# 75/100/155 Watts
# BCS Series



- DC Standby System
- Battery Charging Output
- Optional 5 V, 3 A Supply
- Low Battery Disconnect
- AC OK and Battery Low Alarms
- Battery Overload & Reverse Polarity Protection
- 3 Year Warranty

## Specification

### Input

| | |
|---|---|
| Input Voltage | • 90-264 VAC (120-370 VDC) |
| Input Frequency | • 47-63 Hz |
| Input Current | • 75 W: 1.5/1.0 A max 115/230 VAC<br>100 W: 2.0/1.2 A max 115/230 VAC<br>155 W: 2.5/1.5 A max 115/230 VAC |
| Inrush Current | • 75/100 W 70 A max/230 VAC cold start 25 °C,<br>155 W 80 A max/230 VAC cold start 25 °C |
| Earth Leakage Current | • <1 mA at 264 VAC, 60 Hz |
| Power Factor | • Meets EN61000-3-2, class A |
| Input Protection | • Internal 4.0 A (155 W: 5.0 A) 250 V fuse, fitted in line |

### Output

| | |
|---|---|
| Output Voltage | • See tables |
| Output Voltage Trim | • ±10% on output 1. Output 2 tracks by same percentage |
| Initial Set Accuracy | • ±1.0% |
| Minimum Load | • None |
| Start Up Delay | • 75/100 W: 800 ms O/P 1 & 3, 3.5 s O/P 2,<br>155 W: 4 s O/P 1 & 3, 6.2 s O/P 2 |
| Start Up Rise Time | • 30 ms max |
| Hold Up Time | • 8 ms min at 115 VAC |
| Line Regulation | • ±0.5% max |
| Load Regulation | • Output 1 & 2: ±0.5%, Output 3: ±1.5% (where fitted) |
| Over/Undershoot | • 5% max at turn on |
| Transient Response | • 4% max. deviation, recovery to less than 1% within 500 µs for step load change of 25% |
| Ripple & Noise | • Output 1: 1% pk-pk, Output 2: 150 mV pk-pk, Output 3: 100 mV pk-pk (where fitted), 20 MHz bandwidth |
| Overvoltage Protection | • 115-150% on output 1 only, recycle mains to reset |
| Overload Protection | • Output 1: >110% of total rated power<br>Output 2: 100-115% of max current<br>Output 3: >3.3 A (where fitted)<br>An overload on any output will affect the voltage regulation of all outputs |
| Batt. Low Voltage Protection | • Internal battery relay opens at 10 V±4% for 13 V versions and 20 V±5% for 27 V versions |
| Short Circuit Protection | • On all outputs, trip and restart, auto recovery |
| Temp. Coefficient | • 0.03%/°C |

### General

| | |
|---|---|
| Efficiency | • See tables |
| Isolation | • 3000 VAC Input to Output<br>1500 VAC Input to Ground<br>500 VAC Output to Ground |
| Switching Frequency | • 75 W: 40-76 kHz at full load typical<br>100 W: 28-60 kHz at full load typical<br>155 W: PFC 100 kHz, PWM 30-47 kHz at 25-100% load typical |
| Power Density | • 75 W: 3.4 W/In$^3$,100 W: 4.5 W/In$^3$,<br>155 W: 3.8 W/In$^3$ |
| Signals | • AC OK and BAT LOW signals, see applications note |
| MTBF | • 130 kHrs typical to MIL-HDBK-217F at 25 °C, GB |

### Environmental

| | |
|---|---|
| Operating Temperature | • -20 °C to +70 °C. Refer to derating curves |
| Cooling | • 75 & 100 W: Convection-cooled,<br>155 W: Internal fan |
| Operating Humidity | • 95% RH, non-condensing |
| Storage Temperature | • -40 °C to +85 °C |
| Operating Altitude | • 2000 m |
| Shock | • 30 g pk, half sine, 6 axes |
| Vibration | • 2 g rms, 10 Hz to 500 Hz, 10 min/cycle for 60 mins on each axis |

### EMC & Safety

| | |
|---|---|
| Emissions | • EN55022, Level B conducted and radiated |
| Harmonic Currents | • EN61000-3-2, class A |
| Voltage Flicker | • EN61000-3-3 |
| ESD Immunity | • EN61000-4-2, level 3 Perf Criteria A |
| Radiated Immunity | • EN61000-4-3, 3 V/m Perf Criteria A |
| EFT/Burst | • EN61000-4-4, level 2 Perf Criteria A |
| Surge | • EN61000-4-5, installation class 3, Perf Criteria A |
| Conducted Immunity | • EN61000-4-6, 3 V Perf Criteria A |
| Dips & Interruptions | • EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B |
| Safety Approvals | • EN60950-1, UL60950-1 |

# Models and Ratings



| Output Power | Output 1 | | Output 2 | | Output 3 | | Efficiency | Model Number[2] |
|---|---|---|---|---|---|---|---|---|
| | Voltage | Current[1] | Voltage | Current[1] | Voltage | Current[1] | | |
| 75 W | 13.8 V | 5.50 A | 13.8 V | 1.95 A | | | 86% | BCS75US13-C |
| | 27.6 V | 2.75 A | 27.6 V | 1.10 A | | | 88% | BCS75US27-C |
| | 13.8 V | 4.40 A | 13.8 V | 1.95 A | 5.0 V | 3.0 A | 85% | BCS75US13-CA |
| | 27.6 V | 2.20 A | 27.6 V | 1.10 A | 5.0 V | 3.0 A | 87% | BCS75US27-CA |
| 100 W | 13.8 V | 7.30 A | 13.8 V | 2.80 A | | | 86% | BCS100US13-C |
| | 27.6 V | 3.65 A | 27.6 V | 1.70 A | | | 88% | BCS100US27-C |
| | 13.8 V | 6.20 A | 13.8 V | 2.80 A | 5.0 V | 3.0 A | 85% | BCS100US13-CA |
| | 27.6 V | 3.10 A | 27.6 V | 1.70 A | 5.0 V | 3.0 A | 87% | BCS100US27-CA |

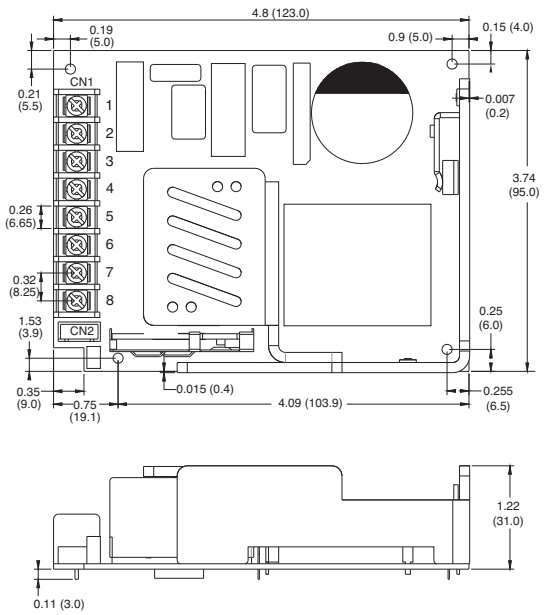
## Notes

*1. Total power must not exceed the output power rating.*

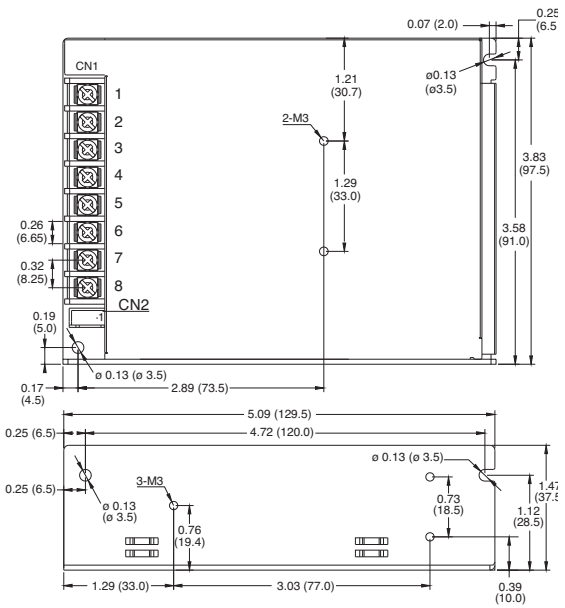
*2. Delete C from model number for optional uncased version e.g. BCS75US13. or BCS75US27-A.*

# Mechanical Details

## BCS, BCS-A




## BCS-C, BCS-CA




| CN1 - Input/Output Connector | | | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1 | Line | 5 | +Vout |
| 2 | Neutral | 6 | BAT+ |
| 3 | FG ⏚ | 7 | BAT- |
| 4 | -Vout Com | 8 | +5V (-A versions only) |

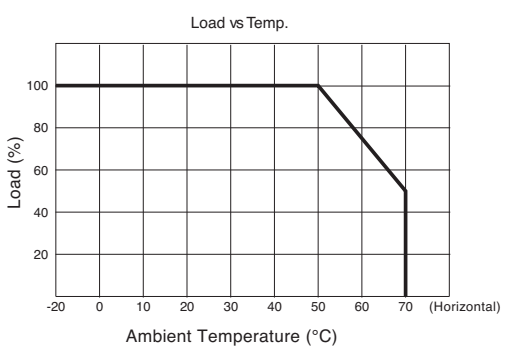
| CN2 - Alarm Connector for BCS, BCS-C | |
|---|---|
| Pin | Function |
| 1 | AC OK |
| 2 | BAT LOW |
| 3 | 13.8 V/20 mA or 27.6 V/20 mA (Output voltage dependant) |

| CN2 - Alarm Connector for BCS-A, BCS-CA | |
|---|---|
| Pin | Function |
| 1 2 | AC OK |
| 3 4 | BAT LOW |

## Notes

1. All dimensions in inches (mm).
2. BCS, BCS-C CN2 Mating Part JST XHP-3 housing, SXH-001 T-P0.6 crimps or equivalent.
3. BCS-A, BCS-CA CN2 mating part JST XHP-4 housing, SXH-001 T-P0.6 crimps or equivalent.
4. For correct operation of the internal battery fuse, the BAT- terminal should not be connected to earth or -Vout Com.

# Derating Curves



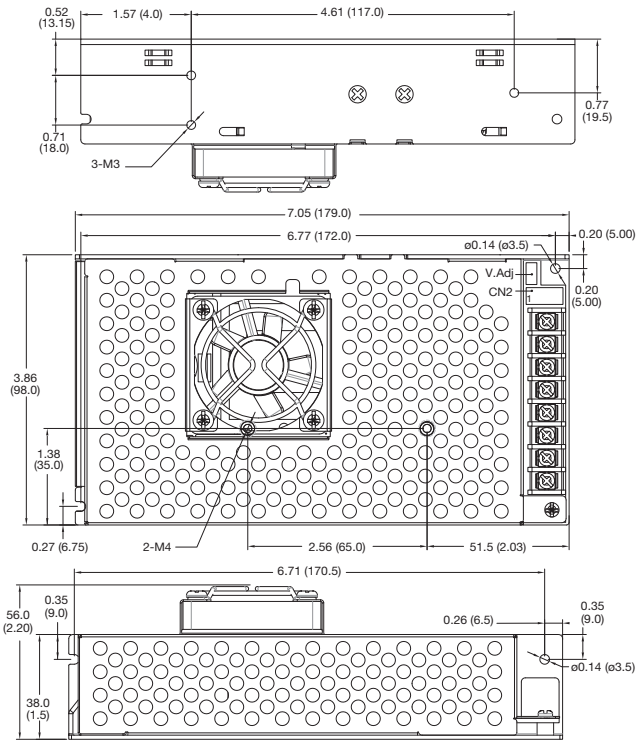
## Models and Ratings

| Output Power | Output 1 | | Output 2 | | Output 3 | | Efficiency | Model Number |
|---|---|---|---|---|---|---|---|---|
| | Voltage | Current[1] | Voltage | Current[1] | Voltage | Current[1] | | |
| 155 W | 13.8 V | 11.2 A | 13.8 V | 3.88 A | | | 86% | BCS155PS13-C |
| | 27.6 V | 5.6 A | 27.6 V | 2.10 A | | | 86% | BCS155PS27-C |
| | 13.8 V | 10.1 A | 13.8 V | 3.88 A | 5.0 V | 3.0 A | 85% | BCS155PS13-CA |
| | 27.6 V | 5.1 A | 27.6 V | 2.10 A | 5.0 V | 3.0 A | 85% | BCS155PS27-CA |

### Notes

*1. Total power must not exceed the output power rating.*

## Mechanical Details




| CN1 - Input/Output Connector | | | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1 | Line | 5 | +Vout |
| 2 | Neutral | 6 | BAT+ |
| 3 | FG ⏚ | 7 | BAT- |
| 4 | -Vout Com | 8 | +5V (-A versions only) |

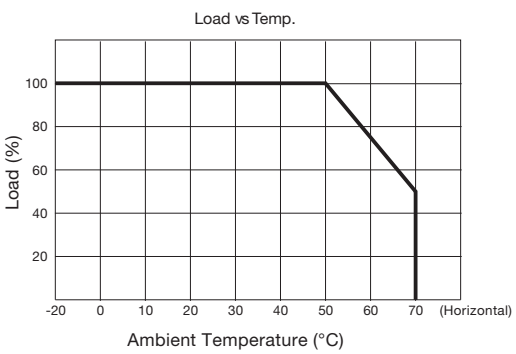
| CN2 - Alarm Connector for BCS, BCS-C | |
|---|---|
| Pin | Function |
| 1 | AC OK |
| 2 | BAT LOW |
| 3 | 13.8 V/20 mA or 27.6 V/20 mA (Output voltage dependant) |

| CN2 - Alarm Connector for BCS-A, BCS-CA | |
|---|---|
| Pin | Function |
| 1 2 | AC OK |
| 3 4 | BAT LOW |

### Notes

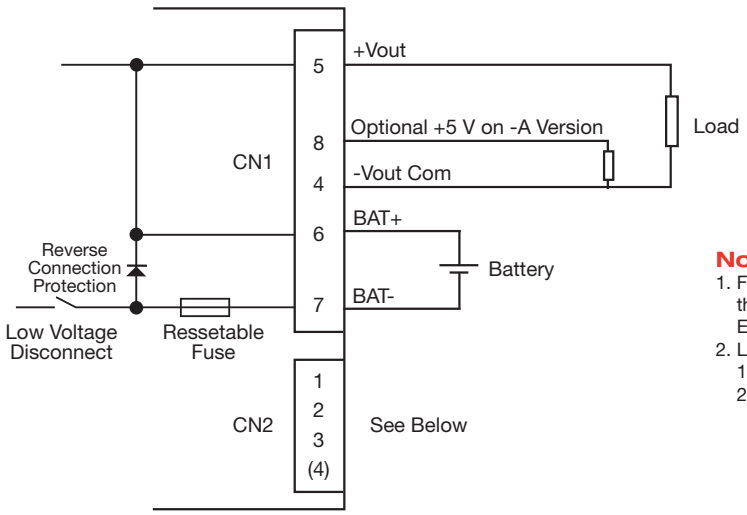
1. All dimensions in inches (mm).
2. BCS-C CN2 Mating Part JST XHP-3 housing, SXH-001 T-P0.6 crimps or equivalent.
3. BCS-CA CN2 mating part JST XHP-4 housing, SXH-001 T-P0.6 crimps or equivalent.
4. For correct operation of the internal battery fuse, the BAT- terminal should not be connected to earth or -Vout Com.

## Derating Curves



## Application Notes

## Connection Diagram

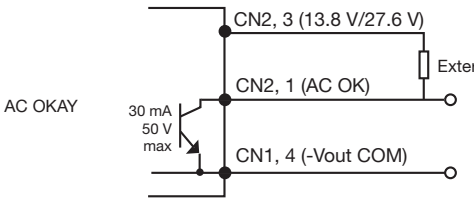



**Notes**

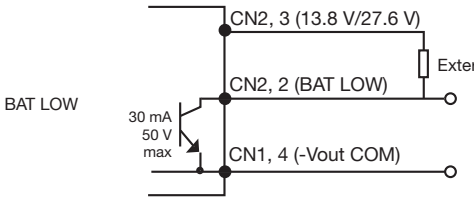
1. For correct operation of the internal battery fuse, the BAT- terminal should not be connected to Earth or -Vout COM.
2. Low Voltage Disconnect operates at 10 V ±4% for S13 models or 20 V ±5% for S27 models.

## Alarm Connections

### BCS, BCS-C Models

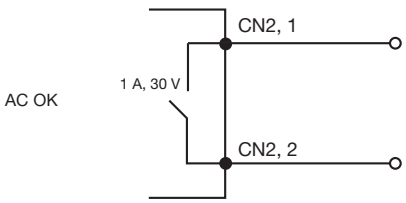



LOW (<0.3 V): AC is OK
HIGH (13.8 V/27.6 V): AC is NOT OK

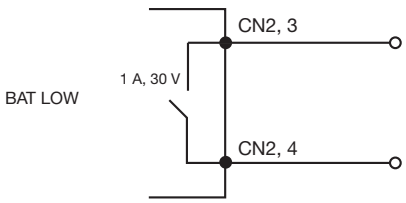



LOW (<0.3 V): BATTERY VOLTAGE <12 V/22 V (±3%)
HIGH (13.8 V/27.6 V): BATTERY VOLTAGE >12 V/22 V (±3%)

### BCS-A, BCS-CA Models




SHORT: AC is OK
OPEN: AC is NOT OK




SHORT: BATTERY VOLTAGE <12 V/22 V (±3%)
OPEN: BATTERY VOLTAGE >12 V/22 V (±3%)