



Dynamic Data Acquisition Software
DCS-100A
Attractive Enhancement Options Available

**Monitor Physical Variables under Measurement
in Various Ways.**



**Add an Enhancement Option
for Simultaneous Acquisition of Movie and Numeric Data
and Arithmetic Operations or Advanced Analysis.**



Making KYOWA measuring instru Dynamic Data Ac

DCS-100A is a dynamic data acquisition software developed to make KYOWA measuring instruments even more powerful. The software enables easy interactive setting of various conditions and facilitates efficient acquisition of required data by presenting variables under measurement in varied graph and numeric windows on the display.

Furthermore, the following enhancement options are available to meet today's needs.

Simultaneous Acquisition of Movie and Numeric Data/Arithmetic Operations

DCS-101A

- Simultaneous acquisition of movie and physical variables
- Arithmetic operations

Data Reproduction/Analysis

DCS-102A

- Data reproduction
- Data analysis (filtering with no phase delay, analysis of coherence and transfer function too)

External Control of EDX-3000A

DCS-103A

- For EDX-3000A only
- Simultaneous acquisition of movie and physical variables
- Real-time processing (filtering, arithmetic operation, differentiation/integration, moving averaging)
- Real-time monitoring of FFT analysis

Note: To externally control the EDX-3000A, DCS-102A and DCS-103A should be added to DCS-100A.

GPS Data Acquisition

DCS-104A

- Simultaneous acquisition of GPS data and physical variables
- Real-time monitoring of GPS data

Applicable Instruments:

EDS-400A Compact Recorder
PCD-300 Series Sensor Interfaces
EDX-100A Universal Recorders
EDX-3000A Data Recorder Analyzer
UCAM-550A Fast Data Logger

| Applicability | Instrument | | | | |
|---------------|-------------------|--------------------------------------|----------|-----------------------------|----------|
| | DCS-100A | DCS-101A (Under external control) | DCS-102A | DCS-103A (Ver. PCD-300A) | DCS-104A |
| DCS-100A | Yes | Yes | Yes | Yes | Yes |
| DCS-101A | No | Yes | Yes | Yes | Yes |
| DCS-102A | No | Yes | Yes | Yes | Yes |
| DCS-103A | Yes ^{*1} | No | No | No | No |
| DCS-104A | Yes | Yes | Yes | Yes | No |

*1 DCS-103A contains DCS-102.

*2 EDX-3000A should be Ver 01.06 or later.

Flexible presentation of graph and numeric windows

A maximum 32 windows each, 64 in total, can be freely arranged on the display. Graph windows are available in 7 types including Y-time graph, Y-time (DIV) graph, X-Y graph, bar graph, digital graph, circular meter and bar meter.



Simultaneous presentation of real-time data and reproduction

Open a data reproduction window, and real-time data can be compared with past data on the same display.

Cyclic data acquisition

In long-term manual measurement/data acquisition, the data file can be saved by dividing at every preset number of data points or at every preset time interval. (Effective for EDX-100A and EDX-3000A under external control)

XLS and RPCIII formats too are available for automatic data file conversion.

Besides CSV format, automatic data file conversion to XLS or RPCIII format is possible. In addition, a desired portion or channel of acquired data can be cropped for saving in a new data file or converted to CSV, Excel or RPCIII format file.

Static measurement

Variables are averaged during every data acquisition cycle and the data of averages is additionally saved in a CSV format file.

Launching data analysis software from the toolbar

If the DAS-100A data analysis software is installed in the PC, the icon is displayed on the toolbar, thereby enabling direct access to the software from the DCS-100A.



Simultaneous Acquisition of Movie and
Numeric Data/Arithmetic Operations

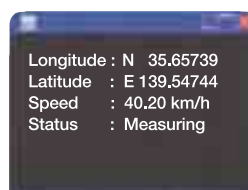
Data Reproduction/

DCS-101A, DCS-

ments even more powerful! Acquisition Software

Simultaneous acquisition of movie and numeric data ⇐ DCS-101A/103A

The movie being taken with a webcam can be monitored together with graph and numeric windows on the same display. In the reproduction mode, the movie and graphs can be displayed with a cursor interlocked.



Real-time arithmetic operations/rosette analysis ⇐ DCS-101A/103A

Physical variables under measurement can be subjected to real-time data processing. Calculation results are displayed and saved together with measured data in the same data file.

GPS data acquisition ⇐ DCS-104A

GPS data can be monitored and saved together with measured data.

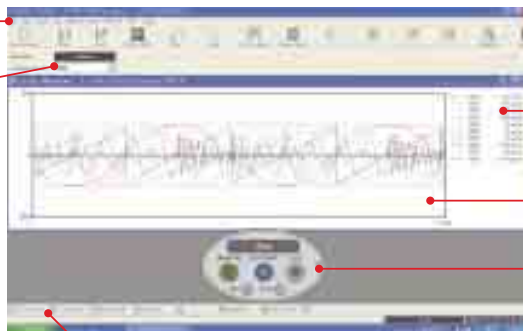
Basic Display

Menu Bar

Each menu option provides a pull-down menu and changes depending on software operating status.

Measuring Conditions

Measuring mode, sampling frequency, etc.



Toolbar

Provides icons of frequently used options for easy selection.

List of Channels

Facilitates selection of channels to be displayed on the graph window. To select, drag desired channels to the graph window.

Data Window

Can present a numeric window and various graph windows in a free combination.

Operating Panel

Provides MONITOR, REC/PAUSE, STOP, BAL and CAL buttons.

Function Keys

Can have any desired function assigned for easy access.

Status Bar

Indicates the present status such as interval or trigger measurement and date/time.

Basic Software

DCS-100A

Analysis

External Control of EDX-3000A

GPS Data Acquisition

102A, DCS-103A, DCS-104A

Software Options

Easy interactive setting of system configuration and measuring/display conditions

System Configuration to Channel and Display Conditions



Environmental Setting



System Configuration



Channel Condition Setting



TEDS Information



CAN Condition Setting



Data File



Display Condition (Graph)



Display Condition (Detail)

Measuring Conditions



Measuring Mode



Interval Measurement Condition



Analog Trigger Condition

Graph and numeric windows, at a maximum 32 each, 64 in total, on the display*

Y-time Graphs Physical variables in a maximum 16 channels are graphed on the Y axis with the X axis for time. 1 to 4 graphs can be presented on a window.



16-channel Y-time Graph



8-channel Y-time Graph x 2



5-channel Y-time Graph x 3



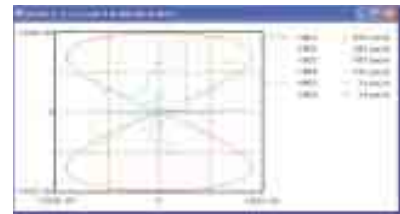
4-channel Y-time Graph x 4

Y-time (DIV) Graph



The waveform of each channel is independently monitored in the division. The zero point can be placed individually in a desired position on the Y-axis division.

X-Y Graph



Relative graph of 2 desired channels assigned to X and Y axes respectively. Max. 8 graphs can be superimposed.

Bar Graph



6-channel Bar Graph
(A maximum 4 bar graphs can be presented on a window.)

Circular Meters



Normal Display



Semicircular Display

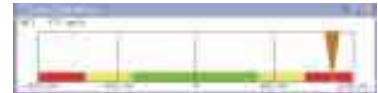


45°-turn Display



-45°-turn Display

Bar Meters



Horizontal Bar Meter



Vertical Bar Meter

Numeric Windows



All Channel Data

With both bar meter and circular meter, desired portions can be displayed in desired colors for easy discrimination.

Digital Graph



* A maximum 64 windows on the display may include reproduced graphs. However, reproducible graphs are limited to Y-time, Y-time (DIV) and X-Y graphs. The maximum number of windows on the display may be restricted by CPU speed and/or memory capacity of the PC.

Basic operation is common Thus, the software can upon changing the applic

Common Specifications

| Operating Environment | |
|---|--|
| OS | Windows XP, Windows Vista, Windows 7 (Japanese/English Edition, 32/64 bits) 64-bit OS operates on WOW64 (Windows 32-bit On Windows 64-bit). |
| CPU | Pentium 4 2 GHz or higher (Pentium III 1 GHz or higher for Windows XP) (Core2Duo 3 GHz or higher is required for simultaneous use of movie data acquisition and arithmetic operations.) |
| Memory | 2 GB or more (1 GB or more for Windows XP) |
| Display | 1024 x 768 dots or more |
| Interface | 100Base-TX/USB2.0 |
| Monitor Display | |
| Y-time Graph | Physical variables in a maximum 16 channels are graphed on the Y axis with the X axis for time. 1 to 4 graphs can be presented on a window. |
| Y-time (DIV) Graph | The physical variable of each channel is independently graphed in the division. The zero point can be placed individually in a desired position on the Y-axis division. |
| X-Y Graph | Relative graph of 2 desired channels assigned to X and Y axes respectively. Maximum 8 graphs can be superimposed. |
| Bar Graph | Physical variables in a maximum 32 channels are presented on 1 bar graph. 1 to 4 bar graphs can be presented on a window. Peak hold ON/OFF is possible. (Numeric indication possible) |
| Bar Meter | The physical variable of a selected channel is monitored on a horizontal or vertical meter. |
| Circular Meter | The physical variable of a selected channel is monitored on a circular meter. |
| Numeric Window | Data of a selected channel, 16 channels or all channels is presented on a window. (Indication of maximum and minimum of each channel is possible.) |
| Display Color | A desired color can be assigned to each individual graph. |
| Title and Label | A desired title and labels of X and Y axes can be set. |
| Number of Windows on Display | Numeric windows: Max. 32, Graph windows: Max. 32 Simultaneous presentation of a maximum 64 windows including reproduced graph and numeric windows is possible. Note: The maximum number of windows on a display may be restricted by the CPU speed and/or memory capacity of PC. |
| Channel Conditions/Measuring Conditions | |
| Setting Range | Depends on specifications of the applied instrument. |
| TEDS Information | Can be read to automatically set conditions. (TEDS-compatible instruments only) |
| Measuring Condition File | Can be saved and read. Setting parameters are automatically saved in internal memory and will be recovered at the next operation. |

| Data Reproduction | |
|-----------------------------------|---|
| Y-time Graph | Physical variables in a maximum 16 channels are graphed on the Y axis with the X axis for time. 1 to 4 graphs can be presented on a window. |
| Y-time (DIV) Graph | The physical variable of each channel is independently graphed in the division. The zero point can be placed individually in a desired position on the Y-axis division. |
| X-Y Graph | Relative graph of 2 desired channels assigned to X and Y axes respectively. Maximum 8 graphs can be superimposed. |
| Numeric Window | Presents a list of measured values. |
| Display Color | A desired color can be assigned to each individual graph. |
| Title and Label | A desired title and labels of X and Y axes can be set. |
| Cursor | Enables indication of the value at the cursor position in the engineering unit. |
| Number of Windows on Display | Numeric windows: Max. 32, Graph windows: Max. 32 Simultaneous presentation of a maximum 64 windows including real-time graph and numeric windows is possible. Note: The maximum number of windows on a display may be restricted by the CPU speed and/or memory capacity of PC. |
| File Size Available on Display | Max. 10 MB. If graph/numeric data file size exceeds 10 MB, set a display range so that the data size on display is 10 MB or less. |
| File Conversion | A desired portion or channel of collected data can be cropped and converted to CSV, Excel or RPCIII format. |
| Environmental Setting | |
| Instrument | Select the applied instrument and set conditions specific to the instrument. |
| Destination to Save Acquired Data | Storage medium of the applied instrument. Direct saving in the hard disk of PC is also possible, while it is limited by the sampling frequency and the number of measuring channels. |
| Automatic Data Transfer | Possible to the hard disk of PC upon completion of data acquisition |
| File Conversion | Automatically possible to CSV, XLS or RPCIII format |
| Optional Units | 3 user-defined units can be registered. |
| Data File | |
| Saving Format | KYOWA standard file format KS2 |
| Readable Format | KYOWA standard file format KS2 |
| File Coupling | Data files saved in applied instruments operated in synchronization can be coupled to a single data file at the time of transfer to the PC. |

Major Functions Added by Software Options

| Software Option | Simultaneous Acquisition of Movie and Numeric Data/ Arithmetic Operations DCS-101A | Data Reproduction/ Analysis DCS-102A | External Control of EDX-3000A DCS-103A | GPS Data Acquisition DCS-104A |
|-----------------------------|--|--|--|---|
| Movie Recording | 30 fps | — | 30 fps | — |
| Movie Reproduction | ● | ● | ● | — |
| Arithmetic Operations | ● | ● | ● | — |
| Statistic Processing | — | — | — | — |
| FFT Analysis | — | ● | ● | — |
| Linear Spectrum | — | ● | ● | — |
| Power Spectrum | — | ● | ● | — |
| Cross Spectrum | — | ● | ● | — |
| Auto-correlation | — | ● | ● | — |
| Cross-correlation | — | ● | ● | — |
| Coherence | — | ● | — | — |
| Transfer Function | — | ● | — | — |
| Histogram Analysis | — | ● | — | — |
| Filtering | — | ● | ● | — |
| Digital Filter | — | IIR filter | IIR filter | — |
| Characteristics | — | 4th order Butterworth | 2nd to 4th order Butterworth | — |
| High-pass/Low-pass Filter | — | Flat to one-half the sampling frequency | — | — |
| Mirroring | — | ● | — | — |
| Differentiation/Integration | — | ● | ● | — |
| Moving Averaging | — | — | ● | — |
| GPS Data Acquisition | — | — | — | ● |

(EDX-3000A only)

Compatible to all KYOWA instruments.
Can be used immediately
and transferred from one instrument to another.

DCS-100A

Dynamic Data Acquisition Software

Instrument-dependent Specifications (1)

| PCD-300 Series | |
|----------------------------------|--|
| Number of Controllable Units | Max. 4 (To control 2 or more units, all units should be operated in synchronization.) |
| Control Interface | USB 1.1 |
| Channel Conditions | Measuring channel, measuring mode, range, low-pass filter (PCD-300B-F only), balance ON/OFF, calibration factor, offset, unit, channel name, measuring range, rated capacity, rated output, number of display digits (Display items can be selected freely.) |
| Measuring Conditions | |
| Sampling Frequency | 1 Hz to 10 kHz (max. 5 kHz for PCD-300A or PCD-320A operated independently or in combination of PCD-300B) |
| Data File Size | Up to the hard disk capacity |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. |
| Interval Measurement | Measurement is made automatically at preset intervals from the preset starting time. |
| Trigger Measurement | Measurement is made automatically according to preset trigger conditions. |
| Common Trigger Conditions | |
| (1) End Trigger | Can be set. |
| (2) Delay | Max. 10000 data points/channel for both start and end |
| Analog Trigger Conditions | |
| (1) Trigger Channel | 1 desired measuring channel |
| (2) Trigger Level | Set in a proper engineering unit |
| (3) Trigger Slope | Up, down |
| Monitoring | |
| | Data under monitoring is presented on graph and numeric windows. |
| Data File | |
| Format | KYOWA standard file format KS2 |
| CSV Conversion | Possible upon completion of data acquisition |
| TEDS Information | |
| | Can be read with the UI-10A or UI-11A input adapter mounted and TEDS-installed transducer connected. |
| Environment | |
| Hardware Configuration | Number of connected units Hardware configuration can be read based on PCD-300 series sensor interfaces connected via USB. |
| Communication Check | Version of PCD-300 series is read. |
| A-D Conversion Bits | Selectable from 12, 16 or 24 bits. (12 bits fixed for PCD-300A and PCD-320A) |

| EDS-400A | |
|--|--|
| Number of Controllable Units | Max. 8 (To control 2 or more units, all units should be operated in synchronization.) |
| Control Interface | 10BASE-T/100BASE-TX |
| Channel Conditions | Measuring channel, measuring mode (strain/voltage), range, zero suppress ON/OFF, calibration factor, offset, unit, channel name, measuring range, rated capacity, rated output, number of display digits (Display items can be selected freely.) |
| Measuring Conditions in the case of saving acquired data in CF card | |
| Sampling Frequency | 1 Hz to 100 kHz (depends on the number of measuring channels) |
| Data File Size | Max. 2 GB (depends on the number of measuring channels) |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. |
| Trigger Measurement | Measurement is made automatically according to preset trigger conditions. |
| Common Trigger Conditions | |
| (1) End Trigger | Cannot be set. |
| (2) Delay | Pretrigger delay: Max. 2000 data points Pretrigger delay time depends on sampling frequency. |
| Analog Trigger Conditions | |
| (1) Trigger Channel | 1 desired measuring channel of master unit |
| (2) Trigger Level | Set in a proper engineering unit |
| (3) Trigger Slope | Up, down, up/down |
| External Trigger Condition | |
| (1) Trigger Slope | Up, down |
| Measuring Conditions in the case of saving acquired data in the hard disk of PC | |
| Sampling Frequency | 1 Hz to 10 kHz |
| Data File Size | Up to the capacity of hard disk |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. (PAUSE button enables interruption of data acquisition.) |
| Trigger Measurement | Measurement is made automatically according to preset trigger conditions. |
| Analog Trigger Conditions | |
| (1) End Trigger | Can be set. |
| (2) Delay | Pretrigger/posttrigger delay: Max. 32000 data points Pretrigger/posttrigger delay time depends on sampling frequency and the number of measuring channels. |
| (3) Trigger Channel | 1 desired measuring channel |
| (4) Trigger Level | Set in a proper engineering unit. |
| (5) Trigger Slope | Up, down |
| Setting Measuring Conditions | By reading measuring conditions saved in the CF card, or online from the PC via LAN |
| Monitoring | Possible on graph and numeric windows. Execution of zero suppress, test signal output and saving conditions in the CF card are possible. |
| Collecting Acquired Data | Online from the CF card to the PC via LAN Offline from the CF card inserted to the PC |
| Erasing Acquired Data | Possible online or offline |
| Environment/Hardware Configuration | Number of connected units IP address is set online from the PC via LAN, or offline by reading from the CF card. Communication check enables reading the version of EDS-400A. |



Instrument-dependent Specifications (2)

| | EDX-100A | EDX-3000A |
|--|---|---|
| Number of Controllable Units | Max. 4 (To control 2 or more units, all units should be operated in synchronization.) | Max. 4 (To control 2 or more units, all units should be operated in synchronization.) |
| Control Interface | USB 2.0 or 100BASE-TX | 10/100/1000BASE-T |
| Applicable Conditioner Cards | CDV-40B(-F), DPM-42A(-F), CCA-40A(-F), CTA-40A, CFV-40A, CAN-40A/41A | CDV-40B(-F), DPM-42A(-F), CCA-40A(-F), CTA-40A, CFV-40A, CAN-40A/41A |
| Channel Conditions | Measuring channel, measuring mode, range, high-pass filter, low-pass filter, balance O/OFF, calibration ON/OFF, calibration factor, offset, unit, channel name, measuring range, rated capacity, rated output, number of display digits (Display items can be selected freely.) | Measuring channel, measuring mode, range, high-pass filter, low-pass filter, balance O/OFF, calibration ON/OFF, calibration factor, offset, unit, channel name, measuring range, rated capacity, rated output, number of display digits (Display items can be selected freely.) |
| Measuring Conditions in the case of saving acquired data in CF card | | For saving acquired data in built-in HDD/SSD |
| Sampling Frequency | 1 Hz to 100 kHz (depends on the number of measuring channels) | 1 Hz to 200 kHz (depends on the number of measuring channels) |
| Data File Size | Max. 2 GB | EDX-3000A-H: 100 GB, EDX-3000A-S: 30 GB |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. |
| Interval Measurement | Automatic measurement at preset intervals from the preset starting time | Automatic measurement at preset intervals from the preset starting time |
| Trigger Measurement | Automatic measurement according to preset trigger conditions | Automatic measurement according to preset trigger conditions |
| Common Trigger Conditions | | |
| (1) End Trigger | Can be set. | Can be set. |
| (2) Delay | Pretrigger/posttrigger delay: Max. 262144 data points The delay quantity depends on the number of measuring channels. | Pretrigger/posttrigger delay: Max. 4194304 data points/channel The delay quantity depends on the number of measuring channels. |
| Analog Trigger Conditions | | |
| (1) Trigger Channel | 1 desired measuring channel of stand-alone or master unit | 1 desired measuring channel |
| (2) Trigger Level | Set in a proper engineering unit | Set in a proper engineering unit |
| (3) Trigger Slope | Up, down | Up, down |
| External Trigger Condition | | |
| (1) Trigger Slope | Up, down | Up, down |
| Composite Trigger Conditions | | |
| (1) Trigger Source | 2 desired channels of stand-alone or master unit and external trigger | 4 desired analog/digital channels, 1 external trigger channel and 1 manual trigger channel |
| (2) AND/OR | Signals of selected trigger channels and external trigger signal can be ANDed or ORed. | Signals of selected analog, digital and external trigger channels can be ANDed or ORed. |
| (3) Trigger Level | Set in a proper engineering unit | Set in a proper engineering unit for analog channel, and 0 or 1 for digital channel |
| (4) Trigger Slope | Up/down | Up, down |
| Measuring Conditions in the case of saving acquired data in the hard disk of PC | | |
| Sampling Frequency | 1 Hz to 100 kHz (depends on the number of measuring channels) | 1 Hz to 200 kHz (depends on the number of measuring channels) |
| Data File Size | Up to the capacity of hard disk | Up to the capacity of hard disk |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. (PAUSE button enables interruption of data acquisition.) | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. (PAUSE button enables interruption of data acquisition.) |
| Interval Measurement | Automatic measurement at preset intervals from the preset starting time | Automatic measurement at preset intervals from the preset starting time |
| Trigger Measurement | Automatic measurement according to preset trigger conditions | Automatic measurement according to preset trigger conditions |
| Analog Trigger Conditions | | |
| (1) End Trigger | Can be set. | Can be set. |
| (2) Delay | Pretrigger/posttrigger delay: Max. 262144 data points The delay quantity depends on the number of measuring channels. | Pretrigger/posttrigger delay: Max. 4194304 data points/channel The delay time depends on sampling frequency and the number of measuring channels. |
| (3) Trigger Channel | 1 desired measuring channel | 1 desired measuring channel |
| (4) Trigger Level | Set in a proper engineering unit. | Set in a proper engineering unit. |
| (5) Trigger Slope | Up, down | Up, down |
| Setting Measuring Conditions | By reading measuring conditions saved in the CF card, or online from the PC via USB or LAN | From the PC via LAN On the mainframe to which the keyboard, mouse and display are mounted |
| Monitoring | Possible on graph and numeric windows. | Possible on graph and numeric windows. |
| Collecting Acquired Data | It is possible to set so that upon completion acquired data is automatically transferred to the PC and converted to CSV format. Online from the CF card to the PC via USB or LAN Offline from the CF card inserted to the PC | It is possible to set so that upon completion acquired data is automatically transferred to the PC and converted to CSV format. Online from the CF card to the PC via LAN Offline from the USB memory inserted to the PC |
| Erasing Acquired Data | Possible online or offline | Possible online or offline |
| TEDS Information | Can be read from TEDS-installed transducer to set channel conditions. | Can be read from TEDS-installed transducer to set channel conditions. |
| Environment/Hardware Configuration | Number of connected units and types of mounted conditioner cards Use/unuse of slots and conditioner cards can be set. Hardware configuration can be read via USB or LAN. IP address is set online from the PC via LAN, or offline by reading from the CF card. Communication check enables reading the version of EDX-100A. | Number of connected units and types of mounted conditioner cards Use/unuse of slots and conditioner cards can be set. Hardware configuration can be read via LAN. IP address is set on the mainframe to which the keyboard, mouse and display are mounted Communication check enables reading the version of EDX-3000A. |



Instrument-dependent Specifications (3)

| UCAM-550A | |
|------------------------------|---|
| Number of Controllable Units | Max. 6 (Max. 300 channels) |
| Channel Conditions | Measuring channel, measuring channel mode, range, calibration factor, offset, unit, initial value, channel name, digits below decimal point, rated capacity, rated output (Display items can be selected freely.) |
| Measuring Conditions | |
| Sampling Frequency | 1, 2, 10, 20, 50 Hz |
| Measuring Modes | Manual, manual (with a preset number of data points), interval, analog trigger |
| Measuring Functions | Measure: Measured value = Sensor output value – Initial value Original: Measure value = Sensor output value |
| Initial Value Setting | Measurement of initial value of each sensor |
| Manual Measurement | Measurement is made from a press of the REC button to a press of the STOP button or to the preset number of data points. |
| Interval Measurement | Automatic measurement at preset intervals from the preset starting time |
| Analog Trigger Measurement | Automatic measurement according to preset trigger conditions |
| End Trigger | Can be set. |
| Delay | Pretrigger/posttrigger delay: Max. 3000 data points/channel |
| Trigger Channel | 1 desired measuring channel |
| Trigger Level | Set in a proper engineering unit |
| Trigger Slope | Up/down |
| Stroke Change | |
| Setting/Reading Parameters | Internal parameters of UCAM-550A can be read and set. |
| Environments | |
| Hardware Configuration | Number of connected units, equipment name and IP address can be set. Configuration of measuring units can be read. |
| Communication Check | Version of UCAM-550A can be read. |



DCS-101A

Simultaneous Acquisition of Movie and Numeric Data/
Arithmetic Operations

| | |
|--|--|
| Applicable Instruments | EDS-400A, PCD-300 series, EDX-100A, UCAM-550A |
| Movie Data Acquisition | |
| Applicable Camera | DirectX-compatible camera (webcam the OS can recognize as an image device) |
| Number of Applicable Cameras | 1 |
| Resolution | Max. 640 x 480 (depends on the applied camera) |
| Frame Rate | Max. 30 frames per second (depends on the applied camera) |
| Saving File Format | AVI |
| Number of Capture Windows | 1 |
| Operations Available | Movie monitoring/recording in linkage with measuring operation, and zooming |
| Measuring Conditions for Simultaneous Acquisition of Movie and Numeric Data | |
| Data File Destination | Data file saving folder of the PC |
| Measuring Mode | Manual, manual (with a preset number of acquired data points) |
| Sampling Frequency | Max. 10 kHz |
| Movie Reproduction | |
| Reproducible File Format | AVI |
| Number of Simultaneously Reproducible Files | 1 |
| Number of Reproduce Windows Available on Display | 1 |
| Operations Available | Reproduce, stop, pause, frame-by-frame forward/reverse feed, zoom, change of reproduce speed |
| Synchronized Cursor | Movie can be reproduced in synchronization with the cursor on a graph. |
| Arithmetic Operations | |
| Number of Calc. Channels | Max. 32 |
| Calc. Channel Conditions | Calculation ON/OFF, arithmetic expression (within 200 alphanumeric), number of display digits, channel name (within 40 alphanumeric) |
| Printout | Calculation channel conditions can be previewed and printed out. |

| | |
|---|--|
| Reading/Saving | Calculation channel conditions can be read and saved as a calculation channel condition file, Matrix conditions can be read and saved as a condition file (CSV format). |
| Operations Available | Calculation channel data can be monitored and recorded together with measuring data, and is saved in the measuring data file. |
| Arithmetic Expression | |
| Inputtable Channels | Measuring channels, calculation channels |
| Operators and Constants | +, -, *, ^ [power], PI [π], () [parentheses] |
| Calculation Functions | SQR Square root ABS Absolute value SIN Sine COS Cosine TAN Tangent ASIN Arc sine (Return value: Radian) ACOS Arc cosine (Return value: Radian) ATAN Arc tangent (Return value: Radian) DSIN Arc sine (Return value: Angle) DCOS Arc cosine (Return value: Angle) DTAN Arc tangent (Return value: Angle) LOG Common logarithm LN Natural logarithm EXP Exponent HMX Maximum principal strain HMN Minimum principal strain HSM Maximum shearing strain SMX Maximum principal stress SMN Minimum principal stress SSM Maximum shearing stress DEG Direction of principal strain |
| Measuring Conditions in Linkage with Arithmetic Operations | |
| Data File Destination | Data file folder of the PC |
| Measuring Mode | Manual, manual with a preset number of data points, interval, analog trigger |
| Sampling Frequency | Max. 10 kHz |

Notes

- For simultaneous use of movie data acquisition and arithmetic operations, CPU should be Core2Duo 3 GHz or higher.
- If CAN data is measured with the EDX-100A, the CAN channel cannot be put in an arithmetic expression.

DCS-102A

Data Reproduction/Analysis

| | |
|-------------------------------|---|
| Applicable Instruments | EDS-400A, PCD-300 series, EDX-100A, EDX-3000A, UCAM-550A |
| Data Reproduction | |
| Graph Display | Display conditions of 4 patterns can be set. |
| Y-time Graph | 1, 2 or 4 graph windows can be displayed. A maximum 8 channels/graph window (A maximum 16 channels/graph window if 1 graph window is monitored on the display) |
| X-Y Graph | 1 graph window can be displayed. (4 desired channels each can be assigned to X and Y axes.) |
| All Data Display | All data can be displayed with 4 channels/graph window. |
| Numeric Data Display | List of measured values Values at 10000 data points/channel can be displayed by selecting 16 desired channels. |
| Cursor | Indication of the value at the cursor position, zooming-in of a portion between 2 cursors and scrolling are possible. |
| Editing | Cropping and file conversion of a desired portion or a desired channel are possible. Title, comment and channel conditions of a data file can be displayed and edited. |
| KS2 Data File | Block No. correspondence (1 block display, all block display) Block information Maximum/minimum display List of voice data and voice reproduction |
| Reproduction Modes, etc. | Automatic reproduction, automatic reverse reproduction, continuous reproduction, frame-by-frame forward/reverse feed, moving to reproduction start position, moving to reproduction end position, setting reproduction start position, setting reproduction end position, setting reproduction speed (0, 1 to 20 times), simultaneous reproduction with AVI file |
| AVI File | Setting the reproduction frame rate Setting the reproduction start frame No. (time) |
| Analysis | |
| Statistic Processing | Presents a list of maxima, minima, averages and standard deviations in a desired data portion. The result is saved in a CSV format file. |
| Arithmetic Operations | Calculation is made using data of channels in 1 or 2 data files and the result is saved in a new data file. |
| Operators & Constants | +, -, *, ^ [power], PI [π], () [parentheses] |
| Calculation Functions | SQR Square root ABS Absolute value SIN Sine COS Cosine TAN Tangent ASIN Arc sine ACOS Arc cosine ATAN Arc tangent LOG Common logarithm LN Natural logarithm EXP Exponent HMX Maximum principal strain HMN Minimum principal strain HSM Maximum shearing strain SMX Maximum principal stress SMN Minimum principal stress SSM Maximum shearing stress DEG Direction of principal strain |

Notes

- Each condition file can be read and saved.
- An analysis result can be saved in an additional file.
- Readable data files: KYOWA standard data file formats KS1 and KS2

| | |
|---|---|
| FFT Analysis | |
| Algorithms | Linear spectrum, power spectrum, cross spectrum, auto-correlation, cross-correlation, coherence, transfer function |
| Analyzed Data Points | 256, 512, 1024, 2048, 8192, 16364, 32768 |
| Window Functions | OFF, hamming, hanning, Fejøl, Blackman, Gaussian |
| Filter | 1, 2, 50, 100, 200, 500, 1000, 2000 (Hz), FLAT |
| Integration Times | 0: None, 1 to 2 |
| Averaging Times | From 0 (whole waveform) |
| Shift Data Points | 2 or more |
| Analysis Result Graphs | Analysis graph 1 Analysis graph 2 |
| Linear Spectrum | Amplitude (linear)/(logarithm) Phase |
| Power Spectrum | Amplitude (linear)/(logarithm) |
| Cross Spectrum | Amplitude (linear)/(logarithm) Phase |
| Auto-correlation | Correlation |
| Cross-correlation | Correlation |
| Coherence | Coherence |
| Transfer Function | Amplitude (linear)/(logarithm) Phase |
| Analysis result is saved in a CSV file. | |
| Histogram Analysis | |
| Algorithms | Peak/valley, maximum/minimum, 1-dimensional rainflow, amplitude, 1-dimensional rainflow + peak/valley, 1-dimensional rainflow + maximum/minimum, 2-dimensional rainflow |
| Number of Slices | 1D: 10 (±50 to 256 (±129) in even number 2D: 10 to 50 in even number |
| Other | Setting slice width, hysteresis and offset |
| Presentation of Analysis Result | Table or graph (3D graph for 2-dimensional rainflow) |
| Filtering | |
| Digital Filter | IIR filter |
| Characteristics | 4th order Butterworth (Cutoff: -6 dB, no phase delay) |
| High-pass/Low-pass Filters | Flat to 500 kHz (up to one-half the sampling frequency) |
| Mirroring | Possible |
| Differentiation/Integration | |
| Number of Times | 0: None, 1 to 2 |
| Other | |
| Collective Conversion of Multiple Data Files | Possible to CSV, Excel or RPCIII |
| Data File Coupling | Data files acquired by master and slave units can be coupled to a file. |
| Reverse Conversion | Data file converted to CSV format can be converted to KYOWA standard data file format KS2. |
| File Dividing | Data of a selected block number can be cropped from a data file divided to multiple blocks. |
| Collective Analysis | Multiple data files can collectively be analyzed under the same conditions (histogram analysis, filtering, differentiation/integration). |
| Data of a maximum 16 files can be superimposed as time-series data. The starting position on display can be set for each data file. | |

DCS-103A

External Control of EDX-3000A

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|------|-------------------|-----|----------------|-----|------|-----|--------|-----|---------|------|----------|------|------------|------|-------------|-----|------------------|----|-------------------|-----|----------|--|--|-----|--------------------------|--|--|-----|--------------------------|--|--|-----|-------------------------|--|--|-----|--------------------------|--|--|-----|--------------------------|--|--|-----|-------------------------|--|--|-----|-------------------------------|--|--|
| Applicable Instrument EDX-3000A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movie Data Acquisition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Applicable Camera | DirectX-compatible camera (webcam the OS can recognize as an image device) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Applicable Cameras | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Resolution | Max. 640 x 480 (depends on the applied camera) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frame Rate | Max. 30 frames per second (depends on the applied camera) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Saving File Format | AVI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Capture Windows | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operations Available | Movie monitoring/recording in linkage with measuring operation, and zooming | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measuring Conditions for Simultaneous Acquisition of Movie and Numeric Data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data File Destination | Data file saving folder of the PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measuring Mode | Manual, manual (with a preset number of acquired data points) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sampling Frequency | Max. 10 kHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movie Reproduction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reproducible File Format | AVI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Simultaneously Reproducible Files | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Reproduce Windows Available on Display | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operations Available | Reproduce, stop, pause, frame-by-frame forward/reverse feed, zoom, setting reproduce speed (1/20, 1/10, 1/5, 1/2, 1, 2, 5, 10 or 20 times) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Synchronized Cursor | Movie can be reproduced in synchronization with the cursor on a graph. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arithmetic Operations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Calc. Channels | Max. 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calc. Channel Conditions | Calculation ON/OFF, expression (within 200 alphanumerics), unit, number of display digits, channel name (within 40 alphanumerics) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operations Available | Calculation channel data is monitored and recorded together with measuring data, and is saved in the same data file. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arithmetic Expression | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inputtable Channels | Measuring channels (analog channels), calculation channels • CAN channel cannot be put in arithmetic expression. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operators & Constants | +, -, *, ^ [power], PI [π], () [parentheses] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calculation Functions | <table border="0"> <tr> <td>SQR</td> <td>Square root</td> <td>ABS</td> <td>Absolute value</td> </tr> <tr> <td>SIN</td> <td>Sine</td> <td>COS</td> <td>Cosine</td> </tr> <tr> <td>TAN</td> <td>Tangent</td> <td>ASIN</td> <td>Arc sine</td> </tr> <tr> <td>ACOS</td> <td>Arc cosine</td> <td>ATAN</td> <td>Arc tangent</td> </tr> <tr> <td>LOG</td> <td>Common logarithm</td> <td>LN</td> <td>Natural logarithm</td> </tr> <tr> <td>EXP</td> <td>Exponent</td> <td></td> <td></td> </tr> <tr> <td>HMX</td> <td>Maximum principal strain</td> <td></td> <td></td> </tr> <tr> <td>HMN</td> <td>Minimum principal strain</td> <td></td> <td></td> </tr> <tr> <td>HSM</td> <td>Maximum shearing strain</td> <td></td> <td></td> </tr> <tr> <td>SMX</td> <td>Maximum principal stress</td> <td></td> <td></td> </tr> <tr> <td>SMN</td> <td>Minimum principal stress</td> <td></td> <td></td> </tr> <tr> <td>SSM</td> <td>Maximum shearing stress</td> <td></td> <td></td> </tr> <tr> <td>DEG</td> <td>Direction of principal strain</td> <td></td> <td></td> </tr> </table> | SQR | Square root | ABS | Absolute value | SIN | Sine | COS | Cosine | TAN | Tangent | ASIN | Arc sine | ACOS | Arc cosine | ATAN | Arc tangent | LOG | Common logarithm | LN | Natural logarithm | EXP | Exponent | | | HMX | Maximum principal strain | | | HMN | Minimum principal strain | | | HSM | Maximum shearing strain | | | SMX | Maximum principal stress | | | SMN | Minimum principal stress | | | SSM | Maximum shearing stress | | | DEG | Direction of principal strain | | |
| SQR | Square root | ABS | Absolute value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIN | Sine | COS | Cosine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TAN | Tangent | ASIN | Arc sine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ACOS | Arc cosine | ATAN | Arc tangent | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LOG | Common logarithm | LN | Natural logarithm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EXP | Exponent | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HMX | Maximum principal strain | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HMN | Minimum principal strain | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HSM | Maximum shearing strain | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SMX | Maximum principal stress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SMN | Minimum principal stress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SSM | Maximum shearing stress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DEG | Direction of principal strain | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|---|
| FFT Analysis | |
| Algorithms | Linear spectrum, power spectrum, cross spectrum, auto-correlation, cross-correlation |
| Analyzed Data Points | 256, 512, 1024, 2048, 8192 |
| Window Functions | OFF, hamming, hanning, Fejøl, Blackman, Gaussian |
| Analysis Result Windows | Max. 8 |
| Analysis Result Graphs | |
| Linear Spectrum | Amplitude (linear)/(logarithm), Phase |
| Power Spectrum | Amplitude (linear)/(logarithm) |
| Cross Spectrum | Amplitude (linear)/(logarithm), Phase |
| Auto-correlation | Correlation |
| Cross-correlation | Correlation |
| Measuring Conditions for FFT Analysis | |
| Sampling Frequency | Max. 10 kHz |
| Filtering | |
| Applicable Channels | Measuring channels (analog channels) |
| Digital Filter | IIR filter |
| Characteristics | Butterworth |
| High-pass/Low-pass Filters | Flat to one-half the sampling frequency |
| Order | 0: None, 2nd to 4th |
| Differentiation/Integration | |
| Applicable Channels | Measuring channels (analog channels) |
| Number of Times | 0: None, 1 to 2 |
| Moving Averaging | |
| Applicable Channels | Measuring channels (analog channels) |
| Simple Moving Averaging | 0: None, 2 to 5000 |
| Measuring Conditions for Arithmetic Processing | |
| Data File Destination | Data file folder of the PC Note: If the number of controlled units is 1, the data file may be saved in the HDD/SSD of the EDX-3000A. |
| Measuring Mode | Manual, manual (with a preset number of acquired data points) |
| Sampling Frequency | Max. 1024 kHz |

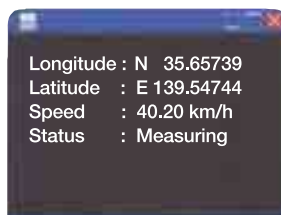
- Parameters for filtering, differentiation/integration and moving averaging can be read and saved as a calculation condition file with extension DFL.
- Calculation channel conditions and matrix conditions can be read and saved as a calculation condition file with extension DCO.
- Matrix conditions can be read and saved as a condition file of CSV format.
- If the data file destination is the hard disk of EDX-3000A, calculation conditions are limited to calculation conditions of EDX-3000A.
- If the data file destination is the data file folder of PC, the number of controlled units is a maximum 4.

DCS-104A

GPS Data Acquisition

| Operating Environment | |
|---|--|
| Applicable Instruments | EDS-400A, PCD-300 series, EDX-100A, EDX-3000A |
| GPS Data Acquisition/Monitoring | |
| Acquired Data | Latitude, longitude, travel direction, travel speed, receiving status, number of receiving satellites |
| Monitored Data | Desired ones of the above in real time |
| Data File | GPS data is saved in the same folder as the KS2 file of acquired physical variables with the same file name with extension NMEA. |
| Measuring Conditions for GPS Data Acquisition | |
| Data File Destination | Data file folder of the PC |
| Measuring Mode | Manual, manual (with a preset number of acquired data points) |
| Sampling Frequency | Max. 10 kHz |

| Applicable GPS Receiver | |
|---------------------------|---|
| Interface | RS-232C or USB (In the case of USB, a USB-to-serial conversion driver should be provided to make the connection similar to RS-232C connection.) If the PC has no COM port for RS-232C connection, use an RS-USB conversion adapter. |
| Output Format | NMEA-01183 |
| Geodetic System | WGS-84 |
| Connectable Units | 1 |
| Operation Checking System | HOLUX Comet USB/3XHL Sanjose Antares 48USB/UBX5 |



JQA-0821
JQA-EM4824

Specifications are subject to change without notice for improvement.



Safety precautions

Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.

Reliability through integration



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