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Gemini 80-Bus System

Welcome, john newcombe.

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Vintage Computers Any vintage computer systems, calculators, video games etc., but with an emphasis on 1980s and earlier equipment.



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2nd Nov 2019, 10:15 pm

#261

john newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

Re: Gemini 80-Bus System

Ok, but just so I am clear, when should I do this? before or after the select?

Code:

```
.Z80
        ASEG
        ORG 0100H
        .PHASE 0100H
.1797
        EOU
                 0E0H
                                  :Base address
WCTRL
                 .1797+5
                                  ;SASI (Winchester) control/status port
        EQU
                 .1797+6
                                  ;SASI (Winchester) Data port
WDATA
        EOU
TEST:
                A,0FEh
        LD
                                  : set Data 0 here ???
        OUT
                 (WDATA),A
                A,5
        LD
        OUT
                 (WCTRL),A
                                  ; set the -SEL
        IN
                A, (WCTRL)
                                  ; read status
        JR
                TEST
                                  ; loop
```











#262

john newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

Re: Gemini 80-Bus System

Quote:

Originally Posted by **JohnBHanson**

I have a GM849A circuit diagram - but too large to post here.

Would be possible to email it to me? I have just sent a PM with my email address.











2nd Nov 2019, 10:54 pm

#263

JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK. Posts: 448





The code above looks ok - you set d0 and then issue the sel command. On a GM849A you will have to then output 7 to restore the control lines inactive however this is not required with the previous versions of the SCSI interface as sel is only active for the duration of the IO write cycle.









#264

iohn newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145





Re: Gemini 80-Bus System

Thank you for sending the circuit diagram, I have now added this to the resource page on https://glasstty.com/wiki/index.php/...0-Bus Resource.







4th Nov 2019, 6:12 pm #265

john newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

\(\Delta\)



Re: Gemini 80-Bus System

No luck with the SASI/SCSI yet, I will experiment with latching the select and see how I get on. As an aside, I found a Teac 55F in a pile of rubbish some guy was clearing out. I cleaned it up attached it as B: and knocked up some code to copy the system track from A: (Gotek) to B:. I swapped the drives over and I am now booting to the floppy with the Gotek as B: It suddenly seems far more vintage. . .







#266



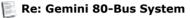
5th Dec 2019, 7:59 pm

iohn newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North Yorkshire, UK.

Posts: 145



Whilst working to add Winchester support to my system it started to become clear that I would need to modify my GM829 Floppy/SASI implementation in order to latch the select line in a similar way to the GM849 in order for it to work with a modern SCSI disk or SCSI disk emulator e.g. the SCSI2SD. I was contemplating fitting a small board to achieve this when I received a message and then a phone call from Charles O'Brien who was, at the time, based Blunsdon Swindon. He has now moved to Hunmanby, East Yorkshire.

Thanks to the generosity of Charles, I am now the proud owner of a Gemini GM916 Galaxy MFB. The unit includes 5.25", 8" and 3.5" disk drives and a Winchester disk. The machine had been owned from new by Charles and had been used when he ran a consultancy business called Obsys Ltd.

I have opened the various boxes and discovered the following;

- GM813 CPU and Memory board
- GM832 SVC Video Controller
- GM849 Floppy/SASI Controller (Modified for MFB)
- An 8 inch double sided drive
- Teac FD55 48tpi 5.25 inch Drive
- Teac FD55 96tpi 5.25 inch Drive
- 3.5 inch drive
- Rodime 201 5Mb Winchester Disk
- GM827 Keyboard
- Gemini Monitor

The machine isn't working at the moment but once I get a little time I will start the diagnosis.

I feel very lucky to have the opportunity to preserve this machine, naturally, if there is interest, will keep this thread going and continue the 80-Bus saga on http://glasstty.com.











JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK. Posts: 448



Re: Gemini 80-Bus System

I would appreciate knowing what the modifications are to the GM849 to support the MFB as I would like to include a modified version as an option with my xbeaver emulator.

Many thanks.







#268



iohn newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145



Re: Gemini 80-Bus System

I thought you would. It will be at least a week until I get time to investigate but will sort out decent photographs and details of anything I find. I have not removed the board vet but I can see that it has a sticker on it that says 'MFB Only'.







6th Dec 2019, 7:35 pm

#269

JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK. Posts: 448

Re: Gemini 80-Bus System

To help out - differences appear to be on the input port 0e5 bits 5 and 6. This is handled by IC2.

On the standard GM849A this is determined by IC14 from the outputs of port E5 bits 3,4,5,6,7 which come from IC19

According to the GM849A circuit IC14 is an 74LS21 but the circuit diagram has unused pins of IC14 wired to the some of the outputs of IC19

I suspect that IC14 is a different chip on the MFB version of the board or there are some board patches in this area.

Looking at the youtube video of the tear down the board is a GM849 and not a GM849A but I cannot see if there has been any changes in the above area.

As this is in the SCSI area I am wondering if this is an attempt at protecting the MFB from being run on normal gemini machines.

I look forward to any additional info you can provide in due course.











6th Dec 2019, 8:32 pm

#270

john newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145





This probably won't help much but here is a photo of the card taken from the MFB.

https://glassttv.com/wiki/images/0/0f/GM849.ipg







#271

6th Dec 2019, 11:40 pm

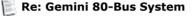
JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK.

Posts: 448



Thanks - that is wonderful - confirms my suspicions IC14 has the last two digits removed from the device type - but confirms this is a 74LS series. Interesting,

When you get a running system - even your old system with RP/M and this floppy card would you be kind enough to run this mbasic program and send me the output.

Thank you...

10 FOR I=0 TO 255 STEP 8 20 OUT &HE5,I+7 30 P=INP(&HE5) 40 PRINT HEX\$(I+7), HEX\$(P) 50 NEXT I

many thanks....









#272

Yesterday, 8:57 am

qazxsw123

Triode

Join Date: Nov 2016 Location: Frinton on Sea,

Essex, UK. Posts: 22

Re: Gemini 80-Bus System

Also from the same site

https://glasstty.com/wiki/index.php/...49A Manual.pdf https://glasstty.com/wiki/index.php/...9A Circuit.pdf











JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

Posts: 448



Re: Gemini 80-Bus System

Just to clarify I am talking about a different floppy controller - not the same as a GM849/GM849A. This different floppy controller has a different IC in position IC14 which is not a 74LS21 as shown on the circuit diagram you quote.







Yesterday, 1:13 pm

john newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

Re: Gemini 80-Bus System

Ouote:

Originally Posted by **JohnBHanson**

Thanks - that is wonderful - confirms my suspicions IC14 has the last two digits removed from the device type - but confirms this is a 74LS series. Interesting,

When you get a running system - even your old system with RP/M and this floppy card would you be kind enough to run this mbasic program and send me the output.

Thank you...

10 FOR I=0 TO 255 STEP 8 20 OUT &HE5,I+7 *30 P=INP(&HE5)* 40 PRINT HEX\$(I+7), HEX\$(P)50 NEXT I

many thanks....

Of course... and thanks for the boost in confidence in assuming I will get it working!

Last edited by john newcombe; Yesterday at 1:20 pm.











iohn newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

Re: Gemini 80-Bus System

I have some documentation that may shed some light on the GM849 changes.

The previous owner of this machine bought it from new and had an annual support contract for some years. During that time (Oct 1986) the machine was returned for modifications.

I also have an un-dated letter that suggests that one of the updates included a 'new' disk controller, although it does not mention any details. The new controller was apparently changed to allow for many 'non-standard' disk formats to be supported, e.g. 'U' format, unconventional side fields, reverse sides, either physical or logical non-standard sector lengths, logical skewing on both sides of the disk, deleted data marks.

The un-dated letter also suggests that this new controller allowed for 4 external floppy disks and user configurable Winchester partitioning with an alternative OS on track 1 and refers to the previous system as MFB 1. As I also have an MFB 2 software manual I am wondering if the modified GM849 is the 'new' controller mentioned.

Last edited by john newcombe; Yesterday at 1:54 pm.









#276



JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK.

Posts: 448

Re: Gemini 80-Bus System

My guess would be that from what you say MFB1 was based on a GM829 floppy disk controller or a variant of. The upgrade was probably to GM849 controller with custom IC14 for copy protection.

I have a pdf for the gemini catalog No5. This does not list the GM849 controller but does list the GM829 controller. It also lists the Multi Format System as a GM916 or GM921 depending on hard disk size of 5.4 or 16.5MByte. From what I have heard from you the MFB2 system is based on the GM849 modified floppy disk controller and has number GM925.

Maybe some of the documentation will through some light on the history. I am looking forward to reading the MFB manuals if you manage to scan them.

PS - Work is proceeding well on modifications to run the MFB system under xbeaver emulation.













iohn newcombe

Pentode

Join Date: Apr 2019

Re: Gemini 80-Bus System

The system I have is marked as a GM916 and it is now my belief that it was upgraded to the MFB2 spec to bring it in line with the later GM925 just as you suggest. It is in the cream metal Galaxy cabinet and includes the GM827

#277

Location: Skipton, North

Yorkshire, UK. Posts: 145

keyboard (although that is also marked as GM916).

I will be able to start scanning the manuals next week.













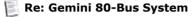
#278

iohn newcombe

Pentode

Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145



Ouote:

Originally Posted by **JohnBHanson**

Maybe some of the documentation will through some light on the history. I am looking forward to reading the MFB manuals if you manage to scan them.

Just had time to do a quick scan of the MFB 2 Software Manual with my phone. I will do a better one when I get chance, but thought you might like an early view.

https://glasstty.com/wiki/index.php/...are Manual.pdf













JohnBHanson

Hexode

Join Date: Aug 2009 Location: Worthing, Sussex,

UK.

Posts: 448

Re: Gemini 80-Bus System

Thanks for the manual - timing just right as I had got the MFB system booting...

Just a warning - the GEMQDDS definition used in the MFB system is not the same as previous QDDS format used by you on your rack system. The side mode is different - one is "C" and the other is "S".

Please check this before you use your MFB system to transfer data between systems.

PS - thanks for the file it was interesting I have MFB now booting from hard disk. A few tweeks still needed to finalize including the results of the basic program given above in post 274.

I will let you know when it is complete







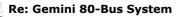








john newcombe





Join Date: Apr 2019 Location: Skipton, North

Yorkshire, UK. Posts: 145

Quote:

Originally Posted by **JohnBHanson** I have MFB now booting from hard disk.

A few tweeks still needed to finalize including the results of the basic program given above in post 274.

I will let you know when it is complete

That is great news, looking forward to seeing it in action. In terms of the QDDS format being different, is this simply because I opted from the wrong side mode in the first place? All my disk images and zip file creation are scripted so i can easily fix and re-publish.















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