TDV 2114
Intelligent Display Terminal with Mass Storage.

TANDBERG

Introduction

The data display terminal is the medium in preference for communication between man and computer. The data terminal, transmitting and receiving information to and from the computer, allows the user to utilize a large computer capacity only paying for applied time.

The accellerating technological development has enabled information processing and data storage capability to be distributed from a central computer to the remote user.

The fields of application may vary from simple office routines to complicated transactions, dealing with large quantities of data.

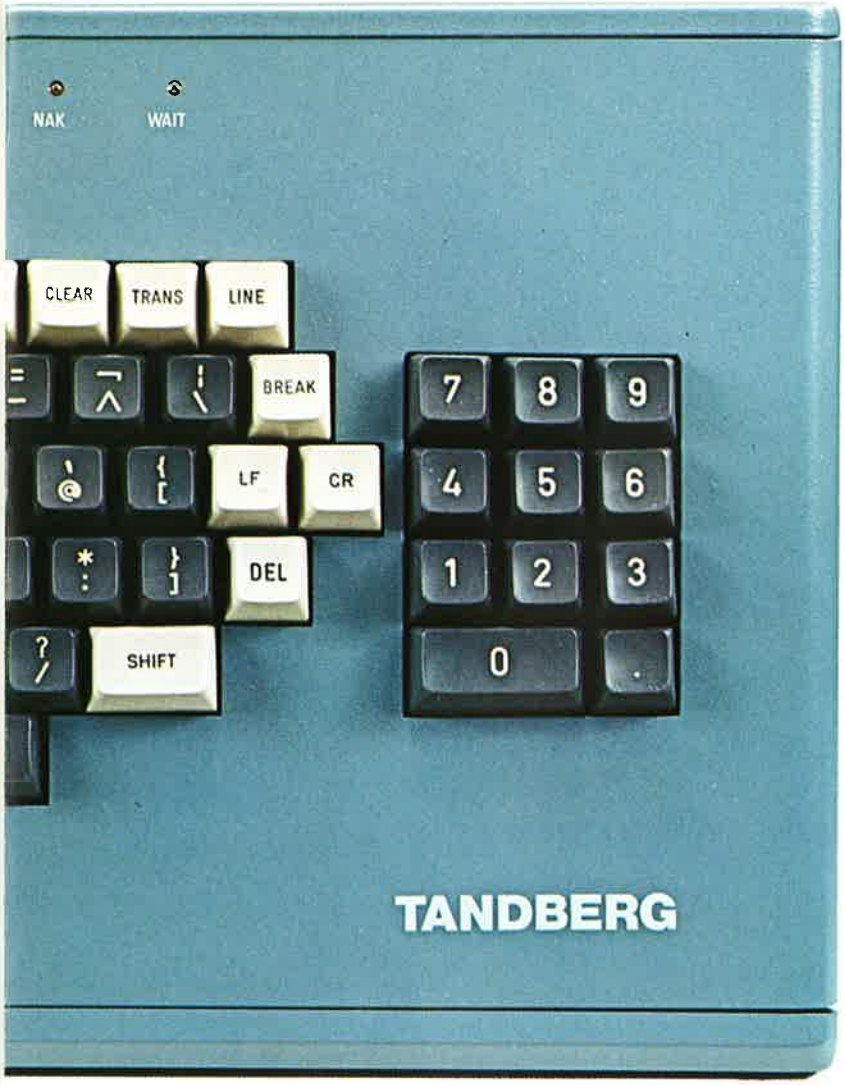
Fields of Application:

The fields of application are numerous for the TDV 2114 and is further increased by the optional cluster interface which particularly enhances the system power and flexibility. The cluster interface offer serial interface for seven additional display units/printers.

Examples on fields of application:
Office Computer
Data Entry
Text Editing
Inventory Control
Order Processing and Distribution Control
Payment Processing
Cluster System Master
Communication
Development Systems for Micro Computer Software

Standard features:

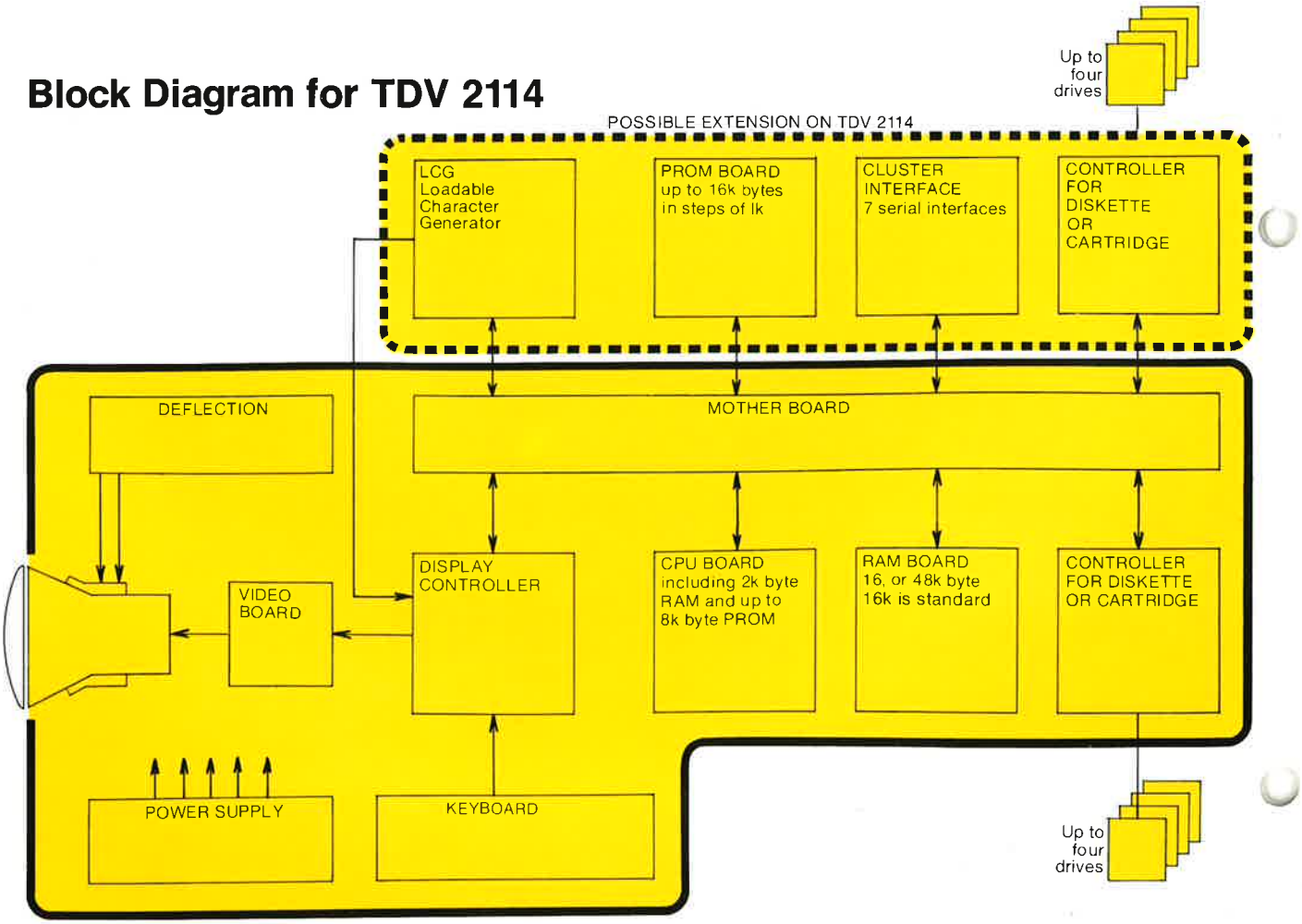
- 12 inch screen with character size 2,6 by 4,7 mm (0,1″ by 0,18″)
- Selection of different display character sets
- Upper and lower case letters
- 7 by 9 dot matrix for character display
- 14 by 9 matrix may be used for semigraphic character sets
- Selection of green or yellow anti-reflection filter
- Selection of cursor type (block/underline, steady/blinking) under program control
- Several different display modes: Normal, underline, invisible, low intensity, inverse video and blinking
- Direct cursor addressing
- One built-in diskette or cartridge drive
- Selection of different standard keyboards
- Fully user programmable
- Minimum configuration contains two 8080 CPU's with firmware monitors and 18k bytes of random access semiconductor memory (RAM)
- Asynchronous interface factory selectable for speeds from 110 to 19200 baud



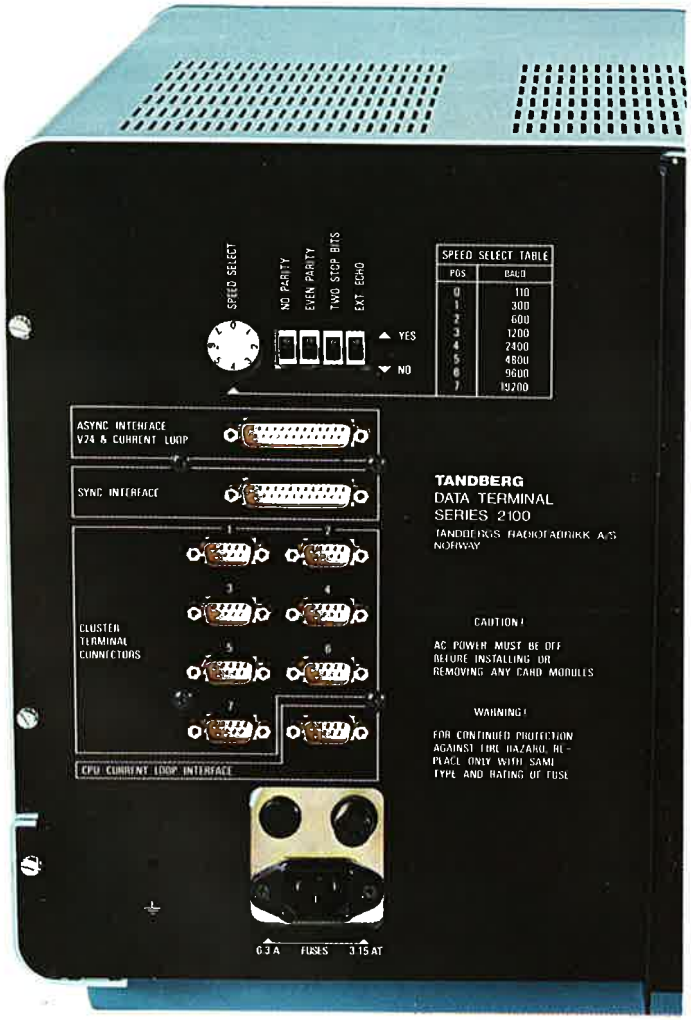
The figure shows one of the standard keyboard types — ECMA international — offered as one version in the range. The keyboard include light intensity potentiometer and necessary control and status lamps (LED).
Other types of keyboards that can be supplied are: ECMA national (Norwegian — Swedish), national keyboards and application oriented ones are also available.

The two examples on keyboards show IBM and ECMA international type and alternative colour variant.

Block Diagram for TDV 2114



TDV 2114 with built-in diskette drive or cartridge recorder. The diskette with particular advantage in fast access of data and the cartridge with large storage capacity.



The rear panel contains connectors for V-24/current loop, synchronous transmission, printer and cluster slave terminals. An eight position speed selector and switches for terminal set up are located on top of the rear panel for easy change of transmission terms.

Software

A diskette or cartridge based operating system, TOS21, (Tandberg Operating System) is provided with the 2114. It consists of a command interpreter and general file handling functions. A program running under TOS21 is written referring to general logical units. When a program is invoked, the relationship between the logical units used in the program and the physical files to be used in the particular invocation is established. This permits flexible and general programming.

Programs may be written in assembly language or in Commercial Basic. Assembly language is used when application requirements are such that close control is needed for all machine resources.

Commercial Basic is intended for easy programming of more conventional commercial problems. The language is based on the BASIC language which is easy to learn and use, but has been enriched by Tandberg to make the language more suitable for commercial applications on the TDV 2114. Among the novel features are: decimal arithmetic, string handling facilities, direct accessing and type checking of fields on the screen, use of multi-character identifiers to ease program readability and sequential file-handling.

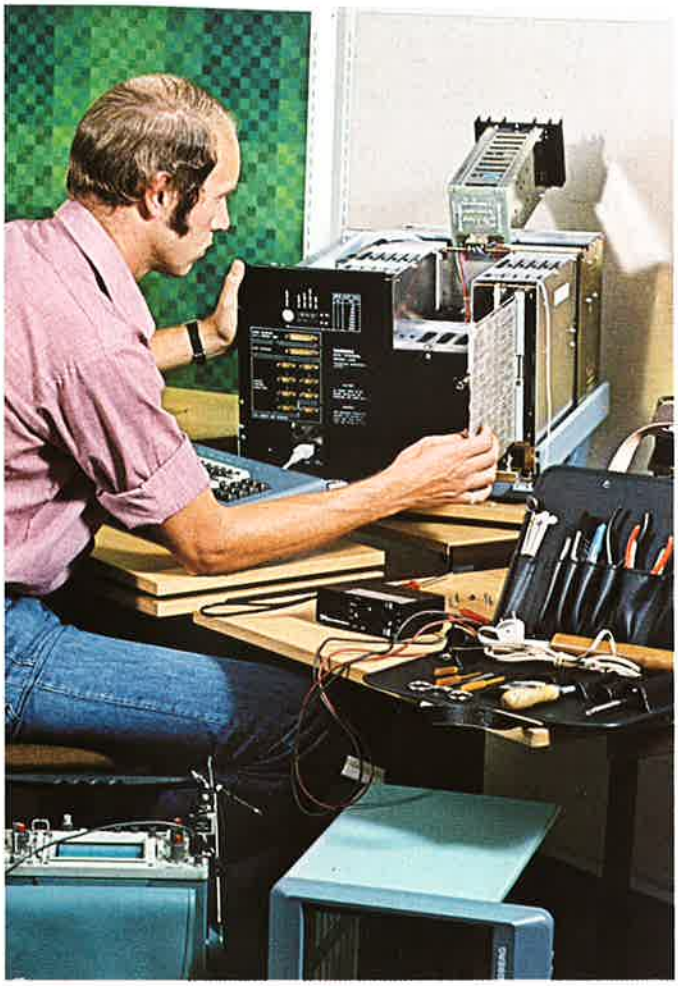
Special application software available on the 2114 are:

HASP communication.
Communications package for batch transmission to IBM 360/370 mainframes. Batch jobs may be prepared using TOS21 utilities.

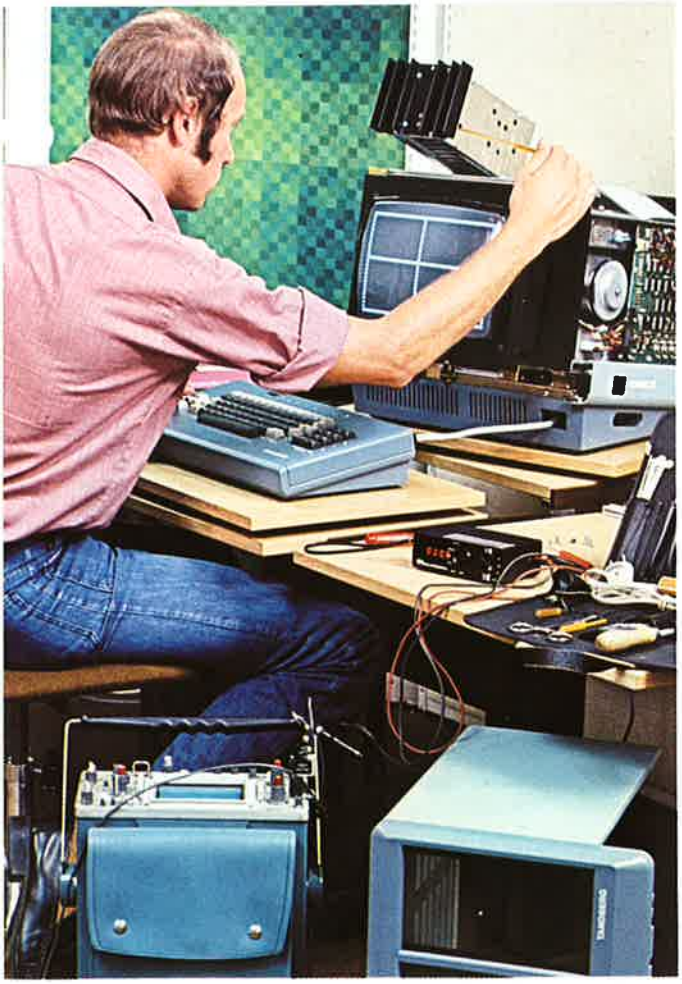
2780 communication.
Communications package for batch transmission to IBM 360/370 mainframes.

TDS-8030 system.
Cluster system of IBM 3270 type with local data registration as an option. The TDV 2114 acts as a master unit. Up to seven slaves may be connected to the master, forming a "mini-cluster". The slave units may be either TDV 2116 or TDV 2114. When a slave unit is a TDV 2114, it may be used to perform local data registration for subsequent transmission to the host computer.

The range of available software is continuously being expanded to provide the best possible tools for end-user and OEM program development.



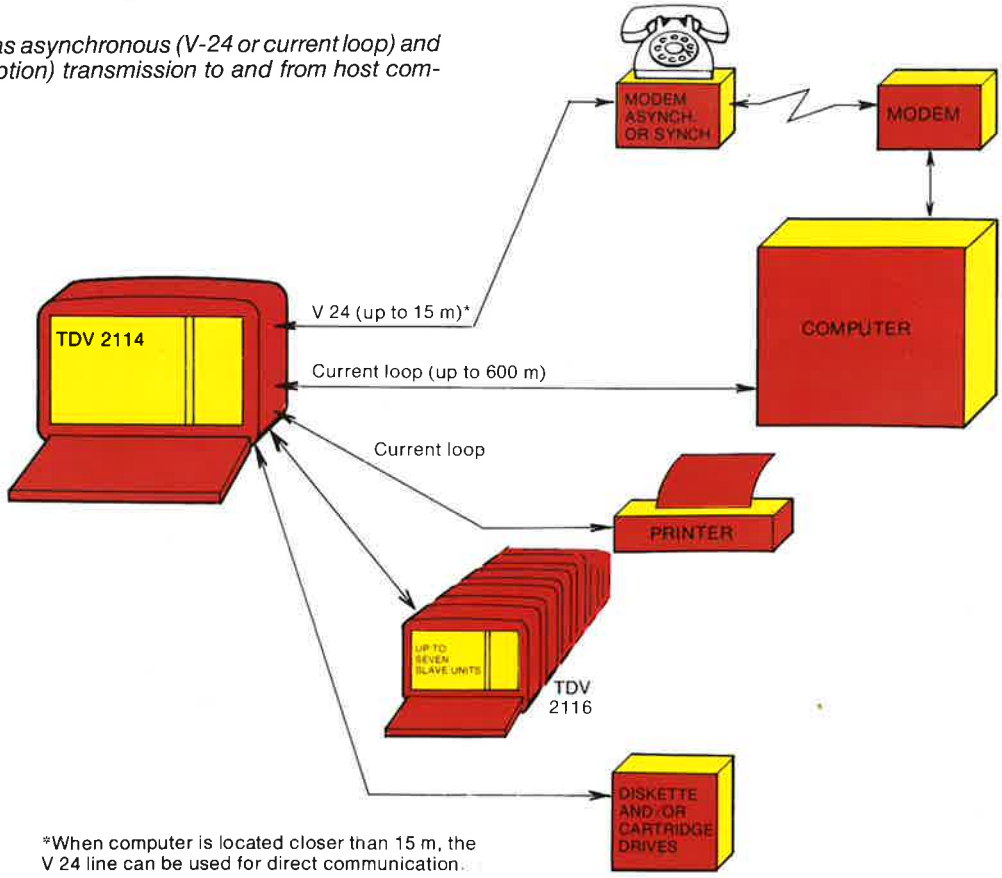
The terminal is designed with easy and fast servicing in mind. The modular construction enables the service engineer to easily substitute modules, causing a very short Mean Time To Repair (MTTR).



The 2114 is an advanced unit with a high degree of complexity, and Tandberg has developed service test progams allowing the service engineer to find the source of error very quickly.

Types of communication links for TDV 2114

The TDV 2114 has asynchronous (V-24 or current loop) and synchronous (option) transmission to and from host computer.



*When computer is located closer than 15 m, the V 24 line can be used for direct communication.

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General

The TDV 2114 is an intelligent terminal fully user programmable with either a built-in IBM compatible diskette or a Tandberg cartridge drive. This unit will effectively give the remote user a computer capability at his fingertips, being a powerful and flexible unit expandable up to 58k memory with 4 diskette drives and 4 cartridge drives.

The TDV 2114 has two microprocessors, one for display and keyboard handling, and one for the more advanced user progammable terminal applications. The microprocessors make it easy to change from one mode of operation to another simply by loading another program.

The design criterias have been aimed high to satisfy the requirements for operator ergonomics such as:

- Anti-reflection filter adapted to the human eye
- Large stable characters obtained by 7 × 9 matrix
- Detachable keyboard
- Terminal tilting possibility
- Six display options:
  Normal, underline, blink, low intensity, inverted video and invisible

Technical specifications

Display characteristics

Screen size:	304 mm (12″) diagonal 265 × 200 mm (10,4″ × 7,9″)
Viewing area:	235 × 170 mm (9,3″ × 6,7″)
Phosphor:	P4 (White) Coloured anti-reflection filter, green or yellow
Characters per line:	80
Number of lines:	25
Cursor:	Block or underscore, blink or steady, under program control. Cursor is directly addressable.
Character size:	2,6 × 4,7 mm (0,1″ × 0,18″)
Character generation:	7 × 9 Dot Matrix
Character set:	95 standard
Display modes:	Underline, blink, low intensity, inverse video, invisible and normal.
Special functions:	Roll up, roll down, erase line, erase page, video on and video off.
Refresh rate:	50 Hz

CPU

Built-in 8080A with 2k bytes of static RAM and up to 8k bytes of PROM (firmware).
Priority interrupt handling, DMA data transfer, and printer interface.

Primary storage:	RAM board with 16k (optional 48k) bytes of dynamic RAM. PROM board with 16k bytes of Eraseable PROM.
Built-in mass storage:	250k byte floppy disk drive, or a 2,5M byte cartridge drive.

Transmission

Input/Output:	Conforms to CCITT V-24 and EIA RS232C (Modem). Teletype current loop 20 mA with built-in floating power supply and opto-couplers.
Mode:	Synchronous or asynchronous. Character by character or block mode full duplex. Internal or external echo.
Code:	US ASCII
Data rate:	Eight position switch selectable 110-300-600-1200-2400-4800-9600-19200 baud.
Parity:	Even, odd or none, switch selectable.
Stop bits:	One or two, switch selectable.

Transmission status given by LED-Lamps on keyboard.

Physical and electrical specifications:

Power:	220V ±10%/50Hz 170 Watts
Cabinet dimensions:	Width 480 mm (18,9″) Height 405 mm (15,9″) Depth 500 mm (19,7″)
Keyboard dimensions:	Width 480 mm (18,9″) Height 90 mm (3,5″) Depth 230 mm (9,1″)
Weight:	Main unit: 32,2 kg (72 lbs) Keyboard: 3,2 kg (7 lbs)
Operating temperature range:	0–40°C

Options:

- Additional 16k or 32k of RAM or PROM storage.
- Cluster interface with provision for connection of 7 slaves-VDU's and one printer.
- The character set may be extended with 32 fixed characters or 32 characters, loaded from diskette or cartridge.
- Extra mass storage.
- The VDU may contain both floppy disk controller and cartridge controller.
- Each controller can control up to 4 drives.
- 120 characters per second bidirectional printer with lower case letters, elongated characters and black and red print as standard.
  Option is 200 characters per second.

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Specifications are subject to change.

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