

DRA05/10/18 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT



FEATURES

- UNIVERSAL INPUT 90~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 3 YEARS WARRANTY



MODEL LIST

DRA18- 24 x

Wattage ——— | ——— | ——— BLANK : SPRING TERMINAL TYPE
05 : 05V OUT 15 : 15V OUT A : SCREW TERMINAL TYPE
12 : 12V OUT 24 : 24V OUT

MODEL LIST

| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) | EFF. (typ.) |
|-----------------------------|---------------|----------------|----------------|----------------|-------------|-------------|
| Single Output Models | | | | | | |
| DRA05-05(A) | 90~264 VAC | 5 WATTS | + 5 VDC | 1 A | 67% | 69% |
| DRA05-12(A) | 90~264 VAC | 5 WATTS | + 12 VDC | 0.42 A | 70% | 72% |
| DRA05-15(A) | 90~264 VAC | 5 WATTS | + 15 VDC | 0.34 A | 70% | 72% |
| DRA05-24(A) | 90~264 VAC | 5 WATTS | + 24 VDC | 0.21 A | 70% | 72% |
| DRA10-05(A) | 90~264 VAC | 10 WATTS | + 5 VDC | 2 A | 71% | 73% |
| DRA10-12(A) | 90~264 VAC | 10 WATTS | + 12 VDC | 0.84 A | 73% | 75% |
| DRA10-15(A) | 90~264 VAC | 10 WATTS | + 15 VDC | 0.67 A | 74% | 76% |
| DRA10-24(A) | 90~264 VAC | 10 WATTS | + 24 VDC | 0.42 A | 74% | 76% |
| DRA18-05(A) | 90~264 VAC | 15 WATTS | + 5 VDC | 3 A | 73% | 75% |
| DRA18-12(A) | 90~264 VAC | 18 WATTS | + 12 VDC | 1.5 A | 75% | 77% |
| DRA18-15(A) | 90~264 VAC | 18 WATTS | + 15 VDC | 1.2 A | 75% | 77% |
| DRA18-24(A) | 90~264 VAC | 18 WATTS | + 24 VDC | 0.75 A | 75% | 77% |

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 | | 132 | | 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 | |
| Isolation resistance | Input-Output, @ 500VDC | 100 | | | MΩ | |
| Ambient temperature | Operating at Vi nom | -20 | | + 71 | °C | |

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| GENERAL | | | | | | |
|-------------------------------|---|-----|--------------------|---------|--------|--------|
| Characteristics | Conditions | | min. | typ. | max. | unit |
| Derating (see derating curve) | Vi nom, from +61°C to +71°C | | | | 2.5 | % / °C |
| Storage temperature | Non operational | | -25 | | + 85 | °C |
| Relative humidity | Vi nom, lo nom | | 20 | | 95 | % RH |
| Temperature coefficient | Vi nom, lo min | | | | ± 0.03 | % / °C |
| MTBF | DRA05 Bellcore Issue 6 @40°C, GB | 5V | | 806,000 | | Hours |
| | | 12V | | 831,000 | | Hours |
| | | 15V | | 846,000 | | Hours |
| | | 24V | | 888,000 | | Hours |
| | DRA10 Bellcore Issue 6 @40°C, GB | 5V | | 728,000 | | Hours |
| | | 12V | | 767,000 | | Hours |
| | | 15V | | 780,000 | | Hours |
| | | 24V | | 808,000 | | Hours |
| | DRA18 Bellcore Issue 6 @40°C, GB | 5V | | 704,000 | | Hours |
| | | 12V | | 721,000 | | Hours |
| | | 15V | | 735,000 | | Hours |
| | | 24V | | 764,000 | | Hours |
| Altitude during operation | EN 60950-1 | | | | 5,000 | m |
| Dimension | Spring & Screw terminal type | | L90 x W22.5 x D114 | | | mm |
| Cooling | Free air convection | | | | | |
| Installation position | Vertical (other direction may derating using) | | | | | |
| Pollution degree | | | 2 | | | |

| INPUT SPECIFICATIONS | | | | | | |
|---------------------------|-------------------------------|-------|------|-----------|---------|------|
| Characteristics | Conditions | | min. | typ. | max. | unit |
| Rated input voltage | lo nom | | 100 | | 240 | VAC |
| Absolute input max. range | Ta min ... Ta max, lo nom | AC in | 90 | | 264 | VAC |
| | | DC in | 120 | | 375 | VDC |
| Input current | Vi : 115 / 230 VAC, lo nom | DRA05 | | 115 / 80 | | mA |
| | | DRA10 | | 200 / 130 | | mA |
| | | DRA18 | | 335 / 210 | | mA |
| Rated input current | Vi : 90 VAC, lo nom | DRA05 | | | 200 | mA |
| | | DRA10 | | | 300 | mA |
| | | DRA18 | | | 500 | mA |
| Line frequency | Vi nom, lo nom | | 47 | | 63 | Hz |
| Inrush current | Vi : 115 / 230 VAC , lo nom | | | | 15 / 30 | A |
| Power dissipation | DRA05 Vi : 230 VAC, lo nom | 5V | | 2.2 | | W |
| | | 12V | | 1.9 | | W |
| | | 15V | | 2.1 | | W |
| | | 24V | | 1.8 | | W |
| | DRA10 Vi : 230 VAC, lo nom | 5V | | 4.0 | | W |
| | | 12V | | 3.4 | | W |
| | | 15V | | 3.3 | | W |
| | | 24V | | 2.8 | | W |
| | DRA18 Vi : 230 VAC, lo nom | 5V | | 5.0 | | W |
| | | 12V | | 4.65 | | W |
| | | 15V | | 4.25 | | W |
| | | 24V | | 4.45 | | W |
| Leakage current | Input-Output | | | | 0.25 | mA |
| | Input-FG | | | | 3.5 | mA |

| OUTPUT SPECIFICATIONS | | | | | | |
|--|--------------------------|--|------|------|------|------|
| Characteristics | Conditions | | min. | typ. | max. | unit |
| Output voltage accuracy (Adjusted before shipment) | Vi nom, lo max | | 0 | | + 1 | % |
| Minimum load | Vi nom | | 0 | | | % |
| Line regulation | lo nom, Vi min ...Vi max | | | | ± 1 | % |

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OUTPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|---|-----------------------------------|--|-------------------------------------|-------|------|
| Line regulation | lo nom, Vi min ...Vi max | | | ± 1 | % |
| Load regulation | Vi nom, lo min ...lo nom | | | ± 2 | % |
| Voltage trim range | Vi nom, 0.8 lo nom | 5V | 4.5 | 5.75 | V |
| | | 12V | 10.8 | 13.8 | V |
| | | 15V | 13.5 | 17.25 | V |
| | | 24V | 21.6 | 28.8 | V |
| Rated continuous loading | DRA05 series Vi nom | 5V | 1.0 A @ 5Vdc / 0.85 A @ 5.75 Vdc | | |
| | | 12V | 0.42 A @ 12Vdc / 0.36 A @ 13.8 Vdc | | |
| | | 15V | 0.34 A @ 15Vdc / 0.28 A @ 17.25 Vdc | | |
| | | 24V | 0.21 A @ 24Vdc / 0.17 A @ 2 8.8 Vdc | | |
| | DRA10 series Vi nom | 5V | 2 A @ 5Vdc / 1.7 A @ 5.75 Vdc | | |
| | | 12V | 0.84 A @ 12Vdc / 0.72 A @ 13.8 Vdc | | |
| | | 15V | 0.67 A @ 15Vdc / 0.58 A @ 17.25 Vdc | | |
| | | 24V | 0.42 A @ 24Vdc / 0.34 A @ 2 8.8 Vdc | | |
| | DRA18 series Vi nom | 5V | 3 A @ 5Vdc / 2.6 A @ 5.75 Vdc | | |
| | | 12V | 1.5 A @ 12Vdc / 1.3 A @ 13.8 Vdc | | |
| | | 15V | 1.2 A @ 15Vdc / 1.0 A @ 17.25 Vdc | | |
| | | 24V | 0.75 A @ 24Vdc / 0.6 A @ 2 8.8 Vdc | | |
| Hold up time | Vi : 115 / 230 VAC , lo nom | DRA05 | 30 / 130 | | ms |
| | | DRA10 | 25 / 100 | | ms |
| | | DRA18 | 20 / 75 | | ms |
| Turn on time | Vi nom, lo nom | DRA05 & DRA10 | | 1,000 | ms |
| | Vi nom, lo nom → with 3500 μF CAP | | | 1,500 | ms |
| | Vi nom, lo nom | DRA18 | | 1,000 | ms |
| | Vi nom, lo nom → with 7000 μF CAP | | | 1,500 | ms |
| Rise time | Vi nom, lo nom | DRA05 & DRA10 | | 150 | ms |
| | Vi nom, lo nom → with 3500 μF CAP | | | 500 | ms |
| | Vi nom, lo nom | DRA18 | | 150 | ms |
| | Vi nom, lo nom → with 7000 μF CAP | | | 500 | ms |
| Fall time | Vi nom, lo nom | | | 150 | ms |
| Transient recovery time | Vi nom, I ~0.5 lo nom | | | 2 | ms |
| Ripple & noise | Vi nom, lo nom, BW = 20MHz | | | 50 | mV |
| Power back immunity | Vi nom, lo nom I second | 5V | 7.5 | | VDC |
| | | 12V | 18 | | VDC |
| | | 15V | 22 | | VDC |
| | | 24V | 35 | | VDC |
| Capacitor load | Vi nom, lo nom | DRA05 & DRA10 | | 3,500 | μF |
| | | DRA18 | | 7,000 | μF |
| DC ON indicator threshold at start up (Green LED) | Vi nom, lo nom | 5V | 3.5 | 4.5 | VDC |
| | | 12V | 9.0 | 10.8 | VDC |
| | | 15V | 11.0 | 13.5 | VDC |
| | | 24V | 18 | 21.6 | VDC |
| DC LOW indicator threshold after start up (Red LED) | Vi nom, lo nom | 5V | 3.5 | 4.5 | VDC |
| | | 12V | 9.0 | 10.8 | VDC |
| | | 15V | 11.0 | 13.5 | VDC |
| | | 24V | 18 | 21.6 | VDC |
| Efficiency | Vi nom, lo nom, Po / Pi | Up to 77%, 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) | 110 | | 165 | % |
| Over voltage protection | Vi nom, 0.8 lo nom (Auto Recovery) | 5V | 6.25 | 7.25 | V |
| | | 12V | 15 | 17.4 | V |

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| Characteristics | Conditions | | min. | typ. | max. | unit |
|-------------------------|------------------------------------|-----|-------|-------------|-------|------|
| Over voltage protection | Vi nom, 0.8 Io nom (Auto Recovery) | 15V | 18.75 | | 21.75 | V |
| | | 24V | 30 | | 34.8 | V |
| Output short circuit | | | | Hiccup mode | | |
| Degree of protection | | | | IP20 | | |

APPROVALS AND STANDARDS

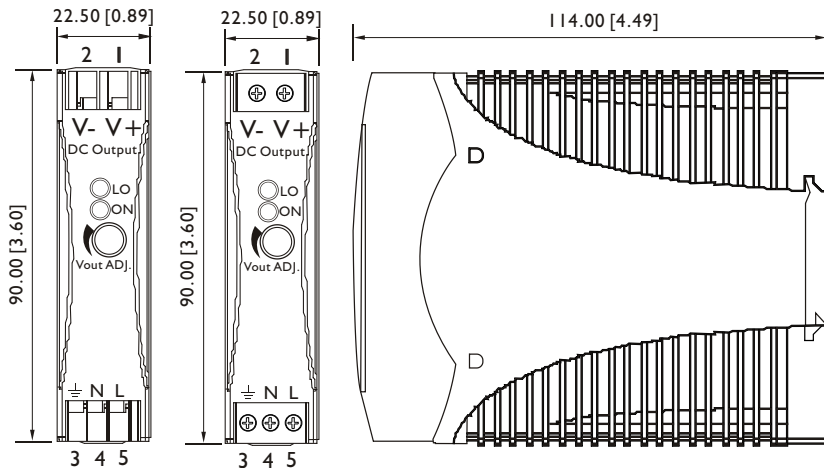
| | |
|----------------------|--|
| UL / cUL | UL 508 Listed UL 60950-1, UL 1310 Class 2 Power Recognized ISA 12.12.01(Class I, Division 2, Groups A, B, C and D) |
| TUV | EN 60950-1 |
| CE | EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3 |
| CCC | GB4943.1, GB9254, GB17625.1 |
| 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 114 mm (3.6 x 0.89 x 4.49 inches) | |
| Case material | Plastic | |
| Weight | DRA05 & DRA10 : 120 g | DRA18 : 150 g |
| Packing | DRA05 & DRA10 : 0.21 kg ; 56 pcs / 12.5 kg / 2.16 CUFT DRA18 : 0.23 kg ; 56 pcs / 14 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 (0.2~2mm²) flexible / solid cable,
10 m/m stripping at cable end recommends
Screw terminal:
AWG26-12 (0.2~2.5mm²) 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

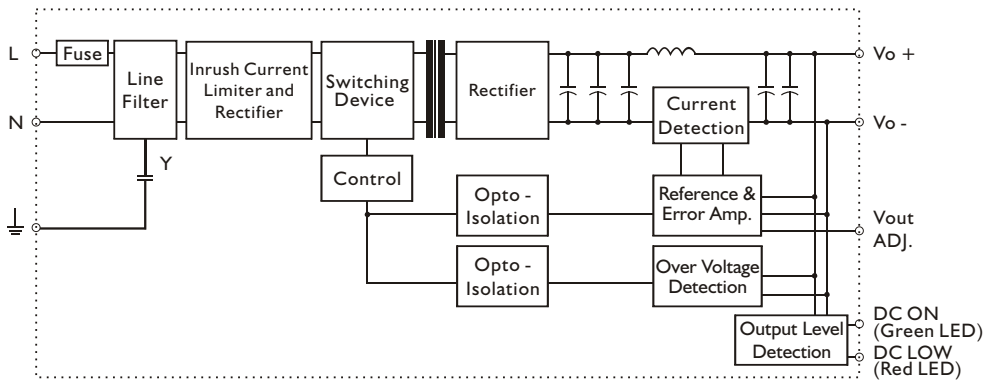
| GENERAL TOLERANCE | |
|----------------------------|-------------|
| 0.00[0.00] - 30.00[1.18] | ±0.30[0.01] |
| 30.00[1.18] - 120.00[4.72] | ±0.50[0.02] |

PIN ASSIGNMENT

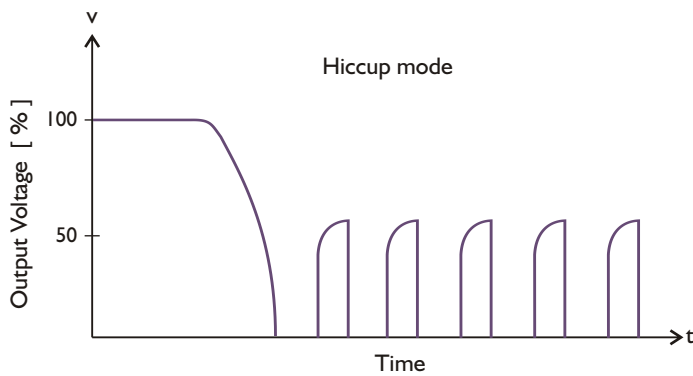
| PIN NO. | Designation | Description |
|---------|-------------|---|
| 1 | OUT | V + Positive output terminal |
| 2 | | V - Negative output terminal |
| 3 | IN | ⊥ Ground this terminal to minimize high-frequency emissions |
| 4 | | N Input terminals (neutral conductor, no polarity at DC input) |
| 5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

CIRCUIT SCHEMATIC

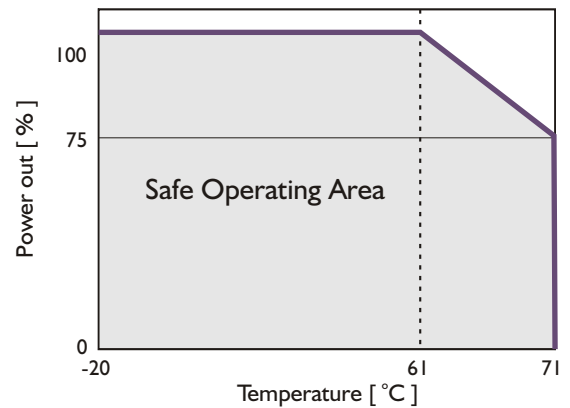
• Block diagram



TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE

