Terminal Terminology

by Roy Worthington

President, Data Terminals & Communications

Computer Aided Instruction (CAI) and Timeshare systems for the most part use Teletype terminals as user input/output devices. The Model 33 series produced by Teletype Corp. in Skokie, Illinois has long been a standard and workhorse of the industry. While other terminals are more and more prevalent the economics and reliability of the Teletype are hard to beat.

Basically the 33 comes in two main varieties — ASRs and KSRs. The KSR (keyboard send/ receive) is simply a keyboard and printing mechanism with an electronics (or call) control package for DAta Communication purposes. ASRs (automatic send/receive) have in addition, a paper tape reader and paper tape punch. Within both groups there are numerous options such as: sprocket (or pin) feed, automatic tape readers, automatic punches, various keyboard options etc. The price of a KSR is approximately two thirds the cost of an ASR. In considering an installation with several terminals in one location, a mix of KSRs and ASRs will provide cost savings against obtaining all ASR machines.

Most Timeshare and CAI system planners emphasize heavily on the types of computers and software available. Less thought goes into how users are going to "talk" to the system. Typically the attitude is: "we'll use a bunch of Teletypes which cost about $70 each a month" either being forgetful or unaware that a lot more is involved in connecting a terminal to a computer.

While each individual installation is unique in its terminal and data communication requirements, one or more of three main methods of connection are used.

Hardwired Terminals (Figure 1)

These are the simplest and generally lowest cost installation. Each port or channel to the computer is physically wired to the terminal (in the case of a Teletype a low cost interface box is required for compatibility—see Figure 1). Limitations of this type of installation are:

Only good to 2000 feet maximum

Each port is "tied" to a particular terminal making port and terminal inflexible

Advantages:

Low installation cost — $35 for 50 feet of cable

Low recurring cost — about $55 per month lease for an ASR 33 Teletype and interface

No reliance on telephone lines and their inherent problems

"Dial Up" Terminals (Figure 2)

Probably the most expensive but definitely the most flexible method of coupling terminals to computers. Modems, which convert signals from the computer into audio tones for transmission over telephone lines and vice versa, are attached to the computer. These modems which connect to the phone line through a protective device called a Data Access Arrangement (DAA) are dialed by a user with a terminal and a coupler (the coupler is a modem used by the terminal and has a receptacle for placing a telephone hand set into for connecting to the phone line). Disadvantages:

Higher cost — typically $65 per month for the terminal and $20+ for the modem at the computer

Subject to phone line problems

User not guaranteed a port should someone else occupy the line

Advantages:

More terminals than lines can be provided. Many timeshare companies have five to eight times the number of customers than they could possibly handle at one time.

Terminal not "tied" to one line should that line be down

Other computers and even terminal to terminal communication can be used

Multiple Terminals Per Line (Figure 3)

The speed of a Teletype (10 characters per second — 110 baud) is low compared to the capacity of a phone line. A number of special modems or multiplexers are available that allow six or even eight terminals to use one phone line. In situations where four or more terminals are located some miles from the computer this type of hook up is ideal.
Disadvantages:

Terminals are "tied" to a particular port

Should the phone line go down all terminals on that line are out of service

Advantages:

Phone line costs reduced significantly

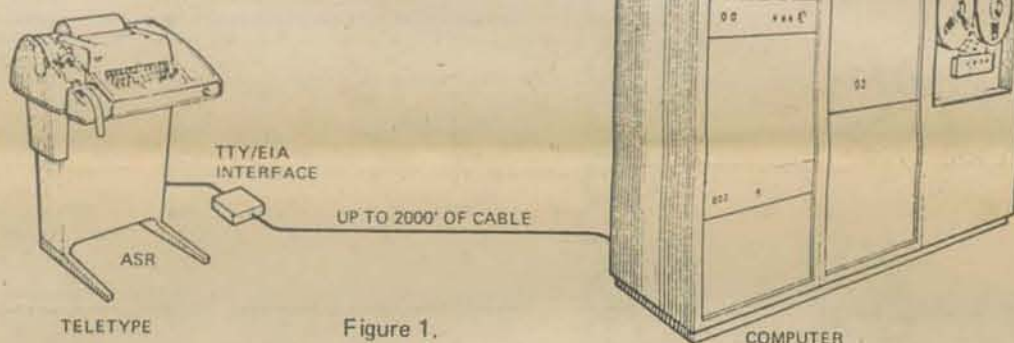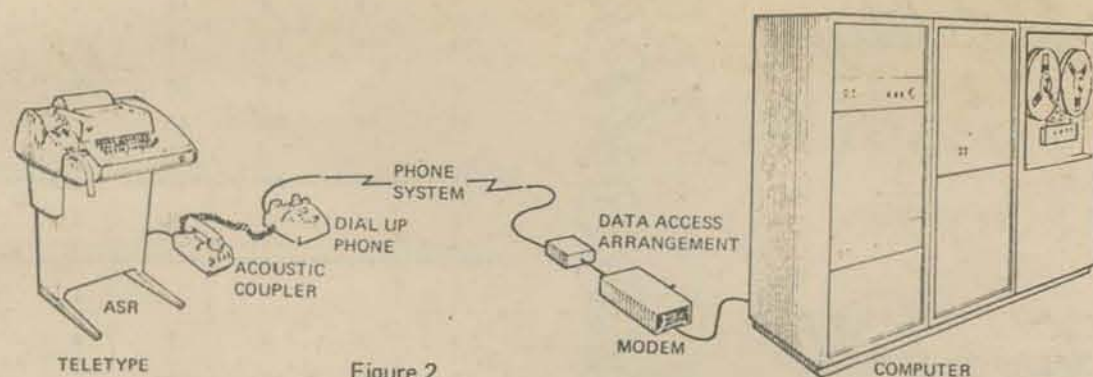Prevents phone line being misused (it only goes to the computer)
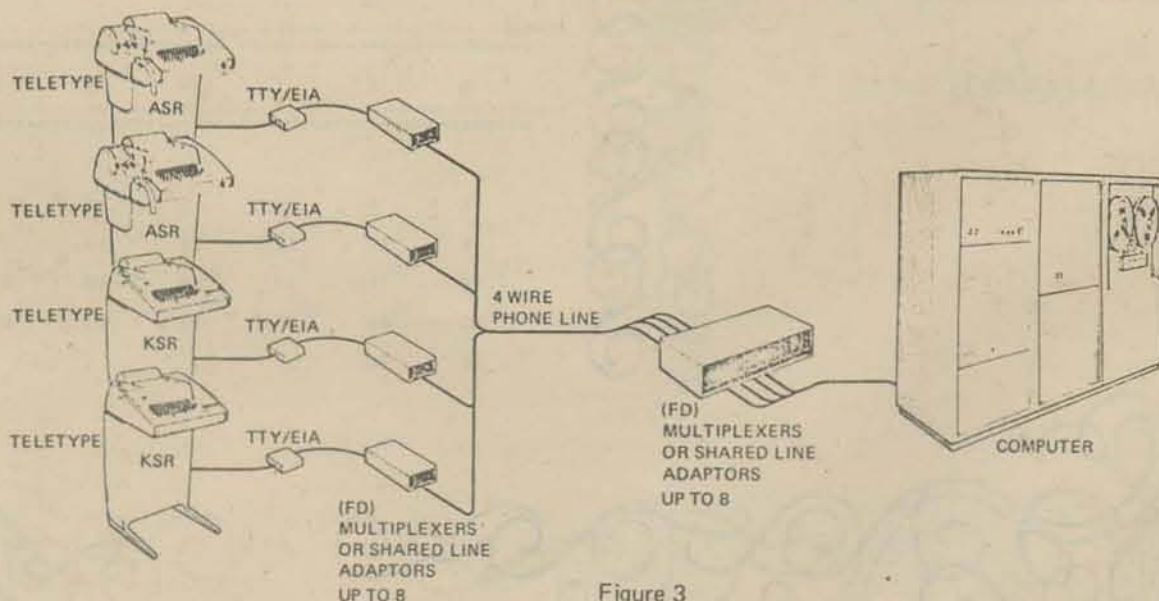
Should you require further information —

Data Terminals & Communications
535 Salmar Avenue
Campbell, California   95008

will be pleased to answer your questions and for a nominal charge will draw up a specific system for your particular applications.


TTY/EIA INTERFACE

UP TO 2000' OF CABLE

ASR

TELETYPE   Figure 1.   COMPUTER

PHONE SYSTEM

DIAL UP PHONE

ACOUSTIC COUPLER

ASR

DATA ACCESS ARRANGEMENT

MODEM

TELETYPE   Figure 2   COMPUTER

TELETYPE   ASR   TTY/EIA

TELETYPE   ASR   TTY/EIA

TELETYPE   KSR   TTY/EIA

TELETYPE   KSR   TTY/EIA

4 WIRE PHONE LINE

(FD) MULTIPLEXERS OR SHARED LINE ADAPTORS UP TO 8

(FD) MULTIPLEXERS OR SHARED LINE ADAPTORS UP TO 8

COMPUTER

Figure 3

DATA–LINK

Ever tear a paper tape? Ever tear the last copy of a long tape? Good news! You can buy patches to quickly repair those torn tapes.
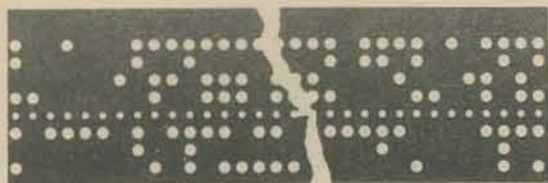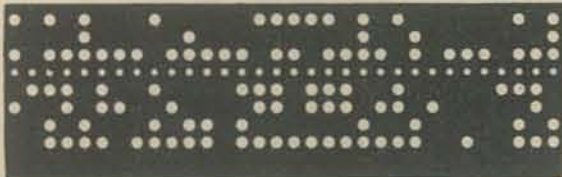
TORN TAPE

+
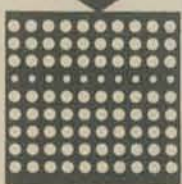
PATCH

ALL CODE HOLES
PUNCHED PATCH

=

ALMOST AS GOOD AS NEW!

MYLAR® OPAQUE PATCHES — are the thinnest patches available and are the perfect answer to photo electric readers . . . eliminates errors from light emission. There are 1,000 1-inch patches with peel-off backs per Kit with all code and feed holes punched.

MYLAR OPAQUE

$20 PER THOUSAND

PAPER PRESSURE SENSITIVE PATCHES — are extra strong and are especially suited for use with oiled tapes. Peel off back makes them easy and fast to apply. There are 1,000 1-inch patches per Kit, with all code and feed holes punched.

PAPER PRESSURE SENSITIVE

$19 PER THOUSAND

from: **DATA–LINK CORPORATION**
733 Convoy Court
P.O. Box 2729
San Diego, CA. 92112

*Ask them for a free sample kit*
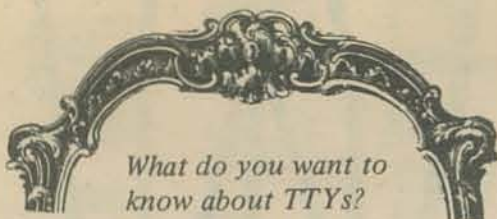
What do you want to know about TTYs?

CHEEP TAPE WINDER:
1 400' (7" dia) metal film take-up reel
1 16mm movie projector (any model)
1 take-up reel demolisher (look in your toolkit--you probably
   thought it was a pair of pliers or a hacksaw)

Demolish the takeup reel by removing one side of the takeup reel down to,
but not including, the hub. If the reel has differently shaped center
holes, remove the side that has the ROUND hole, leaving the square hole
side intact. If both sides are the same, either one will do. *A LOT OF REELS WONT*
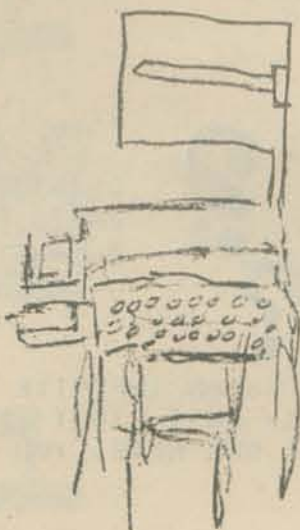*WORK FOR THIS BECAUSE OF THEIR CONSTRUCTION, BUT KEEP LOOKING.*

(Of course if you don't have a 16mm projector, it isn't so cheap! — PCC)

Mount the reel on the movie projector, mount the
tape on the reel like a film, turn the projector
to RUN (without the lamp), turn off when tape is
wound. REWIND is usually too fast.
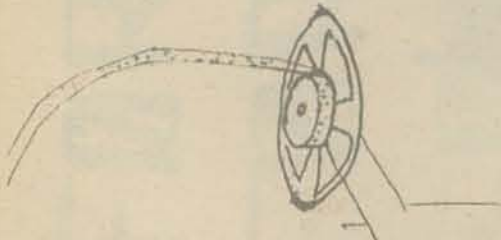
Keep up the good work.

Paul

Paul W. Marsh *O WEDGEWOOD*
BOX 15350
SEATTLE 98115

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DTC

Data Terminals and Communications maintains more than 200 Teletypes in the San Francisco Bay Area. 75% of these are in educational places. DTC guarentees that they will appear on site to fix your TTY within 8 hours after a service call and they claim and average response time of 4 hours. If they have to take your sick TTY to the shop, they'll leave you a loaner.

CHARGES

ON CALL SERVICE: $9.50 per hour fro ASR 33

CONTRACT: $15 to $19 per month for ASR 33
$3 per month for acoustic coupler

DTC will also rent, lease or sell you TTYs, interfaces, acoustic couplers and modems — new or used.

SAMPLE PRICES

	Monthly Rental*	Yearly Lease*	Purchase
ASR 33 (new)	$50	$49	$1100
ASR 33 (rebuilt)	–	–	$ 825
TTY to EIA interface	$14	$ 4	$ 50
Prentice DC22 acoustic coupler	$15	$14	$ 298

* Includes maintenance

from: Data Terminals & Communications
535 Salmar Avenue
Compbell, California 95008

HOW DO YOU STORE TAPES?

We used to store program on paper tape like this:

But now we store them like this. We got our storage cabinet at Sears (30 drawers, about $7.50). Watch for sales at your local discount house.

How do you store tapes?

TELEYTYPE IS NEET
AND I DONT THINK
THERE IS ANYTHING
I DONT LIKE ABOUT
IT.