

# NOTES & ERRATA FOR PROJECTS PUBLISHED IN SILICON CHIP (2016)

*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.*

**High Visibility 6-Digit LED GPS Clock, December 2015 & January 2016:** The parts list in the December issue should read: 9 BC547 (Q1-Q9), 10 BC337 (Q10-Q19). These type numbers were transposed in the original parts list but were correct in Fig.1 & Fig.2. Note also that Fig.1 should show R8 as 68 ohms and the label on Fig.2 should read Q20-Q26 for the MPSA13 transistors (not Q20-Q16). The following additional notes also apply:

- (1) To calibrate the 32kHz crystal, set the XTAL menu option to between -512 (260ppm slower than default) and +511 (260ppm faster). This is adjusted automatically when a GPS module with a 1pps output is used.
- (2) When the alarm goes off, use a long (1s+) press of either pushbutton, or a second press of the Escape button on the remote to cancel it altogether. A short/single press will simply activate the snooze function.
- (3) Maximum alarm duration has been extended to up to 15 minutes with a default of 10 seconds.
- (4) The unit can show the day of the week. Simply activate the date display function, then press the same button again.
- (5) A new menu item, "GPSLCK", has been added to the options menu. If set to "IGNORE", the unit will use GPS time even if the satellite fix is not perfect. This will allow the unit to work in marginal signal areas although time accuracy may not be quite as good.
- (6) A new brightness menu item, "CUR RD", shows the minimum/current/maximum raw LDR readings in 8-bit hexadecimal notation. The fourth digit decimal point lights when the data is going to be saved to flash memory and goes out once it's saved. This can be used to troubleshoot the autodim function. (02/16)

**High Visibility 6-Digit LED GPS Clock, December 2015 & January 2016:** Two bugs have been identified in the firmware. One causes the unit to display the incorrect time for 8pm and later when set to 12-hour mode. The other causes minutes to be shown as 60 rather than 00 for one minute if the current time zone has an offset that is not a whole number of hours.

Firmware v1.2 (revision C) fixes both problems and is available for download from our website. Affected users can send their PIC32 chips back in to be re-programmed if they are unable to do so themselves.

In addition, in Pt.2, the instructions for gluing the case together state "The front panel is rotationally symmetrical so its orientation is not important . . .". While the front panel is rotationally symmetrical, it does not have mirror symmetry so it is possible to glue it "flipped" such that the LED colons will slant in the wrong direction. Please pay attention to this possibility while assembling the case. (03/16)

**High Visibility 6-Digit LED GPS Clock, December 2015 & January 2016:** The circuit diagram (Fig.1) on page 39 of the December 2015 issue show R8 and R9 swapped. They are correct on the overlay diagram (Fig.2) on page 42. (04/16)

**QuickBrake, January 2016:** The voltage applied to the reset pin of 7555 timer IC3 once the timing capacitor has charged may not reach a sufficient level to release the reset. To solve this, change the 220kΩ resistor between pin 4 of IC3 and the 5V supply to 82kΩ. In addition, trimpot VR1 is shown incorrectly orientated in the circuit diagram (Fig.1). Clockwise rotation reduces the resistance and thus reduces sensitivity, as stated in the text. (03/16)

**Battery-Pack Cell Balancer, March 2016:** There is a risk of damage to IC1 and IC2 when batteries with many cells are initially plugged in. Two small (¼W) 10kΩ through-hole resistors can be added to solve this. Solder them between pin 2 and pin 15 of both IC1 and IC2. These pins are adjacent but on opposite sides of the IC packages. The resistor bodies will need to be kept close to the ICs to avoid interfering with the battery header (CON1). Alternatively, they can be soldered from pin 15 of IC3 to ground (pin 20), and the other from pin 16 of IC3 to ground. (05/18)

**Circuit Notebook, Automatic Starter Circuit For Cars, April 2016: Warning!** We cannot recommend installation of this circuit in any car. Please refer to page 4 of the May 2016 issue (Mailbag). If installed, this circuit causes a dangerous situation whereby the car's engine could be inadvertently started in any gear. Please note that this circuit contribution has been removed from the online version. (05/16)

**Touch-Screen Boat Computer With GPS, April 2016:** Version 3 (V3) software is now available for this project, with the following improvements:

- (1) Fixed a problem which may cause the BASIC program to repeatedly crash and restart if a point of interest (POI) is created with longitude and latitude set to 0° (the default).
- (2) Now allows over 50 points of interest (POI) to be created. In the main selection screen, you now use the PREV and NEXT buttons to take you through the list of POIs.
- (3) The heading indicator and POI direction indicator are now suppressed when the boat is stationary.
- (4) Improved rendering for the heading needle.
- (5) Removed the slash from the zero character in one of the fonts. (06/16)

**ESR Meter with LCD readout, Circuit Notebook, May 2016:** There are some errors in this circuit diagram. Two capacitors were left out: one 470µF electrolytic and one 100nF ceramic or MKT type. They should connect between pins 3 & 5 of IC3, with the electrolytic capacitor's negative terminal to pin 5 (the -5V rail) and positive terminal to pin 3 (GND). Also, the two 10MΩ resistors' connections to pins 2 & 3 of IC4a are swapped. The resistor from the output should go to pin 2 (the inverting input), while the resistor from the wiper of VR2 goes to pin 3 (the non-inverting input). (05/21)

**Budget Senator Loudspeakers, May-June 2016:** In the May issue, on page 39: the dimensions given in Figs.4 & 5 are wrong. The correct dimensions are given on page 77 of the June 2016 issue. The dimensions should be: top → 417 x 336, front → 730 x 300, rear → 730 x 300, sides → 730 x 417, base → 300 x 381. All other dimensions are the same, and the MDF board thickness is still 18mm. (04/18)

**Circuit Notebook, Wireless Rain Alarm, June 2016:** The type number for IC3, TL071, was left off the circuit diagram on page 84. (08/16)

**Circuit Notebook, Combined Timer, Counter & Frequency Meter, June 2016:** In the circuit on page 87, pins 23 and 24 of IC1 are shown swapped. Also, the pot connected to pin 27 should be labelled VR3, not VR1. (08/16)

**Stereo LED Audio Level/VU Meter, June & July 2016:** In the circuit diagram on page 36 of the June 2016 issue and the overlay diagram on page 77 of the July 2016 issue, the 12kΩ and 1.5kΩ resistors associated with REG2 are swapped. This error has been carried over onto the PCB silkscreen as well. Install these resistors in each other's marked positions to get the correct 11V output, otherwise the unit will not power up. (10/16)

**Compact 8-Digit Auto-Ranging Frequency Meter, August 2016:** The firmware (0410516A.HEX) fails to initialise certain types of LCDs. The revised version, 0410516B.HEX, solves this. It can be downloaded from the Silicon Chip website. (11/16)

**Touchscreen Appliance Energy Meter, August-October 2016:** In the parts list on page 33 of the August 2016 issue, an incorrect part number was given for the Yunpen YF10T6 mains filter. It should be Jaycar Cat. MS4000. (10/16)

**Touchscreen Appliance Energy Meter, August-October 2016:** It has been brought to our attention that the ACS712 isolated current monitor IC does not have a sufficiently high "Reinforced Isolation Voltage" rating to meet Australian/New Zealand safety standards for double-insulated equipment (AS/NZS 60950.1.2011), which this device effectively is. The solution is to replace it with an ACS718KMATR-20B-T IC which has a different package and pinout but provides the same function. All constructors who have already received PCBs for this project will be sent an adaptor board, ACS718 IC and instructions describing how to fit the substitute device. Others who have ordered the PCB will either receive the original PCB plus the adaptor and IC or, eventually, a revised PCB with a footprint to suit the ACS718. (11/16)

**4-Input Automotive Fault Detector, September 2016:** The 3-way screw terminal blocks that make up CON1 have 5mm pin spacing, not 6mm as stated in the parts list. (11/16)

**Circuit Notebook, dsPIC/PIC Programmer Improvements, September 2016:** The modification made to the circuit does not fully protect Q1 from excessive negative input signals. The circuit has been changed to include a 1N4148 diode (D2) in inverse parallel between the junction of Q1's base and the 1.5kΩ resistor. (11/16)

**Vintage Radio, September 2016:** In Fig.3 bypass capacitor #22 was incorrectly labelled in the diagram as #23, and a 22Ω resistor (#48) was omitted between the junction of resistors #51 and #52. (11/16)

**Voltage/Current Reference with Touchscreen, October & December 2016:** (1) In the October issue, Fig.1 on page 74 shows a resistor with a value of  $R \div 12$  as part of the Programmable Gain Amplifier and the gain is shown as being 1-20 times. In fact, this resistor value should be shown as  $R \div 8$  and the gain range is 1-15, giving a maximum VREF of 37.5V. The panel at the top of page 79 is also incorrect; again, the 1.5kΩ resistor is 1/8 the ladder resistor value of 12kΩ (not 1kΩ and 1/12 respectively, as stated). (12/16)

(2) In the overlay diagram (Fig.3) on page 66 of the December 2016 issue, a 10nF capacitor is shown below and to the right of IC3 (near the centre at the top of the board). This should be 100nF instead, to reduce noise in the output. It is shown correctly in the circuit diagram in the October issue, between pins 1 and 2 of IC5a, and listed correctly in the parts list. The PCB correctly shows this as 100nF on the silkscreen. (04/17)

(3) There is a discrepancy between the circuit diagram, PCB overlay and parts list. The circuit diagram shows 22kΩ & 750Ω feedback resistors for REG1, which is correct, but the PCB overlay and parts list show these as 56kΩ and 1.5kΩ respectively. The 56kΩ/1.5kΩ combination could result in damage to REG1 when the circuit is powered up. If you have purchased a kit, contact us and we will send the correct resistors and if you request it, a replacement CS5173 regulator IC. Otherwise, use the 22kΩ and 750Ω values as shown in the circuit diagram, Fig.2 on pages 76 and 77 of the October 2016 issue. (05/17)

**50A Battery Charger Controller, November 2016:** (1) The Online Shop on page 80 shows the microcontroller as a PIC16F88; it should be a PIC12F675 (the parts list is correct). (12/16)

(2) There is a discrepancy between the circuit and PCB design. The circuit shows D4 connected between ground and the junction of the 100kΩ and 22kΩ resistors, but on the PCB it is connected to the wrong end of the 100kΩ resistor. We suggest constructors cut the track and fix this with a wire link. The next batch of PCBs will have this flaw corrected. (12/17)

**WiFi Switch Control Using a Raspberry Pi & Smartphone, November 2016:** A revised version of the script (v2) is now available which has two improvements. Firstly, it shows the current state for all outputs, rather than the most recently changed output. Secondly, if URLs stored in browser history are accessed, they will no longer repeat previous actions (ie, turn outputs on/off or pulse). (12/16)