TEKTRONIX

4051

The BASIC
Graphic Computing
System.
Low-cost graphics
and processing
power.
Off-line. On-line.
On your desktop.

Back to BASIC: high-level processing without high-priced hardware or line costs.

The 4051 is the first Graphic response to the practical problems of getting computer solutions: high-line costs, finite core capacities, waiting lines, limited languages, large capital outlays.

The new generation. The 4051 is a micro-processor based data system that offers compact, local computing power, with computer capabilities at a fraction of previous costs. But only Tektronix, famous for low-cost, highly reliable Graphic systems, offers so many special capabilities and so much processing power.

This is the 4051 system:

Up to 32K of processing power. All the intelligence of many minis, right at your fingertips. Begin with 8K workspace, and expand in 8K increments. With a built-in 300K byte mag tape unit for plenty of extra local storage.

Uniquely Graphic. The 4051 is the first such system to offer what more and more disciplines find essential: Graphics. To give shape and substance to ideas without hand-plotting; to preview plots; to interpret data instantly.

BASIC Vocabulary. The 4051 employs an enhanced form of BASIC—for easy, English-like access to the computer. So you get a lot of work from every command through a full range of BASIC extensions: extensions for graphics, including MATRIX DRAW, WINDOW, VIEWPORT and ROTATE; for strings; for a wide choice of math functions; for file-system data access; for formatting; for our unique interrupt control of peripherals; plus much more.

With BASIC, you can sit down to the 4051 and begin problem-solving immediately, using Graphics. And work in your own data units—not raster or machine units.

The Data Communications Interface Option. Local computing power is extensive. But for complex problem-solving, our optional Data Communications Interfaces makes your 4051 perform all the functions of our popular 4012 Graphic Display Terminal.

Our special interface has built-in firmware for complete data communications. Send and receive, data via the mag tape unit, at asynchronous speeds up to 2400 Baud.

It's time without time-sharing. You pay for the system, not for the time you use it. You return computing, and costs, to local control.

An Integrated Package. Never before has there been so much problem-solving punch for so little cost. The basic unit includes flicker-free graphics, 300K byte mag tape unit, 10 user-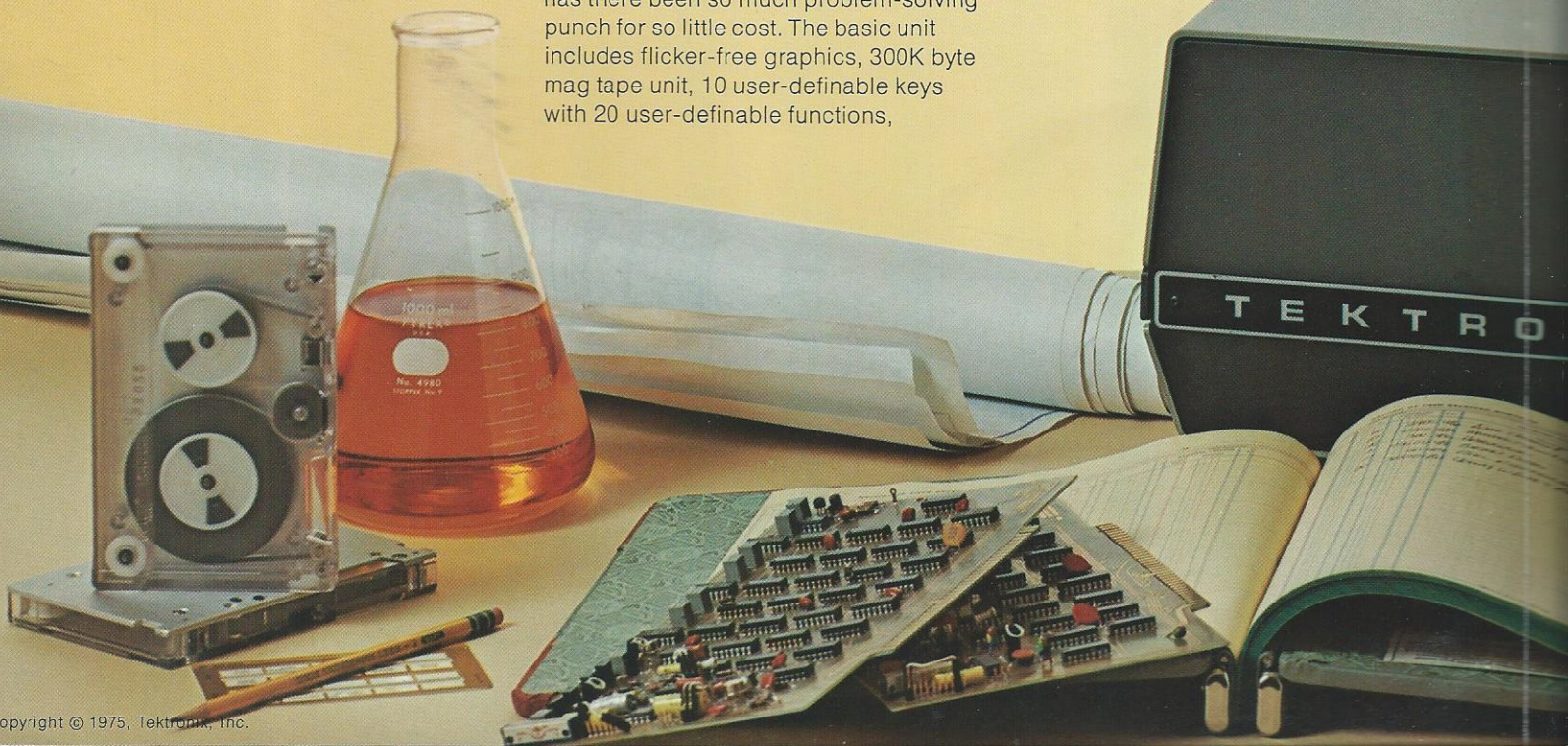definable keys with 20 user-definable functions, four-function numeric keypad, upper and lower case alphanumerics, full 128-character ASCII, IEEE Standard (488-1975) interface, optional RS-232-C communications compatibility, and 8K workspace all in a torture-tested Tektronix package—for less than competitive systems offering alphanumerics alone.

Ready when you are, computer or not. The 4051 is self-sufficient, personal, and graphic, so it makes possible immense problem-solving power right at your desktop. Department heads can interpret data and forecast future needs. Researchers can acquire and analyze weeks of logged data in moments.

Engineers can design and test right at their desktop. Educators can demonstrate ideas with instant access to processing power.

It's a mini with a view. Without complex interfacing and system configurations, the 4051 offers mini capability plus low-

cost graphics. It's always within reach, almost certainly within your budget.

With expert software at your service. We include free orientation manuals and tapes—explained with such clarity that even a beginner can grasp enhanced BASIC and knock out his first graph in minutes. For those with some programming experience, our basic Operator's Manual is a standard part of the package. Also included is our tutorial package for the first-time user.

And as you dig into your own applications, Tektronix can help keep costs under control. We've got a library of BASIC packages you can easily add to your own programs. The cost is minimal.

More to build on. From the Data Communication Interface through a range of other options, Tektronix' 4051 is designed to adapt to your personal needs.

Our high-resolution 4631 Hard Copy Unit attaches in seconds to produce dry copies quickly and economically.

Our 4924 Magnetic Tape Unit provides fast data I/O and tape copying, with easy file access.

The 4662 Plotter offers page scaling, alphanumerics, and built-in digitizing, with optimum speed and precision.

The 4952 Option 2 Joystick makes menu selection and placement of graphic data via the 4051's graphics cursor quick, easy and precise.

The optional RS-232-C Output Interface readily adapts the 4051 to the external peripherals of your choice.

Whatever you have in mind, our IEEE standard (488-1975) interface assures compatibility with the instrumentation industry's most advanced measurement devices.

More to rely on. Dealing with Tektronix is dealing yourself into a tradition of highest-quality equipment, full warranty protection, and our world-wide service.

You're also dealing yourself your ever-present Tektronix Sales Engineer, who knows your field, understands your needs, and has an individually-tailored package of purchase and lease arrangements you'll appreciate.

Ready to get down to specifics? Your Sales Engineer has a 12-page color brochure that puts the in-depth story right in your hands. And a demonstration that puts 4051 graphic computing power right on your desk.

Product data.

Central Processing Unit

Type: LSI Microprocessing Unit

Workspace Size: 8K Bytes Standard Expandable to 32K Bytes

Programming Language: BASIC with integrated operating system, built-in graphics and numerous other extensions

4051 BASIC Language Elements

Keywords	File Storage Keywords
CALL	
COPY	FIND
DATA	MARK
DEF FN	OLD
DELETE	SAVE
DIMENSION	APPEND
END	TLIST
FOR . . . TO . . . STEP	
FUZZ	**Operators**
GOSUB	+
GOTO	−
HOME	*
IF . . . THEN . . .	/
IMAGE	↑
INIT	MIN
INPUT	MAX
LET	AND
LIST	OR
NEXT	NOT
OFF	=
ON . . . THEN . . .	< , >
PAGE	
POLL	**Functions**
PRINT	ABS
RBYTE	ACS
READ	ASC
REMARK	ASN
RENUMBER	ATN
RESTORE	CHR
RETURN	COS
RUN	EXP
SET	INT
STOP	LEN
TYPE	LGT
WAIT	LOG
WBYTE	MEM
WRITE	PI
	POS
Graphic Keywords	REP
MOVE, RMOVE	RND
DRAW, RDRAW	SEG
SCALE	SGN
AXIS	SIN
WINDOW	SPA
VIEWPORT	SQR
ROTATE	STR
GIN	TAN
POINT	VAL

Numeric Accuracy: 14 decimal digits

Numeric Range: $1 \times 10^{\pm 308}$

Internal Peripherals

Keyboard

- Complete upper and lower case alphanumerics with auto-repeating keys. Full ASCII. 128 characters.
- 10 Function Keys with SHIFT for up to 20 separate function calls.
- Five editing keys with SHIFT, control 10 different editing functions used to modify BASIC source programs.
- Calculator key pad including 10 key numeric pad, 5 math operator keys, decimal point and parenthesis.
- Control keys:
  AUTO NUMBER—generates program line numbers automatically
  STEP—executes program steps one at a time
  AUTO LOAD—automatically loads and runs File 1 on tape
  REWIND—Rewinds tape
  MAKE COPY—activates optional 4631 Hard Copy Unit.

Display Characteristics

Type: Direct view storage CRT.

Dimensions: 8 inches wide by 6 inches high (20.3 cm x 15.2 cm).

Alphanumeric Format: 72 characters per line, 35 lines; 2520 total.

Character Set: Full ASCII character set, including upper/lower case. Also includes Scandinavian, German, General European, and Spanish fonts.

Graphic Resolution: 1024 x 780 points

Hard Copy: Compatible with our 4631 Hard Copy Unit.

Tape Drive

Type: 3M® DC300A cartridge.

Capacity: 300K bytes max (dependent on number of files).

System Characteristics: File structures for storage of programs or data. Access is via 4051 BASIC operating system.

General Purpose Interface Bus (GPIB)

Specifications: Conforms to IEEE standard 488-1975. Byte serial, bit parallel transfer mode.

Control Mode: External devices can be serviced via interrupt procedures available in the BASIC operating system. Enable/disable, polling and data transfer commands are available under program control.

Physical Characteristics

Height: 13.6 inches (34.5 cm)

Width: 18.3 inches (46.5 cm)

Depth: 32.5 inches (82.6 cm)

Weight: 65 pounds (29.5 kg)

Power Requirements:

Line Voltage Range: ± 10%.

Low	Med	Hi	
100	110	120	operates between 90V to 132V RMS.
200	220	240	operates between 180V to 264V RMS.

Line Frequency: 48-66 Hz

Power Consumption: 200W maximum

Operating Temperature: + 10 degrees C to + 40 degrees C

TEKTRONIX®

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