Part #: CYW20819 Arduino Eval Kit
CYPRESS AUTHORIZED DISTRIBUTOR Digi-Key
Description: Power your IoT design with Cypress' world class, ultra-low-power Bluetooth 5.0 connectivity
Download Datasheet

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Author Topic: Electronic load - difference between M9710 and M9711? (Read 17750 times)

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aaardvaark
Newbie
Posts: 2

Electronic load - difference between M9710 and M9711?
« **on:** September 04, 2013, 08:21:34 am »

Say Thanks Reply Quote

Hi - first post here - just found this forum while researching above topic. I've read the long discussion on Chinese electronic loads - very interesting. But the statement that 9710 is for the chinese market doesn't help me much -- Since it's a lot cheaper and is being sold by the same shops, I'll save $70 if I can. The shop I asked said the 9710 is less accurate and the software is missing some features. From my reading the specs are identical, and I'm sure they both run the same software which I understand you can download.

Does anyone know why the 10 is considerably cheaper than the 11, what I'd be losing? What does it mean to say "made for the Chinese market" if the specs are the same? The pics in the shop show both have an English manual.

Cheers
Julian

Report to moderator Logged

iloveelectronics
Frequent Contributor
Posts: 937
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #1 on:** September 04, 2013, 08:37:23 am »

Say Thanks Reply Quote

I don't know if there's any difference in the software but in terms of specs the M9710 does seem to be slightly inferior to the M9711. You can download the M9710 full specs here:
http://www.maynuo.com/downloadfile/2009121140356977.pdf

This file is only linked from the Chinese version of the website. If you compare it to the M9711 specs

(which you can find from the English website), you will see there are some differences in ranges and tolerances.

Report to moderator Logged

My email address: franky @ 99centHobbies . com
My eBay store: http://stores.ebay.com/99centhobbies

aaardvaark
Newbie
Posts: 2

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #2 on:** September 04, 2013, 09:19:17 am »

Thanks for that. The supplier I was looking at published exactly the same specs for both ...

http://www.aliexpress.com/item/M9711-Programmable-DC-Electronic-Load-0-30A-0-150V-150W/687221739.html
http://www.aliexpress.com/store/product/M9710-Programming-DC-electronic-load-30A150V150W/512038_687210815.html

which I suppose are specs for the M9711.

The differences between the specs you posted and the more expensive version are TINY! Constant resistance mode accuracy (fine by me) and current measurement resolution-- I can't ever see myself wanting to measure current to 0.01mA esp since the accuracy is 3 mA! Why do they put in useless digits? And the M9711 will battery test for 32 hours instead of 16 (actually that might be useful).

So I'll probably pay the extra just to be sure, dammit. (I found it cheaper here http://www.aliexpress.com/item/M9711-0-30A-0-150V-150W-programmable-DC-electronic-load/1228900794.html but need to pay $50 for the USB cable). Wish I understood Chinese to get TaoBao prices!

Thanks for the info, I appreciate it.

Report to moderator Logged

mcinque
Supporter

Posts: 1032
Country:
I know one thing: that I know nothing

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #3 on:** September 04, 2013, 11:20:48 am »

I've asked to Maynuo about the differences (mostly about price).

They told me that 9710 is only for chinese market because they use cheap components, because of this the units have a high repair rate: they can manage the repairs because the units are in their country while for overseas it wouldn't be easy.

They told me also that for the 9711 (overseas export) they use quality components and follow QA procedures, the repair rate is no more than 1%

Me too was tempted to buy the 9710 on aliexpress...

Report to moderator Logged

I'm basically still a rookie and because of this, even with the best intentions, I often say bullshits

Dave
Super Contributor

Posts: 1200
Country:
I like to measure things.

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #4 on:** September 04, 2013, 11:41:36 am »

> **Quote from: aaardvaark on September 04, 2013, 09:19:17 am**
>
> The differences between the specs you posted and the more expensive version are TINY! Constant resistance mode accuracy (fine by me) and current measurement resolution-- **I can't ever see myself wanting to measure current to 0.01mA esp since the accuracy is 3 mA! Why do they put in useless digits?** And the M9711 will battery test for 32 hours instead of 16 (actually that might be useful).

Resolution without matching accuracy can be useful as well! The absolute value of the reading may be off, but you can still see changes over time.

If I were you, I would pick the one that's not made for the Chinese market. I believe I have read that Rigol puts lower quality components in the gear they sell in China, because it doesn't cost them much to handle the repairs when the units go bad. I wouldn't be surprised if Maynuo did the same.

Report to moderator Logged

<fellbuendel> it's arduino, you're not supposed to know anything about what you're doing
<fellbuendel> if you knew, you wouldn't be using it

crisr
Contributor

Posts: 45
Country:

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #5 on:** September 04, 2013, 10:13:28 pm »

I was also tempted by the price difference between 9710 and 9711 on Ali Express (US$380 x US$506 shipped); I asked Maynuo and also got the "for Chinese market" and "high repair rates" answer. I ended up buying a 9811 at eBay for US$425 + US$55 UPS shipping to Brazil (=US$480), it should arrive next week. For what I understood the basic difference between the 9711 and the 9811 is that the latter has a LED test mode, whatever that means...

« *Last Edit: September 04, 2013, 10:15:37 pm by crisr* »

Report to moderator Logged

gbyleveldt
Contributor

Posts: 21
Country:

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #6 on:** September 05, 2013, 07:29:50 pm »

Quote from: aaardvaark on September 04, 2013, 09:19:17 am

> Thanks for that. The supplier I was looking at published exactly the same specs for both ...
>
> http://www.aliexpress.com/item/M9711-Programmable-DC-Electronic-Load-0-30A-0-150V-150W/687221739.html
> http://www.aliexpress.com/store/product/M9710-Programming-DC-electronic-load-30A150V150W/512038_687210815.html

FWIW, I can highly recommend Cong (the shop linked above). I bought the 9711 and two 8811's from him over two transactions and he was very very good. He's a little more expensive than others I've seen, but totally worth it from a peace of mind and honesty pov.

Report to moderator Logged

Resistance is not futile; it is voltage divided by current (R=V/I)

LaurenceW
Frequent Contributor

Posts: 258
Country:

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #7 on:** September 05, 2013, 09:47:20 pm »

Julian,

I would be cautious of Ali Express and stories about "export quality" products! They will tell you what you want to hear.

If the only difference between the two eLoad's spec is the accuracy and resolution, ask yourself if you *REALLY* need the accuracy?

Have you looked at Maynuo's own website? http://www.maynuo.com/english/pro.asp?tid=25 They do also answer emails.

I've bought a M9712B and am quite happy with it.

Report to moderator Logged

If you don't measure, you don't get.

willb
Regular Contributor

Posts: 101
Country:

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #8 on:** November 12, 2013, 02:22:11 am »

I'm going to bring this post back from the dead...

Which one did you end up purchasing? I'm shopping for one right now and came across the 9710 and I too wonder about the difference.

Report to moderator Logged

mcinque
Supporter

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #9 on:** November 12, 2013, 12:18:16 pm »

Posts: 1032
Country:

I know one thing: that I know nothing

It's your choice: except the high repair rate issue, if you buy in Canada a non-export version (M9710), you will surely have no warranty.

Report to moderator Logged

I'm basically still a rookie and because of this, even with the best intentions, I often say bullshits

Macbeth

Super Contributor

Posts: 2521
Country:

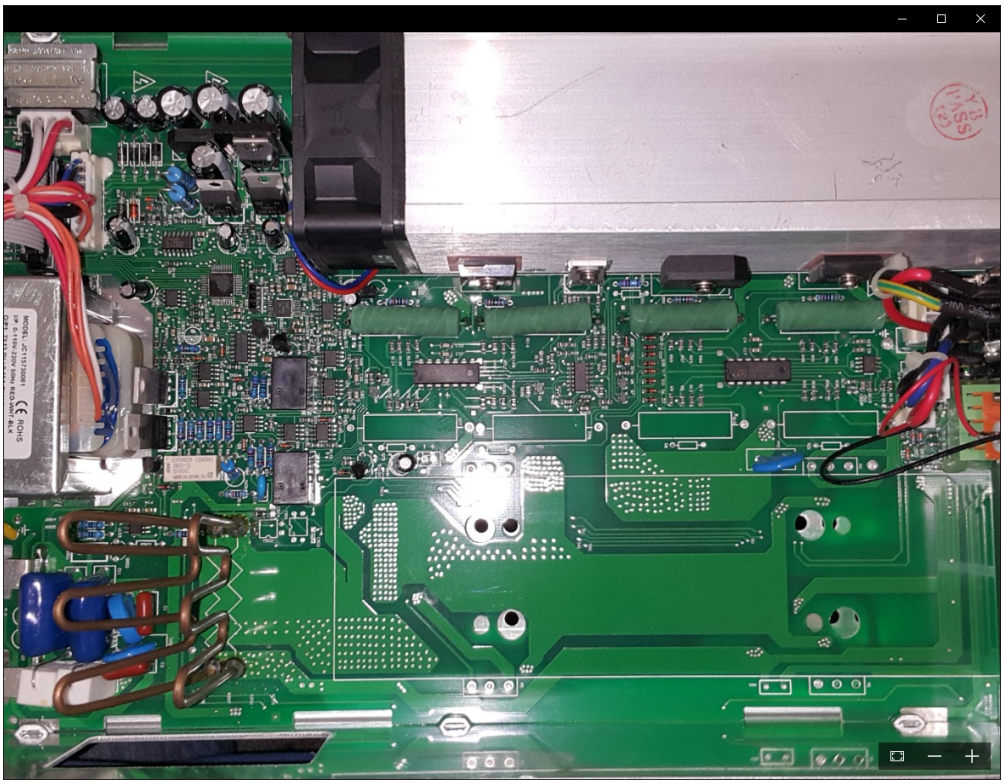
Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

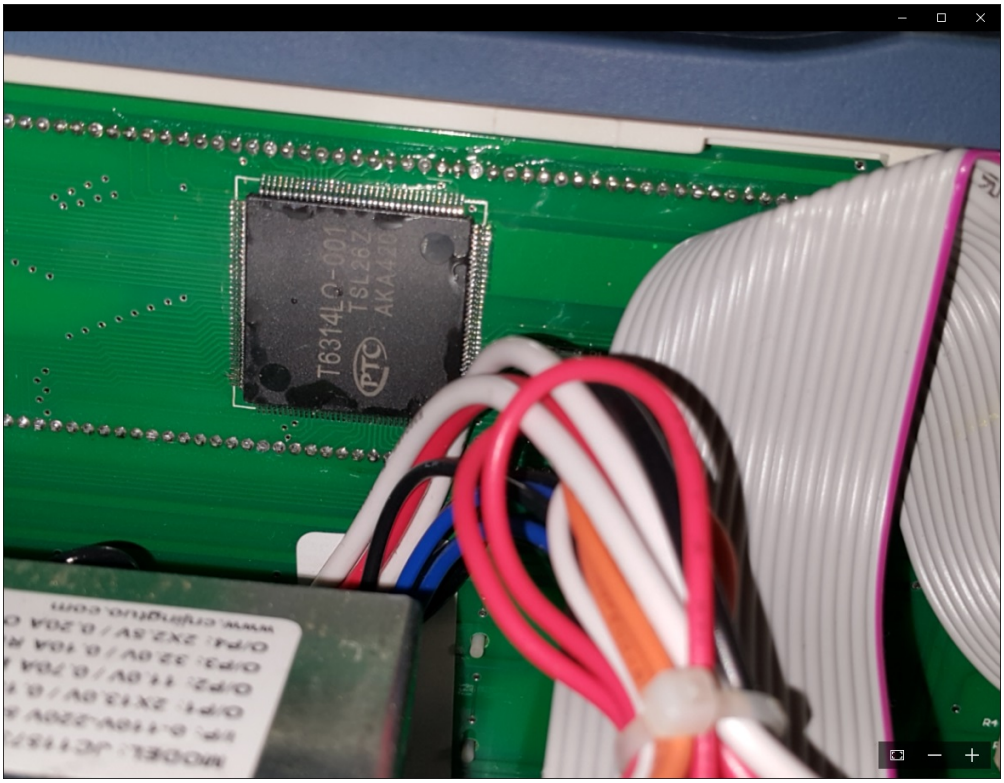
« **Reply #10 on:** April 02, 2016, 02:59:12 pm »

Well I've had a look inside my M9710 and I can't tell the difference between it and the M9711. All the identified components appear to be the same, perhaps the VREF is different? It's a TI REF5025 in the M9710, I haven't found anyone posting what is in the other models.

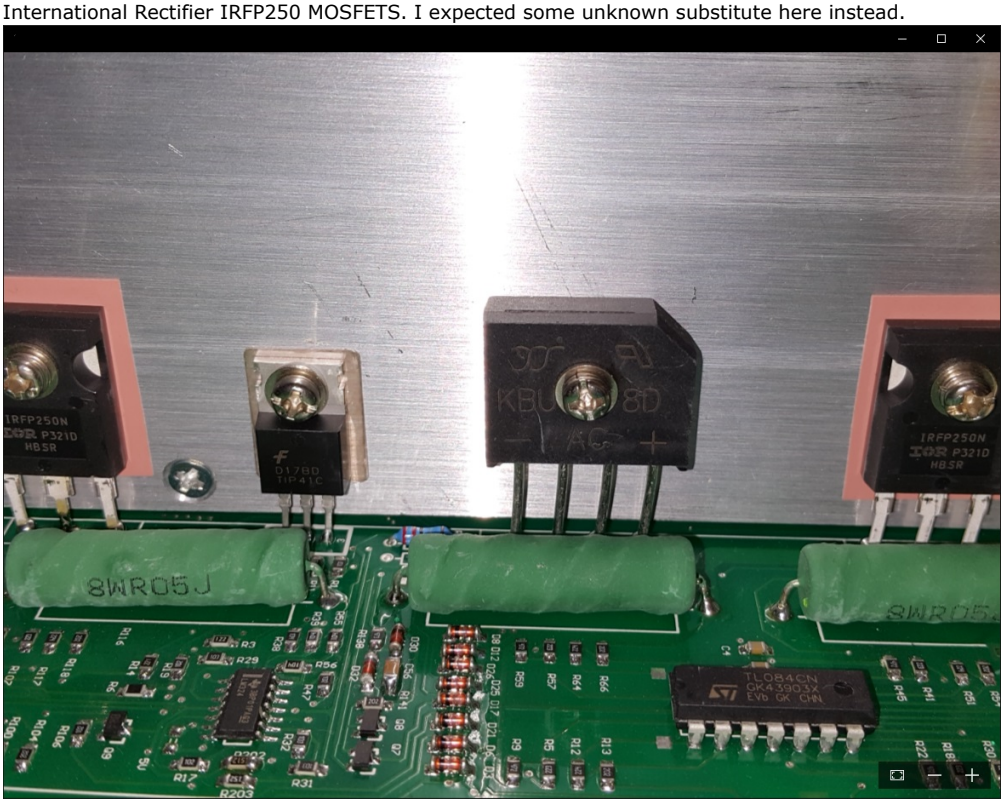
The main PCB. It's labelled MN9711-1.7 in the corner.



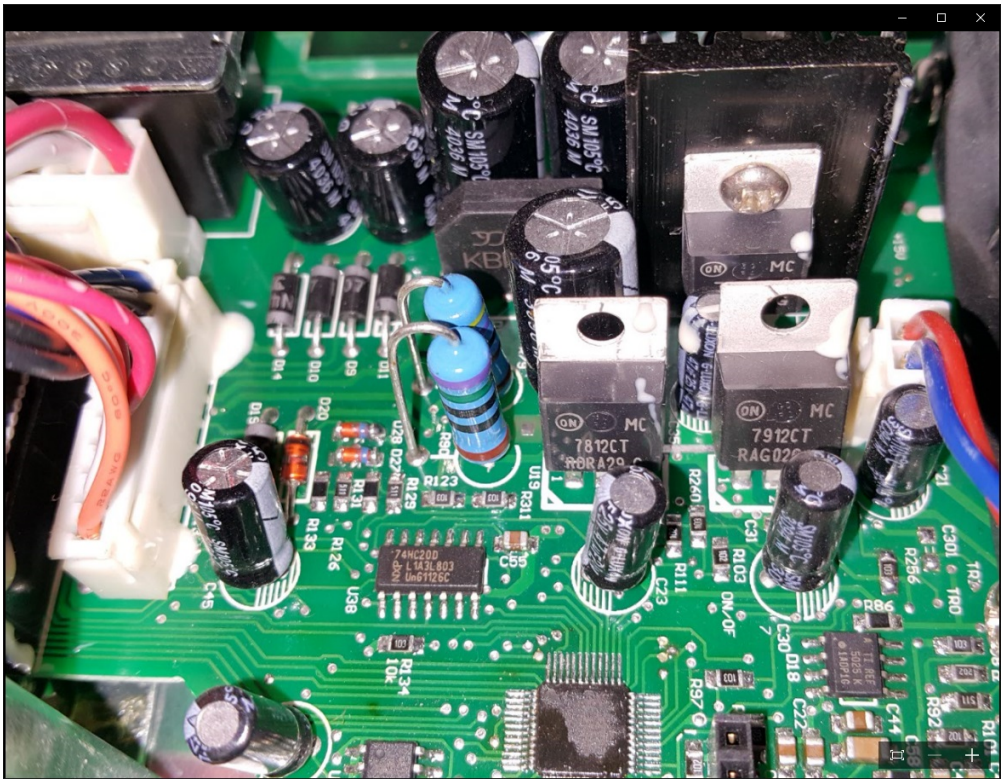
PT6314 VFD driver.
Note the ribbon cable is a bit kinked. I had difficulty removing the cover because the ribbon was trapped by shoddy assembly.



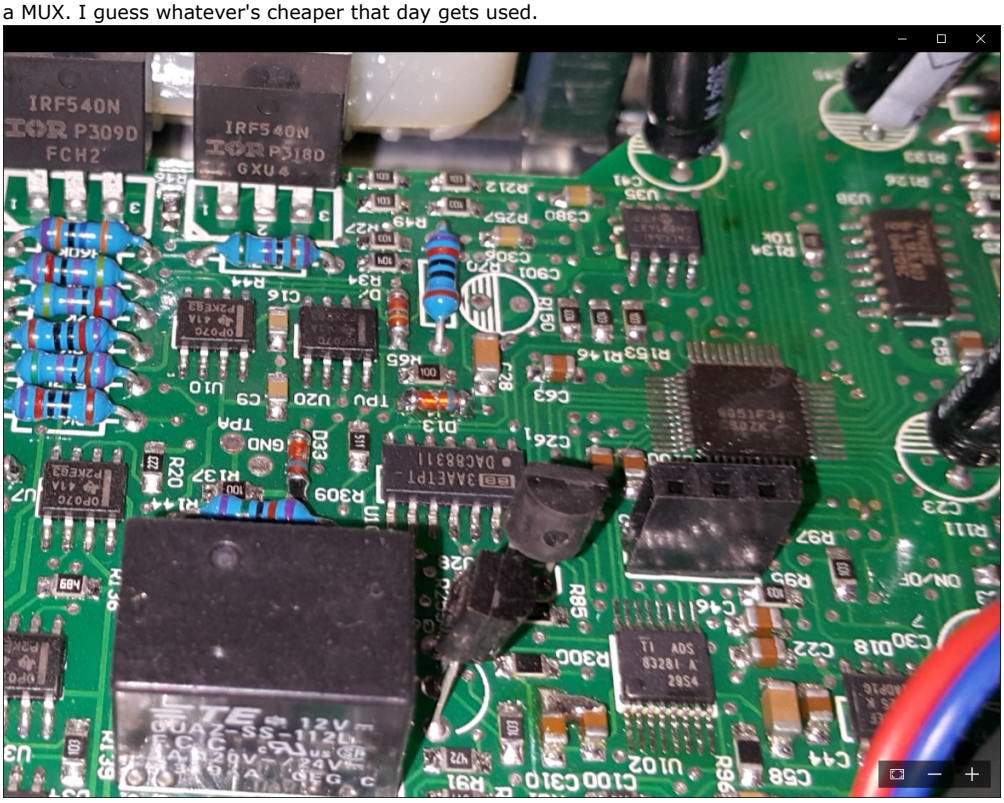
International Rectifier IRFP250 MOSFETS. I expected some unknown substitute here instead.



PSU area, no CrapXcon but the same 105C G-LUXON capacitors and ON Semi linear regulators as the M9711
VREF is also in view, TI REF5025.



Some more International Rectifier IRF540's, Burr Brown DAC8831, 8051 uP, TI ADS8328 ADC.
I note Gerry's had an ADS8327. No difference other than one has an inverting input and the other has a MUX. I guess whatever's cheaper that day gets used.



I can only conclude there is actually no difference between the M9710 and M9711 other than the label on the front panel and the higher price. Maybe the M9711 comes with the USB/TTL cable? Gerry Sweeneys did.

Report to moderator Logged

mcinque
Supporter

Re: Electronic load - difference between M9710 and M9711?
« **Reply #11 on:** April 02, 2016, 07:01:50 pm »

Say Thanks Reply Quote

Posts: 1032
Country:

I know one thing: that I know nothing

No, the usb cable is sold separately.
If your comparison is accurate, we have a valid alternative.

« *Last Edit: April 02, 2016, 07:03:36 pm by mcinque* »

Report to moderator Logged

I'm basically still a rookie and because of this, even with the best intentions, I often say bullshits

jitter

Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #12 on:** April 02, 2016, 08:06:53 pm »

Quote from: Macbeth on April 02, 2016, 02:59:12 pm

> Well I've had a look inside my M9710 and I can't tell the difference between it and the M9711. All the identified components appear to be the same, perhaps the VREF is different? It's a TI REF5025 in the M9710, I haven't found anyone posting what is in the other models.

My M9812 is a spitting image of your M9710 (apart from the extra power dissipation section of course).
It has the same REF5025.

Quote

> The main PCB. It's labelled MN9711-1.7 in the corner.

Same again on the M9812.

Quote

> PT6314 VFD driver.
> Note the ribbon cable is a bit kinked. I had difficulty removing the cover because the ribbon was trapped by shoddy assembly.

Okay on mine.

Quote

> PSU area, no CrapXcon but the same 105C G-LUXON capacitors and ON Semi linear regulators as the M9711

But then G-Luxon and the dreaded Teapo are the same.

Quote

> Some more International Rectifier IRF540's, Burr Brown DAC8831, 8051 uP, TI ADS8328 ADC.

Again, all the same on the M9812.

Quote

> I can only conclude there is actually no difference between the M9710 and M9711 other than the label on the front panel and the higher price. Maybe the M9711 comes with the USB/TTL cable? Gerry Sweeneys did.

The only difference on my M9812 seemed to be some mods which I describe in this thread. Most notable is a wire fix, which wasn't there in the photo of another M9812 further down that thread.
I had to buy the TTL-USB converter as optional, though it was shipped inside the M9812's box.

One thing that stands out on your M9710 are the datecodes on the components. Despite the fact that your unit was calibrated December 2015 (mine in October 2015), the components seem a fair bit older (at least 1 - 2 years).

The difference that I only just noticed is that the display of the M9710 has fewer digits. All quadrants have one digit lower resolution.

« *Last Edit: April 02, 2016, 08:54:43 pm by jitter* »

Report to moderator Logged

Towger

Super Contributor

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

« **Reply #13 on:** April 02, 2016, 09:04:15 pm »

Posts: 1551
Country:

In the actual physical display or done in firmware.

Report to moderator Logged

Macbeth
Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #14 on:** April 02, 2016, 11:10:38 pm »

Say Thanks Reply Quote

Yes, it was in 150V mode. I changed it to 20V mode and get 0.000V and 0.0000A resolution. One thing I have noticed is the front voltage readings are 0.010V even when the input is 0V shorted, but switching to the rear sense it's 0.000V as expected.

Now one of the very few differences in the specifications between M9710 and M9711 is the V measurement. It is stated as 0.015% + 0.05% FS vs 0.015% + 0.03% FS. It just so happens that 0.05% of the 20V range is 10mV. Hmm...

M9710_Cal.pdf (705.47 kB - downloaded 202 times.)

Report to moderator Logged

mos6502
Frequent Contributor

Posts: 537
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #15 on:** April 03, 2016, 01:16:25 am »

Say Thanks Reply Quote

Those 7812 and 7912s look fake as hell, with those thin tabs and the oval ON logo. The markings on the IRF FETs look dodgy as well.

Report to moderator Logged

```
for(;;);
```

jitter
Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #16 on:** April 03, 2016, 07:44:19 am »

Say Thanks Reply Quote

Quote from: mos6502 on April 03, 2016, 01:16:25 am

> Those 7812 and 7912s look fake as hell, with those thin tabs and the oval ON logo. The markings on the IRF FETs look dodgy as well.

I can put your and anyone else's minds at rest. Those thin tabs have been around for several years now, and it was a response from the manufacturers to the rising prices of copper. That may seem odd when looking at a single device, but looking at the whole picture, with billions produced, that might save millions of dollars a year spent on copper alone.
This thinner tab goes by the name "single gauge" and the original thickness has gotten the name "dual gauge". As a random example I link here to the datasheet of an ONSemi LM317. The very last page shows the dimensions C as (min-max): 0.508-0.61 mm/0.020-0.024 in.

It's very clearly visible on TO-220 packages, but the same happened to the DPAK (page above) and other shapes. With those SMDs they just added a bit more plastic to make sure the overall thickness stayed the same, so that operators of pick and place machines didn't have to adjust the programmes.

The real big drawback of those thin tabs is mechanical strength is largely lost. For free standing devices, that's no problem, in fact the lower mass will make shaking loose less likely. But for devices mounted on a heatsink, it's very easy to bend the tab away (especially on shapes like the TO-220 with tabs extending quite far from the plastic part). Invariably, the screw will keep that part on the heatsink, but the body bends away at the point where the plastic starts, essentially creating an air gap right at the hottest part of the component.
To counter this bending, we started using spring clips that push against the plastic body on the these thin devices, to keep them securely pushed against the heatsink. This bending is especially a risk on the components of which we have to bend the leads before insertion. This bending of the leads is to line them up with the heatsink surface, think of big heatsinks placed parallel to the pcb.

Edit: please note that not only ONSemi has been doing this. At around the same time, others like ST, Fairchild and Nat.Semi also instroduced the single gauge and phased out the dual gauge on some

components. Fortunately, the dual gauge seems to remain on lots of devices, perhaps those are higher stressed and the manufacturers deemed them unsuitable for the single gauge package.

About the looks of the printing on the components: in my job in industrial electronics, I get to see many components, and those ONSemis look quite genuine to me. There's always variation in the labelling of components, sometimes quite large. I know this, because we buy from authorized dealers, that's the best assurance to get genuine items (no a "reputable" dealer is **not** the best assurance, but it might be the next best bet).

« *Last Edit: April 03, 2016, 08:05:51 am by jitter* »

Report to moderator Logged

The following users thanked this post: bdlow, theirishscion

Macbeth
Super Contributor
Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #17 on:** April 03, 2016, 08:38:06 am »

Say Thanks Reply Quote

@jitter - fascinating read. I'm glad to see they aren't obvious fakes. Even if they were, they are no different to the components in the 9711/2 loads, and it's been claimed that the 9710 uses inferior components.

Re: The IRFS. Take a look at the 540's. Different date and manufacturing codes. In my experience counterfeiters don't go to that much effort and label everything with the exact same silkscreen. Often with nonsensical manufacturing or even date codes. *(goes off to search for IRF package data...)*

Report to moderator Logged

jitter
Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #18 on:** April 03, 2016, 08:52:04 am »

Say Thanks Reply Quote

Quote from: Macbeth on April 03, 2016, 08:38:06 am

> @jitter - fascinating read. I'm glad to see they aren't obvious fakes. Even if they were, they are no different to the components in the 9711/2 loads, and it's been claimed that the 9710 uses inferior components.

Claimed, but not proven. In fact, it looks like there's no difference at all, BOM-wise.
But maybe there's a design issue that affects calibration on part of the units... not sure, but the 10 mV offset without rear sense seems to point to something like that. Really looking forward to your measurements.

« *Last Edit: April 03, 2016, 08:55:17 am by jitter* »

Report to moderator Logged

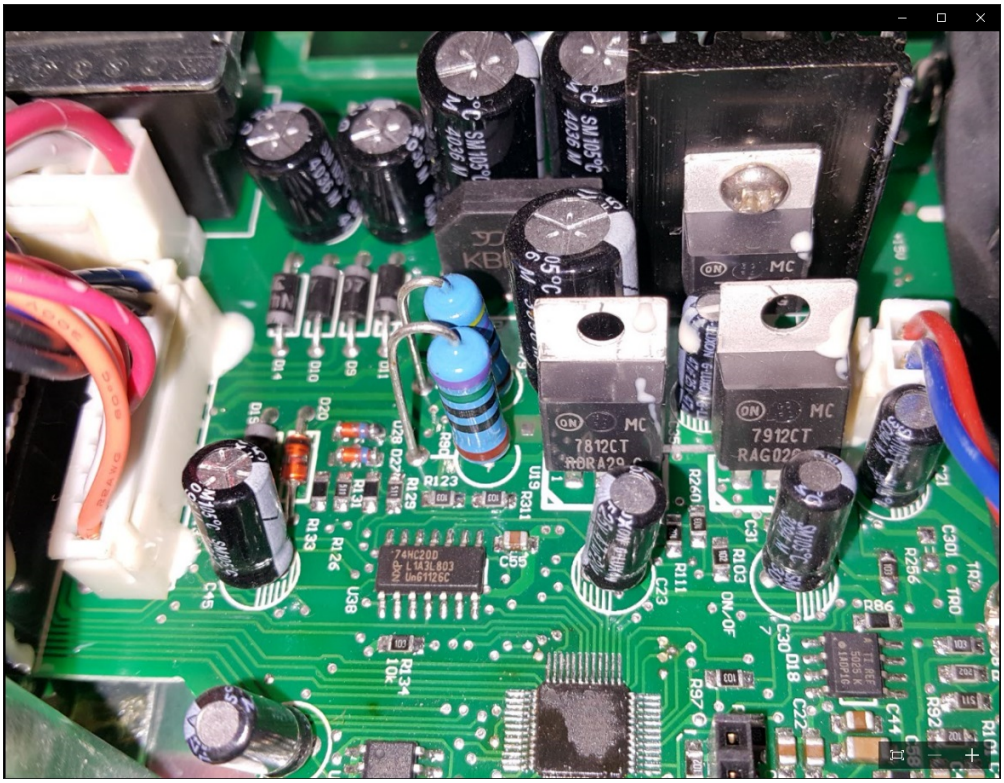
mos6502
Frequent Contributor

Posts: 537
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #19 on:** April 03, 2016, 10:15:21 am »

Say Thanks Reply Quote

Didn't know that about the tab, thanks for the heads up. But still: look how the labeling on the 7812 is further down than on the 7912. How the labeling on the 7912 is at an angle. How the font is distorted. How the spacing between the letters and numbers is irregular. Compare that:



to this from a US seller:

Report to moderator Logged

```
for(;;);
```

robert_
Regular Contributor
Posts: 151
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #20 on:** April 04, 2016, 03:54:08 pm »
Say Thanks Reply Quote

Still looks okay. Parts tend to look a bit different depending on which package assembly plant (often subcontractors) they come from. One could ask the manufacturer, who most likely wont care unless you have a large batch of questionable parts bought off one of their approved distributors.
ON and ST do offer the regular "dual gauge*" TO220s on their regulators, if you order them at some quite significant premium.

*: why do the americans have to define everything by $some_meaningless_number$ gauge? I kinda wonder why they dont have their own units for voltage and time...

Report to moderator Logged

jitter
Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #21 on:** April 04, 2016, 04:58:29 pm »
Say Thanks Reply Quote

Agreed, that's just a matter of alignment and will probably be the same for the entire batch. Nothing to worry about.

Quote from: mos6502 on April 03, 2016, 10:15:21 am

> Didn't know that about the tab, thanks for the heads up. But still: look how the labeling on the 7812 is further down than on the 7912. How the labeling on the 7912 is at an angle. How the font is distorted. How the spacing between the letters and numbers is irregular.

Notice that the "12" in the photos are all spaced closer together than the rest and that this is also the case on your own 7812.

Edit: For comparison I've added an ONSemi LM317T from the same plant (from other ONSemi plants, TO220s look different). This one was bought from an authorized dealer.

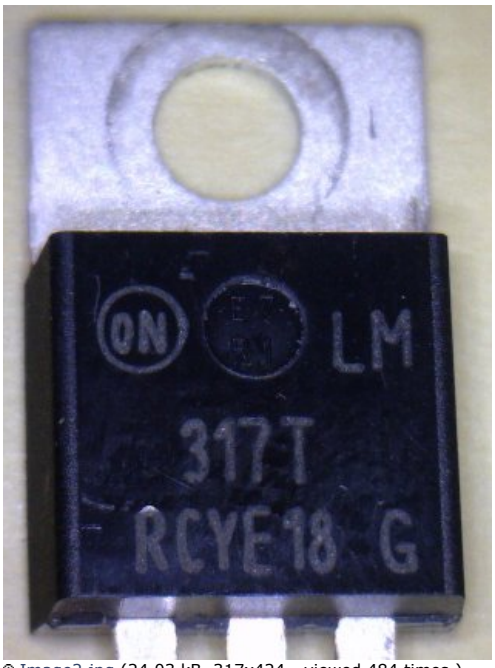


Image2.jpg (24.03 kB, 317x424 - viewed 484 times.)

« *Last Edit: April 05, 2016, 08:53:56 pm by jitter* »

Report to moderator Logged

Macbeth
Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #22 on:** April 04, 2016, 10:53:14 pm »

Say Thanks Reply Quote

Ok, I've run through some performance tests and am not too happy. Especially because the load sometimes locks up and needs power cycling, and other times it reboots itself. Most disconcerting is twice on a reboot I have seen 'ERROR CAL.DATA' on the front panel Switching off and on again and it appears ok.

Anyway, I have attached a spreadsheet with my results. I include some 'spec sheet calculators' for the 9710 and the 9711/12. I've included notes on differences between published specs and the calibration certificate.

Now I expected the lower M9710 spec for volts, but strangely the spec for current is even tighter than the M9711/12 My load seems very good on current, but the voltage readings are a let down.

I'm going to rig a bluetooth dongle on it now and see if I can get the remote control software running.

I recall LaurentW got the instructions to recalibrate his load and it wasn't plain sailing! I guess I can live with the very small out of spec results, but if I ever do go the recal route I will make a backup of the 24LC64 eeprom just in case!

Specs.xls (40 kB - downloaded 288 times.)

Report to moderator Logged

DuPe
Regular Contributor

Posts: 69
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #23 on:** April 05, 2016, 11:24:33 am »

Say Thanks Reply Quote

Quote from: Macbeth on April 04, 2016, 10:53:14 pm

> ...
> recall LaurentW got the instructions to recalibrate his load and it wasn't plain sailing! I guess I can live with the very small out of spec results, but if I ever do go the recal route I will make a backup of the 24LC64 eeprom just in case!

My M9811 also was out of cal when I got it.
I am appending the cal info that I got from Maynuo.
you just need a high voltage source and a precise DVM.
Worked fine.

Cheers
Peter

LED load -Calibration Procedure for M97xx electronic loads_1.pdf (171.72 kB - downloaded 423 times.)

Report to moderator Logged

The following users thanked this post: mcinque, Macbeth

Macbeth
Super Contributor
Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #24 on:** April 05, 2016, 02:34:59 pm »

Say Thanks Reply Quote

Thank you DuPe! This will come in very useful.

Report to moderator Logged

jitter
Frequent Contributor
Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #25 on:** April 05, 2016, 08:44:52 pm »

Say Thanks Reply Quote

> **Quote from: Macbeth on April 04, 2016, 10:53:14 pm**
>
> Ok, I've run through some performance tests and am not too happy. Especially because the load sometimes locks up and needs power cycling, and other times it reboots itself. Most disconcerting is twice on a reboot I have seen 'ERROR CAL.DATA' on the front panel Switching off and on again and it appears ok.

That's indeed disconcerting. Comparing the pictures of your unit and mine, specifically the Eeprom (U35), I noticed on your's C901 is missing while on mine it's present. Don't know if it has any relevance to your error message, though. Edit: it may be that it's omitted on the 150 W models, I can see in Gerry Sweeny's teardown of his M9711 it's not in there either.

> **Quote**
>
> Anyway, I have attached a spreadsheet with my results. I include some 'spec sheet calculators' for the 9710 and the 9711/12. I've included notes on differences between published specs and the calibration certificate.
>
> Now I expected the lower M9710 spec for volts, but strangely the spec for current is even tighter than the M9711/12 My load seems very good on current, but the voltage readings are a let down.
>
> I'm going to rig a bluetooth dongle on it now and see if I can get the remote control software running.
>
> I recall LaurentW got the instructions to recalibrate his load and it wasn't plain sailing! I guess I can live with the very small out of spec results, but if I ever do go the recal route I will make a backup of the 24LC64 eeprom just in case!

I would be interested to see if a recal gets it within spec. Note how calibration is a "devilish" thing for this load ("666" as password to get into the cal menu)...

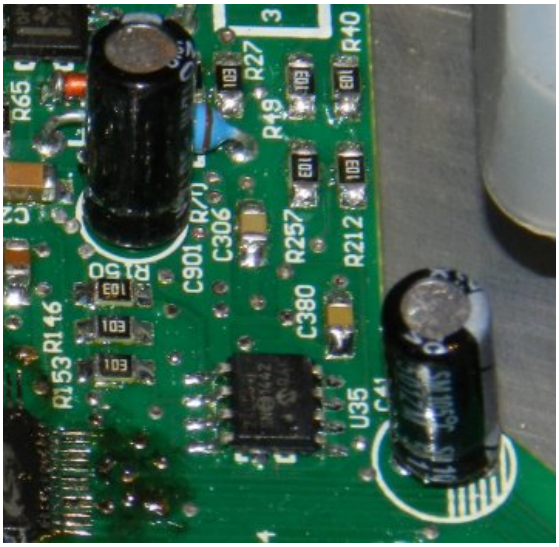


Image1.jpg (35.9 kB, 358x349 - viewed 418 times.)

« *Last Edit: April 05, 2016, 09:04:55 pm by jitter* »

Report to moderator Logged

haveissues
Contributor

Re: Electronic load - difference between M9710 and M9711?

Say Thanks Reply Quote

Posts: 39
Country:

« **Reply #26 on:** April 06, 2016, 04:17:50 pm »

Quote from: DuPe on April 05, 2016, 11:24:33 am

> My M9811 also was out of cal when I got it.
> I am appending the cal info that I got from Maynuo.
> you just need a high voltage source and a precise DVM.
> Worked fine.
>
> Cheers
> Peter

Thanks for posting that. I just received a m9812 and the voltage is way out on mine also. Current is accurate. Now I just need a high voltage source....

Report to moderator Logged

DuPe
Regular Contributor

Posts: 69
Country:

Re: Electronic load - difference between M9710 and M9711? Say Thanks Reply Quote
« **Reply #27 on:** April 06, 2016, 08:28:42 pm »

Welcome haveissues,

I myself solved that problem by buying a "cheap" cs11102x that goes up to 120V (http://www.amazon.de/Circuit-Specialists-CSI12001X-Labornetzger%C3%A4t-Beschichten/dp/B00BCOEWPM?ie=UTF8&psc=1&redirect=true&ref_=oh_aui_detailpage_o04_s00)
It is a absolute awfull PSU but does serve this purpose, since it gives a low noise output when going to current regulation (which is needed for the cal procedure)
The load did not become more economically-priced by this additional buy but maybe the PSU will become handy any day for any other purpose (and buying test equipment for me is not purely a matter of rationality).

Cheers
Peter

PS: It was the same with my Load: Current ok, voltage out of cal (which is "ok", since current cal needs more unusual source).
and btw: The Maynuo's have different resolution and precision specs depending on the setting of voltage range.

« *Last Edit: April 06, 2016, 08:44:20 pm by DuPe* »

Report to moderator Logged

Macbeth
Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711? Say Thanks Reply Quote
« **Reply #28 on:** April 06, 2016, 10:42:00 pm »

Before endeavouring on such a "dangerous" thing as a re-calibration, I prefer to make a backup of the existing cal if possible. Thankfully this is easy with a trusty TL866 and a SOIC clip. One thing with using such a clip is it will fail if reading the target with the device switched off (The TL866 can't power all the ancillary +5V circuits connected to the EEPROM).

Cutting the VCC/VDD wire on the SOIC clip and relying on the device to power up the EEPROM. Sometimes that is all that is needed. Thankfully with the Maynuo this is the case

I have identified most of the data structure of the 94LC64. The actual calibration is in the first 0x60 bytes. It's all IEEE 32bit big-endian floats. The rest is dedicated to the settings (key beep, comms, I-SET, V-SET, Tran database, etc)

I do not have a 150V 0.1A supply, but I only wanted to calibrate the low 20V stuff. While performing the calibration I have found that you do not have to do the full 150V procedure. For the V-SET (front V cal) and P-SET (sense V cal), providing you do the low and high volt steps, the result is written to cal eeprom at that point and you can press ESC and not have to continue with the rest...

From what I have found, the front low range calibration stores floats (32 bit, 4 bytes each) at 0x0000, 0x0004, 0x0020, 0x0038). The rear sense calibration stores its cal at 0x0040, 0x0044, 0x0050, 0x0058.

I also realise from the published calibration procedure that the proper performance tests should be taken with a 100mA source. I had done mine with no load at all, so my slightly out of cal results are wrong anyway.

I will do another one, but I already know that my M9710 is bang on with my K2000 now anyway

Report to moderator Logged

The following users thanked this post: peertux

haveissues
Contributor
Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #29 on:** April 06, 2016, 10:43:09 pm »
Say Thanks Reply Quote

Peter,

Thanks for the info. I looked up that power supply and it is considerably cheaper on this side of the pond. When added to the cost of the load I'm still way ahead of a similar BK load so I'm not too annoyed plus I'm sure I'll find a use for it in the future. If I don't find a good deal on something used in the next couple of weeks I'll go for the one you bought.
Thanks again,
Martin

Report to moderator Logged

haveissues
Contributor
Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #30 on:** April 06, 2016, 10:55:13 pm »
Say Thanks Reply Quote

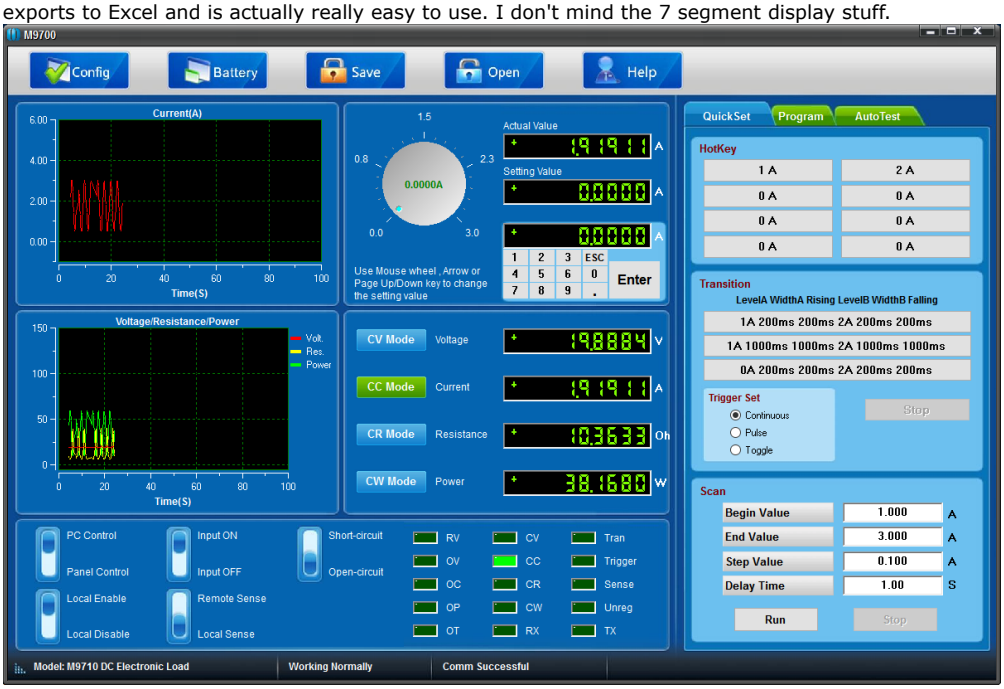
Great info Macbeth. I was wondering if you can calibrate the lower voltages without clearing the entire cal table. In reality I really only care about accurate voltages up to about 25v or so. My voltage is far enough off that it makes me wonder if they just run off the included cal sheet on the xerox machine.

Report to moderator Logged

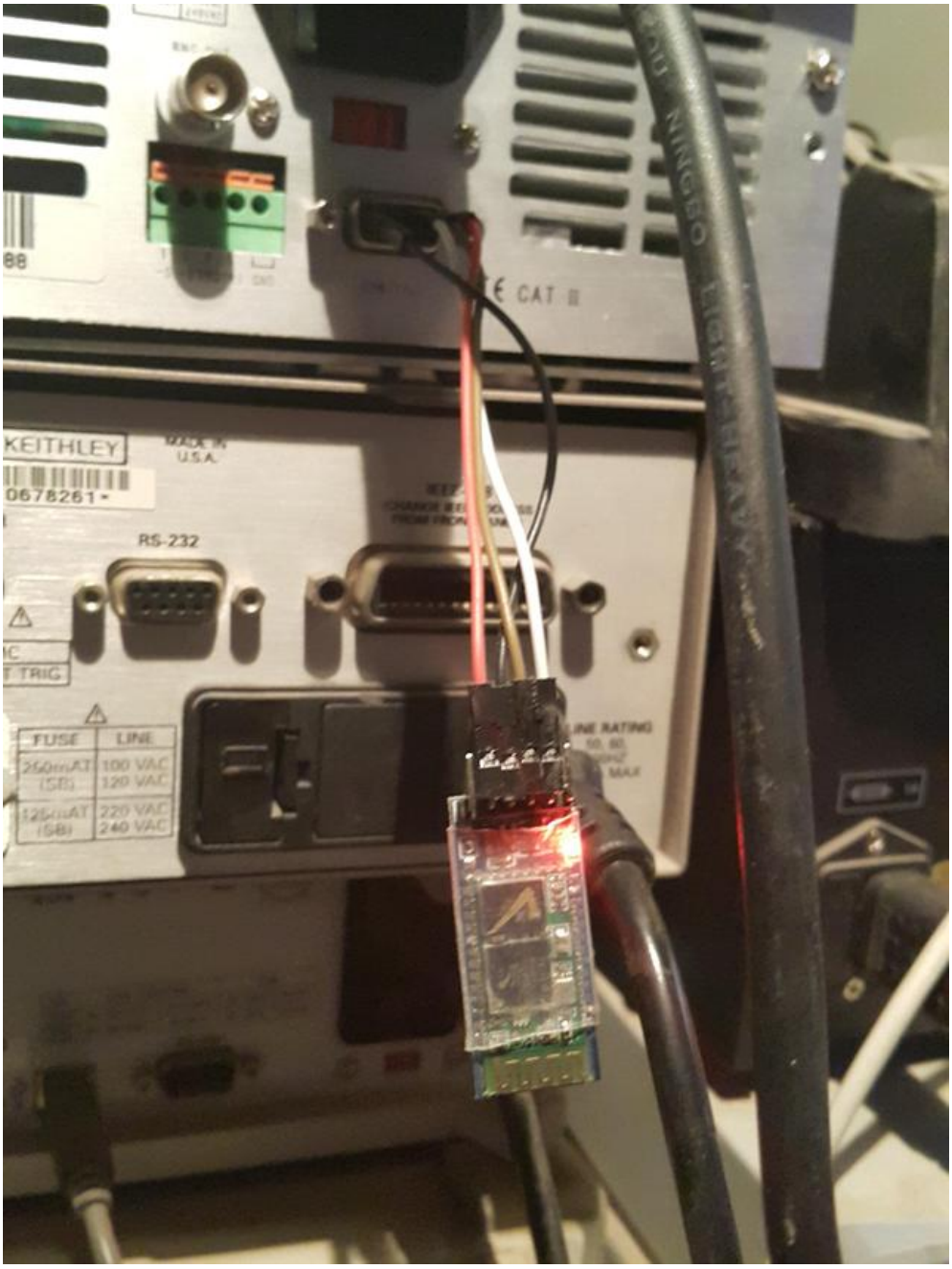
Macbeth
Super Contributor
Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #31 on:** April 06, 2016, 11:27:08 pm »
Say Thanks Reply Quote

I've also been playing with the Maynuo software and I quite like it! It uses .mdb databases and exports to Excel and is actually really easy to use. I don't mind the 7 segment display stuff.



Now I do not have an official (pricey) isolated cable, so for simple wireless isolation I wired in one of my HC05 Bluetooth modules directly to the pins 1-3,5 at the back of the Maynuo.



One thing with Windows is Microsoft have never supported serial ports over bluetooth properly, even in Windows 10. The Maynuo software will not work with Microsofts version of Bluetooth COM ports. Thankfully you can get rid of the shitty Microsoft Bluetooth stack and install the Toshiba Version: v9.10.32T instead

Now one problem with the Toshiba stack is it is only a 30 day trial, even though you can't actually buy it from Toshiba even if you wanted to!

There are some ways around this, including adding a registry key for "TestVersion". However I have found this gives BSODs (Blue Screens of Death) on Windows 7 and 10.

Much better fix for this is to just Hex Edit TosBtChk.dll
Edit byte 000028C0 from 02 to 01
This works for both 32bit & 64bit

You can now use a proper "COM port" to get the MAYNUO software to work over Bluetooth (along with any other software that needs a COM port like Putty, or UltraDMM)

Report to moderator Logged

The following users thanked this post: Deepak, thm_w, DuPe, theirishscion

Macbeth

Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #32 on:** April 06, 2016, 11:29:38 pm »

Quote from: haveissues on April 06, 2016, 10:55:13 pm

> Great info Macbeth. I was wondering if you can calibrate the lower voltages without clearing the entire cal table. In reality I really only care about accurate voltages up to about 25v or so. My voltage is far enough off that it makes me wonder if they just run off the included cal sheet on the xerox machine.

They certainly appear to. However, the current calibration appears to be very tight. Thankfully, as I have no accurate way of measuring over 10 amps or a reliable source for it (maybe a PC PSU) !

Report to moderator Logged

DuPe

Regular Contributor

Posts: 69
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #33 on:** April 07, 2016, 10:48:32 am »

Thanks Macbeth.
Great advice with the Toshiba BT Stack.

Report to moderator Logged

dav

Regular Contributor

Posts: 133
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #34 on:** April 07, 2016, 11:39:00 am »

It seems several Maynuo DC loads are out of calibration and we should have an high res DMM, an high voltage power supply and an high current power supply to fix it.
I cannot buy a DC load and then 3 other instruments to fix it!

Who knows about their counterparts.... (ITECH and BK)

Report to moderator Logged

haveissues

Contributor

Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #35 on:** April 07, 2016, 11:51:42 am »

Thanks for the info Macbeth. I too thought about using a cheap bluetooth adapter but haven't gotten around to it yet as I bought the pricey usb adapter to go with the load. Glad to know it works well.

I also found the software for the load to be very usable and stable. In fact, the software was the deciding factor for buying the Maynuo load instead of the BK. After watching Dave's latest load video I was a bit disappointment that BK's (Itech?) software seems to be a bit better than the previous version but still sucks at twice the cost.

Report to moderator Logged

Macbeth

Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #36 on:** April 07, 2016, 01:42:47 pm »

Quote from: dav on April 07, 2016, 11:39:00 am

> It seems several Maynuo DC loads are out of calibration and we should have an high res DMM, an high voltage power supply and an high current power supply to fix it.
> I cannot buy a DC load and then 3 other instruments to fix it!
>
> Who knows about their counterparts.... (ITECH and BK)

To be fair so far most claim the current is well within specification, and the voltage measurements I had done with no load. It would appear that the calibration is done with 100mA and so performance should be tested against that. Clearly for the front panel voltage testing the supplied current (and cable) will affect measurements. Taking that into account my original calibration was actually within specs, especially as my K2000 hasn't been calibrated in years. I did not include the uncertainty of the Keithley in my measurements.

Although the calibration instructions specify a 150V PSU it seems a 120V supply is enough according

to DuPe. The cheapest one I can find on AliExpress is KPS1203D which can do 120V 3A for just over £70 delivered DHL. Add another £15-£25 for customs processing.

I think I can get away with daisy chaining my DP832's 2 x 30V and my Tenma 72-8340A 60V PSU for that.

As you state, the BK and ITECH could also be slightly outside of specifications too. We need an owner do some performance tests.

Report to moderator Logged

haveissues
Contributor
Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #37 on:** April 08, 2016, 06:24:08 pm »

I ended up using 2 channels on my power supply go get 60v and calibrated the load that way. It worked well and it is now in spec, at least down around the lower voltages that I will be using the load.

-Martin

Report to moderator Logged

DuPe
Regular Contributor
Posts: 69
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #38 on:** April 08, 2016, 09:34:07 pm »

Great it worked.
From the small number of cal points I think they definitely are not doing any sophisticated calibration algorithm besides gain and offset for the two ranges that the gear has.
« *Last Edit: April 08, 2016, 09:38:16 pm by DuPe* »

Report to moderator Logged

haveissues
Contributor
Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #39 on:** April 08, 2016, 09:41:24 pm »

> **Quote from: DuPe on April 08, 2016, 09:34:07 pm**
> Great it worked.
> From the small number of cal points I think they definitely are not doing any sophisticated calibration besides gain and offset for the two ranges that the gear has.

I think you are correct. I was surprised that it is only 4 cal points. It makes me think that the factory either A)doesn't actually calibrate the loads with a keithley 2000 like they say or B)their meter is horribly out of spec. The voltage calibration doesn't take more than a couple of minutes. Either way, I'm happy now. My load is within spec and I was able to do it all with equipment that I already own. Maybe that last part is not a positive however? I don't have an excuse to buy something new now.

Report to moderator Logged

Macbeth
Super Contributor
Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
Say Thanks Reply Quote
« **Reply #40 on:** April 08, 2016, 09:45:16 pm »

> **Quote from: DuPe on April 08, 2016, 09:34:07 pm**
> Great it worked.
> From the small number of cal points I think they definitely are not doing any sophisticated calibration besides gain and offset for the two ranges that the gear has.

I'm happy I have a M9710 as it's more honest. There is absolutely no way the REF5025 used in all these DC loads (BK, Itech, Maynuo, etc) is anywhere near close to an LM399 or LTZ1000, and I don't expect it to be. Just throwing extra magnitudes of digits in a front panel interface is a joke.

But having the calibration instructions is great - I maintain the "Macbeth Volt" in my lab - which just means I like all my gear to agree as close as is possible to my ultimate standards. That includes my recal of the M9710 It is now perfect with everything. For how long, I don't know yet...

Report to moderator Logged

haveissues

Contributor

Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #41 on:** April 08, 2016, 10:24:59 pm »

Say Thanks Reply Quote

It is nice to have cal instructions. 15mV off is enough to annoy me.

Report to moderator Logged

Macbeth

Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #42 on:** April 08, 2016, 10:35:13 pm »

Say Thanks Reply Quote

> **Quote from: haveissues on April 08, 2016, 10:24:59 pm**
>
> It is nice to have cal instructions. 15mV off is enough to annoy me.

Exactly. Now I am mostly happy with my 2x 6.5 digit Keithley 2000/2015 agreeing with each other... I have some LM399's I want to make good standards from. But that means, you know, those 7.5 digit K2001's can sometimes be had for $700 if you keep the eyes peeled.... *no... stop it... I will end up as insane as TiN!... don't go there! 8.5 digit madness and JJA's is next... ~~Reefer~~ Meter Madness*

Report to moderator Logged

haveissues

Contributor

Posts: 39
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #43 on:** April 08, 2016, 10:41:51 pm »

Say Thanks Reply Quote

Isn't it amazing what we justify to ourselves that we 'need'? I have the same 2 meters as you-a 2000 and a 2015. In the process of buying a 2015 I ended up with a free 2000. I can't say I wouldn't buy a 2001 if a good deal came along.

Report to moderator Logged

jitter

Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #44 on:** April 09, 2016, 01:56:18 pm »

Say Thanks Reply Quote

> **Quote from: Macbeth on April 08, 2016, 09:45:16 pm**
>
> > **Quote from: DuPe on April 08, 2016, 09:34:07 pm**
> >
> > Great it worked.
> > From the small number of cal points I think they definitely are not doing any sophisticated calibration besides gain and offset for the two ranges that the gear has.
>
> I'm happy I have a M9710 as it's more honest. There is absolutely no way the REF5025 used in all these DC loads (BK, Itech, Maynuo, etc) is anywhere near close to an LM399 or LTZ1000, and I don't expect it to be. Just throwing extra magnitudes of digits in a front panel interface is a joke.
>
> But having the calibration instructions is great - I maintain the "Macbeth Volt" in my lab - which just means I like all my gear to agree as close as is possible to my ultimate standards. That includes my recal of the M9710 It is now perfect with everything. For how long, I don't know yet...

Did your recal also solve the occasional power on error message?

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Macbeth

Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #45 on:** April 09, 2016, 03:23:55 pm »

Say Thanks Reply Quote

> **Quote from: jitter on April 09, 2016, 01:56:18 pm**
>
> Did your recal also solve the occasional power on error message?

I am not quite sure what caused those glitches, but the shitty assembly that had the front panel ribbon cable trapped certainly didn't help. I stripped and resoldered and isolated the offending wires that were bare exposed.

I also notice the 8051 has very unusual (in this day and age) solder pads - they are of the design for manual soldering allowing the wick to draw the flux and solder away easily. Mine looks like it has been done perfectly by a robot, but I am not so sure... I think there is a bad solder joint but my poking has fixed it temporarily.

After much prodding and probing I have now had the load running 24/7 with stupid ramp ups and

downs and crazy PC control and it is working perfectly. I am stressing it out as I want it to fail so I can get my money back!

Report to moderator Logged

jitter
Frequent Contributor

Posts: 804
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #46 on:** April 12, 2016, 03:52:24 pm »

Say Thanks Reply Quote

> **Quote from: Macbeth on April 09, 2016, 03:23:55 pm**
>
> > **Quote from: jitter on April 09, 2016, 01:56:18 pm**
> >
> > Did your recal also solve the occasional power on error message?
>
> I am not quite sure what caused those glitches, but the shitty assembly that had the front panel ribbon cable trapped certainly didn't help. I stripped and resoldered and isolated the offending wires that were bare exposed.
>
> I also notice the 8051 has very unusual (in this day and age) solder pads - they are of the design for manual soldering allowing the wick to draw the flux and solder away easily. Mine looks like it has been done perfectly by a robot, but I am not so sure... I think there is a bad solder joint but my poking has fixed it temporarily.
>
> After much prodding and probing I have now had the load running 24/7 with stupid ramp ups and downs and crazy PC control and it is working perfectly. I am stressing it out as I want it to fail so I can get my money back!

Sounds plausible the damaged ribbon cable may have had something to do with it, but somehow, I would have expected problems with the display too.
The 8051 on mine looks like it was hand soldered, and so were some other components like ADC and DAC.
I guess your's still works... not having heard anything to the contrary .

« *Last Edit: April 13, 2016, 05:02:34 am by jitter* »

Report to moderator Logged

Macbeth
Super Contributor

Posts: 2521
Country:

Re: Electronic load - difference between M9710 and M9711?
« **Reply #47 on:** April 20, 2016, 07:59:13 pm »

Say Thanks Reply Quote

> **Quote from: jitter on April 12, 2016, 03:52:24 pm**
>
> Sounds plausible the damaged ribbon cable may have had something to do with it, but somehow, I would have expected problems with the display too.
> The 8051 on mine looks like it was hand soldered, and so were some other components like ADC and DAC.
> I guess your's still works... not having heard anything to the contrary .

Yes, sorry it appears I didn't mention that the dodgy scuffed ribbon cable DID affect the display. Just prodding it and the display would die and come back, so there were some faults caused by the slap dash factory assembly. However since I stripped, isolated and resoldered the offending wires in the ribbon (I didn't have an equivalent to hand), and also taken a backup of and reflashed the EEPROM using a SOIC clip with my TL866, all seems to be working well. I soak tested it for a few days with the Windows application switching it into all kinds of stupid modes as a stress test.

Now I do not believe that Maynuo deliberately jam exposed ribbon cables into the closing action of the metal case as a means for the lower price on the M9710. I actually think it is just the dropping of the final '0' in the front panel display software that lets them sell the same item cheaper than an M9711.

One thing that did occur to me though, when the device was crashing all the time I figured it could be the 8051. I had monitored the 5V and it was rock solid so not that. If the 8051 is faulty I can easily get a new one locally, but I suspect Maynuo are not so keen to release the firmware. There is a 3 pin header for flashing it though I don't have the SiLabs flasher dongle thing.

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