PRE-ANNOUNCEMENT NOTICE FOR TRS-80 OWNERS

Radio Shack will introduce its new line of microcomputer products to the general public in February. We plan to begin shipping new hardware and software this March.

Since you now own a TRS-80 or have one on order, we want you to have an early opportunity to place your order for "first come — first served" delivery on this new line of products. Here's what you can order right now.

Expansion Interface — lets you add 16 or 32K RAM, dual cassettes, mini-floppy disks, line printer.

RADIO SHACK MICROCOMPUTER PRODUCTS

Any of the following four micros (CPU only) may be ordered through your local Radio Shack, and will be shipped complete from our factory.

TRS-80 COMPUTER

Includes 4K RAM and LEVEL-I BASIC.
26-1001 .... 400.00

Includes 16K RAM and LEVEL-I BASIC.
26-1003 .... 690.00

Includes 4K RAM and LEVEL-II BASIC.
26-1004 .... 499.00

Includes 16K RAM and LEVEL-II BASIC.
26-1006 .... 789.00

TRS-80 VIDEO DISPLAY
199⁰⁰
26-1201

A 12″ display designed especially for the TRS-80 system. Displays 16 lines of 64 characters, also software selectable to 32 cpl.

REALISTIC CTR-41 CASSETTE RECORDER
49⁹⁵
14-841

FREE! The CTR-41 Cassette Recorder is included at no charge when a computer and video display are ordered together.

Your TRS-80 system can be expanded to suit your specific needs with peripherals and added software packages. Take your pick of the following "goodies"!

16K MEMORY KIT (RAM)
290⁰⁰
26-1101

With this kit you can convert your 4K TRS-80 to 16K of RAM. The EXPANSION INTERFACE (26-1140) will accommodate one or two additional 16K kits which will make possible a 32K or 48K RAM TRS-80.

LEVEL II BASIC KIT (ROM)
99⁰⁰
26-1120

If you own a LEVEL-I BASIC micro, this ROM kit will step you up to the more powerful LEVEL-II BASIC. Improved graphics, print formatting, text editing, key-board roll-over (you can

type as fast as you like and not lose a single letter), and faster (500 baud) cassette transfer rate with named files are some of the features. A manual is included so you can fully utilize LEVEL-II. Also included is a conversion program which will allow you to convert your LEVEL-I programs and cassettes to LEVEL-II.
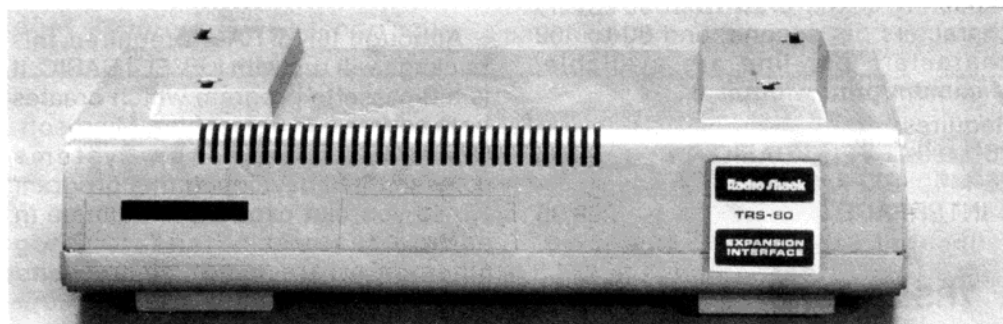
TRS-80 EXPANSION INTERFACE
299⁰⁰
26-1140

This is the key to the expandability of the TRS-80. The Expansion Interface (which usually requires LEVEL-II BASIC) enables you to add the following to the TRS-80:

1. Additional RAM (16 or 32K)
2. Dual cassettes (program selectable)
3. Mini-floppy disks. It will handle up to four minis!
4. Our new line printer (Centronics parallel port).

The EXPANSION INTERFACE includes a real time clock, a space for an additional PC board (to add whatever?), and continuation of the TRS-80 bus. The EXPANSION INTERFACE will give you the capability to *fully utilize* your TRS-80 system.

NEW TRS-80 PRODUCTS (Cont'd.)

TRS-80 LINE PRINTER
1299⁰⁰
26-1150

This dot matrix, impact printer will give you true small business system capability. It will print from 60 to 110 characters per second, and 80 to 132 characters per line are available. Maximum print width is 8″.
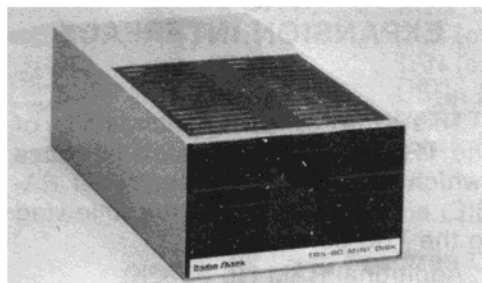
Requires:
26-1120 LEVEL-II BASIC KIT 99.95
26-1140 EXPANSION
INTERFACE 299.95

TRS-80 SCREEN PRINTER
599⁰⁰
26-1151

The TRS-80 SCREEN PRINTER only requires 4K RAM and LEVEL-I BASIC. In other words, you can run it right off the standard 4K, BASIC-I TRS-80 as is. At the touch of a button, whatever is shown on your video screen (including graphics) will be printed on electrostatic paper. *And it prints 2,200 characters a second!*

TRS-80 MINI DISK
499⁰⁰
26-1160

Need more data storage space? The TRS-80 MINI DISK stores 86 to 96K bytes and comes with TRS-80/DOS. The MINI DISK will access any one byte of data in an average time of less than one-half second.

Requires:
16K RAM
LEVEL-II BASIC
26-1140 EXPANSION
INTERFACE 299.95

RADIO SHACK SOFTWARE PRODUCTS

T-BUG PROGRAM
14⁹⁵
26-2001

This is a monitor program which allows access to the Z-80 CPU. With T-BUG it is possible to program in machine language on a LEVEL-I BASIC TRS-80.

EDITOR/ASSEMBLER PROGRAM
29⁹⁵
26-2002

Although 16K of RAM is required, this package will run with LEVEL-I BASIC. It is a 2-cassette program which creates both source and object files. Microsoft, the industry leader in systems software, has developed this program ... so you can expect the ultimate in editing features. Standard Zilog mnemonics are used; macros and conditional assembly are not supported.

STATISTICAL ANALYSIS PROGRAM
29⁹⁵
26-1703

A system of programs designed for the routine analysis of data in business, education, medicine, government administration, and other fields. It includes Random Sample, Descriptive Statistics, Histogram, T-Test, Simple Correlation, Linear Regression.

HOME RECIPE PROGRAM
4⁹⁵
26-1601

Menus, directory, message center ... with this program kitchen chores can be organized, simplified, and "computerized."

MATH I PROGRAM
19⁹⁵
26-1701

A course of fundamentals for beginners. Multiplication, addition and subtraction drills. With teacher's guide. A 3-cassette portfolio.

ALGEBRA I PROGRAM
19⁹⁵
26-1702

Supplemental course in elementary algebra. Includes 9 programs on 3 cassettes. Modern, interactive, computer-assisted instruction techniques.

BACKGAMMON/BLACKJACK PROGRAM
4⁹⁵
26-1801

Play backgammon and blackjack with your TRS-80 system. Includes instructions.

QUICK, WATSON!
4⁹⁵
26-1802

New from our games department. A fascinating game of logical deduction. Sherlock Holmes himself would have found this one challenging!

PAYROLL PROGRAM
19⁹⁵
26-1501

Will handle up to 12 employees on the 4K system. Includes manual and sample instruction sheet.

IN-MEMORY INFORMATION PROGRAM
19⁹⁵
26-1502

A collection of three assembly language programs that can virtually replace any small index card system. It will file inventory, name and address lists, phone numbers, investment portfolios, etc.

PERSONAL FINANCE PROGRAM
14⁹⁵
26-1602

A 7-cassette portfolio with manual. Helps you keep track of household budgets, checkbook balances — even categorizes expenses for income tax records.

LEVEL-I BASIC COURSE
12⁹⁵
26-2003

Contains 8 lessons with 26 programs. Written by Dr. Ralph James and Dr. Ronald Lodewyck of U. of California at Stanislaus. Both are experienced educators and have combined their talents to produce one of the best computer-assisted instruction courses we have seen. It is a totally interactive, self-paced system designed to teach you how to use your TRS-80 to its fullest potential. If you are new to programming, this course is for you.

GOOD NEWS! All of the above software is now available. Order at your nearest Radio Shack.

SOME BUGS THAT NEED CORRECTING

LEVEL-I BASIC

The integer function (INT) should return the least integer. Some TRS-80's will return a zero for integers of values between −.5 and −.99999 instead of a −1.

Again, on some TRS-80's, if a DATA statement contains a syntax error, running the program will cause that program to completely destroy itself as soon as the DATA statement is read.

THE OWNER'S MANUAL

The combined Function and RAM test contains two errors. These lines should read: (underline indicates the change)
330 F.X = 0 TO A : A(X) = Q : N.X
360 P. AT 68, Q : N.Y : P. AT 0, "THE RAM TEST IS COMPLETE."

PAYROLL PROGRAM

The Update and Quarterly Summary tape requires a correction to line 2100. Rewrite line 2100 to read: A(12) = A(12) + I. This change eliminates if "Z = 1G.2040" in statement 2100.

PERSONAL FINANCE

Some of the Personal Finance packages contain two copies of the Monthly Budget Program. One is correctly labeled, the other is labeled "BUDGET SUMMARY PROGRAM". In these cases, the Budget Summary Program is missing. If you have this problem, send your name, address, and TRS-80 serial number to:

TANDY ADVANCED PRODUCTS
CUSTOMER SERVICE DEPT.
205 N.W. 7TH STREET
FORT WORTH, TEXAS 76106

We will send you the correct tape!

We have corrected all of these bugs, but if you should find others, please let us know.

PROGRAMMING TECHNIQUES — ARRAYS

Many aspiring programmers have written or called Tandy Advanced Products concerning the use of Arrays. Radio Shack Level-I BASIC has only one array and it is always called "A." This presents a problem when BASIC programs written for other machines are typed verbatum into the TRS-80. For Example:

```
10 DIM Q (10, 9)
20 FOR X = 1 to 10
30 FOR Y = 1 to 9
40 Q (X, Y) = 0
50 NEXT Y
60 NEXT X
```

Since LEVEL-I BASIC does not recognize the DIM statement from line 10 or the array "Q" from line 40, some modifications must be made. The simplest, most efficient way to convert this program is to eliminate the DIM statement and then convert all references to that array to the A array. The subscript must also be changed. Look at the DIM statement—take the number inside the parentheses on the LEFT HAND SIDE of the comma — we'll call this our OFFSET number. Now, everywhere the array appears in the program, multiply whatever is on the left hand side of the comma by the OFFSET number and add whatever is on the right hand side of the comma to the result.

The previous example in the TRS-80 LEVEL-I BASIC:

```
20 FOR X = 1 to 10
30 FOR Y = 1 to 9
40 A (X * 10 + Y) = 0
50 NEXT Y
60 NEXT X
```

Line 10 is no longer needed. In line 40 —the Q was changed to an A and (X, Y) was changed to (X * 10 + Y).

That's all there is to it. Ed Meloan of North Augusta, South Carolina is a TRS-80 owner who learned this technique over the phone recently. After a few days practice he wrote to us ". . . The TRS-80 is great!! Now if I just had about 100K of memory." I think we all know how you feel, Ed.

With a little bit of bookkeeping, you can make your TRS-80 handle several arrays at one time. Everything is still stored in the array A, but now we need to know some additional information.

1. Where does the array or matrix start in array A, and
2. How many numbers are stored starting there. In a matrix we need to know the number of rows and columns.

Let's say we have an array of the five numbers: 5, 4, 3, 2, and 1. These numbers start at A(6)

A(6)	A(7)	A(8)	A(9)	A(10)
5	4	3	2	1

Let's store the starting location, 6, in the variable W (W = 6). Then, to find the value of the fourth number in our array, we set I to 4 (I = 4). The formula is simple.

$$R = W + (I-1)$$

If we do this formula by hand, 6 + (4-1) is 9, and A(9) *is* our 4th value, a two. In a program we would set W and I and then calculate R as above. The value A(R) would then be the value we asked for.

NEW LEVEL-II BASIC AVAILABLE IN MARCH

Variable Type Declaration Characters — Storage Bytes Used

$ String (0 to 255 characters) .... 3 + # of characters

% Integer (−32768 to 32767) 2

! Single precision (7.1 digit floating point) 4

Double precision (16.8 digit floating point) 8

Arithmetic Functions

ABS (exp)	PEEK (add)
ATN (exp)	POINT
CDBL	POS (dummy)
COBL (exp)	RANDOMIZE
CINT (exp)	RND (parameter)
COS (exp)	SGN (exp)
CSNG (exp)	SIN (exp)
ERL	SPC (exp)
ERR	SQR (exp)
EXP (exp)	TAB (exp)
FIX	TAN (exp)
MEM	USRn (exp)
INP (port)	VARPTR (var)
INT (exp)	VARPTR (# file number exp)
LOG (exp)	

Full Editing Features Commands

A — Restart EDIT at the start of the line

nC — Change n character(s)

nD — Delete n character(s) at the current position

E — End editing and save changes but don't type the rest of the line

H string — Delete the rest of the line and insert string

I string — Insert string at current position

L — Print the rest of the line and go to the start of the line

Q — Quit and cancel all changes

(backspace) — Delete previous character on the line

(Enter) — End editing and save changes

 And many more . . .

Program Statements

CMD	GOSUB	POKE
DEFDBL	GOTO	REM
DEFINT	IF	RESET
DEFSNG	LET	RESTORE
DEFSTR	NEXT	RESUME
DIM	ON ERROR GOTO	RETURN
END	ON . . . GOTO	SET
ERROR	ON . . . GOSUB	STOP
FOR	OUT	

Input-Output Statements

INPUT	DATA	CLOAD	PRINT #
PRINT	SET	CSAVE	INPUT #
READ	RESET	INKEY$	PRINT USING

Commands

CLEAR	DELETE	LIST	NEW	TROFF
CONT	EDIT	LLIST	RUN	TRON

String Functions

ASC (string)	MID$ (string, start [,length])
CHR $ (exp)	RIGHT$ (string, length)
LEFT$ (string length)	STR$ (exp)
LEN (string)	VAL (string)

Disk Commands

Input-Output Statements

CLOSE	LSET
DATA	OPEN
FIELD	PRINT
GET	PUT
KILL	RESET

Input-Output Functions

CVD	LOF
CVI	MKD$
CVS	MKI$
EOF	MKS$
LOC	

Additional TRS-80 Functions Note: Not found in other Microsoft Basics

SET	POINT	CLOAD	RANDOMIZE
RESET	INKEY	CSAVE	CMD