CAN Transmitter User Guide

Table of Contents

[2 Overview 2](#_Toc24801669)

[3 Required Files and BOM 2](#_Toc24801670)

[3.1 BOM 2](#_Toc24801671)

[3.2 Enclosure Models 2](#_Toc24801672)

[3.3 Arduino Sketch 2](#_Toc24801673)

[4 Environment Setup 3](#_Toc24801674)

[4.1 Install Arduino IDE 3](#_Toc24801675)

[4.2 Install mcp\_can Library 3](#_Toc24801676)

[5 Configuration and Programming 4](#_Toc24801677)

[6 Use 5](#_Toc24801678)

[7 Licensing and Disclaimer 5](#_Toc24801679)

[7.1 CAN Transmitter 5](#_Toc24801680)

[7.2 mcp\_can Library 5](#_Toc24801681)

# Overview

The purpose of this CAN transmitter is to send cyclic CAN messages required by DECUs undergoing testing. This CAN transmitter is intended to be easy to create, easy to program, and easy to configure. The user can configure the following parameters:

* Baud rate
* CAN ID type (11/29 bit)
* Number of CAN messages
  + CAN message IDs
  + CAN message DLCs
  + CAN message data
  + CAN message period

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# Required Files and BOM

## BOM

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Description** | **Manufacturer Part #** | **Qty** | **Price (USD)** | **Ext. Price (USD)** | **In-House** |
| ARDUINO UNO SMD R3 ATMEGA328 | A000073 | 1 | 20.90 | 20.90 |  |
| CANBUS SHIELD V2 | 103030215 | 1 | 24.99 | 24.99 |  |
| PNL MNT W/ WIRE 568NM 40MCD GRN | PM5GT | 1 | 0.39 | 0.39 |  |
| PNL MNT W/ WIRE 590NM 40MCD YLW | PM5YT | 1 | 0.39 | 0.39 |  |
| SWITCH ROCKER DPDT 16A 125V | GRS-4022-1600 | 1 | 1.38 | 1.38 |  |
| CONN RCPT HSG 3POS | DT04-3P-L012 | 1 | 4.35 | 4.35 | Yes |
| CONN PIN 14AWG NICKEL CRIMP | 0460-215-16141 | 1 | 0.63 | 1.26 | Yes |
| 18-8 Stainless Steel Socket Cap Screw | 73412 | 4 | - | - | Yes |
| #4 F/W S/S .125x.312 | 71004 | 4 | - | - | Yes |
| 4-40 S/S MS Nut | 1170704 | 4 | - | - | Yes |
| RES 100 OHM 1/4W 5% AXIAL | CF14JT100R | 1 | 0.10 | 0.10 | Yes |
|  |  |  |  |  | Yes |
| AC/DC WALL MOUNT ADAPTER 9V 5W | VEL05US090-US-JA | 1 | 6.50 | 6.50 |  |
| BUMPER SQU 0.812"L X 0.812"W BLK | SJ-5523 (BLACK) | 1 | 1.50 | 1.50 |  |
| USB CABLE TYPE A TO B 30CM BLACK | Seeed Technology Co., Ltd | 1 | 1.99 | 1.99 | Yes |
|  | | | **Total** | **69.36** |  |

The CAN transmitter is based off the *Arduino Uno* development board and the *Seeed Technology CAN BUS shield*. Minor and optional materials, such as solder, heat shrink tubing, and grommets are not included.

## Enclosure Models

The CAN transmitter requires a box and lid. These two *.stl* files are to be 3D printed.

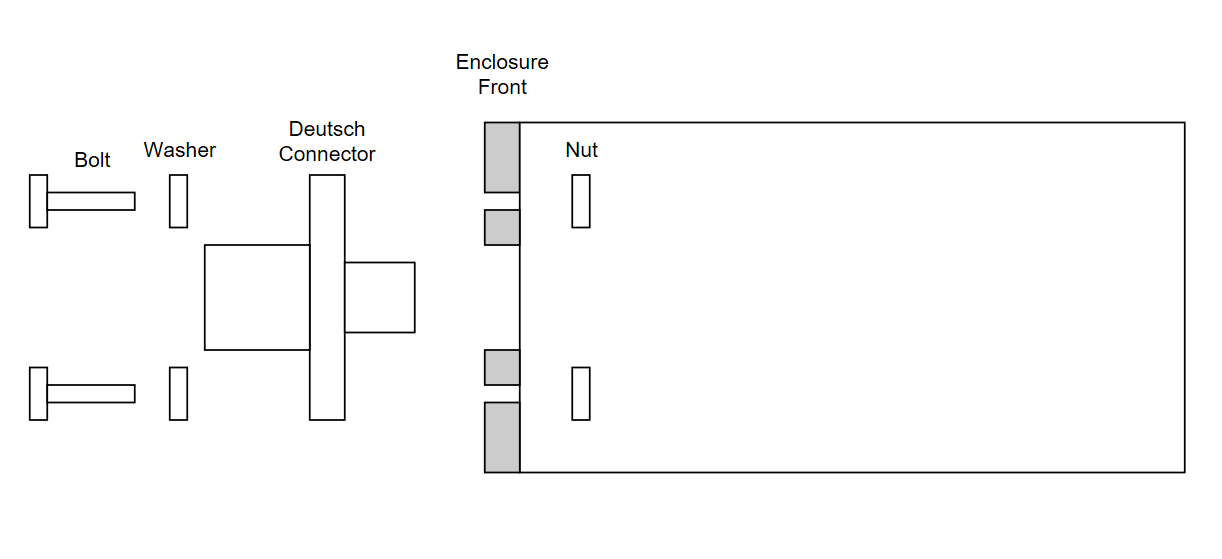
## Arduino Sketch

The CAN transmitter uses the Arduino sketch *CAN\_Transmitter.ino* and the *mcp\_can* library.

# Construction

## Panel Mount Components

The Deutsch 3 pin connector is mounted on the front face using the bolt, washer, and nut as shown.



The indicator LEDs and switch are snap fitted into the lid cutouts. The LED arrangement does not matter.

The

# Environment Setup

## Install Arduino IDE

Download and run the *Windows Installer* from the link below.

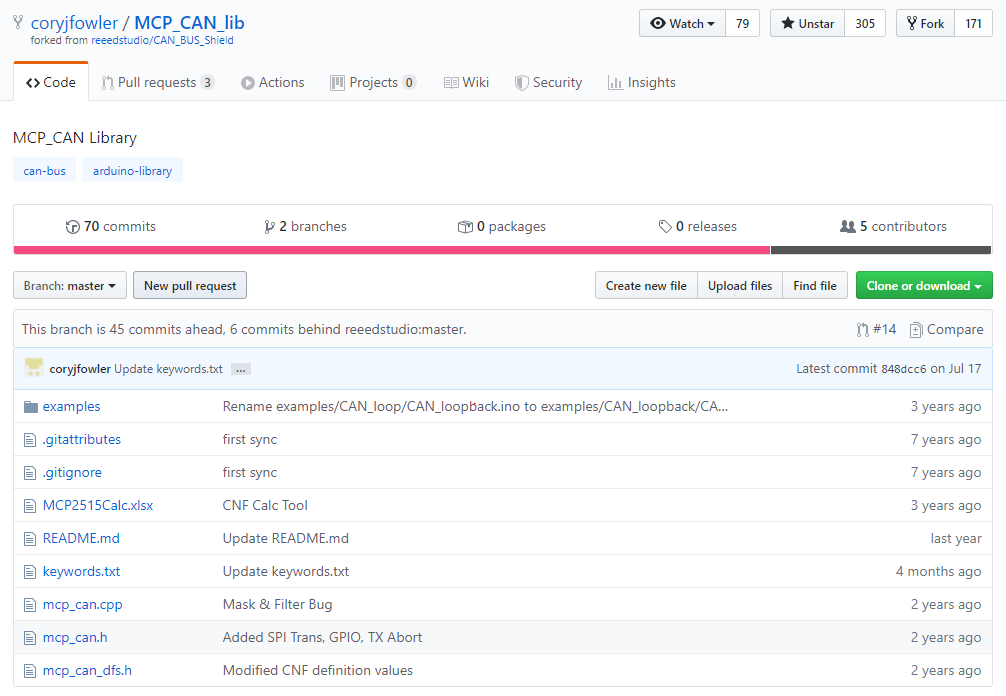
<https://www.arduino.cc/en/Main/Software>



## Install mcp\_can Library

Download the *mcp\_can* library by clicking *Clone or Download*, and *Download ZIP* from the link below.

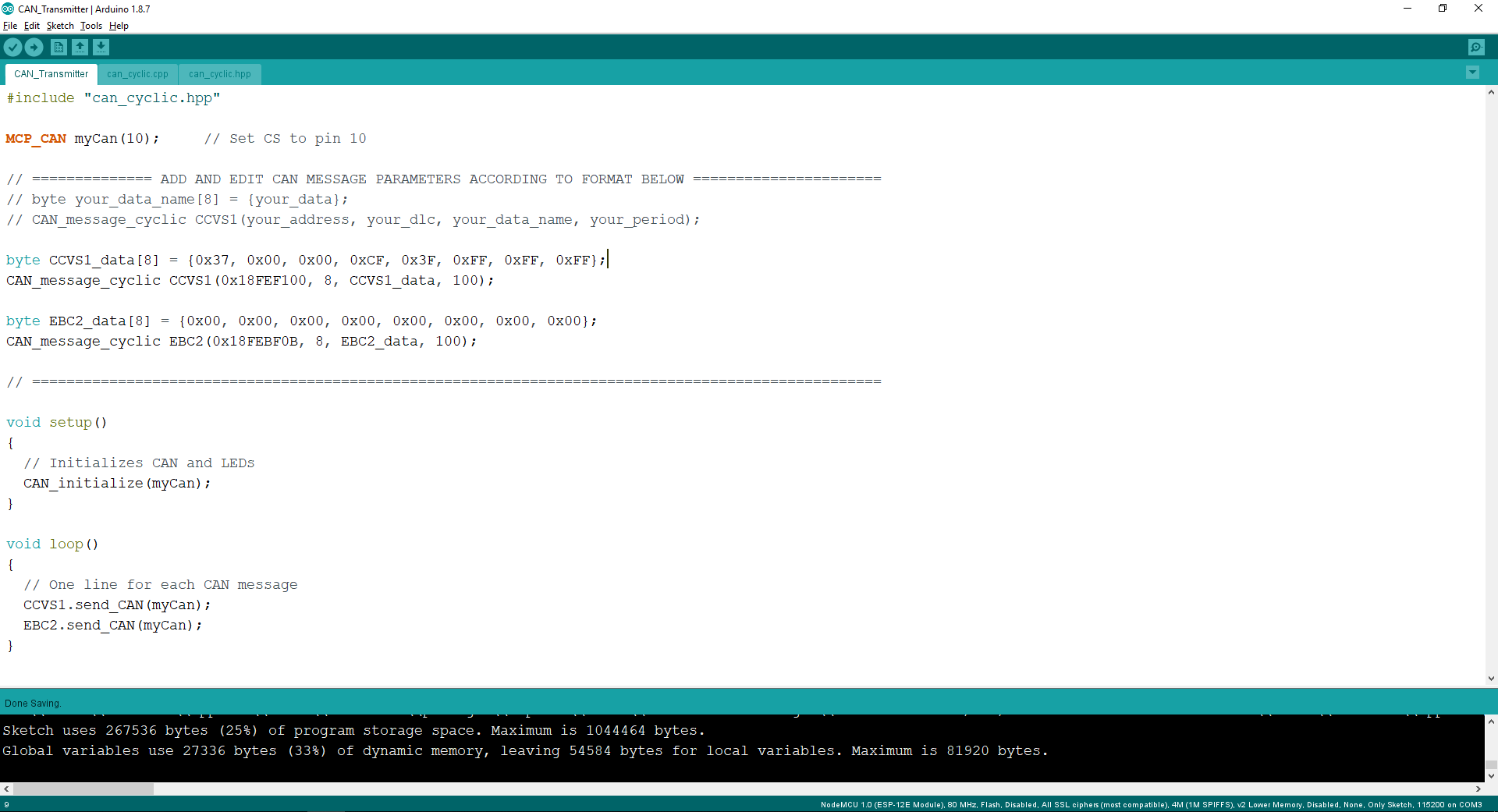
<https://github.com/coryjfowler/MCP_CAN_lib>



To install, open *CAN\_Transmitter.ino*, navigate to *Sketch » Include Library » Add .ZIP Library…*, and add the downloaded *.zip* files.

# Configuration and Programming

Open *CAN\_Transmitter.ino*.

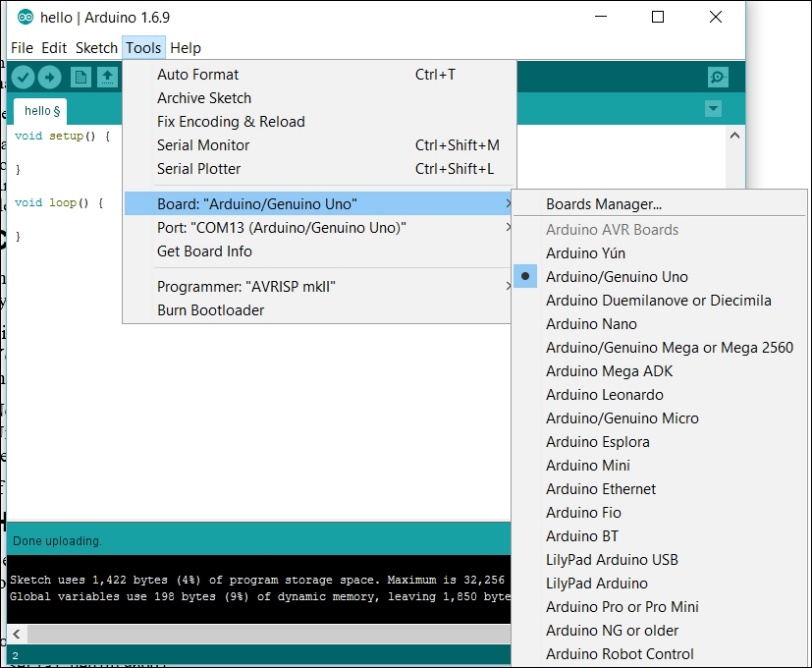


The example above sends CCVS1 and EBC2 messages with a period of 100ms each. To add a new cyclic CAN message, follow the same format with a new data name.

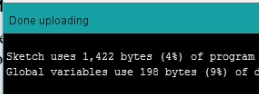
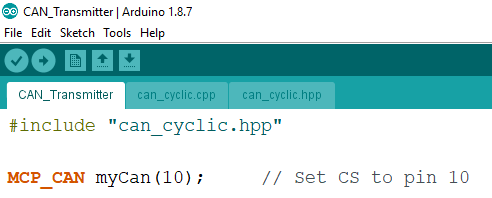
To program, connect your PC to the Arduino with a USB A Male to USB B Male connector.



Under *Tools*, ensure *Board* is selected as *“Arduino/Genuino Uno”*, and *Port* is selected as *“(Arduino/Genuino Uno)”*.



In the top left corner, click the *“Upload”* button, and wait for the *“Done Uploading”* message to appear.



# Use

Plug in the wall adapter, and the *Power* LED should light. After a short time, the *Transmit* LED should begin to flash, and will flash once per message transmitted.

# Licensing and Disclaimer

## CAN Transmitter

The MIT License (MIT)

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## mcp\_can Library

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