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June 18, 2022, 11:05:27 pm

This topic

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EEVblog Electronics Community Forum » Products » Test Equipment » NI GPIB-USB-HS

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LCR Meter or Impedance Analyzer?

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**Author**

**Topic: NI GPIB-USB-HS (Read 3242 times)**

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**perdrix**

Frequent Contributor



Posts: 509

Country:



**NI GPIB-USB-HS**

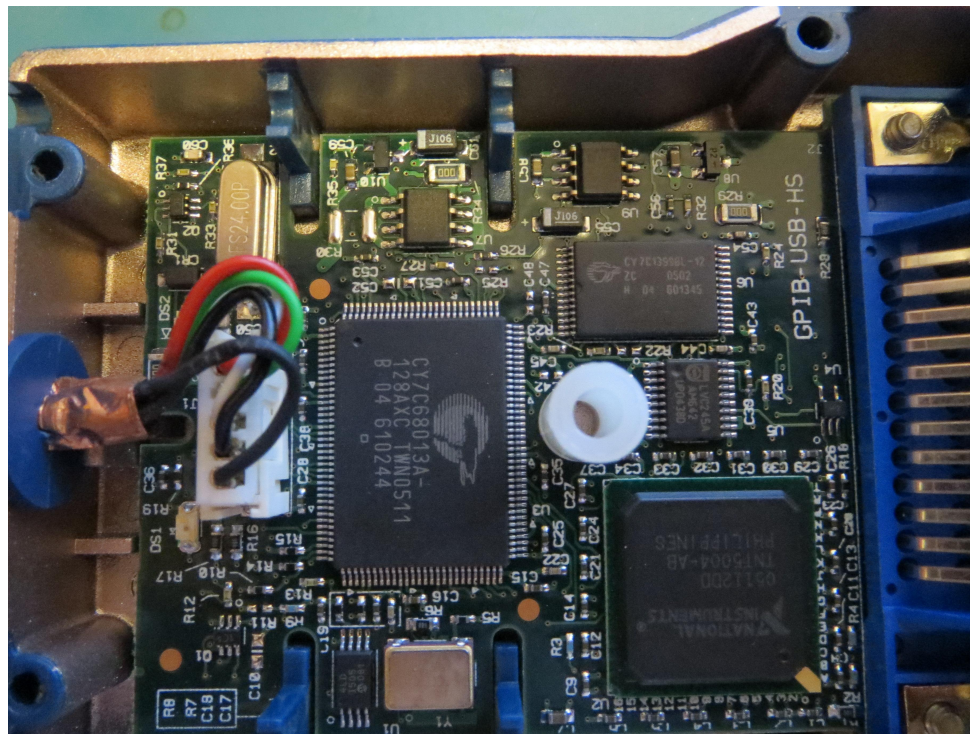
« on: January 01, 2021, 12:27:59 pm »

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I have one of these that I bought from a UK seller on eBay on 4th April 2020. It worked well at that time.

Since then I've not had the need to use it until yesterday (two Windows 10 version updates later).

So I connected it to the lappie and got "Unknown Device" ready for use! Say what? Device Manager says the device ID is USB\VID\_04B4&PID\_8613 which I believe to be the Cypress USB 2 development kit ID which would never be used in the wild.



Has anyone got any idea what's going on here?



IMG\_0740.JPG (2596.15 kB, 3648x2736 - viewed 3564 times.)

« Last Edit: January 01, 2021, 12:31:52 pm by perdrix »

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**mk**

Frequent Contributor



Posts: 862

Country:



**Re: NI GPIB-USB-HS**

« Reply #1 on: January 01, 2021, 06:19:42 pm »

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My guess is that Windows has decided that you need some new drivers and have messed the USB stack.

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**gslick**

Frequent Contributor



Posts: 455

Country:



**Re: NI GPIB-USB-HS**

« Reply #2 on: January 01, 2021, 07:45:00 pm »

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Maybe the serial EEPROM has become corrupted.

CY7C68013A/CY7C68014A/CY7C68015A/CY7C68016A  
EZ-USB® FX2LP™ USB Microcontroller High-Speed USB Peripheral Controller  
<https://www.cypress.com/file/138911/download>

**Code:** [Select]

USB Boot Methods

During the power-up sequence, internal logic checks the I2C port for the connection of an EEPROM whose first byte is either 0xc0 or 0xc2. If found, it uses the VID/PID/DID values in the EEPROM in place of the internally stored values (0xc0), or it boot-loads the EEPROM contents into internal RAM (0xc2). If no EEPROM is detected, FX2LP enumerates using internally stored descriptors. The default ID values for FX2LP are VID/PID/DID (0x04B4, 0x8613, 0xAxxx where xxx = chip revision).

Without taking a look at the EZ-USB FX2LP development tools I don't know if they provide tools to read the contents of serial EEPROM and reprogram it from the host PC. My guess is that such tools are

provided. If the serial EEPROM contents have become corrupted you would need to find a copy of contents somewhere, maybe from someone else with a working device, and then maybe the device will magically work again when the serial EEPROM is reprogrammed.

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**DaJMasta**

Super Contributor



Posts: 2198

Country:



**Re: NI GPIB-USB-HS**

« **Reply #3 on:** January 01, 2021, 08:04:20 pm »

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I believe the Cypress dev tools for these chips and earlier series are available, but in my limited experience I would suspect the EEPROM since it was IDing properly initially. I've worked on a unit with an EZ-USB controller, which I believe is the series before this one, that would revert to an "unprogrammed cypress ez-usb" identifier when the configuration EEPROM was removed.

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<http://www.medpants.com/> - W3BSN

**KE5FX**

Super Contributor



Posts: 1537

Country:



**Re: NI GPIB-USB-HS**

« **Reply #4 on:** January 01, 2021, 08:35:02 pm »

Say Thanks Reply Quote

Looks like either U7 or U9 has failed, as depicted in your photo. One of them will be a 24xCxx I2C PROM. You could double-check that by looking for I2C activity on pins 5 and 6 at plugin time. If there's no activity, the USB chip itself may have died. That would actually be preferable, since you could simply replace that chip.

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**perdrix**

Frequent Contributor



Posts: 509

Country:



**Re: NI GPIB-USB-HS**

« **Reply #5 on:** January 02, 2021, 10:46:28 am »

Say Thanks Reply Quote

Unfortunately U7 is a MAX604 regulator and U9 a C773I power supervisor. There's another 8 pin IC on the board:



which I've failed to ID so far. If its not that that has gone AWOL, then the EEPROM must be inside that large NI custom BGA IC 😞

**IF** that IC is a I2C EEPROM **AND** it has a standard pinout (pin 5 SDA, pin 6 SCL), then the fault is simple: SDA (pin 30) on the CY7C68013A has no continuity to pin 5 of the EEPROM.

I \*think\* it is a Microchip 24LC256 Industrial Temp grade, May 2005 date code

I'd like to confirm what that IC is though before I just run a patch wire ...

So, is anyone able to confirm the identity of that IC?

Thanks  
David

David



IMG\_0743.png (2467.06 kB, 1568x1176 - viewed 3493 times.)

« Last Edit: January 02, 2021, 01:04:07 pm by perdrix »

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**picburner**

Frequent Contributor



Posts: 415

Country:



**Re: NI GPIB-USB-HS**

« Reply #6 on: January 02, 2021, 01:16:45 pm »

Say Thanks

Reply

Quote

Yes, U1 is a 24LC256 eeprom produced by Microchip.

There is, however, an inconsistency with the case according to the datasheet.

## 24AA256/24LC256/24FC256

### Package Marking Information (Continued)

8-Lead MSOP



Example:



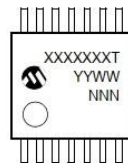
8-Lead DFN-S



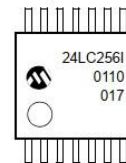
Example:



14-Lead TSSOP



Example:



Part No.	TSSOP Package Codes		MSOP Package Codes	
	STD	Pb-free	STD	Pb-free
24AA256	4AD	G4AD	4A256	G4AD
24LC256	4LD	G4LD	4L256	G4LD
24FC256	4FD	G4FD	4F256	G4FD

« 13 / 28 »

24LC256.jpg (116.75 kB, 876x974 - viewed 268 times.)

« Last Edit: January 03, 2021, 02:30:08 pm by picburner »

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**perdrix**

Frequent Contributor

**Re: NI GPIB-USB-HS**

« Reply #7 on: January 02, 2021, 02:14:23 pm »

Say Thanks

Reply

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Posts: 509  
Country:

**picburner**

Frequent Contributor



Posts: 415  
Country:

Look at page 12 not page 13. Good to have the confirmation...

Patch wire installed. But sad to say still reporting USB\VID\_04B4&PID\_8613

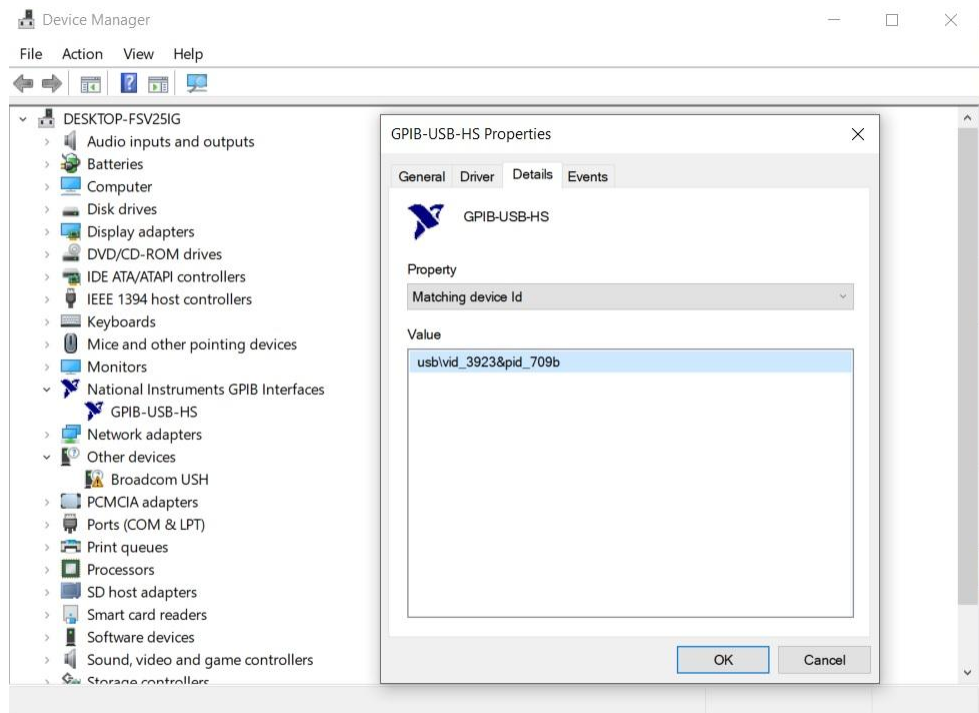
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**Re: NI GPIB-USB-HS**

« Reply #8 on: January 02, 2021, 05:30:07 pm »

Say Thanks Reply Quote

You should have this ID: usb\vid\_3923&pid\_709b (at least mine is this).



gpiusb\_hs.jpg (122.27 kB, 976x710 - viewed 257 times.)

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**KE5FX**

Super Contributor



Posts: 1537  
Country:

**Re: NI GPIB-USB-HS**

« Reply #9 on: January 02, 2021, 05:58:53 pm »

Say Thanks Reply Quote

Interesting, never seen one of those PROMs in that form factor before.

What about activity on the SDA/SCL lines? Is it even trying to read it?

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**perdrax**

Frequent Contributor



Posts: 509  
Country:

**Re: NI GPIB-USB-HS**

« Reply #10 on: January 02, 2021, 09:13:03 pm »

Say Thanks Reply Quote

Hi John,

Yes there's activity - at power on, SDA goes from 0V to 5V for a short time then a very short drop of 0V followed by 5V and then a burst of data and then sits at 5V.

SCL - oops my bad didn't check that.

My scope doesn't decode I2C so my guess is that either the EEPROM data is corrupt, or its OK and the Cypress USB IC is unwell.

The prospect of hand soldering a 128 pin TQFP is a touch scary!

Update: A quick skim of the manual for the development kit <https://www.cypress.com/file/134666/download> suggests to me that it will write the EEPROM but doesn't offer the ability to read it (if you

know better please let me know). I've ordered a TSSOP to DIP adapter for my Rommer (from China) - when it arrives I'll remove the IC (U1) and read it ...

David

« Last Edit: January 03, 2021, 11:36:07 am by perdrix »

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**perdrix**

Frequent Contributor



Posts: 509

Country:



**Re: NI GPIB-USB-HS**

« Reply #11 on: January 19, 2021, 11:28:12 am »

Say Thanks Reply Quote

Very odd! I finally received my TSSOP to DIP adapter and read the eprom (and verified it against what I'd just read from it).

The first eight bytes go 45 83 70 f9 22 90 e6 82 and the checksum is 003D41E8

So I'm not surprised that the hardware ID has been set to the default.

Has anyone ever read the EPROM from a known working GPID-USB-HS, or is prepared to open up their adapter and read the EPROM?

If so I'd be most interested to know what it contains !

Thanks

David

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**coromonadalix**

Super Contributor



Posts: 3657

Country:



**Re: NI GPIB-USB-HS**

« Reply #12 on: January 19, 2021, 03:29:23 pm »

Say Thanks Reply Quote

looks like the cypress has been accessed and reseted in a way for the vid / pid ??

corruption ?

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**m k**

Frequent Contributor



Posts: 862

Country:



**Re: NI GPIB-USB-HS**

« Reply #13 on: January 19, 2021, 07:12:16 pm »

Say Thanks Reply Quote

Try educating Windows.

You have a suitable driver set but system is unaware of it. Maybe it's just a standard port driver with a special filter driver. If you try to update the current one with the real one manually, with some luck it's accepted.

Then you may be able to do something with the device anyhow. At least you then know it's there.

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**TiN**

Super Contributor



Posts: 4521

Country:

#StopRussianWar



**Re: NI GPIB-USB-HS**

« Reply #14 on: January 19, 2021, 11:38:54 pm »

Say Thanks Reply Quote

Have one dead HS too, and one working HS here. Perhaps I'll give it a go. I barely used it as I prefer LAN-GPIB, but sometimes it's handy to have both interfaces..

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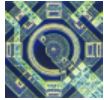
**TiN**

Super Contributor

**Re: NI GPIB-USB-HS**

« Reply #15 on: January 22, 2021, 05:21:05 am »

Say Thanks Reply Quote



Posts: 4521

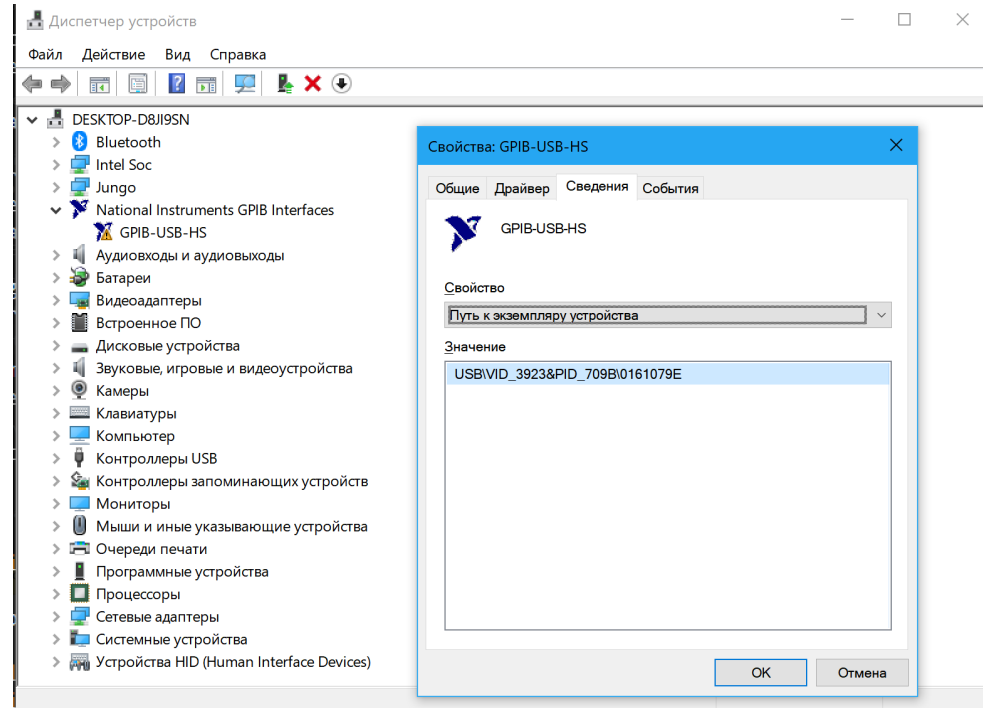
Country:

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I think I made it worse 🤔

Before my bad dongle was at least detecting correctly, but could not operate.



I've desoldered and dumped I2C EEPROM contents (using TL866 and 24LC256 config).

[Here's binary fw from bad dongle.](#)

It looks like some data there is good. You can see National ascii text strings for example.

Then I read same I2C EEPROM from my good working dongle:

[From good dongle.](#)

Interesting enough PCB actually was little different on good one, using 24LC256 in SOIC8 package, not TSSOP.

I've wrote EEPROM in bad dongle with this good binary. Module detected in windows, but was blinking LEDs in various patterns. And attempt to use it failed.

**Code:** [Select]

```
root@raspb:/home/pi# gpib_config
failed to bring board online
failed to configure board
main: operation not permitted
```

Then I wrote EEPROM back to what was in it before.

And now dongle does not detect correctly, but gets default Cypress "unknown device" crap.

Let's see if any other samaritan want to dump EEPROM from good dongle to check my images. 🤔

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**The following users thanked this post:** perdrinx

**m k**

Frequent Contributor



Posts: 862

Country:

**Re: NI GPIB-USB-HS**

« **Reply #16 on:** January 22, 2021, 09:05:47 am »

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There seems to be only one difference, offset 0.  
Bad is 00 and good is C2.



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**perdrix**

Frequent Contributor



Posts: 509  
Country:



**Re: NI GPIB-USB-HS**

« **Reply #17 on:** January 22, 2021, 11:36:15 am »

Say Thanks Reply Quote

The one from the "good dongle" worked fine for me! Erased the IC, and programmed it with that file, soldered it back in and it all works!

Woohoo  
Thank you TiN

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**coromonadalix**

Super Contributor



Posts: 3657  
Country:



**Re: NI GPIB-USB-HS**

« **Reply #18 on:** January 22, 2021, 11:50:04 am »

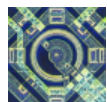
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@Tin do you have the Cypress utilities for the chipset, could it help to access the eeprom ?? and make a dump for it ?

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**TiN**

Super Contributor



Posts: 4521  
Country:

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**Re: NI GPIB-USB-HS**

« **Reply #19 on:** January 22, 2021, 02:07:48 pm »

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Never used anything Cypress, so no, not familiar with their tools.

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**m k**

Frequent Contributor



Posts: 862  
Country:



**Re: NI GPIB-USB-HS**

« **Reply #20 on:** January 22, 2021, 02:53:59 pm »

Say Thanks Reply Quote

There are 3 boot versions.

Offset 0 of ROM is C0 or C2, or all others.  
C2 means that content of ROM is loaded to RAM and normal operation starts.  
C0 means that only VID/PID/DID is loaded.  
All others are for development only.

So if bad ROM offset 0 was 00 from the beginning and device was detected as configured device then something wasn't right somewhere else.

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**TiN**

Super Contributor



Posts: 4521  
Country:

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**Re: NI GPIB-USB-HS**

« **Reply #21 on:** March 30, 2021, 02:24:54 am »

Say Thanks Reply Quote

A little follow up.

Fixed one of my bad dongles. It was dead SRAM chip, to my surprise 😊

Updated my [linux-gpib NI-USB-GPIB guide](#) with info and details about it.

I still have another bad dongle with something loading down +3.3V rail. Might order new Cypress SOC and replace that, to see if it's dead uC. Expensive bugger 😞





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The following users thanked this post: croma641, coromonadalix

**KE5FX**  
Super Contributor



Posts: 1537  
Country:

**max-bit**  
Frequent Contributor



Posts: 591  
Country:

**max-bit**  
Frequent Contributor



Posts: 591  
Country:

**Re: NI GPIB-USB-HS**  
« **Reply #22 on:** March 30, 2021, 05:50:30 am » Say Thanks Reply Quote

Interesting, never seen one of those SRAMs fail before.

Do you have a thermal camera? Since you have a working dongle for comparison, you can probably tell at a glance what's consuming excess current.

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**Re: NI GPIB-USB-HS**  
« **Reply #23 on:** August 31, 2021, 05:52:20 pm » Say Thanks Reply Quote

above  
[https://xdevs.com/doc/National/GPIB-USB-HS/fw/good\\_eeeprom\\_24lc256.BIN](https://xdevs.com/doc/National/GPIB-USB-HS/fw/good_eeeprom_24lc256.BIN)  
firmware is ... no original SN 014F3A71

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**Re: NI GPIB-USB-HS**  
« **Reply #24 on:** September 02, 2021, 09:22:01 am » Say Thanks Reply Quote

f..ck ... programmed eeprom 24lc256 (from original unit) serial no. changed in NI MAX but software still sees it as not genuine? WTF?

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