

Datasheet

RS 20W, 1 Output, Embedded Switch Mode Power Supply (SMPS), 12V, 1660mA

RS Stock 751-1409



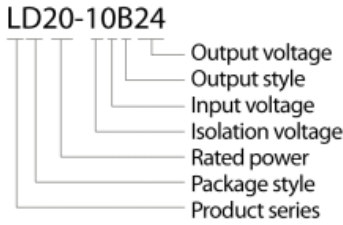
Description

- A compact power supply. Featuring international approvals and standby power consumption of 0.5W max this high efficiency series can be widely used in industrial, telecom, medical and instrumentation applications.
- RoHS compliant

Product features

Model selection

Universal Input : 85 ~ 264VAC, 50/60Hz
 DC input 120~370Vdc
 EMC meets EN55022 level B
 Low Ripple and Noise
 EN55024/IEC/EN 61000-4-2/3/4/5 level 4
 High density solution 53.3 x 28.5 x 23.5mm
 High efficiency
 Standby Power consumption 0.5W (max)
 Output short circuit protection, over-current protection and over-voltage protection
 Meet UL60950 and EN60950 certification standards
 Three years warranty



| PRODUCT | | | | | | | | |
|--------------|------------|----------------------|-------|----------|--------------------|-----------------------|-------------|----------------------|
| RS STOCK NO. | MODEL NO. | PACKAGE | POWER | APPROVAL | OUTPUT (Vo1 / Io1) | RIPPLE & NOISE (TYP.) | EFF. (TYP.) | STANDBY POWER (MAX.) |
| 751-1406 | LD20-10B05 | 53.5 x 28.5 x 23.5mm | 18W | UL / CE | 5V/3600mA | 50mV | 78% | 0.5W |
| 751-1409 | LD20-10B12 | | 20W | | 12V/1660mA | | 82% | |
| 751-1403 | LD20-10B15 | | 20W | | 15V/1330mA | | 83% | |
| 751-1412 | LD20-10B24 | | 20W | | 24V/833mA | | 83% | |

Specifications measured at rated input voltage & rated output load, TA=25 °C, humidity <75%

| INPUT SPECIFICATIONS | | |
|----------------------------------|---------------------------|------------|
| Input voltage range | 85~264Vac, 120~370Vdc | |
| Input frequency | 47~440Hz | |
| Input current | 110Vac | 230Vac |
| | 370mA, typ | 240mA, typ |
| Inrush current | 110Vac | 230Vac |
| | 20A, typ | 40A, typ |
| Leakage current | 0.75mA (max) @ Vin=220Vac | |
| External input fuse (recomended) | 3.15A/250V time lag | |

Typical applications

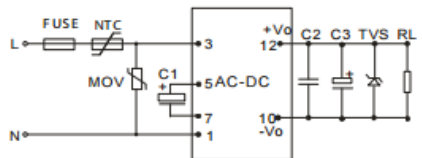


Figure 1 LS01-15BXSS

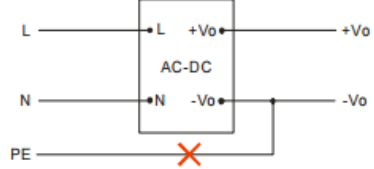


Figure 2 Note: This application is not supported for this series.

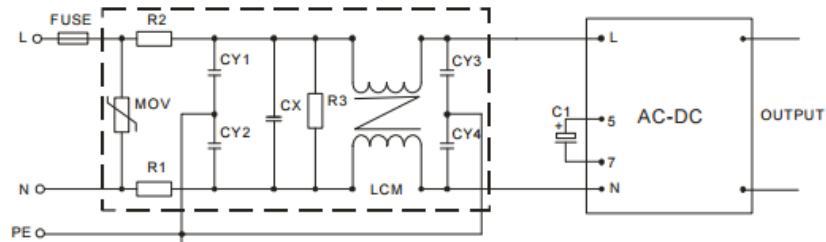
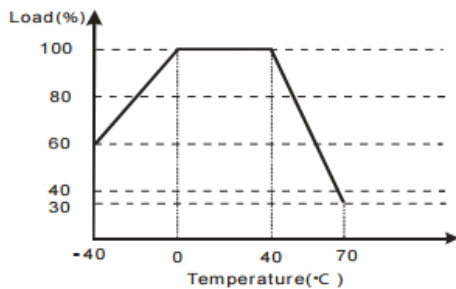


Figure 3 Improved EMC circuit protection (external circuit output as figure 1)

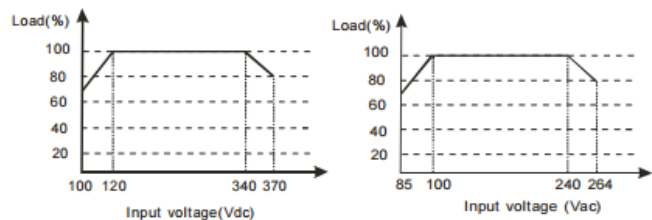
| OUTPUT SPECIFICATIONS | | |
|------------------------------|--------------------|--|
| Voltage set accuracy | | ± 2% (typ) |
| Input variation | | ±0.5% (typ) |
| Load variation (10% to 100%) | | ± 1% (typ) |
| Ripple & noise (p-p) | (20 MHz bandwidth) | 120mV (max) |
| Short circuit protection | | Continuous and auto resume |
| Over current protection | | ≥110% I _o , and auto resume |
| Over voltage protection | | Zener diode clamp |

| CONTROL SPECIFICATIONS | | | |
|----------------------------------|--|----------------------------------|------------------|
| Temperature ranges | Operating | | -40°C to + 70°C |
| | Power derating | (above 40°C) | 2.5% / °C |
| | | (below 0°C) | 1% / °C |
| | Storage | | -40°C to + 105°C |
| Case temperature | | +95°C max | |
| Hold-up time | (vin=230Vac) | 50ms (typ) | |
| | (Vin=115Vac) | 10ms (typ) | |
| Humidity | | 95% (max) | |
| Temperature coefficient | | ±0.02% / °C | |
| Switching frequency | | 100kHz (typ) | |
| Isolation voltage (input-output) | | 3000Vac / 1 min | |
| EMI / RFI conducted | | EN55022, CLASS B | |
| EMC compliance | Electrostatic discharge | EN55024/IEC/EN 61000-4-2 level 4 | 8kV/15kV |
| | RF field susceptibility | EN55024/IEC/EN 61000-4-3 level 4 | 10V/m |
| | Electrical fast transients/bursts on mainsline | EN55024/IEC/EN 61000-4-4 level 4 | 4kV |
| | Surge | EN55024/IEC/EN 61000-4-5 level 4 | 2kV/4kV |
| Safety standards | | IEC60950/EN60950/UL60950 | |
| Safety approvals | | EN60950/UL60950 | |
| Safety class | | CLASS II | |
| Case material | | UL94V-0 | |
| Install | | PCB | |
| Cooling | | Free air convection | |
| MTBF | | >300,000h @25°C | |
| Package | | 53.5 x 28.5 x 23.5mm | |

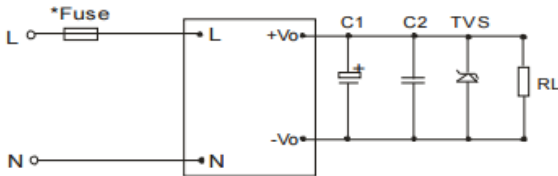
Temperature vs load



Input voltage vs load



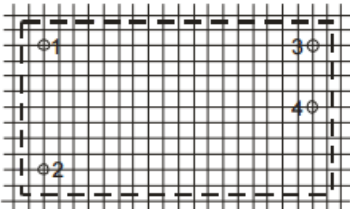
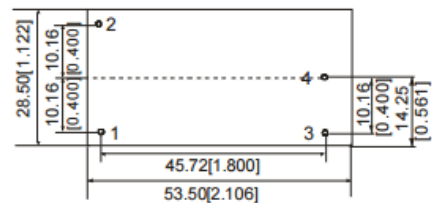
Typical applications



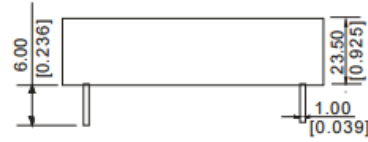
| EXTERNAL CAPACITORS TYPICAL VALUE (UNIT: μ F) | | | |
|---|-----------------|-----------------|----------|
| MODEL | C1 | C2 | TVS |
| LD20-10B05 | 220 μ F/10V | 0.1 μ F/50V | P6KE6.8A |
| LD20-10B12 | 120 μ F/25V | 0.1 μ F/50V | P6KE20A |
| LD20-10B15 | 120 μ F/25V | 0.1 μ F/50V | P6KE20A |
| LD20-10B24 | 68 μ F/35V | 0.1 μ F/50V | P6KE30A |

Note:
 1. Output filtering capacitor C1 is an electrolytic capacitor, It is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Voltage derating of capacitor should be 80% or above. C2 is a ceramic capacitor, it is used to filter high frequency noise. TVS is a recommended component to protect circuitry (if converter fails).
 2. It is recommended to fit an external fuse 3.15A/250V time lag.

Outline dimensions & pin connections



RECOMMENDED FOOTPRINT
 Top view, grid: 2.54mm[0.100inch],
 diameter: 1.60mm[0.063inch]



| FOOTPRINT DETAILS | |
|-------------------|----------|
| PIN | FUNCTION |
| 1 | N |
| 2 | L |
| 3 | +Vo |
| 4 | -Vo |

Note:
 First Angle Projection
 Unit: mm[inch]
 Pin diameter: 1.00 \pm 0.10mm
 General tolerances: \pm 0.50mm
 Weight: 50 \pm 3g