

OVERVIEW

The TIM TI-Image-Maker by OPA for the TI-99/4A Home Computer is based on the latest Yamaha V9958 Video Display Processor. Using this chip, plus the full 192K of VRAM on-board, allows the TI-99/4A not only to display 80 columns of text, but also video and graphics of the same high-quality or better than the Atari ST, Amiga, and new game systems from SEGA. TIM is limited only by the imagination of the software designer.

While there are other approaches to incorporate the older V9938 processor into the existing TI-99/4A environment, we found the biggest complaints about these was the fact that you had to internally modify your TI console, and, the DSR power-up software caused new incompatible problems with your software and/or hardware. Here at OPA we decided the best approach was to design the whole new video hardware, etc. to be installed inside your TI console since there was no way in getting around doing internal modifications. Installing the whole thing at once inside would not be much more of a problem. We also have used the latest in CAD/CAE designing to reduce the board size and keep the power-drain small. In the end, TIM fits all on 4"*3" board, and we have run this with no power problem in a console with Speech, RAVE keyboard, TIM, SOB, and GIZMO all plugged in at once.

The V9958 is directly upward compatible with the TMS 9918A VDP; however, it is not directly compatible with the TI-99/4A due to both the hardware and software design of the latter. The TMS 9918A, 9928A and 9929A were designed by the TI Video Display Products Group in Houston. The implementation of these VDPs is explicitly laid out in a manual published by that group, "Video Display Processors Programmer's Guide", SPPU004. Most TI-99/4A software developers followed those rules as does the Yamaha V9958 and so most existing software will run on the AVPC. There were however some offenders, among which was the TI-99/4A design group in Lubbock.

Errors in most disk based programs should be readily correctible. For example, corrections to TI FORTH screens #53 and #54 have already been disseminated to FORTH interest groups. However, there is little that can be done with cartridge software in which the errors have been "frozen in silicon", other than having the programs translated to disk format and subsequently corrected with a sector editor. We are aware of other programs that have problems and as and when we have time, we will look for solutions. In this regard we would appreciate the input of yourself and our other customers, concerning offending software and any solutions you may have found which we can disseminate to others.

IMPORTANT NOTICE

Only install the TIM in a computer that is in good working order. If your computer malfunctions or if you have any doubts about its condition, now is the time to have it repaired or trade it in to the Texas Instruments Customer Service Center.

At this time the TIM cannot be installed in a "QI" version of the TI-99/4A. The QI model may be recognized by looking at the side I/O port. If the shielding is silver, you have a QI model; all other consoles have gold shielding.

TOOLS and PARTS REQUIRED

Small phillips-head screwdriver.
Small flat-blade screwdriver, or a 16 and 40 pin IC remover.
25 watt soldering iron with a just over a inch of solder.
One thick snug-fitting #6 plastic washer.
Large Xacto knife, or small hacksaw (for cutting plastic case).

DISASSEMBLY

Place the computer in the normal position, keyboard toward you and unplug everything. If you have a black and silver console, gently pry out the thumb slide of the ON-OFF switch. Turn the computer over, remove 7 small self-tapping Phillips head screws and lift off the bottom. Take a good look, this is the way everything must be to fit back into the box. Note that there are three major assemblies: the power supply, the keyboard assembly and the big tin box containing the computer. Also note the the line from the power receptacle passes over the tin box to the power supply. Lift it out of the way.

Remove the 3 small self-tapping Phillips head screws that hold the computer assembly to the top of the case. For greater maneuverability, it may also be necessary to remove the 2 screws that hold the power supply. It isn't necessary to remove the power supply, just loosen it.

Lift the computer assembly up slightly, and reach under it with a small flat-blade screwdriver, gently pry up the keyboard cable connector enough, so that it can be lifted out easily. Once the keyboard cable connector is unplugged, disconnect the power cable, and lift the computer assembly out of the top case. At this time the cartridge port connector may pop loose; that's OK, it has to be removed anyhow.

Two tin plated shields cover the computer printed circuit board and are fastened by 3-#6 machine screws, nuts and washers. Loosen and remove them. Also remove the two metal clips that slide over the shields. Some computers may also have a small bead of solder that electrically grounds the shields to the computer board. If so, it will be necessary to heat up your soldering iron and melt this bond, being careful not to allow molten solder to flow into the computer. Remove both shields.

Put the motherboard on a nice clean work surface, facing you as shown in the fig. #1 drawing. The joystick connector should be on your left, the keyboard connector in the front, the edge-connector on your right. Looking at fig. #1 notice where the GROM area is. Going to this area you should notice four socketed chips. The first GROM, on the far left, should be marked CD2155, the next CD2156, and the last GROM on the far right, should be marked CD2157. The fourth socketed chip to the right of the three GROMs will be the TMS9919 SN76489 or SN94624 sound processor.

Now that you know where the GROMs are: Using a flat-blade screwdriver or 16-pin IC remover, remove the GROMs marked CD2155, and CD2156. This should leave the last one CD2157 on the far right with the sound chip next to it.

Taking the new small 2"*2" SOB, carefully plug it into the empty socket right next to the CD2157 chip. The SOB should cover over the other empty socket.

Taking the yellow wire attached to the SOB, and your soldering iron, solder it to the big tin strip on top at the far back of your motherboard. The best

place for this is right behind, inline with the SOB socket. For the techies: this line is being connected to GROUND, because the GROM sockets don't have a real GROUND, and the new chips contained on the SOB need one to work correctly.

You should plug back in the power supply, keyboard, and monitor cable now to make sure the TI console works with no problems. If it's working correctly, you should be able to see the new OPA MICRO-MANAGER title screen, and from it select TI BASIC, and then from TI BASIC be able to run a small program like CALL CLEAR, A=3*.2456. PRINT A, END. Using a CALL in TI-BASIC is required to fully check the SOB operation, as this and the power-up test will insure that you have correctly installed the SOB, and removed the correct two GROMs.

NOTE: Plugging in anything more, like the PE-BOX, is not recommended in case something went wrong with the installation of SOB.

If everything works, then un-plug the motherboard again and position the board like before with the joystick on the left, and the keyboard connector in the front. Looking at fig. #1 again, notice where the VIDEO area is marked. Looking at it, you should notice it is socketed and covered in a white type of heat-sink compound. Using the flat-blade screwdriver, or a 40-pin IC remover, gently pry out the TMS9918 chip by alternately inserting your tool under each end until it is loose enough to be lifted out of the socket.

With the chip removed, take the second new board, the larger 4"*3" TIM, and install it into the socket so that the 25-pin connector faces out the back of the motherboard. Make sure the board is firmly plugged into the VDP socket, and that all the 40 pins are installed correctly into the socket.

Turn the motherboard over, and taking the long blue wire attached to the TIM board, and your soldering iron, carefully solder it to the point shown in fig. #2. This should be right under the TMS9901, which is now right under the TIM board. For the techies: this wire is being attached to A13 of the system address bus, used by the V9958 in decoding the new memory-mapped I/O ports.

With this done, plug back in the power supply, keyboard, and, using your new monitor cable, plug into the 25-pin connector. Power-up your system. Like the SOB test you should be able to see the OPA MICRO-MANAGER title screen, and select and use TI BASIC. If the picture does not look right, turn off the system, and check your new monitor cable, installation of TIM, etc.

NOTE: If you do not have RGB monitor and/or cable you can still check to see if TIM is working by plugging in a Speech box and hooking up the normal monitor cable. If everything is working, you will hear your computer say "READY TO START" and then if you keep pressing one of the Alpha keys like A or B, after some more speech, you should hear a HONK type of sound. If you don't have Speech, then just listen for the HONK sound.

REASSEMBLY

After doing the TIM power-up, and if everything is working, you will now have to install back the bottom part of the shield. Slide just the **bottom shield** back on over the motherboard, and insert the front long bolt near the keyboard connector back in with the new **thick plastic washer** over it so that when you screw on the nut it won't touch the exposed parts of the motherboard. After installing the front long bolt, install the short bolt on the far right near the edge-connector in the normal fashion. To be able to install the other long bolt near the joystick port, you either have to shave down some of the plastic on the joystick connector, or use a smaller diameter #6 nut. Be careful that the sides

of the shields only contact the ground path around the perimeter, that is, they are not bent inward touching any active traces. When you fasten the screws remember that they were not really tight - only snug. Bond the shield to the motherboard with a small bead of solder if you found it that way.

NOTE: For the techies, we have found that running the TI console without the top shield, does not add any new RF interference; in fact, later model TI consoles like the /QI were built without a top shield. If you feel it is a problem, you can use a pair of metal shears to cut away the 4" x 3" area where the TIM board is. The 2" x 2" SOB does not pose a major problem when installing the TOP shield back on.

If you've had any problems with the dirty module port connector, now's the time to clean it with a "Q-TIP" and denatured alcohol. Then face the connector in the forward direction and plug it into the computer through the shield.

Taking the assembled motherboard, gently place it back into the top cover, and looking at the back wall notice where the 25-pin connector meets it. Carefully mark the outer edges of the 25-pin connector with your knife or an ink marker. Then remove the motherboard.

Looking at the back of the top case and at fig. #3 you should notice that a slot about 1/2" deep, and 2 1/4" wide needs to be cut in the case about 9 1/4" from the left, and 3 1/2" from the right. This should be easy to do, as most of the area is made out of small vent-type slits. But be very careful as two of these slits are attached to the part you will be removing, not to the top as the rest of them are. For added strength after removing the mainly solid piece, we suggest taking this piece and gluing it above the cutted slot to hold the loose slits together.

Depending on your type of motherboard and monitor cable, it may be wise to make this slot bigger and deeper. We found some consoles needed a small trim on the bottom part of the console case, due to lower profile sockets used on some TI motherboards.

Taking the bottom case and the motherboard, notice how when placing the board in the bottom case, the big post on the case comes through the board and almost touches the installed SOB. Due to the closeness when reassembling the console, the post can cause the SOB to be knocked out of its socket slightly. We recommend you take a small file and slightly taper the big post to make it slide in better when putting the bottom cover back on.

Plug the keyboard cable connector into the computer and fit the assembly back into the case. Fasten it with the 3 self-tapping Phillips head screws. Also secure the power supply with the two loosened screws.

Those of you with the black and silver consoles will have to pay special attention to the ON-OFF switch, making sure that the plastic slide engages the switch on the power supply board. The thumb slide snaps in after the case is together. Those of you with the beige console have it made, no fancy ON-OFF switch and no I/O port door.

Replace the power line over the computer assembly in its proper position. Make sure the bottom cover is snugly in place before finishing off in securing it with the 7 small Phillips head screws.

RECOMMENDED MONITOR GUIDE and LIST

Since TIM uses the V9958 processor which outputs a max. of 512 * 424 resolution with over 19,268 colors, choosing the proper Analog RGB monitor is a major part of getting the best out of the advanced video design of TIM. We are still in the process of specing-out more compatible monitors which can be used with the TIM. Any help from our customers or other third-party V9938 upgrade owners would be greatly welcome.

So far we have found that Analog RGB or VGA-type monitors with a resolution of at least 640 * 480, and with a dot pitch of .31mm or better, and running at a scan rate of 15.75kHz work the best. Lower resolutions, and higher dot pitches will work, but it all depends on the amount of 80-column text you will be doing, and the amount you are willing to spend on the new RGB monitor.

Currently TIM only supports Analog RGB type monitors, but here at OPA we are working on producing a external box that will convert the RGB to NTSC for use in recording the video output or displaying it on a normal composite type monitor.

The following monitors have been directly tested by OPA and/or our customers, this list will be expanded and more detail added as our customers report on the type of monitors used with their TIM. If you are unsure about a certain monitor, etc. feel free to call us for our advice on it. The following can also be used as guide in building a compatible monitor cable, but we recommend getting specs and pin-outs from the monitor manual.

TESTED MONITORS and PIN-OUTS

Monitor brand and model no.	RED	GREEN	BLUE	SYNC	GND	Misc. notes
Magnavox 8CM515	4	1	5	2	3	DIN 6 plug type
Amiga 1080	3	4	5	7	1 2	DB-9 plug type
Commodore 1084S						
Thomson 4120	3	4	5	7	1 2	DB-9 plug type
Sony XBR series (KV1311CR)	25	26	27	30	6 16	34pin, 24 Audio 33 +5v

TIM/AIM TECHNICAL SPECS and EXPANSION PIN OUTS

NAME	##	Description of each pin and/or jumper
P1	01	+5 volts (max. of 50ma for expansion use only)
	02	Color bus bit #0 LSBit
	03	Color bus bit #1
	04	Color bus bit #2
	05	Color bus bit #3
	06	Color bus bit #4
	07	Color bus bit #5
	08	Color bus bit #6
	09	Color bus bit #7 MSBit
	10	Color bus direction: Low when output / High when input
	> 11	CSYNC Composite SYNC output (used in RGB monitor hook-ups)
	12	HSYNC Horizontal SYNC output (used in expansion add-ons)
14	13	+5 volts (max. of 50ma for expansion use only)
	>>	GROUND Logic/Signal/Chassis Ground
	15	Horizontal SYNC input (reset)
	16	Blanking control: High = #2 / Middle = #1 / Low = Erase
	17	Vertical SYNC input (reset)
	18	10.74Mhz high resolution dot clock output
	19	5.37Mhz low resolution dot clock output (multi-video-input)
	20	Signal Switcher control: High when RGB output is transparent
	21	10ms low RESET signal for external add-ons
	>>> 22	BLUE (Analog blue control for RGB monitor)
	>>>> 23	RED (Analog red control for RGB monitor)
	>>>>> 24	GREEN (Analog green control for RGB monitor)
	>>>>>> 25	GROUND Logic/Signal/Chassis Ground
P2	hole	Connection to V9958 for extra address line A13 (second LSBit)
P3	hole	Connection to V9958 for CPU wait control line (for future use)
A0	hole	On ADAM version, output to P2 for inverted address line control
AI	hole	On ADAM version, input before P2 to invert the incoming address
J/18	jump	Jumped if TIM/AIM replacing a TMS9918, open if replacing a 9928
J/58	jump	Inductor pack installed if PCBoard using a V9958, open if V9938
AorT	14ic	AIM = Left 74'04 / TIM = Right 74'90 : Other = empty socket

Complete technical specs on the V9938/58 and the expansion port use can be requested from OPA by any third-party company willing to design add-ons to the video board. OPA itself is working on a RGB-NTSC and NTSC-RGB interface box with optional video GENlock. Also future plans if demand warrents, are digitizers, and expanded color palettes. For more information on these add-ons, and current availability please write or call us here at OPA.

COMPATIBILITY WITH THIRD-PARTY PERIPHERALS AND SOFTWARE

During the initial design phase many customers asked if TIM is compatible with current other third-party peripherals, like Horizons, hard drives, etc. So we made sure that all the new hardware put into the TIM and SOB boards was fully compatible with everything we could lay our hands on. Due to the internal design of TIM with no CRU use, we don't see a problem arising with it even in very rare cards we have not tested. So on the hardware side we can say for sure TIM is 100% compatible with all known devices, except of course other V9938 video upgrades, as two of them could not be installed and used together.

On the software side, the new operating system for SOB was based on original TI99/4A source code, and every effort was made in keeping all interfaces and accesses to OS programs the same. Most of the new code, like the OPA MICRO-MANAGER, was written to fit in the extra 4K of new GROM space, so that nothing like TI BASIC, etc. needed to be deleted or changed. Only the old module menu screen selector and non-true lower-case was changed. In its place, a better character-set design, and the ability to easily select modules with our new OPA MICRO-MANAGER were added. In the many months of beta-testing over 800 different programs and cartridges were tested and run, and we could not find any problems with any of them. If you think a problem you discovered lays in the new SOB operating system, then please let us know quickly, so that we may work together in solving any possible bugs, etc. Updates to the first customer that reported the fixed problems will be made free of charge. Others, a small fee will be charged which is refundable in part if the old 28pin EPROM is returned within 30 days of a received update.

As for software incompatible due to incorrect VDP access which could work on the old TMS9918 system, but not on the new V9938 or V9958 chips, mentioned earlier in the **OVERVIEW** section of this manual, not much can be done about cartridge based software, but OPA is working on the matter. As for disk-based software, sector edited fixes will be made available once the problem is confirmed and a proper fix is worked out. Any help in reporting this type of problem is greatly welcome, as the faster we know about them, the better we can serve you and other customers. As fixes are worked out, a -READ-ME file will be added to the supplied disks. Please read this file to check on the current list of incompatible software and possible fixes for them.

DISCLAIMER

The TIM TI-Image-Maker and SOB Son-Of-a-Board for the Texas Instruments 99/4A Home Computer requires an internal modification to the computer console. It is presumed that the purchaser has some technical skill, normal dexterity and a willingness to complete the project. We have included all the necessary data and procedural steps to guide the purchaser. OPA Oasis Pensive Abacutors assumes no liability for unsuccessful project completion or damage to any equipment. Modification of the TI-99/4A will probably void any remaining warranty. The TIM and SOB boards are fully tested for 24 hours before being shipped. Except for the below warranty the products are offered "AS IS", and the purchaser should proceed at his own risk.

WARRANTY

The TIM TI-Image-Maker and SOB Son-Of-a-Boards units for warranted against defective materials or workmanship for a period of One Year from the date of the original purchase by the consumer. This warranty is void if the units have been damaged by accident, unreasonable use, neglect, improper service or other causes not arising out of defects in materials or workmanship.

Any implied warranties arising out of this sale, including but not limited to the implied warranties of mercantibility and fitness for a particular purpose, are limited in duration to the above One Year period. OPA Oasis Pensive Abacutors shall not be liable for loss or use of the hardware or other incidental or consequential costs, expenses, or damages incurred by the consumer or any other user.

Some places do not allow the exclusion or limitation of implied warranties or consequential damages, so the above limitations or exclusions may not apply to you in those places. This warranty gives you specific legal rights, and you may have other rights that vary from place to place.

WARRANTY PERFORMANCE

During the above One Year warranty period, the TIM TI-Image-Maker and/or SOB Son-Of-a-Board units or any component supplied with this package will be repaired or replaced with a new or reconditioned unit of the same or equivalent model (at OPA's option) when the unit is returned by prepaid shipment to OPA Oasis Pensive Abacutors. The repaired or replacement unit will be warranted for another One Year period from the date of repair or replacement. Other than the postage requirement, no charge will be made for the repair or replacement of in-warranty units.

NOTE: OPA Oasis Pensive Abacutors, will not repair the computer console part, or properly install a TIM/SOB package for you, unless prior arrangements have been made either by mail or phone. A repair charge and/or installation fee will be charged on installing TIM/SOB and/or repairing a damaged computer console.

OPA OASIS PENSIVE ABACUTORS
432 JARVIS STREET SUITE 502
TORONTO, ONT. CANADA M4Y-2H3

(416)960-0925 8am-11pm EST
(416)960-1424 if above busy

(416)921-2731 TI-TOWER BBS 24hour 3/12/24bd 8N1

FIGURE #1

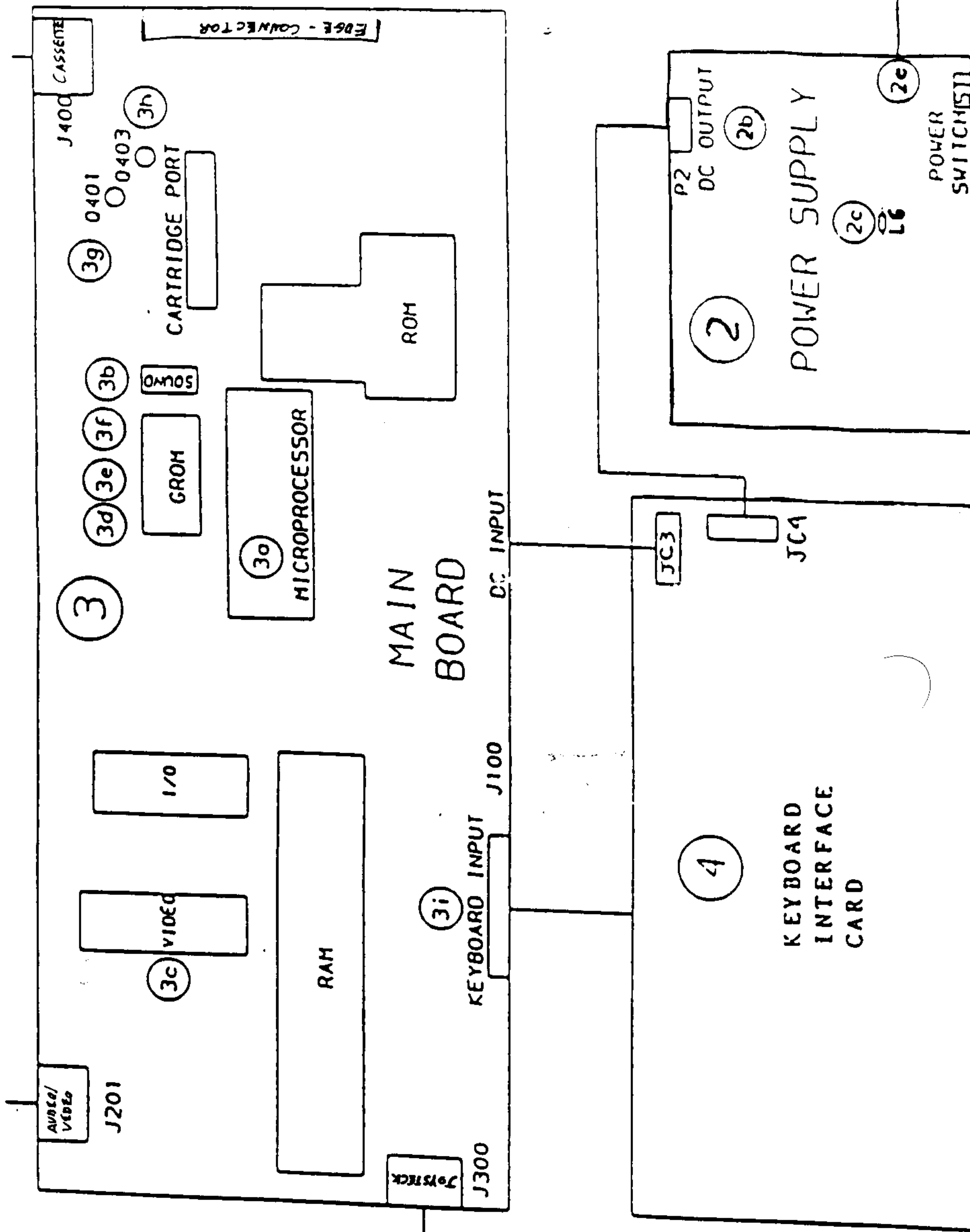


Figure #2 →

Back of the TI motherboard, look at it with the edge-connector on your left and the joystick port on your right.

The enlarged area is the area under the TMS9901 chip. The arrow leaving one of the pads, is where the "BLUE" wire from TIM is connected to.

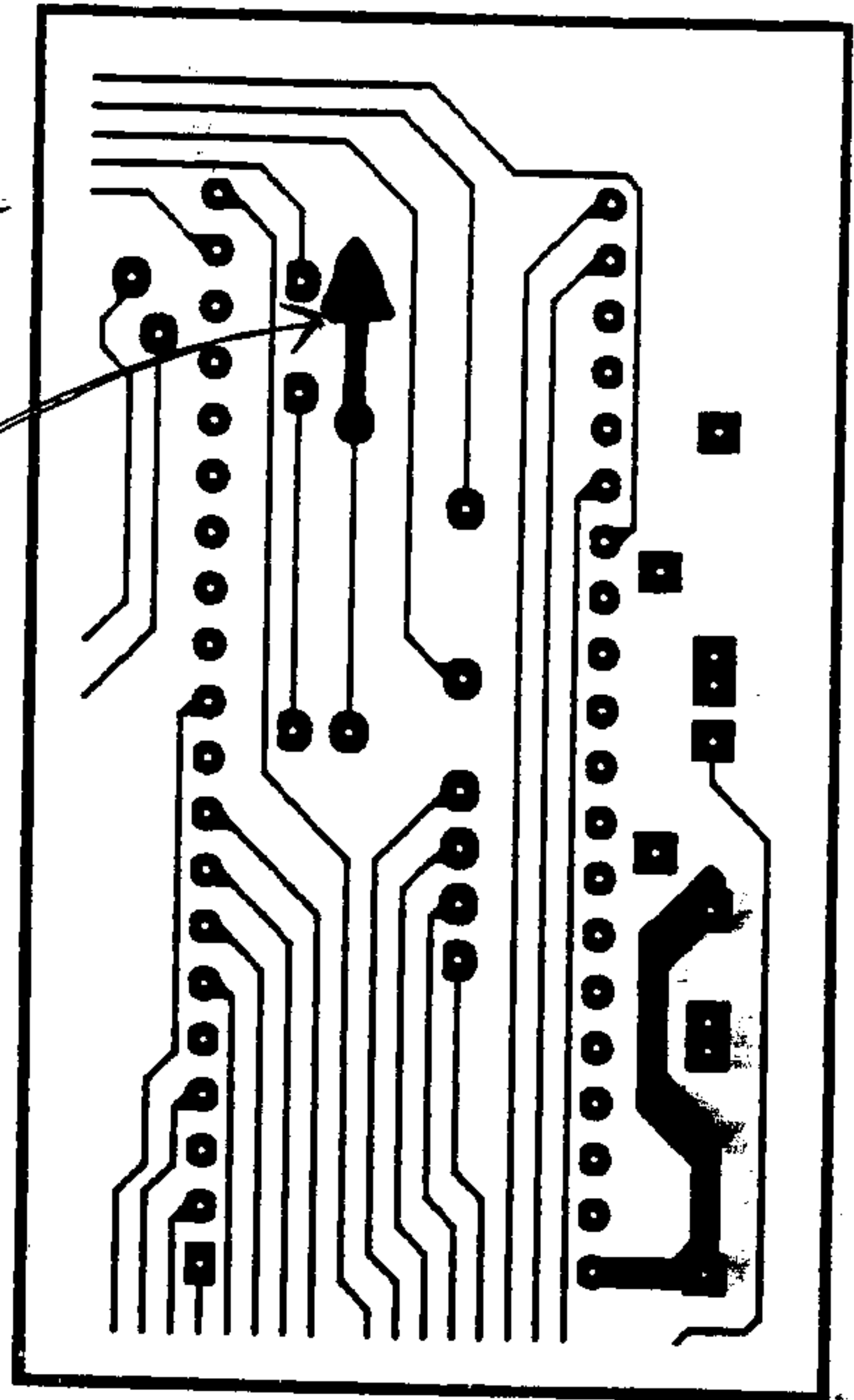
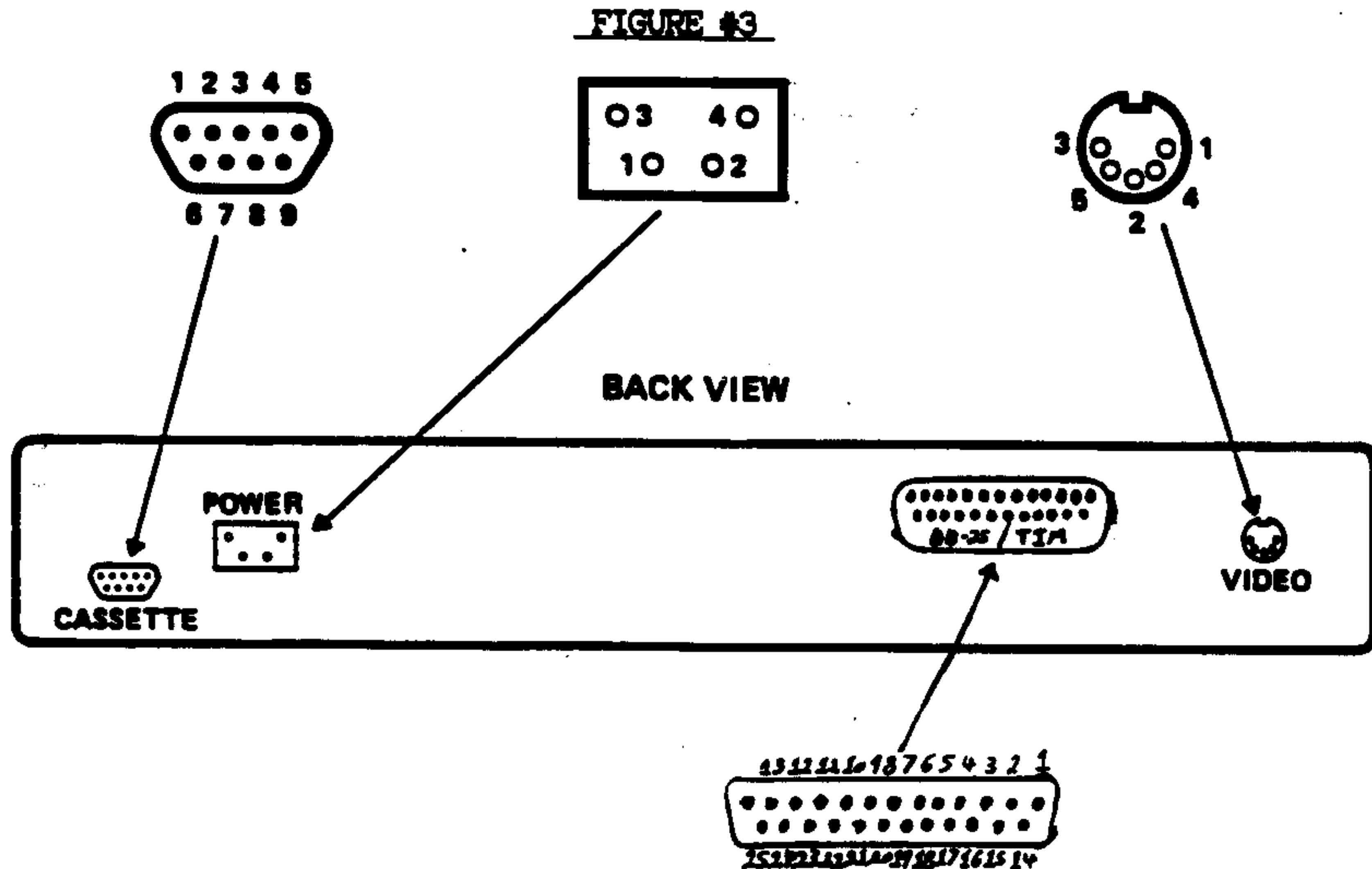


Figure #2 →





OSHITI
77/4A
COMPUTER
USERS GROUP

T.I.M. HERE

TI IMAGE MAKER (Tiny TIM) has arrived....! Oasis Pensive Abacutors 80 column HIRES upgrade for the TI 99/4A is now available for \$179 (US or CAN). Now you will be able to luxuriate with the W I D E S C R E E N. Load in GIF pictures and use the 256 colour Graphics mode 6 and 7 which the U9958 video chip supports.

Although TIM uses the newest YAMAHA video processor the U9958. All of the software that supports the older 80-column cards (the U9938) also works. OPA has made sure that there is compatibility between them. The installation of TIM is very simple. You "pry out" your U9918A chip (from your console) and pop in the TIM board and make a simple solder connection to the bottom of the mother board.

You also remove the two GROM chips and add the S.O.B. (Son of a Board) and make another solder connection, this time to ground.

The instructions are easy to follow and most anyone will be able to add TIM and SOB to their console. If you are faint at heart then I suggest that you make use of a 'techie' from your user group. If you still can't do this, then you can send your console into OPA and they will do it at a small additional charge.

The S.O.B. is a 'stand-alone' unit and can be added to anyone's console. It is a powerhouse by itself. In fact it will perform more operations than Editor/Assembler. S.O.B. replaces GROM 1 and 2 in the console so that you will have TRUE LOWER CASE characters and a MICRO disk manager as well. OPA has also changed the STANDARD TI screen(s) as well.

OPA also supplies the purchaser with software so that you can immediately use the system. X-HI, X-80 from Alexander Hulpke are packaged with it as well as a GIF viewer and of course 80-column FUNNELWEB (DISK REVIEW) 4.31. There are also other programmes which make use of the U9958 graphics.

If you are presently using TELCO, you can readjust your set-up for 80 columns it works in a 'flash'. Now you don't have to worry about wrap-around from BBS's.

TIM is a complete package and the PRICE is definitely RIGHT. You get TWO great hardware upgrades which will turn your TI 99/4A into a computer for the 1990's.

OPA is also thinking ahead has engineered in lines for future add-on devices - GENLOCK devices, IMAGE SCANNERS, as well as a composite monitor adapter. Presently an ANALOG RGB MONITOR is needed with TIM (see article later).

If you've been waiting for 80-columns, now you can get it and not worry about the support for it. You get 512x424 pixel resolution and the FULL 192 K of VDP ram.

<p>OASIS PENSIVE ABACUTORS 432 Jarvis St. #502 TORONTO, ONTARIO, CANADA M4Y 2H3 \$179.00 + 7.50 shipping and handling</p>
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Our fellow Tiers, Phil and Glen and John from Kawartha 'graced' us with their 'presents'. Tom and Keith tried feverishly to get a Commodore RGB monitor to work on the newly obtained TI Imagemaker(T.I.M.) from OPA (AKA Gary Bowser).

Unfortunately the cable us was missing a much needed pin to make it work. We will have to wait for next month's meeting to see.

However, Tom demonstrated the S.O.B., Son of a Board which comes with T.I.M. As mentioned in the March OSHTI newsletter, this board can be purchased separately from T.I.M. for \$59 (Can.) The board features TRUE lowercase characters for all console cartridges, BASIC and XBASIC. Even the zero is slashed.

With the PBOX attached you can choose to RUN a disk based programme from the micromenu screen or choose the module. If your speech synthesizer is attached the SOB says "READY to START" on power-up, then "DEVICE" for disk drives and "MODULE" for cartridges. When you access a drive it says "RUN". The menu screen runs smoothly but there is a complaint about the screen colours on a B-W monitor. It was also noted that there is a compatibility problem between SOB and the MYARC FDC (floppy disk controller). If there is NO synthesizer attached, the MYARC FDC causes the SOB to hang up before displaying anything. Gary Bowser, is working on the fix for this apparently unusual incompatibility. Unfortunately, this might delay orders of TIM and SOB.

T.I.M. and YOUR MONITOR

As mentioned in the Mar. OSHTI meeting minutes, I purchased my TI Image Maker (aka 'tiny' TIM) but was unable to get it to work on the monitors I brought home. Well, here it is Mar.22nd, only 4 days later and TIM is up and working. I sure learned a lot about RGB monitors in the last week.

First thing that you should know about RGB monitors is that there are basically two(2) types. There are the:

RGB analog
and the
RGB digital(or TTL)

TIM to date ONLY works on the RGB ANALOG! No digital models will work. To Keith's and my disappointment, the COMMODORE 1902 RGB monitor will NOT work...it is DIGITAL ONLY!

Most of the Amiga monitors (1084,1084S)from Commodore will work.

I also suspect that the RADIO SHACK monitors,CMS and RGB11 will work. The reason

that I say this is that they have relatively LOW RESOLUTION and have a Horizontal sweep rate of about 15.75 kilohertz. Herein lies the next problem; the horizontal scan or sweep frequency.

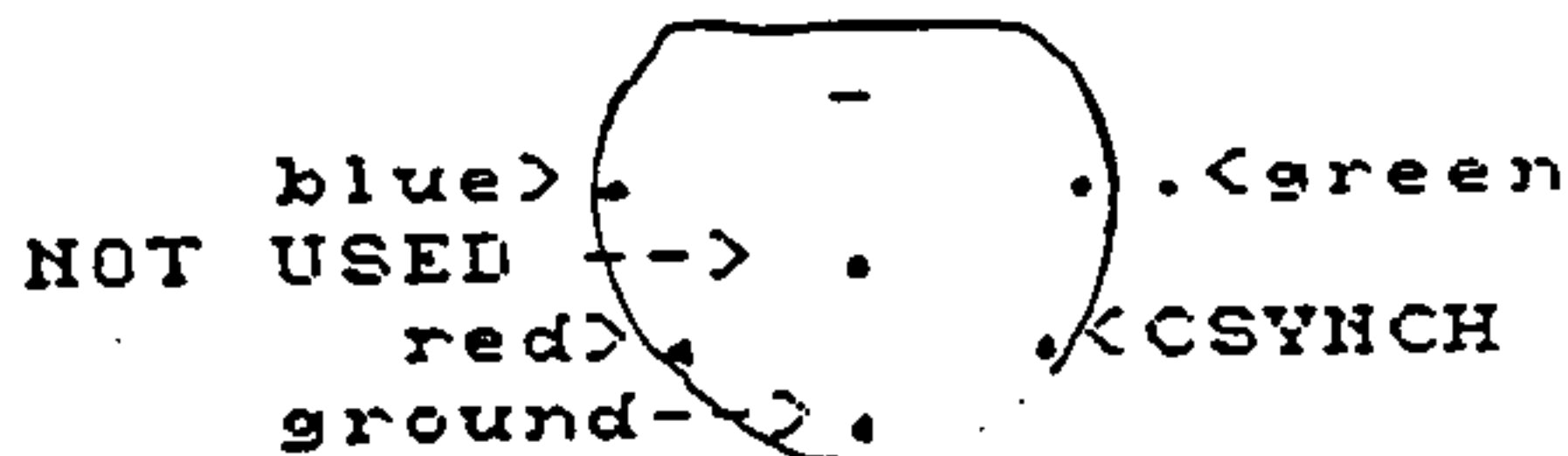
TIM works well on a 15.75 kilohertz scan, but most inexpensive RGB monitors are 31.5 kilohertz, or double this frequency. This causes a small problem (I'm not exactly sure, but it is significant enough). This makes a wide variety of modern UGA monitors for the moment out of contention.

The last problem lies in the wiring diagrams to these monitors. They use separate Horizontal and Vertical scan lines. TIM, at the moment is set up to use only a Composite Synch line.

The good news is that TIM WORKS ! It works with a variety of monitors (see list below). Gary Bowser of OPA is to be congratulated for the work he has done on TIM. Gary continues to work on these last two problems and hopefully TIM will eventually be able to work on more (inexpensive) monitors in the future.

Commodore AMIGA 1080,1084
MAGNIVOX 8CMS15
THOMPSON 4120
SONY XBR series(KU1311CR)

The following is the pin-outs for the DIN 6 plug on my version of the Commodore 1084



Looking at the back of the monitor at the female plug.

Another thing to keep in mind is the SIZE of the PIXELS. From experience with the AMIGA monitor and from the advice of others (Will McGovern), a pixel size of 0.42 mm is ACCEPTABLE but a SMALLER size is BETTER !

Finally, besides the cost, you want a monitor which can do a screen size of 640 x 480 pixels. This is fairly standard on most UGA systems. You will pay more for the higher sizes but the TIM can only do a maximum of 512 X 424 so any larger sizes than the 640 x 480 won't improve things.

To summarize you want a monitor for TIM that is:

- >RGB ANALOG
- >less than 0.42 mm pixels
- >640 x 480 pixel screen
- >15.75 kilohertz Hor.scan

Tom (Mar.24 1991)

MAILING ADDRESS:

OSH TI

Tom Jakabfy
666 Given Rd.
OSHAWA, Ont.
L1H 8L7

DO YOU HAVE AS MUCH SENSE AS A GOOSE?
By Earl Raguse

The following was copied from the 2/91 Dallas '99 Interface from an article by the same name. No author was given. I thought it appropriate, now that our annual election of officers is coming.

This spring when you see geese heading back north for the summer, flying along in "V" formation, you might be interested in knowing what scientists have discovered about why they fly that way. It has been learned that as each bird flaps its wings, it creates an uplift for the bird immediately following. By flying in that "V" formation, the whole flock adds at least 71% greater flying range than if each bird flew on its own.

Basic Truth #1: People who share a common direction and sense of community can get where they are going quicker and easier because they are traveling on the trust of one another.

Whenever a goose falls out of formation, it suddenly feels the drag and resistance of trying to go it alone and quickly gets back into formation to take advantage of the lifting power of the bird immediately in front.

Basic Truth #2: If we have as much sense as a goose, we will stay in formation with those who are headed the same way we are going.

When the lead bird gets tired, he rotates back in the wing and another goose flies point.

Basic Truth #3: It pays to take turns doing hard jobs--with people or geese flying north.

The geese honk from behind to encourage those up front to keep up their speed.

Basic Truth #4: We need to be careful what we say when we honk from behind.

Finally, when a goose gets sick or is wounded by a gunshot and falls out, two geese fall out of formation and follow him down to help him and protect him. They stay with him until he is able to fly or until he is dead, and then they launch out on their own or with another formation to catch up with their group.

Final Truth: If we have the sense of a goose, we will stand by each other like that.