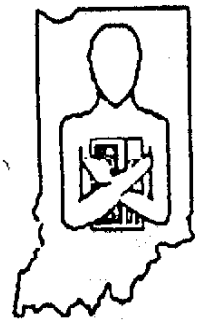

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JULY 1993 The HUGgers Newsletter Volume 12, Number 7

OFFICER'S CORNER

As President, I realize my first months 'in office' have not been very significant (especially due to an unexpected change in work) but hopefully that will change in the near future. Already I have begun to implement some of the ideas I had before being elected and will continue to keep in mind suggestions made by those who returned my questionnaire.

I would also like to remind everyone that the July meeting will be our annual swap meet. So bring all of your equipment you wish to trade (or sale) or ideas for what you want!

At the August meeting I will be demostrating two programs (one old the other new) that I wrote. The former is a sector editor for the Geneve (in our library) and the other is an honest-too-goodness Artificial Neural Network for the Geneve. If possible, I will try to arrange a demostration of the word processor for the TI, First Draft. So be there or be square!

Warren

WHAT EVER HAPPENED TO THE CLARKS?

Mary Rose, Carl and their children left us several years ago for Alaska. (How long has it been, Carl?)

For our newer members, Carl was President of HUG before they left the "Lower 48".

I will try to type his letter as he wrote it to Fred Edstrom Jr., when he renewed his membership.

BOB

Dear Fred & everybody,

We are signing up for this year as usual. You guys are doing a great job of getting the important info about what is new for the TI. I am encouraged to see that there is still a solid base of research for better products being done by a few people.

We have a couple of systems loaned out to families in our area and they are really enjoying them.

I am writing by hand as I am having trouble with my printer cable or my RS232 card. I'm not sure which. When it prints, every other character is incremented by one ASCII number, so B becomes C, J becomes K etc. For example "THROUGH" is printed T(I)R(U)U(H)H. The circled letters being incremented. If anyone has any suggestions, I would love to hear from them.

We are buying 40 acres of forest and living on it. Our house is progressing slowly. Visitors always welcome!

Thanks for the help

Carl Clark

IBM—TI Connection

The author had an IBM PC at work and a Texas Instruments 99/4A at home. Naturally, he wanted to transfer files from the smaller 99/4A to the faster PC. This article describes the hardware and software modifications needed to make the IBM-TI connection. By Kenneth Burchett

With today's vast computer market, it's not unusual for someone to have one kind of computer at home and a different one at work. Having a TI 99/4A of my own and an IBM PC at work soon made me want to adapt programs from the smaller unit to the faster machine. Texas Instrument's decision to drop the TI 99/4A and IBM's announcement of the PCjr was an added incentive to find a simple file-transfer method for these two popular brands.

Making the Connection

First, you have to connect the asynchronous communications support adapter on the IBM PC to the RS-232C interface card on the TI 99/4A. You can use a direct cable or a telephone coupler (modem). If you use a cable, you can buy one or make one from bell wire and two DB-25 connectors—one male and one female.

The required pin connections are shown in Fig. 1. Note that pins 4 and 5 on the IBM PC side are wired together to automatically turn on the clear-to-send input line. This cable hookup successfully moves files from TI 99/4A cassette storage to IBM PC disks and works equally well in disk-to-disk transfers.

The file transfer process is easier when you use the communications program in Listing 1. Prepare a disk containing DOS, BasicA, PCTICOM and the following AUTOEXEC.BAT file: BasicA PCTICOM.BAS/C:16000. A 16Kb buffer for receiving data is set aside to eliminate any possibility of a communication buffer overflow. The size allocated may vary with the system; however, it needn't be larger than the memory of the TI 99/4A to do the job. The maximum allowable is 32767 bytes.

One final note—some Basic program lines may be divided in the process of being translated, resulting in a Direct Statement in File error message when you try to run them. Therefore, it's useful to include a copy of the EDLIN editor provided with MS DOS on the utility disk. I find that, with just a few changes, most programs written on the TI 99/4A can be converted to run on the IBM PC. In order to be transferable, files must be ASCII text files. Default storage for TI files is Display (the equivalent of ASCII code).

The PCTICOM program has all the necessary features of the asynchronous communications support program (ACSP) to control data transmission, with the added convenience of being able to control the print setup, and without the comparatively long initialization time required by the ACSP. By configuring the IBM PC to the communication defaults of the TI 99/4A and using the TI's simple List "RS232" command, you can accomplish the whole transfer process very quickly.

Address correspondence to Kenneth E. Burchett, SR 2, Box 4040, Branson, MO 65616.

```
100 CLS:LOCATE 4,12
110 PRINT "----------PCTICOM----------"
120 LOCATE 5,12:L=1
130 PRINT "Program to transmit text files from a TI99/4A to an IBM-PC."
140 PRINT TAB(12) "File to be transferred must be in TI99/4A memory."
150 LOCATE 7,12
160 PRINT "Use CTRL BREAK to interrupt PC processor, CONT to continue."
170 PRINT TAB(12) "Use direct goto 100 to start over after CTRL BREAK."
180 'By K. Burchett, January 1985.  Ref: J.G. Schmidt, Microcomputing,
190 'November 1983; IBM Basic Manual, 1982; TI RS232 Reference, 1982.
200 KEY OFF:CLOSE:LOCATE 9,12:ON ERROR GOTO 500
210 PRINT "----------"
220 LOCATE 12,28:PRINT "     1.  Transfer File"
230 LOCATE 14,28:PRINT "     2.  Return to BASIC(A)"
240 LOCATE 16,28:PRINT "     3.  Return to DOS"
250 LOCATE 19,14:INPUT "   Enter choice: ";C
260 LOCATE 20,1:CLS:ON C GOTO 280,540,560:GOTO 100
270 '
280 '  ----------Process file----------
290 INPUT "Print transferred file on the screen (y or n)";PS:PRINT
300 INPUT "Print transferred file on a printer (y or n)";HS:PRINT
310 IF HS<>"Y" AND HS<>"y" THEN 340
320 INPUT "Number of lines per page (continuous=0)";L:P=1:PRINT
330 INPUT "Number of characters wide (maximum=255, TI=28)";WI:PRINT
340 INPUT "Save transferred file on diskette (y or n)";SS:PRINT
350 IF SS<>"y" AND SS<>"Y" THEN 380
360 PRINT "Enter filename for file to be received.  Add .BAS suffix if"
370 INPUT "file is BASIC program: ";FILES:OPEN FILES FOR OUTPUT AS #2
380 WIDTH "lpt1:",WI: OPEN "COM1:300,O,7,,CS,DS,RS" AS #1:CLS
390 IF P=1 THEN PRINT "Ready Printer"
400 PRINT "Enter LIST RS232/1(in quotes) at TI99/4A.":PRINT
410 LINE INPUT #1,AS: IF LEFT$(AS,1)=CHR$(10) THEN AS=MID$(AS,2)
420 IF PS="y" OR PS="Y" THEN PRINT AS
430 IF P=1 THEN 440 ELSE 460
440 LPRINT AS:CTRH=CTRH+INT((LEN(AS)/WI))+1:IF CTRH<L OR L=0 THEN 460
450 PRINT:INPUT "Page change. Press ENTER to continue.";XS:CTRH=0
460 IF SS="y" OR SS="Y" THEN PRINT #2,AS
470 FOR T=1 TO 3000:IF LOC(1)>1 THEN 410
480 NEXT T:PRINT:PRINT:PRINT "******Transfer Completed******"
490 CLOSE:FOR I=1 TO 5000: NEXT I:CTRH=0:CLS:GOTO 100
500 IF ERR=69 THEN PRINT "**Overflow**":RESUME
510 IF ERR=25 OR ERR=27 THEN 520 ELSE 530
520 INPUT "Device Error. Check Printer. ENTER to continue.";XS:RESUME
530 ON ERROR GOTO 0
540 CLS:PRINT "End of session.  BASIC(A) resumed.":WIDTH "lpt1:",255
550 END:' ----------
560 SYSTEM
```

Listing 1. PCTICOM file transfer program.

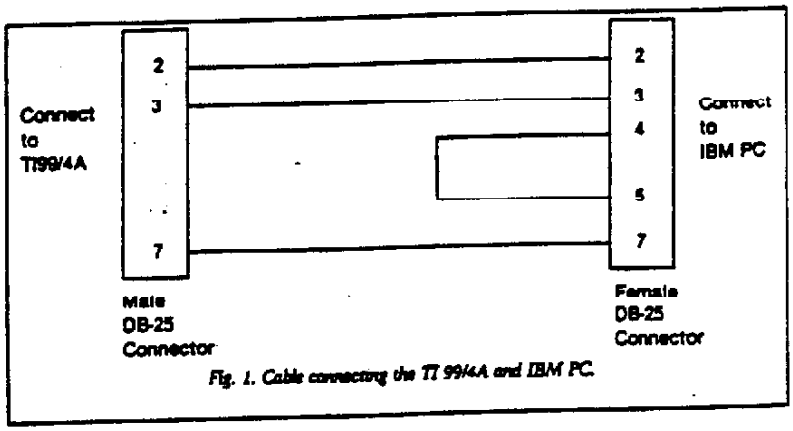


Fig. 1. Cable connecting the TI 99/4A and IBM PC.

HARDWARE HACKING BY
KEN GLADYSZEWSKI
NORTHCOAST 99ERS

ANALOG AND THE TI COMPUTER

When we think of uses for a computer, our thoughts normally turn to word processing, spreadsheets, and data bases. Another equally important use is to monitor and control our surroundings, such as temperature. When trying to use a computer for this purpose, the problem that immediately arises is bringing this type of signal, which is ANALOG, into a computer which is DIGITAL. The method commonly used is to change the analog signal to a digital one, using an analog to digital conversion chip (ADC). Many home computers have a chip like this built into the joystick or game port for use with paddles; unfortunately, the TI does not!

My project got started when I discovered an 8 bit ADC chip made by TI; coincidentally that is both inexpensive (approx.$3.00), and requires few support parts. The TCC 5488 or TLC 549 Chip is unique because it requires only two signals to control it and has serial output. These features make it a natural to be used with the TI joystick port!

The joystick port consists of two outputs, Joy A & B and five inputs: Up, Down, Left, Right, and Fire. When the computer executes a CALL JOYST command, it energizes one of the outputs and examines the directional inputs to see if a switch in the joystick is closed, connecting that output and an input. Using these outputs to control the ADC is complicated by the fact that the Joy A&B outputs are with respect to the computer console power supply. None of these power supply signals are available in the joystick port, although they appear in various combinations on other connectors, such as video, sound, cassette, gross, and system bus ports.

The problem is solved when it is realized that only one output is energized at a time, and the differential between these outputs can be used to generate the two control signals required for the ADC chip. Getting the computer to accept data from the chip is done by lighting an LED in an optocoupler, which causes a photo transistor to turn on and act like a switch in a joystick.

The circuit (Fig.1) works as follows: With no joystick commands and hence no output signals on the Joy A & B pins - both transistors Qa and Qb are off causing both the I/O clock and chip select (CS) pins to be held low enabling the chip. When the CALL KEY statement in step 165 is executed, Joy A goes low and Joy B remains high. Transistor Qb is turned on causing the CS pin on the channel 1 chip and others in the same bank to go high resetting these chips.

When the CALL JOYST statement in step 130 is executed Joy B goes low and Joy A remains high. Transistor Qa is turned on causing the I/O clock pin on the channel 1 chip and others in the same bank to go high with no effect. The most significant bit (MSB) of data from the previous analog conversion has been available and is now recognized by the computer. The input reflects the bit sense and is returned by the CALL JOYST routine. When this statement finishes, transistor Qa turns off and the I/O clock pin goes low causing the next bit to appear on the Data out pin. Step 140 examines the value returned and if on, increments a variable for that channel by a weighted value corresponding to the location of the bit in the ADC Serial output byte.

The circuit shown is for channels 1 & 6, but additional ADC chips may be added easily for up to a total of 6 analog channels with no digital joystick using Basic. In basic we are limited to two channels per joystick because the CALL JYST Command will only recognize a legal combination of 2 inputs at a time (up &t down or left & right cannot be energized). At the same time this limitation can be overcome and the number of channels per joystick expanded to three by using a decode and an encode chip on each bank. This restriction disappears and speed is increased when assembly language is used allowing up to 10 analog channels with no digital joystick or 5 analog channels with 1 digital joystick with no need for encode and decode chips. A fellow club member is writing the assembly language routine.

In Basic, Call Joyst examines two analog channels and CALL KEY only examines one. Therefore, to keep channel 1 update time to a minimum when more than one channel is desired, they should be implemented in both HARDWARE and SOFTWARE in the following order: 1,2,(3),6,7,(8),4,9. Channels 3 & 8 need decode and encode chips in Basic.

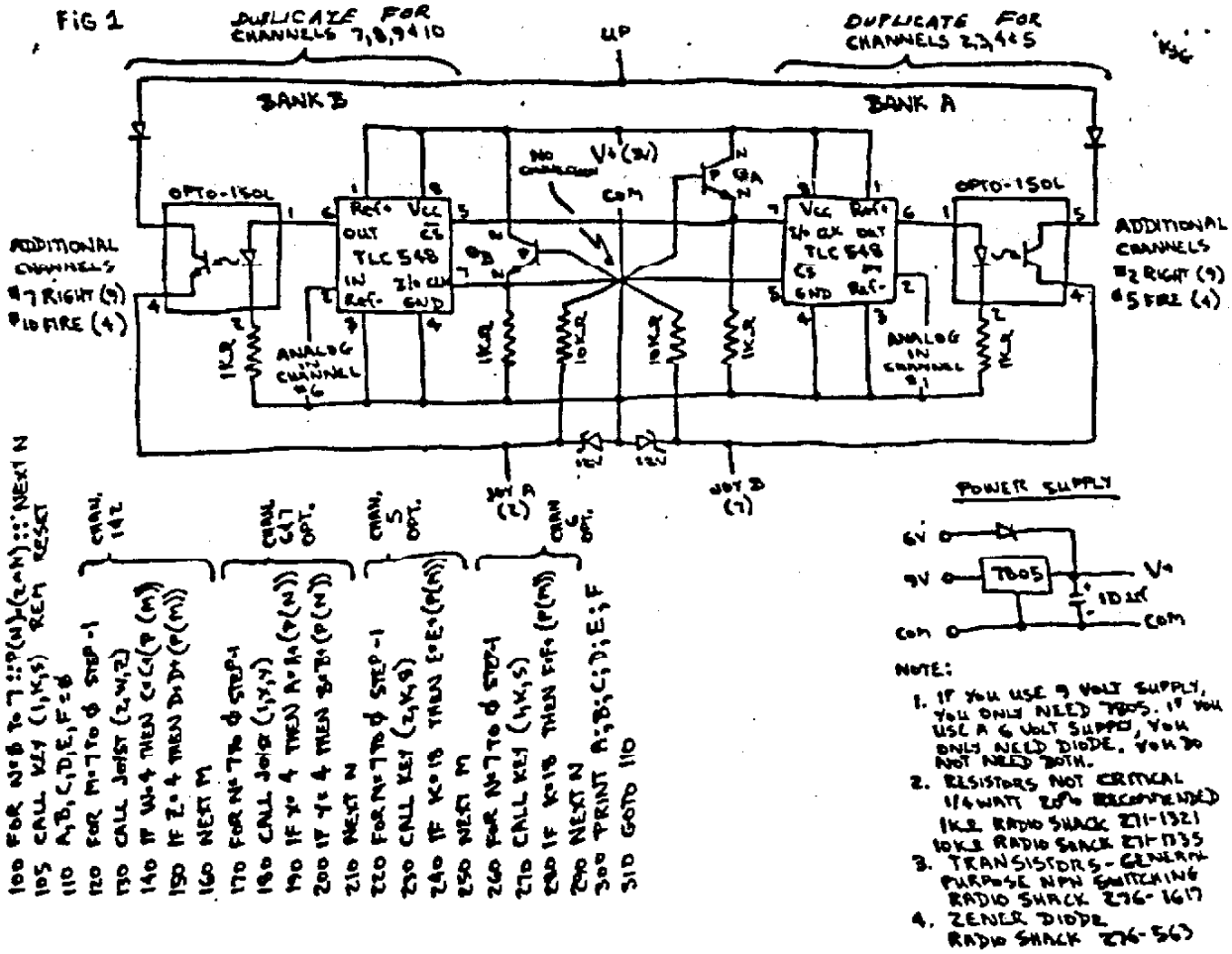
See Fig 7 in this example for a practical application using thermistors to read multiple temperatures. Using the circuit shown, a ham console with multiple analog channels and appropiate sensors could be turned into a local weather station monitoring temperature, wind speed and direction, rainfall, and barometric pressure, etc.

The techniques employed in this project can also be used with a shift register chip (fig 2). This allows 8 or more digital inputs to be read from each of the 5 inputs in the joystick port. The basic program used with the analog chips requires only minor modification to work with shift register(s), the large amount of digital inputs could be used to build a computer based burglar alarm. An analog channel might also be used for the same purpose by using window switches to short resistors in a divider network causing a unique voltage at the input to the ADC (see fig 6).

An alternate method to control either the ADC or shift register chip would be to use a decade counter chip to generate the CS or PL signals. This would free up one of the joystick outputs but would require using another input (fig 5).

As I've said before, if any of this is useful, you are free to use it in a project of your own. I would appreciate hearing about such projects. You can write to me at : 6440 St. Rte. 86, Concord Ohio 44077. For a more thorough discussion of analog to digital conversion see the article in the July 1991 edition of RADIO-ELECTRONICS magazine.

CAUTION !!: Due to the nature of the product, even though it appears simple, the reader assumes all responsibility! Of the figures shown, only Fig.1 has been actually breadboarded.




```
100 FOR N=0 TO 7::P(N)=(2^N)::NEXT N
105 CALL KEY (1,K,S)
110 A,B,C,D,E,F=0
120 FOR M=7 TO 0 STEP -1
130 CALL JOYST (2,W,Z)
140 IF W<4 THEN C=C+P(M)
150 IF Z<4 THEN D=D+P(M)
160 NEXT M
170 FOR N=7 TO 0 STEP-1
180 CALL JOYST (1,Y,X)
190 IF Y<4 THEN A=A+P(N)
200 IF X<4 THEN B=B+P(N)
210 NEXT N
220 FOR N=7 TO 0 STEP -1
230 CALL KEY (2,K,S)
240 IF K<>0 THEN E=E+P(N)
250 NEXT M
260 FOR N=7 TO 0 STEP-1
270 CALL KEY (4,K,S)
280 IF K<>0 THEN F=F+P(N)
290 NEXT N
300 PRINT A;B;C;D;E;F
310 GOTO 110
```

CHAN. 1&2

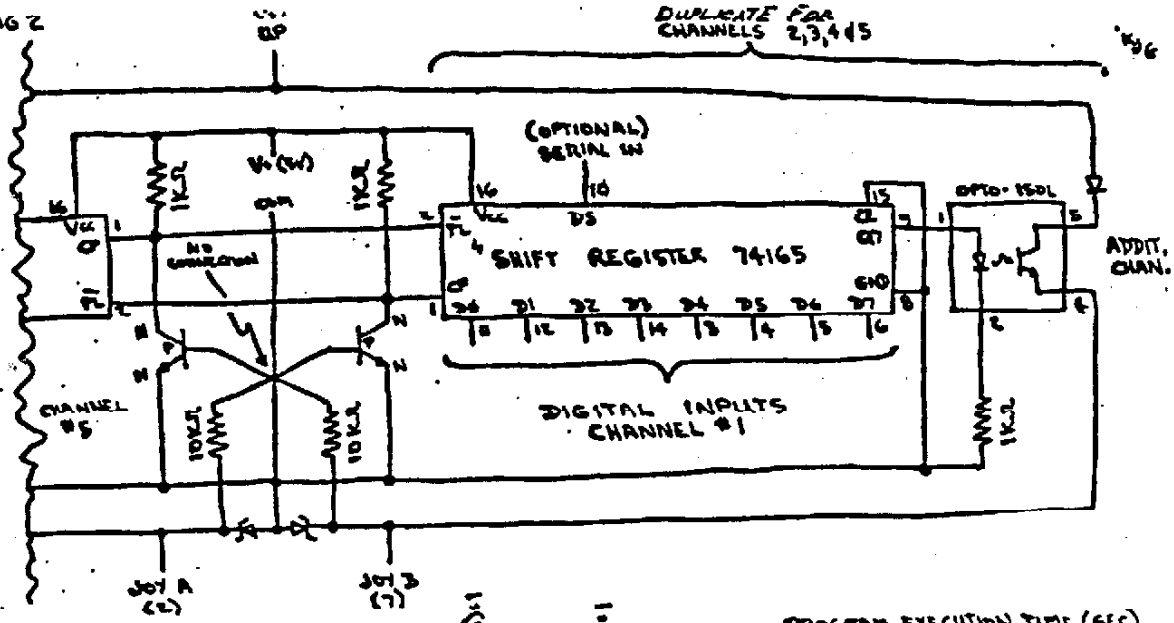
CHAN. 3&7 OPT.

CHAN. 5 OPT.

CHAN. 6 OPT.

100 FOR N=0 TO 7::P(N)=(2^N)::NEXT N
105 CALL KEY (1,K,S) REM RESET
110 A,B,C,D,E,F=0
120 FOR M=7 TO 0 STEP -1
130 CALL JOYST (2,W,Z)
140 IF W<4 THEN C=C+P(M)
150 IF Z<4 THEN D=D+P(M)
160 NEXT M
170 FOR N=7 TO 0 STEP-1
180 CALL JOYST (1,Y,X)
190 IF Y<4 THEN A=A+P(N)
200 IF X<4 THEN B=B+P(N)
210 NEXT N
220 FOR N=7 TO 0 STEP -1
230 CALL KEY (2,K,S)
240 IF K<>0 THEN E=E+P(N)
250 NEXT M
260 FOR N=7 TO 0 STEP-1
270 CALL KEY (4,K,S)
280 IF K<>0 THEN F=F+P(N)
290 NEXT N
300 PRINT A;B;C;D;E;F
310 GOTO 110

FIG 2



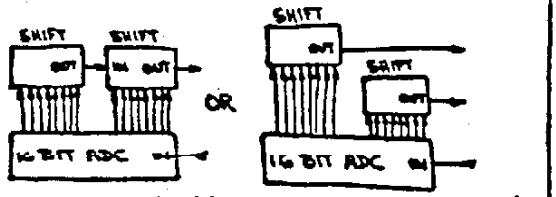

```
105 CALL KEY (1,X,Y)
110 FOR N=7 TO 0 STEP-1
120 CALL JOYST (2,X,Y)
130 IF X<4 THEN G(1,N)=1
140 ELSE G(1,N)=0
150 IF Z>4 THEN G(2,N)=1
160 ELSE G(2,N)=0
170 NEXT N
180 FOR N=7 TO 0 STEP-1
190 CALL JOYST (1,X,Y)
200 IF X>4 THEN G(4,N)=1
210 ELSE G(4,N)=0
220 IF Y>4 THEN G(3,N)=1
230 ELSE G(3,N)=0
240 NEXT N
250 FOR N=7 TO 0 STEP-1
260 CALL KEY (1,X,Y)
270 IF X<10 THEN G(5,N)=1
280 ELSE G(5,N)=0
290 NEXT N
300 FOR N=7 TO 0 STEP-1
310 CALL KEY (1,X,Y)
320 IF X<10 THEN G(6,N)=1
330 ELSE G(6,N)=0
340 NEXT N
350 GOTO 120
```

PROGRAM EXECUTION TIME (SEC)

CHAN. 1&2	+6&7	+4	+9
BASIC	.75	1.5	2.25	3.0
EX.BAS	.50	1.0	1.75	2.0

ASSEM. CALLED FROM EX.BAS.
ALL 10 CH. EVERY .15 SEC

NOTE: EACH CHANNEL UPDATED ONCE PER PROGRAM SCAN



Different Type ADC & Shift Register

FIG 4 9 BIT RESOLUTION USING (2) 8 BIT ADC'S

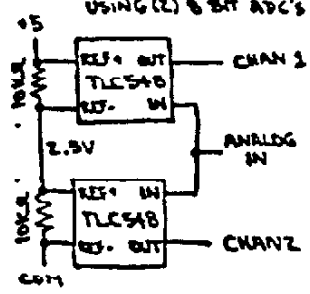
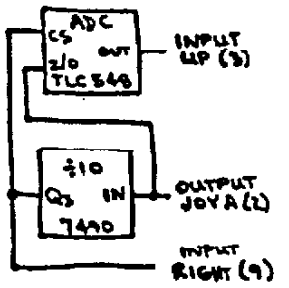
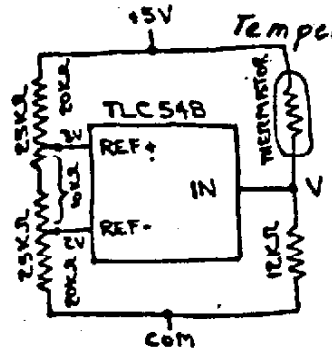


FIG 5 ALTERNATE RESETTING SCHEME





Temperature Sensing Thermistor

°F	°C	R	V
86	30	8K	3.0
77	25	10K	2.75
68	20	12K	2.5
59	15	14.7K	2.25
50	10	18K	2.0

CALCULATED

THERMISTOR IS RADIO SHACK # 271-110

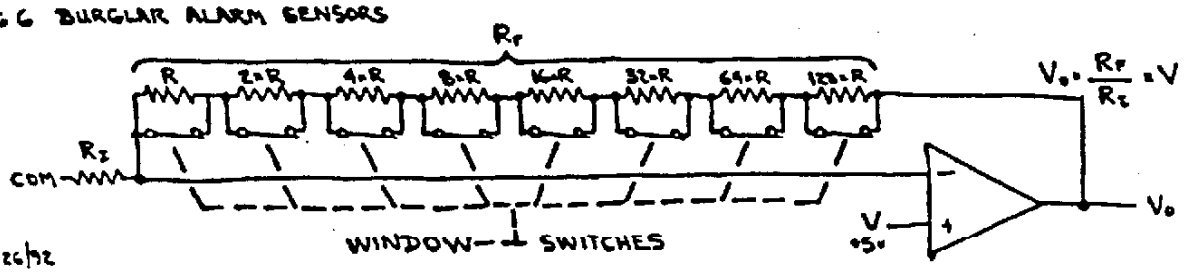
°F = (°C×1.8) + 32

$V = \frac{R}{12+R} \times 5$

CHANGE PROGRAM AS FOLLOWS:

```
100 FOR N=0 TO 7 :: P(N)=(2^N)*.141
    :: NEXT N  REM .141 IS CALIB FACTOR
110 A,B,C,D,E,F = 50
    REM 50 IS OFFSET VALUE
    VALUES IN LINE 300 ARE ACTUAL TEMP
```

FIG 6 BURGLAR ALARM SENSORS



1/26/82

Subj: PIO/IBM connections text=ascii

>Well, I now have a printer, and I have a parallel port on my RS232 card.
>I got a cable that changes from the Centronics parallel interface to a
>standard 25 pin DIN. Does anyone have the diagram to go from TI's 16
>pin connector to the 25 pin DIN? I've got all the parts, I just need to
>wire them up right.

Here is info I got from Gary Bishop. I have yet to try it myself, but it worked for him.

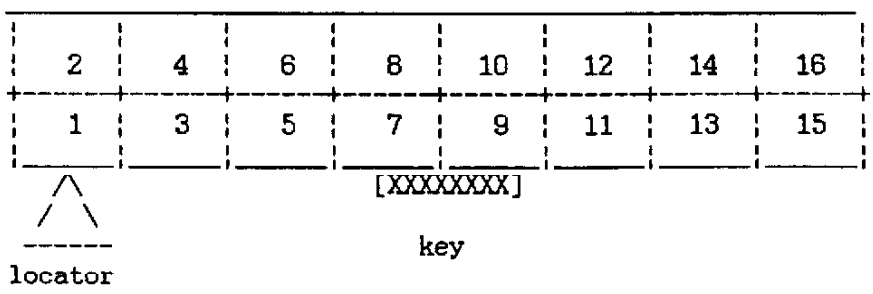
Disclaimer: I am NOT responsible for any wrong connections that might be harmful to your equipment.

(Though I trust Gary and if you exercise caution you should be fine, I think).

You asked for the connections for an adapter cable that would permit the use of IBM printer cables on parallel printers.

TI PIO pin		25pin DB25F <-- the end of any standard IBM printer cable will plug in here.	
handshake out	1	1	-strobe
D1	2	2	D1
D2	3	3	D2
D3	4	4	D3
D4	5	5	D4
D5	6	6	D5
D6	7	7	D6
D7	8	8	D7
D8	9	9	D8
handshake in	10	11	busy
logic gnd	11	*-----	
10K pullup	12	nc \	
Spare in	13	nc \	
Spare out	14	nc /	Tie together 18-25 , gnd
1K pullup	15	nc /	
logic gnd	16	*----	

Pin number orientation, looking into plug from rear. Note: this pin numbering matches the schematic for the TI RS232/PIO adapter card schematic, and the expected numbers for the cable. The numbers on the end of an existing TI parallel cable connector are not numbered according to industry standards. TI, in its infinite wisdom, or pressure from low bid, decided to use a different pin numbering scheme on the cable.



CaDD Electronics,
81 Prescott Road,
Raymond, NH 03077
603-895-0119

Dear TI User Group,

We are pleased to announce the release of PC99 Stage 1. PC99 is our Texas Instruments TI-99/4A emulator which runs on an IBM (or compatible) PC.

As the enclosed information indicates, PC99 is a full-blown 99/4A emulator, with few limitations. You can run TI modules, disk-based software, and access external devices through serial and parallel ports.

This release does not include emulation of sound and sprites. This is planned for the next release. The enclosed functional specification shows the proposed development stages.

We have taken the liberty of enclosing a PC99 order form. The PC99 product includes the TI console GROMs and ROMs, and TI Extended Basic and Tombstone City modules.

We have also included a module order form from which you can order any TI PHM-numbered modules in PC99 format. We have a licensing agreement with TI which allows us to distribute all TI PHM modules and the console GROMs and ROMs.

We would greatly appreciate it if you would pass this information to the members of your user group.

We have put many months of work into the PC99 product. We feel that the TI architecture and software is still viable today. However, the 99/4A hardware is feeling its age and, like all hardware, will eventually fail.

We believe that PC99 offers a bridge between the TI and PC worlds. It allows you to run your existing 4A software, develop new 4A software, and also use DOS-based software.

If more information is needed, we would be happy to answer any questions. Please call or write to the above address.

Yours sincerely,

Mark Van Coppenolle

Mark Van Coppenolle
President, CaDD Electronics

ATTENTION ATTENTION ATTENTION ATTENTION ATTENTION ATTENTION ATTENTIONATTENTION

THIS IS IT, A FOLLOW UP REMINDER!! THE MONTH OF JULY IS HERE.. PLEASE RENEW BY SENDING YOUR CHECK FOR $18.00 TO HOOSIER USER GROUP FRED FOSTROM JR., SECRETARY, TREASURER 1320 NORTH BONAR AVENUE INDIANAPOLIS, INDIANA 46229

NATTENTION ATTENTION ATTENTION ATTENTION ATTENTION ATTENTION ATTENTION

PC99 Functional Specification v930301

Purpose.

To develop a software emulation of the Texas Instruments TI-99/4A Home Computer and selected peripherals running on an IBM (or compatible) Personal Computer (PC).

PC Requirements.

The PC must have the following hardware:

- 80286 or higher microprocessor
  (80386 at 33MHz is minimum recommended),
- at least 640K RAM, of which 540K must be available.
- color VGA adapter and monitor,
- diskette drive to load software
  3.5" 720K, 3.5" 1.44Mb, 5.25" 360K, or 5.25" 1.2Mb,
- a 20Mb or larger hard disk drive.

The PC must have the following software:

- DOS 5.0 (or later). Earlier versions of DOS will probably work.

Description of product.

The product will be known as PC99. It consists of the following modules:

- PC99.EXE
  The TI-99/4A emulator
- CONFIG99.EXE
  A utility that allows you to configure PC99.
- COLOR99.EXE
  A utility to inspect or change the colors used by PC99.

All of these programs run under DOS. They are executed by typing the program name at the DOS prompt.

Delivery media.

PC99 can be delivered on 3.5" 720K, 3.5" 1.44Mb, 5.25" 360K or 5.25" 1.2Mb. The media is specified at time of order.

Emulation requirements

PC99 must emulate in software the Texas Instruments TI-99/4A computer. This requires emulation of the TMS9900 16-bit microprocessor, the TMS9918A video display processor (VDP), the TMS9901 programmable systems interface, the partly decoded addressing scheme between >8000 and >9FFF, TI RAM and TI ROM, TI GROM, and TI I/O devices.

PC99 is a program that runs under DOS on an IBM or compatible PC and emulates the Texas Instruments TI-99/4A Home Computer. The emulation includes the TMS9900 processor, the TMS9918A Video Display Processor (VDP), and the TMS9901 Programmable Systems Interface in the 99/4A console, as well as the TMS9902 Asynchronous Communications Controller and WD-1771 Floppy Disk Controller found in TI peripheral cards.

With PC99 you can run TI-99/4A Command Modules and disk-based programs with few limitations.

For this release (designated Stage 1), there is no emulation of the TMS9919 in the console which creates sound, nor does the TMS9918A emulation display sprites. You can run programs that use these features, but you will not hear any sound from the PC speaker, nor see any sprites displayed.

The PC99 package includes:

- Files representing the TI-99/4A console ROMs and GROMs, as well as Extended Basic, and Tombstone City.
- Extensive documentation on disk in WordPerfect and Ascii format.
- Utilities which will allow you to move your TI-99/4A Command Modules and disk library to your PC. The utilities support the transfer of both text files and executable files (binary files).

PC99 Stage 1 is now released. This stage includes:

- Disk i/o: PC99 emulates the TI disk controller, which is capable of addressing up to three DSSD drives (720 256-byte sectors). The TI "disks" are DOS files.
- RS-232 and PIO: PC99 emulates the TI RS-232 card, which is capable of addressing up to two serial ports and one parallel port. You can configure the emulated ports to address physical PC ports.

This version of PC99 makes it a truly useful computer. There are now many TI modules that can now be used, including the 608-disk Plato educational system.

This news letter is brought to you by the efforts of the officers & members of the Hoosier Users Group.

THE OPPINIONS EXPRESSED HEREIN ARE THE AUTHORS', and DO NOT NECESSARILY REFLECT THOSE OF THE PUBLISHERS.

MEMBERS ARE ENCOURAGED TO SUBMIT ARTICLES FOR PUBLICATION.-PLEASE!

REMEMBER
This is YOUR user group too!

HOOSIER USERS GROUP
P.O. Box 2222
Indianapolis, IN 46206-2222

May 1993

Dan H. Eicher
524 Howell Lane Apt. C
Indianapolis, IN 46224

TIME DATED
July 18 1993
MATERIAL

Hoosier Users Group BBS
317-782-9942 300 - 2400 8N1
USING S&T BBS SOFTWARE

APPLICATION FOR MEMBERSHIP

Below you will find an application for membership to the Hoosier Users Group. Active members will receive the Newsletter, up and download on the HUGbbs, attendance and voting rights at regular club meetings, access to the HUGer Library of Programs, special club activities and special guest speakers for one year.

Make check or money order payable to **Hoosier Users Group**. Send completed application to:

HOOSIER USERS GROUP
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Annual membership is $18.00
Due in May

New membership is prorated as follows:

May ------- April	$20.00
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October --- April	$12.50
Nov[illegible]ber -- April	$11.00
Dec[illegible]ber -- April	$10.00
January + annual	$26.00
February + annual	$24.50
March + annual	$23.00
April + annual	$21.50

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