NTB-100/200 Series

Network Terminal Box

Digitization of field measurements

- Network output conforms with to CAN, enables a single wire connection
- The wide area, decentralized arrangement will be useful for the infrastructure of building and civil engineering.
- Digitizing data adjacent to the sensor, enables transmission of digital data robust against noise.
- Compact, lightweight and affordable, allowing a small-sized system to be built on site easily.
- Various ways of docking and connection are provided, broadening system applications.
- Measurement is started immediately with the NTB-10A software.

NTB-100/200 series is a measuring instrument that extends with one cable, and a decentralized arrangement.
A single unit measures 4 channels, and allows up to 99 units to be connected, so measurement up to 396 channels is possible.
By placing an NTB near a sensor, only a single communication cable is required to build a total distance of a 1 km wide area network
The digital transmission is hardly affected by noise, thus useful for building a wide area network.
Directly connects various sensors including strain gages, facilitates measurement in the field such as construction or building site, or for indoor experiments and researches.
Voltage as well as thermocouples are measured by NTB-201A.
Allows SME-100A/101A (page 3-43) to be connected.

NTB-100 Series Specifications

Network Terminal Box Models

Models*	Bridge excitation	Sensor input terminal	Quarter bridge
NTB-100B-120	Constant-voltage	One-touch terminal	120 Ω
NTB-101A-120	Constant-voltage	Screw soldering terminal	120 Ω
NTB-100B-350	Constant-voltage	One-touch terminal	350 Ω
NTB-101A-350	Constant-voltage	Screw soldering terminal	350 Ω
NTB-110B-350	Constant-current	One-touch terminal	For Full bridge only
NTB-111A-350	Constant-current	Screw soldering terminal	For Full bridge only

*Control Software NTB-10A Standard accessory.
NTB-10A is optional for models with suffix "-0".

Network Terminal Box and Measuring Targets

Bridge excitation	Measuring targets			NTB Models: General-purpose strain measurement: NTB-100B-120 NTB-101A-120	NTB Models: General-purpose strain measurement: NTB-100B-350 NTB-101A-350	NTB Models: Civil engineering measurement: NTB-110B-350 NTB-111A-350
Constant voltage	Strain gages	Quarter bridge	120 Ω	Yes		
			350 Ω		Yes	
	Strain-gage transducers	Half-bridge 120 to 1000 Ω	Active-active system	Yes	Yes	
		Full-bridge 120 to 1000 Ω	Full bridge	Yes	Yes	
Constant current	Civil engineering transducers	Full bridge 350 Ω	Full bridge			Yes
			Civil engineering transducer with thermal sensors			Yes

Channels	4
Scanning Speed	Approx. 0.5 s/channel: 0 to ± 30 k ×10^{-6} strain
	Approx. 1 s/channel: ± 30 k ×10^{-6} strain or more
	Approx. 1 s/channel: With civil engineering transducers with a thermal sensor
Bridge Excitation	Approx. 2 VDC for constant-voltage bridge excitation
	Approx. 5.6 mA for constant-current bridge excitation
	(At bridge resistance 350 Ω)
Measuring Range	Strain measurement
	0 to ± 300 k ×10^{-6} strain (Constant-voltage bridge excitation)
	0 to ± 30 k ×10^{-6} strain (Constant-current bridge excitation)
	Temperature measurement with civil engineering
	transducers with a thermal sensor: -30.0 to 70.0°C
Resolution	Strain measurement
	0 to ± 30 k ×10^{-6} strain: 1 ×10^{-6} strain
	± 30 k to ± 300 k ×10^{-6} strain: 10 ×10^{-6} strain
	Temperature measurement with civil engineering
	transducers with a thermal sensor: 0.1°C
Accuracy	Strain measurement
	0 to ± 30 k ×10^{-6} strain: ± (0.05% of reading + 2) ×10^{-6} strain
	± 30 k to ± 300 k ×10^{-6} strain: ± (0.1% of reading + 20) ×10^{-6} strain
	Temperature measurement with civil engineering
	transducers with a thermal sensor: ± 0.5°C
TEDS	Reads information from TEDS-installed sensors.
	Channel name writing (Kyowa ID only)

Power Save Mode	Provided ON/OFF using "OPT.3" DIP switch.
Interfaces	Dedicated interface conforming to CAN, cable extension up to 1 km
Operating Temperature	-10 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Power Supply	11 to 16 VDC
Current Consumption	(At 12 VDC)
	Constant-voltage bridge excitation
	Operation: 100 mA or less
	Standby: 60 mA or less
	Standby (In power save mode): 40 mA or less
	Constant-current bridge excitation
	Operation: 70 mA or less
	Standby: 60 mA or less
	Standby (In power save mode): 40 mA or less
Dimensions	One-touch type: 150 W × 28 H × 55 D mm (Excluding protrusions)
	Screw soldering type: 150 W × 28 H × 110 D mm (Excluding protrusions)
Weight	One-touch type: Approx. 310 g
	Screw soldering type: Approx. 650 g

Standard Accessories DC power cable P-76, ground wire P-72, wire connection seals, rubber feet, screwdriver (For one-touch type only), terminal block (For screw soldering type only), control software (NTB-10A), instruction manual (CD-R)

Optional Accessories
Y cable N-103 (10 cm)
Communication cable N-102 (1 m)
Communication cable H-11681 (3 m)
Communication cable H-11682 (5 m)
Communication cable H-11683 (10 m)
*Please contact us for communication cables other than those listed above.
AC adapter SA-10A-EDS
(100 to 240 VAC) (For U.S.A.: UNI318-1215-EDS)
Connection board/clip CN-1A
DIN rail mounting plate
Terminal resistor CANTERM 120
USB/CAN converter LEAF LIGHT HS V2

NTB-201A Specifications

Channels	4
Scanning Speed	Approx. 0.5 s/channel
Measuring Targets	DC voltage-output, thermocouples

Voltage-output Measurement

Range	Measuring range	Resolution	Accuracy	Input resistance
10 V	0 to ±10.0000 V	100 µV	±(0.1% of reading+0.0003 V)	Approx. 1 MΩ
50 V	0 to ±50.000 V	1 mV	±(0.1% of reading+0.003 V)	Approx. 1 MΩ

Thermocouples

Types	Range	Accuracy (Resolution: 0.1 °C)	
K	-200.0 to 1230.0°C	-200.0 to below -100°C -100.0 to 1230.0°C	±(0.2% of reading +0.3°C) ±(0.1% of reading +0.2°C)
T	-200.0 to 400.0°C	-200.0 to below -100°C -100.0 to 400.0°C	±(0.2% of reading +0.3°C) ±(0.1% of reading +0.2°C)
E	-200.0 to 660.0°C	-200.0 to below -100°C -100.0 to 660.0°C	±(0.2% of reading +0.3°C) ±(0.1% of reading +0.2°C)
J	-200.0 to 870.0°C	-200.0 to below -100°C -100.0 to 870.0°C	±(0.2% of reading +0.3°C) ±(0.1% of reading +0.2°C)
R	0.0 to 1760.0°C	0.0 to below 100°C +100.0 to 1760.0°C	±(0.2% of reading +0.8°C) ±(0.125% of reading +0.6°C)
N	-200.0 to 1300.0°C	-200.0 to below -100°C -100.0 to 1300.0°C	±(0.2% of reading +0.3°C) ±(0.1% of reading +0.2°C)

* Accuracy of Internal Reference-junction Compensator
Within ±0.5 °C, when temperature balanced at input terminals, and the ambient temperature is 0 to 50 °C.
Within ±1.0 °C, when temperature balanced at input terminals, and the ambient temperature is -10 to 0 °C.

Notes:
1 . Accuracies do not include the accuracies of the internal reference junction compensator and the sensors.
2. The reference junction compensator is switchable between internal and external.
3. The thermocouple resistance should be 1 kΩ or less.

Check Functions	Burnout check
Power Save Mode	Provided ON/OFF using "OPT.3" DIP switch.
Interfaces	Dedicated interface conforming to CAN,
Operating Temperature	-10 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Power Supply	11 to 16 VDC
Current Consumption	(At 12 VDC)
	Operation: 100 mA or less
	Standby (In power save mode): 40 mA or less
Dimensions	150 W × 28 H × 55 D mm (Excluding protrusions)
Weight	Approx. 320 g

Note: TEDS function is unusable.

Standard Accessories DC power cable P-76
Ground wire P-72

NTB power supply box NTB-20A
NTB relay box NTB-21A

The power supply line and CAN communications line are integrated into one wire, enabling decentralized arrangement outdoors or in other locations where securing a power supply is difficult.

NTB power supply box NTB-20A

■Power save function (AUTO mode)

When the PC power supply is OFF, then the power supply of the NTB-20 connected by a USB cable is off.

■Power supply output limitation function

When a power supply exceeding the power supply range for operating the NTB-20A is input, for safety, the power supply output from the serial connector and the OUT connector is turned OFF.

●NTB Series Connected Units and Cable Length

With USB port

NTB series connected units	Cable length
1	200 m or less
2	100 m or less

When AC adapter or DC power supply used

NTB series connected units	Cable length
1	1000 m or less
2	840 m or less
3	560 m or less
4	470 m or less
5	330 m or less
6	280 m or less
7	240 m or less
8	200 m or less
9	180 m or less
10	160 m or less
11	150 m or less
12	130 m or less
13	120 m or less
14	120 m or less
15	110 m or less
16	100 m or less

When UIA-345-12 used
When SA-10A-EDS used

Power Save Functions	Provided
	In POWER switch "AUTO" mode (*1)
Operating Temperature	-10 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Power Supply Input	USB port: 5 VDC
	External power supply: 11 to 16 VDC
	(AC adapter, DC power supply)
Current Consumption	When using 12 VDC (Using AC adapter)
	OFF mode: 7.0 mA or less
	AUTO mode: 7.0 mA
	ON mode: 30.0 mA or less
	When using 5 VDC (Using USB port)
	OFF mode: 5.0 mA or less
	AUTO mode: 30.0 mA or less
	ON mode: 30.0 mA or less
Dimensions	150 W × 28 H × 55 D mm (Excluding protrusions)
Weight	Approx. 260 g

(*1) In "AUTO" mode, turning off the PC power supply automatically turns OFF the power supply to the NTB-20A (NTB power supply box).
When using "AUTO" mode, ensure that the PC and NTB-20A (NTB power supply box) are connected using a USB cable.

Optional Accessories Connection cable N-38 (1 m), N-39 (2 m)
Communication cable N-102 (1 m)
Communication cable H-11681 (3 m)
Communication cable H-11682 (5 m)
Communication cable H-11683 (10 m)

●NTB relay box NTB-21A

■Power supply output limitation function

When power supply exceeding the range is input into NTB, the power supply output from the serial connector is turned to OFF.

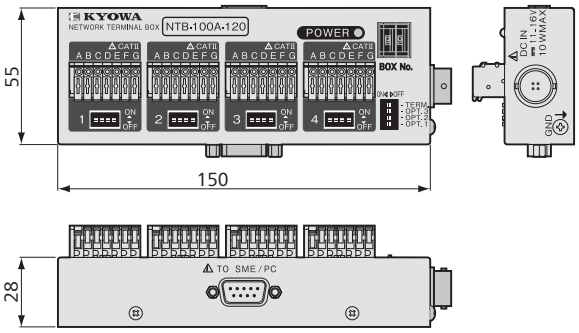
Input Voltage Range	11 to 16 VDC
Operating Temperature	-10 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Dimensions	150 W × 28 H × 29 D mm (Excluding protrusions)
Weight	Approx. 160 g

●Network terminal box control software NTB-10A

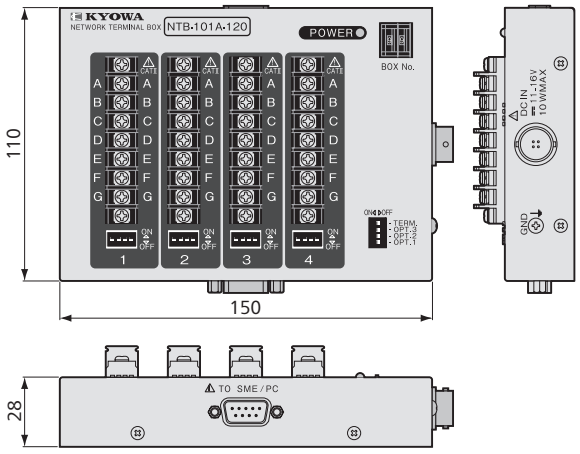
Operating Environment	
OS	Windows® 7, Windows® 8/8.1, Windows® 10
	Japanese/English, 32/64 bits support
CPU	Core2Duo, 2 GHz or advanced
Memory	If 32-bit OS, 2 GB or more
	If 64-bit OS, 4 GB or more
Hard Disk	Empty storage 10 MB or more
	(Excluding the target data file size.)
Display	1024×768 pixels or more
USB/CAN Converter	Manufacture: KVASER
	Model: Leaf Light HS V2
Measuring Units	NTB series: 1 to 99 (Max. 396 channels)
Measuring Functions	RELATIVE measurement (Relative value measurement): Each value is obtained by subtracting the ZERO value.
	*ZERO value is equivalent to the initial unbalance value. Capable of obtaining the ZERO value at arbitrary timig.
Channels Conditions	Meas channel ON/OFF, CAL coefficient calculation
	ON/OFF, CAL coefficient, Offset, Unit, Dec. digits,
	resistance at 0°C, CH Name (20 characters)

Measuring Condition File	Load and save
Interval Measurement	MONITOR Meas (Measures ZERO value during
	MONITOR measurement.)
	One-time measurement
	Continuous measurements
	INTERVAL Meas (To be specified the number of
	measurements)
Numeric Display	Available windows: 1
	Window switch: List only
Graph Display	Y-time, BAR graph
	Max. 8 channels/graph
Measured Data Saving Function	The measured data is saved with the CSV format.
TEDS	Reads sensor's information and sets to channel
	condition automatically.
	Channel name writing
Data File Destination	PC hard disk
File Split	No split
	Split every hour
	Split every day

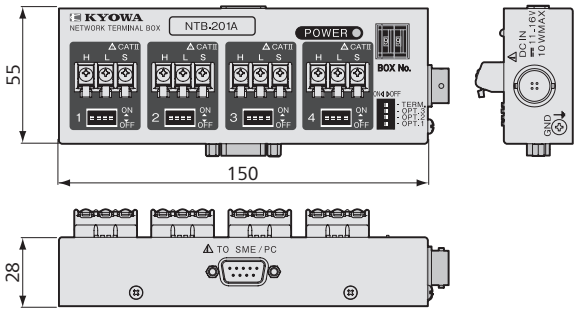
■Dimensions



NTB-100B-120

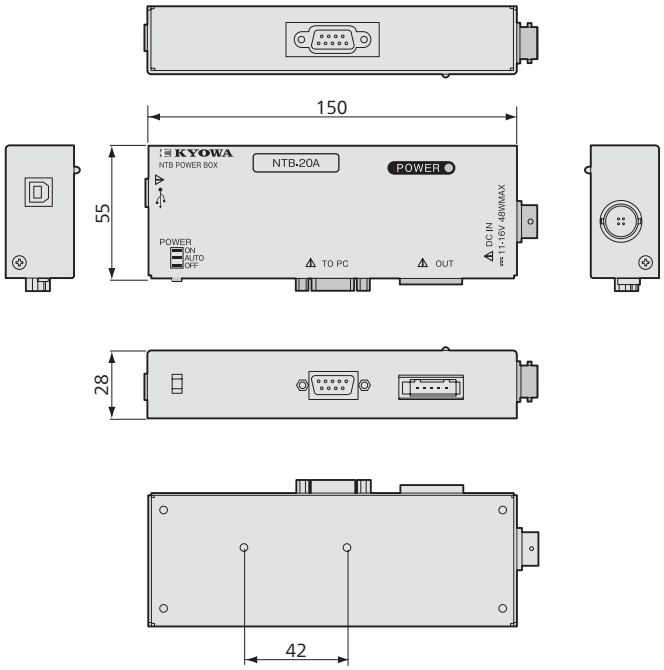


NTB-101A-120

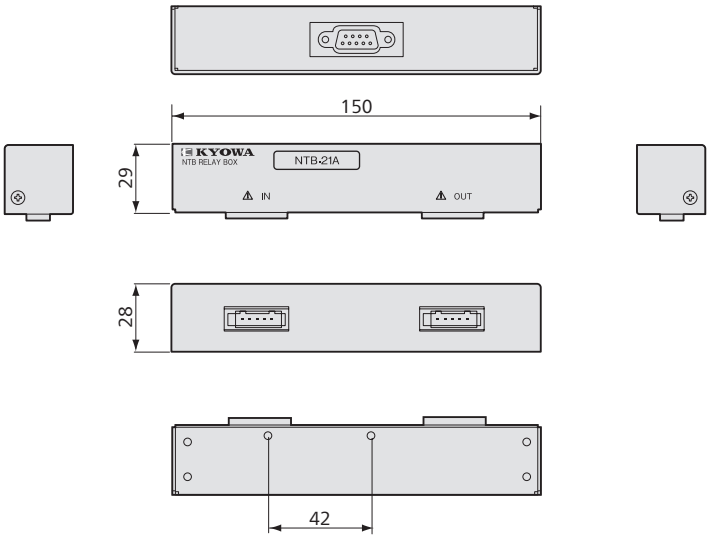


NTB-201A

Dimensions



NTB-20A



NTB-21A

NTB Series Recommended products for combination
Handy Data Logger SME-100A/101A
→ 3-43