

DRU30 SERIES

30A DC UPS CONTROLLER



FEATURES

- BATTERY CONTROLLER FOR DIN RAIL UPS SYSTEM
- BUILT-IN BATTERY TEST FUNCTION
- BATTERY POLARITY PROTECTION
- PARALLEL CONNECTION TO DC BUS
- RELAY CONTACT SIGNAL OUTPUT
- LED INDICATOR FOR DC BUS OK, BATTERY FAIL AND BATTERY DISCHARGE
- BATTERY CONTROLLER FROM 4 TO 12 AH
- CHARGER FOR LEAD-ACID BATTERIES
- 3 YEARS WARRANTY



MODEL LIST

| MODEL NO. | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT |
|-----------------------------|---------------|-----------------|----------------|
| Single Output Models | | | |
| DRU30-12 | 11 ~ 14 VDC | 10.5 ~ 13.5 VDC | 30A |
| DRU30-24 | 22.5 ~ 28 VDC | 22 ~ 27.5 VDC | 30A |

SPECIFICATION

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

GENERAL

| Characteristics | Conditions | min. | typ. | max. | unit |
|-------------------------------|---|------|------------------|-------|--------|
| Isolation voltage | Input / Relay contact | | | 500 | VDC |
| Isolation resistance | Input / Relay contact, @ 100VDC | 100 | | | MΩ |
| Ambient temperature | Operating at Vi nom | -40 | | 71 | °C |
| Derating (see derating curve) | Vi nom, from +51 to +71°C | | | 2.5 | % / °C |
| Storage temperature | Non operational | -40 | | 85 | °C |
| Relative humidity | Vi nom, Io nom | 20 | | 95 | % RH |
| MTBF | Bellcore Issue 6 @40°C, GB | 12V | 383,000 | | Hours |
| | | 24V | 360,000 | | Hours |
| Altitude during operation | IEC 60068-2-13 | | | 4,850 | m |
| Dimension | Screw terminal type | | L90 x W54 x D114 | | mm |
| Cooling | Free air convection | | | | |
| Installation position | Vertical (other direction may derating using) | | | | |
| Pollution degree | | | | 2 | |
| Degree of protection | | | | IP20 | |

INPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit | |
|-----------------|-----------------------|----------|------|-------|------|---|
| DC input | Nominal input voltage | 12V | 12 | | V | |
| | | 24V | 24 | | V | |
| | Input voltage range | 12V | 11 | 14 | V | |
| | | 24V | 22.5 | 28 | V | |
| | Current consumption | No load | | | 0.2 | A |
| | | Charging | | | 3.5 | A |
| Maximum | | | | 35 | A | |
| Battery | Voltage range | 12V | 9.6 | 14.25 | V | |
| | | 24V | 19.2 | 28.5 | V | |

SPECIFICATION

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

INPUT SPECIFICATIONS

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---------------------|------------|------------------|------|------|---------------------------|------|
| Switching threshold | 12V | $V_{in} < 11V$ | | | dynamic Vout - 1V / 100ms | |
| | 24V | $V_{in} < 22.5V$ | | | dynamic Vout - 1V / 100ms | |

OUTPUT SPECIFICATIONS

| Characteristics | Conditions | | min. | typ. | max. | unit |
|-----------------------------|---|------------------------|------|-------------------|-------|------|
| DC output | Nominal output voltage | 12V | | 12 | | V |
| | | 24V | | 24 | | V |
| | Output voltage range | 12V | 10.5 | | 13.5 | V |
| | | 24V | 22 | | 27.5 | V |
| Current range | | | | 30 | A | |
| Battery output | Voltage range | 12V | 9.1 | | 13.75 | V |
| | | 24V | 18.7 | | 28.0 | V |
| | Current range | | | | 30 | A |
| Output voltage drop | $V_i - V_{out}$ | | | 0.55 | | V |
| | Battery - Vout | | | 0.45 | | V |
| Ripple & Noise | V_i nom, I_o nom | | | | 100 | mV |
| Battery reverse voltage | | 12V | | | 14.25 | V |
| | | 24V | | | 28.5 | V |
| Battery output fuse | | | | Internal 40A fuse | | |
| Suggest external battery | | | | 4AH / 7AH / 12AH | | |
| Selection of charge current | 2AH ~ 5AH | | | 0.5 | | A |
| | 5AH ~ 10AH | | | 1 | | A |
| | > 10AH | | | 2.5 | | A |
| Selection of charge voltage | 12V | Nominal charge voltage | | | 13.6 | V |
| | | Fast charge voltage | | | 14.25 | V |
| | 24V | Nominal charge voltage | | | 27.2 | V |
| | | Fast charge voltage | | | 28.5 | V |
| Discharge current | To suggest discharge current 0.1CA ~ 3CA CA is battery capacity | | | | 30 | A |

CONTROL FUNCTION

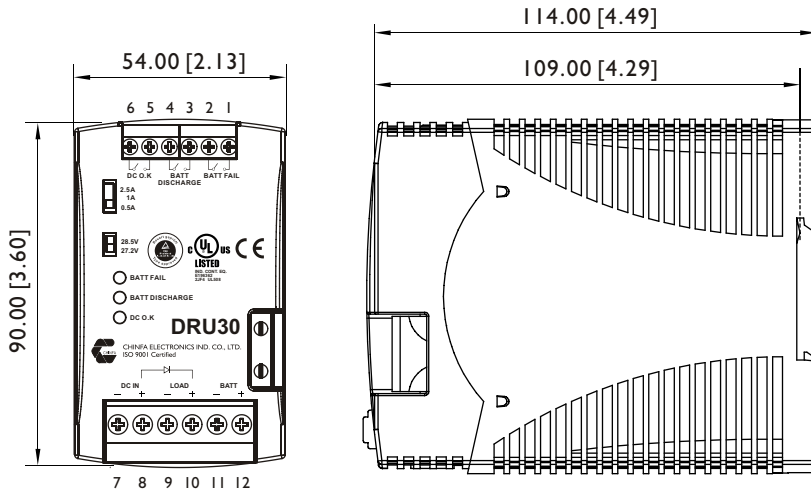
| Characteristics | Conditions |
|--|---|
| Charge voltage | 12V model : Nominal → 13.6 VDC, Fast → 14.25 VDC 24V model : Nominal → 27.2 VDC, Fast → 28.5 VDC |
| Battery Low-voltage protection for discharge voltage | 12V model : $\leq 9.6V$ 24V model : $\leq 19.2V$ |
| Charge voltage protection for Battery Low-voltage | 12V model : $\leq 8V$ 24V model : $\leq 16V$ |
| DC O.K | Relay Status : When DC Voltage between 22.5 ~ 28V (24V model), 11 ~ 14V (12V model) relay contacts DC ON |
| Battery fail | Relay Status : When battery fail is observed through the battery test function, relay contacts battery fail. |
| Battery discharge | Relay Status : When battery in discharge condition, relay contacts battery discharge. |
| NOTE | 1) Propose the battery manufacturer and capacity of battery choose the same type to avoid any damage of battery. 2) Relay contact rating at 1A 30 VDC. |

APPROVALS AND STANDARDS

| | |
|----------------------|--|
| UL / CUL | UL 508 Listed, UL 60950-1 Recognized |
| TUV | EN 60950-1 |
| CE | EN 61000-6-3, EN 55032 class B, EN 61000-6-2, EN 55024, EN 61204-3 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6, EN 61000-4-8 |
| 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) |

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; no tools required even to remove

INSTALLATION

Ventilation / Cooling
 Normal convection
 All sides 25mm free space
 For cooling recommended
 Connector size range
 IN / OUT : AWG18-8 (0.6~6mm²)
 flexible / solid cable, connector can withstand torque at maximum 9 pound-inches.
 10~11 mm stripping at cable end recommends.
 Relay : AWG24-12 (0.2~2.5mm²)
 flexible / solid cable, connector can withstand torque at maximum 5 pound-inches.
 7mm 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

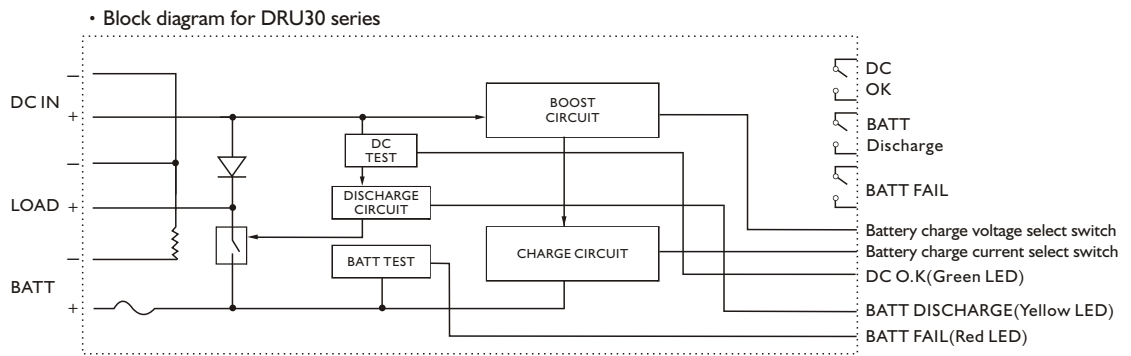
| PIN NO. | Designation | Description |
|---------|-----------------------------|--------------------------------------|
| 1, 2 | BATT FAIL | Signal port |
| 3, 4 | BATT DISCHARGE | Signal port |
| 5, 6 | DC O.K | Signal port |
| 7 | DC IN (-) | Input voltage |
| 8 | DC IN (+) | Input voltage |
| 9 | LOAD (-) | Output voltage |
| 10 | LOAD (+) | Output voltage |
| 11 | BATT (-) | Battery mode connection |
| 12 | BATT (+) | Battery mode connection |
| | 0.5A / 1A / 2.5A | Battery charge current select switch |
| | 27.2V / 28.5V (24V model) | Battery charge voltage select switch |
| | 13.6V / 14.25V (12V model) | Battery charge voltage select switch |
| | BATT FAIL (Red LED) | Battery low fail indicator LED |
| | BATT DISCHARGE (Yellow LED) | Battery discharge indicator LED |
| | DC O.K (Green LED) | Battery charge indicator LED |

PHYSICAL CHARACTERISTICS

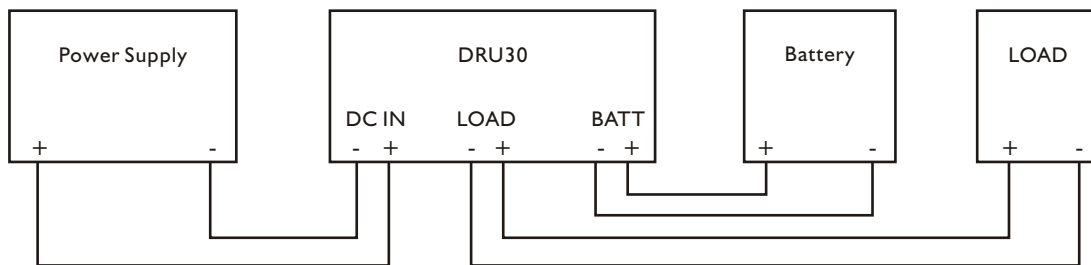
CASE SIZE

| | |
|---------------------|--|
| Screw terminal type | 90 x 54 x 114 mm (3.60 x 2.13 x 4.49 inches) |
| Case material | Plastic |
| Weight | 370g |
| Packing | 0.45kg ; 32 pcs / 15.5kg / 1.85CUFT |

CIRCUIT SCHEMATIC



APPLICATION



* Please disconnect the battery from DRU30 during transportation to avoid consuming the power of battery.

LED INDICATOR STATE

| STATE | | LED | BATT FAIL (RED) | BATT DISCHARGE (YELLOW) | DC O.K (GREEN) |
|--|-----------------------------------|-----|-----------------|-------------------------|----------------|
| Battery Status @ DC IN O.K | Battery open circuit | | | | |
| | Fuse open circuit | | | | |
| | Battery reverse polarity | | ON | OFF | ON |
| | Battery over discharge protection | | | | |
| DC IN OK Battery charging | | | OFF | OFF | ON |
| 12V model : DC IN < 11V, Battery discharge, Batt > 10V | | | OFF | ON | OFF |
| 24V model : DC IN < 22.5V, Battery discharge, Batt > 20.5V | | | OFF | ON | OFF |
| 12V model : DC IN < 11V, Battery discharge, Batt < 10V | | | ON | ON | OFF |
| 24V model : DC IN < 22.5V, Battery discharge, Batt < 20.5V | | | ON | ON | OFF |
| 12V model : DC IN < 11V, Batt ≤ 9.6V | | | OFF | OFF | OFF |
| 24V model : DC IN < 22.5V, Batt ≤ 19.2V | | | OFF | OFF | OFF |

DERATING CURVE

