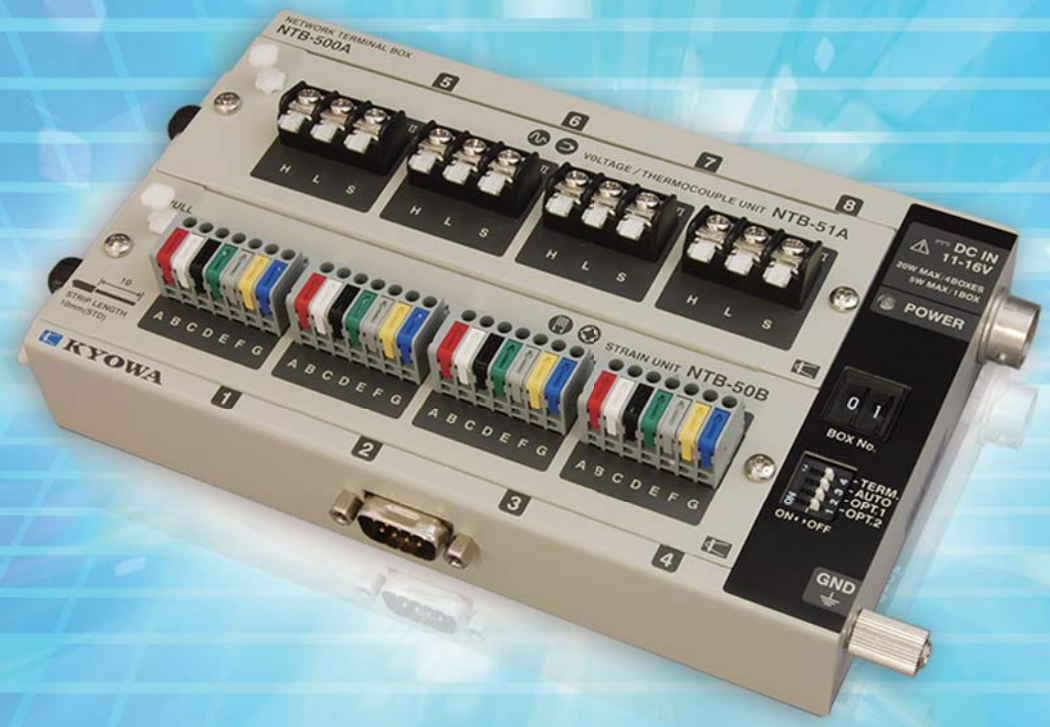
Move into the future with reliable measurements

KYOWA

NTB-500A

Medium Speed Network Terminal Box

Supports dynamic measurement at medium-speed synchronous sampling!



TEDS

Decentralized arrangement and synchronous sampling of all channels.

Medium Speed Network Terminal Box

NTB-500A

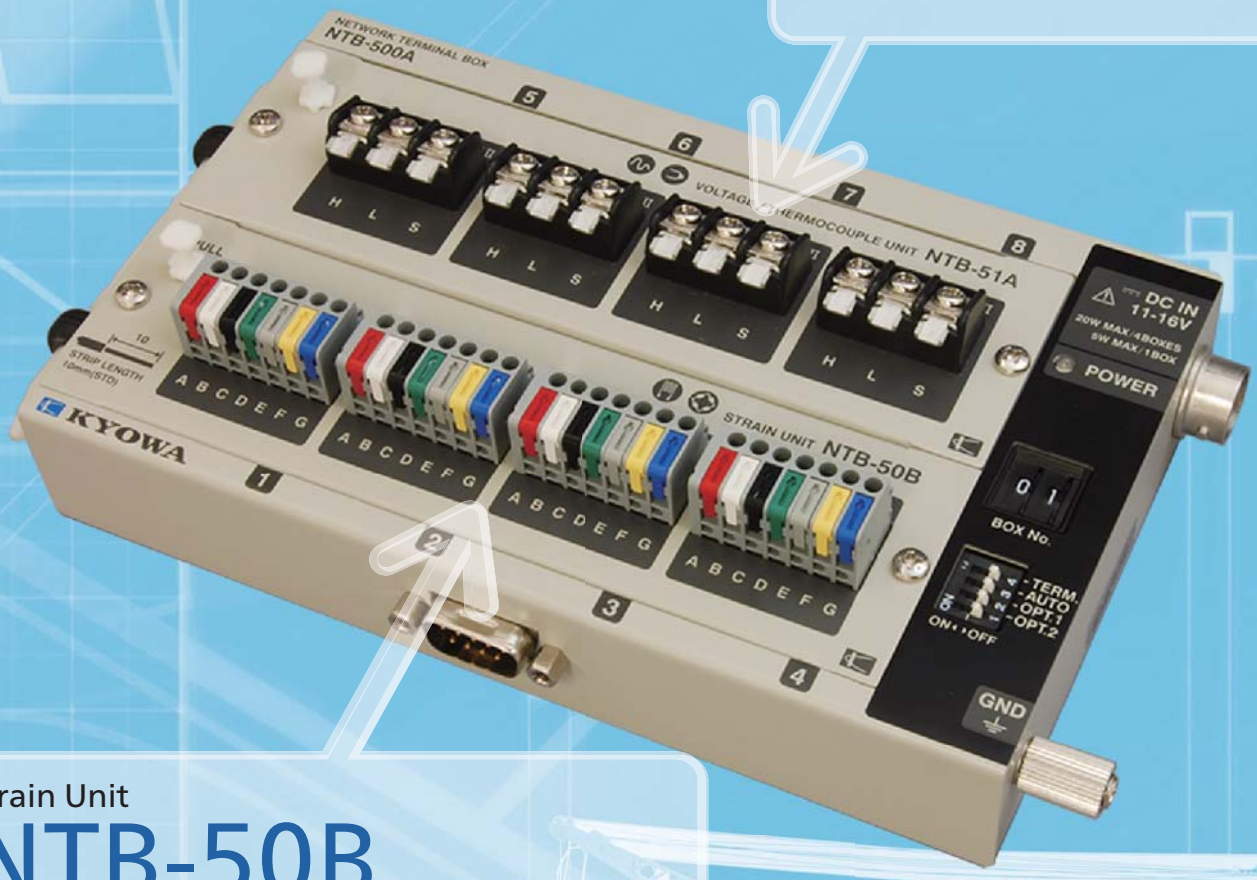
Features

- ✓ Synchronous measurement of all channels at a max of 1 k Hz
- ✓ Up to 8 channels per unit
  (64 channels when 8 units are synchronized)
- ✓ Decentralized arrangement with one wire
- ✓ Controlled by DCS-100A
  (Dynamic Data Acquisition Software)

Voltage/Thermocouple Unit

NTB-51A

- ✓ Maximum Voltage: 50 V
- ✓ Thermocouples: K and T
- ✓ Frequency Response
  Voltage: 100 Hz
  Thermocouple: 10 Hz
- ✓ Isolated among channels



Strain Unit

NTB-50B

- ✓ Large strain measurement of 300 k μm/m
- ✓ Frequency response of 100 Hz
- ✓ 24-bit A/D converter (Resolution: 0.1 μm/m)
- ✓ Built-in bridge circuits

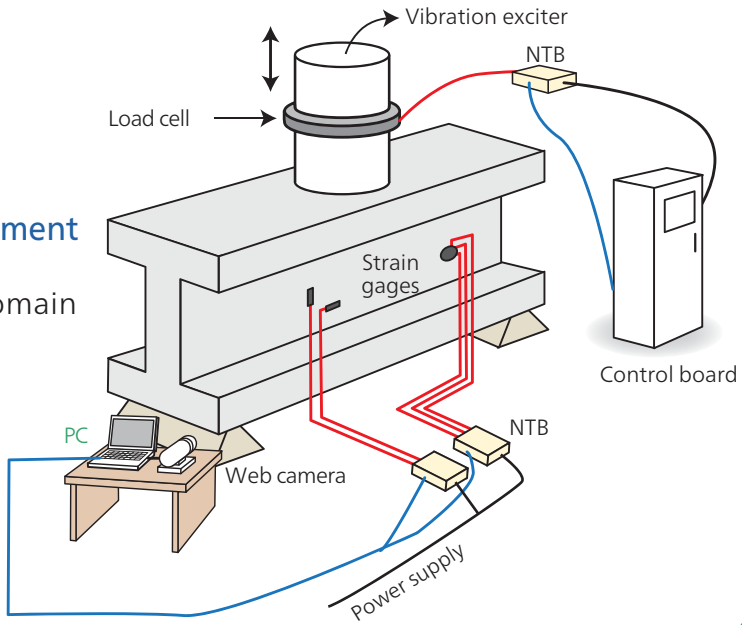
TEDS-compatible

Repetitive loading test for concrete beams, etc.

Verifying structure's durability

Large strain of 300 k μm/m measurement

Measurement is possible for a wide range of input, up to near plastic domain of composite materials.



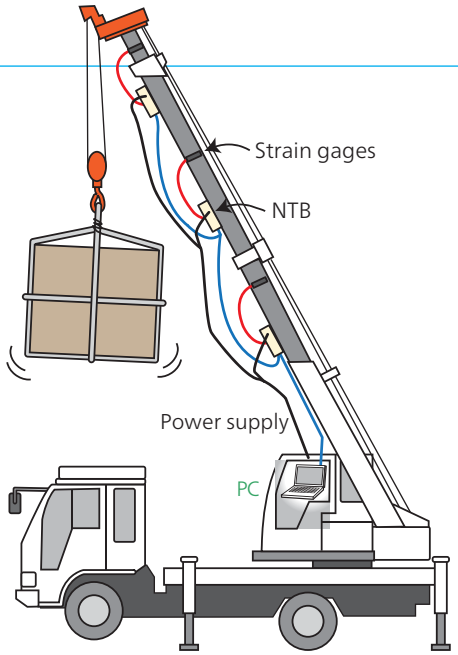
Stress measurement for construction machinery including cranes

Simplified measurement on-site

Deflection (Strain, displacement) of each part of the construction machinery is measured on-site.

Synchronous acquisition of all channels' data

Different from scanning mode, sampling mode makes data acquisition of all channels perfectly synchronized and therefore no time lags among channels.



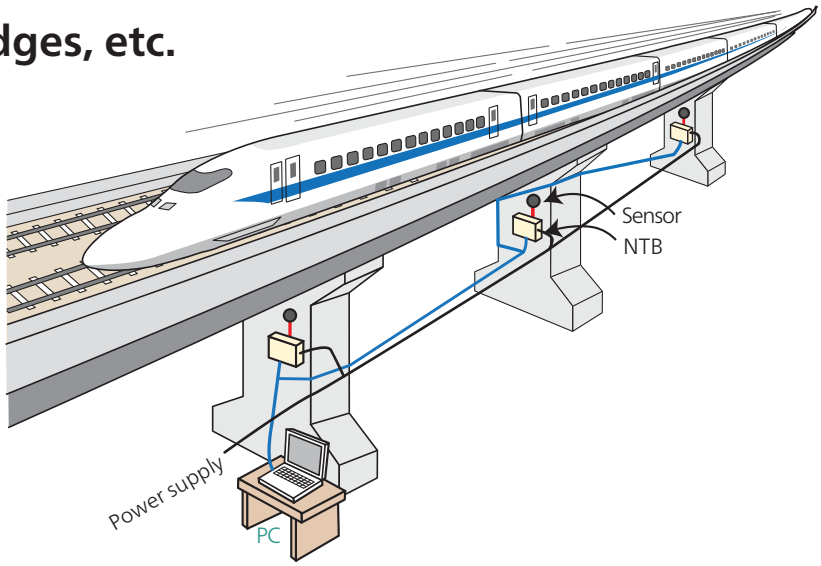
Field observation of bridges, etc.

Large-scale structure test

Strain and displacement of each part of the bridge are measured while vehicles are passing.

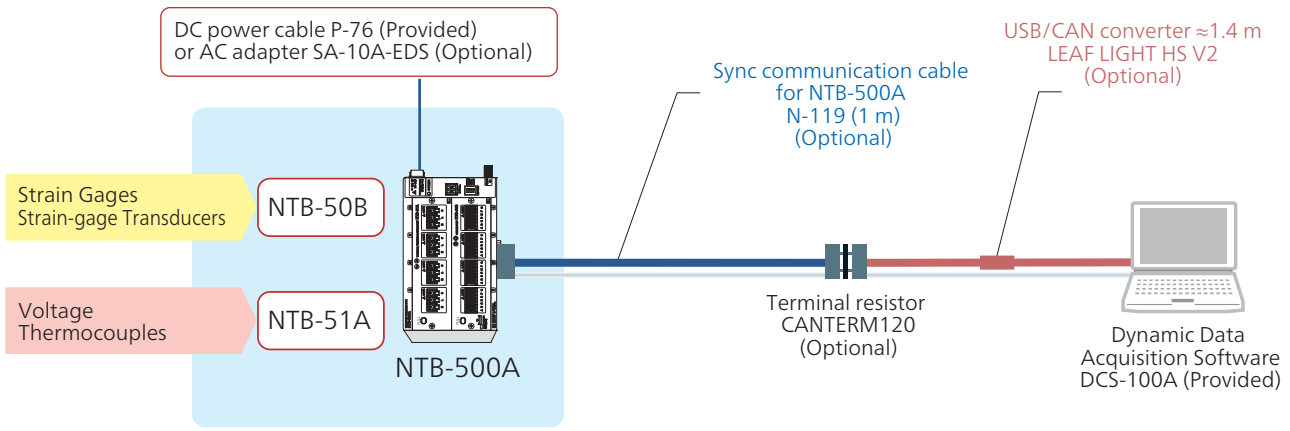
Decentralized arrangement with one cable

Connected every two NTB-500As with one cable, the decentralized arrangement is available.
Up to 64 channels are connected within 100 m from the PC to the last NTB-500A.

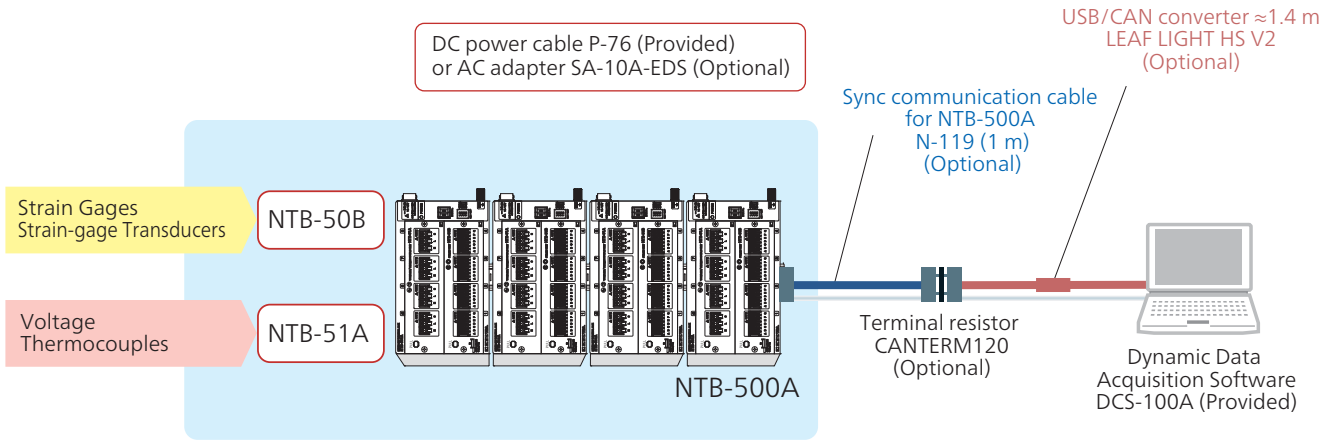


NTB-500A Configuration Diagrams

One NTB-500A

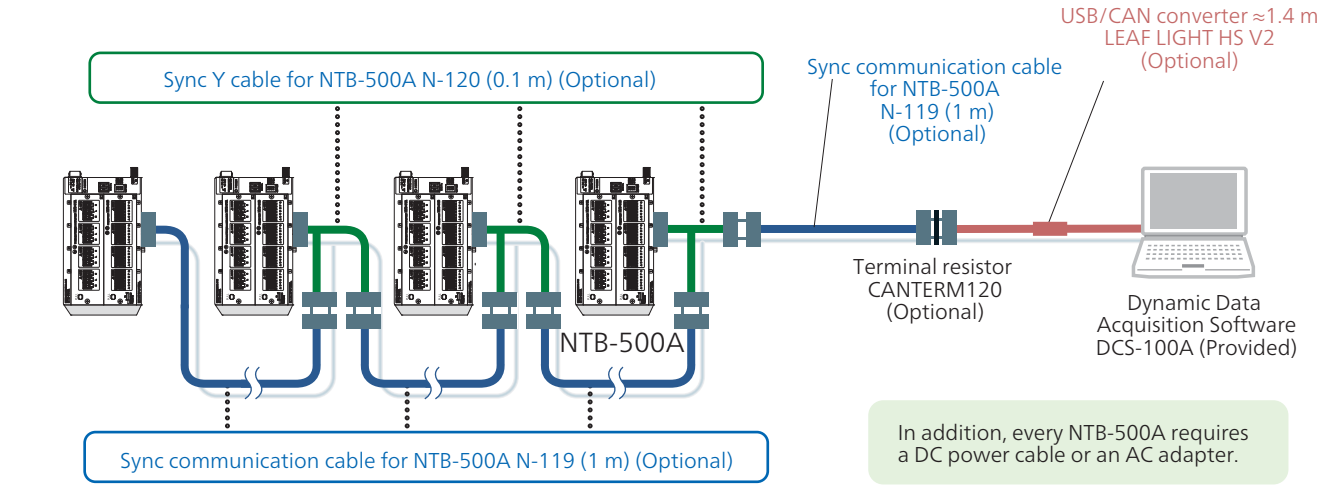


Docked 4 NTB-500As



Connection of up to 4 NTB-500As for 32 channels

Decentralized Arrangement



Connection of up to 8 NTB-500As for 64 channels

Specifications of the Medium Speed Network Terminal Box NTB-500A

Measuring Targets and Measuring Units

Measuring targets \ Measuring units			Strain Unit NTB-50B	Voltage/ Thermocouple Unit NTB-51A
Strain Gages	Quater-bridge 120 Ω	2-wire system	Yes	
		3-wire system	Yes	
	Half-bridge 120 to 1000 Ω	Active-active system	Yes	
Strain-gage Transducers	Full-bridge 120 to 1000 Ω	Full bridge	Yes	
Voltage		± 10.0000 V		Yes
		± 50.000 V		Yes
Thermocouples		K		Yes
		T		Yes

Channels Max. 8 channels/unit
Measuring units (4 channels/unit)
A Mixed combination of 2 is possible.

Synchronous Operations Max. 8 units for 64 channels

Sampling Frequencies 1, 2, 5, 10, 20, 50, 100, 200, 500, and 1k Hz
(Synchronous sampling of all channels)

Sampling Frequencies	Maximum measuring channels		
	Cable length 20 m	Cable length 80 m	Cable length 100 m
1 k Hz	8	4	
500 Hz	16	8	4
200 Hz	40	20	8
100 Hz	64	40	20
50 Hz	64	64	40
20 to 1 Hz	64	64	64

Cable Length Total extended cable length, max. 100 m
(Excluding when the sampling frequency is 1 kHz.)

TEDS Reads information from TEDS-installed sensors
Channel name writing if the manufacturer's ID is Kyowa when NTB-50B is mounted.

Interfaces Bosch2.0 B active supported
(ISO-11898-compliant high-speed CAN)

Data Storage Measured data is saved on the PC.
(No internal storage)

Operating Temperature -10 to 50 ˚C

Operating Humidity 20 to 85%RH (No condensation)

Power Supply 11 to 16 VDC

Current Consumption (When using 12 VDC)

Measuring units	On standby	In measuring
2 NTB-50Bs installed	200 mA or less	230 mA or less
2 NTB-51As installed	250 mA or less	300 mA or less

Dimensions 175 W × 28.7 H × 106.4 D mm (Excluding protrusions)

Weight Approx. 490 g

EMC Directive EN61326-1 (Class A), (Within 30 m among units)

Specifications of the Strain Unit NTB-50B

Channels 4

Input Terminals One-touch terminal blocks

Measuring Targets Strain gages
Strain-gage transducers

Applicable Gages Quater-bridge 120 Ω, 2-wire, 3-wire
Half-bridge and Full-bridge 120 to 1000 Ω

Gage Factors 2.00 fixed

Bridge Excitation 2 VDC ± 1%

Check Functions Cable disconnection check

TEDS Reads information from TEDS-installed sensors.
Channel names writing if the manufacturer's ID is Kyowa

Measuring Range, Resolution, and Range accuracy

Measuring range	Resolution	Range accuracy
30 k μm/m	0.1 μm/m	±0.1% FS
300 k μm/m	1 μm/m	

Frequency Response DC to 100 Hz (Deviation +1 dB, -3 dB)

Dimensions 152.2 W × 6.1 H × 45 D mm (Excluding protrusions)

Weight Approx. 85 g

Specifications of the Voltage/Thermocouple Unit NTB-51A

Channels 4

Input Terminals Screw-soldering terminal blocks

Measuring Targets Voltage, thermocouples (K, T)

Check Functions Burnout check

TEDS N/A

Measuring Range, Resolution, and Accuracy

Voltage Measurement

Measuring range	Resolution	Range accuracy	Input resistance
10 V	100 μV	±0.1% FS	≈ 1 MΩ
50 V	1 mV		

Thermocouple Measurement

Types	Measuring range	Accuracy		Resolution
		External reference junction	Internal reference junction Ambient temp. (25 ± 10) ˚C	
K	–200.0 to 1230.0 ˚C	±(0.5 % of reading+ 1.0) ˚C	±(0.5% of reading + 2.0)˚C (Input pins at an equilibrium temp.)	0.1 ˚C
T	–200.0 to 400.0 ˚C			

*Accuracy doesn't include the accuracy of the thermocouple.
*Switching between internal and external reference junction compensator is possible.
*Thermocouple's resistance: 1 kΩ or less

Frequency Response
Voltage measurement: DC to 100 Hz
(Deviation +1 dB, -3 dB)
Thermocouple measurement: DC to 10 Hz
(Deviation +0.5 dB, -1 dB)

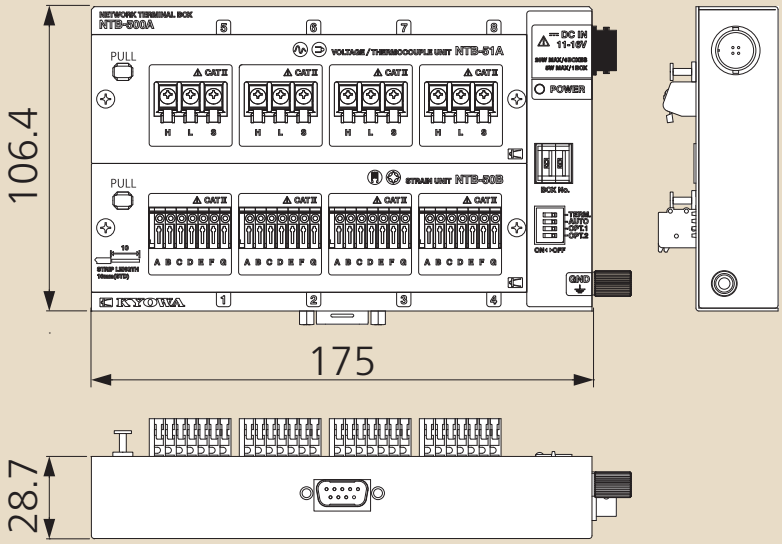
Isolation Between channels: 50 MΩ or more (500 VDC)

Dimensions 152.2 W × 6.1 H × 45 D mm (Excluding protrusions)

Weight Approx. 95 g

■Dimensions (Excluding protrusions)

NTB-500A



Note: Appearance of the box when one NTB-50B and one NTB-51A are mounted.

■Standard Accessories

- ●Instruction manuals
- ●Simplified software
- ●Driver for a USB/CAN converter
- ●Dynamic Data Acquisition Software: DCS-100A *

} DVD

- ●Wire connection seal
- ●DC power cable: P-76
- ●Ground wire: P-72
- ●Rubber feet x 4
- ●Driver holder (With a mini screw driver)
- ●NTB-500A dummy panel: NTB500-DUMMY **

* For NTB-500A, the DCS-100A is provided.
For NTB-500A-0, the DCS-100A is an option.
** The dummy panel is mounted on a vancant slot before shipping.

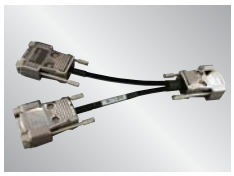
■ Optional Accessories

- ●AC adapter: SA-10A-EDS
- ●Strain unit: NTB-50B
- ●Voltage/thermocouple unit: NTB-51A
- ●NTB-500A sync communication cable: N-119 (1 m)
  Note: For other length of cables, please contact us.
- ●NTB-500A sync Y cable: N-120 (0.1 m)
- ●USB cable: N-38 (1 m)
- ●Docking board for 2 boxes of NTB-500A: CN-10A
- ●Docking board for 4 boxes of NTB-500A: CN-11A
- ●NTB-500A dummy panel: NTB500-DUMMY
- ●Data analysis software: DAS-200A
- ●USB/CAN converter: LEAF LIGHT HS V2
- ●Power supply box for NTB: NTB-20A*
- ●Terminal resistor: CANTERM 120
- ●DIN rail mounting plate: DRA-1
- ●DIN rail (35 mm)

■Caution

- ●Do not use NTB-100A series/201A together with NTB-500A.
- ●No relay box NTB-21A allows to be used for NTB-500A.
- ●No communication cables for NTB-100A series/201A (N-102 and the like) allows to be used for NTB-500A.
- ●No connection boards for the NTB-100A series/201A (CN-1A) allows to be used for NTB-500A
- ●No software for NTB-100A series/201A (NTB-10A) allows to be used for NTB-500A.


N-119


N-120


NTB-20A
*For details about NTB-20A, contact us, please.

CANTERM 120

Dynamic Data Acquisition Software DCS-100A (Standard accessory)

Specifications of DCS-100A for NTB-500A

Operating Environment

OS	Windows® Vista®, 7, 8, 8.1, or 10, English/Japanese, 32, 64 bits support
CPU	Core2Duo, 2 GHz or advanced
Memory	If 32-bit OS, 2 GB or more If 64-bit OS, 4 GB or more
Interfaces	CAN, an optional USB/CAN converter is required.

Setting Channel Conditions and Measuring Conditions

Controllable Units	Max. 8 for 64 channels
Channel Conditions	Measurement ON/OFF, mode, range, zero, LPF, calibration coefficient, offset, units, CH name, measuring range, decimal point, rated capacity, rated output, chk.val.(Up), chk.val. (Down), (Selection of any display items is possible)
Sampling Frequencies	1 Hz to 1 kHz, (Depends on the measuring channels and the cable length)
Measuring Modes	Manual, manual (Data points preset), interval, and analog trigger
Manual Measurement	Measurement is made from a press of the REC button to a press of the STOP button or to completion of recording to the preset data points.
Interval Measurement	Measurement is made automatically at preset intervals from the preset starting time. (Interval of 5-step and 1-step are switchable.)
Analog Trigger Measurement	Start and/or stop recording based on specified trigger conditions
End Triggers	Settable
Delay	Both start and end max. 262144 points/channel The delay differs with the measuring channels.
Trigger Channels	Any channel
Trigger Level	Sets physical quantities
Trigger Slope	Up, down
TEDS	Reads sensor's information and sets to channel condition automatically
Changing Stroke	Changes the data before and after the stroke when using a displacement transducer.
Static Measurement	Every time the DCS-100A starts recording data, the DCS-100A additionally saves the moving-averaged measured data in a single CSV format file in manual and interval modes.
Repetition Acquisition	In long-term data acquisition, a specified amount of data (Or time) is saved in KS2 file . Workable in manual mode (Data points preset).

Environment Settings

Data Storage	Measured data is saved in the PC in KS2 format.
Hardware Configulation	Setting of connected units, communications cable length, device name, measuring unit settings, and reading hardware configuration from the NTB-500A are possible.
Automatic Conversion	Data files are automaticlly transferred to the format of CSV, XLS, XLSX, or RPC Ⅲ upon completion of recording.
Optional Units	Registers up to 3 user-defined units.

Monitor Display and Data Reproduction

Y-time Graphs	Allows up to 16 channels of physical quantities to be graphed on Y axis with X axis for time. 1 to 10 graphs per window
Y-time Graphs (All channels)	Allows all channels of physical quantities to be graphed on Y axis with X axis for time in the same color curves.
Y-time (DIV) Graphs	Allows up to 16 channels of physical quantities to be graphed on Y axis with X axis for time. Zero point of each channel is moved freely to a desired position on a division of axis.
X-Y Graphs	Variables of desired 8 channels each for both X axis and Y axis are graphed in free combination.
Numeric Windows	Shows numeric data of desired 1 or 16 channels or all channels.
Graph Scale	Capable of displaying auto-scale and full scale values on the Y-time graph (Y axis), X-Y graph (X, Y axes) and bar graph* (Y axis). The Y-time graph (Y axis) is able to be changed to 1 axis or 2 axes and CH (Channels). *Not for bar graph in data reproduction mode.
Display Color	Freely changeable graph by graph
Titles and Labels	Sets a desired title and labels for X and Y axes.
Number of Simultaneously Displayed Windows	32 numeric windows and 32 graph windows, 64 in total, including reproduced data windows. Note: However that the number of windows may be restricted by the CPU speed and memory of the PC.
Auxiliary lines	Capable of displaying the desired auxiliary lines on the Y-time graphs (X axis and Y axis), X-Y Graphs (X axis and Y axis), and bar graphs (X axis and Y axis). (Up to 4 auxiliary lines each for both X axis and Y axis.)
Dual-display	Capable of moving the numeric windows or graph windows onto the sub display.

Other Items of Monitor Display

Bar Graphs	One bar graph has up to 32 channels and 1 to 4 graphs per window. Peak hold ON or OFF is possible.
Circular Meters	Variable of 1 desired channel per circular meter
Bar Meters	Variable of 1 desired channel in horizontal or vertical
Over-input Indication	Capable of displaying the excessive channel values in red.
Comparative Data	Displays the comparative data (A previous KS2 format file) on the Y-time graphs, excluding the Y-time (All channels) graphs and Y-time (DIV) graphs, and X-Y graphs for comparing the monitor data. The size of the data file is maximum 10 MB. If the file size exceeds 10 MB, the DCS-100A displays the 10 MB-data from its head.

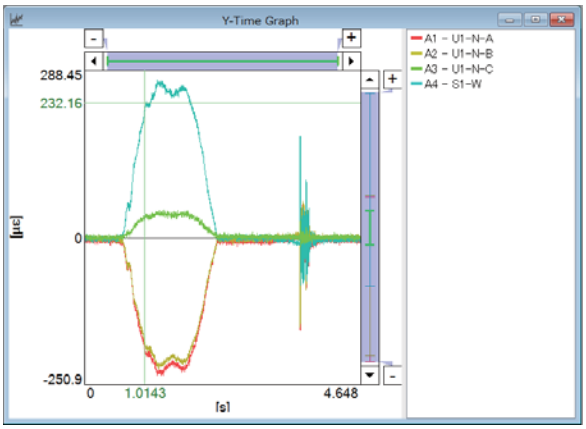
Other Items of Data Reproduction

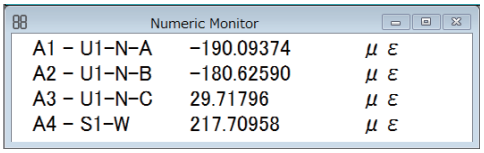
File Conversion	Desired range of a channel is extracted and converted to the format of CSV, XLS, XLSX, or RPC Ⅲ.
Max., min., and average	Capable of displaying the maximum value/ minimum value/average value within the window on the Y-time graphs when the number of channels is 1 or 2.

Software for Reading/Displaying KS2 file data

KS Viewer

NEW





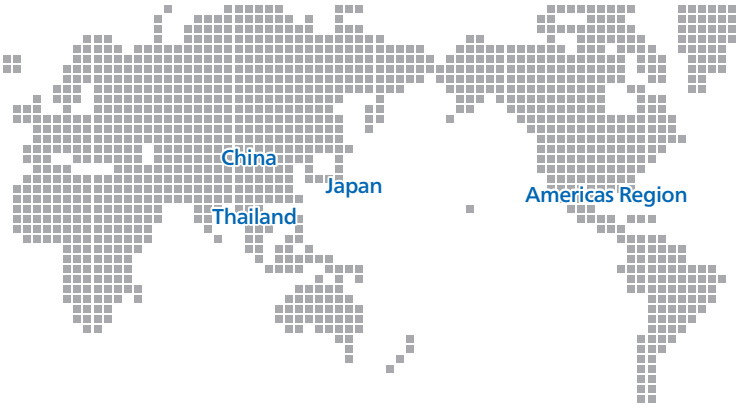
Free edition for showing KS2* file data

* KS2 file is the Kyowa Standard format file.

- User-friendly
- View of Y-time graph data and file information

Download free on Kyowa web below.
http://www.kyowa-ei.com/eng/product/category/software/ksv-100a/index.html

Sales Network



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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.

• Specifications are subject to change without notice for improvement.

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JQA-EM4824

Manufacture's Representative

Cat.No.925c E3-5

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