

# NOTES & ERRATA FOR PROJECTS PUBLISHED IN SILICON CHIP (2012)

*Please note: errata apply primarily to the print edition of SILICON CHIP as online issues are normally changed when an error is identified. However some errata may still apply to the online edition; check carefully before making any changes to a project.*

**Playing USB-Stick & SD/MMC Card Music Without a PC, January 2012:** On page 86, the article states that the Tenda TD896 requires two 2-pin JST leads for the audio outputs and a 3-pin JST lead for the earphone/speaker outputs. However, the two 2-pin JST headers/leads are for the earphone/speaker outputs while the 3-pin header/lead is for the audio (line level) outputs. (09/14)

**Crystal DAC, February 2012:** (1) The original PCB has the trimpots rotating in the opposite direction to that stated in the article, ie, clockwise rotation decreases the quiescent current rather than increasing it. A modified PCB file has been uploaded to the website which fixes this problem. Constructors using the original PCB should rotate both trimpots fully clockwise before applying power for the first time. (06/12)

(2) The trimpots were specified as 500Ω but should in fact be 5kΩ. This affects the circuit diagram, PCB overlay and parts list. Also, the labels for Q22 and Q23 are swapped on the overlay diagram (Fig.6, page 32). (07/12)

**SemTest, February-May 2012:** (1) The electrolytic capacitor shown just to the upper left of IC4 in the circuit diagram (page 73, March 2012) is shown with a value of 47μF, whereas it should have the value 220μF. The parts list and PCB overlay are both correct. In addition, the parts list on page 77 has two errors: there should be two 2.2kΩ resistors listed for the main PCB (not one), while the two 2.2kΩ resistors listed for the display PCB are not required. (01/14)

(2) In the parts list on page 86 in May 2012, SCR1 is incorrectly listed as a TYN812 semiconductor, where it should be a TYN816. (04/17)

**1.5kW Induction Motor Speed Controller, April-May 2012, December 2012 & August 2013:** (1) The PCB overlay diagram (May, p69) shows two 270Ω resistors below IC3 which should have been labelled 100Ω (their value is wrong in the parts list too). Also, the circuit diagram (April, p22) shows the three pull-up resistors for the pins of CON5 (two 4.7k and one 1.5k) all connected to pin 1 of CON4. They are actually connected to the +3.3V rail. Finally, the Altronics catalog number for the 470uF 400V capacitors in the parts list is incorrect. It should be R5448. (06/12)

(2) A number of changes must be made to the original PCB to ensure reliable operation. These changes are described in the December 2012 issue. In addition, one of the holes is incorrectly positioned on the heatsink drilling diagram. A corrected drilling diagram is shown on page 83 of December 2012. (12/12)

(3) The thermostat mounting hole position shown on the drilling diagram (Fig.9) on page 70 of the May 2012 issue should be moved so that it is 170mm from the left hand edge of the heatsink (not 130mm). Be sure to orientate TH2 correctly and keep its leads short so that they cannot possibly contact any high-voltage circuitry. In addition, the mounting hole for BR1 is incorrectly positioned. It should be 45mm up from the bottom edge of the heatsink (as indicated) but is actually incorrectly positioned 40mm up from the heatsink edge.

In August 2013, the article in this issue recommended changing the current-limiting resistor in series with zener diode ZD1 to 470Ω (previously 1kΩ). This 470Ω resistor should be rated at 0.5W (not 0.25W).

Completely updated articles for the 1.5kW Induction Motor Speed Controller have been produced and substituted for the original articles on our website: [www.siliconchip.com.au](http://www.siliconchip.com.au) These articles incorporate all modifications (including the above errata) to the unit which now uses a modified PCB (10105122) and revised software for the microcontroller (1010512B.hex). (09/13)

(4) There is now a more rugged IGBT bridge with higher current ratings available as a drop-in replacement for the originally specified STGIPS20K60. The new device is the STGIP30C60 and it has a rating of 30A (up from 20A). The total power dissipation ratings are unchanged. We recommend that all new speed controllers now be constructed with the new device, as the upgrade will provide increased reliability. However, we do not recommend that readers use it with a motor or pump rated in excess of 1.5kW. In those cases where the speed controller will not reliably start a pool pump with the new IGBT bridge fitted, it will be possible to reduce the value of the specified shunt resistor from 15 milliohms to 12 milliohms to provide for more starting current. (05/14)

(5) Contrary to the instructions on page 74 of the May 2012 issue, do not feed 3.3V into CON4 to test the unit without using the mains supply. Instead, feed 3.3V into pin 2 of the ICSP header while making the ground connection to pin 3 of that same connector. This supply can be provided by a PICkit 3 programmer set up to supply power to the chip being programmed. Also, in the circuit diagram (Fig.5 on pages 22 and 23 of the April 2012 issue), the connections to the EXT and O/S DIP switches are shown reversed; EXT should go to pin 18 (RB8) and O/S to pin 17 (RB9). (09/17)

**PIC/AVR Programming Adaptor Board, May-June 2012:** Since this circuit was designed, Microchip have released a number of new PICs, many of which can be programmed using this board. This includes the PIC16F150x series (four chips). These can be programmed in mode B, not mode C as is implied by Fig.5 on page 78 of the June 2012 issue. For other new PICs, check the data sheet and compare the programming pin location and supply voltage requirements to that of other micros listed in Fig.5. (11/12)

**Crazy Cricket/Freaky Frog, June 2012:** The Jaycar buzzer part number is incorrectly listed in the parts list. It should be AB-3440. (07/12)

**Mix-It! 4-Channel Mixer, June 2012:** Fig.8 on page 67 should show the top switch connecting to signal ground and the bottom switch going to pin 7 of IC1b (not the other way round). (08/12)

**Wideband Oxygen Sensor Controller, June-August 2012:** (1) The parts list in part 1 (June, p42) includes two 3.5mm stereo jack plugs. Delete these and substitute two PCB-mount 3.5mm stereo switched jack sockets. (07/12) P.T.O.

**Wideband Oxygen Sensor Controller, June-August 2012:** (2) On the PCB, the anode of ZD1 does not connect to the adjacent ground track as it should. The PDF file on the website has been corrected to fix this. If you bought a PCB from the first batch, bend the lead of ZD1 over and solder it to the negative (lower) pad of the adjacent 10uF capacitor or fit a wire link between these two pads. Ensure it cannot come in contact with any other nearby pads. (09/12)

**Soft Starter For Power Tools, July 2012:** (1) The X2 capacitor specified in the parts list is a tight fit on the PCB. Element14 part code 1215460 is a better fit, as is the Altronics R3129. (08/12)

(2) The 10mΩ SMD shunt was left off the parts list. This should be a 6332 (metric)/2512 (imperial) size SMD chip resistor with a rating of at least 2W, such as CRA2512-FZ-R010ELF (element14 Cat. 2394421). (04/14)

**Timer For Fans And Lights, August 2012:** Do not wire the unit up as shown in Fig.1(c) on page 65, with a load from the "Asw" terminal to Neutral. This will destroy the unit. If you need to wire up a fan and light, connect them in parallel between the "Aload" terminal and Neutral. (03/14)

**High-Current Adaptor for Scopes & DMMs, August 2012:** One 3.3MW resistor has been omitted from the parts list. The Altronics terminal barrier code P2103 mentioned has the wrong pin pitch; use Jaycar HM3162 instead. Finally, note that on page 75, the article says that IC1 and IC2 have the same number of pins but this is not correct; IC1 has 14 pins and IC2 has 16 pins. (05/17)

**Using Two PC Power Supplies for 24V, Circuit Notebook, August 2012:** Most PC power supplies have their output ground internally connected to earth. For this circuit to work, one supply must have floating outputs. The low-voltage ground is normally earthed through one or more solder pads under the screw heads holding the internal PCB to the earthed metal case. Typically, the supply will still operate if these earth connections are broken (eg, by using insulating washers under the screw heads). Do NOT disconnect the mains earth at the input socket as the metal housing must remain earthed, as should any EMI suppression components. Care must also be taken if a PC power supply is opened up as they contain large, high-voltage capacitors which can retain a lethal charge for some time and they often have exposed mains and high-voltage DC components. (09/12)

**Barking Dog Blaster, September 2012:** (1) The 10Ω resistor shown on the overlay and PCB screen print to the right of the S2 start switch terminals should be a 100Ω resistor to match the parts list and circuit. (12/12)

(2) The Fig.2 overlay diagram shows the LED package (LED1) with the incorrect orientation. The anode marking (A) is in the correct position but the LED flat side should be toward the lower edge of the PCB. (01/13)

(3) The initial timer duration differs to that set by the trimpot due to a software bug. Subsequent timer runs after the first are correct. The revised firmware, supplied by reader AJB, is named 2510812B and is available for download from our website. (05/21)

**Induction Motor Centrifugal Switch Over-ride, Circuit Notebook, September 2012:** There is an error with this circuit. When changing motor speeds, the run LED (in the controller) flickers and in some cases retriggers the 555 (IC1). To fix this, the 10nF capacitor across the 10MΩ resistor should be changed to a 4.7uF electrolytic and connected via a 1N4148 series diode to pin 10 of the PIC (anode to pin 10). The positive side of the electrolytic goes to the cathode. Also when using this circuit, it is best not to set the motor speed below about 25% as the LED can go out completely and retrigger the 555. (10/12)

**Digital Sound Effects Generator, September 2012:** While the LM4889 was specified as an alternative to the LM4819 audio amplifier IC, we have discovered that the shutdown pin polarity of the LM4889 is opposite to that of the LM4819 (active low rather than active high). We recommend constructors stick with the LM4819. (06/13)

**Automatic Reverse Loop Controller For DCC Model Railways, October 2012:** (1) A 10uF 16V capacitor should be added to the parts list. (12/15)

(2) In the circuit diagram (Fig.2) on page 40, OPTO2 is incorrectly labelled as a 2N28. It should be 4N28. Also, in the PCB overlay diagram on page 41 (Fig.3) and the parts list on the same page, the 390Ω resistor should be changed to 330Ω to agree with the circuit diagram. (01/19)

**High-Power Class-D Audio Amplifier, November 2012:** The two 3/8-inch x 20mm-long machine screws listed in the parts list (to secure the heatsink to the PCB) should be 3/16-inch x 20mm. (12/12)

**Classic-D Amplifier Speaker Protector, November & December 2012:** The 4.7uF capacitor shown on the circuit and in the parts list should be 47uF. The overlay diagram and PCB is correct. (01/13)

**High-Energy Electronic Ignition System, November & December 2012:** Readers building the coil tester version of the High Energy Electronic Ignition System, as depicted in Fig.10 on page 50 of the December 2012 issue, should be aware that there is a risk of failure in the LM2940CT-5 regulator and the PIC microcontroller due to high voltage spikes superimposed on the common positive lead from the battery to the coil and the ignition module.

To avoid this risk, the coil tester should be built exactly as we have configured it for the Jacob's Ladder in this issue, including the added protection components for the regulator: 10Ω resistor, 13.6V TVS and 1000uF 25V DC input capacitor. These additional components are not required for the other versions of the High Energy Electronic Ignition System. (02/13)

**USB Power Meter, December 2012:** In Fig.2 (p40), the component shown below IC3 should be a 100Ω resistor, not a 100nF capacitor. (01/13)

**2.5GHz 12-Digit Frequency Counter, December 2012 – January 2013:** Excessive "bobble" on the least significant digit of the counter's display when measuring low frequencies has been discovered. This is due to the first counting decade counter, IC14, not being properly reset prior to making each count. The cure is to insert a few lines of code into the firmware. A revised "Version 1.2" firmware (both source code and hex code) is available for free download on the *SILICON CHIP* website. (11/13)