 V | 6.8 V |
| 12 V | 15 V |
| 15 V | 18 V |

TWO-YEAR WARRANTY



10 Watt DC/DC Converters

T-57-11

| INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT | | % EFF | REGULATION ¹ | | CASE | MODEL NUMBER |
|----------------------|----------------|----------------|---------------|-----------|-------|-------------------------|-------------------|------|--------------|
| | | | NO LOAD | FULL LOAD | | LINE ² | LOAD ³ | | |
| SINGLE OUTPUT | | | | | | | | | |
| 5 VDC | 5 VDC | 2000 mA | 400 mA | 3100 mA | 65 | ± 0.2% | ± 0.2% | X | M05S05/2000X |
| 5 VDC | 12 VDC | 1000 mA | 400 mA | 3700 mA | 65 | ± 0.2% | ± 0.2% | X | M05S12/1000X |
| 5 VDC | 15 VDC | 670 mA | 350 mA | 3100 mA | 65 | ± 0.2% | ± 0.2% | X | M05S15/670X |
| 12 VDC | 5 VDC | 2000 mA | 80 mA | 1350 mA | 62 | ± 0.2% | ± 0.2% | X | M12S05/2000X |
| 12 VDC | 12 VDC | 1000 mA | 76 mA | 1490 mA | 67 | ± 0.2% | ± 0.2% | X | M12S12/1000X |
| 12 VDC | 15 VDC | 670 mA | 75 mA | 1250 mA | 67 | ± 0.2% | ± 0.2% | X | M12S15/670X |
| 24 VDC | 5 VDC | 2000 mA | 35 mA | 650 mA | 64 | ± 0.2% | ± 0.2% | X | M24S05/2000X |
| 24 VDC | 12 VDC | 1000 mA | 35 mA | 700 mA | 71 | ± 0.2% | ± 0.2% | X | M24S12/1000X |
| 24 VDC | 15 VDC | 670 mA | 31 mA | 600 mA | 70 | ± 0.2% | ± 0.2% | X | M24S15/670X |
| 28 VDC | 5 VDC | 2000 mA | 30 mA | 530 mA | 67 | ± 0.2% | ± 0.2% | X | M28S05/2000X |
| 28 VDC | 12 VDC | 1000 mA | 31 mA | 635 mA | 78 | ± 0.2% | ± 0.2% | X | M28S12/1000X |
| 28 VDC | 15 VDC | 670 mA | 30 mA | 505 mA | 71 | ± 0.2% | ± 0.2% | X | M28S15/670X |
| 48 VDC | 5 VDC | 2000 mA | 25 mA | 300 mA | 69 | ± 0.2% | ± 0.2% | X | M48S05/2000X |
| 48 VDC | 12 VDC | 1000 mA | 25 mA | 355 mA | 70 | ± 0.2% | ± 0.2% | X | M48S12/1000X |
| 48 VDC | 15 VDC | 670 mA | 25 mA | 300 mA | 70 | ± 0.2% | ± 0.2% | X | M48S15/670X |
| DUAL OUTPUT | | | | | | | | | |
| 5 VDC | ± 12 VDC | ± 330 mA | 500 mA | 2700 mA | 59 | ± 0.1% | ± 0.1% | X | N05D12/330X |
| 5 VDC | ± 15 VDC | ± 330 mA | 500 mA | 3200 mA | 62 | ± 0.1% | ± 0.1% | X | N05D15/330X |
| 12 VDC | ± 12 VDC | ± 330 mA | 85 mA | 1100 mA | 60 | ± 0.1% | ± 0.1% | X | N12D12/330X |
| 12 VDC | ± 15 VDC | ± 330 mA | 85 mA | 1300 mA | 63 | ± 0.1% | ± 0.1% | X | N12D15/330X |
| 24 VDC | ± 12 VDC | ± 330 mA | 37 mA | 510 mA | 65 | ± 0.1% | ± 0.1% | X | N24D12/330X |
| 24 VDC | ± 15 VDC | ± 330 mA | 35 mA | 600 mA | 69 | ± 0.1% | ± 0.1% | X | N24D15/330X |
| 28 VDC | ± 12 VDC | ± 330 mA | 35 mA | 450 mA | 63 | ± 0.1% | ± 0.1% | X | N28D12/330X |
| 28 VDC | ± 15 VDC | ± 330 mA | 35 mA | 525 mA | 67 | ± 0.1% | ± 0.1% | X | N28D15/330X |
| 48 VDC | ± 12 VDC | ± 330 mA | 20 mA | 255 mA | 65 | ± 0.1% | ± 0.1% | X | N48D12/330X |
| 48 VDC | ± 15 VDC | ± 330 mA | 25 mA | 290 mA | 71 | ± 0.1% | ± 0.1% | X | N48D15/330X |

NOTES: 1. Maximum.

2. Measured from High Line to Low Line.

3. Measured from Full Load to No Load.

Other Input/Output Combinations Available. Consult Factory.

CASE X

| Pin Connections | | |
|-----------------|---------------|---------------|
| Pin | M Series | N Series |
| 1 | + Input | + Input |
| 2 | - Input | - Input |
| 3 | No Connection | + Output |
| 4 | No Connection | Output Common |
| 5 | No Connection | - Output |
| 6 | + Output | No Connection |
| 7 | - Output | No Connection |

Tolerance .xx = ± 0.04
.xxx = ± 0.005

ALL DIMENSIONS IN INCHES (mm)

