# EDS-400A

## Compact Recorder

●Compact & Lightweight


Connected to strain gages, strain-gage transducers and voltage-output sensors, the EDS-400A digitally records 4 channels of dynamic variables at high speed by built-in 16-bit A/D converters.
It is set up from the PC via LAN or by inserting the CF card in which measuring conditions are written beforehand.
Variables under measurement are digitized and saved to the CF card. If required, the data can graphically be monitored on the PC connected via LAN.
Saved data is transferred to the PC, online via LAN or offline via a CF card.
The software, a standard provision, enables the PC to present the data on graphic window, while the optional Data Analysis Software DAS-200A enables data analysis in various ways.

## Compact & lightweight. 4-channel measurement per one unit

- ●Cascade connection of 8 units enables synchronous measurement in up to 32 channels.
- ●High-speed sampling at 100 kHz in 1 channel
- ●Synchronous sampling at 20 kHz in 4 channels
- ●Possible of measuring both strain and voltage signals
- ●Suitable as on-vehicle data logger
- ●LAN port provided standard
- ●Analog filters provided standard
- ●Data Acquisition Software DCS-100A available (Option)
- ●Data Analysis Software DAS-200A* also available (Option)

* For DAS-200A,see page 4-9.

Note:
For LAN connection,
Use 2 straight cables and a LAN hub.

### Hardware Specifications

| | |
|---|---|
| **Channels** | 4 |
| **Connector** | R05-R5F (Tajimi) |
| **Applicable plug** | R05-PB5M (Tajimi) |
| **Measuring Targets** | Strain gages (Full bridge system), Strain-gage transducers, Voltage |
| **Applicable Bridge Resistance** | 120 to 1000 Ω (Full bridge system) |
| **Gage Factor** | 2.00 fixed |
| **Bridge Excitation** | 2 VDC |
| **Measuring Targets** | |
| **Strain** | 1 k, 2 k, 5 k, 10 k, and 20 k μm/m |
| **Voltage** | 1, 2, 5, 10 and 20 V |
| **Accuracy** | Within ±0.5% |
| **Balance Adjustment (Zero Suppress)** | |
| ON/OFF setting possible for each individual channel | |
| **Adjustment Methods** | True electron method (Adjustment value is saved in nonvolatile memory.) |
| **Adjustment range** | |
| **Strain input** | Resistance ±2% (±10 k μm/m) |
| **Voltage input** | ±10 V |
| **Max. Input Voltage** | ±30 V (For voltage signals) |
| **Frequency Response*** | DC to 20 kHz (Deviation: 3 to -1 dB) |
| **LPF** | Transfer characteristic: 2nd order Butterworth |
| Cutoff frequencies: 20, 200, 2 k Hz and FLAT (4 steps) | |
| Amplitude ratio: -3 ±1 dB (At cutoff point) | |
| Attenuation: (-12 ±1) dB/oct. | |
| **A/D converter** | 16 bits |
| **Sampling Methods** | Synchronous sampling of all channels |
| **Sampling Frequencies** | 1, 2, 5, 10, 20, 50, 100, 200, 500,1 k, 2 k, 5 k, 10 k, 20 k, 50 k, and 100 k Hz (16 steps) |
| Note: Sampling at 50 kHz is possible for 1 or 2-channel measurement. Sampling at 100 kHz is possible for 1-channel measurement only. | |
| **Operating Switches** | START/STOP, ZERO, READ |
| **Method of Setting Measuring Conditions** | |
| From PC or CF card in which measuring conditions are written beforehand | |
| **Start/Stop of Recording** | From PC, panel switch or ext. contact points |
| **Balance Adjustment** | From PC, panel switch or ext. contact points |
| **LED Lamps** | |
| **POWER** | Lights up when the EDS is turned on. |
| **SYNC** | Lights up to indicate synchronization condition. |
| **MEAS** | Lights up to indicate measurement in progress. |
| **1, 2, 3, 4** | Indicate channel status. |
| **READ** | Lights up to indicate condition setting in progress. |

| | |
|---|---|
| **Operation Modes** | |
| **Manual** | START signal from PC or a press of the front panel START/STOP button starts recording. It stops recording upon recording to a preset number of measured values or when receiving STOP signal from PC or when the START/STOP button is pressed once again. |
| **Trigger** | START signal from PC or a press of the front panel START/STOP button lets it wait for trigger signal, and starts recording when the trigger condition is satisfied. It stops recording upon recording to a preset number of measured values. Pretrigger data may be included in the number of measured values by setting. |
| **Trigger Functions** | |
| **Trigger source** | External trigger signal, analog input |
| **Trigger level** | Set for analog trigger mode only, in the full scale range in plus and minus directions. |
| **Trigger slope** | Up, down or both |
| **Pretrigger data points to be recorded** | |
| Set in a range of 0 to 2000. | |
| **Backup Functions** | Setting conditions, balance adjustment data (Saved in the internal nonvolatile memory) |
| **LAN Port** | 10BASE-T/100BASE-TX |
| **Connector** | RJ-45 modular jack |
| **Monitor Display** | Waveform, bar graph and numeric data is monitored on the PC via a LAN port. |
| **Data Storage** | CF card (128 MB to 2 GB; writing speed 45x) |
| **Synchronous Operation** | |
| Dedicated synchronous cable enables connection of up to 8 units in cascade for synchronized recording. While data is individually recorded in separate files in CF cards inserted into recorders, it is combined to a single file after transferred to the PC. | |
| **Operating Temperature** | 0 to 50°C |
| **Operating Humidity** | 20 to 90% RH (Non-condensing) |
| **Vibration Resistance** | 49.03 m/s$^2$ (5 G) (5 to 55 Hz) (When operating) |
| **Power Supply** | 10 to 16 VDC, approx. 0.6 A (12 VDC) Power connector: RM12BRD-4PH (Hirose) |
| **Storage Temperature** | -10 to 60°C |
| **Operating Environment** | No dust and no induction noise from large-capacity motors, etc. |
| **Dimensions** | 100 W x 50 H x 110 D mm (Excluding protrusions) |
| **Weight** | Approx. 500 g |

**Standard Accessories**

DC power cable P-76
Compact flash memory card (128 MB)
Control software EDS-40A and Instruction Manual (CD-R)
Rubber feet

**Optional Accessories**

Strain input conversion cable U-49 (30 cm)
Voltage input cable U-50 (1.5 m)
Synchronous cable N-79 (20 cm)
AC adapter SA-10A-EDS (100 to 240 VAC)
Bridge connectors DB-120C-2R (2-wire)/DB-120C-3R (3-wire)
Remote-control unit RCU-04A
Protect unit EDS-PMF
Synchronous signal long-distance transmission unit (A05-2452)
Dynamic Data Acquisition Software DCS-100A
Data Analysis Software DAS-200A

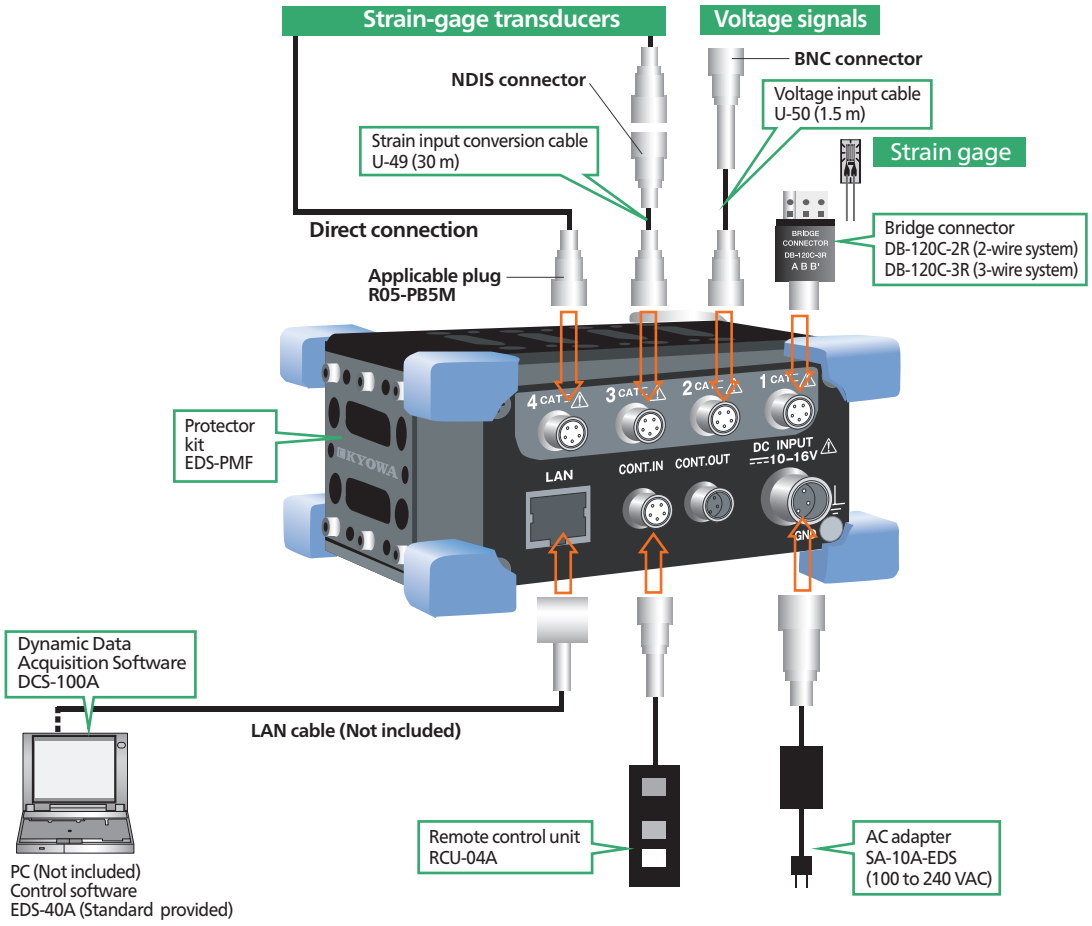
**DCS-100A software for EDS-400A section**
**For details of DCS-100A, see page 4-3.**

| | |
|---|---|
| **Controllable Units** | 8 (Max. 32 ) |
| **Interfaces** | LAN |
| **Data Storage** | Measured data is saved to CF card in the EDS or data folder in the PC |
| **Channel Conditions** | |
| Measuring channel, measuring mode (Strain/ voltage), range, zero suppression ON/OFF, test ON/OFF, calibration coefficient, offset, unit, channel name, measuring range, rated capacity, rated output, numerical value display digits (Selection of arbitrary display items is possible) | |
| **Setting/Loading Parameters** | Loads parameters from EDS and sets the parameters in the EDS |
| **Collecting Data** | Collects data saved in the CF card in the EDS via LAN or CF card in the PC. |
| **Erasing Data** | Erases data via LAN in on-line or off-line |
| **Environmental Settings** | |
| **Hardware configuration** | |
| Number of connected recorders, setting device name Allows hardware configuration of the recorder to be read if it is connected to the PC via LAN. | |
| **Communication status** | Checked by reading the version of the EDS |
| **IP address** | Settable, from the PC via LAN. It is saved in CF card. |
| **■Measurement Conditions for Saving Data in CF Card** | |
| **Sampling Frequencies** | 1 Hz to 100 k Hz (Depends on the number of measuring channels) |
| **Data File Size** | Max. 2 GB (Depends on the number of measuring channels) |
| **Measured Modes** | Manual, analog trigger, and external trigger |
| **Manual Measurement** | Measurement is made from a press of the REC button to a press of the STOP button or to completion of recording to the preset number of measurements. |
| **Trigger Measurement** | Measurement is made automatically at preset intervals from the preset starting time |
| **Delay before trigger** | Max. 2000 data points (Depends on the sampling frequency) |
| **Analog Trigger Measurement** | |
| **Trigger channels** | 1 host channel |
| **Trigger level** | Sets in physical quantity |
| **Trigger slope** | Up, down or both |
| **■Measurement Conditions for Saving Data in PC Hard Disk** | |
| **Sampling Frequencies** | 1 Hz to 10 k Hz |
| **Data File Size** | Capacity of the hard disk |
| **Measuring Modes** | Manual, interval, and analog trigger |
| **Manual Measurement** | Measurement is made from a press of the REC button to a press of the STOP button or to completion of recording to the preset number of measurements. |
| **Interval Measurement** | Measurement is made automatically at preset intervals from the preset starting time |
| **Analog Trigger Measurement** | Start/stop recording based upon specified trigger conditions |
| **Trigger Conditions** | |
| End trigger: Settable<br>Delay before and after trigger: Max. 32 k data points<br>(Depends on the number of measuring channels)<br>Trigger channels: 1 host channel<br>Trigger level: Sets in physical quantity<br>Trigger slope: Up, down or both | |

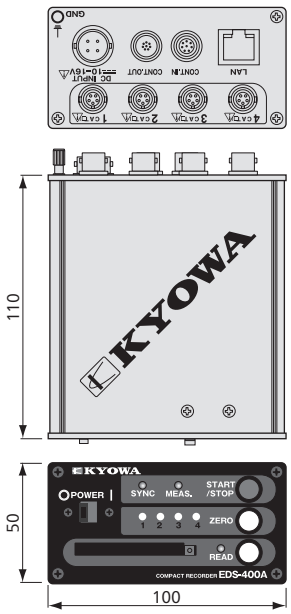
## Control Software EDS-40A Specifications

| | |
|---|---|
| **CPU** | Pentium III 700 MHz or higher |
| **OS** | Windows 2000 (Professional) |
| | XP (Professional, Home Edition) |
| **Memory** | 256 MB or more |
| **Interfaces** | 10BASE-T/100BASE-TX |
| **Hard Disk** | Blank space 10 MB or more |
| | (Excluding space for measured data) |
| **Display** | 1024x768 pixels or more, full color |
| **CD-ROM Drive** | Required to install the control software |
| **Setting Measuring Conditions** | |
| **Measuring targets** | Strain gages, strain-gage transducers, voltage |
| **Channels** | Max. 32 (8 units of EDS-400A) |
| **Sampling Frequencies** | 1, 2, 5, 10, 20, 50, 100, 200, 500, |
| | 1 k, 2 k, 5 k, 10 k, 20 k, 50 k, and 100 k Hz |
| **Measuring Modes** | Manual, analog trigger, external trigger |
| **Recorded data points** | 0 to 500 million |
| | (The number depends on blank space of |
| | CF card.) If 0 is set, data is recorded |
| | using the full capacity of card. |
| **Setting Measuring Channel Conditions** | |
| **ON/OFF setting** | Set measurement for each channel |
| **Range** | Individually selectable for each channel |
| | Strain: 1 k, 2 k, 5 k, 10 k, 20 k μm/m or OFF or OFF |
| | Voltage: 1, 2, 5, 10, 20 V or OFF |
| **LPF** | Individually selectable for each channel |
| | 20, 200, 2000 Hz or FLAT (20 kHz) |
| **Calibration coefficient** | A value by which the measured value is |
| | multiplied is set for each channel. |
| **Offset** | Set and add to the value obtained by multiplying the |
| | measured value by calibration coefficient. |
| **Units** | Selectable for each channel from 60 different |
| | units; also, a desired unit is possible. |
| **Channel name** | Possible input each channel's name |
| **Zero suppress ON/OFF** | Possible channel by channel |
| **Saving/Reading Measuring Conditions** | |
| Measuring conditions and measuring channel conditions are saved | |
| with a desired name. The file is read to set up the recorder with | |
| the same conditions as previous. | |
| **Monitoring Data in Graphic Format** | |
| Data is graphed with measuring times on X axis. | |
| **Y-time graph** | Data is graphed with measuring times on X axis. |
| | The measuring times is set up to 1200. |
| | The graph may include up to 8 channels (Numeric data |
| | is simultaneously displayed.) |
| **Bar graph** | Data is graphed with up to 8 channels on X axis. |
| | (Numeric data is simultaneously displayed.) |
| **X-Y graph** | Data is graphed with up to 7 channels on Y axis for |
| | 1 channel on X axis. |
| **Real-time recording graph** | With X axis for measuring times, |
| | the graph may include variables in up to 8 channels. |
| | (Numeric data is simultaneously displayed.) |
| | Note however that waveform display is not available |
| | when monitoring data. |
| **Measuring Modes** | Manual mode, analog trigger mode, and external |
| | trigger mode |
| **Manual measurement** | Pressing the START/STOP button starts |
| recording data and saves the preset number of measured values in | |
| the CF card. If the sampling frequency is 10 kHz or lower and PC is | |
| connected, data may | |
| automatically be collected in real time in the PC. | |
| **Analog trigger measurement** | When the trigger condition is satisfied |
| | at the trigger channel, the EDS-400A starts recording |
| | data and saves the preset number of measured |
| | values in the CF card. |
| **External trigger measurement** | An external trigger signal starts the |
| | EDS-400A recording data and saves the preset |
| | number of measured values in the CF card. |
| **Reproducing Data** | Recorded data file is reproduced graphically or |
| | converted to CSV format. |
| **Y-time graph** | Up to 8 channels of data is graphed. |
| **File conversion** | A desired data portion is extracted |
| | and converted to CSV format. |
| **Types of Files** | |
| **Measuring condition file** | Extension E4C |
| **Recorded data file** | Extension KS2 (Kyowa standard format) |

## Connection examples




## Dimensions




EDS-400A
Recommended products for combination

Data Analysis Software
DAS-200A
→ 4-9