

CHARLOTTE TI 99 USERS GROUP NEWSLETTER

August 1987

From the Editor...

All sorts of conflicting messages are coming from the larger TI community. The newest surge in programming innovations and hardware inventions would suggest that TI owners are in for another boom before the eventual bust. The appearance of the Myarch 9640 certainly has a lot to do with this, since software suppliers realize that 9640 buyers will not be scrapping their 99/4a's. But as much as anything, the resurgence of support is due to the programmers and designers who do what they do for the love of the system.

The real genius in the TI community is not the original designers-- smart as they might have been. I am convinced they did not know just how good a computer they designed. The genius is in the user-programmers that have arisen in groups all over our country and the world. They have demonstrated time and time again that the limits of the 99 have not been reached.

It would be repetitive to say that users of the TI 99 all over must support the innovative work of these designers and programmers by making contributions when fairware is received, and by ordering from these enterprises whenever you can. But perhaps as important is that computer users should avoid becoming simply leeches on the backs of the TI community at large. Most every computer user has something to offer, if not in the way of new programming ideas or hardware design, then in tips and tricks, or simply in help to another, less experienced TI owner. Pass along the favor. Work at it. Think.

The success of this user group or any other depends upon minimizing the what's-in-it-for-me attitude. To be sure, the need to learn and gather from others is a legitimate reason for being in a users group; but unless the what-can-I-do-to-help attitude looms larger, the group will die by implosion.

ADS NOW TAKEN IN THIS PUB

This publication will now accept advertising from any source subject to the discretion of the editor, at the following rates:

FULL PAGE - \$8.00
HALF PAGE - \$4.00
QUARTER PAGE - \$2.00

Smaller ads may be accepted, but the quarter page will be the minimum price.

For the information of advertisers this rate schedule will be published periodically, and will be included in correspondence with commercial enterprises.

The editor will compose advertising at an extra fee of not less than 50% of the ad rate.

In Other Newsletters...

LOGOI (Newsletter of the Pastor's Users group) AUGUST 87

TIWriter Tips on the use of the CTRL U function. Various notes of interest.

VAST 99, AUGUST 87

The Elements of BASIC, a tutorial on BASIC programming; Part 7 of Hints and Tips, an assembly language tutorial, covering the 'screen bias' of assembly; Whereforths of Forth, a tutorial in Forth, including a discussion of the DISK COPY program included in VAST in March.

LINCOLN 99, AUGUST 87

Short mentions of various items, including applause for MICROpendium's improvement to CHARA files, a source for a program for converting inches or fractions of an inch to dots for use with TPA, and more discussion of the CTRL U function.

(CONTINUED NEXT PAGE)

GENERAL INFORMATION

THE CHARLOTTE TI 99 USERS' GROUP meets the second Monday of each month at the Mary Eliza Computer Learning Center (at the Department of Social Services, 301 Billingsly Road, Charlotte, NC). Visitors are invited to enjoy our meetings without obligation. Membership is only \$15 per calendar year per family or individual. Privileges of membership include borrowing from the software library, monthly newsletters, special interest group meetings, and free ads in the newsletter. For more information contact any of the officers.

THE USERS GROUP NEWSLETTER is printed monthly, and includes news concerning the Charlotte TI 99 Users' Group, as well as items related to the TI 99/4A computer system in general. Product reviews and announcements should not be considered endorsements or the official stand of the users' group as a whole, but only represent the opinions of the authors. Articles from this newsletter can be reprinted freely, in whole or in part, by any other bona fide computer users' group if credit is given to both the original author and to the Charlotte Users' Group. Articles from other users groups' publications may be included in this newsletter to help broaden our range of topics. Full credit will be given to any reprinted articles. Submissions for the newsletter are welcomed. We need long or short programs, technical tips, software or hardware reviews, problems, etc. Credit is given to the author of every item printed. Copyrighted material will not be accepted without the author's permission, and articles may be edited for reasons of space. Newsletters are also available to other TI Users Groups on an exchange basis. Any group interested in this arrangement should contact the correspondence secretary (address below).

ALL CORRESPONDENCE, SUBMISSIONS, ADS, CHANGES OF ADDRESS or other requests should be sent to:
The Charlotte TI 99/4a Users Group, P.O. Box 9353, Charlotte, NC 28299-9353

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THE NEXT FOUR MEETING DATES:

September	14
October	12
November	9
December	14

WEST PENN 99ERS, AUGUST 87

TIWriter tips from Stan Katzman, covering the "dot" command .TL in FORMATTER; Tips for beginners, discussing printers, disks, etc.; Getting the most from your cassette system, tips by Mickey Schmitt, including instructions for how to open cassette files; John Willforth's guide to making the CORCOMP RS232 card operate more reliably; An order form for the PEB Protoboard (An article on this appears in this newsletter) from COMPUTER BUG in Pittsburgh; Review of a controller program, Home Control 99, which works with the X-10 Powerhouse home energy management system; Overlay strip copies.

QB 99ER, SUMMER 1987

An extensive article on disk controllers from TI to Myarc, understanding their operation, step times, speed control, density, and using the Myarc disk manager to fine tune; Part 2 of a Forth tutorial; An article describing some of the advantages of Forth.

SUDBURY 99ERS, SEPTEMBER 87

Diagrams of the "innards" of a disk drive; Description of Tass, available on GENIE, a slide-show program for TI Artist and other format screen graphics; Review of the EPYX 500XJ, a new joystick; "TI versus Other Computers;" Description of a new

keyboard design by Stephen Andrews (Article on this appears elsewhere here in the Charlotte newsletter).



HELP WANTED:

by the Editor

Let's start a new column. Each month I will gather requests from any club member needing help with any kind of problem or looking for any kind of information. Those who can't make the regular meetings will get the help they need; questions nobody at the meeting could answer might find answers from the broader readership. Readers in other clubs may certainly respond, and may also pass along questions--in fact, we wish you would!

I'll start things off this month with several items:

RIDE TO HAMFEST

Anyone interested in riding together to the Hamfest in Shelby contact Robert Simms at 563 0820.

HELP WITH MYARC 512K

Does anybody have some loaders and utilities designed/alterd specifically to load and run from the Myarc 512 when it emulates something other than DSK1? Call Robert Simms, 563 0820.

WANT TIARTIST IMAGES

Anyone having TIArtist images, or GRAPHX or generic RLE, which you think might be of interest in the newsletter, pass them along to the editor, either in hardcopy form or file. No photocopies, however; we need original printer work for reproduction excellence. If you have the file, I would prefer it. Call 563 0820 to download it, or drop a disk by 3708 Country Club Drive, Charlotte, 28205.

HELP WITH 80 COLUMN CARD

Does anybody in the world but me have a Foundation 80 Column Card? In spite of what I have heard about it, I believe there must be some way to get it to display my text files in 80 column format. Foundation has not only gone out of business: they've gone to the moon, and they aren't answering desperate pleas for just a little information which might help me get some use out of this thing other than with the Z80A card, which is another whole subject.

Does anybody know anything about it? Call me at 563 0820.

DIGITIZER FOR TI?!!

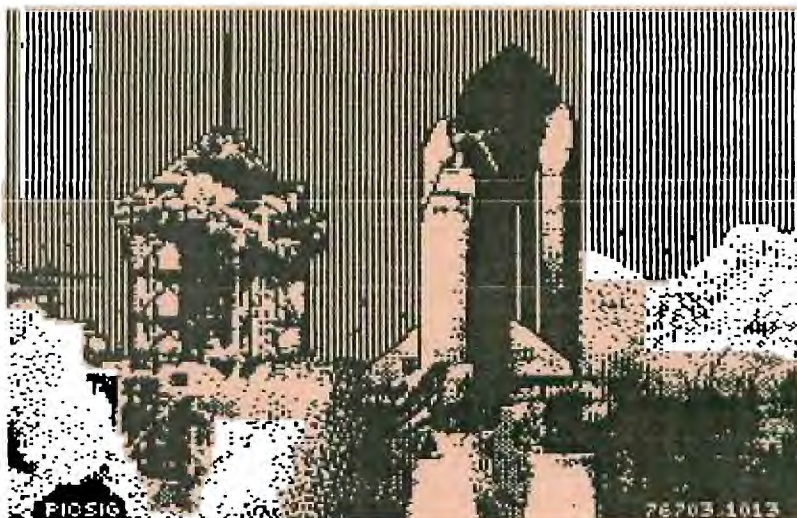
An article appearing in the TI Forum on Compuserve, by Steve Langguth, caught my attention this month. In it he describes a new product called the ImageWise Video Digitizer, developed by Steve Ciarcia, of BYTE magazine. The system is composed of a digitizer/transmitter and a receiver/display, which are boards which may be purchased assembled, or bought with the one necessary EPROM and constructed by the buyer for about \$150 total. The board receives input from a video camera or VCR or laserdisc player, and stores the picture with abundant detail. With conversion through a program written by Langguth, the image is then downloaded into the TI through the RS232 port, and written to disk. Another simple XB program converts it to TIArtist format.

Langguth did not repeat the source of the board, which is certainly available from BYTE magazine (to which I do not subscribe). But he did give his own address, for more information:

Steve Langguth
2956 South Barnes
Springfield, MO 65804

This is one letter I am GOING to write!

THE SHUTTLE SHALL RISE AGAIN!



Northbay Ontario Group Member Designs Keyboard

We gather from the Sudbury 99ers Newsletter that Stephen Andrews, of the Northbay, Ontario Users Group, has designed a new keyboard for the 99/4a. He will share his information, but, says he, he is not interested in building the keyboard for others.

The keyboard has 68 keys, with separate number keys to the right and the function key grouped with the arrow keys. The case is vinyl. The keyboard is patched into the existing computer/keyboard through a hole drilled just above the joystick port toward the back of the computer. A 15-pin female connector is installed parallel to the existing keyboard interface, allowing the present keyboard to function fully and normally. The console may be set back or aside and the new keyboard placed anywhere, even on the lap.

Schematic drawings of the keyboard will reportedly be printed in the Sudbury 99er shortly, and we will pass them on to you.

Parts for the keyboard cost about \$40.00. If you are interested in building it, contact Stephen Andrews, 2400 Trout Lake Road, Northbay Ontario, P1B 7S6, Canada.

The TI PE Box Prototype Board

GENie recently contained an interesting piece describing a newly designed PEB prototype card. We reprint the text of that article, with more details later from other publications. This seems to be a promising addition to the TI hardware arsenal. >>

The card is a full size expansion box card, and is designed to facilitate the construction of a wide variety of PEB box devices.

Those who have attempted construction of a home-brew PEB card from a plug board will appreciate this prototype card. It's designed especially for the PEB and takes much of the work out of a PEB project.

It has a gold plated edgcard connector. All necessary traces are in place for the standard 74LS244's drivers for address and control lines and the bi-directional 74LS245 for the

data bus -- you just drop in sockets and solder. The same is true for the RBDENA line -- a 74LS125 or 74LS368 location is available with a trace running to RBDENA.

Toward the front of the card there is space for an array of eight 28 pin IC's -- e.g., the 6264 (8K) or 62256 (32K). Address and data line traces are provided in two 4-chip groups as are holes for bypass capacitors, but as would be expected with a prototype card, the user connects the address and data lines to the appropriate pads from the address and data bus drivers. With 32K IC's, one could put 256K in a single layer. At the bottom of the 28 pin IC array, there are locations for three 16 pin IC's.

Toward the back of the memory array there is space for five columns of IC's of the 16 pin width -- about sixteen such IC's could be accomodated. This area consists of columns of plated through holes with power and ground buses available, and it would also be used to mount discrete components.

Sticking out the back end of the card is a mounting area for external connectors similar to that found on the RS232 and Disk Controller cards.

Some very careful planning has obviously gone into the design of this card. I understand that input was even solicited from the TI employee who designed all of the expansion box cards. I would say that it comes as close as anyone might want to an ideal universal prototype card for the PEB.

The first 100 cards will be available in four to six weeks and orders are being taken now. The price (as jj indicated in a BB message) is \$35. When 10 or more are purchased the price is \$25 per board. Of course if you buy one of these, you're not just buying a prototype board -- you're investing a little bit in future 4A hardware development. This project is being undertaken by John Willforth and a friend of his basically for the fun of it and to support the TI. Your purchase will help to offset the substantial cost they are incurring for set-up and the initial production run. (And that doesn't even begin to take into account the hundreds of hours of their time spend in developing the

(CONTINUED ON PAGE 5)

artwork.) For whatever it's worth, I've ordered three.

So if you think you might be interested you place an order with John Willforth, RD #1, Box 73A, Jeannette, PA 15644. If you have any further questions, John said you can call him at (412) 527-6656.



I'M A DOCTOR, JIM, NOT A MAGICIAN! HOW AM I SUPPOSED TO KNOW HOW THE MAN KEEPS THIS NEWSLETTER GOING? HE WORKS WITH STONE AGE FLINT KNIVES AND BONES!

FAIRWARE EXCHANGE

The editor has gotten on the mailing list of the Fairware Exchange, an enterprise of Robert Neal, in Romeovill, IL. Ads for the Exchange have appeared in various places. Neal lists an extensive line of fairware products, and acts as an exchange center for distribution.

Currently the Exchange includes a whole host of utilities including a number I had not heard of. There are copiers, filing utilities, databases, disk managers, screen dumps, music compilers, programming aids, terminal emulators, printing aids, c99 files, forth files, debuggers, accounting programs, games, disk cataloggers, and much more.

There is a small fee to get on the mailing list—a couple of dollars I think I remember—and you get the catalog and updates, and an order form. Each disk you order costs you \$2.50, which includes the cost of the mailer and postage; and there is a minimum of three disks per order. If you are interested in acquiring the best of the fairware programs in circulation, you might want to drop Robert Neal a line:

Fairware Exchange
c/o Robert Neal
317 Hickory
Romeoville, IL 60441

MINUTES OF THE CLUB August 10, 1987

1. The meeting opened and the treasurer gave his report. The report stated that the club began the month with a balance of 250.55. Expenses paid to the newsletter editor, offset by dues received of \$15, and raffle proceeds of \$10 from the present meeting, brought the current balance to approximately \$189.

2. The Treasurer reported that Membership is listed at 30 as of the August meeting.

3. The secretary read the minutes of the last meeting, which were received as read. The report of the secretary was presented as written and submitted to the president.

The secretary reminded the club of pending business in the appointment of Wayne Kollar to be Hardcopy Librarian. It was noted that Wayne was moving out of town, but intended to remain active in the club, and he agreed to continue plans to catalog the existing bulk of hardcopy newsletters and periodicals.

4. There was a motion by Bobby Woods to direct the secretary to outline ad rates and include them in the next newsletter. The motion passed.

5. Dave Wentzel reported that his letter to the author of B999 had resulted so far in no reply. In respect of the difficulty encountered in that program, he suggested that the solution lay in changing the line spacing to Epson standards by a DTP switch change to the to 1/8 inch position.

6. The Library report was given by Bill Morrison, who noted that there are two separate libraries as of tonight. Twenty-seven disks are currently owed to Bill Morrison as a result of the recatalogging procedure.

A copy of JF Artist has been donated to the club. The total number of disks owed to the librarian as of Aug 10 is now forty.

Finally, it was noted that Roger Cornell swapped his remaining disks (a total of ~100) to club for blank disks.

7. Jack Foy reported that the BBS down because of his move. The phone number will be changed. Southern Bell is the problem, according to Foy. The new number is 554-6552. The board should be up by Wednesday, August 12, at 6 p.m.

8. Bill Grahling handed out order forms for advance tickets to the Shelby hamfest

9. The raffle was drawn: Robert Timmis won a package of diskettes.

10. The meeting adjourned to demonstrations, which were to be Bobby Woods new ConComp cartridge providing ALFF file transfer from IBM to JF and vice versa, and Dave Wentzel's checkbook programs.

Mike Ballmann's 32K 16 Bit Bus Project

The following is a step-by-step description of how to add 64K of RAM memory on the 16 bit bus. The present modification uses only 32K. This corresponds to the memory space of the 32K Memory Expansion. The modification yields a speed increase of about 50%.

Mike Ballmann is currently working on a circuit to allow CRU decoding of the remaining 32K. This will open up a whole new area of software, including such possibilities as a real DOS which could be loaded into RAM from disk on power-up. The 32K modification described below can easily be modified for full decoding upon completion of Mike's work.

You will need two Hitachi HM62256LP-12 RAMs. One source of these is Microprocessors Unlimited. They cost around \$12. You'll also need a 74LS21 and a 74LS153. These can be obtained from various electronics supply houses. All wiring should be done with wire-wrap wire. You should use a lot wattage soldering pencil with a fine, pencil type tip.

The modification is done on the main board of the Black Silver console, and you'll need to refer to the Logic Board Component Location Diagram in the TI-99/4A Console Technical Data book.

1) Remove the board from the console, and identify the two ROMs. They are located between the GROM connector and the 9900 IC. One is parallel to the 9900 and the other is perpendicular to it. They are U610 and U611 on the Component Location Diagram.

2) Bend the pins on the HM62256 IC's closer so they will firmly contact the ROM pins when piggy-backed. One way of doing this is to place the RAM on it's side on a table and they move the body of the IC toward the table to bend the pins uniformly.

3) Bend out the following pins on both HM62256 RAMs: 1 2 20 22 23 26 27 28. These pins will NOT be soldered to anything on the ROMs. Holding the IC with the notch up and looking at the top, pin numbers start with pin 1 on the upper left, go down the left side, then across and up the right side. Pin 28 is opposite pin 1 on the end with the notch.

4) Place one HM62256 over the ROM that is parallel to the 9900. Make sure the notch points toward the 9900 and that the writing on the 9900 and the 62256 can be read from the same direction. Place the RAM such that pins 1 2 27 and 28 extend beyond the end of the ROM. The un-notched end of the RAM should line up with the un-notched end of the ROM. There should be a sort of "spring tension" that clamps the RAM pins onto corresponding ROM pins below it. This will help to insure good solder joints. If the RAM doesn't fit tightly, remove it and bend the pins closer.

5) Solder all RAM pins not bent out to the ROM pins below. Use a low wattage pencil with a fine, pencil type tip. Inspect each solder joint carefully in good light, under magnification.

6) Place the second 62256 on the ROM that is perpendicular to the 9900. The notch on the RAM points away from the 9900 and toward the edge of the board. As above, solder and inspect all pins that were not bent out.

7) Bend out the 74LS21 pins 1 2 4 5 6 8 10 12 14. Note that pins 1 and 14 are across from each other on this 14 pin IC.

8) The 74LS21 will be piggy-backed on the 74LS138 U504. This IC is located adjacent to the end of the board where the edge connector is. There are two 138's next to each other. U504 is the one nearest the end of the board. You will place the 74LS21 so that the UN-NOTCHED end lines up with the un-notched end of the 138 (pointing toward the cassette connector). Pins 1 and 16 of the 138 will extend beyond the notched end of the 74LS21.

9) Before positioning the 74LS21, solder 1/2" lengths of wire-wrap wire to the 138 pins 7 and 9. Then position the 74LS21 on top of the 138 and solder all pins not bent out to the 138 pins below and inspect the connections.

10) Bend out all of the 74LS153 pins EXCEPT 8 and 16.

11) Place the 153 over U613, a 74LS194. The notch will line up with the 194 notch and point toward the edge of the board away from the 9900. Solder pins 8 and 16 of the 153 to pins 8 and 16 of the 194 below.

12) At the end of the 9900

opposite to where the RAM's have been piggy-backed, you will see a line of three ICs. They are a 74LS00, 74LS32, and 74LS04. The 74LS00 is U606 and the 74LS32 is U605. Turn the board upside down so you can see the traces. Find the trace that runs from pin 11 of the 74LS00 (U606) to pin 13 of the 74LS32 (U605). Double check to make sure you're doing the pin numbering correctly. When you've found the trace, cut it with a knife so there is no continuity between the LS00 pin 11 and the LS32 pin 13.

13) Identify the piggy-backed RAM that is perpendicular to the 9900. Solder wire-wrap wires connecting every bent out pin on this RAM to the corresponding bent out pin on the RAM that is parallel to the 9900. Pin 1 to pin 1, pin 2 to pin 2, etc. There will be eight wires in all to solder.

14) Solder wire-wrap wires to make the following connections on the RAM that is parallel to the 9900. Pin 1 goes to pin 24 of the 9900 (solder the wire to the 9900 pin on top of the board). Pin 2 goes to the 9900 pin 22. Pin 20 goes to two places. Connect pin 20 of the RAM to pin 22 of the RAM and also to pin 8 (bent out) of the 74LS21. There should be three wires coming off pin 20 of the RAM. Pin 23 of the RAM goes to pin 21 of the 9900. Pin 26 of the RAM goes to 23 of the 9900. Pin 27 of the RAM goes to pin 61 of the 9900 (fourth from the top on the right side). Finally, connect pin 28 of the RAM to pin 20 of the 74LS244 adjacent to the piggy-backed 74LS21.

15) Connect the following 74LS21 pins with a bare wire: 1 2 4 and 14. Connect the short wire from the 138 pin 7 to the LS21 pin 5 (bent out). Connect LS21 pin 6 to LS21 pin 12. Connect LS21 pin 8 (bent out) to the piggy-backed 153 pin 2. Connect the short wire coming from the 138 pin 9 to LS21 pin 10. Finally, connect the 74LS21 pin 14 to the 74LS244 pin 20 that you connected the RAM pin 28 to.

16) OK, we're almost done, so take a break and have a beer.

17) On the 153, connect pin 9 to pin 13 on the 74LS32 (U605). Pin 10 of the 153 goes to pin 14 of the 74LS74 next to it (U607). Also connect pin 10 of the 153 to pins 11 and 13 of the 153. Connect pin 12 of the 153 to pin

15 of the 153, and then connect pin 15 of the 153 to pin 7 of the 74LS00 U612 (next to the 74LS74). Connect pin 14 of the 153 to pin 1 of the 74LS00 U606; that's the one you cut the trace on.

18) That's it! Now have another beer before putting your computer back together. When you try it out, remember that this version isn't compatible with other 32K in the system.

If you have problems with this I can't promise I can help but feel free to give me a call or write EMAIL (419) 874-8838. Ask for John (or Hose-Head.)



I'M GIVIN' THIS NEWSLETTER ALL I CAN, CAPTAIN, AN' MAYBE JUST A WEE BIT MORE. BUT I KINNA SWEAR IT'LL HOLD UP W'OUT SOME HELP FROM THE CREW!

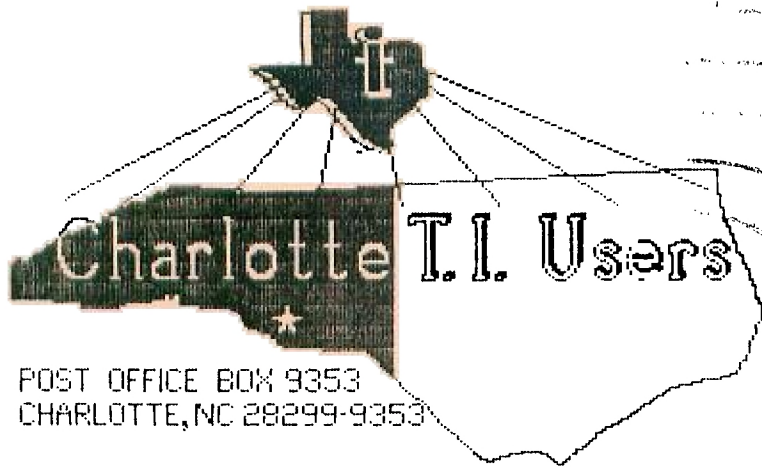
TI ARTIST PIC OF THE MONTH



10X Printer Commands

MODE	ASCII CODE	TIWRITER PROCEDURE*
Italics	27 52	CTRL U,FCTN R,CTRL U, 4
Elite	27 66 2	CTRL U,RCTN R,CTRL U, B,CTRL U,SHIFT B,CTRL U
Condensed	15	CTRL U,SHIFT O,CTRL U
Pica	27 66 1	CTRL U,FCTN R,CTRL U, B, CTRL U,SHIFT A,CTRL U
Expanded	27 87 1	CTRL U,FCTN R,CTRL U, W, CTRL U,SHIFT A,CTRL U
Superscript	27 83 0	CTRL U,FCTN R,CTRL U, S, CTRL U,SHIFT 2,CTRL U
Subscript	27 83 1	CTRL U,FCTN R,CTRL U, S, CTRL U,SHIFT A,CTRL U
Emphasied	27 69	CTRL U,FCTN R,CTRL U, E
Underline	27 45 1	CTRL U,FCTN R,CTRL U, -, CTRL U,SHIFT A,CTRL U
Double Strike	27 71	CTRL U,FCTN R,CTRL U, G
1/8 spacing	27 48	CTRL U,FCTN R,CTRL U, O
1/6 spacing	27 50	CTRL U,FCTN R,CTRL U, Z
7/72 spacing	27 49	CTRL U,FCTN R,CTRL U, 1
n/72 spacing	27 65 n	CTRL U,FCTN R,CTRL U, A, n (See **note)
n/144 spacing	27 51 n	CTRL U,FCTN R,CTRL U, 3, n
Top Margin	27 82 n	CTRL U,FCTN R,CTRL U, R, n
Bottom Margin	27 78 n	CTRL U,FCTN R,CTRL U, N, n
Left Margin	27 77 n	CTRL U,FCTN R,CTRL U, M, n
Right Margin	27 81 n	CTRL U,FCTN R,CTRL U, Q, n
Page Lines	27 67 n	CTRL U,FCTN R,CTRL U, C, n
Page Inches	27 67 0 n	CTRL U,FCTN R,CTRL U, C, CTRL U,SHFT 2,CTRL U,n
Paper out off	27 56	CTRL U,FCTN R,CTRL U, B
Reset printer	27 64	CTRL U,FCTN R,CTRL U, @

** (Lower case "n" is a variable to be filled in by the user. Be sure to give the ASCII code, not the character. For example, in the "left margin" code, if a margin of 5 is desired, then n=5. Typing the numeral 5 in the code will actually give a margin of 53, since the ASCII code for 5 is 53. You must depress CTRL U again and then hit SHIFT E to send ASCII 5.)



EDMONTON T199/4A COMPUTER
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