

# ASK SILICON CHIP

Got a technical problem? Can't understand a piece of jargon or some technical principle? Drop us a line and we'll answer your question. Send your email to [silicon@siliconchip.com.au](mailto:silicon@siliconchip.com.au)

- 1) To send an SMS alert to the selected phone number if a specific input to the Arduino goes high.
- 2) To send an SMS alert if a selected analog input exceeds a set voltage.
- 3) To set an Arduino pin high upon receipt of a text message from the authorised number with a particular word.

Since you have provided the Arduino code for this project at no charge, I suggest that you add the examples I have mentioned above to the download package on your website. Highlighted comments at those areas of the code would also be helpful.

Many thanks for any help you can provide and congratulations on a great project and magazine. (G. C., Toormina, NSW)

- To send an SMS alert to the selected phone number if a particular input to the Arduino goes high, copy the block from lines 93-101 and replace the condition on line 94. For example, change:

```
if(gnssValid&&(
  gnss.speed>100.0)){
```

to:

```
if(digitalRead(pin)==HIGH){
```

To send an SMS alert if a selected analog input exceeds a set voltage, copy the block from lines 93-101 and replace the condition on line 94. For example:

```
if(gnssValid&&(
  gnss.speed>100.0)){
```

becomes:

```
if(analogRead(pin)>value){
```

In this case, 'value' is a number between 0 and 1022, representing a range from 0V up to a tiny bit under the micro's 5V supply rail voltage, which may not be exactly 5V. So, for example, a value around 500 corresponds to a threshold of approximately 2.5V.

To set an Arduino pin high upon receipt of a text message from the authorised number with particular word you can use the following code. But note that this requires an exact match, ie,

the same letter case and no other characters in the message before or after the word. Add the following at line 146:

```
if(strmatch("WORD",msg))
  {digitalWrite(pin,HIGH);}
```

In this case, the word is WORD, and 'pin' is the number of the digital pin that you want to send high.

## Modifying Tunable HF Preamp for AM

I want to modify the Tunable HF Preamplifier (January 2020; [siliconchip.com.au/Article/12219](http://siliconchip.com.au/Article/12219)) for connection to a standard AM radio, to improve reception in fringe areas. Would it be feasible to just change the number of turns on T1 to extend the range down to the AM broadcast band? If not, has SILICON CHIP produced an article/kit for AM radio range boosting? (G. R., Denistone, NSW)

- Yes, the frequency range can be extended down to the AM band. The tuning capacitor range allows this, but you need a 500µH inductance in the input tuned circuit.

This would give a tuning range from 520kHz to about 2MHz. With the toroid shown, this means about 156 turns; that may be difficult to manage on that size core.

It would be easier to use a fixed choke of 470µH instead. Adjusting the trimmer capacitors on the back of the tuning capacitor would extend the tuning range to just below the broadcast band. You may have to experiment with the number of turns wound around this inductor, as the impedance of the antenna is rather indeterminate.

## Relay substitution for Charge Controller

I have recently purchased the PCB to build your Universal Battery Charge Controller (December 2019; [siliconchip.com.au/Article/12159](http://siliconchip.com.au/Article/12159)). While awaiting its delivery, I managed to assemble almost all of the

## New actions for Remote Monitoring Station

I am in the process of building the Arduino-based 4G Remote Monitoring Station (February 2020; [siliconchip.com.au/Article/12335](http://siliconchip.com.au/Article/12335)).

Everything is going well so far, and I have successfully set up a ThingSpeak account. But I am having a bit of trouble following your Arduino code. It is obviously very clever, but I need a bit more spoon-feeding on using it to do what I want.

Can you give me examples of how to set up the code as follows: