

# TATA-340-PP40

## FABRICATED CAN RECEIVER NODE & MCU FUNCTIONAL TESTING PROCEDURE

*Note : This document explains CAN Receiver NODE hardware functional testing procedure and programming*

**AARTECH SOLOINICS LIMITED**



**Document V.0.1**

**DATE : 16-08-2024**

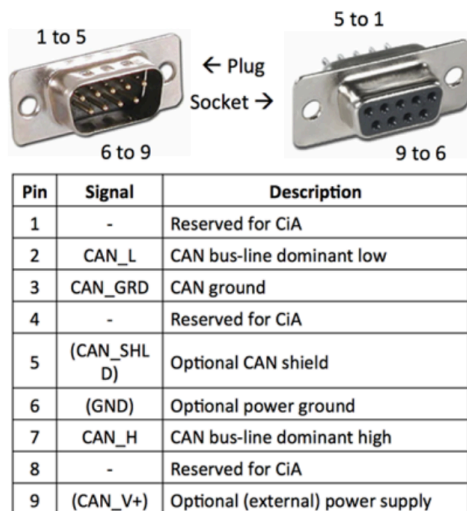
**DOCUMENT BY  
SHRADHA RATHORE**

## TABLE OF CONTENTS

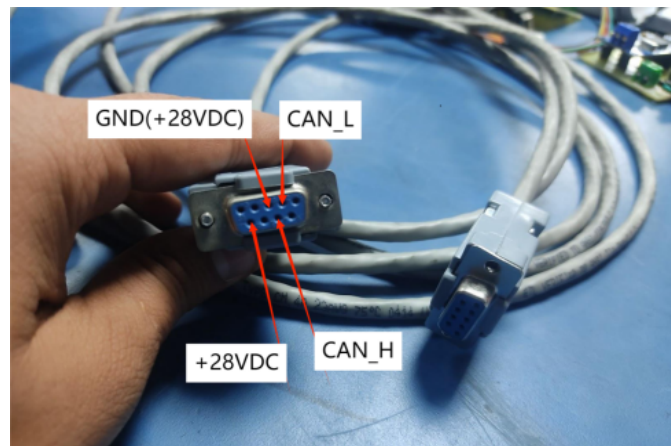
1. SETUP FOR TESTING (TOOLS & EQUIPMENTS)
2. PROGRAM THE CAN RECEIVER NODE
3. BLOCK DIAGRAM OF TEST SETUP
4. TESTING PROCEDURE
  - 4.1 Setup and Connection
  - 4.2 Initial Check
  - 4.3 Communication Test via Serial Terminal
  - How to disconnect
  - Troubleshooting (if necessary)
5. REFERENCE DOCUMENTS
  - 5.1 PCB fabrication
  - 5.2 Code

## 1. SETUP FOR TESTING (TOOLS & EQUIPMENTS)

1. Power supply OR Adaptor  
Output Rating : 24VDC to 28VDC (Max. I/P limit of MCU : 28VDC),1A
2. Multimeter
3. DB09-Connector (Female) Interface Cable : For CAN-Bus and Power supply



**Fig. 1.1 DB09 Pinout**



**Fig. 1.2 Reference Connector and Cable Image**

4. CAN RECEIVER NODE (Please refer to the documentation -Update here -)
5. MCU Board
6. USB-A to USB Micro-B CABLE
7. LAPTOP/WORKSTATION
8. Serial Terminal (Arduino serial, Termitte etc)

## 2. PROGRAM THE CAN RECEIVER NODE

Follow the steps to program CAN RECEIVER NODE.

Step 1: Connect the USB Micro-B to USB-A CABLE for programing the CAN RECEIVER NODE.

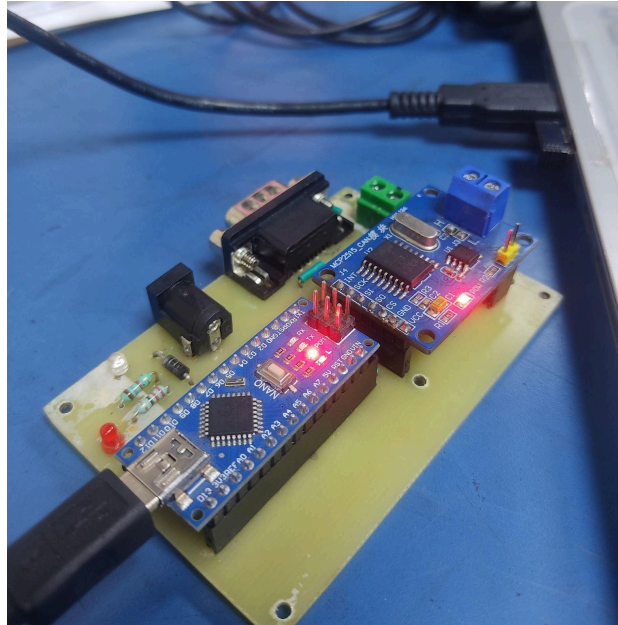


Fig. 2.1

Step 2: Open Arduino IDE, then select the port.

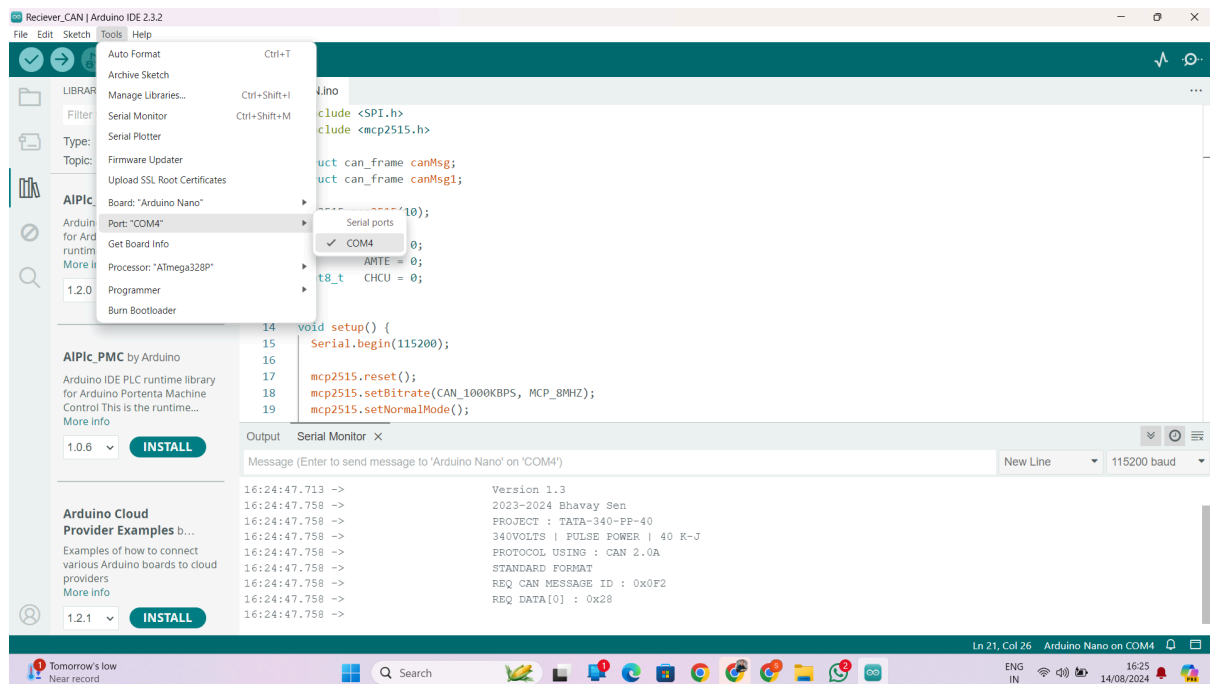


Fig. 2.2

Step 3 : Select the board > Arduino Nano > OK

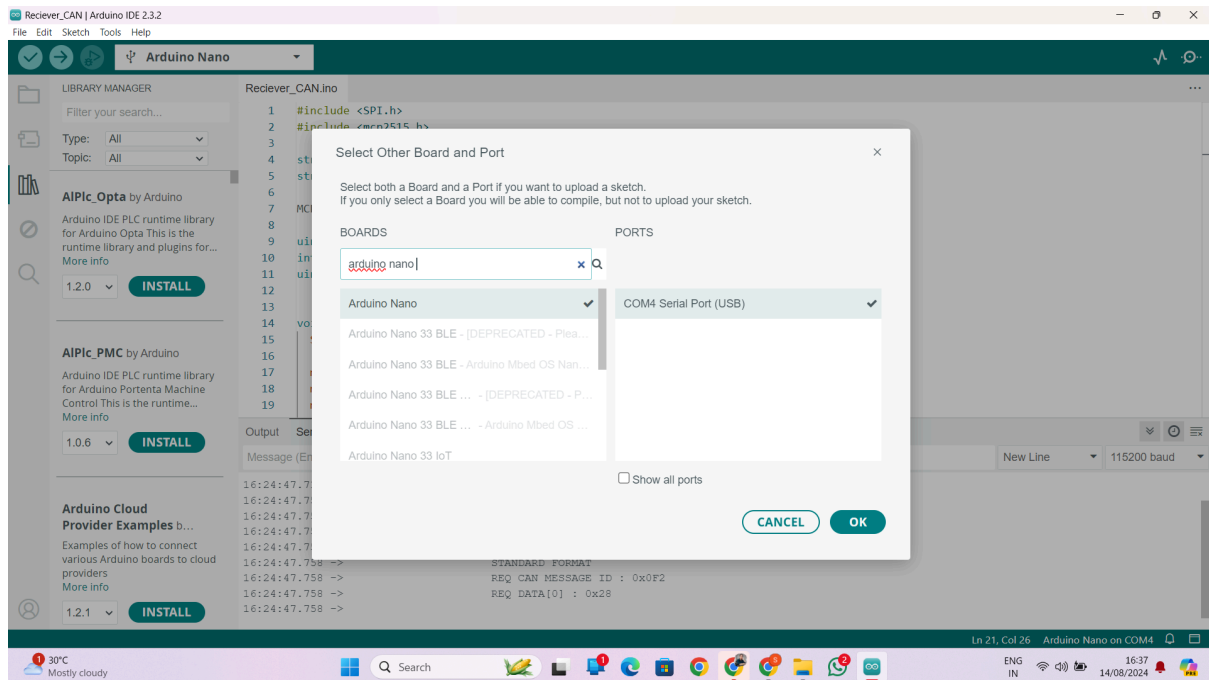


Fig. 2.3

Step 4 : Compile and upload the code.

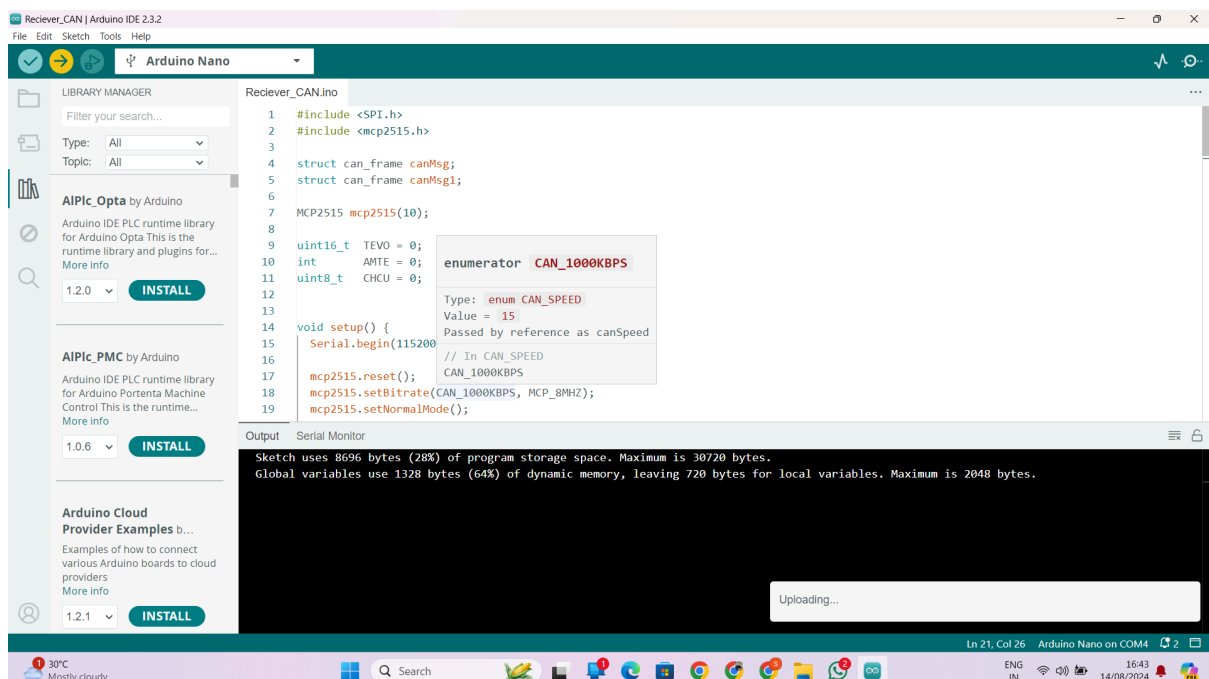
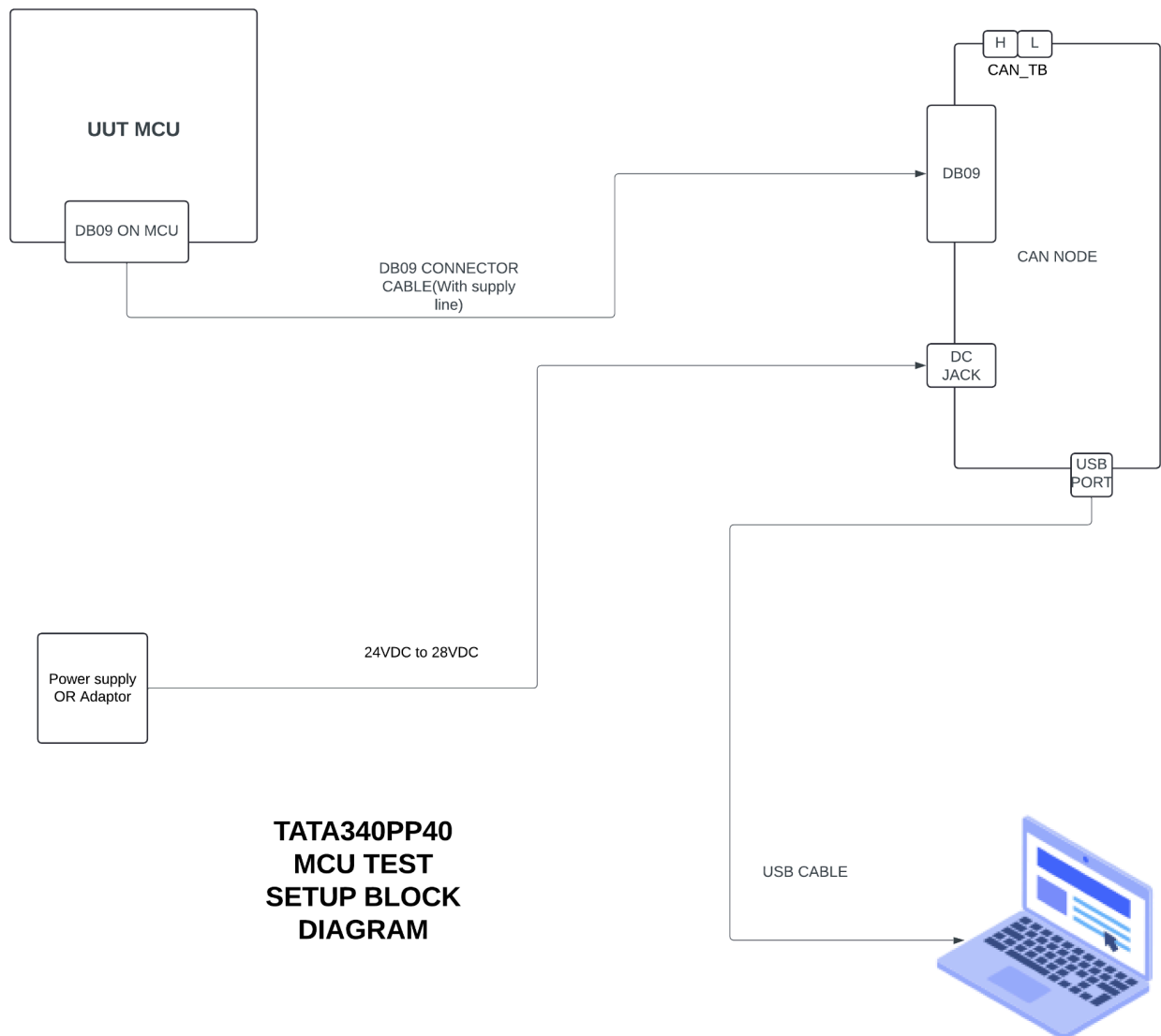


Fig. 2.4

### 3. BLOCK DIAGRAM OF TEST SETUP



**Fig. 3.1**

## 4. TESTING PROCEDURE

### 4.1. Setup and Connection:

Step 1: Connect DB09 Connector Cable.

1. Locate the DB09 connector (Female) interface cable.
2. Connect one end of the DB09 connector cable to the CAN fabricated node.
3. Connect the other end of the DB09 connector cable to the corresponding port on the MCU board.

Step 2: Connect the USB Cable.

1. Take the USB-A to USB Micro-B cable.
2. Connect the USB Micro-B end to the CAN fabricated node.
3. Connect the USB-A end to your laptop/workstation.

Step 3: Connect Power Supply.

1. Prepare your power supply or adapter with an output rating of 24VDC to 28VDC.
2. Connect the power supply to the CAN fabricated node using the DC jack.
3. Ensure the multimeter is set to measure DC voltage, and use it to verify that the output from the power supply is within the specified range (24VDC to 28VDC).

### 4.2. Initial Check:

1. Observe the LED indicators on the MCU board and the CAN fabricated node to ensure they are functioning correctly for power supply.

### 4.3. Communication Test via Serial Terminal:

1. Launch your chosen serial terminal software (e.g., Arduino Serial Monitor, Termite) on your laptop/workstation.
2. Set the correct COM port and baud rate ( i.e. 115200 bps).
3. Initially, a start message will be displayed on the terminal.

```

12:49:37.051 ->          ----- CAN Read -----
12:49:37.051 ->          AARTECH SOLONICS LIMITED
12:49:37.051 ->          Version 1.3
12:49:37.051 ->          2023-2024 Bhavay Sen
12:49:37.051 ->          PROJECT : TATA-340-PP-40
12:49:37.051 ->          340VOLTS | PULSE POWER | 40 K-J
12:49:37.051 ->          PROTOCOL USING : CAN 2.0A
12:49:37.051 ->          STANDARD FORMAT
12:49:37.051 ->          REQ CAN MESSAGE ID : 0x0F2
12:49:37.069 ->          REQ DATA[0] : 0x28
12:49:37.069 ->

```

4. Observe the CAN receiver node's response on the serial terminal and LED indication on MCU and CAN receiver NODE.

**How to disconnect:**

1. Disconnect the power supply and USB cable.
2. Safely disconnect the DB09 connector cable from the MCU board and the CAN fabricated node.
3. Document any observations, including successful communication or any issues encountered.

**Troubleshooting (if necessary):**

If there is no response from the CAN receiver node:

1. Recheck all connections.
2. Verify that the power supply is within the correct range using the multimeter.
3. Confirm the COM port and baud rate settings in the serial terminal.

## 5. REFERENCE DOCUMENTS

### 5.1 PCB fabrication

[https://github.com/BhavaySen/TATA340PP40\\_SOFTWARE/tree/master/Hardware](https://github.com/BhavaySen/TATA340PP40_SOFTWARE/tree/master/Hardware)

### 5.2 Code

[https://github.com/BhavaySen/TATA340PP40\\_SOFTWARE/tree/master/Software/TATA\\_MCU\\_TEST\\_NODE\\_V.0.1-CODES](https://github.com/BhavaySen/TATA340PP40_SOFTWARE/tree/master/Software/TATA_MCU_TEST_NODE_V.0.1-CODES)