

# 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
<b>Single Output Models</b>			
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	EN 62368-1			5,000	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				30	A
	CA is battery capacity					

### CONTROL FUNCTION

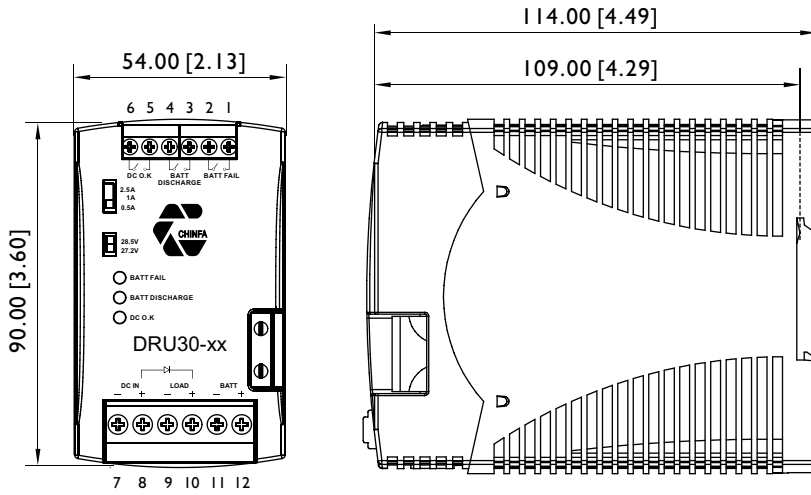
Characteristics	Conditions
Charge voltage	12V model : Nominal → 13.6 VDC, Fast → 14.25 VDC 24V model : Nominal → 27.2 VDC, Fast → 28.5 VDC
Battery Low-voltage protection for discharge voltage	12V model : ≤ 9.6V 24V model : ≤ 19.2V
Charge voltage protection for Battery Low-voltage	12V model : ≤ 8V 24V model : ≤ 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 62368-1
cTUVus	UL 62368-1
CE	BS EN / EN 61000-6-3, BS EN / EN 55032 class B, BS EN / EN 61000-6-2, BS EN / EN 55035 BS EN / EN 61204-3, BS EN / EN 61000-4-2, BS EN / EN 61000-4-3, BS EN / EN 61000-4-4 BS EN / EN 61000-4-5, BS EN / EN 61000-4-6, BS EN / EN 61000-4-8, DD ENV / ENV 50204, CISPR 32
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 (0.6~6mm<sup>2</sup>)  
flexible / solid cable, connector can withstand torque at maximum 9 pound-inches.  
10~11 mm stripping at cable end recommends.  
Relay : AWG24-12 (0.2~2.5mm<sup>2</sup>)  
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

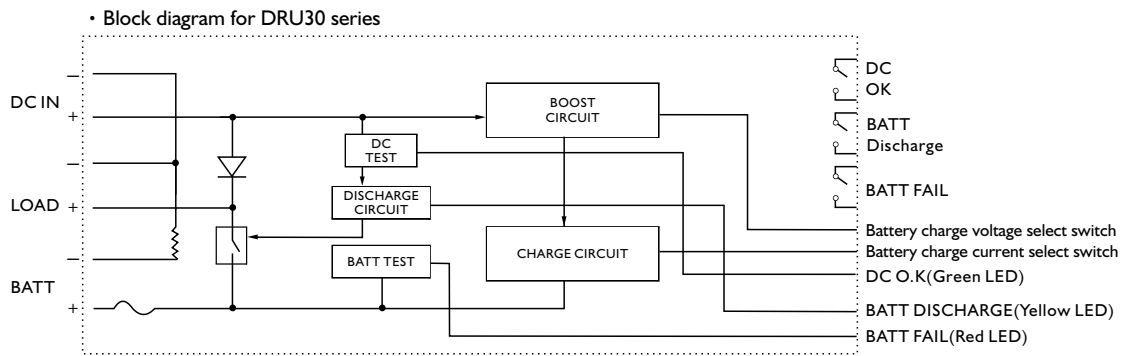
PIN NO.	Designation	Description
1, 2	BATT FAIL	Signal port
3, 4	BATT DISCHARGE	Signal port
5, 6	DC O.K	Signal port
7	DC IN (-)	Input voltage
8	DC IN (+)	Input voltage
9	LOAD (-)	Output voltage
10	LOAD (+)	Output voltage
11	BATT (-)	Battery mode connection
12	BATT (+)	Battery mode connection
	0.5A / 1A / 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

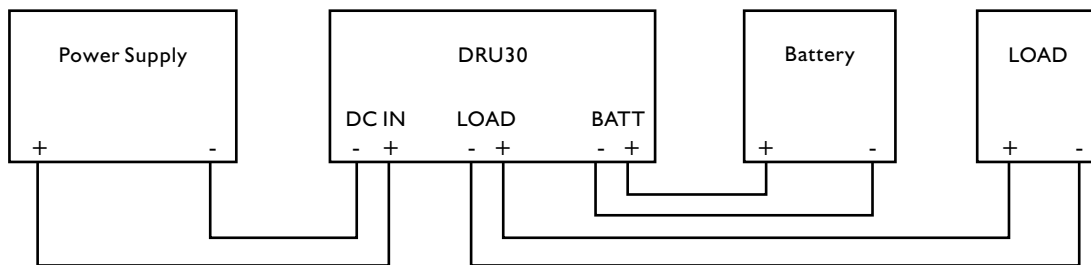
### CASE SIZE

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 & RELAY CONTACTS STATE

STATE		LED / RELAY	BATT FAIL (RED)	BATT DISCHARGE (YELLOW)	DC O.K (GREEN)
Battery Status @ DC IN O.K	Battery open circuit		ON	OFF	ON
	Fuse open circuit				
	Battery reverse polarity				
	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

\*ON: Relay contacts close. OFF: Relay contacts open.

## DERATING CURVE

