

# CTRS-100 Series

## Compact Recorder



NEW



### Compact and tough data logger

- Channels: Max. 32 per unit (Max. 128)
- Robust (Shock resistance:  $490 \text{ m/s}^2$  (50 G), Degree of protection: IP50)
- Synchronous 20 kHz sampling on all 4 channels  
Max. 100 kHz measurement possible on 1 channel (during strain, voltage measurement)
- Supports wireless real-time monitoring
- Easily expandable modular design

CTRS-100 series is a data logger that is ideal for various measurements regardless of installation site, from environments with limited space exposed to vibration and shock such as motorcycle driving tests and actual ship tests, to desktop measurements, due to its compact, lightweight, and shock-resistant structure.

#### Model

#### Main Unit



Compact Recorder  
**CTRS-100A**

#### Measuring Unit



Strain/Voltage Unit  
**CTRS-CDV010A**



Voltage Unit  
**CTRS-CVPS010A**



IEPE Accelerometer Unit  
**CTRS-IEPE010A**



Thermocouple Unit  
**CTRS-CTA010A**  
\*Including the temperature measuring adapter CT-3A-4

#### Expansion Unit



CAN Unit  
**CTRS-CAG010A**



CAN/GPS Unit  
**CTRS-CAG011A**



Wireless LAN Unit  
**CTRS-WLAN010A/011A/012A**



Synchronization Unit  
**CTRS-SYNC010A**

\*CTRS-WLAN010A for Japan.

CTRS-WLAN011A for U.S.

CTRS-WLAN012A for EU and Thailand.

\*Jordan compatible model is available.

Please contact us.

#### Battery



Battery Unit  
**CTRS-BATT010A**

#### Remote Controller



Remote Control Unit  
**CTRS-RCU010A**



Dynamic Data Acquisition  
Software  
**DCS-100A**



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

## CTRS-100A Specifications

### Control Unit Specifications

|                                                                                                                  |                                                                                                              |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Connector</b>                                                                                                 |                                                                                                              |
| USB Connector                                                                                                    | Micro USB Type-B                                                                                             |
| <b>Remote Control Connector</b>                                                                                  |                                                                                                              |
| Used to connect the remote control unit                                                                          |                                                                                                              |
| <b>External I/O Connector</b>                                                                                    |                                                                                                              |
| Model: ECA.0B.307.CLN                                                                                            |                                                                                                              |
| Compatible connector: FGA.0B.307.CLAD52                                                                          |                                                                                                              |
| Operating Switch                                                                                                 | POWER                                                                                                        |
| <b>Main Unit Display</b>                                                                                         |                                                                                                              |
| Status LED                                                                                                       |                                                                                                              |
| SD card access indicator LED                                                                                     |                                                                                                              |
| <b>Data Recording Media</b>                                                                                      |                                                                                                              |
| Kyowa recommended industrial-use SD card                                                                         |                                                                                                              |
| SD standards: SDHC                                                                                               |                                                                                                              |
| Capacity: 4 GB, 16 GB                                                                                            |                                                                                                              |
| Format: FAT32                                                                                                    |                                                                                                              |
| (Operation is not guaranteed if an SD card other than the recommended product is used.)                          |                                                                                                              |
| <b>Communication Interface</b>                                                                                   |                                                                                                              |
| USB (USB2.0 High Speed)                                                                                          |                                                                                                              |
| Ethernet*1 (10/100BASE-T)                                                                                        |                                                                                                              |
| <b>Number of Units that Can be Connected</b>                                                                     |                                                                                                              |
| Measuring Unit                                                                                                   | Up to 7 units can be connected per CTRS-100A.<br>(Total of 32 channels)                                      |
| Expansion Unit                                                                                                   | Up to 5 units can be connected per CTRS-100A.<br>However, 2 or more same units cannot be connected and used. |
| <b>Synchronization between Devices</b>                                                                           |                                                                                                              |
| Synchronization Method                                                                                           | Use a synchronization unit and synchronous cable to connect CTRS-100As.                                      |
| <b>Maximum Number of Units that Can Be Synchronized</b>                                                          |                                                                                                              |
| The maximum is four CTRS-100As, and a maximum of 128 measurement channels can be synchronized.                   |                                                                                                              |
| Recorded Data                                                                                                    | Data is recorded to each unit's SD card or a PC. *2                                                          |
| <b>Recorded Data</b>                                                                                             |                                                                                                              |
| File Saving Location                                                                                             | SD card<br>PC*2                                                                                              |
| Data Format                                                                                                      | Kyowa standard format KS3                                                                                    |
| Maximum Data File Size                                                                                           | 4 GB/1 data file<br>(1 GB = 1,000,000,000 bytes) *3                                                          |
| <b>Data Collection</b>                                                                                           |                                                                                                              |
| Online collection: Collect by control software (PC)                                                              |                                                                                                              |
| Offline collection: Collect by directly reading data from an SD card to the PC                                   |                                                                                                              |
| <b>Measurement-condition Setting Method</b>                                                                      |                                                                                                              |
| Online Setting                                                                                                   | Set by control software (PC)                                                                                 |
| Offline Setting                                                                                                  | Set by reading the measurement-condition settings on the SD card                                             |
| <b>Recording Modes</b>                                                                                           |                                                                                                              |
| Manual                                                                                                           | The user performs operations to start or stop recording.                                                     |
| <b>Trigger (Compound Trigger)</b>                                                                                |                                                                                                              |
| Automatic recording is performed based on the trigger condition setting.                                         |                                                                                                              |
| <b>Interval</b>                                                                                                  |                                                                                                              |
| Automatic recording is performed based on the recording start time and recording interval settings.              |                                                                                                              |
| <b>Sampling</b>                                                                                                  |                                                                                                              |
| Method                                                                                                           | Synchronous sampling of all channels                                                                         |
| <b>Frequency</b>                                                                                                 |                                                                                                              |
| 1-2-5 series                                                                                                     |                                                                                                              |
| 1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k Hz                                           |                                                                                                              |
| 2n series                                                                                                        |                                                                                                              |
| 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536 Hz                                  |                                                                                                              |
| Maximum sampling frequency that can be set: 100 kHz / number of measurement channels                             |                                                                                                              |
| <b>External Clock</b>                                                                                            |                                                                                                              |
| Clock input from an external device is used as the sampling clock.                                               |                                                                                                              |
| A frequency from 1 Hz to 100 kHz can be set in 1-Hz increments.                                                  |                                                                                                              |
| Input a clock within the range of the specified frequency $\pm 5\%$ .                                            |                                                                                                              |
| Voltage level: High-level voltage 2.4 to 5 V                                                                     |                                                                                                              |
| Low-level voltage 0 to 0.8 V                                                                                     |                                                                                                              |
| DUTY: 30 to 70%                                                                                                  |                                                                                                              |
| <b>Trigger Functions</b>                                                                                         |                                                                                                              |
| <b>Trigger Type</b>                                                                                              |                                                                                                              |
| • Analog input signal (Analog trigger)                                                                           |                                                                                                              |
| • External trigger input signal                                                                                  |                                                                                                              |
| (No-voltage contact, open collector, signal with high-level voltage 2.4 to 5 V and low-level voltage 0 to 0.8 V) |                                                                                                              |

|                                                                                                                                                                                                                |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| • Manual (If the REC button is pressed in the trigger awaiting state, recording starts.)                                                                                                                       |                                                                                       |
| Trigger Level                                                                                                                                                                                                  | Any level within the range of $\pm FS$ can be set.*4                                  |
| Trigger Slope                                                                                                                                                                                                  | Slope (positive), slope (negative)                                                    |
| <b>Pre-trigger</b>                                                                                                                                                                                             |                                                                                       |
| Specify the amount of data to save from before the start trigger point.                                                                                                                                        |                                                                                       |
| Any amount up to 524288 data items/the number of measurement channels can be set.                                                                                                                              |                                                                                       |
| <b>Post-trigger</b>                                                                                                                                                                                            |                                                                                       |
| Specify the amount of data to save from after the end trigger point.                                                                                                                                           |                                                                                       |
| Any amount up to 524288 data items/the number of measurement channels can be set.                                                                                                                              |                                                                                       |
| <b>Backup Function</b>                                                                                                                                                                                         |                                                                                       |
| Backup Target                                                                                                                                                                                                  | Setting conditions, balance-adjustment value (Zero suppress value)                    |
| Saving Location                                                                                                                                                                                                | Internal nonvolatile memory                                                           |
| <b>External Clock Output</b>                                                                                                                                                                                   |                                                                                       |
| Signal Level                                                                                                                                                                                                   | 5 VDC                                                                                 |
| The inverted or non-inverted signal can be set.                                                                                                                                                                |                                                                                       |
| Division                                                                                                                                                                                                       | A clock signal that is synchronized with the sampling clock is divided and output.    |
| Any division ratio in the range from 1 to 65534 can be set.                                                                                                                                                    |                                                                                       |
| Output Modes                                                                                                                                                                                                   | Select from always output the clock, only output it while recording, or no output it. |
| <b>Other Functions</b>                                                                                                                                                                                         |                                                                                       |
| <b>Specification of the Number of Data Items to Record</b>                                                                                                                                                     |                                                                                       |
| When the specified number of data items is recorded, recording automatically finishes.                                                                                                                         |                                                                                       |
| <b>Automatic Recovery Function in Power Interruption*5</b>                                                                                                                                                     |                                                                                       |
| While recording, if the power supply is interrupted due to a power outage, etc., you can select whether to switch to battery power and continue recording or close the file being recorded and then shut down. |                                                                                       |
| If the option to shut down is selected, you can select whether to resume recording after the power is restored or enter the standby state.                                                                     |                                                                                       |
| <b>Recording Recovery Function</b>                                                                                                                                                                             |                                                                                       |
| You can select whether to resume recording or enter the standby state when the POWER switch is turned off while recording and then turned back on.                                                             |                                                                                       |
| File Name Assignment                                                                                                                                                                                           | Automatically assign a file number or recording date to the recorded-data file name.  |
| <b>Trigger Signal Output</b>                                                                                                                                                                                   |                                                                                       |
| Output a trigger signal when in the trigger (Compound trigger) recording mode.                                                                                                                                 |                                                                                       |
| While on standby: 5 VDC, while recording: 0 VDC                                                                                                                                                                |                                                                                       |

### Measuring Unit Specifications

| Item                                    |                 | Strain Measurement                                                                                                                                                 | Voltage Measurement                               |
|-----------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Channels                                |                 | 4                                                                                                                                                                  |                                                   |
| Input Connector                         | Connector Shape | NDIS4109 receptacle<br>Model: EPRC07-RX9FNDIS                                                                                                                      |                                                   |
|                                         | Compatible Plug | NDIS4109 plug<br>Model: EPRC07-P9MNDIS                                                                                                                             |                                                   |
| Measuring Targets                       |                 | Strain gages*6<br>Strain-gage transducers                                                                                                                          | Voltage                                           |
| Compatible Bridge Resistance            |                 | When bridge excitation is set to 2 V<br>120 to 1000 $\Omega$<br>When bridge excitation is set to 5 V<br>350 to 1000 $\Omega$                                       | —                                                 |
| Gage Factor                             |                 | 2.00 fixed                                                                                                                                                         | —                                                 |
| Bridge Excitation/<br>Sensor Excitation |                 | 2, 5 VDC<br>A maximum of 20 mA per channel can be output.                                                                                                          | 2, 5 VDC *7 OFF(0 V)                              |
| Input Impedance                         |                 | —                                                                                                                                                                  | 3.6 M $\Omega$ $\pm 10\%$                         |
| Input Modes                             |                 | Balanced differential input                                                                                                                                        |                                                   |
| Measuring Range                         | Setting Method  | Any range method or OFF                                                                                                                                            |                                                   |
|                                         | Settable Range  | Minimum: $1000 \times 10^{-6}$ strain<br>Maximum: $50000 \times 10^{-6}$ strain                                                                                    | Minimum: 1 V<br>Maximum: 50 V                     |
|                                         | Setting Steps   | • 1000 to $10000 \times 10^{-6}$ strain<br>• $100 \times 10^{-6}$ strain steps<br>• 10000 to $50000 \times 10^{-6}$ strain<br>• $1000 \times 10^{-6}$ strain steps | • 1 to 10 V 0.1 V steps<br>• 10 to 50 V 1 V steps |



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

| Item                      |                                  | Strain Measurement                                                                                                                                                                                                                                                            | Voltage Measurement                   |
|---------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Range Accuracy            |                                  | Within $\pm 0.2\%$ FS                                                                                                                                                                                                                                                         |                                       |
| Nonlinearity              |                                  | Within $\pm 0.1\%$ FS                                                                                                                                                                                                                                                         |                                       |
| Temperature Stability     | Zero Point                       | Within $\pm(0.009\%$ FS + $0.9 \times 10^{-6}$ strain)/°C                                                                                                                                                                                                                     | Within $\pm(0.009\%$ FS + 0.21 mV)/°C |
|                           | Sensitivity                      | Within $\pm 0.03\%/^{\circ}\text{C}$                                                                                                                                                                                                                                          |                                       |
| Time Stability            | Zero Point                       | Within $\pm(0.09\%$ FS + $9 \times 10^{-6}$ strain)/8 h                                                                                                                                                                                                                       | Within $\pm(0.09\%$ FS + 0.1 mV)/8 h  |
|                           | Sensitivity                      | Within $\pm 0.3\%/8$ h                                                                                                                                                                                                                                                        |                                       |
| Balance Adjustment        | Setting                          | For each channel, ON, OFF, or NONE can be selected.<br>ON: Execute balance adjustment and set the measured value to zero.<br>OFF: Do not execute balance adjustment again.<br>NONE: Balance adjustment can be disabled to check the initial unbalanced value (input voltage). |                                       |
|                           | Operating Method                 | Execute the balance operation by using the control software*2 or operate the special-remote-control BAL switch.                                                                                                                                                               |                                       |
|                           | Adjustment Method                | Auto balance (Saved in nonvolatile memory)                                                                                                                                                                                                                                    |                                       |
|                           | Adjustment Range                 | Within $\pm 10000 \times 10^{-6}$ strain                                                                                                                                                                                                                                      | Within $\pm 10$ V                     |
|                           | Accuracy                         | Within $\pm (0.1\%$ FS + $2 \times 10^{-6}$ strain)                                                                                                                                                                                                                           | Within $\pm 0.1\%$ FS                 |
|                           | NONE Accuracy                    | Within $\pm 1\%$ FS*4                                                                                                                                                                                                                                                         | Within $\pm 0.2\%$ FS                 |
| Input Range               |                                  | Within $\pm 60000 \times 10^{-6}$ strain                                                                                                                                                                                                                                      | Within $\pm 60$ V                     |
| Common-mode Input Voltage |                                  | —                                                                                                                                                                                                                                                                             | Within $\pm 20$ V                     |
| Absolute Maximum Rating   | Input                            | Within $\pm 5$ V                                                                                                                                                                                                                                                              | Within $\pm 70$ V                     |
|                           | Frequency Response               | DC to 20 kHz, -3 $\pm 1$ dB (At 20 kHz)                                                                                                                                                                                                                                       |                                       |
| Low-pass Filter           | Transfer Characteristics         | 5th-order Butterworth                                                                                                                                                                                                                                                         |                                       |
|                           | Cutoff Frequency                 | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz as well as FLAT*9, AUTO*10                                                                                                                                                                                                      |                                       |
|                           | Amplitude Ratio at Cutoff Point  | -3 $\pm 1$ dB                                                                                                                                                                                                                                                                 |                                       |
|                           | Attenuation Characteristics      | -30 $\pm 3$ dB/oct.*11                                                                                                                                                                                                                                                        |                                       |
| High-pass Filter          | Cutoff Frequency                 | 0.2, 1 Hz and OFF                                                                                                                                                                                                                                                             |                                       |
| AD Conversion             | Resolution                       | 24 bits                                                                                                                                                                                                                                                                       |                                       |
|                           | Method                           | Delta-sigma method<br>Synchronous sampling of all channels                                                                                                                                                                                                                    |                                       |
| Indicator                 |                                  | Channel-state indicator LED                                                                                                                                                                                                                                                   |                                       |
| Other Functions           | Input Resistance Check Functions | Bridge resistance check function<br>Accuracy within $\pm 2\%$<br>Used for sensor connection checks                                                                                                                                                                            |                                       |
|                           | TEDS                             | Read the TEDS information and apply it to the measurement conditions.*2                                                                                                                                                                                                       |                                       |

### General Specifications

|                            |                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------|
| Power Connector            | Model: ECP.15.302.CLL                                                                                 |
| Power-supply Voltage Range | 10 to 30 VDC                                                                                          |
| Power Consumption          | Approx. 3.5 W (When supplying 12 VDC)                                                                 |
| Operating Temperature      | -10 to 50°C                                                                                           |
| Operating Humidity         | 20 to 90% (Non-condensing)                                                                            |
| Storage Temperature        | -20 to 60°C                                                                                           |
| Vibration Resistance       | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                              |
| Shock Resistance           | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                            |
| Degrees of Protection      | IP50 (JIS C 0920/IEC 60529)                                                                           |
| Dimensions                 | 53.2(W) $\times$ 92(H) $\times$ 94(D) mm,<br>not including protrusions or protectors                  |
| Weight                     | Approx. 420 g                                                                                         |
| Compliance                 | Directive 2014/30/EU (EMC)<br>Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS) |
| Terminal                   | GND terminal: M3 bind                                                                                 |
| Utility Nuts               | Size: M4, 12 places                                                                                   |

\*The measuring unit specifications apply to the state in which the temperature has stabilized after a preheating time of 30 minutes.

\*1 A separate synchronous unit and special communication cable are necessary.

\*2 Only when online control is performed by a PC

\*3 Maximum recording time depends on number of measurement channels and sampling frequency. Maximum recording time: 1,000,000,000  $\div$  number of measurement channels  $\div$  sampling frequency

\*4 Analog input signal only

\*5 Only when the battery unit is connected

\*6 A separate bridge box is necessary.

\*7 When the sensor excitation is 2 VDC, the positive side of the sensor excitation is +1 V and the negative side is -1 V. When the sensor excitation is 5 VDC, the positive side of the sensor excitation is +2.5 V and the negative side is -2.5 V.

\*8 When the bridge resistance is 350  $\Omega$

\*9 When FLAT is set, the cutoff frequency is set to approx. 25 kHz. However, the cutoff-point amplitude ratio specification is not applied.

\*10 When AUTO is set, the cutoff frequency is set to approx. 1/4 the specified sampling frequency.

\*11 Excluding cutoff frequencies over 5 kHz

■ **Standard Accessories** Stack-connector caps (female)  $\times 2$   
SD card (4 GB)  
USB cable  
CTRS DC power cable P-79  
Ground wire P-78  
Ballpoint screwdriver  
Input connector caps  $\times 4$

■ **Optional Accessories** AC adapter UNI345-1238-L-JP  
(For use outside Japan, purchase an optional AC power cable.)  
Various measuring units  
Various expansion units  
Remote control unit  
Connector cap BRA.0B.200.PCSG  
Connector cap BRA.1B.200.PCSG  
4109P-S32-7 (4-conductor shielded) N-129  
4109P-S32-7 (6-conductor shielded) U-136  
4109P-BNC plug U-137  
4109P-BNC jack U-129  
4109P-R05 jack U-138  
EXTERNAL I/O cable U-133  
SD card (4 GB)  
SD card (16 GB) RP-SDFC16SW1  
Dynamic Data Acquisition Software DCS-100A  
(Please use the latest version.)

### CTRS-CDV010A Specifications

| Item                                    |                    | Strain Measurement                                                                                                                                                                                                                                                            | Voltage Measurement                                           |
|-----------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Channels                                |                    | 4                                                                                                                                                                                                                                                                             |                                                               |
| Input Connector                         | Connector Shape    | NDIS4109 receptacle<br>Model: EPRC07-RX9FNDIS                                                                                                                                                                                                                                 |                                                               |
|                                         | Compatible Plug    | NDIS4109 plug<br>Model: EPRC07-P9MNDIS                                                                                                                                                                                                                                        |                                                               |
| Measuring Targets                       |                    | Strain gages*1<br>Strain-gage transducers                                                                                                                                                                                                                                     | Voltage                                                       |
| Compatible Bridge Resistance            |                    | When bridge excitation is set to 2 V<br>120 to 1000 $\Omega$<br>When bridge excitation is set to 5 V<br>350 to 1000 $\Omega$                                                                                                                                                  | —                                                             |
| Gage Factor                             |                    | 2.00 fixed                                                                                                                                                                                                                                                                    | —                                                             |
| Bridge Excitation/<br>Sensor Excitation |                    | 2, 5 VDC<br>A maximum of 20 mA per channel can be output.                                                                                                                                                                                                                     | 2, 5 VDC *2 OFF(0 V)                                          |
| Input Impedance                         |                    | —                                                                                                                                                                                                                                                                             | 3.6 M $\Omega$ $\pm 10$ %                                     |
| Input Modes                             |                    | Balanced differential input                                                                                                                                                                                                                                                   |                                                               |
| Measuring Range                         | Setting Method     | Any range method or OFF                                                                                                                                                                                                                                                       |                                                               |
|                                         | Settable Range     | Minimum: $1000 \times 10^{-6}$ strain<br>Maximum: $50000 \times 10^{-6}$ strain                                                                                                                                                                                               | Minimum: 1 V<br>Maximum: 50 V                                 |
|                                         | Setting Steps      | $\cdot 1000$ to $10000 \times 10^{-6}$ strain<br>$100 \times 10^{-6}$ strain steps<br>$\cdot 10000$ to $50000 \times 10^{-6}$ strain<br>$1000 \times 10^{-6}$ strain steps                                                                                                    | $\cdot 1$ to 10 V 0.1 V steps<br>$\cdot 10$ to 50 V 1 V steps |
| Range Accuracy                          |                    | Within $\pm 0.2\%$ FS                                                                                                                                                                                                                                                         |                                                               |
| Nonlinearity                            |                    | Within $\pm 0.1\%$ FS                                                                                                                                                                                                                                                         |                                                               |
| Temperature Stability                   | Zero Point         | Within $\pm (0.009\%$ FS + $0.9 \times 10^{-6}$ strain)/°C                                                                                                                                                                                                                    | Within $\pm (0.009\%$ FS + 0.21 mV)/°C                        |
|                                         | Sensitivity        | Within $\pm 0.03\%/^{\circ}\text{C}$                                                                                                                                                                                                                                          |                                                               |
| Time Stability                          | Zero Point         | Within $\pm (0.09\%$ FS + $9 \times 10^{-6}$ strain)/8 h                                                                                                                                                                                                                      | Within $\pm (0.09\%$ FS + 0.1 mV)/8 h                         |
|                                         | Sensitivity        | Within $\pm 0.3\%/8$ h                                                                                                                                                                                                                                                        |                                                               |
| Balance Adjustment                      | Setting            | For each channel, ON, OFF, or NONE can be selected.<br>ON: Execute balance adjustment and set the measured value to zero.<br>OFF: Do not execute balance adjustment again.<br>NONE: Balance adjustment can be disabled to check the initial unbalanced value (input voltage). |                                                               |
|                                         | Operating Method   | Execute the balance operation by using the control software*3 or operate the special-remote-control BAL switch.                                                                                                                                                               |                                                               |
|                                         | Adjustment Method  | Auto balance (Saved in nonvolatile memory)                                                                                                                                                                                                                                    |                                                               |
|                                         | Adjustment Range   | Within $\pm 10000 \times 10^{-6}$ strain                                                                                                                                                                                                                                      | Within $\pm 10$ V                                             |
|                                         | Accuracy           | Within $\pm (0.1\%$ FS + $2 \times 10^{-6}$ strain)                                                                                                                                                                                                                           | Within $\pm 0.1\%$ FS                                         |
|                                         | NONE Accuracy      | Within $\pm 1\%$ FS*4                                                                                                                                                                                                                                                         | Within $\pm 0.2\%$ FS                                         |
| Input Range                             |                    | Within $\pm 60000 \times 10^{-6}$ strain                                                                                                                                                                                                                                      | Within $\pm 60$ V                                             |
| Common-mode Input Voltage               |                    | —                                                                                                                                                                                                                                                                             | Within $\pm 20$ V                                             |
| Absolute Maximum Rating                 | Input              | Within $\pm 5$ V                                                                                                                                                                                                                                                              | Within $\pm 70$ V                                             |
|                                         | Frequency Response | DC to 20 kHz, -3 $\pm 1$ dB (At 20 kHz)                                                                                                                                                                                                                                       |                                                               |



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

|                       |                                  |                                                                                                       |
|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------|
| Low-pass Filter       | Transfer Characteristics         | 5th-order Butterworth                                                                                 |
|                       | Cutoff Frequency                 | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz, FLAT* <sup>5</sup> , AUTO* <sup>6</sup>                |
|                       | Amplitude Ratio at Cutoff Point  | -3 ±1 dB                                                                                              |
|                       | Attenuation Characteristics      | -30 ±3 dB/oct.* <sup>7</sup>                                                                          |
| High-pass Filter      | Cutoff Frequency                 | 0.2, 1 Hz and OFF                                                                                     |
| AD Conversion         | Resolution                       | 24 bits                                                                                               |
|                       | Method                           | Synchronous sampling of all channels                                                                  |
| Indicator             |                                  | Channel-state indicator LED                                                                           |
| Other Functions       | Input Resistance Check Functions | Bridge resistance check function<br>Accuracy within ±2%<br>Used for sensor connection checks          |
|                       | TEDS                             | Read the TEDS information and apply it to the measurement conditions.* <sup>3</sup>                   |
| Power Supply          |                                  | Supplied by the CTRS-100A or CTRS-BATT010A                                                            |
| Power Consumption     |                                  | Approx. 2.1 W (When supplying 12 VDC)                                                                 |
| Operating Temperature |                                  | -10 to 50°C                                                                                           |
| Operating Humidity    |                                  | 20 to 90% (Non-condensing)                                                                            |
| Storage Temperature   |                                  | -20 to 60°C                                                                                           |
| Vibration Resistance  |                                  | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                              |
| Shock Resistance      |                                  | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                            |
| Degrees of Protection |                                  | IP50 (JIS C 0920/IEC 60529)                                                                           |
| Dimensions            |                                  | 26.6 W × 92 H × 94 D mm, not including protrusions or protectors                                      |
| Weight                |                                  | Approx. 240 g                                                                                         |
| Compliance            |                                  | Directive 2014/30/EU (EMC)<br>Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS) |
| Utility Nuts          |                                  | Size: M4, 6 places                                                                                    |

\* The measuring unit specifications apply to the state in which the temperature has stabilized after a preheating time of 30 minutes.

\*1 A separate bridge box is necessary.

\*2 When the sensor excitation is 2 VDC, the positive side of the sensor excitation is +1 V and the negative side is -1 V.  
When the sensor excitation is 5 VDC, the positive side of the sensor excitation is +2.5 V and the negative side is -2.5 V.

\*3 Only when online control is performed by a PC.

\*4 When the bridge resistance is 350 Ω

\*5 When FLAT is set, the cutoff frequency is set to approx. 25 kHz.

However, the cutoff-point amplitude ratio specification is not applied.

\*6 When AUTO is set, the cutoff frequency is set to approx. 1/4 the specified sampling frequency.

\*7 Excluding cutoff frequencies over 5 kHz

■ **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)  
Input connector caps ×4

■ **Optional Accessories** 4109P-S32-7 (4-conductor shielded) N-129  
4109P-S32-7 (6-conductor shielded) U-136  
4109P-BNC plug U-137  
4109P-BNC jack U-129  
4109P-R05 jack U-138

### CTRS-CVPS010A Specifications

|                   |                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------|
| Channels          | 4 (Isolated input circuit)                                                                               |
| Input Connector   |                                                                                                          |
| Connector Shape   | NDIS4109 receptacle                                                                                      |
|                   | Model: EPRC07-RX9FNDIS                                                                                   |
| Compatible Plug   | NDIS4109 plug                                                                                            |
|                   | Model: EPRC07-P9MNDIS                                                                                    |
| Measuring Target  | Voltage                                                                                                  |
| Sensor Excitation | 5, 10 VDC, OFF                                                                                           |
|                   | Accuracy: Within ±0.2%                                                                                   |
|                   | Channels 1 and 2 can output up to 35 mA / channel<br>Channels 3 and 4 can output up to 15 mA / channel   |
| Input Impedance   | (1.8 MΩ +1.8 MΩ) ±10%                                                                                    |
| Input Mode        | Balanced differential input                                                                              |
| Measuring Range   |                                                                                                          |
| Setting Method    | Any range method or OFF                                                                                  |
| Settable Range    | Minimum: 0.2 V<br>Maximum: 50 V                                                                          |
| Setting Steps     | 0.2 to 10 V 0.1 V steps<br>10 to 50 V 1 V steps                                                          |
| Range Accuracy    | Within ±0.2% FS                                                                                          |
|                   | (Apply to an ambient temperature at 23 ±5°C<br>and a stable temperature after preheating for 30 minutes) |
| Nonlinearity      | Within ±0.1% FS                                                                                          |

|                                 |                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Stability           |                                                                                                                                                                                                                                                         |
| Zero Point                      | Within ±(0.009% FS + 0.21 mV)/°C                                                                                                                                                                                                                        |
| Sensitivity                     | Within ±0.03%/°C                                                                                                                                                                                                                                        |
| Time Stability                  |                                                                                                                                                                                                                                                         |
| Zero Point                      | Within ±0.05% FS/8 h                                                                                                                                                                                                                                    |
| Sensitivity                     | Within ±0.05%/8 h                                                                                                                                                                                                                                       |
| Zero Suppress                   |                                                                                                                                                                                                                                                         |
| Setting                         | ON, OFF or NONE selectable for each channel.<br>ON: Execute zero suppress and set the measured value to zero.<br>OFF: Do not execute zero suppress again.<br>NONE: Zero suppress can be disabled to check the initial unbalanced value (Input voltage). |
| Operating Method                | Execute the zero suppress operation by using the control software or operate the special-remote-control BAL switch.                                                                                                                                     |
| Adjustment Method               | Auto balance (Saved in nonvolatile memory)                                                                                                                                                                                                              |
| Adjustment Range                | In the setting range of 0.2 to 0.9 V<br>In the setting range of 1 to 50 V                                                                                                                                                                               |
| Accuracy                        | Within ±0.1% FS                                                                                                                                                                                                                                         |
| NONE Accuracy                   | In the setting range of 0.2 to 0.4 V: Within ± 1 mV                                                                                                                                                                                                     |
|                                 | In the setting range of 0.5 to 50 V: Within ± 0.2 % FS<br>(Apply to an ambient temperature of 23 ± 5 °C<br>and a stable temperature after preheating for 30 minutes)                                                                                    |
| Input Voltage Range             | Within ±60 V                                                                                                                                                                                                                                            |
| Common-mode Input Voltage       |                                                                                                                                                                                                                                                         |
|                                 | Within ±20 V                                                                                                                                                                                                                                            |
| Absolute Maximum Rating         |                                                                                                                                                                                                                                                         |
| Input                           | Within ±70 V                                                                                                                                                                                                                                            |
| Frequency Response              | DC to 20k Hz (At 20k Hz input, -3 ±1 dB)                                                                                                                                                                                                                |
| Low-pass Filter                 |                                                                                                                                                                                                                                                         |
| Transfer Characteristics        | 5th-order Butterworth                                                                                                                                                                                                                                   |
| Cutoff Frequency                | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz, FLAT, AUTO<br>Cutoff frequency with "FLAT" :<br>approximately 25 kHz.<br>Cutoff frequency with "AUTO" :<br>1/4 of predetermined sampling frequency.                                                      |
| Amplitude Ratio at Cutoff Point |                                                                                                                                                                                                                                                         |
|                                 | -3±1 dB                                                                                                                                                                                                                                                 |
| Attenuation Characteristics     |                                                                                                                                                                                                                                                         |
|                                 | When the cutoff frequency is less than 5k Hz:<br>-30 ±3 dB/oct.<br>When the cutoff frequency exceeds 5k Hz:<br>-30 (+3, -12) dB/oct.                                                                                                                    |
| High-pass Filter                |                                                                                                                                                                                                                                                         |
| Cutoff Frequency                | 0.2, 1 Hz and OFF                                                                                                                                                                                                                                       |
| Attenuation Characteristics     |                                                                                                                                                                                                                                                         |
|                                 | -6 dB/oct.                                                                                                                                                                                                                                              |
| AD Conversion Resolution        |                                                                                                                                                                                                                                                         |
|                                 | 24 bits                                                                                                                                                                                                                                                 |
| Sampling Method                 | Synchronous sampling of all channels                                                                                                                                                                                                                    |
| Indicator                       | Channel-state indicator LED                                                                                                                                                                                                                             |
| Other Functions                 |                                                                                                                                                                                                                                                         |
| TEDS                            | Read the TEDS information and apply it to the measurement conditions.<br>(Only when online control is performed by a PC.)                                                                                                                               |
| Isolation                       | Between input to GND (Non-isolated between channels), withstand 250 VAC for one minute.                                                                                                                                                                 |
| Power Supply                    |                                                                                                                                                                                                                                                         |
| Power Consumption               | Approx. 3.1 W (at 12 VDC)                                                                                                                                                                                                                               |
| Operating Temperature           | -10 to 50°C                                                                                                                                                                                                                                             |
| Operating Humidity              | 20 to 90% (Non-condensing)                                                                                                                                                                                                                              |
| Storage Temperature             | -20 to 60°C                                                                                                                                                                                                                                             |
| Vibration Resistance            | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                                                                                                                                                                                |
| Shock Resistance                | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                                                                                                                                                                              |
| Degrees of Protection           | IP50 (JIS C 0920/IEC 60529)                                                                                                                                                                                                                             |
| Dimensions                      | 26.6 W × 92 H × 94 D mm, not including protrusions or protectors                                                                                                                                                                                        |
| Weight                          | Approx. 240 g                                                                                                                                                                                                                                           |
| Compliance                      | Directive 2014/30/EU (EMC)                                                                                                                                                                                                                              |
|                                 | Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS)                                                                                                                                                                                 |
| Utility Nuts                    | Size: M4, 6 places                                                                                                                                                                                                                                      |



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

- **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)  
Input connector caps × 4

- **Optional Accessories** 4109P-S32-7(6-conductor shielded) U-136  
4109P-BNC plug U-137  
4109P-BNC jack U-129  
4109P-R05 jack U-138

### CTRS-CTA010A Specifications

|                                         |                                                                                                                |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Channels                                | 4                                                                                                              |
| Input Connector*1                       |                                                                                                                |
| Connector Shape                         | Push-in spring connection                                                                                      |
| Connection Capacity                     | Conductor cross section solid / flexible                                                                       |
|                                         | 0.2 mm <sup>2</sup> to 1.5 mm <sup>2</sup>                                                                     |
|                                         | Conductor cross section AWG / kcmil 24 to 16                                                                   |
|                                         | Stripping length 8 mm                                                                                          |
| Measuring Targets                       | Thermocouples                                                                                                  |
| Measuring Targets*2                     | K, T, J, N                                                                                                     |
| Measuring Range                         | K: -200.0 to 1370.0°C                                                                                          |
|                                         | T: -200.0 to 400.0°C                                                                                           |
|                                         | J: -200.0 to 1200.0°C                                                                                          |
|                                         | N: -200.0 to 1300.0°C                                                                                          |
| Resolution                              | 0.1°C                                                                                                          |
| Accuracy                                |                                                                                                                |
| External Reference Junction Compensator |                                                                                                                |
|                                         | Above -100°C Within ±0.1% of reading ±0.4°C                                                                    |
|                                         | Below -100°C Within ±0.2% of reading ±0.6°C                                                                    |
| Internal Reference Junction Compensator |                                                                                                                |
|                                         | Ambient temperature 15°C to 35°C                                                                               |
|                                         | Above -100°C Within ±0.1% of reading ±1.4°C                                                                    |
|                                         | Below -100°C Within ±0.2% of reading ±1.6°C                                                                    |
|                                         | Ambient temperature -10°C to 50°C                                                                              |
|                                         | Above -100°C Within ±0.1% of reading ±2.4°C                                                                    |
|                                         | Below -100°C Within ±0.2% of reading ±2.6°C                                                                    |
| Sampling System                         | Scanning                                                                                                       |
| Inside Sampling Frequencies             |                                                                                                                |
|                                         | Approx. 0.5 Hz, approx. 2.0 Hz                                                                                 |
| Indicator                               | State indicator LED                                                                                            |
| Check Functions                         | Burnout check                                                                                                  |
| Withstand Voltage                       | 500 VAC for 1min. between input and case (Output)                                                              |
| Power Supply                            | Supplied by the CTRS-100A or CTRS-BATT010A                                                                     |
| Power Consumption                       | Approx. 0.7 W (when supplying 12 VDC)                                                                          |
| Operating Temperature                   | -10 to 50°C                                                                                                    |
| Operating Humidity                      | 20 to 90% (Non-condensing)                                                                                     |
| Storage Temperature                     | -20 to 60°C                                                                                                    |
| Vibration Resistance                    | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                                       |
| Shock Resistance                        | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                                     |
| Degrees of Protection                   | IP50 (JIS C 0920/IEC 60529)                                                                                    |
| Dimensions                              | 26.6 W × 92 H × 94 D mm, not including protrusions or protectors                                               |
|                                         | 26.6 W × 92 H × 127 D mm, not including protrusions or protectors, including the temperature measuring adapter |
| Weight                                  | Approx. 240 g, not including the temperature measuring adapter                                                 |
|                                         | Approx. 260 g, include the temperature measuring adapter                                                       |
| Compliance                              | Directive 2014/30/EU (EMC)                                                                                     |
|                                         | Directive 2011/65/EU, (EU)2015/863                                                                             |
|                                         | (10 restricted substances) (RoHS)                                                                              |
| Utility Nuts                            | Size: M4, 6 places                                                                                             |

\*1 Mounted on temperature measuring adapter

\*2 Thermocouple resistance 1 kΩ or less

- **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)  
Temperature measuring adapter CT-3A-4

- **Optional Accessories** Temperature measuring adapter CT-3A-4

### CTRS-IEPE010A Specifications

| Item                         |                                 | Accelerometer                                                                                                                                                                                                                      | Voltage                                                                                                                                                                                                                                                        |
|------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channels                     |                                 | 4                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                |
| Input Connector              | Connector Shape                 | BNC jack                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                |
|                              | Compatible Plug                 | BNC plug                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                |
| Measuring Targets            |                                 | IEPE Accelerometer (built-in amplifier type)<br>Charge converter is necessary when using a charge output accelerometer.<br>Recommended item: FUJII CERAMICS CORPORATION, "CAC1R0"                                                  | Voltage                                                                                                                                                                                                                                                        |
| Compatible Bridge Resistance |                                 | Constant current Approx. 4 mA<br>Excitation voltage: Approx. 23 V<br>Load resistance: 1 kΩ or less                                                                                                                                 | —                                                                                                                                                                                                                                                              |
| Input Impedance              |                                 | —                                                                                                                                                                                                                                  | 1.8 MΩ±10%                                                                                                                                                                                                                                                     |
| Input Modes                  |                                 | Unbalanced input                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |
| Measuring Range              | Setting Method                  | Any range method or OFF                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |
|                              | Settable Range                  | Minimum: 100 mV<br>Maximum: 5000 mV                                                                                                                                                                                                | Minimum: 1 V<br>Maximum: 10 V                                                                                                                                                                                                                                  |
|                              | Setting Steps                   | 100 to 990 mV 10 mV steps<br>1000 to 5000 mV 100 mV steps                                                                                                                                                                          | 1 to 10 V 0.1 V steps                                                                                                                                                                                                                                          |
| Range Accuracy               |                                 | Within ±0.5% FS                                                                                                                                                                                                                    | Within ±0.2% FS                                                                                                                                                                                                                                                |
| Nonlinearity                 |                                 | Within ±0.2% FS                                                                                                                                                                                                                    | Within ±0.1% FS                                                                                                                                                                                                                                                |
| Temperature Stability        | Zero Point                      | —                                                                                                                                                                                                                                  | Within ±(0.009% FS+0.21 mV)/°C                                                                                                                                                                                                                                 |
|                              | Sensitivity                     | Within ±0.03%/°C                                                                                                                                                                                                                   | Within ±0.03%/°C                                                                                                                                                                                                                                               |
| Time Stability               | Zero Point                      | —                                                                                                                                                                                                                                  | Within ±0.05%/8H                                                                                                                                                                                                                                               |
|                              | Sensitivity                     | Within ±0.1%/8H                                                                                                                                                                                                                    | Within ±0.1%/8H                                                                                                                                                                                                                                                |
| Zero Suppress                | Setting                         | —                                                                                                                                                                                                                                  | For each channel, ON, OFF, or NONE can be selected.<br>ON: Execute zero suppress and set the measured value to zero.<br>OFF: Do not execute zero suppress again.<br>NONE: zero suppress can be disabled to check the initial unbalanced value (input voltage). |
|                              | Operating Method                | —                                                                                                                                                                                                                                  | Execute the zero suppress operation by using the control software or operate the specialremote-control BAL switch.                                                                                                                                             |
|                              | Adjustment Method               | —                                                                                                                                                                                                                                  | Auto balance (saved in nonvolatile memory)                                                                                                                                                                                                                     |
|                              | Adjustment Range                | —                                                                                                                                                                                                                                  | Within ±10 V                                                                                                                                                                                                                                                   |
|                              | Accuracy                        | —                                                                                                                                                                                                                                  | Within ±0.1% FS                                                                                                                                                                                                                                                |
|                              | NONE Accuracy                   | —                                                                                                                                                                                                                                  | Within ±0.2% FS                                                                                                                                                                                                                                                |
| Input Voltage Range          |                                 | 0 to 20 V                                                                                                                                                                                                                          | Within ±20 V                                                                                                                                                                                                                                                   |
| Absolute Maximum Rating      | Input                           | -5 to 21 V                                                                                                                                                                                                                         | Within ±30 V                                                                                                                                                                                                                                                   |
| Frequency Response           |                                 | 0.5 Hz to 20 kHz<br>(At 20 kHz input, -3 ±1 dB)                                                                                                                                                                                    | DC to 20 kHz<br>(At 20 kHz input, -3 ±1 dB)                                                                                                                                                                                                                    |
| Low-pass Filter              | Transfer Characteristics        | Fifth-order Butterworth                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |
|                              | Cutoff Frequency                | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz, FLAT and AUTO<br>When FLAT is set, the cutoff frequency is set to approximately 25 kHz.*1<br>When AUTO is set, the cutoff frequency is set to 1/4 the specified sampling frequency. |                                                                                                                                                                                                                                                                |
|                              | Amplitude Ratio at Cutoff Point | -3±1 dB                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |
|                              | Attenuation Characteristics     | When the cutoff frequency is less than 5 kHz<br>-30 ± 3 dB/oct.<br>When the cutoff frequency exceeds 5 kHz<br>-30 (+3, -12) dB/oct.                                                                                                |                                                                                                                                                                                                                                                                |
| High-pass Filter             | Cutoff Frequency                | —                                                                                                                                                                                                                                  | 0.2, 1 Hz and OFF                                                                                                                                                                                                                                              |
|                              | Attenuation Characteristics     | —                                                                                                                                                                                                                                  | -6 dB/oct.                                                                                                                                                                                                                                                     |
| A/D Conversion Resolution    |                                 | 24 bits                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |
| Sampling Method              |                                 | Synchronous sampling of all channels                                                                                                                                                                                               |                                                                                                                                                                                                                                                                |
| Indicator                    |                                 | Status LED, channel-state indicator LED                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |
| Other Functions              | TEDS                            | Read the TEDS information and apply it to the measurement conditions. (Only when online control is performed by a PC)                                                                                                              | —                                                                                                                                                                                                                                                              |
| Power Supply                 |                                 | Supplied by the CTRS-100A or CTRS-BATT010A                                                                                                                                                                                         |                                                                                                                                                                                                                                                                |



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

|                                          |                                                                                                        |
|------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Power Consumption                        | Approx. 1.7 W (when supplying DC 12 V)                                                                 |
| Operating Temperature and Humidity Range | -10 to 50° C, 20 to 90% (non-condensing)                                                               |
| Storage Temperature Range                | -20 to 60° C                                                                                           |
| Vibration Resistance                     | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                               |
| Shock Resistance                         | 490 m/s <sup>2</sup> (50 G), 11 msec or less, Half sine wave                                           |
| Degrees of Protection                    | IP50 (JIS C 0920 / IEC 60529)                                                                          |
| External Dimensions                      | 26.6 (W) × 92 (H) × 94 (D) mm, not including protrusions or protectors                                 |
| Weight                                   | Approx. 230 g                                                                                          |
| Compliance                               | Directive 2014/30/EU (EMC)<br>Directive 2011/65/EU, (EU) 2015/863<br>(10 restricted substances) (RoHS) |
| Utility Nuts                             | Size: M4, 6 places                                                                                     |

\*The measuring unit specifications apply to an ambient temperature of 23 ± 5°C and a stable temperature after 30 minutes of preheating time.

\*The specifications do not include the accuracy of the optional charge converter.

\*1 The cutoff point amplitude ratio specification is not applied.

■ **Standard Accessories** Stack-connector caps (female)×1  
Stack-connector cap (male)×1

■ **Optional Accessories** Charge converter CAC1R0

### CTRS-CAG010A Specifications

|                          |                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------|
| CAN Ports                | 2                                                                                                     |
| CAN Port Connector       | ECB.1B.303.CLN LEMO made (Compatible plug FGB.1B.303.CLAD62Z)                                         |
| CAN Protocol             | ISO/DIS 11898-1 compliant                                                                             |
|                          | *Support for CAN and CAN FD Frames                                                                    |
| Supported Physical Layer |                                                                                                       |
|                          | ISO 11898-2 and ISO 11898-5                                                                           |
|                          | *Low Speed CAN not supported                                                                          |
| Termination Resistor     | Implementation (Selectable ON/OFF)                                                                    |
| Communication Speed      | 1000, 800, 500, 250, 125, 100, 83.3, 62.5,<br>50, 33.3, 25, 20, 10 kbps                               |
| CAN FD Data Bit Rate     | 5, 4, 2, 1, 0.5 Mbps, OFF                                                                             |
|                          | *Limited by communication speed. Refer to<br>The Configurable CAN FD Data Bit Rate Table.             |
| CAN Recording Mode       | Selected CAN ID mode (max. 1024 messages)                                                             |
|                          | All CAN ID mode                                                                                       |
|                          | *CAN trigger is not available                                                                         |
| Listen Only Mode         | (Selectable ON/OFF)                                                                                   |
|                          | *CAN data output is not available with listen<br>only mode.                                           |
| CAN Data Output          | Predetermined CAN data can be output up<br>to 32 messages at one time.                                |
| CAN Data Output Timing   | Output at start/ Output at stop/<br>Interval/ Manual                                                  |
| CAN Trigger              | Received CAN messages can be used as<br>trigger source.                                               |
| CAN Trigger Type         | Manual / Analog / Digital / Composite                                                                 |
| Other Function           | Automatic communication speed check                                                                   |
| Power Supply             | Supplied by the CTRS-100A or CTRS-BATT010A                                                            |
| Power Consumption        | Approx. 0.6 W (at 12 VDC)                                                                             |
| Operating Temperature    | -10 to 50°C                                                                                           |
| Operating Humidity       | 20 to 90% (Non-condensing)                                                                            |
| Storage Temperature      | -20 to 60°C                                                                                           |
| Vibration Resistance     | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                              |
| Shock Resistance         | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                            |
| Degrees of Protection    | IP50 (JIS C 0920/IEC 60529)                                                                           |
| Dimensions               | 26.6 (W) × 92 (H) × 94 (D) mm, not including<br>protrusions or protectors                             |
| Weight                   | Approx. 220 g                                                                                         |
| Compliance               | Directive 2014/30/EU (EMC)<br>Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS) |
| Utility Nuts             | Size: M4, 6 places                                                                                    |

### The Configurable CAN FD Data Bit Rate Table

| Communication Speed [kbps] | CAN FD Data Bit Rate [Mbps] |
|----------------------------|-----------------------------|
| 1000, 800                  | 2, 1, OFF                   |
| 500, 250                   | 5, 4, 2, 1, 0.5, OFF        |
| 125                        | 2, 1, 0.5, OFF              |
| 100, 83.3, 62.5            | 1, 0.5, OFF                 |
| 50, 33.3                   | 0.5, OFF                    |
| 25, 20, 10                 | OFF                         |

■ **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)

■ **Optional Accessories** CTRS CAN cable 9-pin male D-sub U-135



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

**CTRS-CAG011A Specifications**

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAN Ports                        | 2                                                                                                                                                                                                                                                                                                                                                                                                            |
| CAN Port Connector               | ECB.1B.303 LEMO made<br>(applicable plug FGB.1B.303.CLAD62Z)                                                                                                                                                                                                                                                                                                                                                 |
| CAN Protocol                     | ISO/DIS 11898-1 compliant<br>*Support for CAN and CAN FD Frames                                                                                                                                                                                                                                                                                                                                              |
| Supported Physical Layer         | ISO 11898-2 and ISO 11898-5<br>*Low Speed CAN not supported                                                                                                                                                                                                                                                                                                                                                  |
| Termination Resistor             | Implementation (Select ON/OFF)                                                                                                                                                                                                                                                                                                                                                                               |
| Communication Speed              | 1000, 800, 500, 250, 125, 100, 83.3, 62.5,<br>50, 33.3, 25, 20, 10 kbps                                                                                                                                                                                                                                                                                                                                      |
| CAN FD Data Bit Rate             | 5, 4, 2, 1, 0.5 Mbps, OFF<br>*Limited by communication speed. Refer to<br>The Configurable CAN FD Data Bit Rate Table.                                                                                                                                                                                                                                                                                       |
| CAN Recording Mode               | Selected CAN ID mode<br>All CAN ID mode<br>*CAN trigger is not available.                                                                                                                                                                                                                                                                                                                                    |
| Listen Only Mode                 | Select ON/OFF<br>*CAN data output is not available.                                                                                                                                                                                                                                                                                                                                                          |
| CAN Data Output                  | Up to 32 messages of arbitrary CAN data can<br>be output at one time.                                                                                                                                                                                                                                                                                                                                        |
| CAN Data Output Timing           | Output at start/ Output at stop/<br>Interval/ Manual                                                                                                                                                                                                                                                                                                                                                         |
| CAN Trigger                      | Received CAN messages can be used as<br>trigger source.                                                                                                                                                                                                                                                                                                                                                      |
| CAN Trigger Type                 | Manual / Digital / Analog / Composite                                                                                                                                                                                                                                                                                                                                                                        |
| Other Function                   | Automatic communication speed survey                                                                                                                                                                                                                                                                                                                                                                         |
| GPS Port                         | 1                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recordable GPS Data              | Latitude, longitude, number of received<br>satellites, positioning status, time, speed,<br>azimuth, altitude above sea level,<br>geoid height, horizontal accuracy loss rate,<br>position accuracy loss rate, vertical accuracy<br>loss rate, etc.<br>*Saving format: NMEA                                                                                                                                   |
| GPS Correction Function          | CTRS-100A internal time (every hour)<br>Sampling clock (at the start of recording)                                                                                                                                                                                                                                                                                                                           |
| Time Synchronization Measurement | Set the start time of recording to the time<br>data received by GPS.                                                                                                                                                                                                                                                                                                                                         |
| GPS Data Update Rate             | 5 times/second                                                                                                                                                                                                                                                                                                                                                                                               |
| Position Accuracy                | 2.5 m (CEP)<br>*The above values are for reference only,<br>and the accuracy is not guaranteed.<br>This accuracy may not be satisfied depending<br>on the installation condition of the antenna,<br>measurement environment, etc.<br>*CEP is an abbreviation for Circular Error<br>Probability, which means that 50% of the<br>data is contained within the radius of the<br>circle indicated by the number. |
| Power Supply                     | Supplied by the CTRS-100A or CTRS-BATT010A                                                                                                                                                                                                                                                                                                                                                                   |
| Power Consumption                | Approx. 0.7 W (when supplying 12 VDC)                                                                                                                                                                                                                                                                                                                                                                        |
| Operating Temperature            | -10 to 50°C                                                                                                                                                                                                                                                                                                                                                                                                  |
| Operating Humidity               | 20 to 90% (Non-condensing)                                                                                                                                                                                                                                                                                                                                                                                   |
| Storage Temperature              | -20 to 60°C                                                                                                                                                                                                                                                                                                                                                                                                  |
| Vibration Resistance             | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                                                                                                                                                                                                                                                                                                                                     |
| Shock Resistance                 | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                                                                                                                                                                                                                                                                                                                                   |
| Degrees of Protection            | IP50 (JIS C 0920/IEC 60529)                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimensions                       | 26.6 (W) × 92 (H) × 94 (D) mm, not including<br>protrusions or protectors                                                                                                                                                                                                                                                                                                                                    |
| Weight                           | Approx. 220 g                                                                                                                                                                                                                                                                                                                                                                                                |
| Compliance                       | Directive 2014/53/EU (RED)<br>Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS)                                                                                                                                                                                                                                                                                                        |
| Utility Nuts                     | Size: M4, 6 places                                                                                                                                                                                                                                                                                                                                                                                           |

**The Configurable CAN FD Data Bit Rate Table**

| Communication Speed [kbps] | CAN FD Data Bit Rate [Mbps] |
|----------------------------|-----------------------------|
| 1000, 800                  | 2, 1, OFF                   |
| 500, 250                   | 5, 4, 2, 1, 0.5, OFF        |
| 125                        | 2, 1, 0.5, OFF              |
| 100, 83.3, 62.5            | 1, 0.5, OFF                 |
| 50, 33.3                   | 0.5, OFF                    |
| 25, 20, 10                 | OFF                         |

- **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)  
GPS antenna (cable length 5 m)  
DAM1595-5M  
GPS connector cap

**GPS Antenna Specifications**

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Operating Temperature | -40 to 80°C                                                |
| Vibration Resistance* | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                   |
| Shock Resistance*     | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave |
| Degrees of Protection | IPX6                                                       |

\*Depends on results of verification tests

- **Optional Accessories** CTRS CAN cable 9-pin male D-sub U-135  
GPS antenna (cable length 5 m)  
DAM1595-5M



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

## CTRS-BATT010A Specifications

|                                                                              |                                                                                                                                                                                           |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of Battery                                                              | Lithium-ion battery                                                                                                                                                                       |
|                                                                              | United Nations Recommendations on the Transport of Dangerous Goods UN 38.3 safety tests: Passed                                                                                           |
|                                                                              | The UN 38.3 safety test certification and a certificate of Safe Transport of Chemical Goods (Test Report) issued by the Shanghai Research Institute of Chemical Industry, China: Received |
| Input (DC IN)                                                                | 10 to 30 VDC                                                                                                                                                                              |
|                                                                              | Connector: ECP.1S.302.CLL (LEMO)                                                                                                                                                          |
|                                                                              | Compatible plug: FFA.1S.302.CLA** (LEMO)                                                                                                                                                  |
|                                                                              | ** stands for the collet type, size number, etc.                                                                                                                                          |
| Output                                                                       | Voltage 10 VDC                                                                                                                                                                            |
|                                                                              | Current Maximum: 2.5 A (Ambient temperature: 0 to 40°C)                                                                                                                                   |
|                                                                              | Maximum: 1.5 A (Ambient temperature: -10 to 0°C)                                                                                                                                          |
|                                                                              | Maximum: 2.0 A (Ambient temperature: 40 to 50°C)                                                                                                                                          |
| Operating Switch                                                             | Battery-check switch                                                                                                                                                                      |
|                                                                              | Press once :                                                                                                                                                                              |
|                                                                              | Remaining battery power check The battery-check LED indicates the remaining battery power.                                                                                                |
|                                                                              | Hold down (For approx. one second) :                                                                                                                                                      |
|                                                                              | Battery integrity check                                                                                                                                                                   |
|                                                                              | The battery-check LED indicates the integrity.                                                                                                                                            |
| Indicator                                                                    | Status LEDs: 1                                                                                                                                                                            |
|                                                                              | During external-power operation: Lit up in blue                                                                                                                                           |
|                                                                              | During battery operation: Lit up in purple                                                                                                                                                |
|                                                                              | (The LED flashes purple when the remaining battery power is less than 30%.)                                                                                                               |
|                                                                              | When an error occurs: Flashes red                                                                                                                                                         |
|                                                                              | Battery-check LEDs: 3                                                                                                                                                                     |
|                                                                              | When checking the remaining battery power (Lit up in blue)                                                                                                                                |
|                                                                              | ●/●/● 100 to 70%                                                                                                                                                                          |
|                                                                              | ●/●/- 69 to 30%                                                                                                                                                                           |
|                                                                              | ●/-/- 29 to 0%                                                                                                                                                                            |
|                                                                              | *Flashes red at 5% or less                                                                                                                                                                |
|                                                                              | When checking the integrity (Lit up in purple)                                                                                                                                            |
|                                                                              | ●/●/● Good                                                                                                                                                                                |
|                                                                              | ●/●/- Caution                                                                                                                                                                             |
|                                                                              | ●/-/- Replacement required                                                                                                                                                                |
|                                                                              | When an error occurs: flash red (All 3)                                                                                                                                                   |
|                                                                              | (● : Lit up, - : Off)                                                                                                                                                                     |
| Charging Time*1                                                              |                                                                                                                                                                                           |
| When Charging the Battery Alone                                              |                                                                                                                                                                                           |
|                                                                              | 4.5 h or less (Ambient temperature 10 to 40°C)                                                                                                                                            |
|                                                                              | 7.0 h or less (Ambient temperature 0 to 10°C)                                                                                                                                             |
| When Supplying Power to the System and Charging the Battery at the Same Time |                                                                                                                                                                                           |
|                                                                              | 7.0 h or less (Ambient temperature 10 to 40°C)                                                                                                                                            |
|                                                                              | 10.0 h or less (Ambient temperature 0 to 10°C) *2                                                                                                                                         |
| Discharge Time                                                               | During 2.5 A (25 W) output: 60 min or more                                                                                                                                                |
|                                                                              | During 0.5 A (5 W) output: 300 min or more                                                                                                                                                |
|                                                                              | *When using a new battery at an ambient temperature of 25 ±10°C                                                                                                                           |
|                                                                              | (Reference) The power consumption of each unit is as follows:                                                                                                                             |
|                                                                              | CTRS-100A 3.5 W                                                                                                                                                                           |
|                                                                              | CTRS-CDV010A 2.1 W                                                                                                                                                                        |
|                                                                              | CTRS-SYNC010A 0.3 W                                                                                                                                                                       |
|                                                                              | Because the total power consumption in the case of analog measurement on 32 channels + the use of synchronous unit is approx. 18.5 W, operation for 80 minutes or more is possible.       |
| Operating Temperature                                                        |                                                                                                                                                                                           |
| Charging                                                                     | 0 to 40°C                                                                                                                                                                                 |
| Discharging                                                                  | -10 to 50°C                                                                                                                                                                               |
| Operating Humidity                                                           | 20 to 90% (Non-condensing)                                                                                                                                                                |
| Storage Temperature                                                          | -20 to 50°C                                                                                                                                                                               |
|                                                                              | *In the case of long-term storage for one month or more, avoid high temperatures or humidity, and store the unit at 40°C or less.                                                         |
| Vibration Resistance                                                         | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                                                                                                                  |
| Shock Resistance                                                             | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                                                                                                                |
| Degrees of Protection                                                        | IP50 (JIS C 0920/IEC 60529)                                                                                                                                                               |
| Dimensions                                                                   | 53.2 W × 92 H × 94 D mm                                                                                                                                                                   |
|                                                                              | * Not including protrusions or protectors                                                                                                                                                 |
| Weight                                                                       | Approx. 570 g                                                                                                                                                                             |
| Compliance                                                                   | Directive 2014/30/EU (EMC)                                                                                                                                                                |
|                                                                              | Directive 2011/65/EU, (EU)2015/863                                                                                                                                                        |
|                                                                              | (10 restricted substances) (RoHS)                                                                                                                                                         |
| Utility Nuts                                                                 | Size: M4, 12 places                                                                                                                                                                       |

## Battery Pack Replacement

Handled by Kyowa

(Replacement by the user is not possible.)

\*1 If the battery is hot, it may stop charging before it is fully charged for safety reasons. This is not a malfunction.

\*2 Depending on the environment, charging may stop before the battery is fully charged for safety reasons. This is not a malfunction.

■ Standard Accessories Stack-connector cap (male)

■ Optional Accessories AC adapter UNI345-1238-L-JP  
(For use outside Japan, purchase an optional AC power cable.)  
CTRS DC power cable P-79  
Connector cap BRA.1B.200.PCSG

## CTRS-WLAN010A/011A/012A Specifications

|                                            |                                                                                          |
|--------------------------------------------|------------------------------------------------------------------------------------------|
| Supported Functions                        | Collection of collected data, setting of measurement conditions, real-time monitoring *1 |
| Operating Switch                           | "WIRELESS": Enables or disables the wireless LAN unit operation.                         |
|                                            | "SETUP": Use the "Easy connection function" *2.                                          |
|                                            | "RESET": Reset SSID and security key to factory default.                                 |
| Indicator                                  | Status LED, Wireless LAN status LED (2.4 GHz and 5 GHz)                                  |
| Radio Section                              |                                                                                          |
| Compliance Standards                       | IEEE 802.11 a/b/g/n/ac                                                                   |
| Frequency                                  | 2.4 GHz and 5 GHz                                                                        |
| Channel                                    | CTRS-WLAN010A/012A                                                                       |
|                                            | 2.4 GHz: 1 to 13 ch                                                                      |
|                                            | 5 GHz: 36, 40, 44, 48 ch (W52) *3                                                        |
|                                            | CTRS-WLAN011A                                                                            |
|                                            | 2.4 GHz: 1 to 11 ch                                                                      |
|                                            | 5 GHz: 36, 40, 44, 48 ch (W52) *3                                                        |
|                                            | 149, 153, 157, 161, 165 ch (W58) *3                                                      |
| Security                                   | WPA2-PSK(AES), WPA-PSK(AUTO/TKIP) *4, None                                               |
| Network Type                               | Access point mode                                                                        |
| Number of Simultaneous Connections to a PC |                                                                                          |
|                                            | 1                                                                                        |
| Antenna                                    | Built-in antenna                                                                         |
| Country *5                                 | CTRS-WLAN010A: Japan                                                                     |
|                                            | CTRS-WLAN011A: U.S.                                                                      |
|                                            | CTRS-WLAN012A: Thailand, EU                                                              |
| Other Functions                            | Easy connection function, DHCP server function *6                                        |
| Power Supply                               | Supplied by the CTRS-100A or CTRS-BATT010A                                               |
| Power Consumption                          | Approx. 2.5 W (When supplying 12 VDC)                                                    |
| Operating Temperature                      | -10 to 50°C                                                                              |
| Operation Humidity                         | 20 to 90% (Non-condensing)                                                               |
| Storage Temperature                        | -20 to 60°C                                                                              |
| Vibration Resistance                       | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                 |
| Shock Resistance                           | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                               |
| Degrees of Protection                      | IP50 (JIS C 0920/IEC 60529)                                                              |
| Dimensions                                 | 26.6 (W) × 92 (H) × 94 (D) mm                                                            |
|                                            | * Not including protrusions or protectors                                                |
| Compliance                                 | CTRS-WLAN012A:                                                                           |
|                                            | Directive 2014/53/EU (RED)                                                               |
|                                            | Directive 2011/65/EU, (EU)2015/863                                                       |
|                                            | (10 restricted substances) (RoHS)                                                        |
| Weight                                     | Approx. 200 g                                                                            |
| Utility Nuts                               | Size: M4, 6 places                                                                       |

\*1 Depending on the radio wave environment of the installation location, the monitor may stop due to a decrease in the transfer rate of wireless LAN communication.

\*2 Communicate with WPS (Wi-Fi Protected Setup) compatible devices and use wireless LAN Easy to configure complex security settings. (Equivalent to WPS 2.0)

\*3 5 GHz band is for indoor use only. (Do not use outdoors)

\*4 When WPA-PSK (AUTO/TKIP) is selected, the "Easy connection function" cannot be used.

\*5 Not available in other countries.

\*6 The IP address of the wireless connection device (PC) can be set automatically.

■ Standard Accessories Stack-connector cap (male)  
Stack-connector cap (female)

■ Optional Accessories CTRS Network Utility Software  
\*Free of charge, please download from our website.



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

**CTRS-SYNC010A Specifications**

|                                              |                                                                                                                                                                                                            |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector                                    | Synchronous input connector                                                                                                                                                                                |
|                                              | Synchronous output connector                                                                                                                                                                               |
| Indicator                                    | Status LED                                                                                                                                                                                                 |
|                                              | REMOTE LED                                                                                                                                                                                                 |
| <b>Operating Switch</b>                      |                                                                                                                                                                                                            |
| 4-bit DIP Switch                             | ETHERNET-USB communication switch: 1 bit                                                                                                                                                                   |
|                                              | Device ID setting: 2 bits                                                                                                                                                                                  |
|                                              | Reserved: 1 bit                                                                                                                                                                                            |
| <b>Synchronous Operation Function</b>        |                                                                                                                                                                                                            |
| <b>Number of Units that Can Be Connected</b> |                                                                                                                                                                                                            |
|                                              | A maximum of four units can be connected in a cascade by using synchronous cable.                                                                                                                          |
| Recorded Data                                | Recorded data can be saved to the SD card for each CTRS-100A as a separate file or to a PC (Only when online control is performed by the PC).                                                              |
| Ethernet Communication                       | Communication is possible by connecting a communication cable.                                                                                                                                             |
|                                              | * Ethernet communication is possible at a distance of up to 53 m by extending the communication cable by using an RJ-45 relay connector (Kyowa recommended items) and LAN cable (Kyowa recommended items). |
| <b>Distance between Devices</b>              |                                                                                                                                                                                                            |
|                                              | 2 m or less                                                                                                                                                                                                |
| Power Supply                                 | Supplied by the CTRS-100A or CTRS-BATT010A                                                                                                                                                                 |
| Operating Temperature                        | -10 to 50°C                                                                                                                                                                                                |
| Operating Humidity                           | 20 to 90% (Non-condensing)                                                                                                                                                                                 |
| Storage Temperature                          | -20 to 60°C                                                                                                                                                                                                |
| Vibration Resistance                         | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                                                                                                                                                   |
| Shock Resistance                             | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                                                                                                                                                 |
| Degrees of Protection                        | IP50 (JIS C 0920/IEC 60529)                                                                                                                                                                                |
| Power Consumption                            | Approx. 0.3 W                                                                                                                                                                                              |
| Dimensions                                   | 26.6 W × 92 H × 94 D mm,                                                                                                                                                                                   |
|                                              | not including protrusions or protectors                                                                                                                                                                    |
| Weight                                       | Approx. 200 g                                                                                                                                                                                              |
| Compliance                                   | Directive 2014/30/EU (EMC)                                                                                                                                                                                 |
|                                              | Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS)                                                                                                                                    |
| Utility Nuts                                 | Size: M4, 6 places                                                                                                                                                                                         |

- **Standard Accessories** Stack-connector cap (female)  
Stack-connector cap (male)

- **Optional Accessories** CTRS sync cable N-130  
CTRS communication cable N-131  
LAN cable 20m NWYC5E-STP-S-BL-20  
LAN cable 50m LD-CTTBU500  
RJ-45 relay adapter ADT-EX-STPN  
Connector cap BRA.1B.200.PCSG

**CTRS-RCU010A Specifications**

|                                  |                                                                           |
|----------------------------------|---------------------------------------------------------------------------|
| <b>Operating Button Switches</b> |                                                                           |
| REC                              | Start recording.                                                          |
|                                  | Operating method: Press the button once.                                  |
| STOP                             | Stop recording.                                                           |
|                                  | Operating method: Press the button once or twice.* <sup>1</sup>           |
| BAL                              | Execute a balance operation.                                              |
|                                  | Operating method: Press the button twice or hold it down.* <sup>1</sup>   |
| READ                             | Read the condition settings from the SD card.                             |
|                                  | Operating method: Hold down the button.                                   |
| OPTION 1, OPTION 2               | Use the control software to assign any function to these buttons for use. |
|                                  | Operating method: Press the button once.                                  |
|                                  | • Monitor                                                                 |
|                                  | • Delete the latest data file                                             |
|                                  | • Over reset                                                              |
|                                  | • PAUSE                                                                   |
| Indicator                        | Status LED                                                                |
|                                  | Remaining-battery-power indicator LED                                     |
|                                  | Remaining-SD-card-space indicator LED                                     |
|                                  | Range-over indicator LED                                                  |
|                                  | REC LED                                                                   |
|                                  | BAL LED                                                                   |
|                                  | READ LED                                                                  |
|                                  | OPTION 1 LED                                                              |
|                                  | OPTION 2 LED                                                              |
| Other Functions                  | Built-in buzzer                                                           |
|                                  | Strap hole                                                                |
| Operating Temperature            | -10 to 50°C                                                               |
| Operating Humidity               | 20 to 90% (Non-condensing)                                                |
| Storage Temperature              | -20 to 60°C                                                               |
| Vibration Resistance             | 49.0 m/s <sup>2</sup> (5 G), 5 to 200 Hz                                  |
| Shock Resistance                 | 490 m/s <sup>2</sup> (50 G), 11 ms or less, half sine wave                |
| Degrees of Protection            | IP50 (JIS C 0920/IEC 60529)                                               |
| Power Consumption                | Approx. 0.2 W                                                             |
| Dimensions                       | 46 W × 90 H × 20 D mm, not including protrusions                          |
| Weight                           | Approx. 120 g                                                             |
| Compliance                       | Directive 2014/30/EU (EMC)                                                |
|                                  | Directive 2011/65/EU, (EU)2015/863<br>(10 restricted substances) (RoHS)   |
| Utility Nuts                     | Size: M3, 6 places                                                        |

\*<sup>1</sup> This can be switched by using the control software.

\*Hold down: To press and hold down a button for at least one second.

Press twice: To press a button switch twice within 0.5 seconds.



Data Logger

Amplifier

Indicator  
&  
Display

Handheld

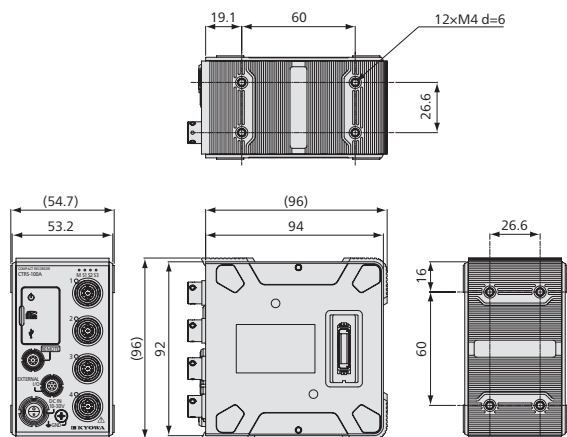
## DCS-100A Specification for Control of CTRS-100 Series

\*For details of DCS-100A, see chapter 4.

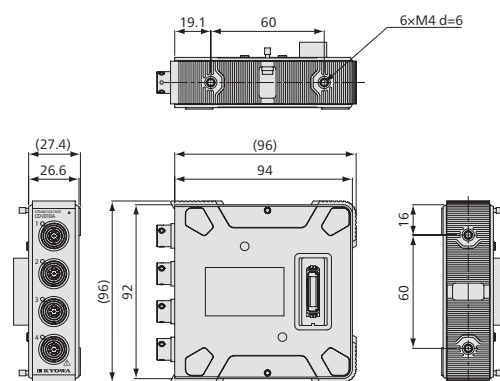
|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Units                                                         | Up to 4 units (up to 128 analog channels.)                                                                                                                                                                                                                                                                                                                                                                                                          |
| Interface                                                     | USB (USB2.0 High Speed) or Ethernet* (10/100BASE-T)                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                               | *A separate synchronous unit and special communication cable are necessary.                                                                                                                                                                                                                                                                                                                                                                         |
| Saving Format                                                 | Saves the measured data in the CTRS-100A SD card or PC folder.                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                               | When saving to the SD card of CTRS-100A, save the KS3 file. When saving to PC folder, save as KS3 file or KS2 file (01.06).                                                                                                                                                                                                                                                                                                                         |
| Channel Conditions                                            | Measuring ON/OFF, Measuring mode, Range (Arbitrary input), HPF, LPF, Balance adjustment ON/OFF/NONE, Input resistance check ON/OFF, Calibr. const., Offset, Cable correction value, Offset ZERO Value, Unit, Channel name, Measuring range, Rated capacity, Rated output, Deci Digits, Chk. Val. (Up), Chk. Val. (Down), Offset ZERO ON/OFF, TEDS User Data, TEDS Sensor Model, TEDS Sensor S/N, TEDS ROMID (Display items can freely be selected.) |
| Loading TEDS Sensor Information                               | Loads the TEDS information automatically and sets the channel conditions.                                                                                                                                                                                                                                                                                                                                                                           |
| Setting Parameter and Loading Parameter                       | Loads and sets the CTRS-100A internal parameter.                                                                                                                                                                                                                                                                                                                                                                                                    |
| Saving and Loading Meas Condition File                        | Loads and saves the meas condition file. (Extension: C1H)                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                               | The meas condition file includes environment settings, channel conditions, measuring conditions, display conditions on graphs and on numeric windows, and arithmetic operation conditions (Optional).                                                                                                                                                                                                                                               |
| Saving and Loading CTRS-100A Condition File                   | Loads and saves the CTRS-100A condition file (Extension: SET) by using the SD card.                                                                                                                                                                                                                                                                                                                                                                 |
| Collecting Data File                                          | Convert KS3 files and KC3 files in CTRS-100A SD card. (KS3 files can be converted to KS2 files and collected.)                                                                                                                                                                                                                                                                                                                                      |
| Deleting Data File                                            | PC deletes the KS3 files and KC3 files, saved in the CTRS-100A SD card.                                                                                                                                                                                                                                                                                                                                                                             |
| Formatting SD Card                                            | PC formats the CTRS-100A SD card.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Setting Environment                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Setting Hardware Configuration                                | Sets Interface, the number of units and device names. Loads the hardware configurations from the CTRS-100A.                                                                                                                                                                                                                                                                                                                                         |
| Communication Check                                           | Loads the CTRS-100A version.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Device Confirmation                                           | LEDs, on the CTRS-100A front panel, light up.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Others                                                        | Remote control unit operation beep, balance standard value, PAUSE ON/OFF, detailed hardware information display                                                                                                                                                                                                                                                                                                                                     |
| When the CAN Unit is Installed                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recording CAN Data                                            | Records up to 1024 message CAN data per one unit. (as the KC3 file).                                                                                                                                                                                                                                                                                                                                                                                |
|                                                               | *When saving to PC folder, Up to 1 CAN unit to be measured.                                                                                                                                                                                                                                                                                                                                                                                         |
| CAN Data Output                                               | Start, Stop, Interval, Manual                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>When Saving the Measured Data in the CTRS-100A SD Card</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Sampling Frequency                                            | 1 Hz to 100k Hz (1-2-5 system, 2n system, external clock)                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                               | *Limited by the number of channels.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Number of Data/CH                                             | Up to 1000000000 data                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Measure Mode                                                  | Manual, Manual (Set Record Data), Interval, Analog Trigger, External Trigger, Manual Trigger, Complex Trigger, CAN Trigger*.                                                                                                                                                                                                                                                                                                                        |
|                                                               | *CAN unit are necessary.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Manual Measurement                                            | Records data from REC to STOP or from REC to the number of data, specified on the Manual (Set Record Data).                                                                                                                                                                                                                                                                                                                                         |
|                                                               | Recording start time settable.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Interval Measurement                                          | Records data automatically based on the preset starting time and recording interval.                                                                                                                                                                                                                                                                                                                                                                |
| Trigger Measurement                                           | Starts/stops recording data based on the preset trigger conditions.                                                                                                                                                                                                                                                                                                                                                                                 |
| Common Trigger Conditions                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| End Trigger                                                   | Settable                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Delay                                                         | Up to 524288 data for both start and end.                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                               | *The delay time varies with the number of channels.                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                                       |                                                                                                                                               |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Analog Trigger Conditions</b>                      |                                                                                                                                               |
| Trigger Channel                                       | Any 1 channel of the master unit                                                                                                              |
| Trigger Level                                         | Physical quantity                                                                                                                             |
| Trigger Slope                                         | Positive or Negative                                                                                                                          |
| <b>External Trigger Conditions</b>                    |                                                                                                                                               |
| Trigger Slope                                         | Positive or Negative                                                                                                                          |
| <b>Manual Trigger Conditions</b>                      |                                                                                                                                               |
| <b>Complex Trigger Conditions</b>                     |                                                                                                                                               |
| Trigger Source                                        | Select from the analog channels (any 4 channels of the master unit), external trigger, or manual trigger.                                     |
|                                                       | Capable of judging the trigger source by using the logical AND and OR operators.                                                              |
| Trigger Level                                         | Physical quantity                                                                                                                             |
| Trigger Slope                                         | Positive or Negative                                                                                                                          |
| <b>CAN Trigger Conditions</b>                         |                                                                                                                                               |
| <b>Common CAN Trigger Conditions</b>                  |                                                                                                                                               |
| End Trigger                                           | Settable                                                                                                                                      |
| Delay                                                 | Only end.                                                                                                                                     |
|                                                       | With measurement CH: Up to 174762 s,                                                                                                          |
|                                                       | No measurement CH: Up to 65535 s                                                                                                              |
|                                                       | The delay time varies with the sampling frequency and the number of channels.                                                                 |
| <b>Manual Trigger Conditions</b>                      |                                                                                                                                               |
| <b>Analog Trigger Conditions</b>                      |                                                                                                                                               |
| Trigger Channel                                       | Any 1 signal of the master unit                                                                                                               |
| Trigger Level                                         | Physical quantity                                                                                                                             |
| Trigger Slope                                         | Positive or Negative                                                                                                                          |
| <b>Digital Trigger Conditions</b>                     |                                                                                                                                               |
| Trigger Channel                                       | Any 1 signal of the master unit                                                                                                               |
| Trigger Bit                                           | Any 1 bit                                                                                                                                     |
| Trigger Slope                                         | Positive, Negative, or Level                                                                                                                  |
| <b>Complex Trigger Conditions</b>                     |                                                                                                                                               |
| Trigger Source                                        | Trigger channel (any 8 signals of the master unit)                                                                                            |
|                                                       | Select from analog trigger or digital trigger.                                                                                                |
|                                                       | Trigger sources can be logically identified by AND / OR at once.                                                                              |
| Repeated Recording                                    | When recording data for a long time, the DCS-100A saves data, every preset number of data or every preset interval, in the KS3 format file.   |
|                                                       | *Measure Mode: Manual (Set Record Data) only.                                                                                                 |
| Data File                                             | File name, File Title,                                                                                                                        |
|                                                       | Grant rule: File No. or Recording start time.                                                                                                 |
|                                                       | File No.: 3 to 5 digits.                                                                                                                      |
| <b>When Saving the Measured Data in the PC Folder</b> |                                                                                                                                               |
| Sampling Frequency                                    | 1 Hz to 100k Hz (1-2-5 system, 2n system, external clock)                                                                                     |
|                                                       | *Limited by the number of channels. CAN data recording in synchronous operation: 2 kHz or less.                                               |
| File Size                                             | Up to the data drive capacity.                                                                                                                |
| Measure Mode                                          | Manual, Manual (Set Record Data), Interval, Analog Trigger                                                                                    |
| Manual Measurement                                    | Records data from REC to STOP or from REC to the number of data, specified on the Manual (Set Record Data).                                   |
| Interval Measurement                                  | Records data automatically based on the preset starting time and recording interval.                                                          |
| <b>Analog Trigger Measurement</b>                     |                                                                                                                                               |
|                                                       | Starts/stops recording data based on the preset trigger conditions.                                                                           |
| End Trigger                                           | Settable                                                                                                                                      |
| Delay                                                 | Up to 524288 data for both start and end.                                                                                                     |
|                                                       | *The delay time varies with the number of channels.                                                                                           |
| Trigger Channel                                       | Any 1 channel                                                                                                                                 |
| Trigger Level                                         | Physical quantity                                                                                                                             |
| Trigger Slope                                         | Positive or Negative                                                                                                                          |
| Static Measurement                                    | Every time the DCS-100A starts recording data, the DCS-100A additionally saves the moving-averaged measured data in a single CSV format file. |
|                                                       | *Measure Mode: Manual and Interval only.                                                                                                      |
| Repeated Recording                                    | When recording data for a long time, the DCS-100A saves data, every preset number of data or every preset interval, in the KS2 format file.   |
|                                                       | *Measure Mode: Manual (Set Record Data) only.                                                                                                 |
| Data File                                             | File name, File Title                                                                                                                         |
|                                                       | Grant rule: File No. only.                                                                                                                    |
|                                                       | File No.: 4 digits only.                                                                                                                      |

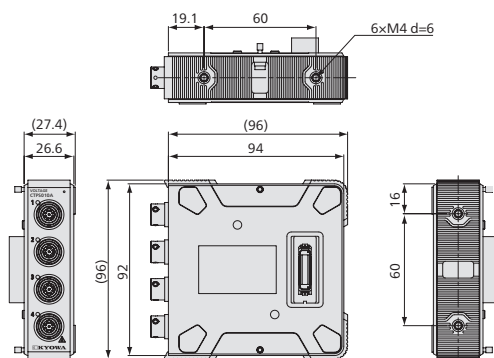
CTRS-100A



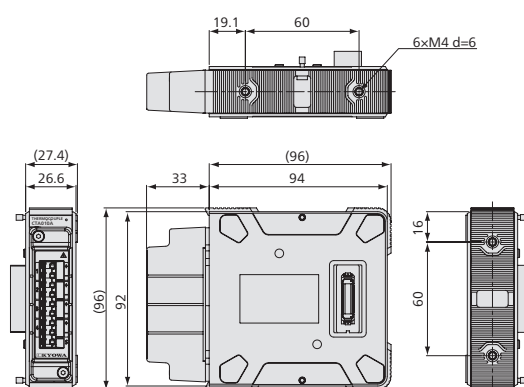
CTRS-CDV010A



CTRS-CVPS010A

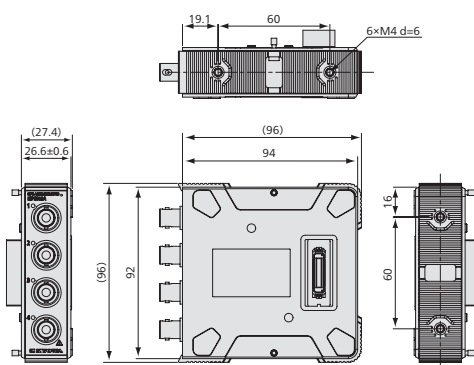


CTRS-CTA010A

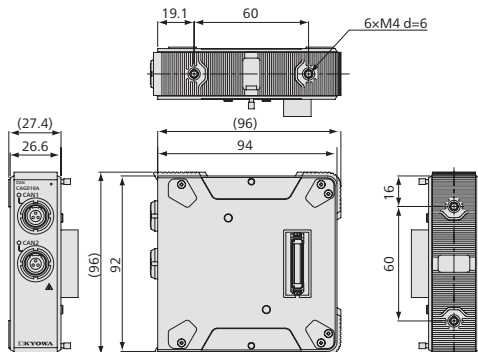


\*With the Temperature measuring adapter attached.

CTRS-IEPE010A



CTRS-CAG010A





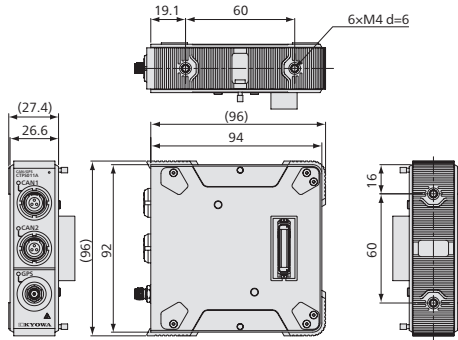
Data Logger

Amplifier

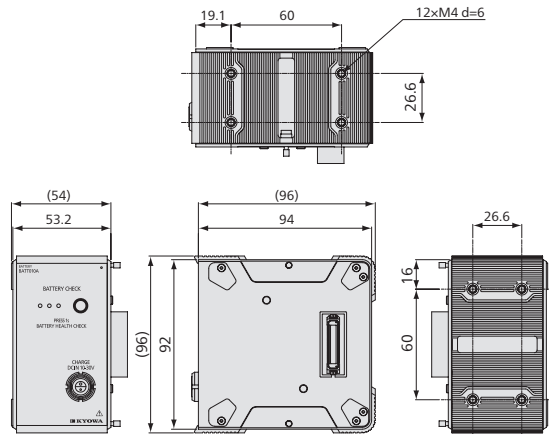
Indicator  
&  
Display

Handheld

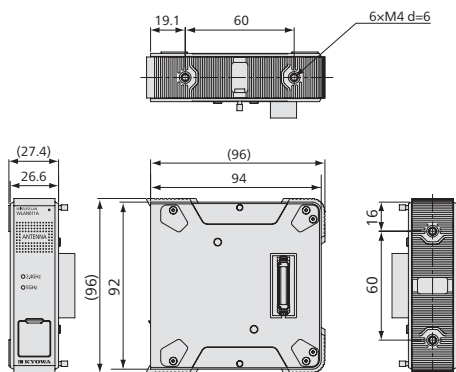
CTRS-CAG011A



CTRS-BATT010A

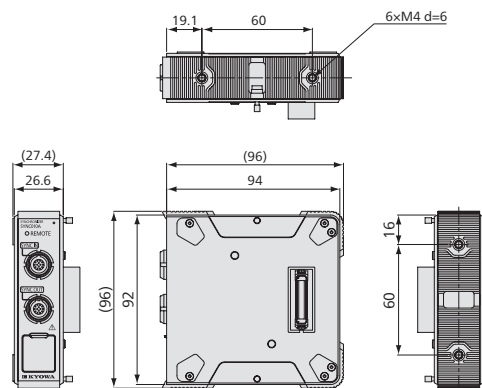


CTRS-WLAN011A\*



\*CTRS-WLAN010A/012A are the same in dimensions.

CTRS-SYNC010A



CTRS-RCU010A

