Expensive Expansion

CHEAP

EXPENSIVE – The *LNW System Expansion II* and built-in comes with a full 32K of 200ns RAM, RS232c 20 MA current loop serial interface. That's for starters. Next, consider our heavy gauge steel case, power indicator lamp, gold-plated connectors, FR-2 glass epoxy circuit board with solder mask and silk screen legends. Then there is the parallel printer port, screen printer port, real time clock, and extra heavy duty onboard power supply with over current protection, over voltage protection and thermal shutdown. If that's not enough then there is the floppy disk controller, guaranteed operation at a 4MHz CPU speed and our 6 month warranty. Every one of these features is *STANDARD*. This is true system expansion. You get every 'expensive' feature without spending more.

CHEAP – Our price is $399.95. Any way you compare, features or price, LNW's *System Expansion II* is the clear winner. The LNW System has been field tested for over two years with thousands of users. It works with any DOS, is 100% TRS-80 Model I compatible and it works 'right out of the box'. If there is any doubt in your mind as to whether you should buy ours or the 'other guys', just ask an LNW owner!

WE ARE #1 – Number one in price, features, reliability, performance and delivery. LNW is committed to 'expensive' features and quality at reasonable prices. LNW is committed to support, thorough documentation, and reliability.
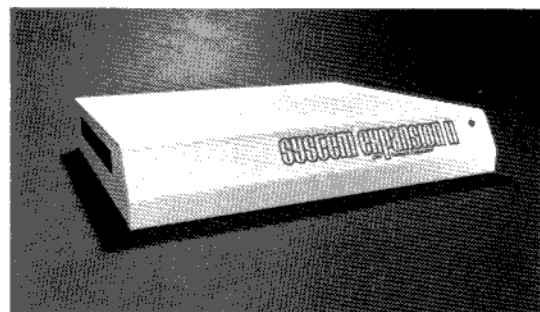
This has made us the number one manufacturer of system expansion units and accessories for the Model I computer.

EXPANSION OPTION – 8-inch drive capability is as easy as plugging in the *LNDoubler 5/8* option*. Now you can have any combination of single- or double-density, single- or double-sided, 8"* and/or 5" disks on-line! 8-inch disk storage increased to 591,360 bytes – 77-track single-sided, double-density or 1,182,720 bytes – 77-track double-density, double-sided.

The *LNDoubler's* unique 5/8 switch allows you to boot from 5- or 8-inch system disks and it's accessible from outside the interface. The $219.95 *LNDoubler 5/8* comes with a double-density disk operating system (DOS+ 3.3.9), *complete* with BASIC and utility programs... ready to run your software.

Each of your present 40-track, single-sided 5-inch drives will store up to 184,320 bytes (formatted storage) – that's an 80% increase in storage capacity for only half the cost of just one disk drive. With three 8-inch double-density, double-sided drives your Model I will have 3.75 Megabytes of online storage – that's more storage than a Model II or Model III!

LNW Research Corp.

2620 WALNUT Tustin, CA. 92680
(714) 641-8850   (714) 544-5744

*8" drive operation requires special cable, 8" double-density requires 3.55MHz CPU speed-up modification or LNW-80 4MHz computer.

SYSTEM EXPANSION II

GENERAL

The SYSTEM EXPANSION II provides complete expansion for the TRS80 model I and the PMC-80 microcomputers. The PMC-80 requires PMC's 50 to 40 pin adaptor.

The SYSTEM EXPANSION II is enclosed in an attractive steel case measuring 16.5" W x 3"H x 22"D and weighs 15lbs. The unit contains the proven SYSTEM EXPANSION PCB with 32K 200ns RAM, single density 5.25" floppy disk controller and a Radio Shack/Centronics Compatible Parallel Printer Port. Also included as standard is the RS232/20Ma serial communications interface. 40 pin extension of the CPU BUS (screen printer port), interrupt driven REAL TIME CLOCK and heavy-duty power supply.

MEMORY

```
            TYPE: 4116 Dynamic RAM (200 ns)
     ONBOARD RAM: 32K
  TOTAL (+TRS80): 48K
 MAX. CPU SPEED: 4.00Mhz
```

FLOPPY DISK DRIVE INTERFACE

```
     DRIVE TYPES:  5.25" Shugart compatible
 NUMBER OR DRIVES: 4-Single sided or 3-dual sided drives
       INTERFACE:  34 pin
   DRIVE DENSITY:  Single (see OPTIONS below)
  DATA SEPARATION: Internal to 1771 IC
  MAXIMUM STORAGE: 89,600 bytes/disk - 537,600 bytes total
FLOPPY CONTROLLER: FD1771
```

RS232-C ASYNCHORNOUS INTERFACE (Serial)

```
        TYPE:  Full Duplex
 HANDSHAKING:  Fully supported under software control
  BAUD RATES:  Switch selectable at the following rates:
               110, 150, 300, 600, 1200, 2400, 4800, 9600
      PARITY:  Even, odd, or disabled (software selectable)
 WORD LENGTH:  5,6,7,8 BITS (software selectable)
   STOP BITS:  1, 1.5, 2 (software selectable)
   CONNECTOR:  Female DB25, mounted on the rear panel
     CONFIG.:  To connect to data communication equipment
```

PRINTER INTERFACE (Parallel)

Industry standard Centronics 8 bit parallel — 100% TRS-80 Compatible.

TERMINAL EMULATION

A number of "dumb" and "intelligent" terminal software packages are available for the LNW80. A listing of a "dumb" terminal program is supplied in the LNW80 documentation.

EXPANSION PORT

This 40 pin CPU bus has all the ADDRESS, DATA, and CONTROL lines to expand the capabilities of the TRS-80. This bus is electrically equivalent to the "SCREEN PRINTER" bus on the TRS-80 model I. Here are just some of the products which connect to the EXPANSION BUS and are available from independent hardware suppliers:

* Exatron Stringy Floppy
* Eprom add-on memory programmers
* Corvus Hard Disk — Constellation
* TCHRON-Battery-powered clock calender
* Data aquisition equipment
* Industrial controllers
* Speech synthesizers
* Voice recognition equipment
* Orchestra 85 — stereo music synthesizer

REAL TIME CLOCK

```
      TYPE:  INTERRUPT "heartbeat" type
 FREQUENCY:  40 HZ
      NOTE:  The real time clock feature is not available on
             the cassette only systems without one of the
             following programs:
                 Microsoft Level 3 BASIC
                 Radio Shack Real Time Clock Cassette program
```

OPTIONS AVAILABLE: LNDoubler or LNDoubler 5/8

WARRANTY: 6 Months parts and labor