

# UPS Controller Type SPUC 30A 12 / 24V DIN Rail Mounting

CARLO GAVAZZI



- DIN Rail mounting UPS controller
- To be used in combination up to 30A power Supply
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output LED indicator for DC Bus ok, battery fail and battery discharge
- Suggested batteries from 4 to 12Ah
- 3 years warranty

## Ordering Key

**SPUC 24 720**

Model \_\_\_\_\_  
Output voltage \_\_\_\_\_  
Output power \_\_\_\_\_

## Approvals



## Product Description

The SPUC, being a UPS controller, it can be used to either convert and existing conventional supply system into an uninterruptible power supply system or else to realize a UPS system by using a separate power supply. It is suitable for both 12V and 24V systems and it can handle up to 30A load current whilst the suggested battery sizes are from 4 to 12Ah.

The input of the SPUC has to be connected to a 12Vdc or 24Vdc source, depending upon the model. The output is connected to the load which needs to be supplied uninterruptedly. The battery, suggested type is lead acid, is connected to the battery terminals. DIN rail mounting racks are also available, with or without batteries, for easy installation of the battery aside the SPUC. The

nominal charging voltage is 13.6V (or 27.2V). The charge is carried out in the first stage by constant current until the nominal voltage is reached then by constant voltage. When the battery is fully charged it stays into "float" cycle. Sulphatation process is prevented by charging with positive/negative pulse current. If the 24Vdc input is cut off because of mains failure

or blackout the SPUC will immediately switch the supply to the load by using the battery stored energy. There are three relays for remote operation monitoring: "DC OK" provides indication of correct DC output, "Battery fail" indicates a possible failure of the battery and "Backup Mode" provides remote indication that the device is providing power to the load from the battery not from input.

## Output Performance

AVAILABLE MODELS	INPUT VOLTAGE	MAX. OUTPUT POWER	OUTPUT VOLTAGE	MAX. OUTPUT CURRENT
Single Output Models				
SPUC12360	11 ~ 14VDC	360 WATTS	10.5 ~ 13.5VDC	30A
SPUC24720	22.5 ~ 28VDC	720 WATTS	22 ~ 27.5VDC	30A

## Input Data

### DC input

#### Nominal input voltage

12V Model  
24V Model

12V  
24V

#### Input voltage range

12V Model  
24V Model

Min. 11 ~ 14V Max.  
Min. 22.5 ~ 28V Max.

#### Current consumption

No load  
Charging  
Maximum

0.2A  
3.5A  
35A

### Battery

#### Voltage range

12V Model  
24V Model

Min. 9.6V ~ 14.25V Max.  
Min. 19.2V ~ 28.5V Max.

#### Switching threshold

12V Model  $V_{in} < 11V$   
24V Model  $V_{in} < 22.5V$

Dynamic Vout - 1V / 100ms  
Dynamic Vout - 1V / 100ms

## Output Data All specifications are at nominal values, full load, 25°C unless otherwise noted

<b>DC output</b>		<b>Battery output fuse</b>	40A 32V Automotive fuse on the front side. Replaceable.
<b>Nominal Output voltage</b>		<b>Suggested external battery</b>	3.2Ah, 7.2Ah or 12Ah Lead Acid batteries. (SPUBAT series, see related Data Sheet)
12V Model	12V		
24V Model	24V		
<b>Output voltage range</b>		<b>Charge Voltage selection</b>	
12V Model	Min. 10.5V ~ 13.5V Max.	12V Model	
24V Model	Min. 22V ~ 27.5V Max.	Float charge voltage	13.6V
<b>Current range</b>	30A Max.	Fast/bulk charge Voltage	14.25V
<b>Battery output</b>		24V Model	
12V Model	Min. 9.1V ~ 13.75V Max.	Float charge voltage	27.2V
24V Model	Min. 18.7V ~ 28.0V Max.	Fast/Bulk charge voltage	28.5V
<b>Current range</b>	2.5A	<b>Charge Current selection</b>	
<b>Output voltage drop</b>		12V/24V Models	
Vi out	0.55V	2AH ~ 5AH	0.5A
Battery - Vout	0.45V	5AH ~ 10AH	1A
<b>Ripple and noise (Vi nom, Io nom)</b>	100mV	>10AH	2.5A
<b>Battery max withstand reverse voltage</b>		<b>Suggested Discharge current</b>	
12V Model	14.25V	From 0.1 to 3 times battery capacity	30A Max
24V Model	28.5V		

## Control and Protections

<b>Battery discharge low voltage protection</b>		<b>Battery Fail Output Relay status</b>	Output relay switches when battery test is negative
12V Model	≤ 9.6V		
24V Model	≤ 19.2V	<b>Backup Mode</b>	output is active when the SPUC operates as UPS as there is no input. Power is provided from battery
<b>Battery charging low voltage protection</b>			
12V Model	≤ 8V	<b>Note</b>	Carlo Gavazzi provides a set of batteries, SPUBAT series. See related Data Sheet.
24V Model	≤ 16V		
<b>DC OK relay output (active when)</b>			
12V Version	11 to 14Vdc		
24V Version	22.5 to 28Vdc		

## General Data

<b>Dimensions</b>		<b>Packing</b>	Cartons of 32 x 0.45kg each pieces.
LxWxD mm (inch)	90x54x114 mm (3.60x2.13x4.49) inches		Total weight 15.5kg (34.17lbs; 1.85cuft)
<b>Case material</b>	Plastic		
<b>Weight</b>	370g		

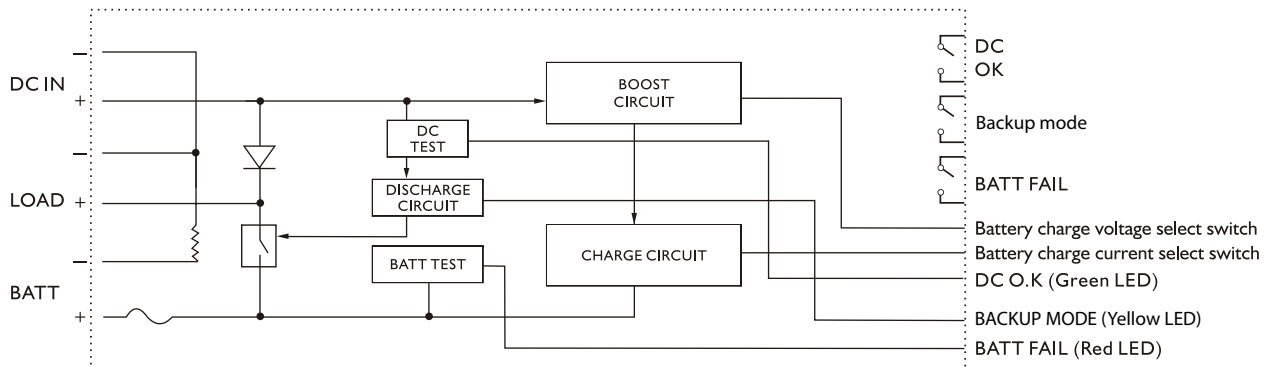
## Signal Outputs

<b>Batt fail</b>	Yes	<b>Relay outputs</b>	
<b>Back up mode</b>	Yes	Type	3 x SPDT
<b>DC OK</b>	Yes	Max. AC Load	2A @ 115Vac / 1A @ 240Vac
		Max. DC Load	2A @ 30Vdc

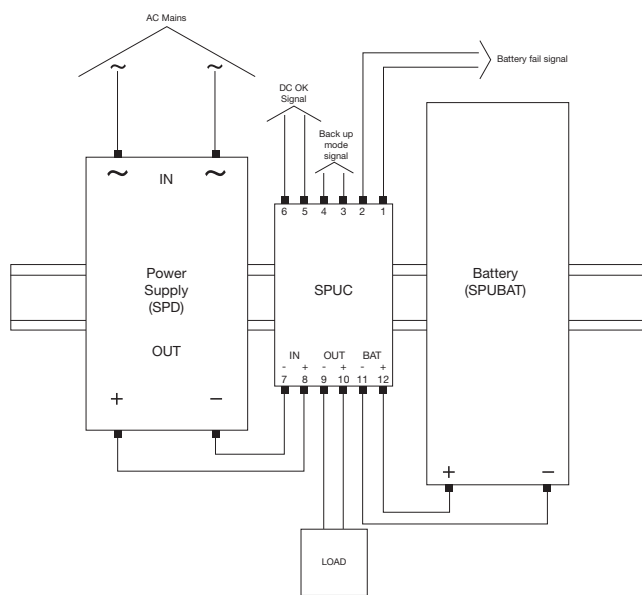
## Norms and Standard

<b>UL / CUL</b>	UL508 Listed, UL60950-1 Recognized	<b>Vibration resistance</b>	IEC60068-2-6 (Mounting on rail: 10-500Hz 2G, along X, Y, Z each Axis, 60 min for each Axis).
<b>TUV</b>	EN60950-1	<b>Shock resistance</b>	IEC60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face).
<b>CE</b>	EN61000-6-3, EN55022 class B, EN61000-6-2, EN55024, EN61204-3, EN61000-4-2, EN61000-4- 3, EN61000-4-4, EN61000- 4-6, EN61000-4-8		

## Block Diagram



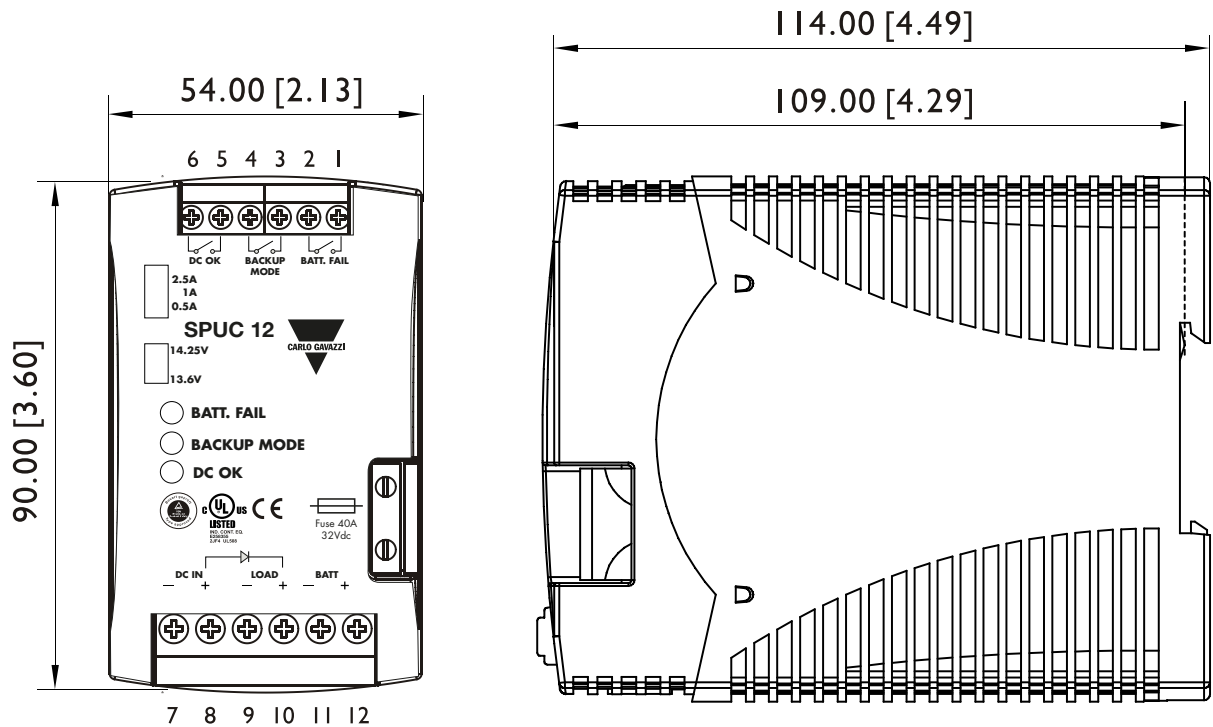
## Application



## Pin Assignment and Front Controls

Pin No.	Designation	Description
1, 2	Batt Fail	Relay output
3, 4	Backup mode	Relay output
5, 6	DC Ok	Relay output
7	DC IN (-)	Negative pole input
8	DC IN (+)	Positive pole input
9	LOAD (-)	Negative pole input
10	LOAD (+)	Positive pole input
11	Batt (-)	Negative battery pole
12	Batt (+)	positive battery pole
	0.5A / 1A / 2.5A	Battery charging current selection switch
	27.2V / 28.5V (24V Model)	Battery charging voltage selection switch
	13.6V / 14.25V (12V Model)	Battery charging voltage selection switch
	Batt Fail (Red LED)	Battery fail LED Indicator
	Batt Discharge (Yellow LED)	Backup mode LED Indicator
	DC OK (Green LED)	DC OK LED Indicator

## Mechanical Drawing



## LED Indicator State

State	LED	Batt Fail (Red)	Backup mode (Yellow)	DC OK (Green)
Battery status @DC IN OK	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		ON	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		OFF	OFF	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

