

The logo for GippsTech features a large, stylized black letter 'G' on the left. To its right, the word 'GippsTech' is written in a sans-serif font. 'Gipps' is in grey, and 'Tech' is in blue. Above the 'p' and 's' in 'Gipps', there are four blue curved lines that resemble radio waves or signal strength indicators. To the right of the logo, the year '2016' is written in a large, bold, black sans-serif font.

# **GippsTech 2016**

**A Speech Synthesiser for the Yaesu FT-817**

**By**

**Julie VK3FOWL and Joe VK3YSP**

# EFFIE AND RACHEL



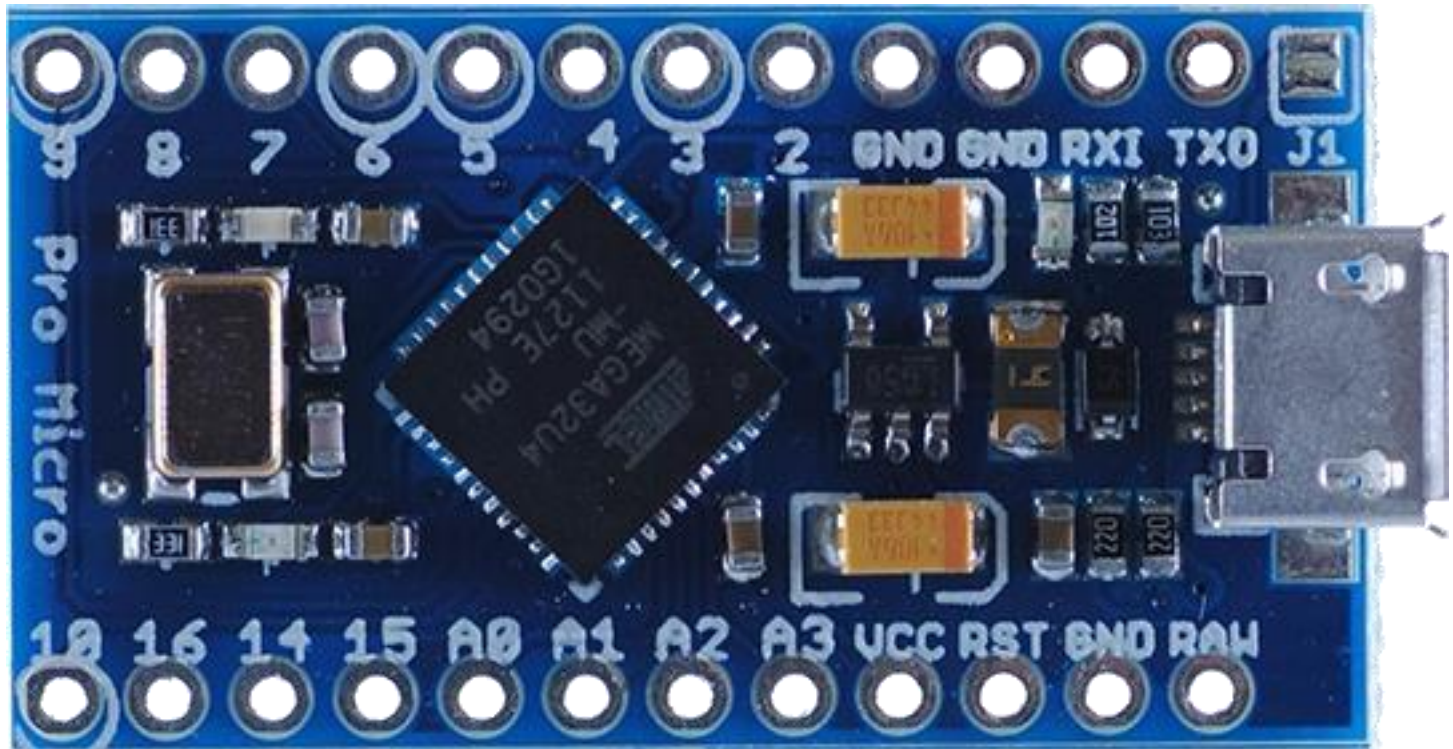
# FEATURES

- Powered by the radio
- Built-in speaker/amplifier
- Speaks frequencies and modes as they change
- Speaks PWR, ALC, MOD SWR and S-Meter
- Speaks function key menu items and values
- Speaks configuration menu items and values
- Monitors any FT-817 EEPROM changes
- Interrogates band registers
- Uses over 180 pre-recorded MP3 files
- Costs under \$35 to build

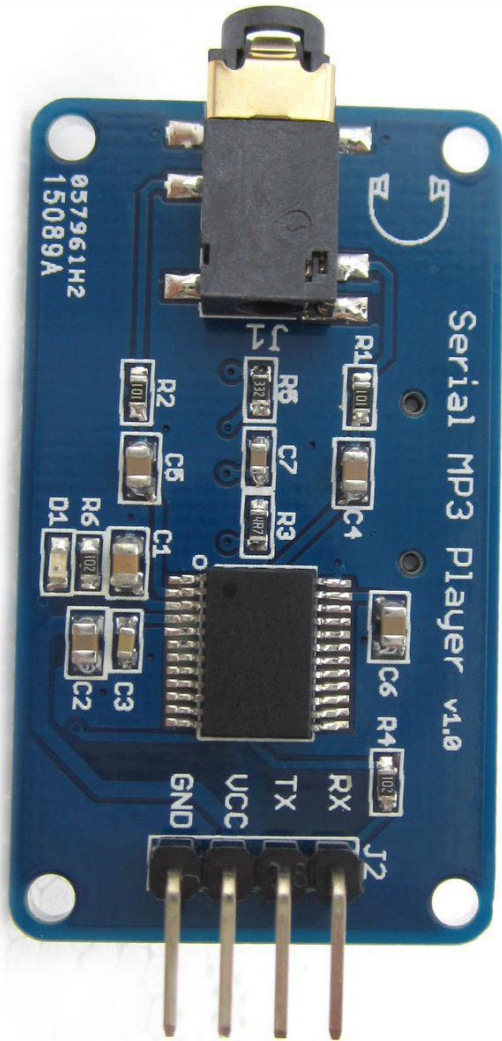
# OPERATION

- Connect Rachel to Effie's ACC port
- Press METER on RX for S-METER
- Press METER on TX for PWR, ALC, MOD, SWR
- Press CONFIG for entire radio configuration
- Press METER to cancel CONFIG (5½ mins)

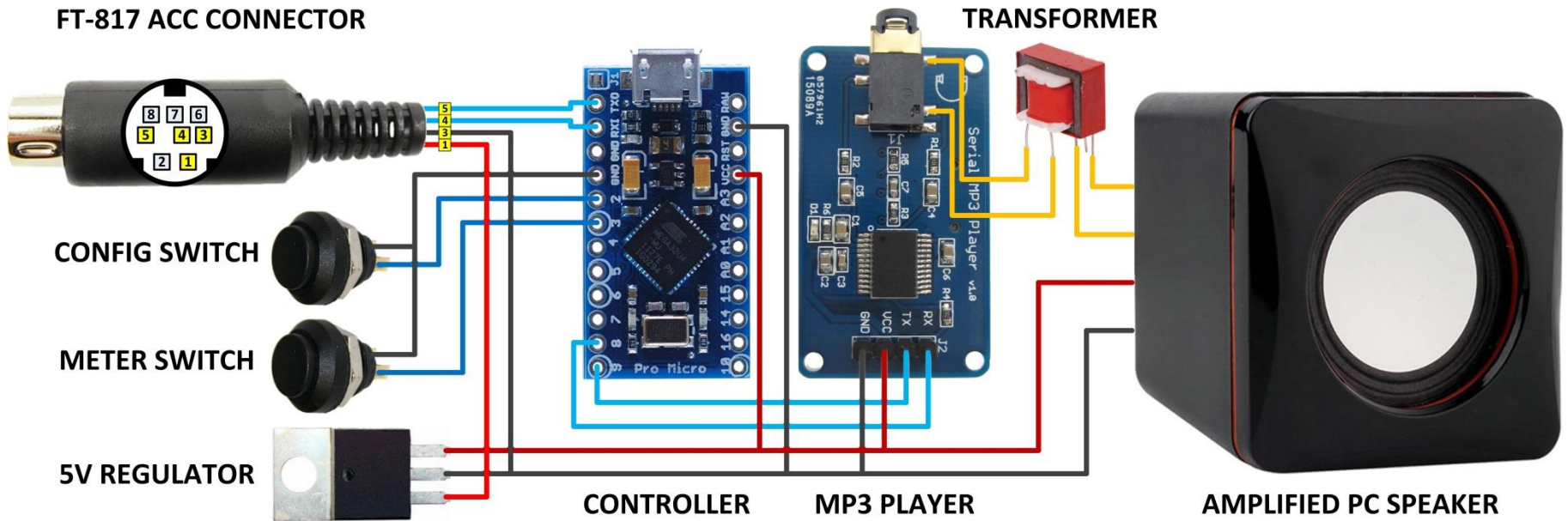
# ARDUINO PRO MICRO 5V/16MHz



# CALATEX MP3 PLAYER



# PICTORIAL SCHEMATIC



# HOW IT WORKS

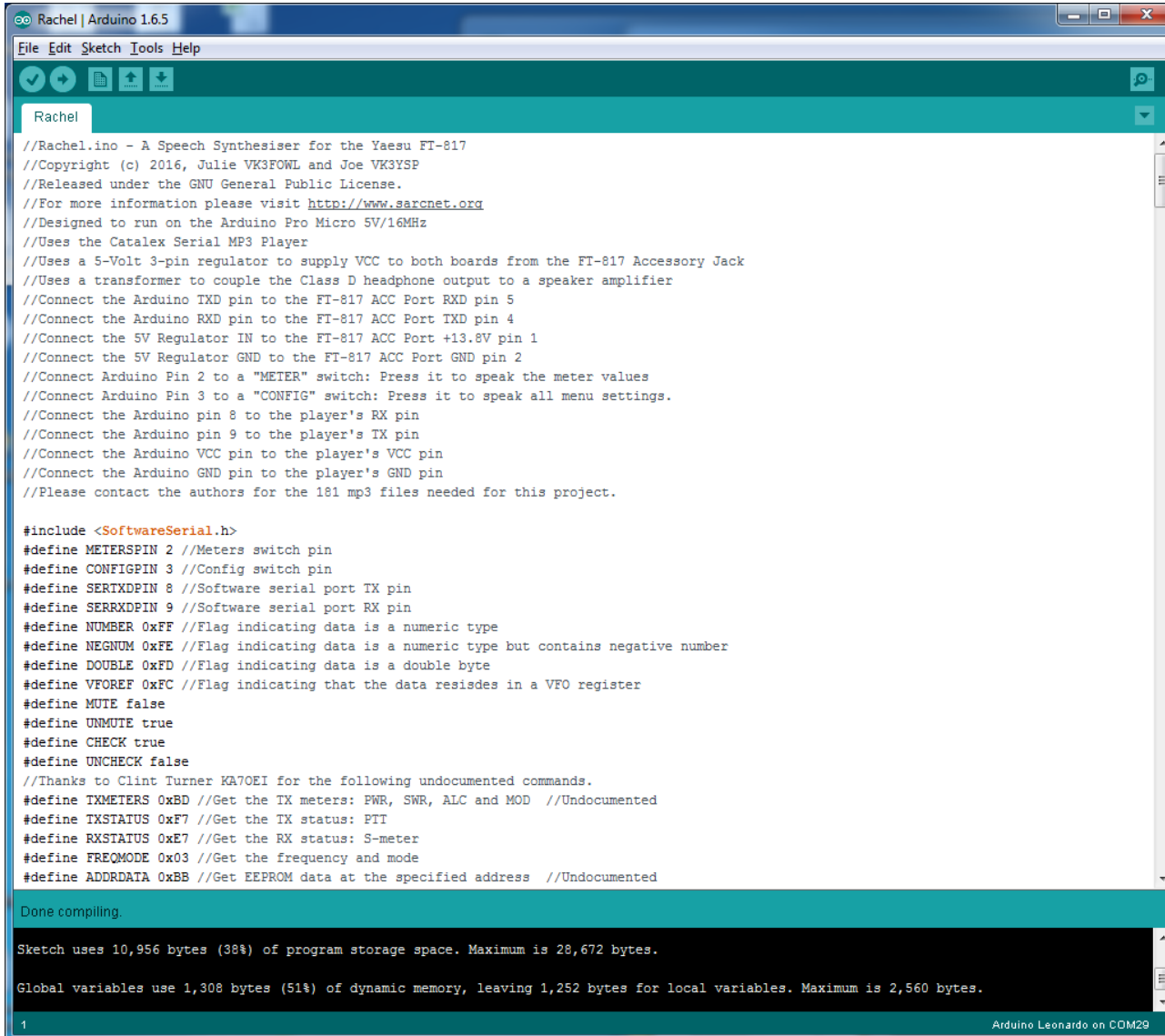
- 5V Regulator to power:
  - Speaker amplifier
  - Controller
  - MP3 Player
- Hardware Serial Port monitors EEPROM @ 34k8 baud
- Software Serial Port controls MP3 Player @ 9k6 baud
- Undocumented CAT commands to scan EEPROM
- Does not modify the EPROM or control the rig
- Text-To-Speech app used to create MP3 files



# PARTS LIST

- Mini, USB powered, amplified PC speaker (\$8)
- Arduino Pro Micro 5V/16MHz (\$7)
- Press-button Switches (\$5)
- 3k $\Omega$ :3k $\Omega$  Audio transformer (\$5)
- Calatex Serial MP3 player board (\$4)
- Rig interface cable (\$2)
- 2GB Micro SD card (\$1)
- LM7805 5V Regulator IC (\$1)

# ARDUINO SOFTWARE



```
Rachel | Arduino 1.6.5
File Edit Sketch Tools Help
Rachel
//Rachel.ino - A Speech Synthesiser for the Yaesu FT-817
//Copyright (c) 2016, Julie VK3FOWL and Joe VK3YSP
//Released under the GNU General Public License.
//For more information please visit http://www.sarcnet.org
//Designed to run on the Arduino Pro Micro 5V/16MHz
//Uses the Catalex Serial MP3 Player
//Uses a 5-Volt 3-pin regulator to supply VCC to both boards from the FT-817 Accessory Jack
//Uses a transformer to couple the Class D headphone output to a speaker amplifier
//Connect the Arduino TXD pin to the FT-817 ACC Port RXD pin 5
//Connect the Arduino RXD pin to the FT-817 ACC Port TXD pin 4
//Connect the 5V Regulator IN to the FT-817 ACC Port +13.8V pin 1
//Connect the 5V Regulator GND to the FT-817 ACC Port GND pin 2
//Connect Arduino Pin 2 to a "METER" switch: Press it to speak the meter values
//Connect Arduino Pin 3 to a "CONFIG" switch: Press it to speak all menu settings.
//Connect the Arduino pin 8 to the player's RX pin
//Connect the Arduino pin 9 to the player's TX pin
//Connect the Arduino VCC pin to the player's VCC pin
//Connect the Arduino GND pin to the player's GND pin
//Please contact the authors for the 181 mp3 files needed for this project.

#include <SoftwareSerial.h>
#define METERSPIN 2 //Meters switch pin
#define CONFIGPIN 3 //Config switch pin
#define SERTXDPIN 8 //Software serial port TX pin
#define SERRXDPIN 9 //Software serial port RX pin
#define NUMBER 0xFF //Flag indicating data is a numeric type
#define NEGNUM 0xFE //Flag indicating data is a numeric type but contains negative number
#define DOUBLE 0xFD //Flag indicating data is a double byte
#define VFOREF 0xFC //Flag indicating that the data resides in a VFO register
#define MUTE false
#define UNMUTE true
#define CHECK true
#define UNCHECK false
//Thanks to Clint Turner KA7OEI for the following undocumented commands.
#define TXMETERS 0xBD //Get the TX meters: PWR, SWR, ALC and MOD //Undocumented
#define TXSTATUS 0xF7 //Get the TX status: PTT
#define RXSTATUS 0xE7 //Get the RX status: S-meter
#define FREQMODE 0x03 //Get the frequency and mode
#define ADDRDATA 0xBB //Get EEPROM data at the specified address //Undocumented

Done compiling.

Sketch uses 10,956 bytes (38%) of program storage space. Maximum is 28,672 bytes.

Global variables use 1,308 bytes (51%) of dynamic memory, leaving 1,252 bytes for local variables. Maximum is 2,560 bytes.

1 Arduino Leonardo on COM29
```

# SOURCES/LINKS

- <http://www.sarcnet.org/projects.html>
- Clint Turner, KA7OEI : [www.KA7OEI.com](http://www.KA7OEI.com)