

## **INSTALLATION MANUAL AND OPERATING INSTRUCTIONS**

### **SPTUSBSCB and SPTUSBSCC Dual USB Charging Port**



**SPT Dual Charge Port  
By Superior Panel Technology**

#### **FOREWORD**

This manual provides information intended for use by persons who, in accordance with current regulatory requirements, are qualified to install this equipment. If further information is required, please contact:

[support@sptpanel.com](mailto:support@sptpanel.com)

340 E. First St., Unit 1576

Tustin, CA 92780

714-838-8946

© 2019 Superior Panel Technology

## REVISION HISTORY

Rev.	Date	Approved	Detail
A	06/25/19	WB	Initial release.

## TABLE OF CONTENTS

### SECTION 1 GENERAL DESCRIPTION

- 1.1 INTRODUCTION
- 1.2 TECHNICAL SPECIFICATIONS
  - 1.2.1 ELECTRICAL ATTRIBUTES
  - 1.2.2 PHYSICAL ATTRIBUTES

### SECTION 2 PRE-INSTALLATION CONSIDERATIONS

- 2.1 COOLING
- 2.2 EQUIPMENT LOCATION
- 2.3 ROUTING OF CABLES

### SECTION 3 INSTALLATION PROCEDURES

- 3.1 GENERAL INFORMATION
- 3.2 UNPACKING AND INSPECTING
- 3.3 CABLE HARNESS
  - 3.3.1 WIRE GAUGE SELECTION
  - 3.3.2 WIRE ASSIGNMENT INFORMATION
  - 3.3.3 HARNESS VERIFICATION
- 3.4 MOUNTING

### SECTION 4 OPERATION

- 4.1 ELECTRICAL PERFORMANCE
- 4.2 PROTECTIVE FEATURES
  - 4.2.1 SHORT CIRCUIT PROTECTION
  - 4.2.2 OVER-CURRENT PROTECTION
  - 4.2.3 LOW INPUT VOLTAGE SHUTDOWN
  - 4.2.4 OVER-TEMPERATURE

### SECTION 5 CONFORMANCE

- 5.1 CONTINUED AIRWORTHINESS STATEMENT

## SECTION 1: GENERAL DESCRIPTION

### 1.1 INTRODUCTION

Both SPTUSBSCB and SPTUSBSCC units here on out will be referred to as the "SPTUSBSC"! They are the same exact unit with the exception of the color anodizing of the front face plate. The SPTUSBSC Dual USB Charging Port is an accessory that converts 14-28 volts of DC electrical input from the aircraft to standard 5V power to charge any electronic product that charges using a USB connector. The SPTUSBSC provides two Universal Serial Bus-A (USB-A) ports and can be rear mounted with an attractive face plate for a clean, finished look.

This Dual USB Charging Port is designed as a DCP (Dedicated Charging Port) to industry-standard protocol per the USB Battery Charging 1.2 Compliance Plan. Early-generation or smaller consumer electronics typically accept one (1.0) amp of power during charging. However, newer electronics, such as the Apple iPad, other tablets and larger devices can accept and, in some cases, require up to 3.4 amps of power to charge and operate. As a high power DCP, the SPTUSBSC can provide up to 3.4 amps of power to charge any USB device, including the higher demand products. Unlike most dual USB chargers which provide 1.0 amp on the first port and 2.1 amps on the second port, the SPTUSBSC can provide 3.4 amps of power to both ports simultaneously. With features like short circuit protection, over-current protection, low voltage shut-down and temperature monitoring, it can handle unforeseen conditions safely.

Small, compact and powerful, with plenty of installation flexibility, the SPTUSBSC is an ideal choice when selecting a highly useful and effective addition for any aircraft.

### 1.2 TECHNICAL SPECIFICATIONS

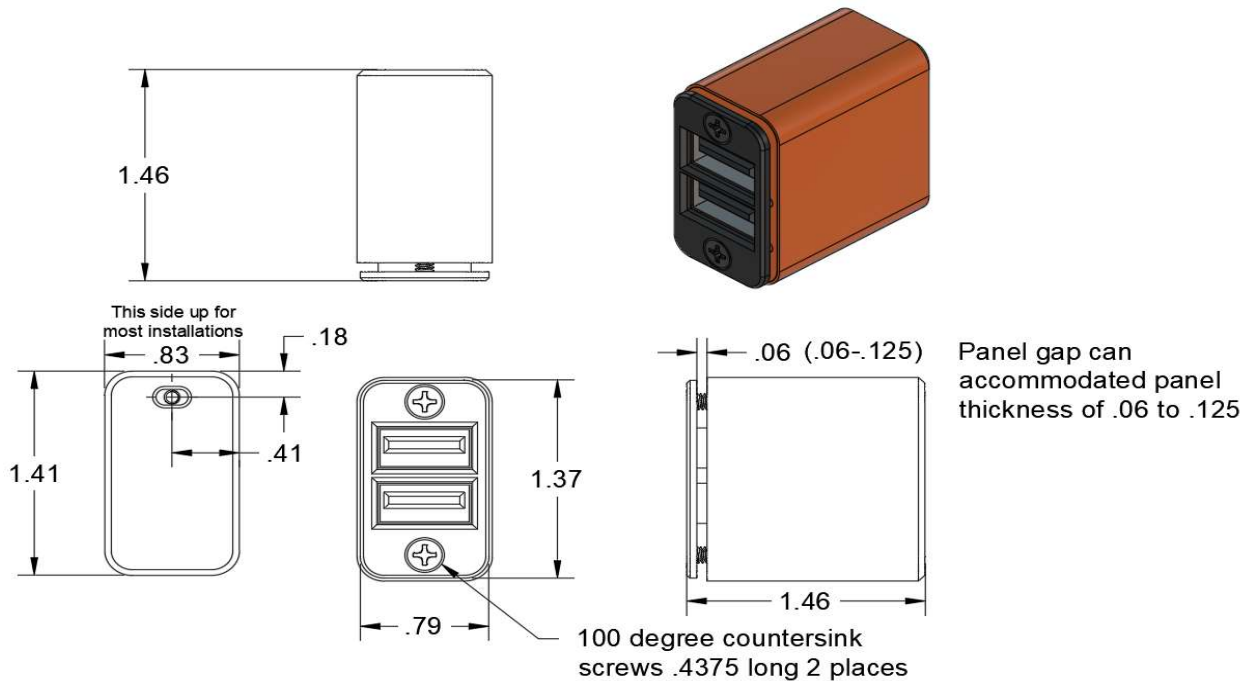
#### 1.2.1 ELECTRICAL ATTRIBUTES

Input Voltage:	14-28 VDC
Input Power:	48 watts max; 3.4 amps @ 14 VDC / 1.7 amps @ 28 VDC
Output Voltage:	5 VDC $\pm$ 0.25 per port
Output Power:	3.4 amps max per port
Efficiency:	90%~97%

**Table 1.1**

#### 1.2.2 PHYSICAL ATTRIBUTES

Weight:	44 grams, 0.097 pounds
Dimensions: (not including connector)	.83 inches wide X 1.41 inches high X 1.46 inches deep
Charging Ports Type:	USB Standard-A



## SECTION 2: PRE-INSTALLATION CONSIDERATIONS

### 2.1 COOLING

No external cooling is required. The unit will become warm when in use. This is normal and within operational parameters. No special mounting considerations are required; however, mounting to a metal surface can help dissipate any heat generated and extend the life of the product.

### 2.2 EQUIPMENT LOCATION

The SPTUSBSC Dual USB Charging Port can be mounted in any orientation and can be mounted in the cockpit or cabin. It is designed to be panel mounted or can be installed with an optional L bracket.

### 2.3 ROUTING OF CABLES

Avoid sharp bends in cabling and routing near aircraft control cables. Avoid close proximity and contact with aircraft structures, avionics equipment or other obstructions that could chafe wires and cause a short.

## **SECTION 3: INSTALLATION PROCEDURES**

### **3.1 GENERAL INFORMATION**

This section contains interconnect diagrams, mounting dimensions and other information pertaining to the installation of the SPTUSBSC Dual USB Charging Port. After installation of cabling and before installation of the equipment, ensure that power and ground are applied to the proper wire.

### **3.2 UNPACKING AND INSPECTING EQUIPMENT**

When unpacking this equipment, make a visual inspection for evidence of any damage that may have occurred during shipment. The following parts should be included:

- a. Dual USB Charging Port
- b. Connector Kit
  - 1. Aluminum face plate B for Black or C for Clear.
  - 2. Screws, #4-40 flat-head (2)
- c. Installation Manual
- d. Cutout template

Optional Equipment Available:

- a. Under panel "L" bracket mounting kit  
-SPTUSBSC-LB

Equipment Not Provided:

- a. Cable Harness Wire
- b. Circuitry Breaker
  - Recommendation 5 amp (14v sys)
  - 3 amp (28V sys)

### **3.3 CABLE HARNESS**

Construct the cable harness following the instructions outlined below and per Figure 3.1 below. Refer to Section 2: Pre-Installation Considerations, for routing precautions.

#### **3.3.1 WIRE GAUGE SELECTION**

Use of PTFE, ETFE, TFE, Teflon or Tefzel insulated wire is recommended for aircraft use. The wire harness should utilize 18-20 AWG stranded wire. Refer to table 3.1 below.

Wire Gauge	Wire Length
18 AWG stranded wire	>14 ft
20 AWG stranded wire	<14 ft

**TABLE 3.1**  
**Wire Gauge and Length**

### 3.3.2 WIRE ASSIGNMENT INFORMATION

#### INPUT POWER:

**Red wire** – Positive DC input +14 to +28 VDC power

**Black wire** – Negative DC input / ground

### 3.3.3 HARNESS VERIFICATION

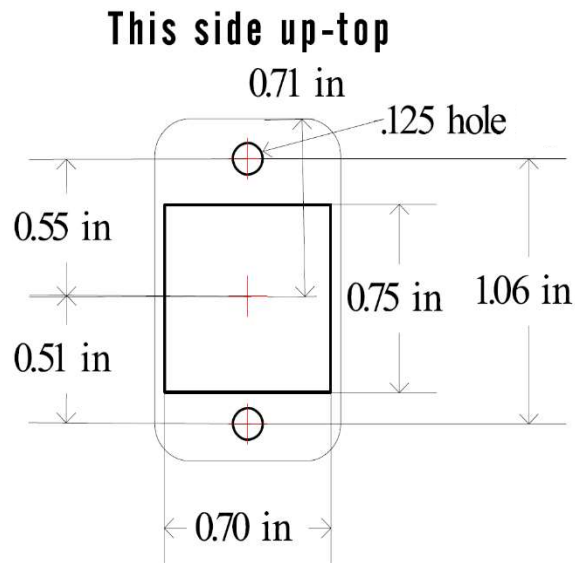
#### WARNING:

Failure to install aircraft power and ground wires in the proper wiring configuration will permanently damage the unit.

Once the cable harness is prepared, prior to connecting the SPTUSBSC, activate the aircraft power bus and use a multimeter to verify that aircraft power and ground is supplied with appropriate voltage on the proper wire to be connected to the SPTUSBSC.

### 3.4 MOUNTING

Prepare the panel cutout using the supplied cutout template.



DO NOT USE above drawing for template (not to scale).  
Use template provided.

## **SECTION 4: OPERATION**

### **4.1 ELECTRICAL PERFORMANCE**

The SPTUSBSC Series Dual USB Charging Port converts an aircraft (DC) input voltage within the range specified to a 5V (DC) output. This output power is applied to each of the USB ports as an independent circuit. The USB D+ and D- data lines communicate with the USB portable device to tell the device it is a dedicated charging port (DCP), capable of a higher current than a standard USB port. This allows the USB portable device to draw up to 3.4 amps per port. The unit is designed as a DC-to-DC converter and supports multiple fast charging protocol technologies. Each port is independent and reduces the output current to a safe level if the USB portable device draws excess current, is shorted or has a fault.

If the temperature of the SPTUSBSC becomes elevated due to a fault or excessive load, the device will seamlessly communicate with the USB portable device to lower the charge current. This allows the device to continue charging while the unit returns to a temperature within designed limits. When the temperature returns to a safe level the SPTUSBSC will automatically reestablish the higher charge current level with the device and continue charging.

### **4.2 PROTECTIVE FEATURES**

#### **4.2.1 SHORT CIRCUIT PROTECTION**

The SPTUSBSC is capable of surviving a short circuit event without permanent damage. The unit goes into an over-current condition so that the average current is significantly reduced, and the device is protected.

#### **4.2.2 OVER-CURRENT PROTECTION**

The SPTUSBSC monitors the current draw individually on each port. During an over-current condition, the voltage is reduced.

#### **4.2.3 LOW INPUT VOLTAGE SHUTDOWN**

If the input voltage applied to the SPTUSBSC drops below 10 VDC the unit will shut down until the applied voltage returns to a level within range.

#### **4.2.4 OVER-TEMPERATURE**

When the temperature of the SPTUSBSC becomes elevated, the unit communicates with the USB portable device to reduce the charge current output (1 amp limit). When the temperature returns to an acceptable level the unit automatically returns to a higher charge current as required (up to 3.4 amps).

## **SECTION 5: CONFORMANCE**

### **5.1 CONTINUED AIRWORTHINESS STATEMENT**

No periodic scheduled maintenance or calibration is necessary for continued airworthiness of the SPTUSBSC series Dual USB Charging Port. If the unit fails to perform to specifications, the unit must be removed and serviced by Superior Panel Technology.