



## 60W Single Output Industrial DIN Rail Power Supply

## MDR-60 series



### ■ Features :

- Universal AC input/Full range
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- NEC class 2 / LPS compliant (24V,48V only)
- LED indicator for power on
- DC OK relay contact
- No load power consumption<0.75W
- 100% full load burn-in test
- 3 years warranty

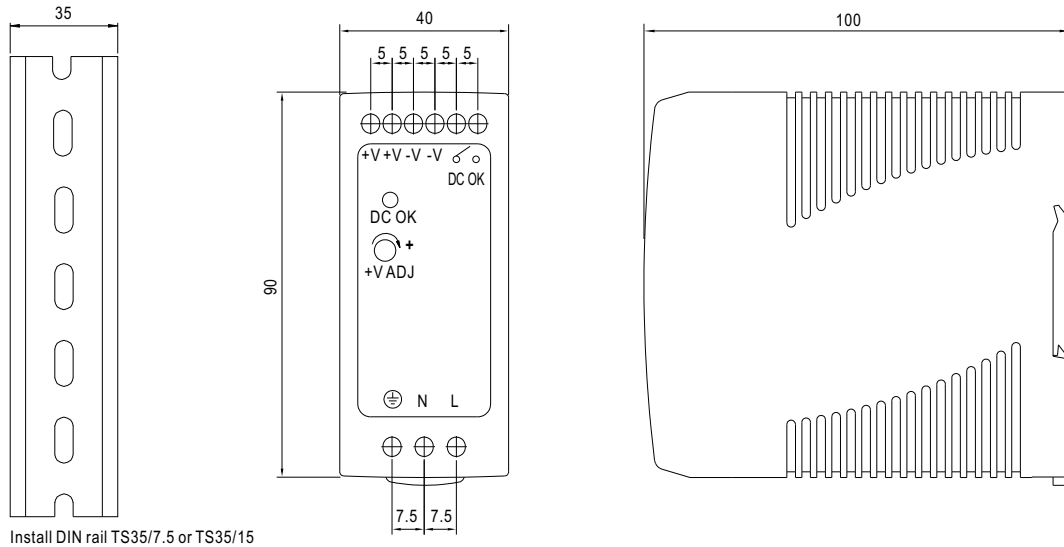


### SPECIFICATION

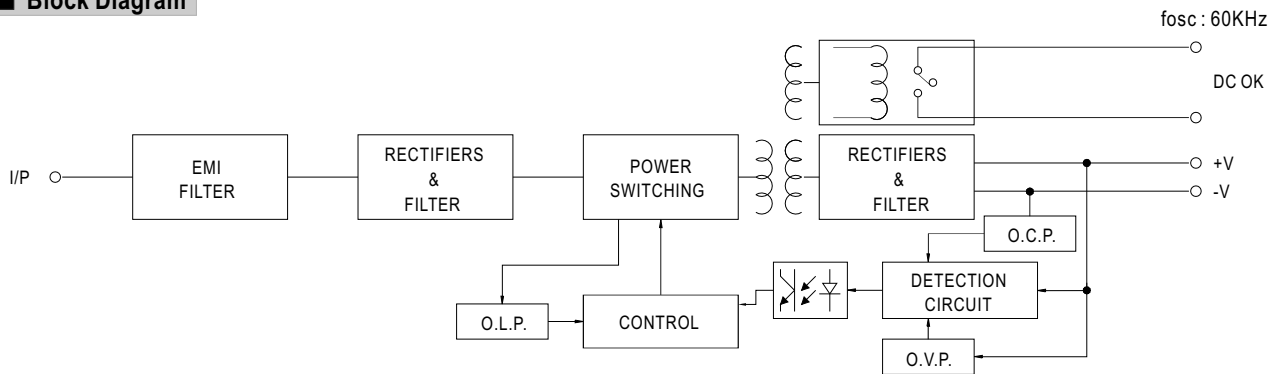
| MODEL                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MDR-60-5                                                                                                                              |                          | MDR-60-12                       |  | MDR-60-24  |  | MDR-60-48    |  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------|--|------------|--|--------------|--|
| OUTPUT                   | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5V                                                                                                                                    |                          | 12V                             |  | 24V        |  | 48V          |  |
|                          | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10A                                                                                                                                   |                          | 5A                              |  | 2.5A       |  | 1.25A        |  |
|                          | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0 ~ 10A                                                                                                                               |                          | 0 ~ 5A                          |  | 0 ~ 2.5A   |  | 0 ~ 1.25A    |  |
|                          | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50W                                                                                                                                   |                          | 60W                             |  | 60W        |  | 60W          |  |
|                          | RIPPLE & NOISE (max.) Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 80mVp-p                                                                                                                               |                          | 120mVp-p                        |  | 150mVp-p   |  | 200mVp-p     |  |
|                          | VOLTAGE ADJ. RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 ~ 6V                                                                                                                                |                          | 12 ~ 15V                        |  | 24 ~ 30V   |  | 48 ~ 56V     |  |
|                          | VOLTAGE TOLERANCE Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ±2.0%                                                                                                                                 |                          | ±1.0%                           |  | ±1.0%      |  | ±1.0%        |  |
|                          | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ±1.0%                                                                                                                                 |                          | ±1.0%                           |  | ±1.0%      |  | ±1.0%        |  |
|                          | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ±1.5%                                                                                                                                 |                          | ±1.0%                           |  | ±1.0%      |  | ±1.0%        |  |
|                          | SETUP, RISE TIME Note.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 500ms, 30ms/230VAC                                                                                                                    |                          | 500ms, 30ms/115VAC at full load |  |            |  |              |  |
| HOLD UP TIME (Typ.)      | 50ms/230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                       | 20ms/115VAC at full load |                                 |  |            |  |              |  |
| INPUT                    | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 85 ~ 264VAC                                                                                                                           |                          | 120 ~ 370VDC                    |  |            |  |              |  |
|                          | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 47 ~ 63Hz                                                                                                                             |                          |                                 |  |            |  |              |  |
|                          | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 78%                                                                                                                                   |                          | 86%                             |  | 88%        |  | 87%          |  |
|                          | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.8A/115VAC                                                                                                                           |                          | 1A/230VAC                       |  |            |  |              |  |
|                          | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COLD START 30A/115VAC                                                                                                                 |                          | 60A/230VAC                      |  |            |  |              |  |
|                          | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <1mA/ 240VAC                                                                                                                          |                          |                                 |  |            |  |              |  |
| PROTECTION               | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 105 ~ 150% rated output power<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed |                          |                                 |  |            |  |              |  |
|                          | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6.25 ~ 7.25V                                                                                                                          |                          | 15.6 ~ 18V                      |  | 31.2 ~ 36V |  | 57.6 ~ 64.8V |  |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Protection type : Shut down o/p voltage, re-power on to recover                                                                       |                          |                                 |  |            |  |              |  |
| FUNCTION                 | DC OK SIGNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Relay contact rating(max.): 30V/1A resistive                                                                                          |                          |                                 |  |            |  |              |  |
| ENVIRONMENT              | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -20 ~ +70℃ (Refer to output load derating curve)                                                                                      |                          |                                 |  |            |  |              |  |
|                          | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20 ~ 90% RH non-condensing                                                                                                            |                          |                                 |  |            |  |              |  |
|                          | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -40 ~ +85℃, 10 ~ 95% RH                                                                                                               |                          |                                 |  |            |  |              |  |
|                          | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±0.03%/℃ (0 ~ 50℃ )                                                                                                                   |                          |                                 |  |            |  |              |  |
|                          | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Component : 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes ; Mounting : Compliance to IEC60068-2-6           |                          |                                 |  |            |  |              |  |
| SAFETY & EMC<br>(Note 4) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | UL508, TUV EN60950-1 approved, NEC class 2 / LPS compliant (24V,48V only)                                                             |                          |                                 |  |            |  |              |  |
|                          | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC                                                                                           |                          |                                 |  |            |  |              |  |
|                          | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I/P-O/P, I/P-FG, O/P-FG:>100M Ohms/500VDC 25℃ 70%RH                                                                                   |                          |                                 |  |            |  |              |  |
|                          | EMI CONDUCTION & RADIATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Compliance to EN55011, EN55022 (CISPR22), EN61204-3 Class B                                                                           |                          |                                 |  |            |  |              |  |
|                          | HARMONIC CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Compliance to EN61000-3-2,-3                                                                                                          |                          |                                 |  |            |  |              |  |
|                          | EMS IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11, ENV50204, EN55024, EN61000-6-2, EN61204-3, heavy industry level, criteria A             |                          |                                 |  |            |  |              |  |
| OTHERS                   | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 299.2K hrs min. MIL-HDBK-217F (25℃ )                                                                                                  |                          |                                 |  |            |  |              |  |
|                          | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 40*90*100mm (W*H*D)                                                                                                                   |                          |                                 |  |            |  |              |  |
|                          | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.33Kg; 42pcs/14.8Kg/0.82CUFT                                                                                                         |                          |                                 |  |            |  |              |  |
| NOTE                     | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.<br>5. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time. |                                                                                                                                       |                          |                                 |  |            |  |              |  |

Case No.962A Unit:mm

## Mechanical Specification



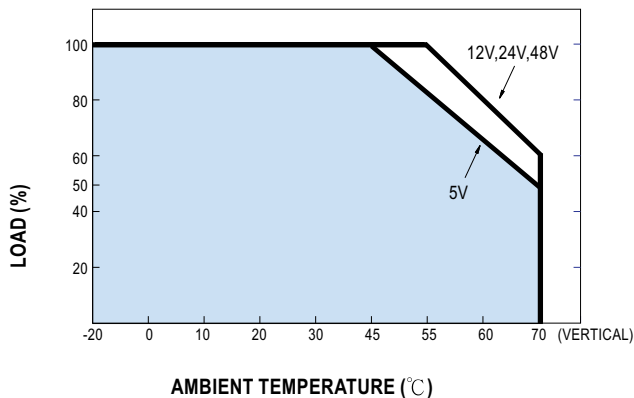
## Block Diagram



## DC OK Relay Contact

|                        |                                                              |
|------------------------|--------------------------------------------------------------|
| Contact Close          | When the output voltage reaches the adjusted output voltage. |
| Contact Open           | When the output voltage drop below 90% output voltage.       |
| Contact Ratings (max.) | 30V/1A resistive load                                        |

## Derating Curve



## Output Derating VS Input Voltage

