DAS-200A

Data Analysis Software

Reproduces and analyzes the acquired data.

- Allow a data file to be processed for waveform display, FFT analysis, statistic operations, header information display, tabulation of numeric data and setting display conditions.
- Extracts and converts the data files into CSV files.
- Statistic processing
- Arithmetic operations
- FFT analysis
- Histogram analysis
- Filtering
- Differentiation & integration
- Saving & reading graph display and analysis conditional files
- Playback function of the acquired video data.
- Printer output
- Displays max. 16 data files on graphs.

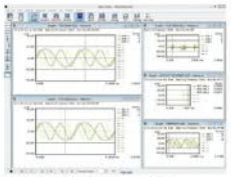
The Data Analysis Software DAS-200A enables data reproduction and analysis of data.
The DAS-200A displays Kyowa standard files (KS1, KS2, KS3) on graphs, in numerical values and analyzes them.

The major instruments are CTRS-100 series, EDX-10 series, EDX-200A, EDX-5000A, PCD-400B series, UCAM-550A. and NTB-500C.

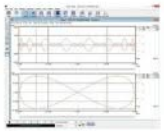
* The DAS-200A is able to convert the KS3 files into KS2 files. (The KS3 files are the data in the SD card recorded by the CTRS-100 series.)

Outline of Data Reproduction

1, 2 or 4 Y-time graphs are shown on a window.
The zooming function enables detailed observation of a necessary part by zooming in and the cursor enables reading the values on the time axis.
The enlarged result on display is saved as a different file or converted to a CSV file.



Multi-graph (Max. 16) on a window



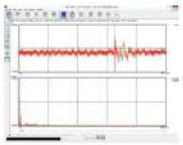
X-Y graphs

Results of statistic operations

Numeric data list

Outline of Analysis

Data files are carried out to arithmetic operations, FFT analysis, histogram analysis and differentiation-integration. The analyzed results are saved in another file or converted to a CSV file.



FFT analysis

Specifications

■Operation Environment

OS	Windows® 10, Windows® 11
	English/Japanese, 32/64 bits support (64-bit only for Windows® 11)
	If 64-bit OS, operate in WOW64 (Windows 32-bit On Windows 64-bit) environment.
CPU	Core i5 2 GHz or advanced
Memory	If 32-bit OS, 2 GB or more
	If 64-bit OS, 4 GB or more
Display	Resolution: 1024×768 pixels or more

■Data Reproduction

Graph Display	Up to 4 patterns of display conditions are set for each graph. Displays 1, 2, or 4 graphs on a single screen.
Y-time Graphs	Max. 16 channels per graph. Allows Y axis to be auto scaled.
X-Y Graphs	Displays 1 graph on a single screen. Displays of arbitrary 4 channels for both the X and Y axes, allows X axis and Y axis to be auto scaled.
All Data Display	Displays all data by every 4 channels.
Numerical Data Display	Up to 16 channels of data are listed.
Cursor Display	Displays numeric data of cursor location. Zoom in data between 2 cursors. Display max. and min. data between 2 cursors.
Scrolling	Scrolls X axis on Y-time graphs.
Data File Editing	Extracts an arbitrary range or arbitrary channel from collected data file and converts to a CSV format file possible. Data file titles, comments, channel conditions display and editing are possible.
Max. and Min. Display	Displays max. and min. data of each channel (5-data), 400-data around the max. or min. graphs.
KS2 File	Block number support (1 block display, all block display). Displays and plays back the audio data.
Operations	Playback, backward, repeat, frame-by-frame forward, frame-by-frame backward, jump to the beginning, jump to the end, set the beginning position, set the end position. Playback speed: ×0.1 to ×20. Plays back the measured data, video and GPS data at the same time.
AVI Files	Playback frame rate, start frame No. (time)
GPS Data Files	Displays the trail of latitude data and longitude data.
Dual-sampling Data	Plays back the dual-sampling KS2 data (high-speed sampling data files and low-speed sampling data files) at the same time.
Static Measuring Files	Reproduces the static measuring files (CSV format files).
ECAN Format Files	Reproduces CAN data of the ECAN-40A/EGPC-40A. Reproduces E4A format files and KS2 format files at the same time. Converts E4A format files into CSV format files.
CTRS-CAN File	Reproduces the CAN data of the CTRS-100 series. Converts the CTRS-CAN file into the CSV format file.

■Analysis Processing

Statistical Processing
List display of the maximum value, minimum value, average, and standard deviation for the desired portion of the reproduced data file. Statistical calculation results are converted to a CSV format file and saved.

Arithmetic Calculations
Carries out calculations between channels in a maximum of 2 files, and saves the calculation results as a new file.
Configuration of a maximum 320 expressions possible
Expressions (Up to 200 digits)

Operations and Constants +, -, *, /, ^ [Power], PI [π], and ( ) [parentheses]

Functions

SQR	Square root function	LOG	LOG function (common logarithm)
ABS	Absolute value function	LN	LN function (natural logarithm)
SIN	SIN function (Sine, angle Unit radian)	EXP	EXP function (exponential)
COS	COS function (Cosine, angle Unit radian)	HMX	Maximum principle strain function
TAN	TAN function (Tangent, angle Unit radian)	HMN	Minimum principle strain function
ASIN	ASIN function (Arcsine, angle Unit radian)	HSM	Maximum shear strain function
ACOS	ACOS function (Arccosine, angle Unit radian)	SMX	Maximum principal stress function
ATAN	ATAN function (Arctangent, angle Unit radian)	SMN	Minimum principle stress function
DSIN	ASIN function (Arcsine, angle Unit degree)	SSM	Maximum shear stress function
DCOS	ACOS function (Arccosine, angle Unit degree)	DEG	Principal strain direction function
DTAN	ATAN function (Arctangent, angle Unit degree)		

FFT Analysis
Analysis types: Linear spectrum, power spectrum, cross-spectrum, auto-correlation, mutual correlation, coherence, transfer function
Number of analysis data: 256, 512, 1024, 2048, 4096, 8192, 16384, and 32768
Window functions: OFF, Hamming, Hanning, Fejer, Blackman, Gaussian
Filters: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000 Hz, and FLAT
Integration times: 0 to 2
Average number of times: 0 to (0: whole waveform)
Number of shift data: 2 or more
Analysis results graph display

Types	Graph 1	Graph 2
Linear spectrum	Amplitude (Linear) Amplitude (Logarithm)	Phase
Power spectrum	Amplitude (Linear) Amplitude (Logarithm)	
Cross spectrum	Amplitude (Linear) Amplitude (Logarithm)	Phase
Auto-correlation	Correlation	
Cross-correlation	Correlation	
Coherence	Coherence	
Transfer functions	Amplitude (Linear) Amplitude (Logarithm)	Phase

Saves the analysis results in CSV format files.

Histogram Analysis
Types: Peak-valley
Maximum-minimum
1D rainflow method
Amplitude method
Time at lever
1D rainflow + peak-valley
1D rainflow + maximum-minimum
2D rainflow
Slices: 1D algorithm: Even numbers from 10 (±5) to 256 (±128)
2D algorithm: Even numbers from 10 to 50
Others: Allows slice width, hysteresis, offset to be specified.
Result display: Tables and graphs (3D display for 2D rainflow)

Life Prediction Processing Predicts life from the result of histogram analysis of 1D rainflow method, 2D rainflow method, or amplitude method. The life prediction data is shown and saved as a file. (Allows S-N data files to be read.)

Filtering Digital filters: IIR filters
Characteristics: 4th order Butterworth (Cutoff: -6dB, no phase delay)
HPF & LPF: FLAT to 500 kHz (Up to 1/2 of the sampling frequency)
Mirroring
Loads and saves the filtering processing conditions.
Analysis results are saved as additional format.

Differential & Integration Processing
Number of differentiation & integration
0 : None, 1 to 2
Analysis results are saved as additional format.

■Others

Batch Conversion of Multiple Data Files
CSV format file, Excel format file (XLS, XLSX), RPCIII format file

Data File Coupling
Couples the multiple data files, acquired in the synchronous operation (master unit and slave units), into single file.

Reverse File Conversion
Converts the CSV format file into the KS2 format file.

File Division
Extracts the specified block No. data of the data file into single file.

Batch Analysis
Analyzes (analysis processing, filtering, differentiation & integration) the multiple data files under the same conditions at one time.

Overwriting of Multiple Files
Overwrites the data files (up to 16) as the time series data.
Sets the start position of each data file.

Multiple KS2 Format File Conversion into the CSV Format File
Converts the multiple KS2 format file, acquired in the interval measurement, into single CSV format file.

Convert the KS3 Format Files into the KS2 Format Files
Convert multiple KS3 format files into KS2 format files at once.

■LOADABLE DATA FILE

File Formats	Kyowa standard format data files: KS1, KS2, KS3
	High-speed-sampling data files: KS2
	Low-speed-sampling data files: KS2
	FFT analysis result files: CSV
	Histogram analysis result files: HIS
	AVI files: AVI
	GPS data files: NMEA
	Static measurement files: CSV
	ECAN files: E4A
	CTRS-CAN file :KC3