

# High Speed Multi-Function Recorders

## Models DAS30 / DAS50 / DAS60



The DAS 30/50/60 high speed multi-function recorders feature versatile channel configurability, high speed sampling (1 MSa/s), a wide input range ( $\pm 5$  mV to  $\pm 500$  V), large internal solid state memory (up to 64 GB), and 9.5 hours of battery life. Combined with the CAT III isolation rating, these instruments are well suited for applications ranging from small sensor signal logging to electrical power analysis.

The best-in-class 2  $\mu$ s sampling interval in file mode lets you capture transient events with confidence. Additionally, the large built-in memory allows for data recording over longer periods of time.

Each channel can record a different signal such as voltage, temperature, current or frequency simultaneously, using a common time base. The next-generation touchscreen features unlimited data scrolling, zoom in/out function as well as drag and drop delta cursors for precision measurements.

### Applications

- Measure signals ranging from small sensors to large electrical systems
- Maintenance and failure analysis
- Power analysis of single and three phase systems

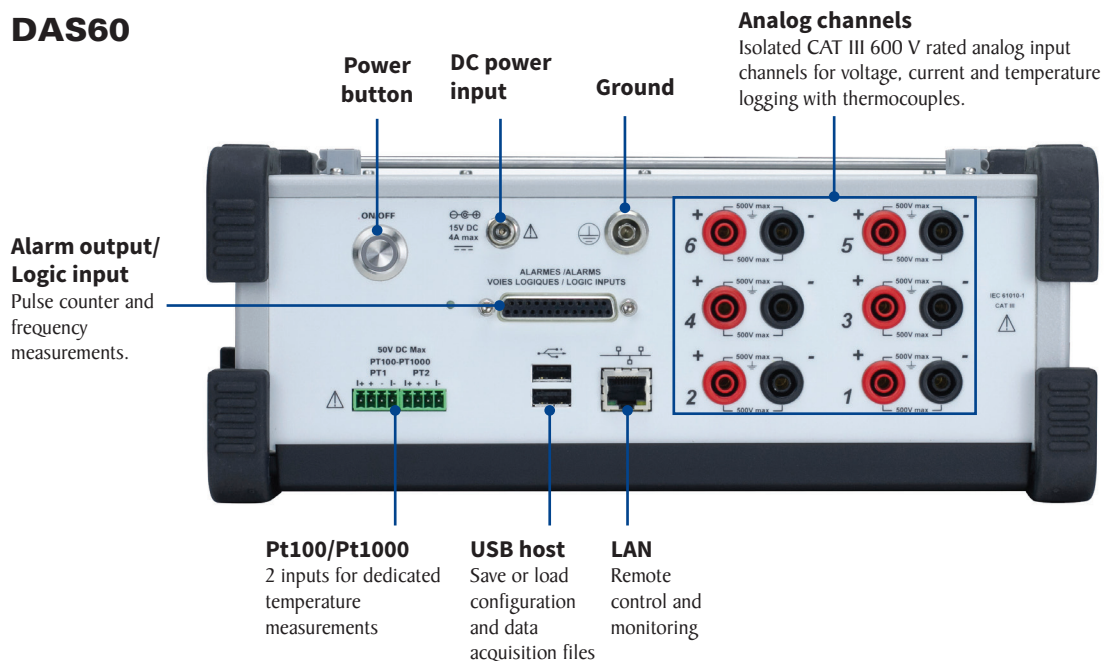
### Features and benefits:

- Fast 1 MSa/s sample rate (memory mode) and 100 kHz bandwidth for capturing intermittent events
- Accurately view and record signals from  $\pm 5$  mV to  $\pm 500$  VDC and 424 VRMS
- CAT III 600 V rated isolated channels
- Wide 10-inch touchscreen TFT display
- Capture mixed signals with one instrument, such as high voltage/current waveforms, temperature and logic data
- Battery life up to 9.5 hours
- 64 GB (DAS60) and 32 GB (DAS30/50) built-in solid state memory
- 2, 4, or 6 universal analog channels
- 14-bit resolution
- 16 logic input channels
- Temperature measurements supporting thermocouples and Pt100/Pt1000 sensors
- Frequency counter
- WiFi monitoring and control (standard USB WiFi dongle required)
- 2 USB host ports and one LAN interface
- Free software for control and analysis
- Virtual Networking Computing (VNC)
- 110 mm integrated thermal printer (optional)

Feature	DAS30	DAS50	DAS60
Isolated Universal Channels	2	4	6
File Mode Sampling Interval	5 $\mu$ s (200 kSa/s)		2 $\mu$ s (500 kSa/s)
Memory	32 GB	32 GB	64 GB
110 mm Thermal Printer	Factory option	Factory option	Factory option
2 Pt100/Pt1000 Inputs	Factory option	Factory option	Included
Power Analysis	Single-Phase	Single-Phase & Delta (Aron)	Single-Phase, & Delta (Aron), Star
Power Analysis Frequency	50/60 Hz	50/60 Hz	50/60 and 400 Hz
PWM Analysis	-	-	Included
Alarms	2	2	4

## Top panel

### DAS60



### DAS50-T



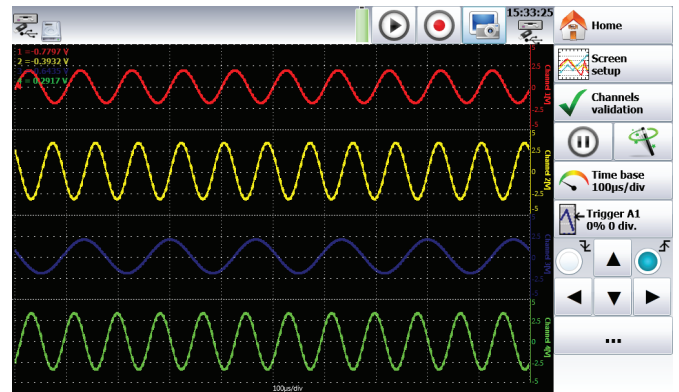
### DAS30-T



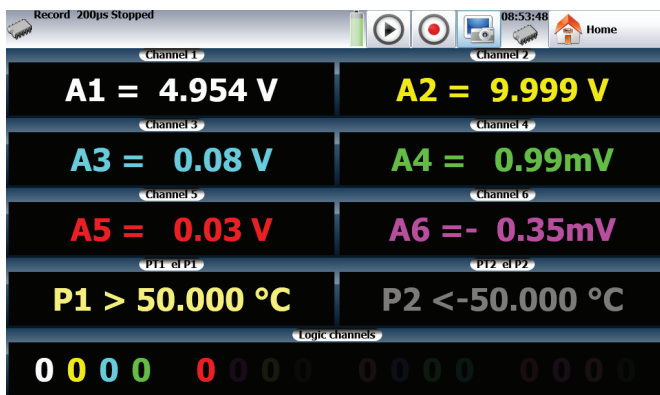
## Operation highlights

Channel	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	PT1 el P1	PT2 el P2
Name	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	PT1 el P1	PT2 el P2
Type	Thermocouple K compensated	Voltage direct	Voltage direct	Voltage direct	Voltage direct	Voltage direct	P1100 2 wires 0.00 Ω	P1100 2 wires 0.00 Ω
Filter	Without filter	Without filter	Without filter	Without filter	Without filter	Without filter	10 Hz	10 Hz
Function	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Range	60°F	1V	200V	1V	200V	1V	100°C	100°C
Center zero	70°F	0V	0V	0V	0V	0V	0°C	0°C
Max.	100°F	0.5V	100V	0.5V	100V	0.5V	50°C	50°C
Min.	40°F	-0.5V	-100V	-0.5V	-100V	-0.5V	-50°C	-50°C
Threshold T1	0.5°F	0.5V	0.5V	0.5V	0.5V	0.5V	0.5°C	0.5°C
Threshold T2	-0.5°F	-0.5V	-0.5V	-0.5V	-0.5V	-0.5V	-0.5°C	-0.5°C

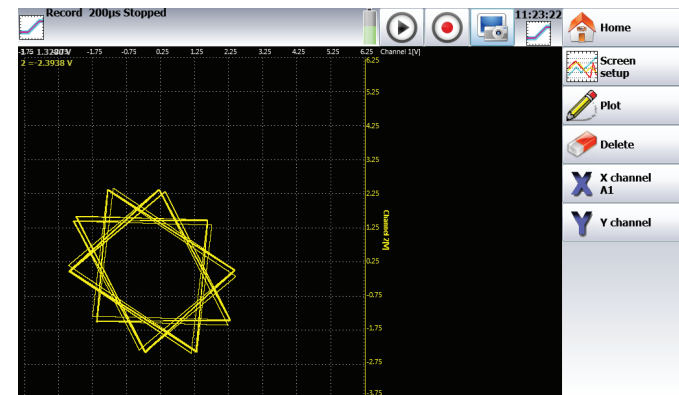
Channel setup displays all parameters on a single screen



Oscilloscope like display mode with 100 kHz bandwidth



Numerical display of measured values



XY mode for plotting one varying signal versus another

Number of blocks 1

Real-time save

Erase blocks

200 µs / 5 kHz

Start Manual start

Stop Automatic stop

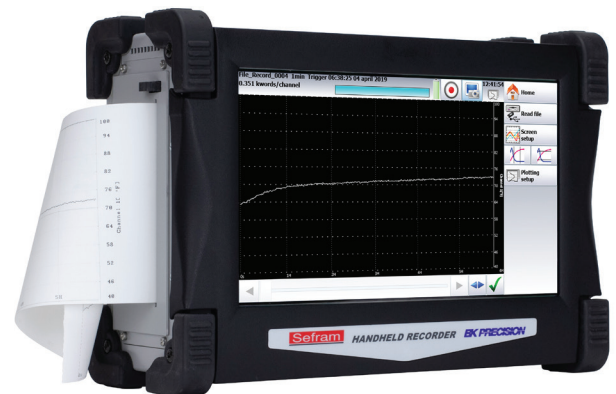
Next... Stop Rearm Save to file

3 channels active: A1 A2, 4 logical channels

11184 k sample/channel  
Acquisition time 37 min 16 s  
Trigger 3 min 43 s

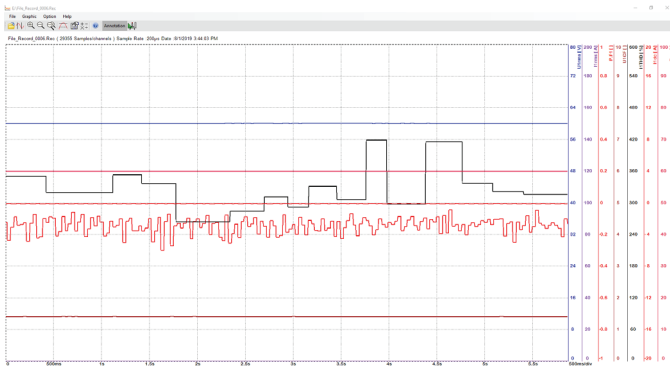
Disable trigger while pre-trigger Yes

Comprehensive triggering capabilities: Configure triggers on analog and logic channels. Select from multiple combinations of thresholds, channels and conditions.



Optional thermal printer enables hard copies of recorded data

## The tools you need



Sefram Viewer and Sefram Pilot are license free software that can be downloaded from [www.bkprecision.com](http://www.bkprecision.com). The software tools provide the following features:

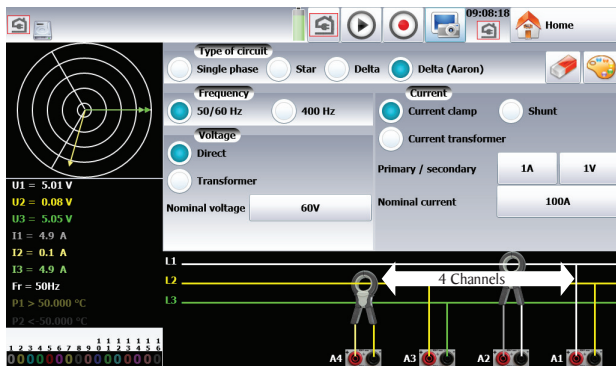
### Sefram Viewer

- Post acquisition analysis
- Display measurement results in graphical or numerical format
- 7 math functions such as  $y=ax+b$ ,  $y=\ln(x)+b$ , and  $y=\exp(cx)+b$

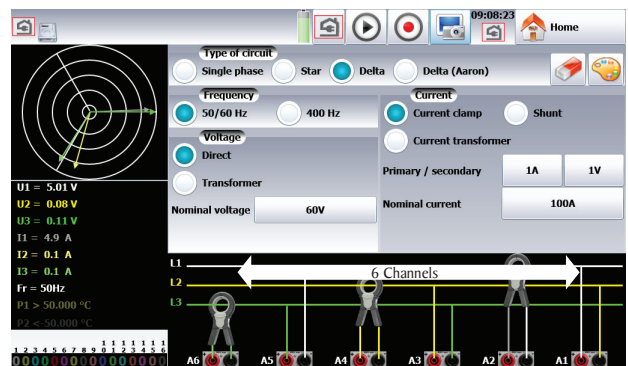
### Sefram Pilot

- Remote control and setup
- Channel and trigger configuration
- Export measurement data to a computer
- Start and stop recording
- Real time display

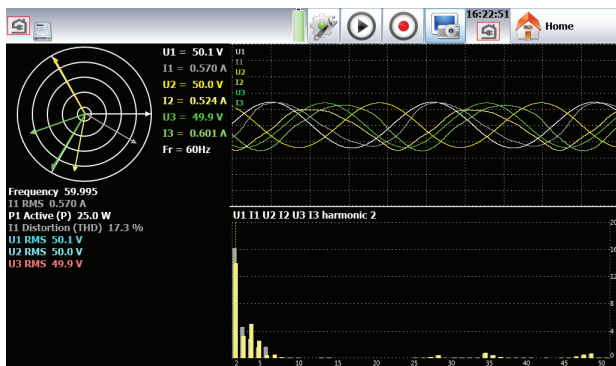
## Energy / Power Analysis



Aron configuration enables 3 phase current and voltage measurements with 4 channels

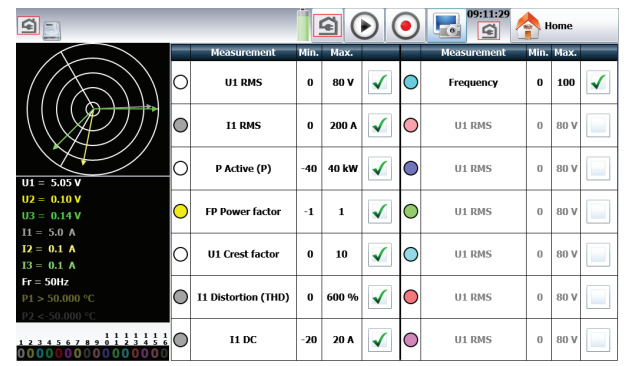


Choose from three phase configurations Delta, Delta (Aron) or Star



Real time display of Fresnel diagram, oscilloscope mode and harmonics (up to 50th)

Note: Current clamps not included, visit [www.bkprecision.com](http://www.bkprecision.com) to purchase.



Select which measurements are displayed on screen

## The tools you need

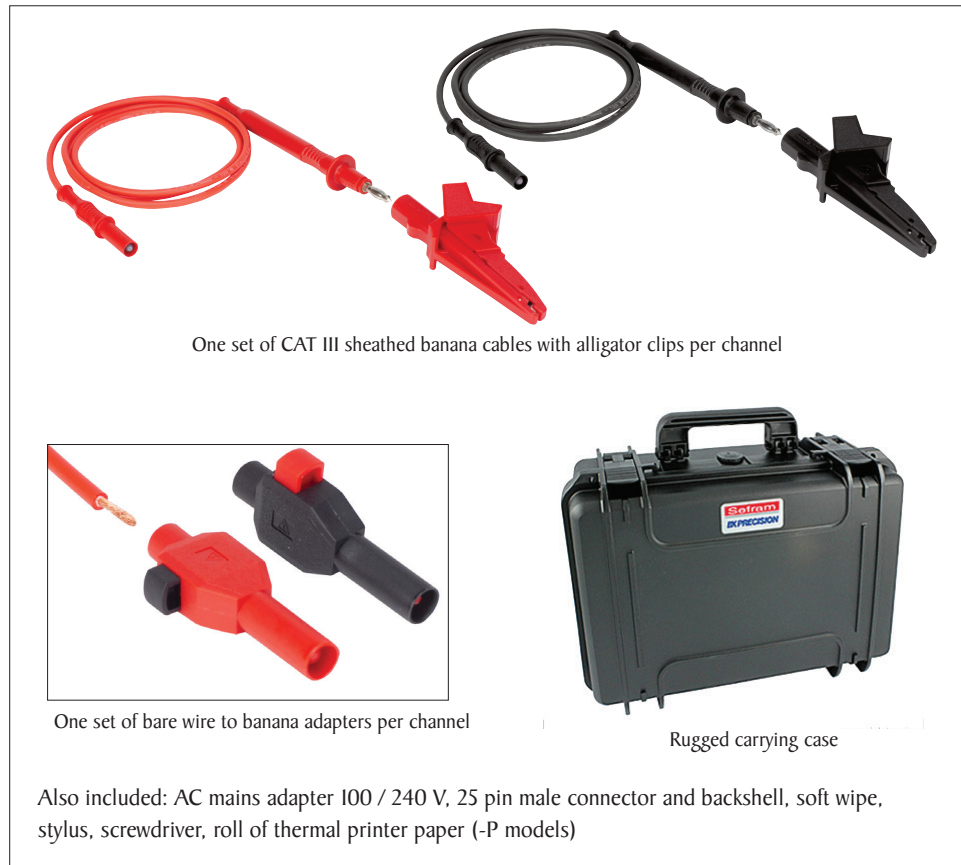
### Virtual Network Computing (VNC) capability

The recorder's built-in VNC provides a graphical desktop sharing system to remotely control the instrument from a computer with a full graphical interface that replicates the instrument's front panel using a mouse and keyboard.

### Ordering information

Model	2 Pt100/Pt1000 Inputs Factory Installed	110mm Thermal Printer Factory Installed
DAS30	-	-
DAS30-P	-	√
DAS30-T	√	-
DAS30-PT	√	√
DAS50	-	-
DAS50-P	-	√
DAS50-T	√	-
DAS50-PT	√	√
DAS60	Standard	-
DAS60-P	Standard	√

### Included accessories



One set of CAT III sheathed banana cables with alligator clips per channel

One set of bare wire to banana adapters per channel

Rugged carrying case

Also included: AC mains adapter 100 / 240 V, 25 pin male connector and backshell, soft wipe, stylus, screwdriver, roll of thermal printer paper (-P models)

### Optional accessories



Rackmount kit

- 906001000 (DAS60)
- 903004000 (DAS30/50)

16 channel isolated logic adapter (984405500)

Note: Current clamps not included, visit [www.bkprecision.com](http://www.bkprecision.com) to purchase.

## Specifications

Note: All specifications apply to the unit after a temperature stabilization time of 30 minutes over an ambient temperature range of 23 °C ± 5 °C.

Universal Inputs			
Number of Channels	DAS30	2	
	DAS50	4	
	DAS60	6	
Voltage			
Maximum Input Voltage		±500 VDC or 424 VRMS	
Maximum Offset		± 5 ranges (up to ± 500 V)	
Accuracy		0.1% of the full scale ±10 µV	
True RMS AC/DC Ranges		200 mV to 424 V	
Response Time		100 ms typical (40 ms to 50 Hz)	
Crest Factor		2.2 and 600 V Max	
Input Impedance (DC)		> 25 MΩ for upper ranges < 1 V, 1 MΩ for upper ranges, 150 pF typical	
Channel Isolation		> 100 MΩ at 500 VDC	
Bandwidth and Filters			
Bandwidth (-3 dB)	> 1 V	100 kHz	
	> 50 mV	50 kHz	
	5 mV	20 kHz	
True RMS AC/DC Bandwidth		5 Hz to 500 Hz	
Internal Analog Filters		10 kHz, 1 kHz, 100 Hz, 10 Hz	
Slope		20 dB/decade	
Programmable Digital Filters		10 Hz, 1 Hz, 0.1 Hz, 0.01 Hz, 0.001 Hz	
Sensitivity		100 mV RMS min.	
Duty Cycle		10% min.	
Frequency Range		0.1 Hz to 100 kHz	
Basic Accuracy		0.02% of full scale	
Data Acquisition and Trigger			
Resolution		14 bit	
Fastest Sampling Interval (single channel)		File mode	Memory mode
	DAS30	5 µs (200 kSa/s)	1 µs (1 MSa/s)
	DAS50		
	DAS60	2 µs (500 kSa/s)	
Memory Length (memory mode)		32 M word segments up to 128 blocks	
Triggering		Positive edge, negative edge, on logic input, delay, go no go	
Pre-trigger		±100%	
Temperature with Thermocouples			
Sensor Range by Type (cold junction compensation: ±0.5 °C)	J	410 °F to 2192 °F (210 °C to 1200 °C)	
	K	482 °F to 2498 °F (250 °C to 1370 °C)	
	T	392 °F to 752 °F (200 °C to 400 °C)	
	S	122 °F to 3200 °F (50 °C to 1760 °C)	
	B	392 °F to 3308 °F (200 °C to 1820 °C)	
	E	482 °F to 1832 °F (250 °C to 1000 °C)	
	N	482 °F to 2372 °F (250 °C to 1300 °C)	
	C	32 °F to 4208 °F (0 °C to 2320 °C)	
	L	392 °F to 1652 °F (200 °C to 900 °C)	

Power Analysis Function		
Networks	Single phase, 3 phase	
Display	Fresnel diagram, oscilloscope, data	
Measurements	Mean value, RMS, peak, crest factor, THD and DF for voltage & current, active, reactive and apparent power, power factor (ϕ)	
Harmonics	Calculated up to rank 50, with display and record	
Logic Input		
Channels	16	
TTL Maximum Voltage	24 V	
Sampling Interval	1 µs (1 MSa/s) per channel	
Sensor Supply	9 to 15 VDC	
Alarms	A & B, 0 to 5 V output	
Pt100/Pt1000 (factory option for DAS30 & DAS50)		
Number of Channels	2	
Current	1 mA for Pt100, 100 µA for Pt1000	
Resolution	20 bits	
Temperature Range	-392 °F to 1562 °F (-200 °C to +850 °C)	
Measurements	2, 3, 4 wires	
Accuracy @ 20 °C	±0.2 °C	
Printer (factory option for all models)		
Paper Width	110 mm	
Paper Speed	1 mm/min. to 25 mm/s	
Paper Speed	10 mm/s max. (memory mode)	
Resolution	Y axis	8 dots/mm
	X axis	16 dots/mm
	XY mode	8 dots/mm (both axis)
General		
Internal Solid State Memory (file mode)	32 GB (DAS30, DAS50)	
	64 GB (DAS60)	
Operating Temperature	0 °C to 40 °C, 80% RH (no condensation)	
Storage Temperature	-68 °F to 140 °F (-20 °C to 60 °C)	
Display	10" TFT touchscreen LCD, backlit, 1024 x 600 dots	
Power Supply	15 V / 4 A max with main adapter (100 / 240 VAC)	
Interfaces	2 x USB host, LAN (10/100 base-T with RJ45 socket)	
Battery	Non removable, Lithium-ion	
Typical Battery Life	9.5 hours with standby mode, 4 hours without standby mode	
Safety	IEC 61010 - CAT III 600 V	
Weight	5.5 lbs (2.5 kg)	
Dimensions (W x H x D)	8.25" x 11.5" x 4.1" (210 x 295 x 105 mm)	
Warranty	Two Years	
Supplied Accessories	AC mains adapter 100 / 240 V, rugged carrying case, CAT III banana test leads <sup>(2)</sup> + alligator clips <sup>(2)</sup> , bare wire to banana adapters <sup>(2)</sup> , 25 pin male connector <sup>(1)</sup> and backshell, soft wipe, stylus, screwdriver, roll of thermal printer paper (-P models), calibration certificate & test report	

(1) User configurable with solder cups.

(2) One set per channel