

DRE240 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT



FEATURES

- HIGH EFFICIENCY 93%
- BUILT-IN ACTIVE P.F.C.
- 150% PEAK LOAD CAPABILITY
- SELV COMPONENTS DESIGN
- PARALLEL FUNCTION (SWITCH SELECTABLE)



SELECTION CHART

DRE 240 - 24 x

Wattage

12 : 12V OUT
24 : 24V OUT

A : SCREW TERMINALS
B : DETACHABLE CONNECTOR

MODEL LIST

| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) | EFF. (typ.) |
|-----------------------------|---------------|----------------|----------------|----------------|-------------|-------------|
| Single Output Models | | | | | | |
| DRE240-12x | 88 ~ 264 VAC | 192 WATTS | + 12 VDC | 16A | 89% | 91% |
| DRE240-24x | 88 ~ 264 VAC | 240 WATTS | + 24 VDC | 10A | 91% | 93% |

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 | | | 90 | | KHz |
| Isolation voltage | Input-Output | | 3000 / 4242 | | | VAC / VDC |
| | Input-FG | | 1500 / 2121 | | | VAC / VDC |
| Isolation resistance | Input-Output, @ 500VDC | | 100 | | | MΩ |
| Ambient temperature | Operating at Vi nom | | -40 | | + 71 | °C |
| Derating (see derating curve) | Vi nom, from +61 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 | 12V model | | | 374000 | Hours |
| | | 24V model | | | 384000 | Hours |
| Altitude during operation | IEC 60068-2-13 | | | | 4850 | m |
| Dimension | Screw terminal type | | L124.5 x W64 x D123.6 | | | mm |
| | Detachable connector type | | L143.5 x W64 x D123.6 | | | mm |
| Cooling | Free air convection | | | | | |
| Pollution degree | | | | | 2 | |

INPUT SPECIFICATIONS

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---------------------|------------------------------|-------|------|------|------|------|
| Rated input voltage | Io nom | | 100 | | 240 | VAC |
| Input voltage range | Ta min ... Ta max, Io nom | AC in | 88 | | 264 | VAC |
| | | DC in | 120 | | 375 | VDC |

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INPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|---------------------|-----------------------------|-----------|------------|---------|------|
| Input current | Vi : 115 / 230 VAC, Io nom | | 2.3 / 1.15 | | A |
| Rated input current | Vi : 88 VAC, Io nom | | | 3.2 | A |
| Line frequency | Vi nom, Io nom | 47 | | 63 | Hz |
| Inrush current | Vi : 115 / 230 VAC , Io nom | | | 24 / 48 | A |
| Power dissipation | Vi : 230 VAC, Io nom | 12V model | 17 | | W |
| | | 24V model | 16 | | W |
| Leakage current | Input-Output | | | 0.25 | mA |
| | Input-FG | | | 3.5 | mA |
| P.F.C. (Active) | Vi : 230VAC, Io nom | | 0.97 | | |

OUTPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|---|-----------------------------------|---------------|--|------|------|
| Output voltage accuracy (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 | single mode | | ± 1 | % |
| | | parallel mode | | ± 5 | % |
| Peak power (I) | Vi nom | | | 360 | W |
| Voltage trim range | Vi nom, 0.8 Io nom | 12V model | 11.4 | 14.5 | VDC |
| | | 24V model | 22.5 | 28.5 | VDC |
| Rated continuous loading | Vi nom | 12V model | 16 A @ 12Vdc / 13 A @ 14.5 Vdc | | |
| | | 24V model | 10 A @ 24Vdc / 8.4 A @ 28.5 Vdc | | |
| Hold up time | Vi : 115 / 230 VAC , Io nom | 25 / 30 | | | ms |
| Turn on time | Vi nom, Io nom | | | 1000 | ms |
| | Vi nom, Io nom → with 7000 μF CAP | | | 1500 | ms |
| Rise time | Vi nom, Io nom | | | 150 | ms |
| | Vi nom, Io nom → with 7000 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 | 12V model | 18 | | VDC |
| | | 24V model | 35 | | VDC |
| Capacitor load | Vi nom, Io nom | | | 7000 | μF |
| DC ON indicator threshold at start up (Green LED) | Vi nom, Io nom | 12V model | 10 | 11.2 | VDC |
| | | 24V model | 17.6 | 19.4 | VDC |
| DC LOW indicator threshold after start up (Red LED) | Vi nom, Io nom | 12V model | 10 | 11.2 | VDC |
| | | 24V model | 17.6 | 19.4 | VDC |
| Parallel operation | 0.1 Io min ~ 0.9 Io max | | | 3 | unit |
| Efficiency | Vi nom, Io nom, Po / Pi | | Up to 93%, See model list and typ efficiency curve | | |

NOTE 1 : 3 sec or 20% duty cycle max, and the average output power should not exceed the rated power.

CONTROL AND PROTECTION

| Characteristics | Conditions | min. | typ. | max. | unit |
|-----------------------------------|---|---|------|------|------|
| Input fuse | | T5A / 250VAC internal | | | |
| Internal surge voltage protection | IEC 61000-4-5 | Varistor | | | |
| Rated over load protection | Vi nom (see typ current limited curve) | 120 | | 150 | % |
| Power Rdy (for 24V model only) | Threshold voltage of contact closed(at start up) | 17.6 | | 19.4 | VDC |
| | Electrical isolation | 500 | | | VDC |
| Over voltage protection | Vi nom, Io nom (Shut-down protect) | 12V model | 14.5 | 17.5 | V |
| | | 24V model | 30 | 33 | V |
| Output short circuit | | shut-down protection, after 7s auto-restart | | | |
| Over temperature | Detect on heat sink, shut down O/P voltage, recovers automatically after temperature goes down. | 100 | | 110 | °C |
| Degree of protection | | IP20 | | | |

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APPROVALS AND STANDARDS

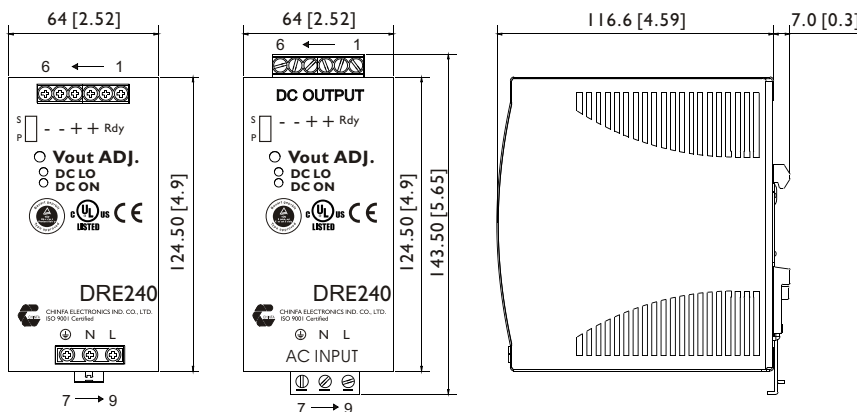
| | |
|----------------------|--|
| UL / cUL | UL 508 Listed UL 60950-1 Recognized |
| TUV | EN 60950-1, CB scheme |
| CE | EN 61000-6-3, EN 55022 Class B, EN 61000-3-2 Class D, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 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 |
| Vibration resistance | meet IEC 60068-2-6 (Mounting by rail : Random wave, 10-500 Hz, 2G, each along X, Y, Z axes 10 min / cycle, 60 min) |
| Shock resistance | meet IEC 60068-2-27 (Half sine wave, 4G, 22ms, 3 axes, 6 Faces, 3 times for each face) |

PHYSICAL CHARACTERISTICS

| | | |
|---------------|---------------------------|---|
| Case size | Screw terminal type | 124.5 x 64 x 123.6 mm (4.9 x 2.52 x 4.87 inches) |
| | Detachable connector type | 143.5 x 64 x 123.6 mm (5.65 x 2.52 x 4.87 inches) |
| Case material | | Metal |
| Weight | | 860g |
| Packing | | 0.96kg ; 20pcs / 20.5kg / 2.01CUFT |

MECHANISM & PIN CONFIGURATION

mm [inch]



| 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] |

CONSTRUCTION

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

INSTALLATION

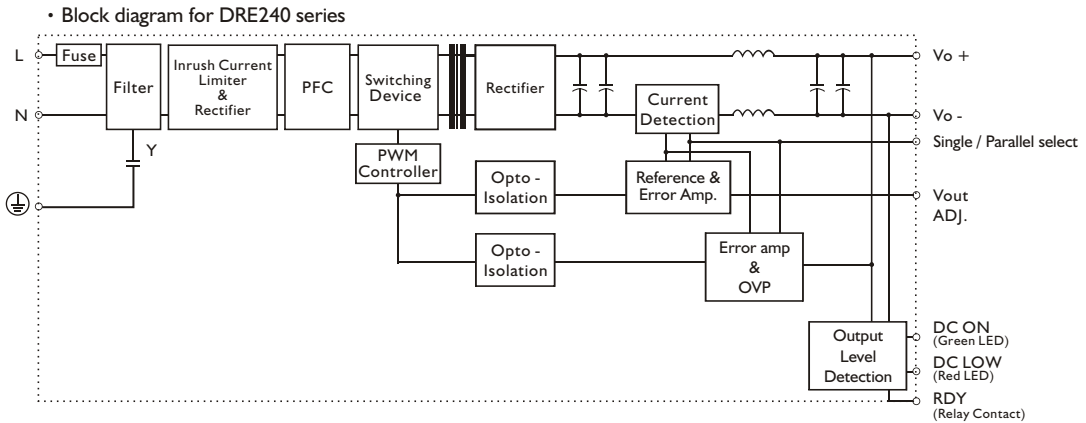
Ventilation / Cooling
Normal convection
All sides 25mm free space
For cooling recommended

Connector size range
Screw terminal:
AWG24-10 (0.2~4mm²) flexible / solid cable,
-Input connector can withstand torque at maximum 9 pound-inches.
-Output connector can withstand torque at maximum 5.5 pound-inches.
8 m/m stripping at cable end recommends
Detachable connector:
AWG24-12 (0.2~2.5mm²) flexible / solid cable,
-Input connector can withstand torque at maximum 4.5 pound-inches.
-Output connector can withstand torque at maximum 7 pound-inches.
4~5 m/m stripping at cable end recommends
Use copper conductors only, 60 / 75°C

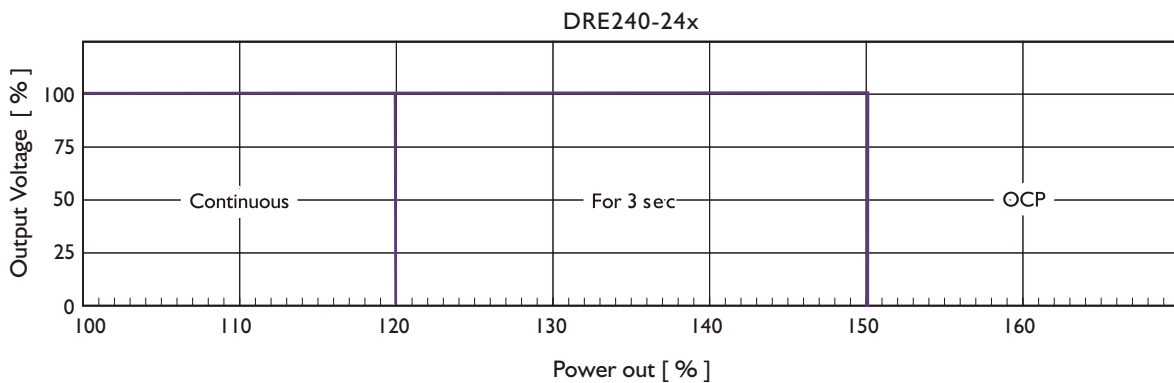
PIN ASSIGNMENT

| PIN NO. | Designation | Description |
|---------|-------------|--|
| 1 | OUT | RDY |
| 2 | | A normal open relay contact for DC ON level control (Never connect except 24V model) |
| 3, 4 | | V + |
| 5, 6 | | V - |
| 7 | IN | ⊕ |
| 8 | | N |
| 9 | | L |
| | OTHER | DC ON |
| | | DC LO |
| | | Vout ADJ. |
| | | S / P |
| | | Operation indicator LED |
| | | DC LOW voltage indicator LED |
| | | Trimmer-potentiometer for Vout adjustment |
| | | Single / Parallel select switch |

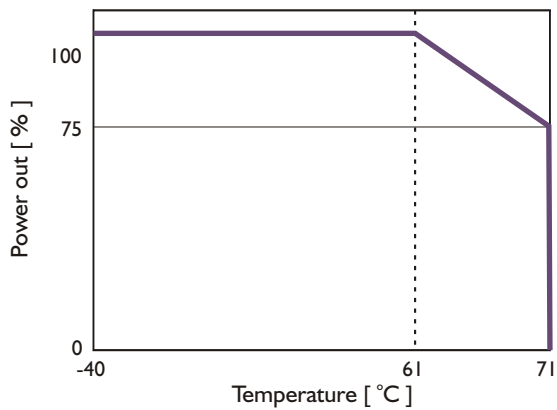
CIRCUIT SCHEMATIC



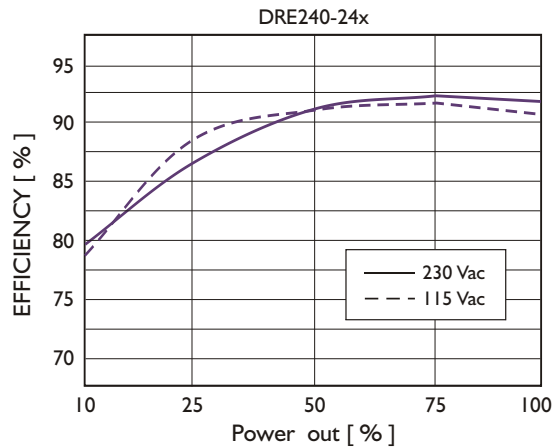
TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE



PEAK LOADING

