Aux port configuration Report

The aux port configuration was to done to convert AUX port into GPIO and receive the sensor data on the aux port 5 and 6 and use this data as a range finder data for Ardupilot firmware.

Sensor: Ultrasonic sensor HC-SR04.

Changed Mission Planner parameter:

RNGFND1_MAX_CM: 100(Maximum Distance).

RNGFND1_MIN_CM: 20(Minimum Distance).

RNGFND1_PIN: 54(Attach the GPIO pin to the Pixhawk on aux port 5).

RNGFND1_TYPE = 30 (Range finder type value for HC-SR04 sonar).

RNGFND1_ORIENT = 0 (facing forward), 30(facing downward).

Change HUD contents: change any one of the parameters to RNG_FND1

Arduino Code:

```
 //code starts
#include "Wire.h"
#include "NewPing.h"


// Ultrasonic Sensor Pin define
#define _PIN_ULTRASONIC_VCC    4
#define _PIN_ULTRASONIC_TRIGGER   7
#define _PIN_ULTRASONIC_ECHO    6


#define _PIN_PWM_SIGNAL    11 // Aux output


#define _MAX_DISTANCE  300 // cm


NewPing oultrasonicSensor(_PIN_ULTRASONIC_TRIGGER, _PIN_ULTRASONIC_ECHO,
_MAX_DISTANCE);
```

```
uint16_t un16distance;


#define _PIN_ARDUINO_LED    13  // embeded  LED  Port on Arduino Pro

#define  _ULTRASONIC_HZ   10  // 1~10 Hz



void setup()
{
 Serial.begin(9600);

 pinMode(_PIN_ULTRASONIC_VCC, OUTPUT);
 digitalWrite(_PIN_ULTRASONIC_VCC, HIGH);  // Ultrasonic VCC

 pinMode(_PIN_PWM_SIGNAL, OUTPUT);

 pinMode(_PIN_ARDUINO_LED, OUTPUT);

}


void loop()
{
 un16distance = oultrasonicSensor.ping_cm();   // Get Distince

 Serial.print("Distince: "); Serial.print(un16distance); Serial.println("cm"); // Print

 SendPwmSignal(); // Send PWM to Pixhawk Aux
```

```
 delay(1000/ _ULTRASONIC_HZ);


}



void SendPwmSignal()
{
 bool bLED = false;


 digitalWrite(_PIN_PWM_SIGNAL, HIGH);
 delayMicroseconds(un16distance*10);
 digitalWrite(_PIN_PWM_SIGNAL, LOW);
}
//code ends
```

After successfully burning this code with Arduino and connect VCC to 5V and GND to GND Trigger to pin no 7 echo to pin no 6. Connect the FC to mission planner, range finder HUD status data will show the range finder distance in Meters.

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