MEAN WELL

35W Single Output Switching Power Supply

# LRS-35 series

User's Manual

R33100 RoHS

IS 13252(Part 1):2010/ IEC 60950-1:2005 R-41179035

AS/NZS60950-1 GB4943.1 UL62368-1 TP TC004 IEC62368-1 (for LRS-35-12/24 only)

ECO Automate Industrial Security Network Telecom

## Features

- Universal AC input / Full range
- Withstand 300VAC surge input for 5 second
- No load power consumption<0.2W
- Miniature size and 1U low profile
- High operating temperature up to 70℃
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- Compliance to IEC/BS EN/EN 60335-1(PD3) and IEC/BS EN/EN61558-1, -2-16 for household appliances
- Operating altitude up to 5000 meters (Note.8)
- Withstand 5G vibration test
- High efficiency, long life and high reliability
- LED indicator for power on
- Over voltage category III
- 100% full load burn-in test
- 3 years warranty

## Applications

- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Household appliances

## Description

LRS-35 series is a 35W single-output enclosed type power supply with 30mm of low profile design. Adopting the full range 85~264VAC input, the entire series provides an output voltage line of 5V, 12V, 15V, 24V, 36V and 48V.

In addition to the high efficiency up to 89%, the design of metallic mesh case enhances the heat dissipation of LRS-35 that the whole series operates from -30℃ through 70℃ under air convection without a fan. Delivering an extremely low no load power consumption (less than 0.2W), it allows the end system to easily meet the worldwide energy requirement. LRS-35 has the complete protection functions and 5G anti-vibration capability; it is complied with the international safety regulations such as TUV BS EN/EN62368-1, BS EN/EN60335-1,BS EN/EN61558-1/-2-16, UL62368-1 and GB4943. LRS-35 series serves as a high price-to-performance power supply solution for various industrial applications.

## Model Encoding

**LRS - 35 - 5**

- 5 — Output voltage
- 35 — Rated wattage
- LRS — Series name

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# LRS-35 series

## SPECIFICATION

| MODEL | | LRS-35-5 | LRS-35-12 | LRS-35-15 | LRS-35-24 | LRS-35-36 | LRS-35-48 |
|---|---|---|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | 5V | 12V | 15V | 24V | 36V | 48V |
| | RATED CURRENT | 7A | 3A | 2.4A | 1.5A | 1A | 0.8A |
| | CURRENT RANGE | 0 ~ 7A | 0 ~ 3A | 0 ~ 2.4A | 0 ~ 1.5A | 0 ~ 1A | 0 ~ 0.8A |
| | RATED POWER | 35W | 36W | 36W | 36W | 36W | 38.4W |
| | RIPPLE & NOISE (max.) Note.2 | 80mVp-p | 120mVp-p | 120mVp-p | 150mVp-p | 200mVp-p | 200mVp-p |
| | VOLTAGE ADJ. RANGE | 4.5 ~ 5.5V | 10.2 ~ 13.8V | 13.5 ~ 18V | 21.6 ~ 28.8V | 32.4 ~ 39.6V | 43.2 ~ 52.8V |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% |
| | LINE REGULATION Note.4 | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | LOAD REGULATION Note.5 | ±1.0% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | 1000ms, 30ms/230VAC 2000ms,30ms/115VAC at full load | | | | | |
| | HOLD UP TIME (Typ.) | 30ms/230VAC 12ms/115VAC at full load | | | | | |
| INPUT | VOLTAGE RANGE | 85 ~ 264VAC 120 ~ 373VDC | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | |
| | EFFICIENCY (Typ.) | 82% | 86% | 86% | 88% | 88% | 89% |
| | AC CURRENT (Typ.) | 0.7A/115VAC 0.42A/230VAC | | | | | |
| | INRUSH CURRENT (Typ.) | COLD START 45A/230VAC | | | | | |
| | LEAKAGE CURRENT | <0.75mA / 240VAC | | | | | |
| PROTECTION | OVER LOAD | 110 ~ 150% rated output power | | | | | |
| | | Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | | | |
| | OVER VOLTAGE | 5.75 ~ 6.9V | 13.8 ~ 16.2V | 18.75 ~ 21.75V | 28.8 ~ 33.6V | 41.4 ~ 48.6V | 55.2 ~ 64.8V |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | |
| ENVIRONMENT | WORKING TEMP. | -30 ~ +70℃ (Refer to "Derating Curve") | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH non-condensing | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/℃ (0 ~ 50℃) | | | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | |
| | OVER VOLTAGE CATEGORY | III; According to BS EN/EN61558, BS EN/EN50178, BS EN/EN60664-1, BS EN/EN62477-1; altitude up to 2000 meters | | | | | |
| SAFETY & EMC (Note 9) | SAFETY STANDARDS | UL62368-1, TUV BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16,CCC GB4943.1, BSMI CNS14336-1, EAC TP TC 004,AS/NZS 60950.1(by CB),KC K60950-1(for LRS-35-12/24 only), BIS IS13252(Part1): 2010/IEC 60950-1: 2005 approved | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.25KVAC | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH | | | | | |
| | EMC EMISSION | Compliance to BS EN/EN55032 (CISPR32) Class B, BS EN/EN55014, BS EN/EN61000-3-2,-3, GB/T 9254, BSMI CNS13438, EAC TP TC 020,KC KN32,KN35(for LRS-35-12/24 only) | | | | | |
| | EMC IMMUNITY | Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN61000-6-2 (BS EN/EN50082-2), heavy industry level, criteria A, EAC TP TC 020,KC KN32,KN35(for LRS-35-12/24 only) | | | | | |
| OTHERS | MTBF | 763.6K hrs min. MIL-HDBK-217F (25℃) | | | | | |
| | DIMENSION | 99*82*30mm (L*W*H) | | | | | |
| | PACKING | 0.23Kg ; 60pcs/14.8Kg/0.88CUFT | | | | | |

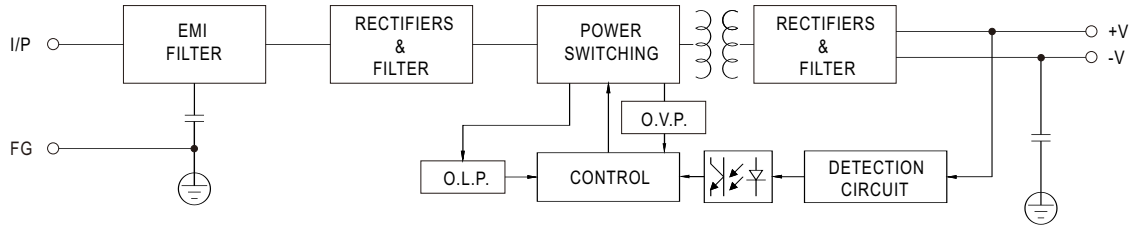
**NOTE**

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Line regulation is measured from low line to high line at rated load.
5. Load regulation is measured from 0% to 100% rated load.
6. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time.
7. 5V when the load factor 0~50%, the switching power less is reduced by burst operation, which will cause ripple and ripple noise to go beyond the specifications.
8. The ambient temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m(6500ft).
9. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on http://www.meanwell.com)

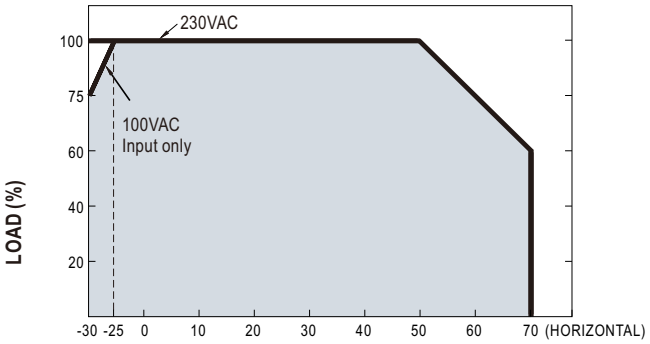
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

## Block Diagram

fosc : 115Vac : 75KHz
230Vac :110KHz

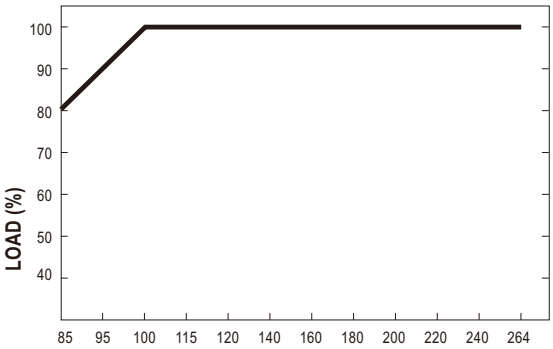



## Derating Curve




AMBIENT TEMPERATURE (℃)

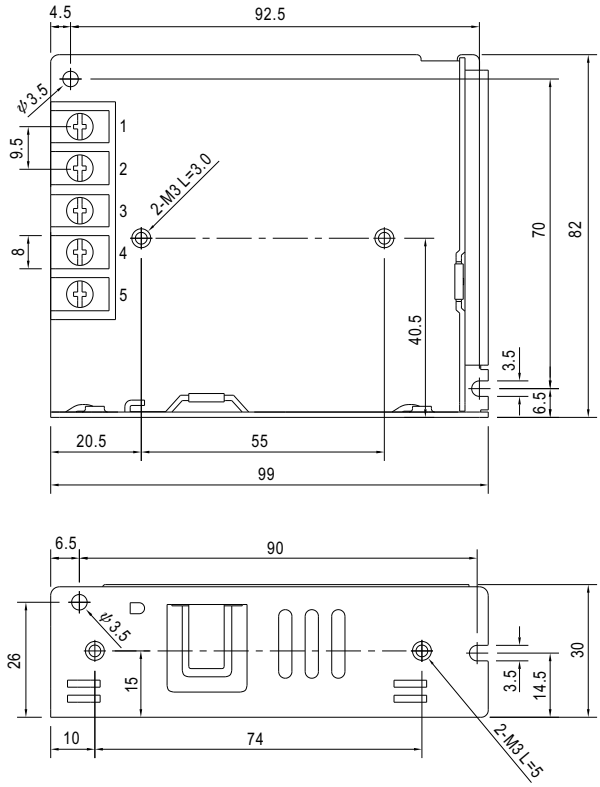
## Static Characteristics




INPUT VOLTAGE (VAC) 60Hz

## ■ Mechanical Specification

Case No.239A Unit:mm







Terminal Pin No. Assignment

| Pin No. | Assignment | Pin No. | Assignment |
|---|---|---|---|
| 1 | AC/L | 4 | DC OUTPUT -V |
| 2 | AC/N | 5 | DC OUTPUT +V |
| 3 | FG ⏚ | | |

## ■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html