

TEKTRONIX

31/53

Your
personal
data
acquisition
system.

Under \$6,000,
as shown.



Tektronix 31/53

The only things small about it are size and price.

Tektronix is out to beat down the high cost of data acquisition and analysis.

Our new 31/53 system is our desktop answer to some old, expensive—and new, expensive ways of measuring and processing electrical data.

What do you get for your money? A fully integrated modular system. Made by one manufacturer. Guaranteed and serviced by one manufacturer. Each component is made to work with each other. And each has the versatility to work alone when it's not being used in the system.

You get our 31 programmable calculator to run the system. It's complete with magnetic tape cartridge for program and data storage.

For the instrumentation package, you get a mainframe/power supply unit which accepts two modular plug-ins. A digital translator/interface unit is already plugged in.

You choose the other two instruments to complete your system. You can use a digital multimeter and a digital counter, or two of a kind.

Standard software packages let you put the system right to work on data monitoring and statistical analysis.

Check our performance.

If you think our capability might be too limited, think again. You can measure any direct electrical output. Or mechanical output when you couple transducers to the system.

The system will digitize any unit of voltage, time, temperature, displacement, volume or pressure. It will process, evaluate, document and record the results. Automatically.

Or, you can sit in and work along with the decision-making process. Something you can't do with a minicomputer. Basically, the 31/53 system will do the same chores as a mini. But at much lower wages.

Examples? It will reduce data statistically, find average, frequency distribution, grouping about the mean, and fit curves to the data.

It will translate, changing one set of units to another.

It will compute, finding a function of an original variable.





It will log a running count of any occurrence, with a time reference.

It will monitor an ongoing process, test for out-of-limits and trigger an alarm.

Keep it busy

One big advantage of the Tektronix 31/53 system is its portability and versatility. Besides the many types of jobs you can do with it as a system, you can keep on working the individual components as stand alone tools.

Think of how you could use the calculator for other chores. Or the multimeter or counter.

And it's certainly a positive and low cost way to breadboard a system before going to a dedicated computer system. And, you still have the 31/53 for other non-dedicated jobs.

Powerful performance in a little package. If you think we're claiming too much for a calculator and some little counters and multimeters, take a closer look.

The calculator is unlike any you've encountered. Ours is personal. If you know math, and can one-finger a keyboard, you can program it.

It's powerful. The 28 built-in math functions include trig and hyperbolic formulas. And it follows math hierarchy, naturally. It has 74 data registers and 512 program steps. You can define 24 keys with an overlay to handle often-used special functions.

If that isn't enough, you can expand data registers to 1010. And program steps to 8,192.

The optional alphanumeric printer gives you a paper tape of your computed results fast, and/or provides operator instructions in English! Or in French, German, etc.

Our digital multimeter gives the usual AC, DC voltage, current and resistance readings. Up to 5 per second. And it takes temperatures with its own probe.

A bright 4½ digit LED display automatically blanks leading zeros. You get accuracy, range and resolution in a compact package.

Counters—take your pick from three. They do the same job as larger, more expensive instruments. They measure direct frequency and totalize events to 9,999,999. The 7 digit LED display automatically positions decimal and blanks leading zeros. Depending on the model, you can measure frequencies to 500 MHz, period, ratio of two frequencies, time intervals and totalize events.

Look at your alternatives

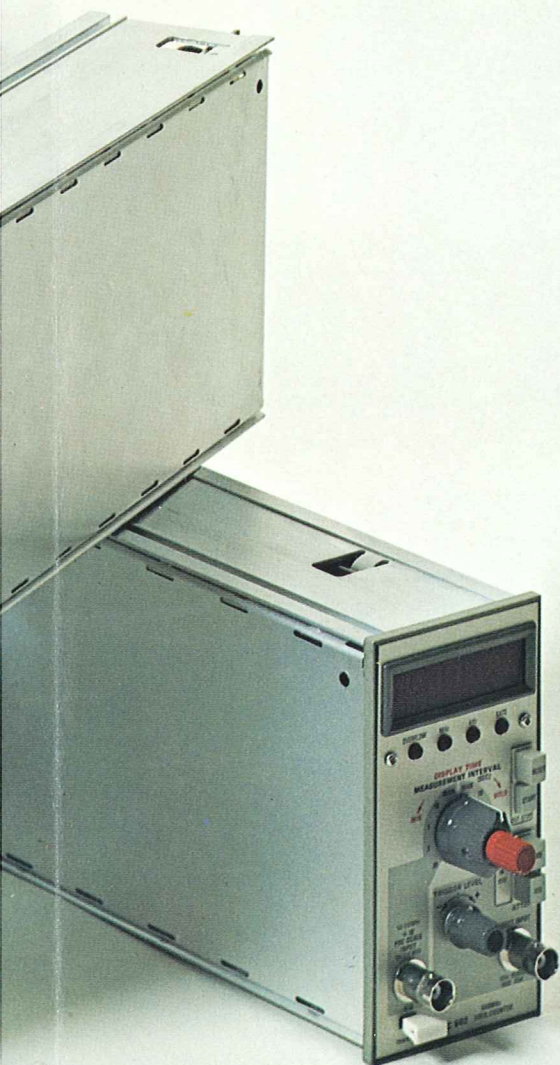
Compare this to anything on the market to do the same job. For portability, compactness, efficiency, versatility. And price.

You could keep your present analog or digital measuring devices and hand-fed processing. You could kluge a system of various components from different manufacturers. But that's going to cost you 3 or 4 times as much.

And you still won't have our advantages.

Our suggestion: call your nearest Tektronix Sales Engineer. Get yourself a personal data acquisition system.

Or write: Tektronix, Inc. Information Display Division, P.O. Box 500, Beaverton, Oregon 97005.



Tektronix 31/53 Calculator Instrumentation System

Tektronix' 31/53 system complete with plug ins, is ready for immediate data acquisition and analysis. Measures time, frequency, temperature, count, voltage, current, resistance and can compute displacement, volume or pressure. Processes, evaluates, documents and records.

Programming. By alphanumeric keyboard with user definable overlay or magnetic tape cartridge.

Standard Software:

Data Logging on alphanumeric printer with sampling rate and numbers; single or dual source.

Data Reduction. Statistical summaries of variables and frequency distribution.

Data Acquisition. Stores data internally and generates least squares curve fits for a line, exponential or power function.

Magnetic Tape Cartridge. Stores programs or data.

System Processor. 31 Programmable Calculator. Natural math hierarchy. Alphanumerics with user-definable keys. Stores data, computes, outputs to printer, display terminal or X-Y plotter. Memory steps, 512 expandable to 8,192; Data registers, 74 expandable to 1,010.

Digital Display. 7 Segment Gas Discharge. 10 digit plus two exponents.

Data Acquisition. 153 Instrumentation Interface enables calculator to read instruments; supplies power to plug ins.

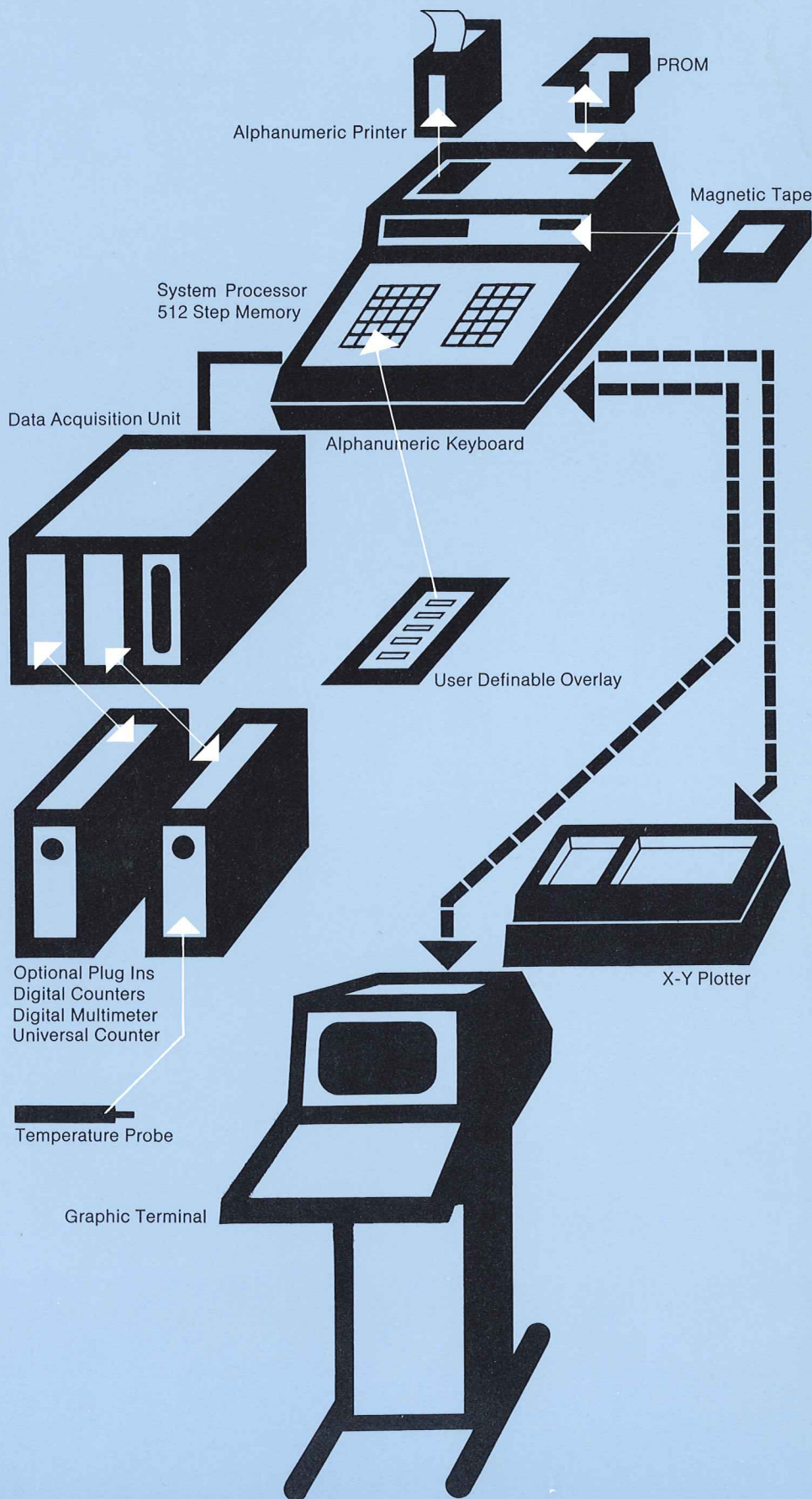
Optional Plug Ins. Choose from four TM 500 modular test and measurement instruments. Up to 20 plug ins can be operated with additional interface units.

Direct Inputs. Any electrical signal—voltage, current, resistance, temperature, time, and frequency.

X-Y Plotter. Optional 4661 Digital Plotter gives fast, accurate graphic representations of data.

Graphic Terminal. Optional 4010 displays alphanumeric and graphic expression of calculator output. The 4010-1 is hard copy compatible.

PROM. Your own program up to 1,024 steps permanently resides in the calculator, without reducing MOS memory. Instant-on; more efficient operation.



Product data

Components Include:

31 Programmable Calculator and
153 Calculator Instrumentation
Interface.

Standard Accessories:

31 verification program.
31/53 system operation manual,
31 and 153 component manuals.
One 6000 step magnetic tape
cartridge.
Two user definable overlays, inter-
face cable, power cord.
Magnetic tape cartridges for data
logging and statistical routines.

Options:

1. Silent alphanumeric printer.
Memory expansion stages of:
2. 1024 steps 128 registers
3. 1536 steps 192 registers
4. 2048 steps 256 registers
5. 2048 steps 640 registers
6. 3584 steps 448 registers
7. 5120 steps 256 registers
8. 2048 steps 1000 registers
9. 5120 steps 640 registers
10. 8192 steps 256 registers.
Magnetic tape cartridges.
30. Type II patch plug.
31. Type III patch plug.

Optional Accessories:

Calculator carrying handle kit, user
definable overlay package (10).
Thermal printer paper—18,000
lines per roll.

Patch Plug Information

A Type I patch plug is provided as
standard for use with one counter
and one multimeter in the 153 Instru-
mentation Interface.

For a system with two multimeters, a
Type II option 30 should be ordered;
this will replace the standard Type I.

For a system with two counters, a
Type III option 31 should be ordered;
this will replace the standard Type I.

When ordering subsequent instru-
mentation, additional patch plugs are
available as optional accessories.

Software Options:

31 mathematics program library.
31 statistics program library.

Peripherals:

4661 Digital Plotter
4010 Graphic Terminal
4010-1 Graphic Terminal
(Hard copy compatible)
4610 Hard Copy Unit

Data Building Blocks

The 31/53 systems use TM-500 test
and measurement instruments. They
include the—

Counters:

DC-501 option 4

- Direct counting to 110 MHz
- Seven digit LED display
- Manual start/stop (totalize)
- Auto range and time base options

DC-502 option 4

- Same as DC-501, but counts to
550 MHz with 10x prescale (with
50-ohm input).

DC-503 option 4

- Same as DC-501, but has period
and ratio averaging, carries out
six functions: frequency, period,
ratio, time A-B, time manual and
totalizing.

5 MHz Time Base options are available
For DC-501, 502 and 503.
Required option 4 may be installed in
standard counters.

Multimeter:

DM-501

- 0.1% DC voltage accuracy
- 4½ digit LED display
- Auto-polarity
- Measures voltage, current,
resistance and temperature
- Fully isolated serial BCD output

Options:

1. Without temperature probe.
2. Without temperature measurement
capability and probe.

Physical Characteristics: Calculator—

Weight: 32 lbs., (14.5 kg)
Height: 7.9 in., (20 cm)
Width: 14.3 in., (36 cm)
Length: 20.5 in., (52 cm)
Shipping weight: 48 lbs., (21.8 kg)
Aluminum case construction with
"modular design" internal
components.
Mainframe and interface—
Height: 6 in., (15.2 cm)
Width: 8.7 in., (22.1 cm)
Length: 15.3 in., (38.8 cm)
Weight:
Mainframe and interface, less
plug-ins: 11.2 lbs., (5 kg)

Power Requirements: Calculator—

Line Voltage Range:
Low Med Hi
100 110 120 operates between
90 V to 132 V RMS
200 220 240 operates between
180 V to 264 V RMS
Maximum Line Voltage Input:
250 V RMS
Line Frequency: 48 Hz to 66 Hz
Power Consumption (Max.): from
150 watts 60 Hz, 115 V line.
Mainframe and Interface, less
plug-ins: 11.5 watts.

Interface Features:

Can transmit to calculator all data
on module digital display.
Programmable interface pulse
outputs: Trig out, front and back
panels, 12µs width.
Logic levels are TTL compatible
≥ 2.4 V high ≤ .8 V low.
Calculator display flashed by inter-
face with a ≥ 2 µs momentary short,
or pulldown to ground.

Environmental Characteristics:

Calculator, mainframe, interface and
instrumentation:
Nonoperating temperature:
—67° F to 167° F; —55° C to 75° C.
Operating temperature:
32° F to 122° F; 0° C to 50° C.
Nonoperating altitude:
50,000 ft.; 15,250 m.
Operating altitude: 15,000 ft.;
4,570 m.

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