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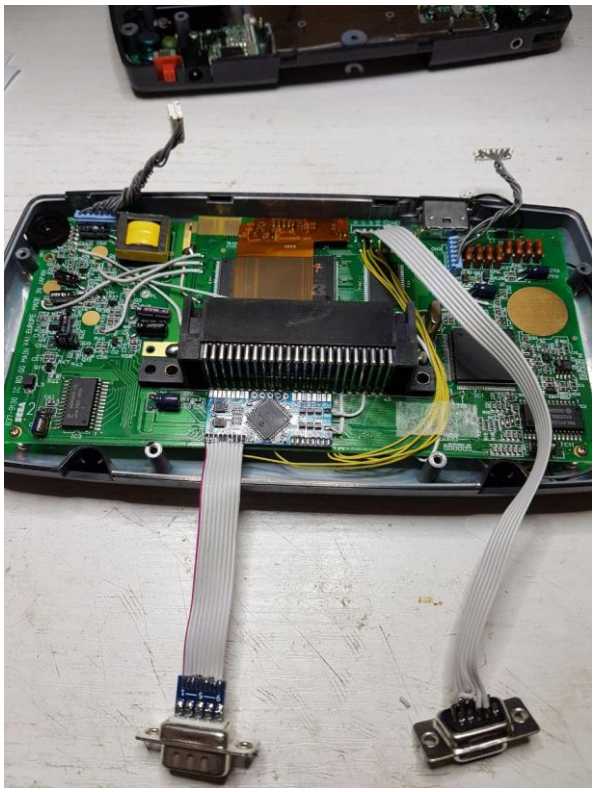
SEGA Game Gear Controller

pxlmod Installation Guide V1.0

Bas Gialopsos 09 Nov 2019



The Scope of this Guide is to aid the Installation of the Pxlmod SEGA Game Gear Controller kit which can be purchased from VideoGamePerfection.Com. It allows the connection of a regular SEGA MegaDrive Joypad to control the Game Gear.

When Paired with an external VGA connection, courtesy of McWill's LCD Screen Upgrade kit, it provides the Game Gear with both Hand Held and 'Console' use options.

Caution / Disclaimer – To Install this modification you must have an understanding of ESD Precautions and follow them at all times, you will be required to solder to SMD 0805 size components as well as some mechanical modification of the Game Gear shell.

VGP and BetaGamma Computing cannot be held responsible for any injury or damage sustained whilst following this guide.

Preparation

The Game Gear will need to be re-capped, this is a mandatory step, do not install ANY upgrades to the Game Gear prior to a full recap and system test.

If you are installing a McWill Replacement LCD screen then this must be installed first. Cut outs for the 15 Pin VGA Connector and the 9 Pin D-Type required for this installation can be carried out at the same time.

Ensure that your McWill installed upgrade, including VGA, if the option is fitted, is fully tested and working satisfactory.

It is not in the scope of this guide to provide step by step details on modifying the Game Gear shell for the D-Type cut outs, there are many tutorials available on YouTube, plus it is assumed that you are adept at carrying out precision mechanical modifications with care.

It is advised to read this guide prior to starting ANY work on the Game Gear itself.

You will need a fine tipped temperature controlled soldering iron and ensure ESD precautions are carried out at all times. Suitable 60/40 leaded solder as well as general tools to strip, install, inspect and rebuild the Game Gear.

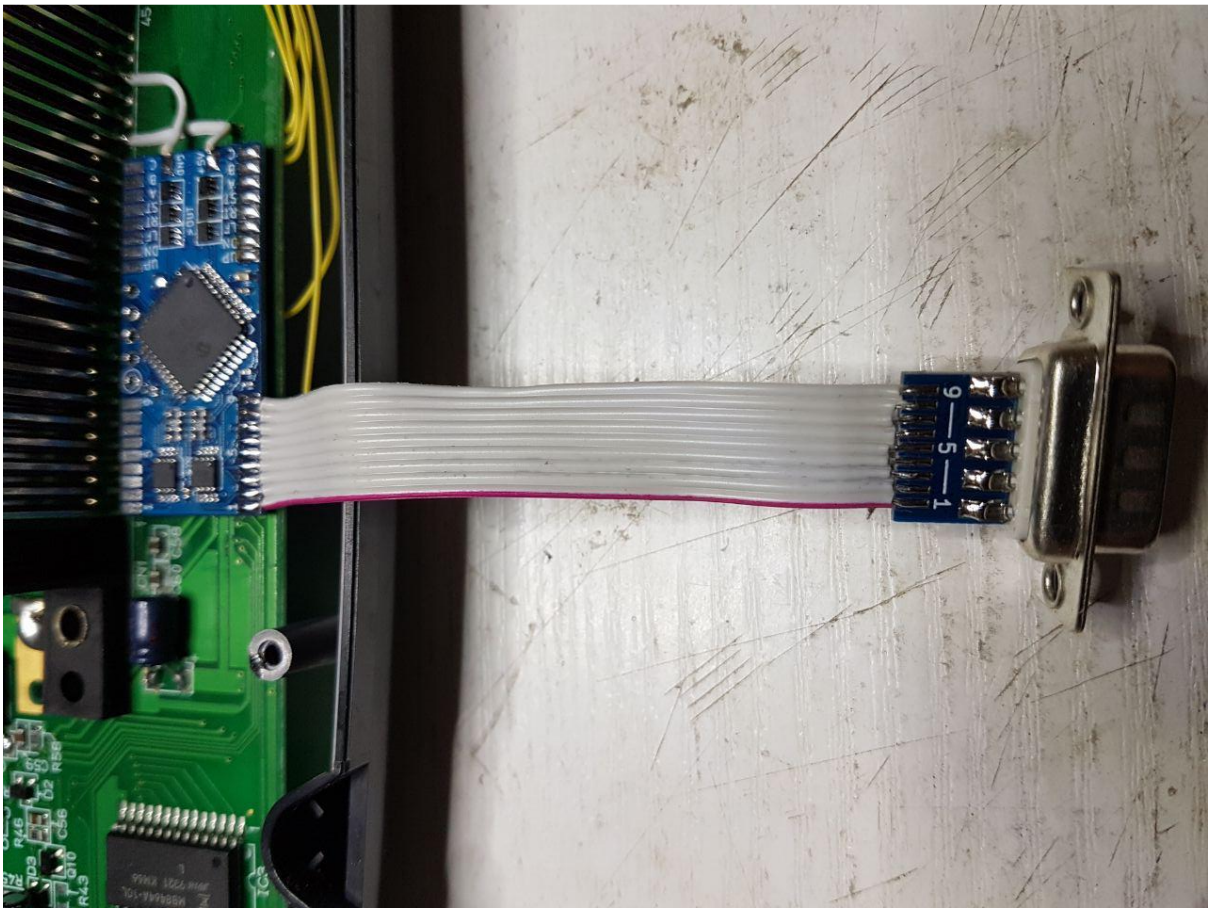
The supplied kit consists of 2 PCB’s and a 9-way D-Type male socket, you will need to provide a 50CM strip of 9Core IDC cable and some Kynar 30AWG Insulated wire to carry out the Install.

The Install guide will begin with the Game Gear stripped down and recapped. In this guides example Game Gear you will see that a McWill LCD replacement screen has already been fitted along with the VGA optional cable loom.

Step 1 – Building the 9-Pin DType Loom assembly

Using a pair of cutters strip both ends of the 50CM 9 way IDC Cable carefully leaving 2 or 3 mm or wire visible. Tin both ends and trim as necessary.

I recommend soldering one end of the flat cable to the smaller DSUB PCB first. Make a note of Pin 1's polarity, i.e the red marked end of the IDC cable.



Now, solder the other end of the IDC cable to the processor board, observing polarity as indicated on both PCB's and the red IDC wire indication.

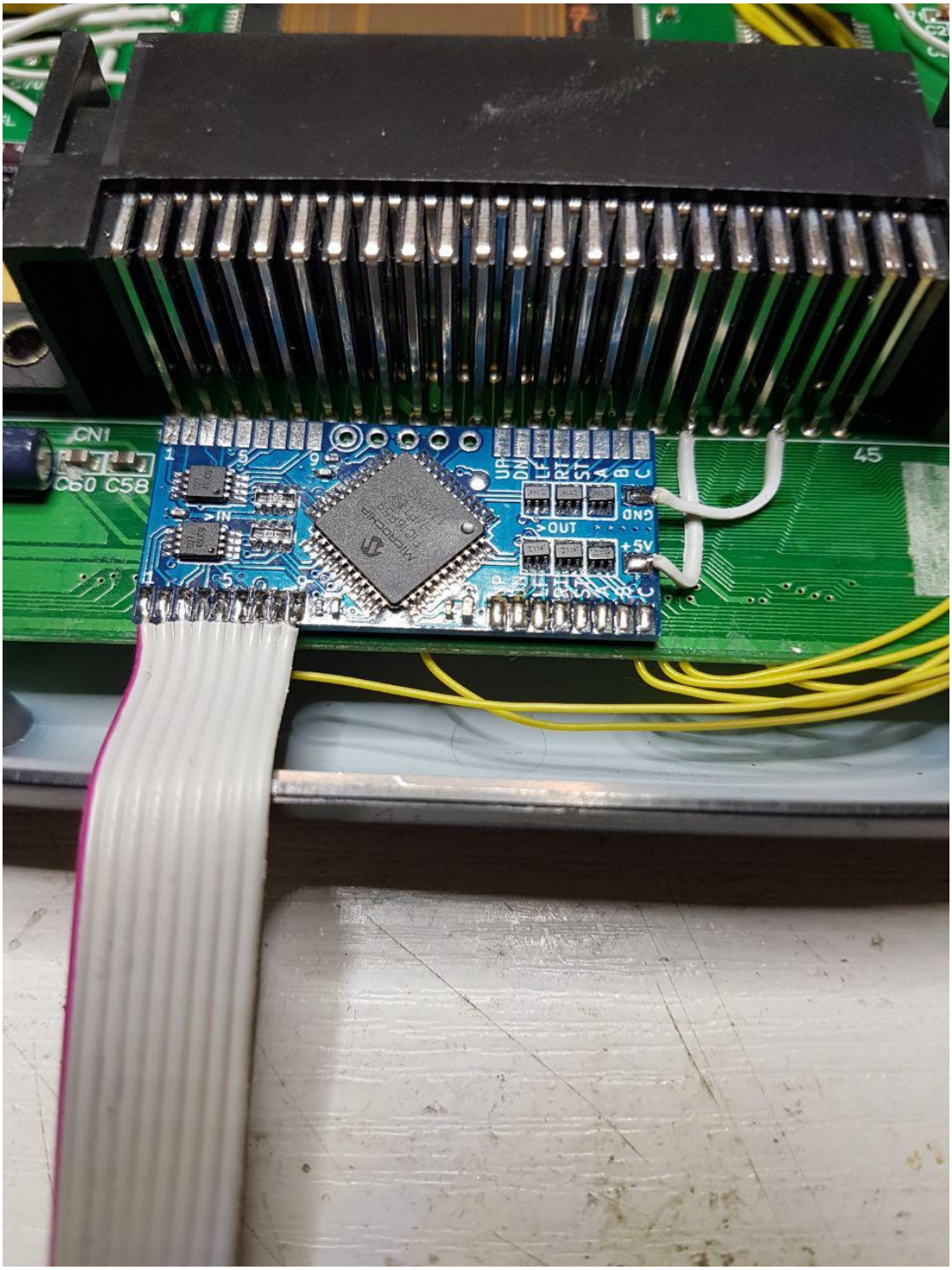
At this point, Use IPA to remove Flux from both connections and use a magnifying tool to ensure you have no short circuits or solder splashes between all solder connections.

At this point now You can push the DSub PCB between the 2 rows of the D-Type socket and solder all 9 Pins securely on both sides.

Inspect your work again for any possible shorts etc.

Step 2 – Board Installation and Power Supply Hook-up

Using Insulated double side tape, or a piece of double sided foam pad, the processor PCB can be Installed securely within the Game Gear as shown below.

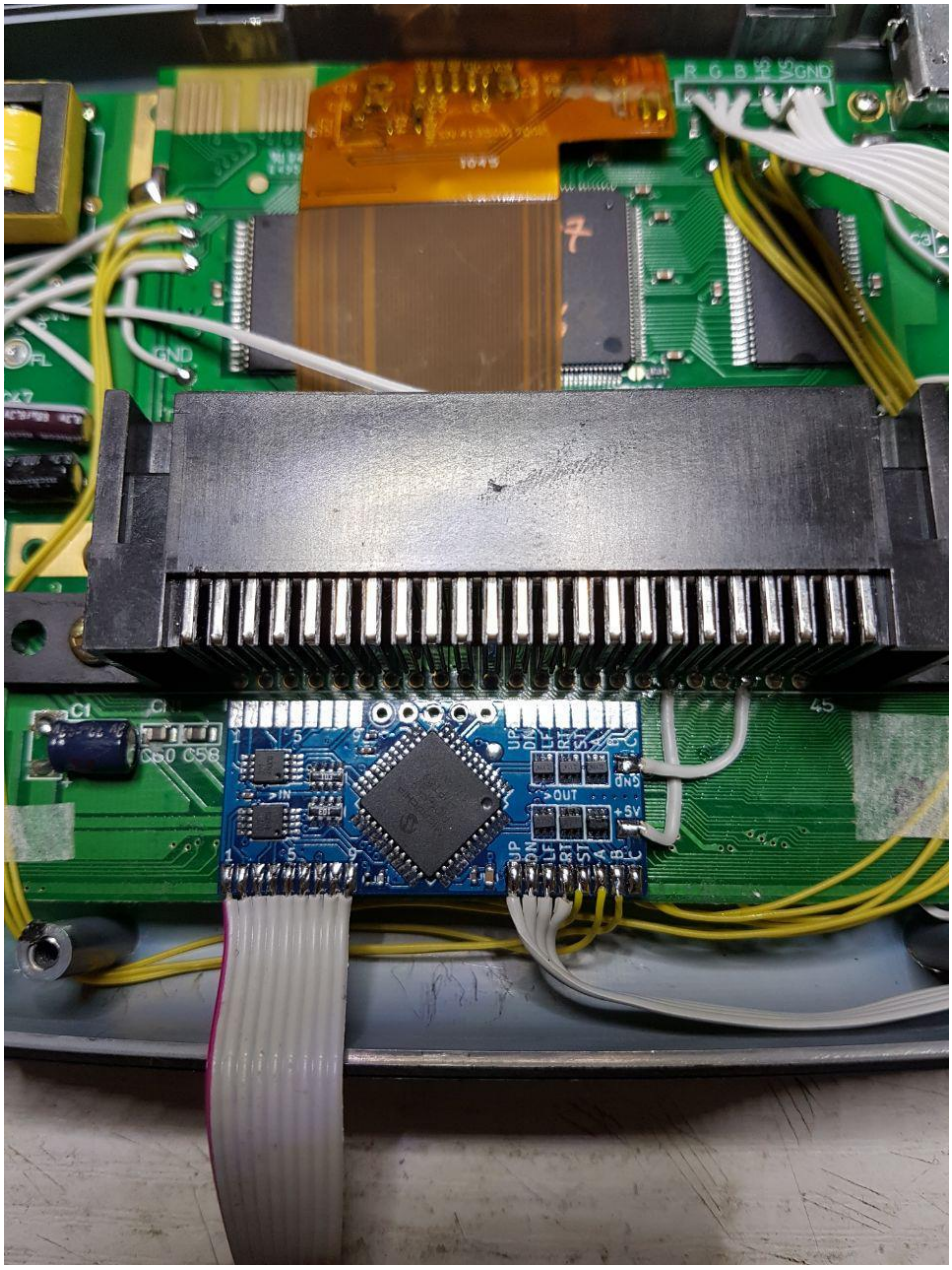


Ensure you leave a gap between the processor PCB edge and the Game Gear cartridge pins.

Hook up the +5V and GND points to the Processor PCB from the cartridge connector pins as shown above. Observe the correct polarity.

Step 3 – Control Input Hook-up

This is the trickiest part of the Install as you will need to solder directly to small SMD components. 30 AWG Kynar wire is recommended and lots of patience.



Referring to the picture above, on the bottom right you can see a row of solder pads labelled UP,DN,LF,RT,ST,A,B,C

These directly refer to the buttons on the Mega Drive joypad and can now hook up our Game Gear control signals in an appropriate manner.

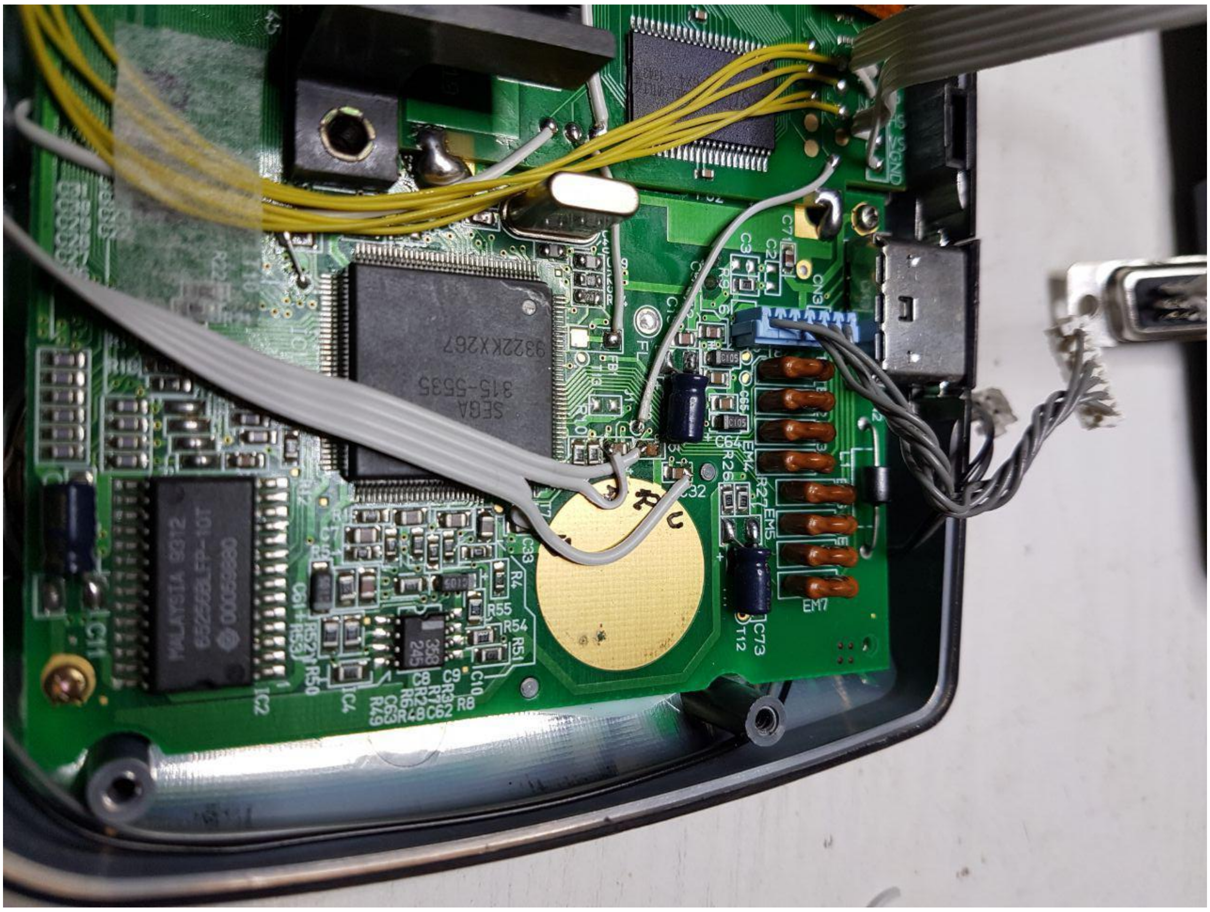
Notice there are 3 button options A,B,C whereas the Game Gear has only 2 buttons. In my example I have decided to use buttons A and B on the Mega Drive joypad but you can map whichever you prefer.

There are two main revisions of Game Gear PCB. Which revision you have will define our hook-up points.

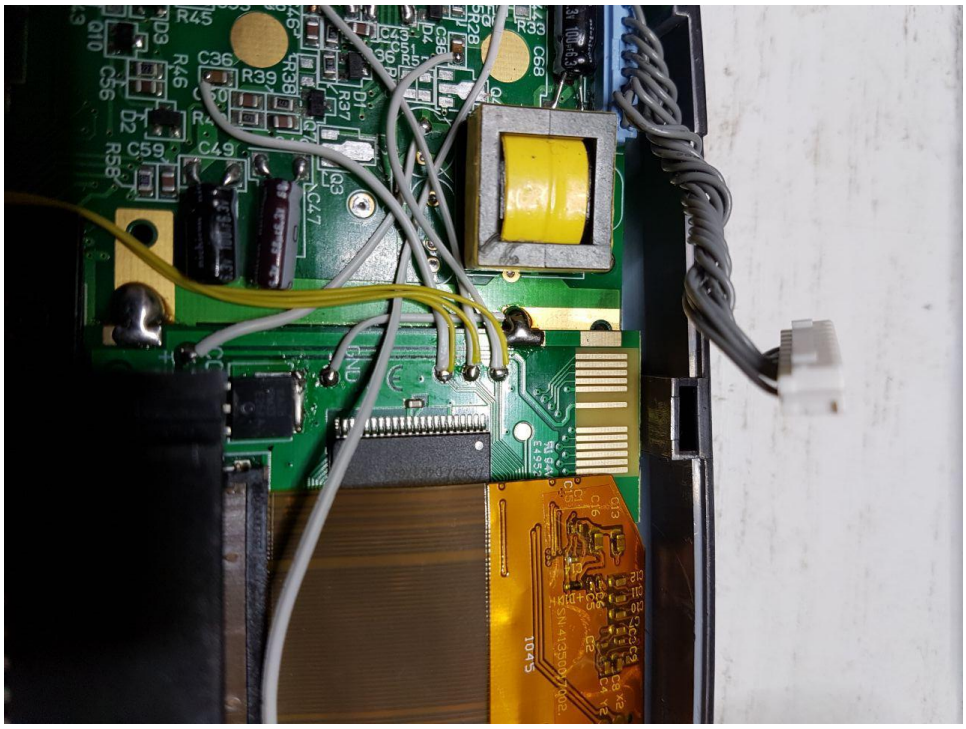
Function	IC BD GG Main USA 837-9024 Single ASIC	IC BD GG Main USA 837-7719-01 Twin ASIC	Test Points Common to Both Versions
START	EAST C38	EAST C30	M16
Button I	SOUTH C36	SOUTH C28	M14
Button II	WEST C37	WEST C29	M15
UP	NORTH C32	SOUTH C24	M10
DOWN	NORTH C33	NORTH C25	M11
LEFT	SOUTH C34	SOUTH C26	M12
RIGHT	SOUTH C35	SOUTH C27	M13

Identify your revision and using the table below you will be able to identify a suitable wire attachment.

My Example is a single chip ASIC type and you can see my hook-up points below.


EM7
R55
R54
R51
C73
C33
C10

If you have the McWill LCD replacement screen installed, then you can common the button inputs by attaching directly to the screen connections as shown below.



Otherwise just solder the button wires directly as outlined in the Table to the left hand side of the Game Gear PCB.

Now you can part reassemble the Game Gear and test away.