

Move into the future with reliable measurements



# CTRS-100 Series

Compact Recorder

# COMPACT & TOUGH

We're changing common sense  
for measuring instruments.



# COMPACT & TOUGH

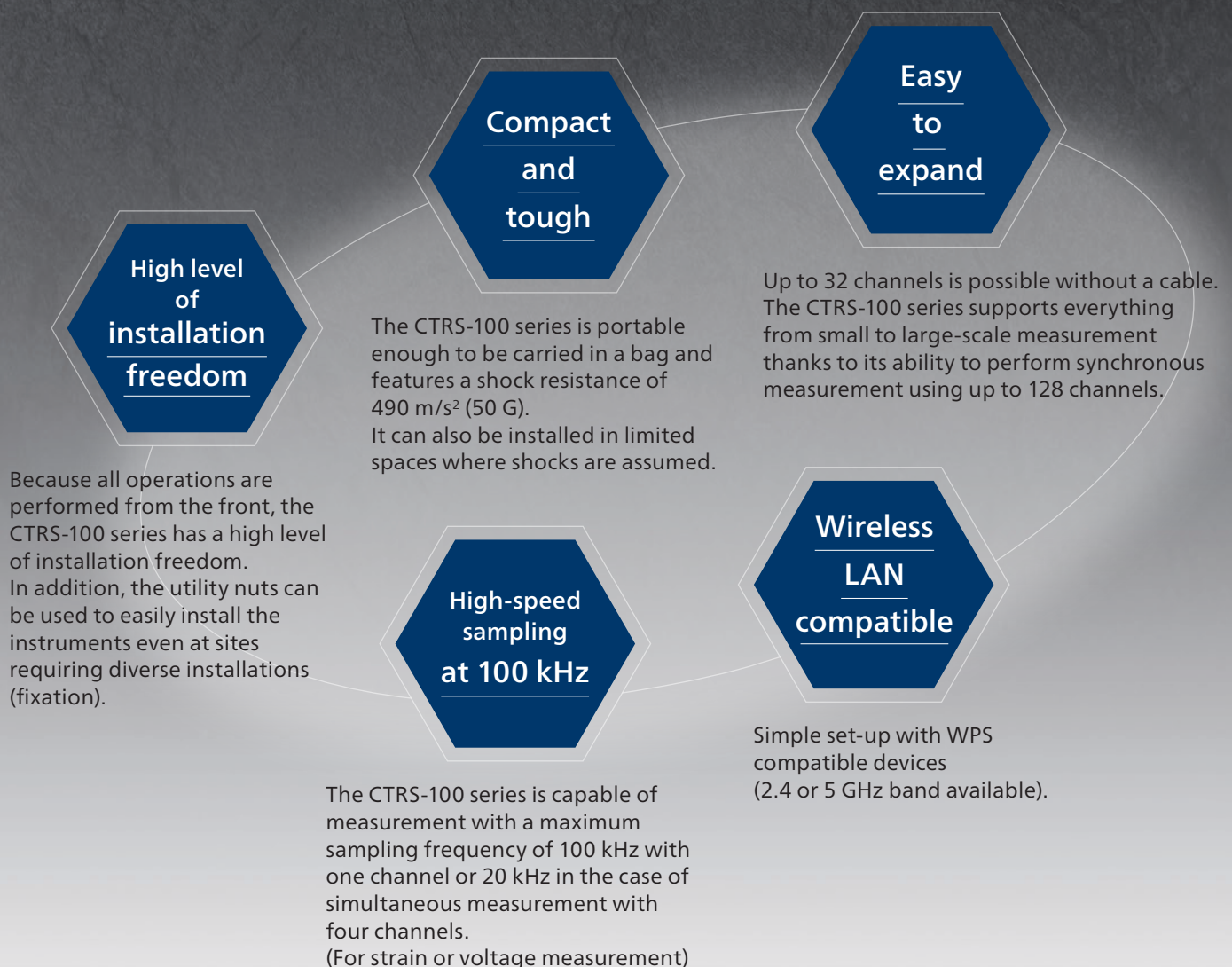
## Pursuit for simple operation on measurement site CTRS-100 Series

A body that is both compact and resistant to vibrations and shocks.

High expandability enabling expansion up to 128 channels.

Expanded possibilities for measurement in hard environments.

We're changing common sense for measuring instruments.





#### Compact Recorder

A unit for controlling each unit, saving data, and measuring strain and voltage.



#### Strain/Voltage Unit

A unit for measuring strain and voltage.



#### Thermocouple Unit

A unit for measuring temperature.

## CTRS-100 SERIES

## LINEUP



#### Battery Unit

A power supply unit that enables measurement even at locations without power.



#### Synchronization Unit

A unit for synchronous operation on 32 channels or more as well as connection with a PC or LAN.



#### Wireless LAN Unit

A unit for wireless LAN connection. (Certified in radio law in Japan, and U.S.)

## Application

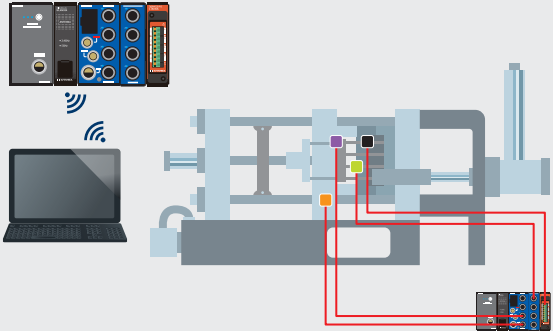
The CTRS-100 series has the excellent ability to perform the various type measurements, no worries to concern about the impact from certain environment. In the limited space, in the field or lab, especially it is exposed with vibrating or crashing. The data will be recorded reliably.\*1

In additional, the CTRS-100 series supports both of standalone recording and online recording via the interface of LAN or USB.



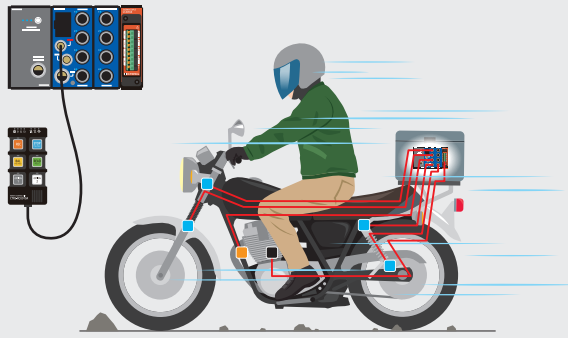
**[Research on walking aids]**  
Storage in limited spaces

Compact Recorder x1 Battery Unit x1  
Wireless LAN Unit x1



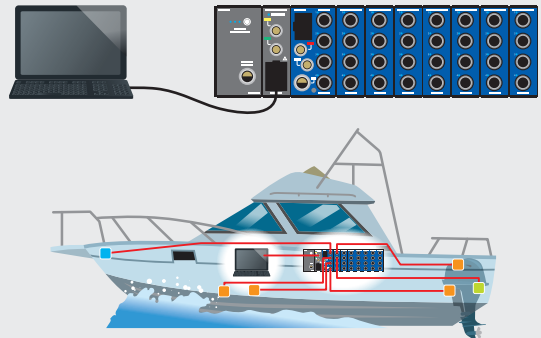
**[Multi-channel measurements for molding]**  
Select 2.4 or 5 GHz band depending on the environment

Compact Recorder x1 Strain/Voltage Unit x1 Battery Unit x1  
Thermocouple Unit x1 Wireless LAN Unit x1



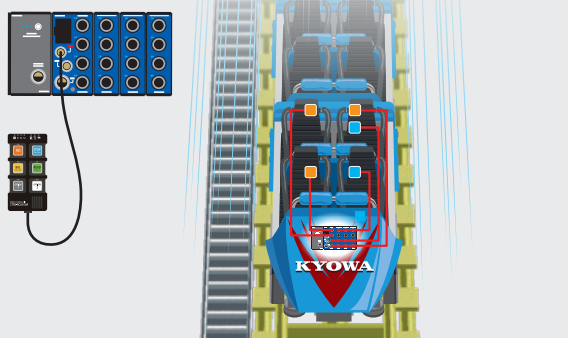
**[In-vehicle driving tests of motorcycles]**  
Operation in environments with vibrations/shocks

Compact Recorder x1 Strain/Voltage Unit x1 Battery Unit x1  
Thermocouple Unit x1 Remote Control Unit x1



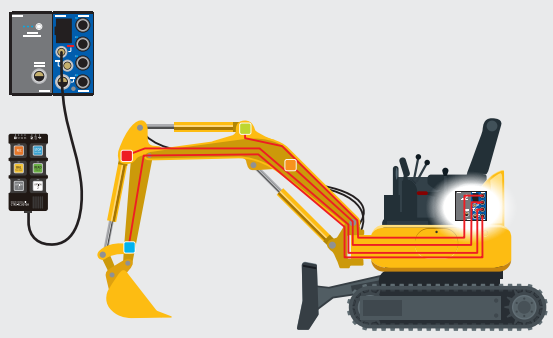
**[Full-scale ship tests of cruisers]**  
Multi-channel LAN monitoring

Compact Recorder x1 Strain/Voltage Unit x7  
Battery Unit x1 Synchronization Unit x1



**[Driving tests of rides]**  
Measurement is possible even with battery power

Compact Recorder x1 Strain/Voltage Unit x3  
Battery Unit x1 Remote Control Unit x1



**[Actual vehicle tests of construction machinery]**  
Installation even in limited spaces

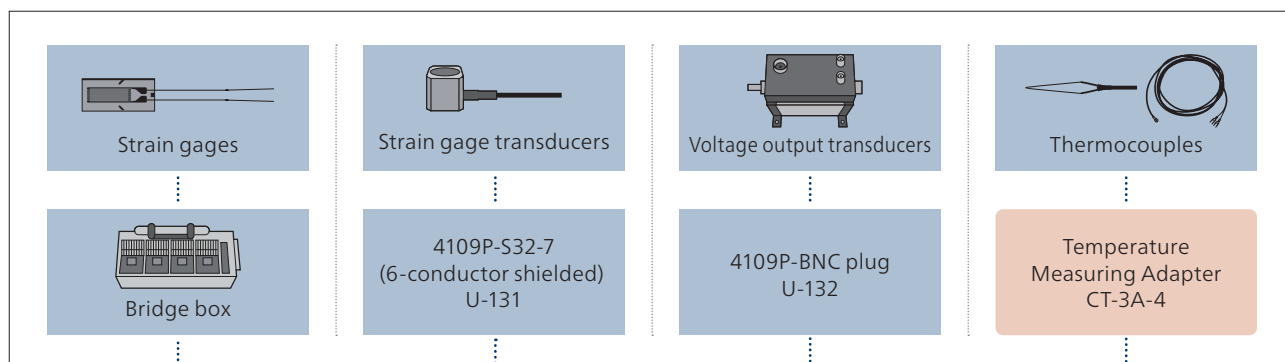
Compact Recorder x1 Battery Unit x1  
Remote Control Unit x1

■ ... Strain Gage\*2 
 ■ ... Acceleration Transducer 
 ■ ... Pressure Transducer 
 ■ ... Load Cell 
 ■ ... Displacement Transducer 
 ■ ... Thermocouple

\*1 The structure is not dustproof or waterproof. \*2 Bridge boxes are required for strain measurement.

## Configuration (1 to 32 channels)

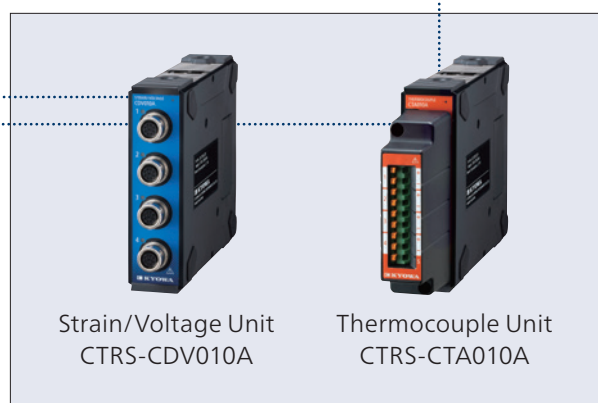
[For sensors/measurement]



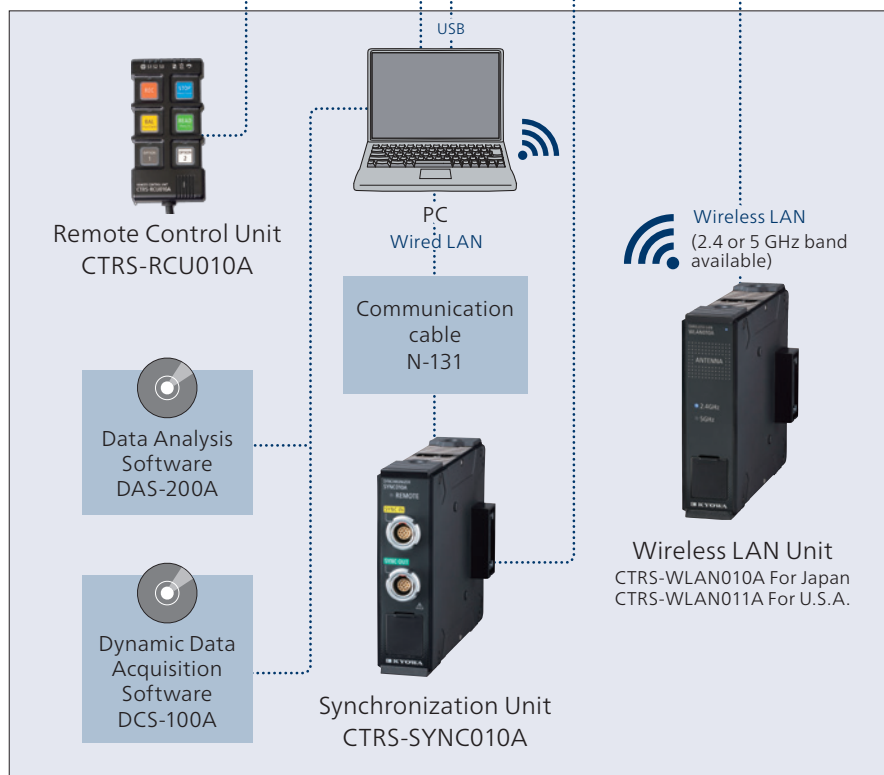
[Main Unit]



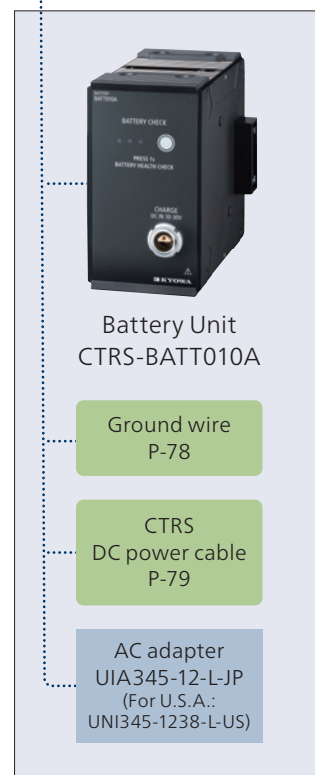
[Measuring Units] (Up to 7 units can be connected)



[Control/analysis]



[Power Supply]



\* The ■ items are standard accessories of the Compact Recorder. No other items are included.

\* The ■ items are standard accessories of the Thermocouple Unit. No other items are included.

\* For setting the measurement condition and performing online recording, the latest Dynamic Data Acquisition Software is required.

If you already have DCS-100A and it is not the latest version, please update it on our official website.

\* For standalone measurement, the Remote Control Unit is required.

\* For controlling via the interface of LAN, the Synchronization Unit or the Wireless LAN Unit is required.

\* One Compact Recorder is able to be combined with 7 measuring units, one Synchronization Unit, one Wireless LAN Unit and one Battery Unit as the maximum structure.

\* For details of the Data Analysis Software, contact us.

## 【Compact Recorder CTRS-100A Specifications】

| Item                        |                                       |                                                                 | Details                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|---------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Unit Specifications | Connector                             | USB Connector                                                   | Micro USB Type-B                                                                                                                                                                                                                                                                                                                                             |
|                             |                                       | Remote Control Connector                                        | Used to connect the remote control unit                                                                                                                                                                                                                                                                                                                      |
|                             |                                       | External I/O Connector                                          | Model: ECA.0B.307.CLN<br>Compatible connector: FGA.0B.307.CLAD52                                                                                                                                                                                                                                                                                             |
|                             | Operating Switch                      |                                                                 | POWER                                                                                                                                                                                                                                                                                                                                                        |
|                             | Main Unit Display                     |                                                                 | Status LED<br>SD card access indicator LED                                                                                                                                                                                                                                                                                                                   |
|                             | Data Recording Media                  |                                                                 | Kyowa recommended industrial-use SD card<br>SD standards: SDHC<br>Capacity: 4 GB, 16 GB<br>Format: FAT32<br>(Operation is not guaranteed if an SD card other than the recommended product is used.)                                                                                                                                                          |
|                             | Communication Interface               |                                                                 | USB (USB2.0 High Speed), Ethernet <sup>1)</sup> (10/100BASE-T)                                                                                                                                                                                                                                                                                               |
|                             | Number of Units that Can Be Connected | Measuring Unit                                                  | Up to 7 units can be connected per CTRS-100A (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.                                                                                                                                                                                                                                                 |
|                             | Synchronization between Devices       | Synchronization Method                                          | Use a synchronization unit and synchronous cable to connect CTRS-100As.                                                                                                                                                                                                                                                                                      |
|                             |                                       | Maximum Number of Units that Can Be Synchronized                | The maximum is four CTRS-100As, and a maximum of 128 measurement channels can be synchronized.                                                                                                                                                                                                                                                               |
|                             |                                       | Recorded Data                                                   | Data is recorded to each units SD card or a PC. <sup>2)</sup>                                                                                                                                                                                                                                                                                                |
|                             | Recorded Data                         | File Saving Location                                            | SD card, PC <sup>2)</sup>                                                                                                                                                                                                                                                                                                                                    |
|                             |                                       | Data Format                                                     | Kyowa standard format KS3                                                                                                                                                                                                                                                                                                                                    |
|                             |                                       | Maximum Data File Size                                          | 4 GB/1-data-file (1 GB = 1000000000 bytes) <sup>3)</sup>                                                                                                                                                                                                                                                                                                     |
|                             |                                       | Data Collection                                                 | Online collection : Collect by control software (PC)<br>Offline collection : Collect by directly reading data from an SD card to the PC                                                                                                                                                                                                                      |
|                             | Measurement Condition Setting Method  | Online Setting                                                  | Set by control software (PC)                                                                                                                                                                                                                                                                                                                                 |
|                             |                                       | Offline Setting                                                 | Set by reading the measurement-condition settings on the SD card                                                                                                                                                                                                                                                                                             |
|                             | Recording Modes                       | Manual                                                          | The user performs operations to start or stop recording.                                                                                                                                                                                                                                                                                                     |
|                             |                                       | Trigger (Compound Trigger)                                      | Automatic recording is performed based on the trigger condition setting.                                                                                                                                                                                                                                                                                     |
|                             |                                       | Interval                                                        | Automatic recording is performed based on the recording start time and recording interval settings.                                                                                                                                                                                                                                                          |
|                             | Sampling                              | Method                                                          | Synchronous sampling of all channels                                                                                                                                                                                                                                                                                                                         |
|                             |                                       | Frequency                                                       | 1-2-5 series<br>1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k Hz<br>2 <sup>n</sup> series<br>4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536 Hz<br>Maximum sampling frequency that can be set : 100 kHz / number of measurement channels                                                                  |
|                             |                                       |                                                                 |                                                                                                                                                                                                                                                                                                                                                              |
|                             |                                       | External Clock                                                  | Clock input from an external device is used as the sampling clock.<br>A frequency from 1 Hz to 100 kHz can be set in 1-Hz increments.<br>Input a clock within the range of the specified frequency $\pm 5\%$ .<br>Voltage level: High-level voltage 2.4 to 5 V Low-level voltage 0 to 0.8 V<br>DUTY: 30 to 70%                                               |
|                             | Trigger Functions                     | Trigger Type                                                    | ·Analog input signal (Analog trigger)<br>·External trigger input signal<br>(No-voltage contact, open collector, signal with high-level voltage 2.4 to 5 V and low-level voltage 0 to 0.8 V)<br>·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. <sup>4)</sup>                                                                                                                                                                                                                                                                                             |
|                             |                                       | Trigger Slope                                                   | Slope (positive), slope (negative)                                                                                                                                                                                                                                                                                                                           |
|                             |                                       | Pre-trigger                                                     | Specify the amount of data to save from before the start trigger point.<br>Any amount up to 524288 data items/the number of measurement channels can be set.                                                                                                                                                                                                 |
|                             |                                       | Post-trigger                                                    | Specify the amount of data to save from after the end trigger point.<br>Any amount up to 524288 data items/the number of measurement channels can be set.                                                                                                                                                                                                    |
|                             | Backup Function                       | Backup Target                                                   | Setting conditions, balance-adjustment value (Zero suppress value)                                                                                                                                                                                                                                                                                           |
|                             |                                       | Saving Location                                                 | Internal nonvolatile memory                                                                                                                                                                                                                                                                                                                                  |
|                             | External Clock Output                 | Signal Level                                                    | 5 VDC<br>The inverted or non-inverted signal can be set.                                                                                                                                                                                                                                                                                                     |
|                             |                                       | Division                                                        | A clock signal that is synchronized with the sampling clock is divided and output.<br>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.                                                                                                                                                                                                                                                                        |
|                             | Other Functions                       | Specification of the Number of Data Items to Record             | When the specified number of data items is recorded, recording automatically finishes.                                                                                                                                                                                                                                                                       |
|                             |                                       | Automatic Recovery Function in Power Interruption <sup>5)</sup> | 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.<br>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. |
|                             |                                       | Recording Recovery Function                                     | 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.                                                                                                                                                                                                                                                                         |
|                             |                                       | Trigger Signal Output                                           | Output a trigger signal when in the trigger (Compound trigger) recording mode.<br>While on standby: 5 VDC, while recording: 0 VDC                                                                                                                                                                                                                            |

| Item                          |                                      |                 | Strain measurement                                                                                                                                                   | Voltage measurement                                           |
|-------------------------------|--------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Measuring Unit Specifications | Channels                             |                 | 4                                                                                                                                                                    |                                                               |
|                               | Input Connector                      | Connector Shape | NDIS4109(Small round 9 pins) receptacle Model: EPRC07-RX9FNDIS                                                                                                       |                                                               |
|                               |                                      | Compatible Plug | NDIS4109(Small round 9 pins) plug Model: EPRC07-P9MNDIS                                                                                                              |                                                               |
|                               | Measuring Targets                    |                 | Strain gages <sup>6)</sup><br>Strain-gage transducers                                                                                                                | Voltage                                                       |
|                               | Compatible Bridge Resistance         |                 | When bridge excitation is set to 2 V 120 to 1000 $\Omega$<br>When bridge excitation is set to 5 V 350 to 1000 $\Omega$                                               | -                                                             |
|                               | Gage Factor                          |                 | 2.00 fixed                                                                                                                                                           | -                                                             |
|                               | Excitation Voltage/Sensor Excitation |                 | 2, 5 VDC<br>A maximum of 20 mA per channel can be output.                                                                                                            | 2, 5 VDC <sup>7)</sup> 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 $100 \times 10^{-6}$ strain steps<br>$\cdot 10000$ to $50000 \times 10^{-6}$ strain $1000 \times 10^{-6}$ strain steps | $\cdot 1$ to 10 V 0.1 V steps<br>$\cdot 10$ to 50 V 1 V steps |

| Item                          |                           |                                  | Strain measurement                                                                                                                                                                                                                                                            | Voltage measurement              |
|-------------------------------|---------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Measuring Unit Specifications | Range Accuracy            |                                  | Within ±0.2% FS                                                                                                                                                                                                                                                               |                                  |
|                               | Nonlinearity              |                                  | Within ±0.1% FS                                                                                                                                                                                                                                                               |                                  |
|                               | Temperature Stability     | Zero Point                       | Within ±(0.009% FS + 0.9 × 10 <sup>-6</sup> strain)/°C                                                                                                                                                                                                                        | Within ±(0.009% FS + 0.21 mV)/°C |
|                               |                           | Sensitivity                      | Within ±0.03%/°C                                                                                                                                                                                                                                                              |                                  |
|                               | Time Stability            | Zero Point                       | Within ±(0.09% FS + 9 × 10 <sup>-6</sup> strain)/8h                                                                                                                                                                                                                           | Within ±(0.09% FS + 0.1 mV)/8h   |
|                               |                           | Sensitivity                      | Within ±0.3%/8h                                                                                                                                                                                                                                                               |                                  |
|                               | 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*8 or operate the special-remote-control BAL switch.                                                                                                                                                               |                                  |
|                               |                           | Adjustment Method                | Auto balance (Saved in nonvolatile memory)                                                                                                                                                                                                                                    |                                  |
|                               |                           | Adjustment Range                 | Within ±10000 × 10 <sup>-6</sup> strain                                                                                                                                                                                                                                       | Within ±10 V                     |
|                               |                           | Accuracy                         | Within ±(0.1% FS + 2 × 10 <sup>-6</sup> strain)                                                                                                                                                                                                                               | Within ±0.1% FS                  |
|                               | NONE Accuracy             |                                  | Within ±1% FS*9                                                                                                                                                                                                                                                               | Within ±0.2% FS                  |
|                               | Input Range               |                                  | Within ±60000 × 10 <sup>-6</sup> strain                                                                                                                                                                                                                                       | Within ±60 V                     |
|                               | Common-mode Input Voltage |                                  | -                                                                                                                                                                                                                                                                             | Within ±20 V                     |
|                               | Absolute Maximum Rating   | Input                            | ±5 V                                                                                                                                                                                                                                                                          | ±70 V                            |
|                               | Frequency Response        |                                  | DC to 20 kHz, -3 ±1 dB (at 20 kHz)                                                                                                                                                                                                                                            |                                  |
|                               | LPF                       | Transfer Characteristics         | 5th-order Butterworth                                                                                                                                                                                                                                                         |                                  |
|                               |                           | Cutoff Frequency                 | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz as well as FLAT*10, AUTO*11                                                                                                                                                                                                     |                                  |
|                               |                           | Amplitude Ratio at Cutoff Point  | -3 ±1 dB                                                                                                                                                                                                                                                                      |                                  |
|                               |                           | Attenuation Characteristics      | -30 ±3 dB/oct.*12                                                                                                                                                                                                                                                             |                                  |
|                               | HPF                       | Cutoff Frequency                 | 0.2, 1 Hz and OFF                                                                                                                                                                                                                                                             |                                  |
|                               | AD Conversion             | Resolution                       | 24 bits                                                                                                                                                                                                                                                                       |                                  |
|                               |                           | Method                           | Synchronous sampling of all channels                                                                                                                                                                                                                                          |                                  |
|                               | Indicator                 |                                  | Channel-status 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.*8                                                                                                                                                                                                       |                                  |
| General Specifications        | Power Connector           |                                  | Model: ECP1S.302.CLL                                                                                                                                                                                                                                                          |                                  |
|                               | Power Supply              |                                  | 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                                                                                                                                                                                                                    |                                  |
|                               | Dimensions                |                                  | 53.2 W × 92 H × 94 D mm (Excluding protrusions or protectors)                                                                                                                                                                                                                 |                                  |
|                               | Weight                    |                                  | Approx. 420 g                                                                                                                                                                                                                                                                 |                                  |
|                               | Terminal                  |                                  | GND terminal: M3 bind                                                                                                                                                                                                                                                         |                                  |
|                               | Utility Nuts              |                                  | Size: M4, 12 places                                                                                                                                                                                                                                                           |                                  |

\*1 A separate synchronization 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 : 1000000000 ÷ number of measurement channels ÷ 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 -1V. When the sensor excitation is 5 VDC, the positive side of the sensor excitation voltage is +2.5 V and the negative side is -2.5 V.

\*8 Only when online control is performed by a PC

\*9 When the bridge resistance is 350 Ω

\*10 When FLAT is set, the cutoff frequency is set to approx. 25 kHz.

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

\*11 When AUTO is set, the cutoff frequency is set to approx. 1/4 the specified sampling frequency.

\*12 Excluding cutoff frequencies over 5 kHz

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

#### [Standard Accessories]

·Stack-connector caps (female) ×2  
·SD card (4 GB)  
·USB cable  
·CTRS DC power cable P-79  
·Ground wire P-78  
·Ballpoint screwdriver  
·Input connector caps ×4

#### [Optional Accessories]

CTRS AC adapter UIA345-12-L-JP  
(For U.S.A.: UNI345-1238-L-US)  
·Various measuring units  
·Various expansion units  
·Remote control unit  
·Connector cap BRA.0B.200.PCSG  
·Connector cap BRA.1B.200.PCSG

·EXTERNAL I/O cable U-133  
·4109P-S32-7 (4-conductor shielded) N-129  
·4109P-S32-7 (6-conductor shielded) U-131  
·4109P-BNC plug U-132  
·4109P-BNC jack U-129  
·4109P-R05 jack U-134  
·SD card 4GB

·SD card 16 GB RP-SDFC16SW1  
·Dynamic Data Acquisition Software DCS-100A  
(Please use the latest version)

## [Strain/Voltage Unit CTR5-CDV010A Specifications]

| Item                                |                 | Strain measurement                                                                                                                                             | Voltage measurement                            |
|-------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Channels                            |                 | 4                                                                                                                                                              |                                                |
| Input Connector                     | Connector Shape | NDIS4109(Small round 9 pins) receptacle Model: EPRC07-RX9FNDIS                                                                                                 |                                                |
|                                     | Compatible Plug | NDIS4109(Small round 9 pins) plug Model: EPRC07-P9MNDIS                                                                                                        |                                                |
| Measuring Targets                   |                 | Strain gages <sup>*1</sup><br>Strain-gage transducers                                                                                                          | Voltage                                        |
| Compatible Bridge Resistance        |                 | When bridge excitation is set to 2 V 120 to 1000 Ω<br>When bridge excitation is set to 5 V 350 to 1000 Ω                                                       | -                                              |
| Gage Factor                         |                 | 2.00 fixed                                                                                                                                                     | -                                              |
| Bridge Excitation/Sensor Excitation |                 | 2, 5 VDC                                                                                                                                                       | 2, 5 VDC <sup>*2</sup> OFF (0 V)               |
|                                     |                 | A maximum of 20 mA per channel can be output.                                                                                                                  |                                                |
| Input Impedance                     |                 | -                                                                                                                                                              | 3.6 MΩ±10%                                     |
| Input Modes                         |                 | Balanced differential input                                                                                                                                    |                                                |
| Measuring Range                     | Setting Method  | Any range method or OFF                                                                                                                                        |                                                |
|                                     | Settable Range  | Minimum: 1000 × 10 <sup>-6</sup> strain<br>Maximum: 50000 × 10 <sup>-6</sup> strain                                                                            | Minimum: 1 V<br>Maximum: 50 V                  |
|                                     | Setting Steps   | ·1000 to 10000 × 10 <sup>-6</sup> strain 100 × 10 <sup>-6</sup> strain steps<br>·10000 to 50000 × 10 <sup>-6</sup> strain 1000 × 10 <sup>-6</sup> strain steps | ·1 to 10V 0.1 V steps<br>·10 to 50 V 1 V steps |
| Range Accuracy                      |                 | Within ±0.2% FS                                                                                                                                                |                                                |
| Nonlinearity                        |                 | Within ±0.1% FS                                                                                                                                                |                                                |

## 【Strain/Voltage Unit CTRS-CDV010A Specifications】

| Item                      |                                  | Strain measurement                                                                                                                                                                                                                                                            | Voltage measurement                                                 |
|---------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Temperature Stability     | Zero Point                       | Within $\pm(0.009\% \text{ FS} + 0.9 \times 10^{-6} \text{ strain})/^{\circ}\text{C}$                                                                                                                                                                                         | Within $\pm(0.009\% \text{ FS} + 0.21 \text{ mV})/^{\circ}\text{C}$ |
|                           | Sensitivity                      | Within $\pm 0.03\%/^{\circ}\text{C}$                                                                                                                                                                                                                                          |                                                                     |
| Time Stability            | Zero Point                       | Within $\pm(0.09\% \text{ FS} + 9 \times 10^{-6} \text{ strain})/8 \text{ h}$                                                                                                                                                                                                 | Within $\pm(0.09\% \text{ FS} + 0.1 \text{ mV})/8 \text{ h}$        |
|                           | Sensitivity                      | Within $\pm 0.3\%/8 \text{ h}$                                                                                                                                                                                                                                                |                                                                     |
| 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 <sup>*3</sup> or operate the special-remote-control BAL switch.                                                                                                                                                   |                                                                     |
|                           | Adjustment Method                | Auto balance (Saved in nonvolatile memory)                                                                                                                                                                                                                                    |                                                                     |
|                           | Adjustment Range                 | Within $\pm 10000 \times 10^{-6} \text{ strain}$                                                                                                                                                                                                                              | Within $\pm 10 \text{ V}$                                           |
|                           | Accuracy                         | Within $\pm (0.1\% \text{ FS} + 2 \times 10^{-6} \text{ strain})$                                                                                                                                                                                                             | Within $\pm 0.1\% \text{ FS}$                                       |
|                           | NONE Accuracy                    | Within $\pm 1\% \text{ FS}$ <sup>*4</sup>                                                                                                                                                                                                                                     | Within $\pm 0.2\% \text{ FS}$                                       |
| Input Range               |                                  | Within $\pm 60000 \times 10^{-6} \text{ strain}$                                                                                                                                                                                                                              | Within $\pm 60 \text{ V}$                                           |
| Common-mode Input Voltage |                                  | -                                                                                                                                                                                                                                                                             | Within $\pm 20 \text{ V}$                                           |
| Absolute Maximum Rating   | Input                            | $\pm 5 \text{ V}$                                                                                                                                                                                                                                                             | $\pm 70 \text{ V}$                                                  |
| Frequency Response        |                                  | DC to 20 kHz, $-3 \pm 1 \text{ dB}$ (at 20 kHz)                                                                                                                                                                                                                               |                                                                     |
| LPF                       | Transfer Characteristics         | 5th-order Butterworth                                                                                                                                                                                                                                                         |                                                                     |
|                           | Cutoff Frequency                 | 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k Hz as well as FLAT <sup>*5</sup> , AUTO <sup>*6</sup>                                                                                                                                                                              |                                                                     |
|                           | Amplitude Ratio at Cutoff Point  | $-3 \pm 1 \text{ dB}$                                                                                                                                                                                                                                                         |                                                                     |
|                           | Attenuation Characteristics      | $-30 \pm 3 \text{ dB/oct.}$ <sup>*7</sup>                                                                                                                                                                                                                                     |                                                                     |
| HPF                       | Cutoff Frequency                 | 0.2, 1 Hz and OFF                                                                                                                                                                                                                                                             |                                                                     |
| AD Conversion             | Resolution                       | 24 bits                                                                                                                                                                                                                                                                       |                                                                     |
|                           | Method                           | Synchronous sampling of all channels                                                                                                                                                                                                                                          |                                                                     |
| Indicator                 |                                  | Status LED, channel-status 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. <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 $50^{\circ}\text{C}$                                                                                                                                                                                                                                                 |                                                                     |
| Operating Humidity        |                                  | 20 to 90% (Non-condensing)                                                                                                                                                                                                                                                    |                                                                     |
| Storage Temperature       |                                  | $-20$ to $60^{\circ}\text{C}$                                                                                                                                                                                                                                                 |                                                                     |
| Vibration Resistance      |                                  | $49.0 \text{ m/s}^2$ (5 G), 5 to 200 Hz                                                                                                                                                                                                                                       |                                                                     |
| Shock Resistance          |                                  | $490 \text{ m/s}^2$ (50 G), 11 ms or less, half sine wave                                                                                                                                                                                                                     |                                                                     |
| Dimensions                |                                  | $26.6 \text{ W} \times 92 \text{ H} \times 94 \text{ D mm}$ (Excluding protrusions or protectors)                                                                                                                                                                             |                                                                     |
| Weight                    |                                  | Approx. 240 g                                                                                                                                                                                                                                                                 |                                                                     |
| 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  $\Omega$ .

\*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 x4

### 【Optional Accessories】

·4109P-S32-7 (4-conductor shielded) N-129  
·4109P-S32-7 (6-conductor shielded) U-131  
·4109P-BNC plug U-132  
·4109P-BNC jack U-129  
·4109P-R05 jack U-134

## 【Thermocouple Unit CTRS-CTA010A Specifications】

| Item                            |                                         | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channels                        |                                         | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Input Connector <sup>*1</sup>   | Connector Shape                         | Push-in spring connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                 | Connection Capacity                     | Conductor cross section solid / flexible 0.2 mm <sup>2</sup> ...1.5 mm <sup>2</sup><br>Conductor cross section AWG / kcmil 24...16<br>Stripping length 8 mm                                                                                                                                                                                                                                                                                                                                     |
| Measuring Targets               |                                         | Thermocouples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Measuring Targets <sup>*2</sup> |                                         | K, T, J, N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Measuring Range                 |                                         | K -200.0 to 1370.0 $^{\circ}\text{C}$ T -200.0 to 400.0 $^{\circ}\text{C}$ J -200.0 to 1200.0 $^{\circ}\text{C}$ N -200.0 to 1300.0 $^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                          |
| Resolution                      |                                         | 0.1 $^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Accuracy                        | External Reference Junction Compensator | Above $-100^{\circ}\text{C}$ Within $\pm 0.1\%$ of reading $\pm 0.4^{\circ}\text{C}$<br>Below $-100^{\circ}\text{C}$ Within $\pm 0.2\%$ of reading $\pm 0.6^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                    |
|                                 | Internal Reference Junction Compensator | Ambient temperature $15^{\circ}\text{C}$ to $35^{\circ}\text{C}$<br>Above $-100^{\circ}\text{C}$ Within $\pm 0.1\%$ of reading $\pm 1.4^{\circ}\text{C}$ Below $-100^{\circ}\text{C}$ Within $\pm 0.2\%$ of reading $\pm 1.6^{\circ}\text{C}$<br>Ambient temperature $-10^{\circ}\text{C}$ to $50^{\circ}\text{C}$<br>Above $-100^{\circ}\text{C}$ Within $\pm 0.1\%$ of reading $\pm 2.4^{\circ}\text{C}$ Below $-100^{\circ}\text{C}$ Within $\pm 0.2\%$ of reading $\pm 2.6^{\circ}\text{C}$ |
| Sampling System                 |                                         | Scanning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Inside Sampling Frequencies     |                                         | Approx. 0.5 Hz, approx. 2.0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Indicator                       |                                         | State indicator LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Check Functions                 |                                         | Burnout check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Withstand Voltage               |                                         | 500VAC 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 $50^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Operating Humidity              |                                         | 20 to 90% (Non-condensing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Storage Temperature             |                                         | $-20$ to $60^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Vibration Resistance            |                                         | $49.0 \text{ m/s}^2$ (5 G), 5 to 200 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Shock Resistance                |                                         | $490 \text{ m/s}^2$ (50 G), 11 ms or less, half sine wave                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Dimensions                      |                                         | $26.6 \text{ W} \times 92 \text{ H} \times 94 \text{ D mm}$ (Excluding protrusions or protectors)<br>$26.6 \text{ W} \times 92 \text{ H} \times 127 \text{ D mm}$ (Excluding protrusions or protectors, including the temperature measuring adapter)                                                                                                                                                                                                                                            |
| Weight                          |                                         | Approx. 240 g, not including the temperature measuring adapter<br>Approx. 260 g, include the temperature measuring adapter                                                                                                                                                                                                                                                                                                                                                                      |
| 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.

### 【Standard Accessories】

·Stack-connector cap (female) ·Stack-connector cap (male)  
·Temperature measuring adapter CT-3A-4

### 【Optional Accessories】

·Temperature measuring adapter CT-3A-4

## [Battery Unit CTRS-BATT010A Specifications]

| Item                     |                                                                              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of Battery          |                                                                              | Lithium-ion battery<br>United Nations Recommendations on the Transport of Dangerous Goods UN 38.3 safety tests: Passed<br>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<br>Connector: ECP.1S.302.CLL (LEMO)<br>Compatible plug: FFA.1S.302.CLA** (LEMO)<br>** stands for the collet type, size number, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Output                   |                                                                              | Voltage 10 VDC<br>Current Maximum: 2.5 A (Ambient temperature: 0 to 40°C)<br>Maximum: 1.5 A (Ambient temperature: -10 to 0°C)<br>Maximum: 2.0 A (Ambient temperature: 40 to 50°C)                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Operating Switch         |                                                                              | Battery-check switch<br>Press once : Remaining battery power check<br>The battery-check LED indicates the remaining battery power.<br>Hold down (For approx. one second) : Battery integrity check<br>The battery-check LED indicates the integrity.                                                                                                                                                                                                                                                                                                                                                   |
| Indicator                |                                                                              | Status LEDs 1<br>During external-power operation: lit up in blue<br>During battery operation: lit up in purple<br>(The LED flashes purple when the remaining battery power is less than 30%.)<br>When an error occurs: flashes red<br>Battery-check LEDs: 3<br>When checking the remaining battery power: ●/●/● 100 to 70%<br>(Lit up in blue) ●/●/— 69 to 30%<br>●/—/— 29 to 0% * Flashes red at 5% or less<br>When checking the integrity: ●/●/● Good<br>(Lit up in purple) ●/●/— Caution<br>●/—/— Replacement required<br>Flash red (all 3)<br>When an error occurs: ●/—/—<br>(● : Lit up, — : Off) |
| Charging Time*1          | When Charging the Battery Alone                                              | 4.5 h or less (Ambient temperature 10 to 40°C)<br>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)<br>10.0 h or less (Ambient temperature 0 to 10°C)*2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Discharge Time           |                                                                              | During 2.5 A (25 W) output: 60 minutes or more<br>During 0.5 A (5 W) output: 300 minutes or more<br>* When using a new battery at an ambient temperature of 25 ±10°C<br>(Reference) The power consumption of each unit is as follows:<br>CTRS-100A 3.5 W CTRS-CDV010A 2.1 W CTRS-SYNC010A 0.3 W<br>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<br>* 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimensions               |                                                                              | 53.2 W × 92 H × 94 D mm (Excluding protrusions or protectors)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Weight                   |                                                                              | Approx. 570 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Utility Nuts             |                                                                              | Size: M4, 12 places                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Battery Pack Replacement |                                                                              | Handled by Kyowa<br>(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]

·CTRS AC adapter UIA345-12-L-JP (For U.S.A.: UN1345-1238-L-US) ·CTRS DC power cable P-79 ·Connector cap BRA.1B.200.PCSG

## [Synchronization Unit CTRS-SYNC010A Specifications]

| Item                           |                                      | Details                                                                                                                                                                                                                                                                        |
|--------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector                      |                                      | Synchronous input connector<br>Synchronous output connector                                                                                                                                                                                                                    |
| Indicator                      |                                      | Status LED<br>REMOTE LED                                                                                                                                                                                                                                                       |
| Operating Switch               | 4-bit DIP Switch                     | ETHERNET-USB communication switch: 1 bit<br>Device ID setting: 2 bits<br>Reserved: 1 bit                                                                                                                                                                                       |
| Synchronous Operation Function | Number of Unit that Can Be Connected | 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.<br>* Ethernet communication is possible at a distance of up to 52.8 m by extending the communication cable by using an RJ-45 relay connector (Kyowa recommended items) and LAN cable (Kyowa recommended items). |
| Distance between Devices       |                                      | 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                                                                                                                                                                                                                     |
| Power Consumption              |                                      | Approx. 0.3 W                                                                                                                                                                                                                                                                  |
| Dimensions                     |                                      | 26.6 W × 92 H × 94 D mm (Excluding protrusions or protectors)                                                                                                                                                                                                                  |
| Weight                         |                                      | Approx. 200 g                                                                                                                                                                                                                                                                  |
| Utility Nuts                   |                                      | Size: M4, 6 places                                                                                                                                                                                                                                                             |

### [Standard Accessories]

·Stack-connector cap (female)  
·Stack-connector cap (male)

### [Optional Accessories]

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

## [Wireless LAN Unit CTRS-WLAN010A/011A Specifications]

| Item                  |                                            | Details                                                                                                                                                                                     |                                                                                                                         |
|-----------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Model                 |                                            | CTRS-WLAN010A                                                                                                                                                                               | CTRS-WLAN011A                                                                                                           |
| Supported Functions   |                                            | Collection of collected data, Setting of measurement conditions, Real-time monitoring <sup>*1</sup>                                                                                         |                                                                                                                         |
| Operating Switch      |                                            | "WIRELESS" : Enables or disables the wireless LAN unit operation. "SETUP" : Use the "Easy connection function" <sup>*2</sup> .<br>"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                                    | 2.4 GHz : 1 to 13 ch<br>5 GHz : 36, 40, 44, 48 ch (W52) <sup>*3</sup>                                                                                                                       | 2.4 GHz : 1 to 11 ch<br>5 GHz : 36, 40, 44, 48 ch (W52) <sup>*3</sup><br>149, 153, 157, 161, 165 ch (W58) <sup>*3</sup> |
|                       | Security                                   | WPA2-PSK(AES) WPA-PSK(AUTO/TKIP) <sup>*4</sup> None                                                                                                                                         |                                                                                                                         |
|                       | Network Type                               | Access point mode                                                                                                                                                                           |                                                                                                                         |
|                       | Number of Simultaneous Connections to a PC | 1                                                                                                                                                                                           |                                                                                                                         |
|                       | Antenna                                    | Built-in antenna                                                                                                                                                                            |                                                                                                                         |
|                       | Country <sup>*5</sup>                      | Japan                                                                                                                                                                                       | U.S.                                                                                                                    |
| Other Functions       |                                            | Easy connection function DHCP server function <sup>*6</sup>                                                                                                                                 |                                                                                                                         |
| Power Supply          |                                            | Supplied by the CTRS-100A or CTRS-BATT010A                                                                                                                                                  |                                                                                                                         |
| Power Consumption     |                                            | Approx. 2.0 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                                                                                                                                  |                                                                                                                         |
| Dimensions            |                                            | 26.6 W × 92 H × 94 D mm (Excluding protrusions or protectors)                                                                                                                               |                                                                                                                         |
| Weight                |                                            | Approx. 200 g                                                                                                                                                                               |                                                                                                                         |
| Utility Nuts          |                                            | Size: M4, 6 places                                                                                                                                                                          |                                                                                                                         |

<sup>\*1</sup> 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.

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

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

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

<sup>\*5</sup> Not available in other countries.

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

### [Standard Accessories]

·Stack-connector cap (male) ·Stack-connector cap (female)

## [Remote Control Unit CTRS-RCU010A Specifications]

| Item                    |                    | Details                                                                                                                                                                                    |
|-------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Button Switch | REC                | Start recording.<br>Operating method: Press the button once.                                                                                                                               |
|                         | STOP               | Stop recording.<br>Operating method: Press the button once or twice. <sup>*1</sup>                                                                                                         |
|                         | BAL                | Execute a balance operation.<br>Operating method: Press the button twice or hold it down. <sup>*1</sup>                                                                                    |
|                         | READ               | Read the condition settings from the SD card.<br>Operating method: Hold down the button.                                                                                                   |
|                         | OPTION 1, OPTION 2 | Use the control software to assign any function to these buttons for use.<br>Operating method: Press the button once.<br>·Monitor<br>·Delete the latest data file<br>·Over reset<br>·PAUSE |
| Indicator               |                    | Status LED<br>Remaining-battery-power indicator LED<br>Remaining-SD-card-space indicator LED<br>Range-over indicator LED<br>REC LED<br>BAL LED<br>READ LED<br>OPTION 1 LED<br>OPTION 2 LED |
| Other Functions         |                    | Built-in buzzer<br>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                                                                                                                                 |
| Power Consumption       |                    | Approx. 0.2 W                                                                                                                                                                              |
| Dimensions              |                    | 46 W × 90 H × 20 D mm (Excluding protrusions)                                                                                                                                              |
| Weight                  |                    | Approx. 120 g                                                                                                                                                                              |
| Utility Nuts            |                    | Size: M3, 6 places                                                                                                                                                                         |

\* 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.

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

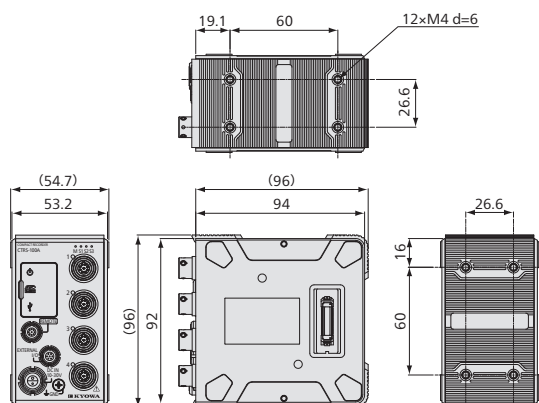
## [Dynamic Data Acquisition Software DCS-100A Specifications for control of CTRS-100A]

| Item                  |         | Details                                                                                             |
|-----------------------|---------|-----------------------------------------------------------------------------------------------------|
| Operating Environment | OS      | Windows® 8.1 or Windows® 10, English/Japanese<br>32, 64 bits support                                |
|                       | CPU     | Core i5 2GHz or more                                                                                |
|                       | Memory  | If 32-bit OS, 2 GB or more<br>If 64-bit OS, 4 GB or more                                            |
|                       | Display | 1024×768 pixels or more                                                                             |
| Main Functions        |         | Y-time graphs display<br>Real-time measurement<br>Measurement condition setting<br>TEDS information |

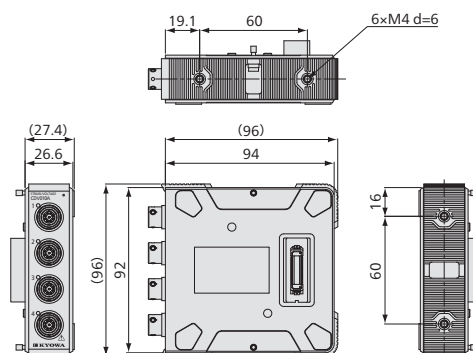
\* If you already have DCS-100A, just update your DCS-100A for using it.

## Dimensions

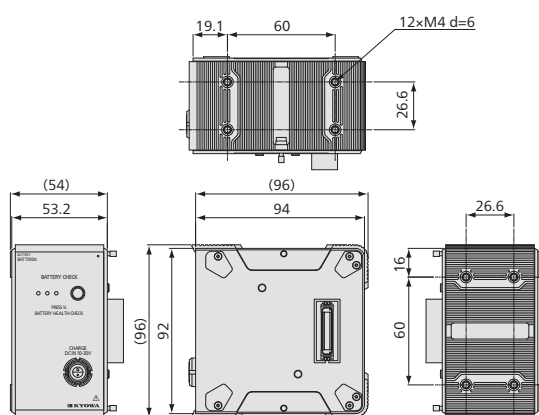
Compact Recorder CTRS-100A



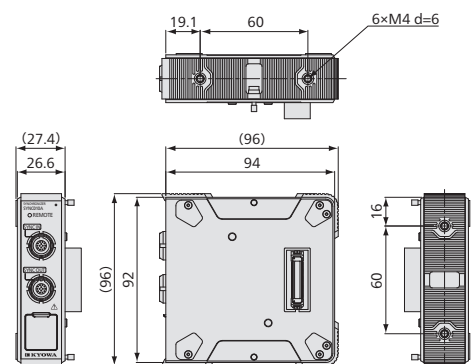
Strain/Voltage Unit CTRS-CDV010A



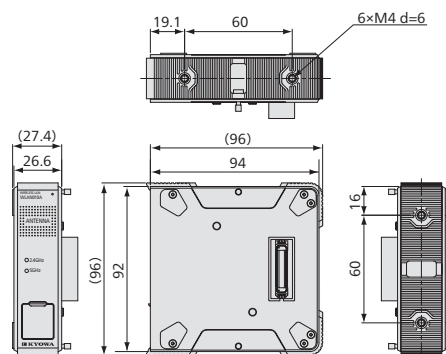
Battery Unit CTRS-BATT010A



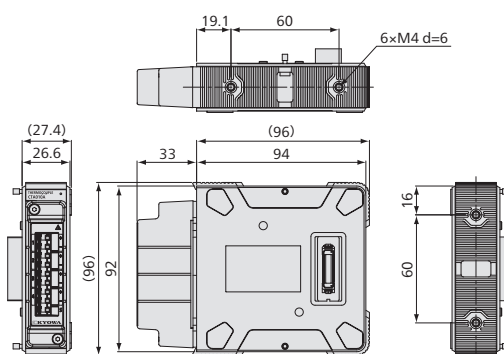
Synchronization Unit CTRS-SYNC010A



Wireless LAN Unit CTRS-WLAN010A/011A\*1

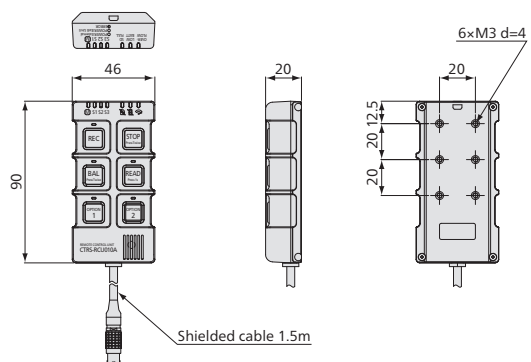


Thermocouple Unit CTRS-CTA010A



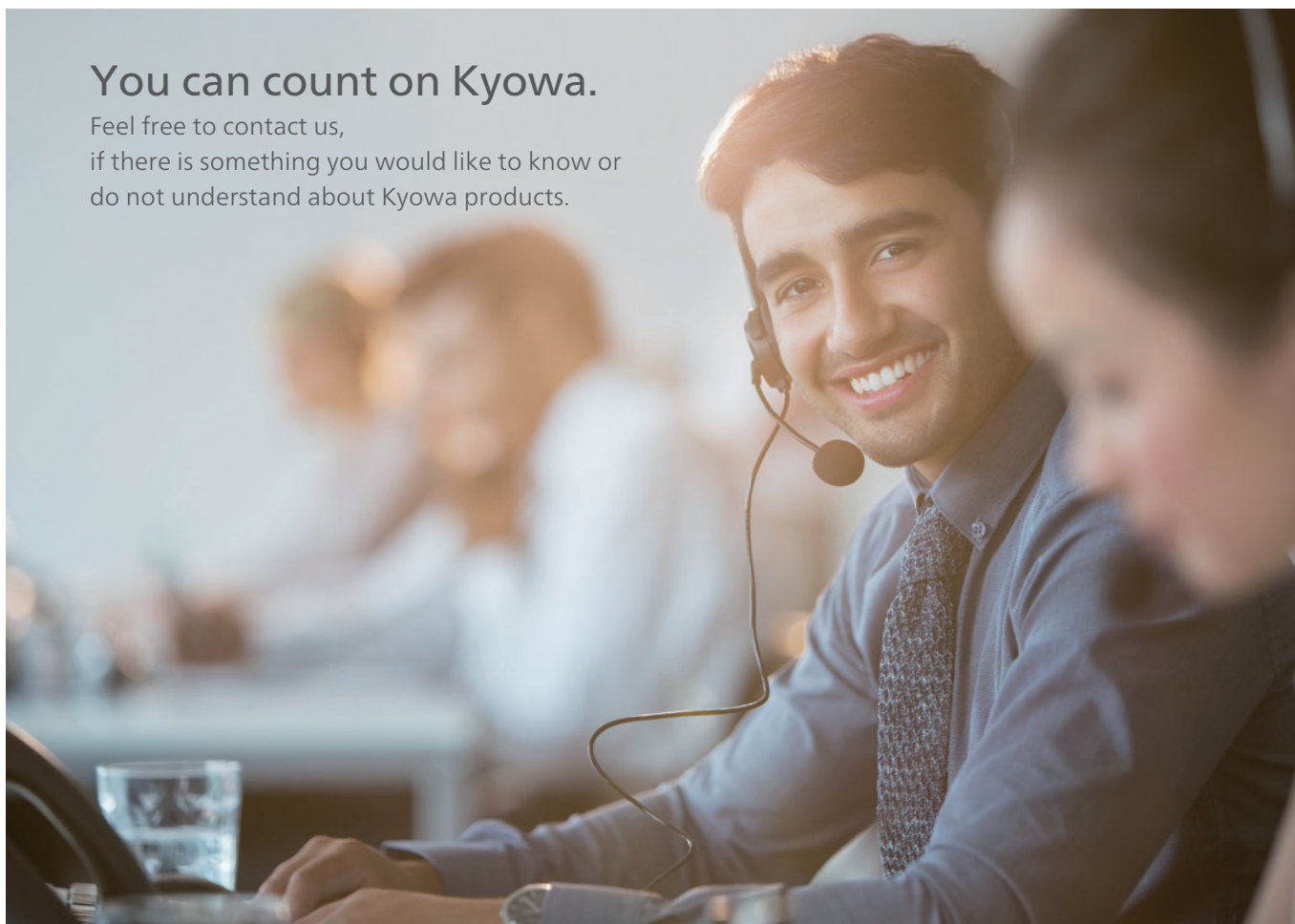
\*1 CTRS-WLAN011A is the same in dimensions.

Remote Control Unit CTRS-RCU010A



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### Safety Precautions

- Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.
- Do not use in locations subject to significant water, dampness, steam, dust, or flammable gases.  
Doing so may lead to fire, electrical shock, or malfunction.

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