



LPS



## Features

- Ultra slim design with 52.5mm(3SU) width
- Universal input 85~264VAC(277VAC operational)
- No load power consumption<0.3W
- Isolation class II
- Pass LPS (Limited power source)
- DC output voltage adjustable
- Protections : Short circuit / Overload / Over voltage
- Cooling by free air convection (working temperature:-30~+70°C)
- DIN rail TS-35/7.5 or 15 mountable
- Over Voltage category III
- LED indicator for power on
- 3 years warranty

## Applications

- Household control system
- Building automation
- Industrial control system
- Factory automation
- Electro-mechanical apparatus

## Description

HDR-60 is one economical ultra slim 60W DIN rail power supply series, adapt to be installed on TS-35/7.5 or TS-35/15 mounting rails. The body is designed 52.5mm(3SU) in width, which allows space saving inside the cabinets. The entire series adopts the full range AC input from 85VAC to 264VAC (277VAC operational) and conforms to EN61000-3-2, the norm the European Union regulates for harmonic current.

HDR-60 is designed with plastic housing that it can effectively prevent user from electric hazards. With working efficiency up to 91%, the entire series can operate at the ambient temperature between -30°C and 70°C under air convection. It is equipped with constant current mode for overload protection, fitting various inductive or capacitive applications. The complete protection functions and relevant certificates for home automations and industrial control apparatus (IEC60950-1,UL508,UL60950-1,EN61558-2-16) make HDR-60 a very competitive power supply solution for household and industrial applications.

## Model Encoding

HDR - 60 - 12

Output voltage

Rated wattage

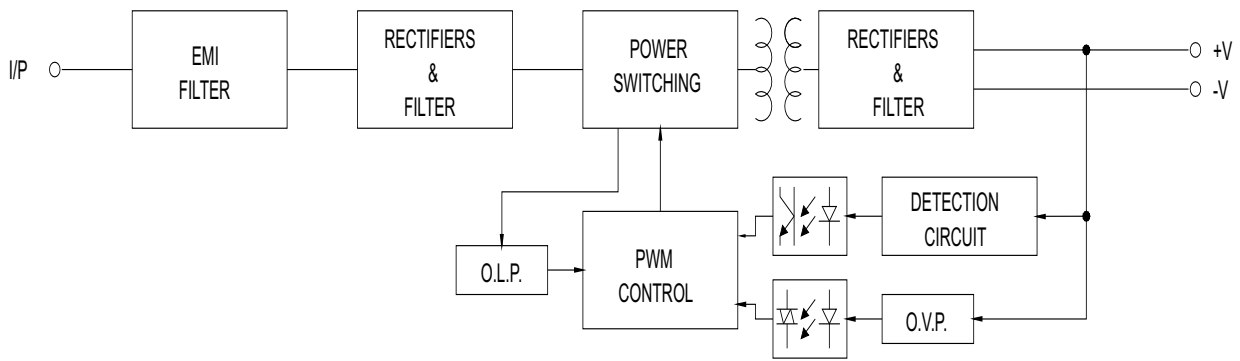
Series name



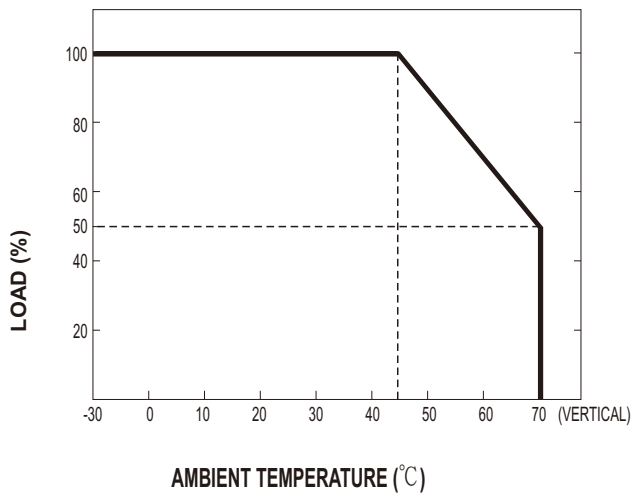
## SPECIFICATION

| MODEL                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HDR-60-5                                                                                                                              | HDR-60-12        | HDR-60-15    | HDR-60-24  | HDR-60-48                                                                      |  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|------------|--------------------------------------------------------------------------------|--|
| OUTPUT                                  | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5V                                                                                                                                    | 12V              | 15V          | 24V        | 48V                                                                            |  |
|                                         | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6.5A                                                                                                                                  | 4.5A             | 4A           | 2.5A       | 1.25A                                                                          |  |
|                                         | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0 ~ 6.5A                                                                                                                              | 0 ~ 4.5A         | 0 ~ 4A       | 0 ~ 2.5A   | 0 ~ 1.25A                                                                      |  |
|                                         | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 32.5W                                                                                                                                 | 54W              | 60W          | 60W        | 60W                                                                            |  |
|                                         | RIPPLE & NOISE (max.) <small>Note.2</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 80mVp-p                                                                                                                               | 120mVp-p         | 120mVp-p     | 150mVp-p   | 240mVp-p                                                                       |  |
|                                         | VOLTAGE ADJ. RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5.0 ~ 5.5V                                                                                                                            | 10.8 ~ 13.8V     | 13.5 ~ 18V   | 21.6 ~ 29V | 43.2 ~ 55.2V                                                                   |  |
|                                         | VOLTAGE TOLERANCE <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ± 2.0%                                                                                                                                | ± 1.0%           | ± 1.0%       | ± 1.0%     | ± 1.0%                                                                         |  |
|                                         | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ± 1.0%                                                                                                                                | ± 1.0%           | ± 1.0%       | ± 1.0%     | ± 1.0%                                                                         |  |
|                                         | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ± 1.0%                                                                                                                                | ± 1.0%           | ± 1.0%       | ± 1.0%     | ± 1.0%                                                                         |  |
|                                         | SETUP, RISE TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 500ms, 50ms/230VAC      500ms, 50ms/115VAC at full load                                                                               |                  |              |            |                                                                                |  |
|                                         | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30ms/230VAC      12ms/115VAC at full load                                                                                             |                  |              |            |                                                                                |  |
| INPUT                                   | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 85 ~ 264VAC (277VAC operational)      120 ~ 370VDC (390VDC operational)                                                               |                  |              |            |                                                                                |  |
|                                         | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47 ~ 63Hz                                                                                                                             |                  |              |            |                                                                                |  |
|                                         | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 85%                                                                                                                                   | 88%              | 89%          | 90%        | 91%                                                                            |  |
|                                         | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.2A/115VAC      0.8A/230VAC                                                                                                          |                  |              |            |                                                                                |  |
|                                         | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | COLD START 30A/115VAC      60A/230VAC                                                                                                 |                  |              |            |                                                                                |  |
| PROTECTION                              | OVERLOAD <small>Note.4</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 105 ~ 160% rated output power<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed |                  |              |            |                                                                                |  |
|                                         | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5.75 ~ 6.75V                                                                                                                          | 14.2 ~ 16.2V     | 18.8 ~ 22.5V | 30 ~ 36V   | 56.5 ~ 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℃) RH non-condensing                                                                                                 |                  |              |            |                                                                                |  |
|                                         | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6                         |                  |              |            |                                                                                |  |
|                                         | OPERATING ALTITUDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2000 meters                                                                                                                           |                  |              |            |                                                                                |  |
|                                         | OVER VOLTAGE CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | III ,According to EN61558, EN50178, altitude up to 2000 meters                                                                        |                  |              |            |                                                                                |  |
| SAFETY & EMC<br><small>(Note 5)</small> | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | UL60950-1, UL508, TUV EN61558-2-16, IEC60950-1 approved; Design refer to EN50178, TUV EN60950-1                                       |                  |              |            |                                                                                |  |
|                                         | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P-O/P:3KVAC                                                                                                                         |                  |              |            |                                                                                |  |
|                                         | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH                                                                                             |                  |              |            |                                                                                |  |
|                                         | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Parameter                                                                                                                             | Standard         |              |            | Test Level / Note                                                              |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Conducted                                                                                                                             | EN55032(CISPR32) |              |            | Class B                                                                        |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Radiated                                                                                                                              | EN55032(CISPR32) |              |            | Class B                                                                        |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Harmonic Current                                                                                                                      | EN61000-3-2      |              |            | Class A                                                                        |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Voltage Flicker                                                                                                                       | EN61000-3-3      |              |            | -----                                                                          |  |
|                                         | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EN55024, EN55035, EN61000-6-2, EN61204-3                                                                                              |                  |              |            |                                                                                |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Parameter                                                                                                                             | Standard         |              |            | Test Level /Note                                                               |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ESD                                                                                                                                   | EN61000-4-2      |              |            | Level 3, 8KV air; Level 2, 4KV contact, criteria A                             |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Radiated Susceptibility                                                                                                               | EN61000-4-3      |              |            | Level 3, criteria A                                                            |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EFT/Burest                                                                                                                            | EN61000-4-4      |              |            | Level 3, criteria A                                                            |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Surge                                                                                                                                 | EN61000-4-5      |              |            | Level 4,2KV/L-N, criteria A                                                    |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Conducted                                                                                                                             | EN61000-4-6      |              |            | Level 3, criteria A                                                            |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Magnetic Field                                                                                                                        | EN61000-4-8      |              |            | Level 4, criteria A                                                            |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Voltage Dips and interruptions                                                                                                        | EN61000-4-11     |              |            | > 95% dip 0. 5 periods, 30% dip 25 periods,<br>> 95% interruptions 250 periods |  |
| OTHERS                                  | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 927.6K hrs min. MIL-HDBK-217F (25℃)                                                                                                   |                  |              |            |                                                                                |  |
|                                         | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 52.5*90*54.5mm (W*H*D)                                                                                                                |                  |              |            |                                                                                |  |
|                                         | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 190g/60pcs/12.4Kg/0.97CUFT                                                                                                            |                  |              |            |                                                                                |  |
| 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 0.1μf & 47μf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Constant current limiting operation within 50% ~100% rated output voltage; protection type for short circuit is hiccup mode,it will recover automatically after fault condition is removed.<br>5.The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.”<br>(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> ) |                                                                                                                                       |                  |              |            |                                                                                |  |

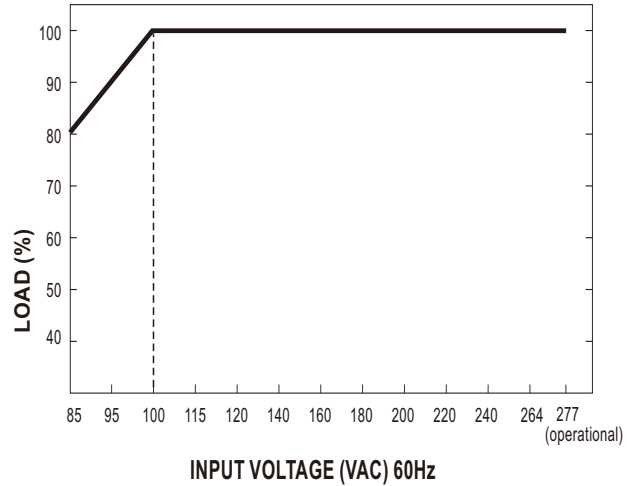
### ■ Block Diagram



### ■ Derating Curve

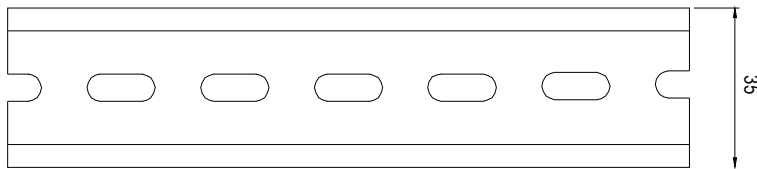
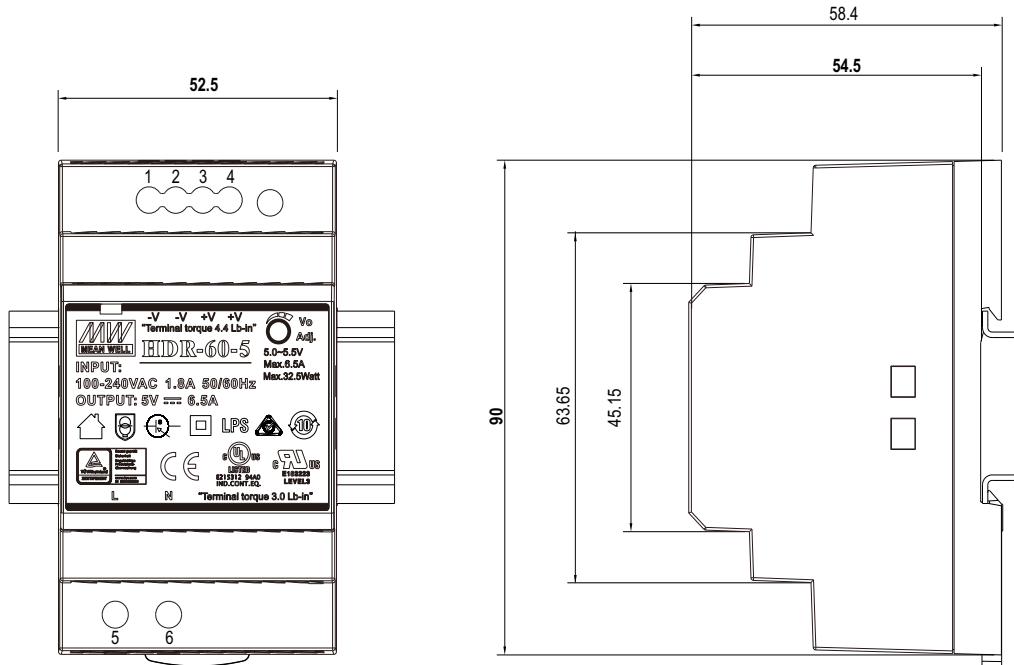


### ■ Output Derating VS Input Voltage



## Mechanical Specification

(Unit: mm , tolerance  $\pm 0.5\text{mm}$ )



ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15

### Terminal Pin No. Assignment

| Pin No. | Assignment | Pin No. | Assignment |
|---------|------------|---------|------------|
| 1,2     | -V         | 5       | AC/L       |
| 3,4     | +V         | 6       | AC/N       |

## Installation Manual

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