

# DRSI SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY  
INDUSTRIAL CONTROL EQUIPMENT



## FEATURES

- UNIVERSAL INPUT 85~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- HIGH EFFICIENCY UP TO 86%
- HIGH AVERAGE EFFICIENCY MEET ErP
- LOW STANDBY POWER CONSUMPTION
- 3 YEARS WARRANTY



## MODEL LIST

**DRSI - 24 x**

05 : 05V OUT  
12 : 12V OUT  
24 : 24V OUT

BLANK : SPRING TERMINAL TYPE  
A : SCREW TERMINAL TYPE

## MODEL LIST

| MODEL NO.            | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) | EFF. (typ.) | EFF. (avg.) |
|----------------------|---------------|----------------|----------------|----------------|-------------|-------------|-------------|
| Single Output Models |               |                |                |                |             |             |             |
| DRSI-05(A)           | 85~264 VAC    | 20 WATTS       | + 5 VDC        | 4 A            | 80%         | 82%         | 82%         |
| DRSI-12(A)           | 85~264 VAC    | 24 WATTS       | + 12 VDC       | 2 A            | 83%         | 85%         | 83%         |
| DRSI-24(A)           | 85~264 VAC    | 30 WATTS       | + 24 VDC       | 1.25 A         | 84%         | 86%         | 85%         |

## SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

| GENERAL                       |                                                 |     |                    |         |        |           |
|-------------------------------|-------------------------------------------------|-----|--------------------|---------|--------|-----------|
| Characteristics               | Conditions                                      |     | min.               | typ.    | max.   | unit      |
| Switching frequency           | Vi nom, Io nom                                  |     |                    | 65      |        | KHz       |
| Isolation voltage             | Input-Output                                    |     | 3,000 / 4,242      |         |        | VAC / VDC |
|                               | Input-FG                                        |     | 1,500 / 2,121      |         |        | VAC / VDC |
|                               | Output-FG                                       |     | 500 / 710          |         |        | VAC / VDC |
|                               | Input-Output, @ 500VDC                          |     | 100                |         |        | MΩ        |
| Isolation resistance          | Input-Output, @ 500VDC                          |     | 100                |         |        | MΩ        |
| Ambient temperature           | Operating at Vi nom                             |     | -25                |         | + 71   | °C        |
| Derating (see derating curve) | Vi nom, from +51°C to +71°C                     |     |                    |         | 2.5    | % / °C    |
| Storage temperature           | Non operational                                 |     | -40                |         | + 85   | °C        |
| Relative humidity             | Vi nom, Io nom                                  |     | 20                 |         | 95     | % RH      |
| Temperature coefficient       | Vi nom, Io min                                  |     |                    |         | ± 0.03 | % / °C    |
| MTBF                          | Bellcore Issue 6 @40°C, GB                      | 5V  |                    | 704,000 |        | Hours     |
|                               |                                                 | 12V |                    | 721,000 |        | Hours     |
|                               |                                                 | 24V |                    | 764,000 |        | Hours     |
|                               |                                                 |     |                    |         |        |           |
| Altitude during operation     | EN 60950-1                                      |     |                    |         | 5,000  | m         |
| Dimension                     | Spring & Screw terminal type                    |     | L90 x W22.5 x D100 |         |        | mm        |
| Cooling                       | Free air convection                             |     |                    |         |        |           |
| Installation position         | Vertical ( other direction may derating using ) |     |                    |         |        |           |
| Pollution degree              |                                                 |     |                    | 2       |        |           |



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### INPUT SPECIFICATIONS

| Characteristics           | Conditions                   |       | min. | typ.      | max.    | unit |
|---------------------------|------------------------------|-------|------|-----------|---------|------|
| Rated input voltage       | Io nom                       |       | 100  |           | 240     | VAC  |
| Absolute input max. range | Ta min ... Ta max,<br>Io nom | AC in | 85   |           | 264     | VAC  |
|                           |                              | DC in | 120  |           | 375     | VDC  |
| Input current             | Vi : 115 / 230 VAC, Io nom   |       |      | 335 / 210 |         | mA   |
| Rated input current       | Vi : 85 VAC, Io nom          |       |      |           | 750     | mA   |
| Line frequency            | Vi nom, Io nom               |       | 47   |           | 63      | Hz   |
| Inrush current            | Vi : 115 / 230 VAC , Io nom  |       |      |           | 20 / 40 | A    |
| Power dissipation         | Vi : 230 VAC, Io nom         | 5V    |      | 5.0       |         | W    |
|                           |                              | 12V   |      | 4.9       |         | W    |
|                           |                              | 24V   |      | 5.7       |         | W    |
| Leakage current           | Input-Output                 |       |      |           | 0.25    | mA   |
|                           | Input-FG                     |       |      |           | 3.5     | mA   |
| Standby power consumption | Vi nom, Io = 0A              |       |      |           | 0.3     | W    |

### OUTPUT SPECIFICATIONS

| Characteristics                                       | Conditions                        |     | min.                                               | typ. | max.  | unit |
|-------------------------------------------------------|-----------------------------------|-----|----------------------------------------------------|------|-------|------|
| Output voltage accuracy<br>(Adjusted before shipment) | Vi nom, Io max                    |     | 0                                                  |      | + 1   | %    |
| Minimum load                                          | Vi nom                            |     | 0                                                  |      |       | %    |
| Line regulation                                       | Io nom, Vi min ... Vi max         |     |                                                    |      | ± 1   | %    |
| Load regulation                                       | Vi nom, Io min ... Io nom         |     |                                                    |      | ± 1   | %    |
| Voltage trim range                                    | Vi nom,<br>0.8 Io nom             | 5V  | 4.5                                                |      | 5.5   | V    |
|                                                       |                                   | 12V | 11.4                                               |      | 15.6  | V    |
|                                                       |                                   | 24V | 22.5                                               |      | 28.5  | V    |
| Rated continuous loading                              | Vi nom                            | 5V  | 4 A @ 5Vdc / 3.6 A @ 5.5 Vdc                       |      |       |      |
|                                                       |                                   | 12V | 2 A @ 12Vdc / 1.6 A @ 15 Vdc                       |      |       |      |
|                                                       |                                   | 24V | 1.25 A @ 24Vdc / 1 A @ 28.5 Vdc                    |      |       |      |
| Hold up time                                          | Vi : 115 / 230 VAC , Io nom       |     | 20 / 50                                            |      |       | ms   |
| Turn on time                                          | Vi nom, Io nom                    |     |                                                    |      | 1,000 | ms   |
|                                                       | Vi nom, Io nom → with 3500 μF CAP |     |                                                    |      | 1,500 | ms   |
| Rise time                                             | Vi nom, Io nom                    |     |                                                    |      | 150   | ms   |
|                                                       | Vi nom, Io nom → with 3500 μF CAP |     |                                                    |      | 500   | ms   |
| Fall time                                             | Vi nom, Io nom                    |     |                                                    |      | 150   | ms   |
| Transient recovery time                               | Vi nom, I ~ 0.5 Io nom            |     |                                                    |      | 2     | ms   |
| Ripple & noise                                        | Vi nom, Io nom, BW = 20MHz        |     |                                                    |      | 100   | mV   |
| Power back immunity                                   | Vi nom, Io nom<br>1 second        | 5V  | 7.5                                                |      |       | VDC  |
|                                                       |                                   | 12V | 22                                                 |      |       | VDC  |
|                                                       |                                   | 24V | 35                                                 |      |       | VDC  |
| Capacitor load                                        | Vi nom, Io nom                    |     |                                                    |      | 3,500 | μF   |
| DC ON indicator threshold<br>at start up (Green LED)  | Vi nom, Io nom                    | 5V  | 4.0                                                |      | 4.5   | VDC  |
|                                                       |                                   | 12V | 9.6                                                |      | 10.8  | VDC  |
|                                                       |                                   | 24V | 19.2                                               |      | 21.6  | VDC  |
| Efficiency                                            | Vi nom, Io nom, Po / Pi           |     | Up to 86%, See model list and typ efficiency curve |      |       |      |

### CONTROL AND PROTECTION

| Characteristics                   | Conditions                             |     | min.                  | typ. | max. | unit |
|-----------------------------------|----------------------------------------|-----|-----------------------|------|------|------|
| Input fuse                        |                                        |     | T2A / 250VAC internal |      |      |      |
| Internal surge voltage protection | IEC 61000-4-5                          |     | Varistor              |      |      |      |
| Rated over load protection        | Vi nom (see typ current limited curve) |     | 140                   |      |      | %    |
| Over voltage protection           | Vi nom, 0.8 Io nom (Auto Recovery)     | 5V  | 6.5                   |      | 8.5  | VDC  |
|                                   |                                        | 12V | 16.2                  |      | 18   | VDC  |
|                                   |                                        | 24V | 28.8                  |      | 32.4 | VDC  |
| Output short circuit              |                                        |     | Hiccup mode           |      |      |      |
| Degree of protection              |                                        |     | IP20                  |      |      |      |

## SPECIFICATION

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### APPROVALS AND STANDARDS

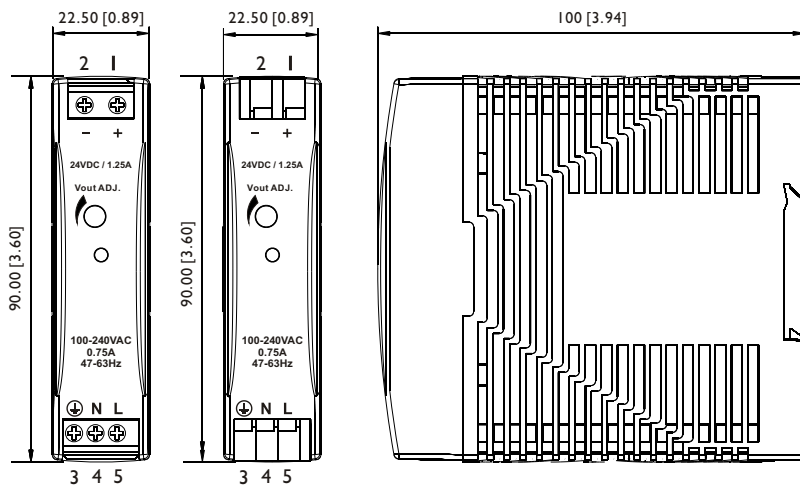
|                      |                                                                                                                                                                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UL / cUL             | UL 508 Listed                                                                                                                                                                                                                                                                                      |
| cTUVus               | UL 60950-I                                                                                                                                                                                                                                                                                         |
| TUV                  | EN 60950-I                                                                                                                                                                                                                                                                                         |
| CE                   | EN 61000-6-3, EN 55032 Class B, EN 61000-3-2, EN 61000-3-3<br>EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3<br>EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4<br>EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11<br>ENV 50204 Level 2, EN 61204-3 |
| Vibration resistance | meet IEC 60068-2-6 (Mounting on rail : 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)                                                                                                                                                                                               |
| Shock resistance     | meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)                                                                                                                                                                                                                            |

## PHYSICAL CHARACTERISTICS

|               |                                               |
|---------------|-----------------------------------------------|
| Case size     | 90 x 22.5 x 100 mm (3.6 x 0.89 x 3.94 inches) |
| Case material | Plastic                                       |
| Weight        | 140 g                                         |
| Packing       | 0.15 kg ; 60 pcs / 10 kg / 2.16 CUFT          |

## MECHANISM & PIN CONFIGURATION

mm [inch]



### CONSTRUCTION

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safely and firmly on the rail.

### INSTALLATION

Ventilation / Cooling  
Normal convection  
All sides 25mm free space  
For cooling recommended  
Connector size range  
Spring terminal:  
AWG24-14 (0.2~2mm<sup>2</sup>) flexible / solid cable,  
10 m/m stripping at cable end recommends  
Screw terminal:  
AWG26-12 (0.2~2.5mm<sup>2</sup>) flexible / solid cable,  
connector can withstand torque at maximum 5  
pound-inches.  
4-5 m/m stripping at cable end recommends  
Use copper conductors only, 60 / 75°C

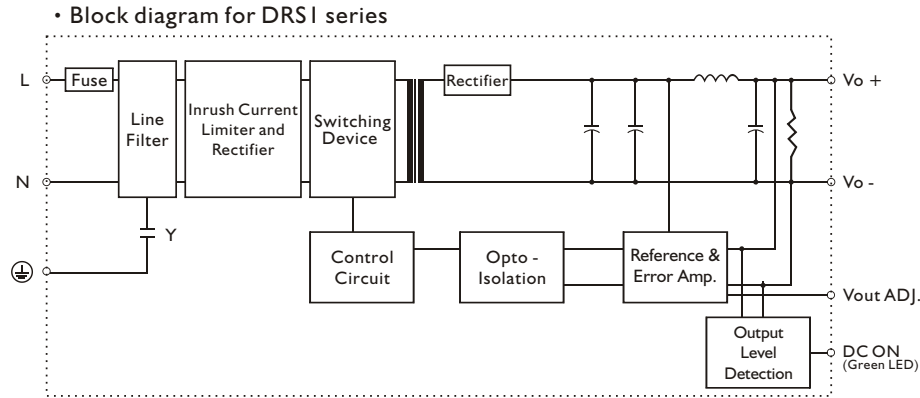
### GENERAL TOLERANCE

|                            |             |
|----------------------------|-------------|
| 0.00[0.00] - 30.00[1.18]   | ±0.30[0.01] |
| 30.00[1.18] - 120.00[4.72] | ±0.50[0.02] |

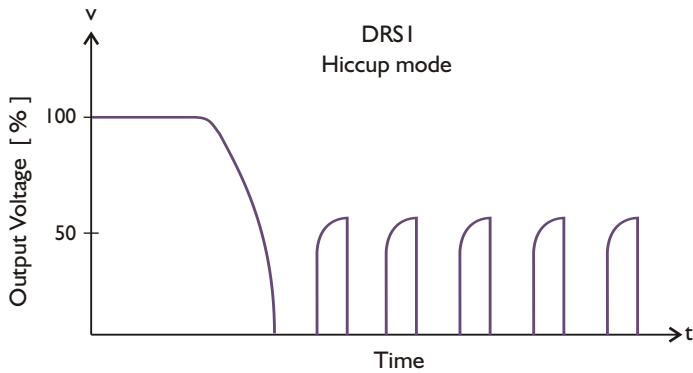
## PIN ASSIGNMENT

| PIN NO. | Designation |           | Description                                                  |
|---------|-------------|-----------|--------------------------------------------------------------|
| 1       | OUT         | V +       | Positive output terminal                                     |
| 2       |             | V -       | Negative output terminal                                     |
| 3       | IN          | ⊕         | Ground this terminal to minimize high-frequency emissions    |
| 4       |             | N         | Input terminals (neutral conductor, no polarity at DC input) |
| 5       |             | L         | Input terminals (phase conductor, no polarity at DC input)   |
|         | OTHER       | DC ON     | Operation indicator LED                                      |
|         |             | Vout ADJ. | Trimmer-potentiometer for Vout adjustment                    |

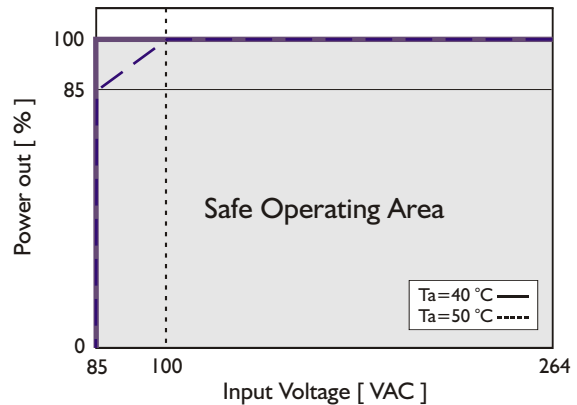
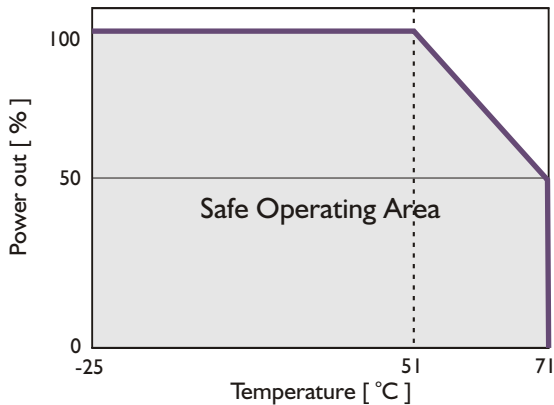
## CIRCUIT SCHEMATIC



## TYP. CURRENT LIMITED CURVE



## DERATING CURVE



## TYP. EFFICIENCY CURVE

