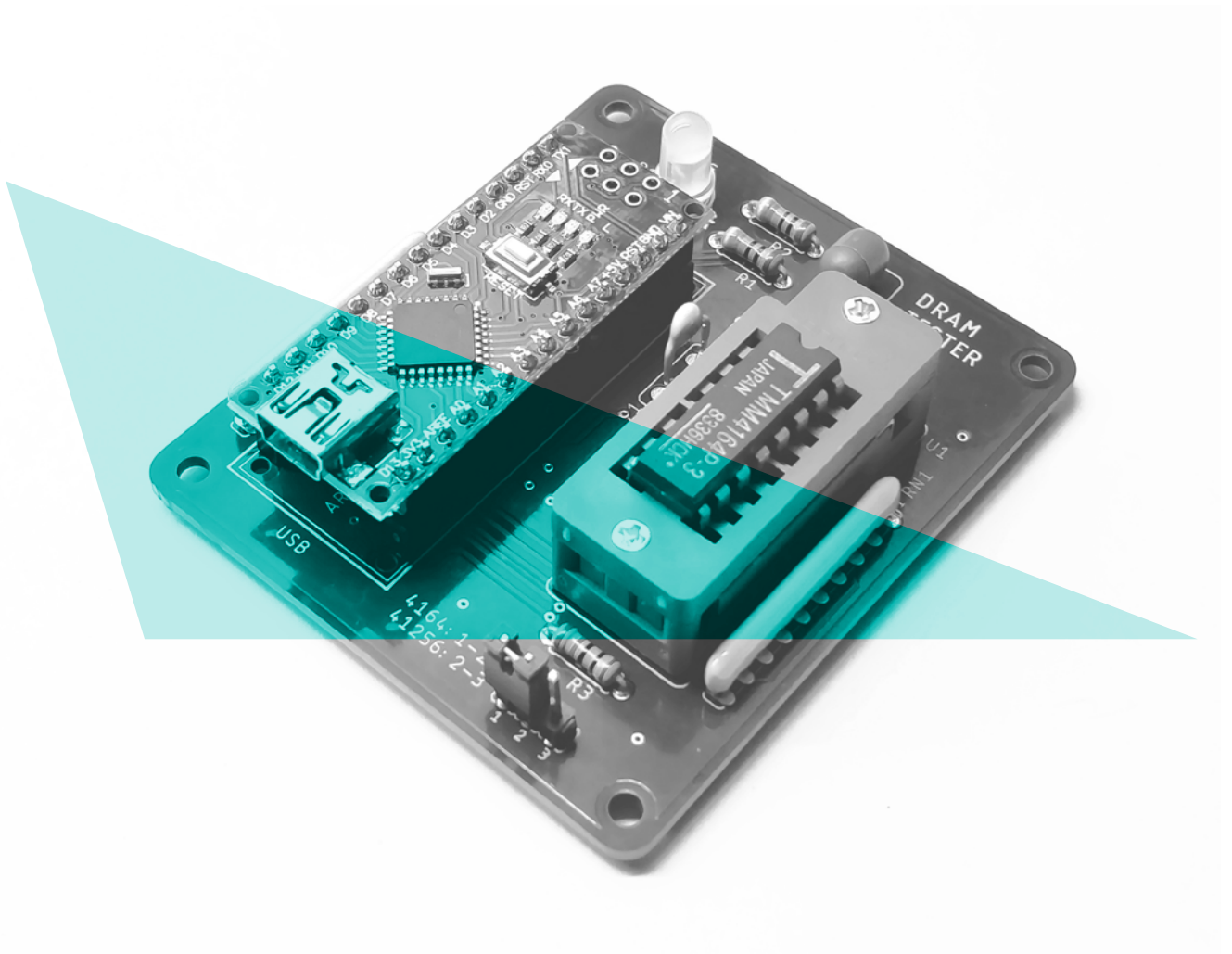


DRAMBOARD

VERSION 1.2



4164/41256 DRAM CHIP TESTER

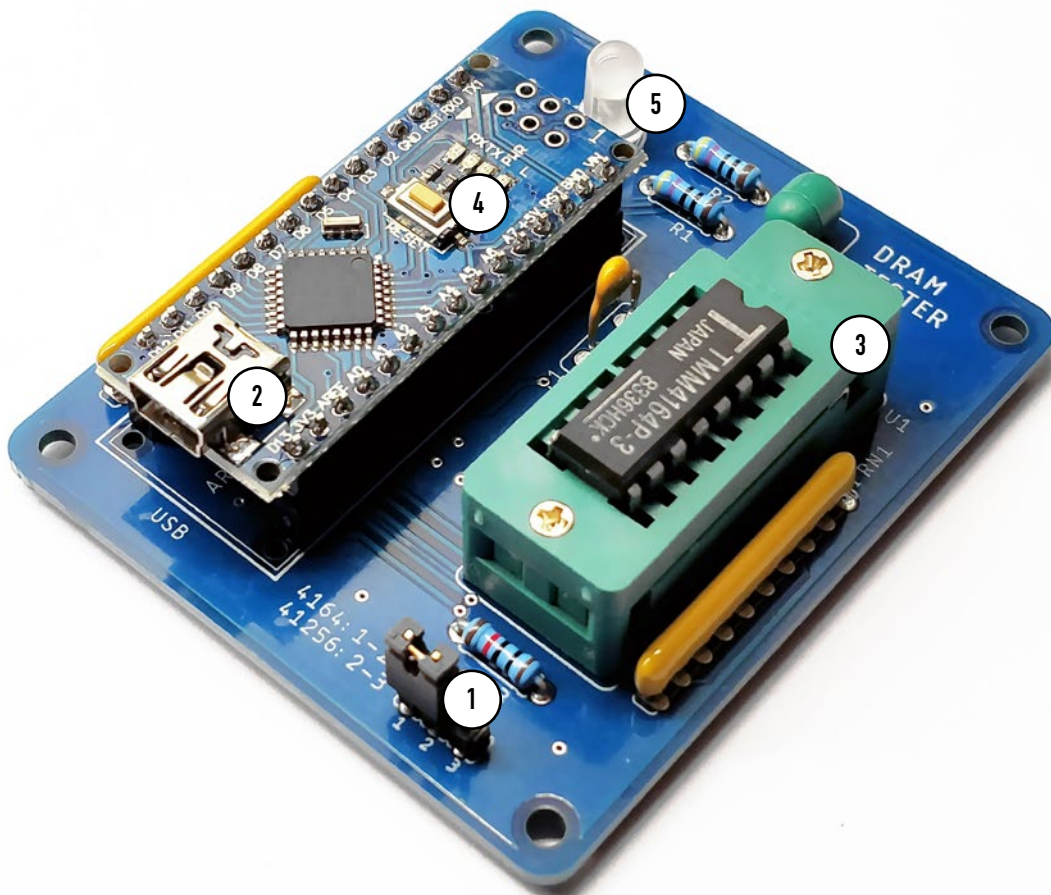
USER MANUAL

DRAMBOARD

The **DRAMBOARD** is an Arduino Nano based 4164/41256 DRAM memory chip tester. 4164 DRAM is used in Commodore 64 and other old computers.

INSTRUCTIONS

1. Select **4164 or 41256 test mode** with jumper (1)
2. Connect **Arduino micro USB connector (2)** to **powered (5V) USB port** with attached cable
3. Insert **DRAM chip** in socket (3), check chip orientation
4. Press **reset button (4)** on Arduino Nano for new test run
5. Observe **LED (5)** status
 - **Green:** Init & passed all tests
 - **Yellow/orange:** tests running
 - **Red (flashing):** test failed
6. **Remove DRAM chip** from socket when tests are finished



SPECIFICATIONS

Supported DRAM types	4164 and 41256 (see cross test reference lists below)
Serial monitoring	CH340 chip*, 9600 bauds
Tests duration	4164: 40s 41256: 1m 45s
Tests configuration	The tester runs four loops of following tests: <ul style="list-style-type: none">- Fill memory with ones and verify- Fill memory with zeros and verify- Fill memory with alternating ones and zeros and verify- Fill memory with alternating zeros and ones and verify
Protection	Polymer PTC self-resettable fuse** & current limiting resistors

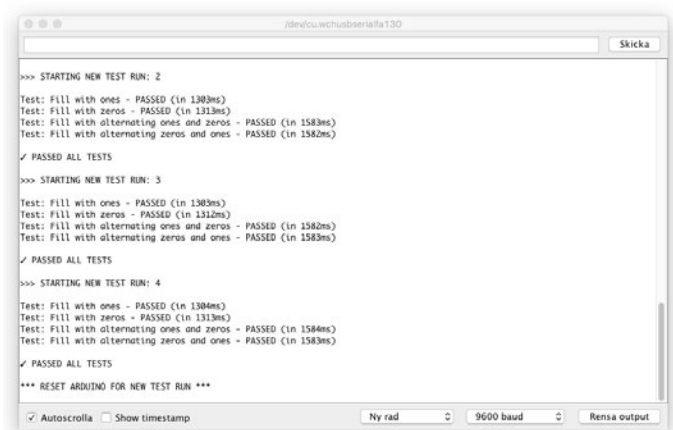
* CH340 drivers download: <https://sparks.gogo.co.nz/ch340.html>

** Can be bypassed with solder bridge on PCB bottom

SERIAL MONITOR

The DRAM tester supports serial monitoring for enhanced test status information

1. **Connect the tester to your computer**
2. **Download and install CH340 drivers**
3. **Download and install serial port terminal/monitor** on your computer
4. **Start your terminal program** and select the proper serial COM port and 9600 baud rate
5. **Start new test run** by pushing reset button on the Arduino Nano



```
>>> STARTING NEW TEST RUN: 2
Test: Fill with ones - PASSED (in 1303ms)
Test: Fill with zeros - PASSED (in 1313ms)
Test: Fill with alternating ones and zeros - PASSED (in 1583ms)
Test: Fill with alternating zeros and ones - PASSED (in 1582ms)
✓ PASSED ALL TESTS
>>> STARTING NEW TEST RUN: 3
Test: Fill with ones - PASSED (in 1303ms)
Test: Fill with zeros - PASSED (in 1312ms)
Test: Fill with alternating ones and zeros - PASSED (in 1582ms)
Test: Fill with alternating zeros and ones - PASSED (in 1583ms)
✓ PASSED ALL TESTS
>>> STARTING NEW TEST RUN: 4
Test: Fill with ones - PASSED (in 1304ms)
Test: Fill with zeros - PASSED (in 1313ms)
Test: Fill with alternating ones and zeros - PASSED (in 1584ms)
Test: Fill with alternating zeros and ones - PASSED (in 1583ms)
✓ PASSED ALL TESTS
*** RESET ARDUINO FOR NEW TEST RUN ***
Autoscrolla Show timestamp Ny rad 9600 baud Rensa output
```

Screenshot from the Arduino IDE serial monitor

4164 DRAM CROSS REFERENCE

- MB8264-15** (Fairchild)
- MB8264A-15** (Fujitsu)
- HM4864, HYB4164P2BD** (Hitachi)
- M3764A-15** (OKI)
- MT4264-25** (Micron)
- M5K4164AP-15, M5K4164 ANP-10** (Mitsubishi)
- MK4564N-20** (Mostek)
- MCM4164BP15, MCM6665BP20, MCM6665AP** (Motorola)
- D4164C-2, D4164C-15, uPD 4164-1** (NEC)
- KM4164B-15** (Samsung)
- TMM4164 C-3, TMS4164-15NL, TMS4164-20NL** (Toshiba)

41256 DRAM CROSS REFERENCE

- TMS4256** (Toshiba)
- MCM6256** (Motorola)
- HM51256** (Hitachi)
- MB81256** (Fujitsu)
- HYB41256** (Siemens)
- KM41256** (Samsung)
- MSM41256** (OKI)
- uPD41256** (NEC)