Established 1981
Advanced Test Equipment Rentals
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FALCON™
Models TA220-1000 Series

SOLTEC®

DATA ACQUISITION SYSTEMS
Stand-alone & with Recorder
Portable, 1 to 16 Channels

ISO9001 JQA-1598

The SOLTEC Model TA220-1000 series are data acquisition systems with enhanced functions for color data display, acquisition, and analysis. Three mainframe models, TA220-1100, TA220-1200, and TA220-1300 are available. The TA220-1100 features data monitoring and acquisition. The TA220-1200/1300 units feature a waveform printing chart recorder feature in addition to the functions of the TA220-1100. All mainframes accept a wide selection of plug-in signal conditioning amplifiers, a wealth of calculation and analysis functions, and three types of communication interfaces to make each TA220-1000 series unit a versatile, portable data acquisition system, memory recorder, data logger, transient recorder, and real-time recorder, all-in-one.

FEATURES

- **Selectable Functions**

FFT Analysis, Waveform Judgement, and Interfaces(GP-IB and SCSI) are available options.

- **Multi-channel Support**

Up to 16-Channels of measurement are possible in this compact unit using dual channel plug-in amplifier modules.

- **Wide Variety of Input Signal Conditioners**

12 & 16 bit high-resolution plug-in signal input amps support voltage, temperature, vibration, strain and rotation encoder pulse measurements at sampling speeds up to 1MS/s (1µs).

- **Color LCD Display**

A 10.4 inch TFT color LCD display with a touch sensitive panel offers easier operation.

- **Long Term Data Storage**

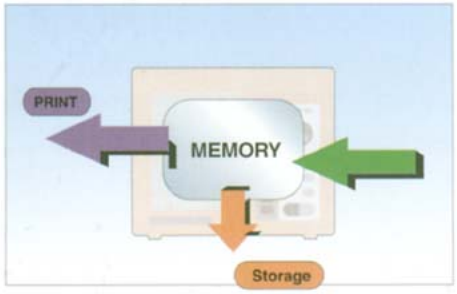
Long term data acquisition (storage) is possible at a sampling speed of 200µs by storing data on a Magneto Optical (MO) hard drive with removeable media (up to 640 MBytes) or on flash memory cards. Since the recorded data is in a digital format (binary or CSV), data analysis after recording and long term data management, which were impossible with chart data, can be easily performed.

- **Modem and Fax Transmission Functions Increase Measurement Efficiency**

Long distance measuring using a telephone line is possible by connecting to a modem. Automatic data transmission to a fax machine during data acquisition is also possible.

RECORD HIGH SPEED PHENOMENA TO MEMORY (MEMORY RECORDING)

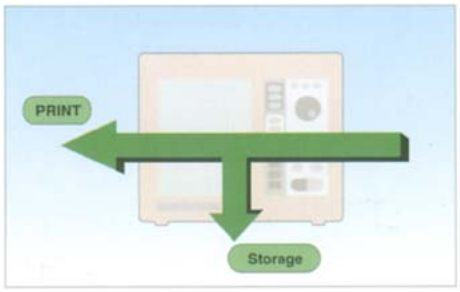
High Speed signals can be recorded into built in memory (up to 2Mdata/ch) at sample rates of 1µs to 1s. Memory can be divided into blocks for more verstility. Recorded data is displayed on screen and can be automatically or manually stored, printed on chart (TA220-1200/1300 only), transmitted to a fax machine, or sent via modem to a computer.



The monitored waveform is displayed in the same formal as the recorded data.

RECORD INPUT SIGNALS IN REAL TIME (REAL TIME RECORDING)

Real Time Signals can be monitored on the screen while storing on MO Drive, Memory Card or Disk. Storage rates range from 200µs to 100s. Loop storage mode ensures that latest data is always saved. TA220-1200/1300 can print on a chart at speeds up to 25/200mm/s. Choose WAVEFORM, XY, or ALPHANUMERIC Datalogger print format.



The monitored waveform is displayed in the same format as data being printed.

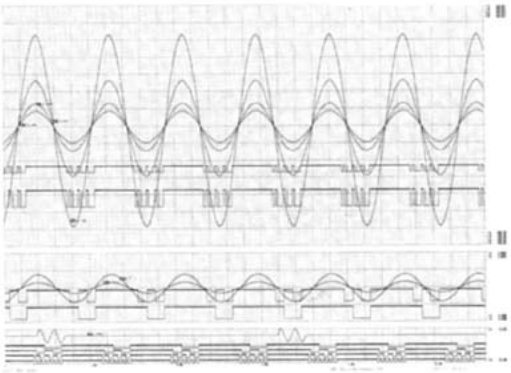
SIMULTANEOUS MEASUREMENT OF LONG TERM TREND & TRANSIENT PHENOMENA (TRANSIENT RECORDING)

Transient recording combines Real Time and Memory recording. While Recording in Real Time, 'Snapshots' of High-Speed transients are stored into memory. After Recording session, both the long term and higher resolution 'snapshot' data are available.

APPLICATION SOFTWARE (Option)

View files, manipulate data, communications, set-up, control, analyze files, export to spreadsheets, network/ethernet interface, etc.

PRINT EXAMPLE



SELECT EXPANSION FUNCTIONS ACCORDING TO MEASUREMENT NEEDS

Two expansion functions are provided as option:

- **FFT (Option)**
  The following eight functions are supported:
  Linear spectrum, power spectrum, RMS spectrum, power spectrum density, octave analysis, transfer function, cross power spectrum, and coherence function.
- **Waveform Judgement (Option)**
  Waveform judgment option compares incoming waveforms to waveforms stored in memory. If the incoming waveform is out of tolerance, a trigger is activated.

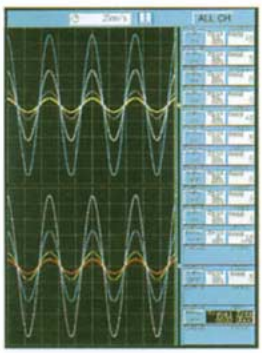
ARITHMETIC OPERATION (Standard)

Provides arithmetic operations on data located in specified areas of memory. The results of operations are displayed in the screen and stored in the form of a waveform or a file.

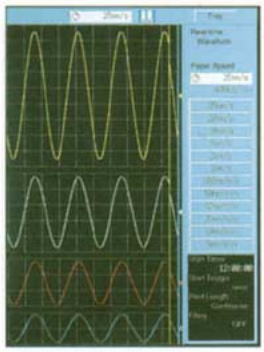
Operations Include: Four (4) basic arithmetic operations, maximum, minimum, P-P value, average area, RMS, standard deviation, rise time, fall time, absolute value, differential, integral, linear/quadratic differential, single/double integral, square root, exponent, common logarithm, moving average, and trigonometric functions (sine, cos, tan, asin, acos, and atan).

DISPLAY EXAMPLES

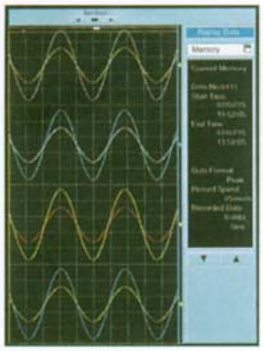
Monitor data during input amplifier setup



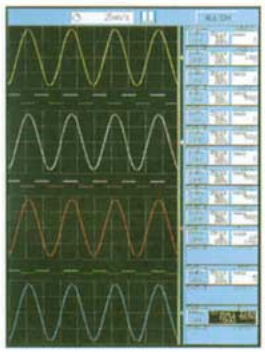
User customized display; channelized, overlap, etc.



Replay monitor

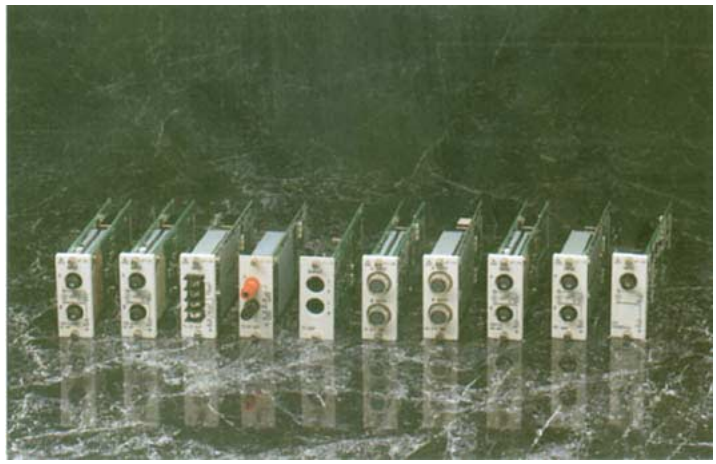


Customized display of event signals



PLUG-IN SIGNAL INPUT AMPLIFIER MODULES

Amplifiers are available to support a wide range of measurement conditions. The plug-in module design allows easy configuration changes.



2CH High Resolution Voltage Amp. AP11-101	16 bits 10µs	High resolution voltage amplifier with 500V maximum input
2CH High Speed Voltage Amp. AP11-103	12 bits 1µs	High speed voltage amplifier with 500V maximum input
2CH TC Voltage Amp. AP11-106	15 bits 10µs	Thermocouple and voltage
1CH TC Voltage Amp. AP11-107	14 bits 10µs	Thermocouple and voltage amplifier
Event Amp. AP11-105	1µs	Logic input (8CH)
2CH AC Strain Amp. AP11-104	16 bits 10µs	Strain gage and strain-gage sensor input with high resistance to noise from power line
2CK DC Strain Amp. AP11-110	16 bits 10µs	Strain gage and strain-gage sensor input with high frequency response
2CH RMS• Vibration Amp. AP11-109	16 bits 10µs	DC amplifier. 500V max. input with charge sensor power supply, RMS converter and bandpass filter
2CH FFT Amp. AP11-102	16 bits 10µs	Voltage amplifier. 500V max. input with anti-aliasing filter and power supply for charge sensor
1CH F/V Converter AP11-108	16 bits 10µs	Converts frequency (e.g. pulses) into voltage

SPECIFICATIONS

Basic Specifications

Display	10.4 inch TFT color LCD display. Effective display area 211.2mm (8.32") × 158.4mm (6.24") (640 × 480 dots)
Printer (Models TA220-1200 & TA220-1300)	
Recording method	Thermal array head and thermosensitive chart
Paper width	219.5mm (8.64")
Effective recording width	200mm (7.87") FS in 1 div. to 10mm FS in 16 div. variable
Channel print	Prints channel No. in the vicinity of the printed waveform
Battery Backup	Backup for main unit settings, recording conditions Backup time : Approx. 1 month
Storage Devices	Built-in 3.5 inch FDD (1.25MB/1.44MB) and PC card slot (ATA flash memory card, SRAM card). Option: MO Disk Drive w/ removeable cartridge 640, 540, 230, 128MB media, Internal or External versions; Zip™ Drives
Interface Unit	Standard RS-232C unit (38400 to 2400bps) Option: GP-IB (IEEE488 compliant) Option: SCSI (half pitch 50 pin type)
Remote Terminal Features	Start/stop, mark print, and paper feed controlled by external signal. Input: Sync pulse, Protect pulse. Output: Waveform judge, Error
Clock function	Stability : Daily error ± 35PPM (at normal temp.)
Operating Environment	Temperature: 0 to 40°C (5 to 40° C when FFD is operating) Humidity: 35 to 80%RH (without condensation) Vibration: MIL-STD-810E compliant (except during FDD or MO operation)
Power Supply	90 to 132V or 180 to 264V AC. Specify at time of order Frequency: 47 to 63Hz Option: DC power unit: 11 to 28V DC
Power Consumption (Max)	TA220-1100: approx 85VA TA220-1200: approx 180VA TA220-1200/1300: Approx 180 VA/400VA (approx. 85VA stand-by)
Dimensions	approx. 369.5 (4.6")(W) × 150.5 (5.9")(H) ×301(11.9")(D)mm
Weight	Approx. 7 kg (15 lb)

Data Storage Mode

Data Recording	
Function	Stores measured data in real time to a memory medium (Real-time data storage).
Recording Speed	200µs to 1s, user set. External synchronization possible.
Recording Method	Linear Buffer: Stores set no. of data samples and stops. Loop (ring buffer): Overwrites old data with most recent events.

Other Specifications

Printing functions (TA220-1200 & TA220-1300)	
Data information	Measurement mode, year/month/day, measurement start time, data No., trigger condition (trigger point, year/month/day, time), sampling speed, paper speed, time axis, etc. are printed. Modes can be turned ON or OFF.
Channel Information	Signal input amp. settings are printed. Modes can be turned On or OFF.
Event Print	In real-time mode, a manual or external input event is marked on chart along with date and time.
List Print	Date, time, measurement mode, data No., print format, paper speed, sampling speed, scale print, backlight auto-off, auto-start, trigger mode, source channel, recording operation and file settings are printed.
Screen Copy Function	Any screen can be printed or saved to .BMP file.
A4 Report Output	Registers users comments and prints them together with waveform on A4 format.
Printing Line Width	Printing line width can be set for each channel. (1, 2, 3, 4 dots)
Key Lock Function	Locks keyboard to prevent erroneous operation.
Internal Storage of Recorder Setups	4 different recorder setups can be saved or recalled from internal memory. Setups include amplifier settings.
Engineering Unit Conversion	Physical value conversion, full-scale modification of display.
Auto-Start	After a power failure, recording is resumed. (Except during data filing)
Auto-Setup Function	Automatically reads the recorder setup from floppy disk when power is turned on. (Desired setup must be previously stored on the floppy disk)
Screen Image Store	Stores a screen image in .BMP file. Useful for reports.
Help Function	Displays how to operate, cautions, etc.

AC Bridge Power Supply Unit (Option)

Function	Bridge power source for 2CH AC strain amplifier model AP11-104.
Power Source	2Vrms, sine wave 5kHz.
Synchronism	Synchronizes with other TA220-1000 series units in which an AC bridge power unit is installed.

SPECIFICATIONS (cont.)

Memory Mode

Data Recording	
Measurement Operation	Once, Repeat, Endless
Memory Capacity	256kW/CH (Option: 1MW/CH) When using dual channel modules, module memory may be combined to provide up to 2 Mega Data on one channel.
Memory Divisions	1, 2, 4, 8, 16, 32, 64 and 128
Sampling	1µs (1MS/s)~1s (1S/s), User sets sampling rate in 1µs steps. External synchronization possible.
Display (Replay Monitor)	
Waveform X-Y	Magnification : x 5 to x 1/1000 User can select any channel to be X-axis, and any other channel(s) for Y-axis.
Printing (Models TA220-1200/1300 only)	
Waveform	Print density : Voltage axis: 8 dots/mm Time axis : 10/80 dots/mm Magnification : × 5 to × 1/1000
Alphanumeric	Read out interval : Selectable 1 to 1000 data measurements.
X-Y	User can select any channel to be X-axis and any other channel for Y-axis. Effective print range : 200mm x 200mm Print density : 400 dots (X-axis) x 400 dots (Y-axis)
Memory Storage	Captured data can be saved as binary or CSV files.

Transient Mode

Transient Printing (TA220-1200/1300)	
Function	Normally operates in the real-time mode. When a trigger is detected, transient is recorded to memory.
Real-time Set-up	See "Real-time Mode".
Memory Set-up	See "Memory Mode".
Transient Storage	
Function	Normally operates in real-time mode. Transient data is saved in memory when trigger is detected. When recording finishes, the memory data is stored.
Real-time Section	See "Data Storage" in the Real-time Mode.
Memory Section	See "Memory Storage" in the Memory Mode.

Real-time Mode (TA220-1200/1300)

Waveform Printing	
Measurement Start	Start Key, Trigger, Date/Time or Interval
Paper Speed	25mm/s (200mm/s, TA220-1300) to 1 mm/min, user set. External synchronization provided.
Frequency Characteristics	DC~100kHz (sampling rate 10 points/cycle), Varies depending on the input amplifier.
Print Density	Voltage axis : 8 dots/mm, Time axis: 10 dots/mm (80 dots/mm, TA220-1300)
Print Length	Continuous, or 1 to 1000 divisions-shot feed.
Alphanumeric Format	
Sampling	1 second to 1 hour per sample External synchronization possible.
Print Length	Continuous, or 1 to 1000 data samples shot feed.
X-Y Print	
Operation	User can select any channel to be X-axis and any other channel(s) to be Y-axis. Continuously measures until the Stop key is pressed. Pause mode provided.
Effective Print Area	200mm x 200mm
Print Density	400 dots (X-axis) x 400 dots (Y-axis)
Print Speed	10ms or more
Data Storage	Stores the measured data in a memory device in real-time. Storage rate: Synchronized with paper speed.

Waveform Printing (TA220-1200/1300)	
Function	Prints the waveform of input signal.
Paper Speed	25/200 mm/s~1mm/min, user set. (Independent of sampling speed) External synchronization possible.
Frequency Characteristics	DC to 100kHz (sampling rate 10 points/cycle). Varies depending on the input units.
Print Density	Voltage axis: 8 dots/mm, Time axis: 10 dots/mm (80 dots/mm, TA220-1300)
Print Length	Continuous or 1 to 1000 divisions shot-feed

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SPECIFICATIONS (cont.)

Trigger Specifications

Trigger Mode	OR, AND, A then B, WINDOW
Trigger Source	Input signal; Time trigger (start time, end time, measurement interval); Manual trigger; External trigger.
Trigger Setting	Amps other than Event Amp (AP11-105) Trigger slope Q or Q, OR, AND, A then B, WINDOW (Outside or Inside). Level setting : Can be Set with engineering units, e.g., PSI or Volts. Event amp (AP11-105) State setting: H, L or OFF can be set for each each input. When OFF, trigger is not active. Trigger setting : AND or OR of the state setting for CH1 to CH8.
Related Functions	Pre-trigger, trigger path count, trigger filter, trigger mark

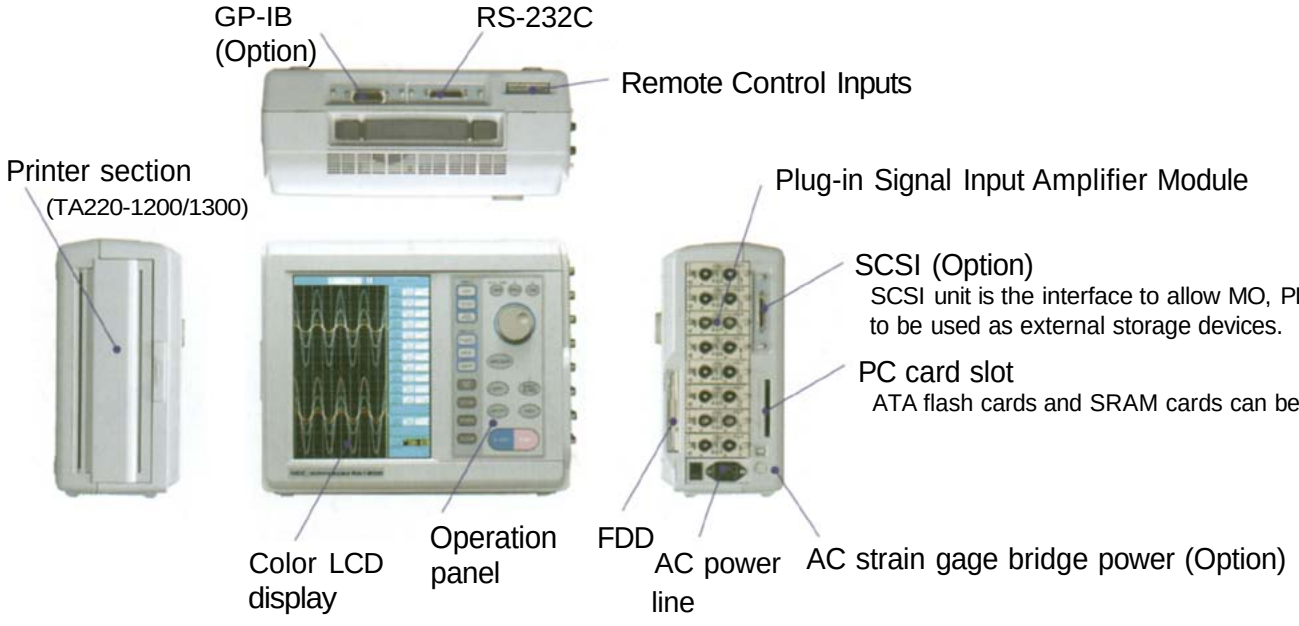
RS-232C Interface (Standard)	
Remote Control	Controls the main unit from a computer via RS-232C cable.
Modem Control	Communicate between a computer and the TA220-1000 Series unit via modem on telephone line.
FAX Transmission	Transmits measured waveform using a FAX modem connected to RS-232C port.

GP-IB Interface (Option)	
Remote Control	Controls the TA220-1000 Series unit from a computer via GP-IB cable.
SCSI Interface (Option)	
	Stores data to external memory devices, such as MO, PD, or ZIP™.

FFT (Option)

1 Signal Analysis	Linear spectrum, power spectrum, RMS spectrum, power spectrum density, and octave analysis (1/1, 1/3).
2 Signal Analysis	Transfer function, coherence function, and cross-power spectrum.
Window Function	Rectangular, hanning, hamming, exponential, and force.
Additional Process	Simple additional average (time axis), simple additional average (frequency axis), exponential weighted average (frequency axis), and peak hold.
Analysis Frequency	400kHz, 200kHz, 80kHz, 40kHz, 20kHz, 10kHz, 5kHz, 2kHz, 1kHz, 500Hz, 200Hz, 100Hz, 50Hz, 20Hz, 10Hz
Resolution	Real-time: 400, 800, 1600 data samples. Memory Mode: 1000, 2000, 4000 data samples.

EXTERNAL VIEW



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