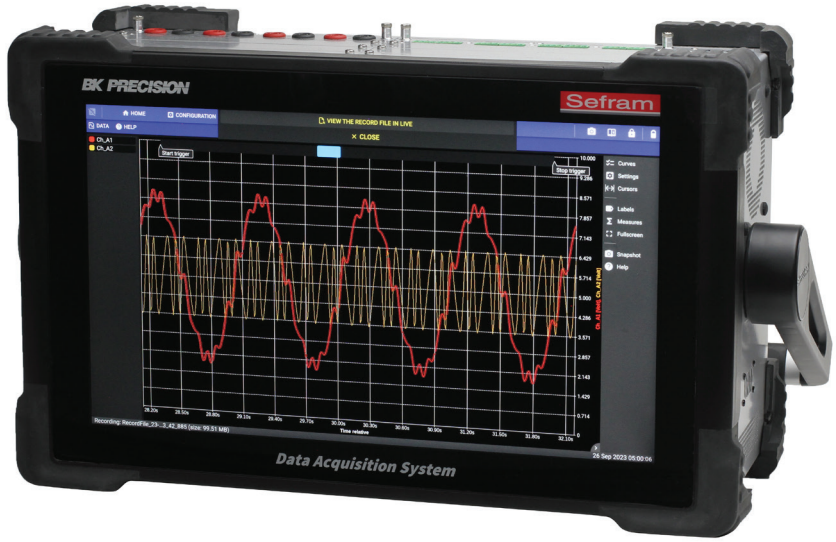
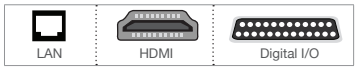
Data Sheet

Modular High-Speed Data Acquisition System
DAS1800





The DAS1800 is a modular high-speed data acquisition system designed for flexibility and scalability. Featuring a 10-slot chassis, this system is engineered for high-density applications, supporting up to 80 analog channels and 16 digital inputs. Its modular architecture provides plug-and-play capabilities for the measurement modules, allowing users to easily configure the instrument without the need for factory recalibration.

The system's versatility is driven by the suite of modules used for acquiring a wide range of signals. For high-speed applications, the D18-UNI4 and D18-HVM4 modules provide 4 channels, simultaneous sampling at rates up to 1 MSa/s per channel, and the ability to measure up to ± 1500 VDC or 1000 Vrms under CAT III 1500 V and CAT IV 1000 V safety ratings. For low voltage and temperature logging, multiplexed modules offer 8 channels per module, multiplexed sampling, and sampling rates up to 5 kSa/s.

Designed for both high-speed transients and long-term trend recording, the DAS1800 offers advanced data management through variable sampling rate and multi-file logging. Users can configure up to four different sampling rates and record data to as many as four files simultaneously. Configurable rates prevent over and under sampling signals, while multi-file eliminates dead times by providing individual trigger conditions for each file. Combined with an internal 1 TB solid-state drive, upgradable to 2 TB, the DAS1800 offers the longest recording time of any acquisition system on the market.

Further extending its versatility, the DAS1800 integrates advanced power analysis with Class S measurements and onboard scripting capabilities directly into the system. The power analysis supports DC, single-phase, and 3-phase systems operating in 50 Hz, 60 Hz, and 400 Hz. While custom script channels enable real-time scaling and linearization for non-linear sensors, supporting single and multichannel calculations.

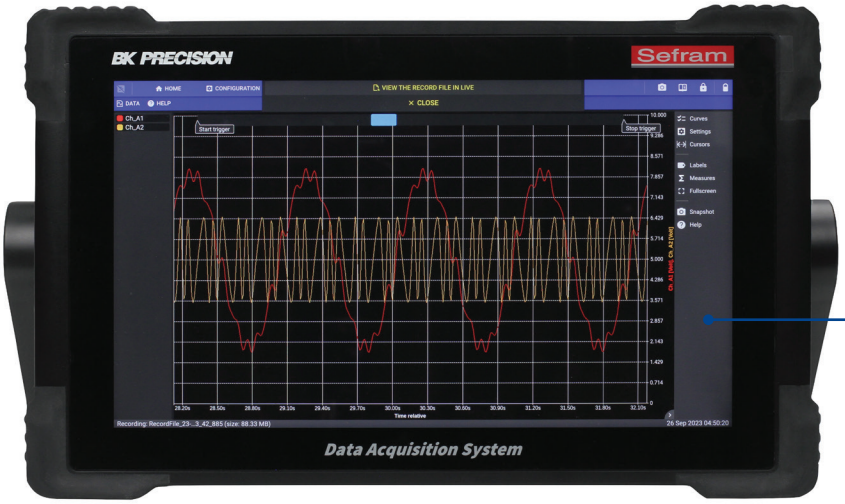
The DAS1800 offers factory configurations to suit different operating environments. Users can choose between battery enabled models and a 19-inch rackmount version. In addition, the system supports advanced time-stamping and multi-unit coordination through optional GPS, IRIG, and PTP (IEEE 1588) synchronization.

Features and benefits:

- 10 slots and 4 measurement modules available
  - Universal (4 ch)
  - Multiplexed (8 ch)
  - High Impedance (4 ch)
  - High Voltage (4 ch)
- Measure up to ± 1500 VDC
- Up to 80 analog inputs with D18-MUX8 multiplexed module
- Temperature measurements with thermocouples and RTDs
- Max sampling rate of 1 MSa/s/ch (up to 40 channels)
- Memory efficient acquisition with simultaneous sampling at different rates (up to 4) and independent file recording (up to 4)
- Synchronize timing with optional IRIG, GPS, and PTP (-SYNC models)
- Dedicated power analysis supports DC, single-phase, and 3-phase networks operating in 50 Hz, 60 Hz, or 400 Hz
- Dedicated sensor library to store and recall sensor information
- 15.6" Full HD touchscreen display
- Data visuals include real-time waveforms, numeric values, phasor diagrams, and histogram charts
- Internal 1 TB SSD standard with optional 2 TB upgrade
- Battery providing up to 3.5 hours of operation (-BAT models only)
- Available 19-inch rackmount version
- Interfaces include USB 3.0 (x2), USB 2.0 (x2), LAN 1 Gbps (x2), and HDMI (x1)
- 16 digital input channels
- Rugged carrying case included (portable units)
- cTUVus certifies CSA and UL safety standard

Technical data subject to change
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Front panel



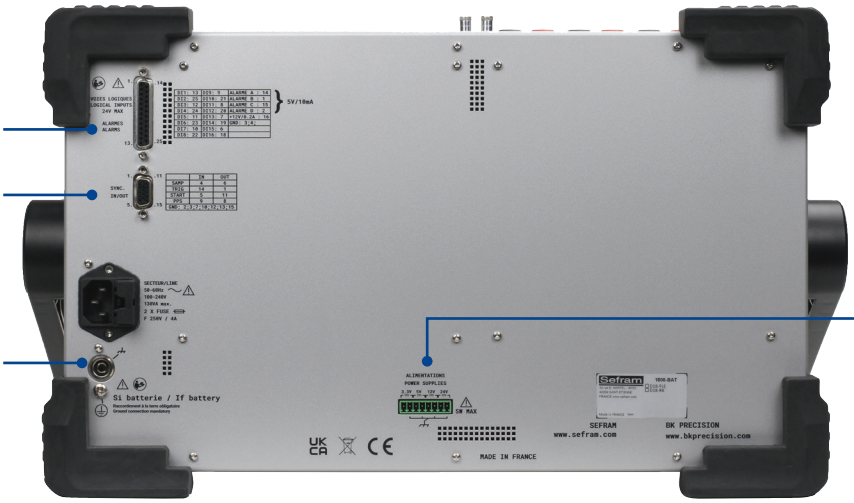
15.6" touchscreen
Full HD touchscreen display with multi-touch features such as one finger scrolling and pinch zoom

Rear panel

Digital inputs & outputs
Provides 16 digital input channels and 4 digital outputs

Synchronization input
SUB-D 15 HD pin terminal provides start/stop, trigger, and sampling output

Ground terminal



Power supply outputs
Dedicated outputs provide 3.3 V, 5 V, 12 V, and 24 V with maximum 500 mA

Top panel

Standard 10 module slots
With a plug & play design, users can easily swap between modules to meet new application requirements



LAN
Dual LAN ports for remote control and monitoring

HDMI output
Mirror the DAS1800 screen to an external monitor

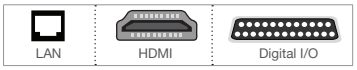
Power button

USB host ports

Image displays a DAS1800 configured with 3 universal modules and 3 multiplexed modules.

Rackmount High-Speed Data Acquisition System
DAS1800-R





The DAS1800-R is a dedicated rackmount version of the DAS1800 Modular High-Speed Data Acquisition System. It retains all the same hardware and software, but offers a rack mountable chassis with rear facing module slots and communication interfaces. It also provides a removable 1 TB solid-state drive, accessible from the front panel.

Equipped with a 15.6-inch full HD display, this system offers clear visuals for monitoring measurements as real-time waveforms, numeric values, phasor diagrams, and histogram charts. The DAS1800-R also supports remote control via web server and VNC, and offers free DASpro software for PC-based data viewing.

Removable Solid-State Drive

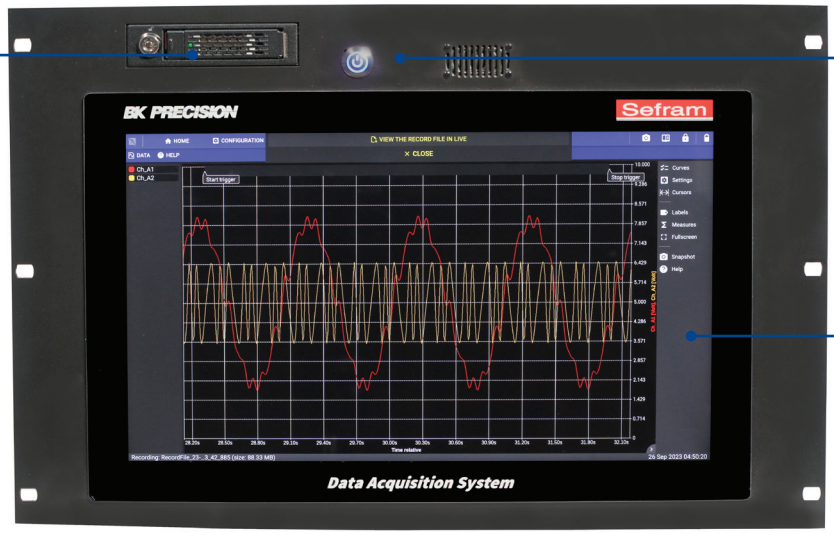
A key advantage of the DAS1800-R is its focus on data security and workflow efficiency. The front-access SSD allows for easy removal of sensitive information, satisfying data sanitization protocols in aerospace and defense.

This feature also facilitates swapping drives, enabling users to retrieve massive data sets for analysis while the instrument logs to a new drive— minimizing downtime in critical test environments.

Features and benefits:

- 10 slots and 4 measurement modules available
- Measure up to ± 1500 VDC
- Up to 80 analog inputs with D18-MUX8 multiplexed module
- Temperature measurements with thermocouples and RTDs
- Max sampling rate of 1 MSa/s/ch (up to 40 channels)
- Dedicated power analysis supports DC, single-phase, and 3-phase networks operating in 50 Hz, 60 Hz, or 400 Hz
- 15.6" Full HD touchscreen display
- Data visuals include real-time waveforms, numeric values, phasor diagrams, and histogram charts
- Removable 1 TB SSD (standard) secured with lock and key
- Interfaces include USB 3.0 (x2), USB 2.0 (x2), LAN 1 Gbps (x2), and HDMI (x1)

Front panel

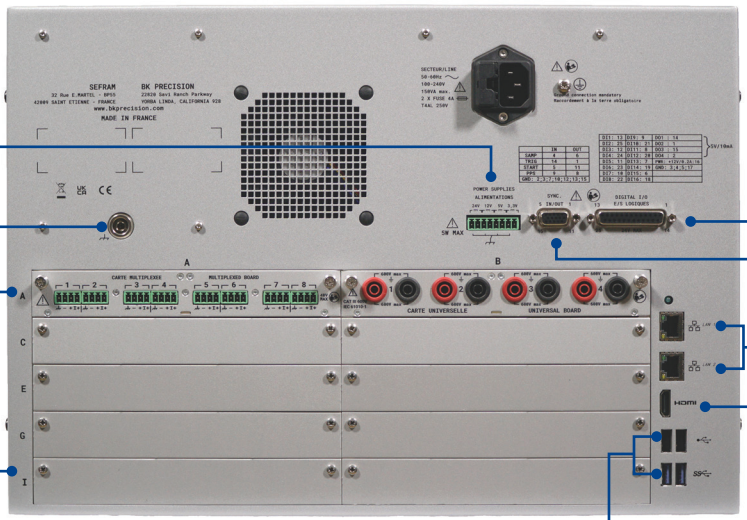


Removable SSD
Simplify removing sensitive data with convenient access to the SSD

Power button

15.6" touchscreen
Full HD touchscreen display with multi-touch features such as one finger scrolling and pinch zoom

Rear panel



Power supply outputs
Dedicated outputs provide 3.3 V, 5 V, 12 V, and 24 V with maximum 500 mA

Ground terminal

Standard 10 module slots
With a plug & play design, users can easily swap between modules to meet new application requirements

Digital inputs & outputs
Provides 16 digital input channels and 4 digital outputs

Synchronization input
SUB-D 15 HD pin terminal provides start/stop, trigger, and sampling output

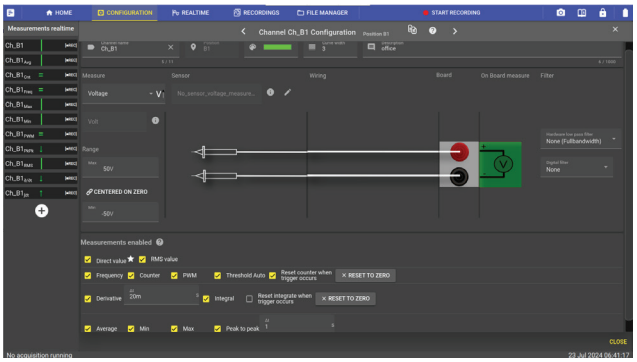
LAN
Dual LAN ports for remote control and monitoring

HDMI output
Mirror the DAS1800 screen to an external monitor

USB host ports

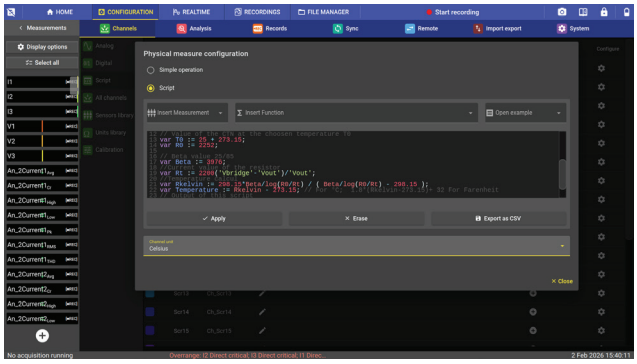
Operation highlights

Channel Configuration



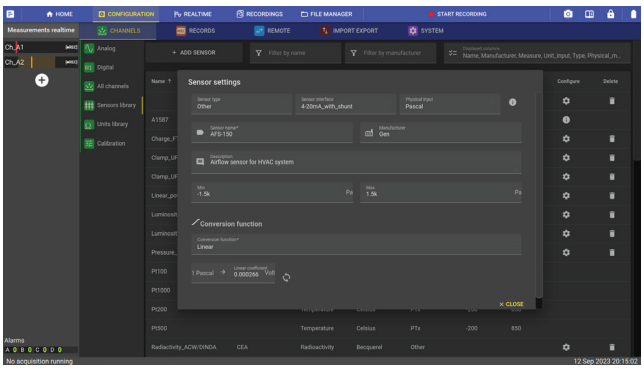
From a single input channel, the DAS1800 can be configured to perform real-time calculations such as RMS, frequency, PWM, and time-domain analysis. Sensor outputs can be converted in real time to the original measure and using the appropriate sensor parameters and conversion functions, while built-in analog and digital filters are available to condition the signal.

Programmable Scripting Channels



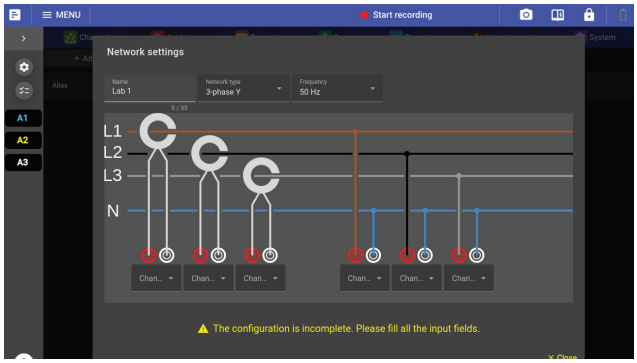
The DAS1800 provides scripting channel capabilities to reduce reliance on complex calibration curves and time-consuming post-processing. Script channels enable real-time scaling and linearization of non-linear sensors, supporting the use of custom voltage divider networks and multichannel calculations.

Sensor Library



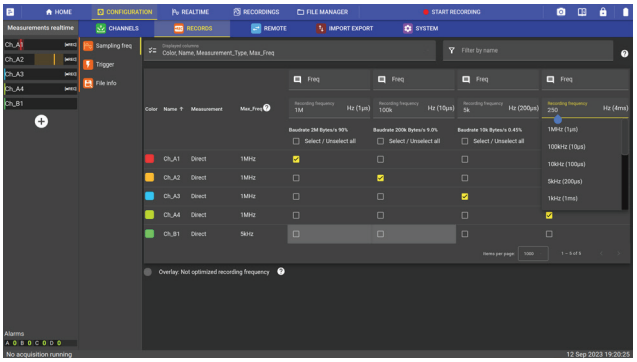
The DAS1800 provides a library of common sensor configurations to facilitate channel setup. Users can also add to the library by creating a new sensor with user-defined parameters including, name, units, and conversion function.

Power Analysis



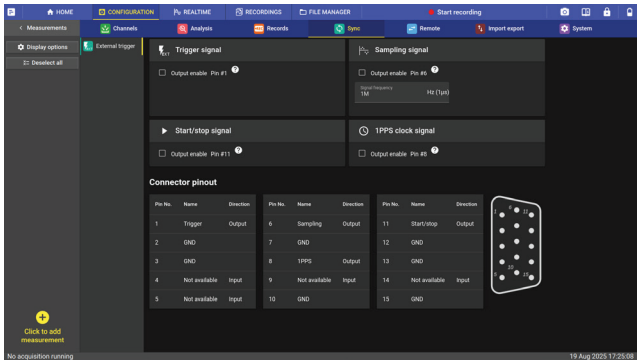
The power analysis function supports Class S power measurements for DC, single-phase, and 3-phase systems operating at 50 Hz, 60 Hz, and 400 Hz. Users can record power, energy, voltage, current, power quality, and harmonic measurements up to the 50th order, with real-time visualization using phasor diagrams and harmonic histograms.

Advanced Sampling and Recording



Sample channels at differing sample speeds (up to 4) to avoid over sampling trends or under sampling transients. Record data into separate files (up to 4) to record long term trends while triggering separate file recordings for high speed intermittent events.

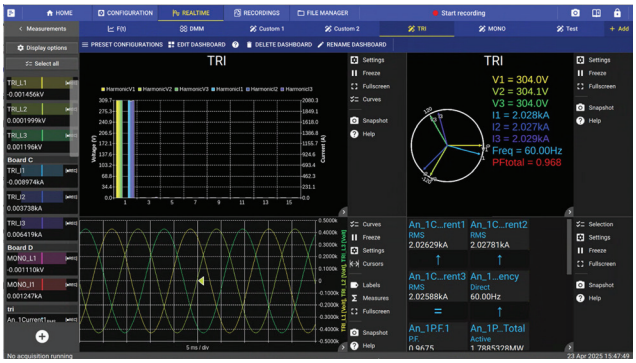
Synchronization and Triggering



The DAS1800 combines advanced synchronization and triggering features for precise measurements. Use a variety of timing sources, including optional PTP, IRIG, and GPS, to ensure your data is perfectly synchronized across multiple systems. Trigger from external signals via the 15-pin SUB-D connector or internal software settings to start and stop manually, at a specified time, or based on channel combinations.

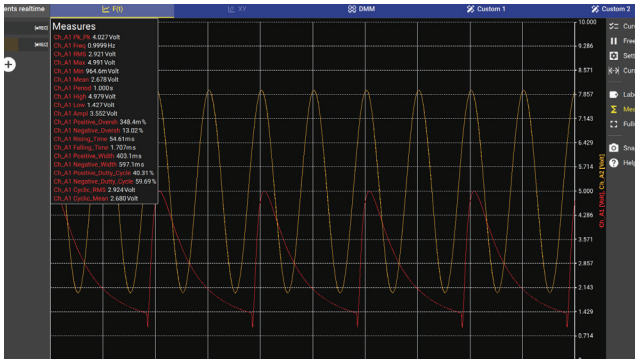
The tools you need

Custom Dashboards



Display and monitor data through highly customizable dashboards. Generate up to 25 widgets to display images and channel data in any combination of real-time waveforms, numeric meters, Phasor diagrams, and harmonic histograms. Create and save up to 10 custom dashboards to easily swap between.

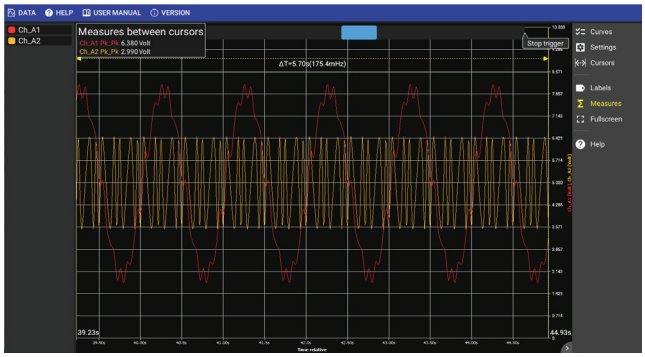
Built-in MDF4 File Viewer



Analyze recordings instantly with the built-in MDF4 viewer. Quickly navigate through data with intuitive touch gestures like one-finger scrolling and pinch-to-zoom. When recording in multiple files, markers are automatically placed at triggered events and link to the corresponding data file.

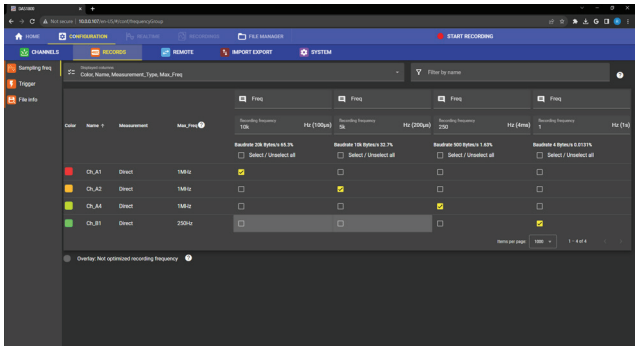
Remote connectivity and PC software

DASpro (PC software)



DASpro is a license free software that can be downloaded from bkprecision.com. Through this software, users can open and view the universal ASAM MDF4 file recordings saved by the DAS1800. Viewing data and analysis features are similar to the instrument, making it easy and intuitive to operate.

Web Server



The DAS1800 provides an internal web server for remote access through any device on the same network. Configure instrument channels and trigger parameters, initialize acquisition, and easily save and transfer files to a local storage system.

Virtual Network Computing (VNC) capability

The recorder includes a built-in VNC server that enables remote operation from a computer over a network connection. When accessed using a standard VNC client, the instrument's front panel is mirrored as a full graphical desktop on the computer, allowing users to monitor measurements and control all functions using a mouse and keyboard as if operating the unit locally.

File Transfer Protocol (FTP) and Network-Attached Storage (NAS)

Integrated FTP and NAS support allows measurement data to be automatically transferred from the recorder to a remote server or network-attached storage. This enables easy file access from multiple computers and simplified data backup without manual file handling.

Measurement Modules

Configure the DAS1800 systems to fit your needs with any combination of modules up to 10.



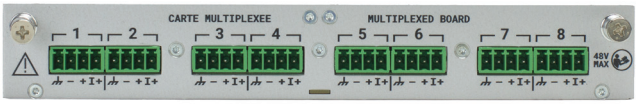
Universal Module



High Voltage Module



High Impedance Module



Multiplexed Module

Measurement Modules

	Universal	High Impedance	High Voltage	Multiplexed
Channels	4	4	4	8
Maximum Voltage	± 600 VDC	± 600 VDC	± 1500 VDC	± 48 VDC
RMS Voltage	424 VRMS	424 VRMS	1000 VRMS	-
Resolution	16 bit	16 bit	16 bit	18 bit
Sampling Rate	1 MSa/s/ch	1 MSa/s/ch	1 MSa/s/ch	5 kSa/s
Input Impedance	1 MΩ	10 MΩ	10 MΩ	2 MΩ
Input Type	Single ended	Single ended	Differential	Differential
Isolation	√	√	√	-
Voltage	√	√	√	√
Current	√	√	√	√
Thermocouples	√	√	-	√
RTDs	-	-	-	√
Frequency	√	√	√	-
Counter	√	√	√	√
PWM	√	√	√	-

Included accessories



Bare wire to banana adapter[1]
(Set of 4 pairs)



4 pin screw terminal block[2]
(Set of 8),



Rugged case[3]



SUB-D 25 pin connector for
digital inputs and alarms



SUB-D 15 HD pin connector for
timing and synchronization I/O



8 pin screw terminal block
for power rail supply

Optional accessories



D18-MZ250



D18-UZ001

Current shunts available for banana and 4-pin inputs



D18-UZ50 accessory

(1) A set of bare wire to banana adapters is provided with every universal and high impedance module purchased.
(2) A set of 4 pin screw terminal blocks is provided with every multiplexed module purchased.
(3) Rugged case is not included with the DAS1800-R

Specifications, base unit

Note: All specifications apply to the unit after a temperature stabilization time of 60 minutes over an ambient temperature range of 23 °C ± 5 °C.

Data Acquisition System

Recording (files written to SSD)		
Max Sampling Rate[1]	1 MSa/s up to 8 channels	
Recording Groups	4	
Number of Files	4 files with different Start and Stop conditions	
Write Speed	85 MB/s (5 GB/min)	
File Format	ASAM MDF4 (.mf4)	
File Size Limit	90% of disk capacity	
At End of Acquisition	Notify, rearm trigger	
Markers	On user action, On event	
Real Time Measure		
Display Mode	F(t)	Roll mode: 100 ms/div to 10 min/div Scope mode: 10 µs/div to 50 ms/div
	DMM	Acquisition time: 200ms (10 NPLC[2] at 50Hz), 2s (100 NPLC[2] at 50Hz)
		Display mode: Bargraph, reduce, MIN/MAX
	Record live view	Typical Refresh period 2s, Zoom Mode
	Phasor Diagram	Data sampled at 10 kHz Vector amplitude based on RMS value
	Histogram	50 Hz to 60 Hz: 1 to 50 harmonics 400 Hz: 1 to 10 harmonics
	Custom	Customize up to 10 dashboards with unique widget arrangements Widgets: F(t), Record Live F(t), DMM, Phasor diagrams, Histogram, Images
File Viewer		
Open File Time (typical)	10 sec per 100 GB of file[3]	
Subplot	16	
Cursors	Horizontal, vertical	
Measurements	On the data displayed or between cursors	
	Min, Max, Pk to Pk, Frequency, RMS, Rising time	
Trigger System		
Compute Period	1 µs	
Source	Analog and logic channel, external source, manual, date/time, delay (on start), duration (on stop), AND/OR combination of channels (128 max)	
On Analog Channel	Edge (rising, falling, both), Threshold (above, below), windows (in, out)	
Pre-trigger	128 M samples	
Post-trigger	1000 s maximum	

Power Supply Outputs

Maximum Power Consumption	5 W
Output Characteristics	+ 3.3 V ± 5%, 500 mA; + 5 V ± 5%, 500 mA; + 12 V ± 5%, 400 mA; + 24 V ± 5 %, 200 mA

Digital I/O

Input	
Number of Channels	16
Max Voltage	24 V
Threshold	1.2 V to 2.8 V
Sampling Interval	1 µs (1 MSa/s) each channel
Output	
Number of Channels	4
Output Characteristics	TTL 5 V, 10 mA
Trigger Source	Analog/Digital channels, acquisition start/stop, disk full
Power Supply[4]	+ 12 V ± 5 %, 200 mA

Synchronization

Sync and Trigger I/O (SUB-D 15 HD Connector)		
Input	Signal level	TTL 3.3 V
	External trigger	Pull-up resistor: 10 kΩ, Rising edge sensitive Minimum pulse width: 100 µs
	External start/stop	Pull-up resistor: 10 kΩ, Rising edge sensitive for start Falling edge sensitive for stop Minimum pulse width: 500 ms
Output	Signal level	TTL 3.3 V
	Trigger	1 ms positive pulse at trig event
	Start/stop	Set when record is launched
	Sampling	Clock with 50%duty cycle at the frequency of the fastest record group
	PPS	100ms pulse each second base on the main clock of the unit
IRIG and GPS (option)		
IRIG/GPS Input		IRIG format B122/B126 Time error between reference clock and acquisition clock, < ± 10 µs
PTP (option)		
Ethernet PTPV2 IEEE1588		Time error between reference clock and acquisition clock, < ± 10 µs

Software Feature

Remote Access	VNC for remote monitoring and control	
	Web server	
	Event notify	Email
	File management	FTP NAS (Network storage for file backup)
	Bench automation	SCPI command port (23 or 5025)
Storage Management	Cleaning policy option for automatically removing old files after exceeding a specific number of files or a date	
Sensor Library	Predefined sensors and user created	
Date and Time	Manual, NTP	
Software Update	Through web or USB	

(1) For D18- UNI4, -HIZ4, and -HVM4 module
(2) NPLC: Number of power line cycles
(3) Time with only the 1st frequency group used
(4) Used to power the isolated digital input board

Specifications, base unit

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.

Power Analysis

General					
Network Type	DC; AC: Single-phase (1U/1I), 3-phase delta (3U/3I), 3-phase Wye in 3-wire (3U/3I) and 4-wire (4U/4I)				
Network Frequency	DC, 50Hz, 60Hz, 400Hz				
Sampling Rate	10 kHz				
Number of Networks	5				
Compatible Modules	D18-UNIV4 & D18-HVM4 & D18-HIZ4				
Record File	MDF4				
Calculation Interval					
Network Frequency	**1st Interval**	**2nd Interval**	**3rd Interval**	**4th Interval**	**5th Interval (custom)**
DC	200 ms	3 s	10 min	2 h	1 ms to 100 ms
50 Hz	10 periods	150 periods	10 min	2 h	1-2-5 period
60 Hz	12 periods	180 periods	10 min	2 h	1-2-5 period
400 Hz	80 periods	1200 periods	10 min	2 h	1-2-5-10-20-40 period

DC Measurements		
Voltage	Mean, Max, Min, peak-to-peak	0.1% Udin (1)
Current	Mean, Max, Min, peak-to-peak	0.1% Idin (2)
Power	Active	0.1% Pdin (3)
Energy	Active	-

AC Measurements		
Voltage	Mean, True RMS, Max, Min, peak-to-peak, Crest factor	0.1% Udin (1)
	Phase to ref channel	± 0.5°
Current	Mean, True RMS, Max, Min, peak-to-peak, Crest factor	0.1% Idin (2)
	Phase	± 0.5°
	K factor	1%
Power	Active, Reactive, Apparent	0.1% Pdin (3)
Power Quality	cos (Φ)	± 0.01
	tan (Φ)	-
	Φ	± 0.5°
	PF	0.002 in 50/60 Hz 0.004 in 400 Hz
	THD	1.0%
Energy	Active, Reactive	-
Frequency	±50 mHz	
Voltage Harmonics	50 Hz, 60 Hz: 1 to 50 harmonics	0.1% Udin (1)
	400 Hz: 1 to 10 harmonics	
Current Harmonics	50 Hz, 60 Hz: 1 to 50 harmonics	0.1% Idin (2)
	400 Hz: 1 to 10 harmonics	

Frequency	
50 Hz	18 Hz to 95 Hz
60 Hz	22 Hz to 100 Hz
400 Hz	150 Hz to 750 Hz

General

Models	DAS1800	DAS1800-R
Internal Memory	Non removable SSD 3D TLC NAND - 1TB	Removable 2.5" SATA SSD Drive - 1TB
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)	
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)	
Display	15.6" TFT LCD Full HD 1920x1080	
Power Supply	110 VAC to 240 VAC ± 10%, 50 to 60 Hz (150 VA max)	
Interfaces	USB 3.0 (x2), USB 2.0 (x2) , LAN 1 Gbps (x2), HDMI (x1)	
Battery (optional)	Non removable, Lithium-ion, 100 Wh	-
Battery Life	3 ½ hrs - One D18-UNI4 module installed 1 ½ hrs - Ten D18-UNI4 modules installed	-
Safety	Low Voltage Directive (LVD) 2014/35/EU EN 61010-2010+A1:2019, EN 61010-2-030 (2021+A11/2021)	
	UL/CSA 61010-1, UL/CSA 61010-2-030 UL 61010-1:2012 R6.23, CAN/CSA 61010-1-12 + (R2022 R6.23 UL 61010-2-030:2018, CAN/CSA-C22.2 No. 61010-2-030:18	-
Electromagnetic Compatibility	EMC directive 2014/53/EU, EN IEC 61326-2-1 (2021) EN IEC 61326-1 (2021), EN 61000-3-2 (2019+A1/2021) EN 61000-3-3 (2013+A1/2019)	
Weight	26.4 lbs (12 kg) Ten Module installed + Battery option 15.5 lbs (7 kg) - One Module installed + Battery option	33.1 lbs (15 kg) Ten Module installed 22 lbs (10 kg) - One Module installed
Dimensions (WxHxD)	19.1" x 11" x 7.9" (485 x 280 x 200 mm)	19.3" x 12.3" (7U) x 10.2" (490 x 311 (7U) x 260 mm)
Warranty	Base unit and modules: 3 years	
	Battery: 1 year	-
Supplied Accessories	Power cord, SUB-D 25 pin male connector and back shell, SUB-D 15 HD pin male connector and back shell, 8 pin connector, rugged carrying case[4]	
Languages	English, French, Portuguese, German, Spanish, Italian, Traditional Chinese, and Simplified Chinese	

(1): Udin— Nominal network voltage
(2): Idin— Nominal network current
(3): Pdin— Nominal network power (Udin*Idin)
(4): Rugged carrying case is not included with the DAS1800-R

Specifications, measurement Modules

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 Module (D18-UNI4)		
Number of Channels	4	
Input Type	Isolated single ended input - 4mm Banana Plug	
Voltage		
Max. Input Voltage	± 600 VDC or 424 Vrms	
Common-mode Voltage	600 V between track and ground	
Range (19 ranges)	± 500 µV / 1 mV / 2.5 mV / 5 mV / 10 mV / 25 mV / 50 mV / 100 mV / 250 mV / 500 mV / 1 V / 2.5 V / 5 V / 10 V / 25 V / 50 V / 100 V / 250 V / 600 V	
DC Accuracy[1]	≤ ± 25 mV	± 0.1% of full range + 10 µV[2]
	± 25 mV to ± 500 mV	± 0.1% of full range + 10 µV
	≥ ± 1 V	± 0.06% of full range
Offset Drift	± 50 ppm/°C ± 1 µV/°C	
Input Impedance	1 MΩ for ranges ≥ ± 1 V, 25 MΩ for ranges ≤ ± 0.5 V	
Input Capacitance	150 pF	
Intrinsic Noise[3] (standard deviation in % of the span)	≤ ± 1 mV	< 0.2%
	± 2.5 mV to ± 10 mV	< 0.1%
	± 25 mV to ± 500 mV	< 0.05%
	≥ ± 1 V	< 0.02%
CMRR	≤ ± 500 mV	> 85 dB
	≥ ± 1 V	> 70 dB
Crosstalk	> -90 dB	
Isolation	CH to CH and CH to GND, > 100 MΩ at 650 VDC	
Safety	CAT III 600 V	
Bandwidth and Filters		
Bandwidth (-3 dB)	≤ ± 2.5 mV	1 kHz
	± 5 mV to ± 25 mV	10 kHz
	± 50 mV to ± 500 mV	60 kHz
	≥ ± 1 V	100 kHz
Analog Filter	2nd Order(-40 dB/dec)	100 Hz, 1 kHz, 10 kHz
Digital Filter	IIR 4th order (-80 dB/dec)	0.01 Hz to 10 kHz
	Type	Low pass, high pass, band pass, band stop
	Filter	Butterworth, Bessel, Chebyshev, Inverse Chebyshev, elliptic, Papoulis, Gaussian
Temperature (Thermocouple)		
Compute Frequency	4 ms	
Cold Junction	Uncompensated, internal, external (other channel)	
	Accuracy[4]: ± 1.25°C	
Type	J	-210 °C to 1200 °C (-346 °F to 2192 °F)
	K	-250 °C to 1370 °C (-418 °F to 2498 °F)
	T	-200 °C to 400 °C (-328 °F to 752 °F)
	S	-50 °C to 1760 °C (-58 °F to 3200 °F)
	B	200 °C to 1820 °C (392 °F to 3308 °F)
	E	-250 °C to 1000 °C (-418 °F to 1832 °F)
	N	-250 °C to 1300 °C (-418 °F to 2372 °F)
	R	-50°C to 1768°C (-58 °F to 3214 °F)

Data Acquisition		
ADC	16 bit – SAR	
Sampling Interval	1 µs (1 MSa/s) each channel	
Time and Counting		
Threshold	Set by user, auto	
Duty Cycle	10% minimum – (minimum pulse width, 20 µs)	
Counter	48 bits	
Frequency	0.1 Hz to 100 kHz	
	Accuracy: 0.01% reading, 0.1 Hz to 10 Hz 0.05% reading, 10 Hz to 100 kHz	
PWM	Absolute error: 0.1% from 0.1 Hz to 1 kHz 0.5% from 1 kHz to 5 kHz	
True RMS		
Compute Period	Compute on the 1 Ms/s data flow Each period until 100 Hz 10 ms between 100 Hz and 10 kHz	
Accuracy (Sine wave ≥ 1 V)	10 Hz to 2 kHz	± 0.1% of full range
	2 kHz to 10 kHz	± 0.3% of full range
Other		
Current	Through shunt or clamp	
Sensor	0 to 10 V, 4 to 20 mA (with external shunt), duty cycle or frequency sensor, other user defined settings	
Calculations	Min - max - avg - pk to pk on Δt, integral, and derivative	

High Impedance Module[5] (D18-HIZ4)		
Voltage		
Input Impedance	10 MΩ for ranges ≥ ± 1 V, 25 MΩ for ranges ≤ ± 0.5 mV	
Intrinsic Noise[3] (standard deviation in % of the span)	≤ ± 1 mV	< 0.2%
	± 2.5 mV to ± 10 mV	< 0.1%
	± 25 mV to ± 500 mV	< 0.05%
	≥ ± 1 V	< 0.05%
Bandwidth and Filters		
Bandwidth	≤ ± 2.5 mV	1 kHz
	± 5 mV to ± 25 mV	10 kHz
	± 50 mV to ± 500 mV	60 kHz
	≥ ± 1 V to ± 10 V	20 kHz
	≥ ± 25 V	80 kHz

(1) Direct measure taken on DMM at 10 (50 Hz) / 12 (60 Hz) NLPC (200 ms) and full bandwidth
(2) Only when offset adjustment has been performed after installing a new module. Otherwise accuracy is ± 0.1% of full range (max. range - min. range) + 20 µV
(3) Measure ± short circuit termination to 50 Ω on chassis during 1 sec at the fastest acquisition speed and full bandwidth
(4) Only when cold junction adjustment has been performed after installing a new module and after 30 minutes of connection between TLK2B accessory, thermocouple and module terminal. Otherwise accuracy is ±3 °C
(5) For all other specs, refer to the universal module specifications

Specifications, measurement Modules

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.

Multiplexed Module (D18-MUX8)		
Number of Channels	8	
Input Type	Non-isolated differential input – 4 pin terminal block, Part: Phoenix Contact MC 1.5/ 4-ST-3.5	
Voltage		
Maximum Input Voltage	± 48 VDC between CH to GND and between 2 poles on a channel	
Range (16 ranges)	± 500 µV / 1 mV / 2.5 mV / 5 mV / 10 mV / 25 mV / 50 mV / 100 mV / 250 mV / 500 mV / 1 V / 2.5 V / 5 V / 10 V / 25 V / 48 V	
Admissible Common Mode	≤ ± 1 V	± 3 V
	≥ ± 2.5 V	± 48 V
DC Accuracy[1]	≤ ± 10 mV	± 0.1% of full range + 5µV
	≥ ± 25 mV	± 0.04% of full range
Offset Drift	± 50 ppm/°C ± 0.5 µV/°C	
Input Impedance	2 MΩ for ranges ≥ ± 1 V, 25 MΩ for ranges ≤ ± 0.5 V	
Input Capacitance	150 pF	
Intrinsic Noise[2] (standard deviation in% of the span)	≤ ± 1 mV	< 0.15%
	± 2.5 mV to ± 10 mV	< 0.05%
	≥ ± 25 mV	< 0.01%
CMRR	> 70 dB	
Crosstalk	> -90 dB	
Bandwidth and Filters		
Bandwidth (-3 dB)	1 kHz	
Digital Filter	IIR 4th order (-80 dB/dec)	0.01 Hz to 500 Hz
	Type	Low pass, high pass, band pass, band stop
	Filter	Butterworth, Bessel, Chebyshev, Inverse Chebyshev, elliptic, Papoulis, Gaussian
Data Acquisition		
ADC	18 bit – SAR	
Sampling Interval	200 µs (5 kSa/s) each channel	

Temperature (Thermocouple)		
Compute Frequency	4 ms	
Cold Junction	Uncompensated, internal, external (other channel)	
	Accuracy[3]: ± 1.25 °C	
Type	J	-210 °C to 1200 °C (-346 °F to 2192 °F)
	K	-250 °C to 1370 °C (-418 °F to 2498 °F)
	T	-200 °C to 400 °C (-328 °F to 752 °F)
	S	-50 °C to 1760 °C (-58 °F to 3200 °F)
	B	200 °C to 1820 °C (392 °F to 3308 °F)
	E	-250 °C to 1000 °C (-418 °F to 1832 °F)
	N	-250 °C to 1300 °C (-418 °F to 2372 °F)
	R	-50°C to 1768°C (-58 °F to 3214 °F)

Temperature (RTD)		
Compute Frequency	4 ms	
Wiring	2 wires	Max. corrective resistance 50 Ω
	3 wires	Max. 3-wire resistance, 50 Ω
	4 wires	
Type	Pt50(α = 3851), Pt100(α = 3851),Pt200(α = 3851), Pt500(α = 3851), Pt1000(α = 3851): from IEC 60751/1995 Pt100(α = 3926): from ITS-90 Ni100(α = 618), Ni120(α = 672), Ni1000(α = 618): from Minco NA/NB	
Excitation Current	Pt50, Pt100, Ni100, Ni120, Cu10, Cu50	1.0 mA
	Pt200	0.5 mA
	Pt500	0.2 mA
	Pt1000, Ni1000	0.1 mA
Temperature Range	Pt50/100/200/500/1000	-200 °C to 850 °C (-328 °F to 1562 °F)
	Ni100/1000	-60 °C to 180 °C (-76 °F to 356 °F)
	Ni120	-40 °C to 205 °C (-40 °F to 401 °F)
	Cu10/50	-50 °C to 150 °C (-58 °F to 302 °F)
Measurement Range	Pt50/100/200/500/1000 (7 ranges)	± 10 °C, ± 25 °C, ± 65 °C, ± 130 °C, ± 200 °C, [-220 °C, 380 °C], [-220 °C, 850 °C]
	Ni100 (5 ranges)	± 9 °C, ± 15 °C, ± 40 °C, [-60 °C, 80 °C], [-60 °C, 180 °C]
	Ni120 (3 ranges)	± 40 °C, [-40 °C, 100 °C], [-40 °C, 205 °C]
	Cu50 (2 ranges)	[0 °C, 150 °C], [-50 °C, 150 °C]
	Cu10 (2 ranges)	[-50 °C, 25 °C], [-50 °C, 150 °C]
Measurement Accuracy (4 Wire)	Pt50/Pt100/200/500/1000	± 0.04% of the range ± 0.2 °C
	Ni100/120	± 0.04% of the range ± 0.1 °C
	Cu10/50	± 0.1% of the range ± 0.3 °C
Accuracy (3 Wire)	± ([4 Wire accuracy] + 0.1°C)	

Resistance		
Compute Frequency	4 ms	
Wiring	2 wires	Max. corrective resistance 50 Ω
	3 wires	Max. 3-wire resistance, 50 Ω
	4 wires	
Measurement Range (4 Ranges)	300 Ω (1 mA), 1500 Ω (0.5 mA), 5k Ω (0.2 mA), 10 kΩ (0.1 mA)	
Accuracy	± 0.1% of the range ± 0.1 Ω	
Time and Counting		
Threshold	Set by user, auto	
Minimum Pulse Width	1 ms	
Counter	32 bits	
Other		
Current	Through shunt or clamp	
Sensor	0 to 10 V, 4 to 20 mA (with external shunt), other user defined settings	

(1) Direct measure taken on DMM at 10 (50 Hz) / 12 (60 Hz) NLPC (200 ms) and full bandwidth
(2) Measure ± short circuit termination to 50 Ω on chassis during 1 sec at the fastest acquisition speed and full bandwidth
(3) Only when cold junction adjustment has been performed after installing a new module and after 30 minutes of connection between GCM5P accessory, thermocouple and module terminal. Otherwise accuracy is ±3 °C

Specifications, measurement Modules

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.

High Voltage Module (D18-HVM4)		
Number of Channels	4	
Input Type	Isolated differential input - 4mm Banana Plug	
Voltage		
Max. Input Voltage	± 1500 VDC or 1000 Vrms	
Overvoltage Protection	± 2000 VDC or 1414 Vrms (3)	
Range (9 ranges)	± 5 V / 10 V / 25 V ± 50 V / 100 V / 250 V ± 500 V / 1000 V / 2000 V	
DC Accuracy (1)	± 0.06% of full range	
Offset Drift	± 50 ppm/°C ± 1 µV/°C	
Input Impedance (DC)	10 MΩ	
Input Capacitance	10 pF	
Intrinsic Noise (2) (standard deviation in % of the span)	< 0.02%	
CMRR (Common mode rejection range)	> -120 dB	
Crosstalk	> -120 dB	
Channel Isolation	CH to CH and CH to GND, > 100 MΩ at 2000 VDC	
Safety	CAT III 1500 VDC, CAT IV 1000 V	
Bandwidth and Filters		
Bandwidth (-3 dB)	Ranges ≤ ± 2.5 V	30 kHz
	Ranges ≥ ± 50 V	100 kHz
Analog Filter	3rd order(-60 dB/dec)	100 Hz, 1 kHz, 10 kHz
Digital Filter	IIR 4th order (-80 dB/dec)	0.01 Hz to 10 kHz
	Type	Low pass, high pass, band pass, band stop
	Prototypes	Butterworth, Bessel, Chebyshev, Inverse Chebyshev, elliptic, Papoulis, Gaussian

Data Acquisition		
ADC	16 bit - SAR	
Sampling Interval	1 µs (1 MSa/s) each channel	
Time and Counting		
Threshold	Set by user, auto	
Duty Cycle	10% minimum - minimum pulse width 20 µs	
Counter	48 bits	
Frequency	0.1 Hz to 50 kHz	
	Accuracy: 0.01% from 0.1 Hz to 10 Hz 0.05% of the value from 10 Hz to 50 kHz	
PWM	Absolute error: 0.1% - 0.1 Hz to 1 kHz 0.5% ≥ 1 kHz to 5 kHz	
True RMS		
Compute Period	Compute on the 1 Ms/s data flow Each period until 100 Hz 10 ms between 100 Hz and 10 kHz	
Accuracy (on a Sine wave for range ≥ 10 V)	10 Hz to 2 kHz	± 0.1% of full range
	2 kHz to 10 kHz	± 0.3% of full range
Other		
Current	Through shunt or clamp	
Sensor	0 to 10 V, 4 to 20 mA (with external shunt), duty cycle or frequency sensor, and other user defined settings	
Calculations	Derivative, integral, min - max - avg - pk to pk on Δt	

(1) Direct measure,full bandwidth, value taken on DMM display at 10 (50 Hz) / 12 (60 Hz) NLPC (200 ms)
(2) Measure ± short circuit terminate to 50 Ω on chassis during 1 sec at the fastest acquisition speed and full bandwidth
(3) CH to Earth GND withstand voltage 6.6 kV AC for 5 seconds

Ordering Information

Step 1:Select base unit model and factory options

Models	Description
DAS1800 (base unit)	The DAS1800 base unit includes the following standard; 10 module slots, 1 TB SSD, 16 digital channels, SUB-D 15 HD pin connector for external triggering and synchronization, 5 W power rail, 15.6" TFT LCD Full HD (1920 x 1080), USB 3.0 (x2), USB 2.0 (x2), 1 Gbps LAN (x2), and HDMI (x1) interfaces
DAS1800-BAT	Includes the DAS1800 base unit with a non-removable Lithium-ion battery providing up to 3 ½ hours of use
DAS1800-SYNC	Includes the DAS1800 base unit with PTP enabled and additional hardware supporting IRIG and GPS synchronization
DAS1800-BAT-SYNC	Includes the DAS1800 base unit with battery equipped, PTP enabled, and hardware supporting IRIG and GPS synchronization
DAS1800-R	19" rackmount version of the DAS1800 with removable 1 TB SSD
Options	**Description**
D18-FLE(1)	Fanless version of the DAS1800 base unit
D18-PTP	Software license to enable PTPv2 (IEEE1588) time synchronization through ethernet
D18-2TB	Upgrades memory capacity to a 2 TB SSD

(1): Fanless option is not available with -BAT models

Step 2: Determine the number and type of measurement modules for your application. Select up to 10 modules.

Module	Channels	Measurements
Universal (D18-UNI4)	4	Voltage, current (shunt), temperature (thermocouple), frequency, PWM, True RMS
High Impedance (D18-HIZ4)	4	Voltage, current (shunt), temperature thermocouple), frequency, PWM, True RMS
Multiplexed (D18-MUX8)	8	Voltage, current (shunt), resistance, temperature (RTD), temperature (thermocouple)
High Voltage (D18-HVM4)	4	Voltage (± 1500 VDC), current (shunt), frequency, PWM, True RMS

Note: Refer to the measurement modules and specifications sections for additional information.

Step 3: Select your accessories

Accessory	Part Number
Isolated digital channel board	917008000
Digital channels patch cord	902407000
Replacement 4 pin terminal block, pack of 8	GCM5P
Replacement quick-connect banana plug, 4 pairs	TLQ2B
4-pin 250 Ω shunt, 0.1%, 0.03 A max	D18-MZ250
Banana 50 Ω shunt, 0.1%, 0.05 A max	D18-UZ50
Banana 0.01 Ω shunt, 1%, 5 A max	D18-UZ001

Step 4: Contact us

For inquiries and assistance configuring your DAS1800, please fill out the DAS1800 Order Request Form.

Or, visit our Where to Buy page at bkprecision.com to view a list of authorized vendors.

About B&K Precision

For more than 75 years, B&K Precision has provided reliable and value-priced test and measurement instruments worldwide.

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B&K Precision group member Independent service center Service center location

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B&K Precision Corporation is an ISO9001 registered company employing traceable quality management practices for all processes including product development, service, and calibration.

ISO9001:2015 Certification body NSF-ISR
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About Sefram

Established in 1947, Sefram has been designing and manufacturing data recorders for more than 70 years. Sefram joined the test and measurement division of Schlumberger in 1978, and has been a subsidiary of B&K Precision since 2004. Certified ISO 9001, Sefram's strategy is to provide innovative and high-quality test and measurement products for electronic and electrical applications.

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