

# NTB-100/200 Series

## Network Terminal Box



### Digitization of field measurements

- Network output conforms with 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 3-49) to be connected.

### NTB-100 Series Specifications

Network Terminal Box Models			
Models*	Bridge excitation	Sensor input terminal	Quarter bridge
NTB-100 B-120	Constant-voltage	One-touch terminal	120 Ω
NTB-101A-120	Constant-voltage	Screw soldering terminal	120 Ω
NTB-100 B-350	Constant-voltage	One-touch terminal	350 Ω
NTB-101A-350	Constant-voltage	Screw soldering terminal	350 Ω
NTB-110 B-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		Civil engineering measurement		
		NTB-100B-120 NTB-101A-120	NTB-100B-350 NTB-101A-350	NTB-110B-350	NTB-111A-350	
Constant voltage	Strain gages	Quarter bridge	120 Ω 350 Ω	Yes	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	
		Civil engineering transducers	Full bridge 350 Ω	Full bridge		
	Civil engineering transducer with thermal sensors					Yes

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



Data Loggers

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

<b>Standard Accessories</b>	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)
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<b>Optional Accessories</b>	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 CANTERM120 USB/CAN converter LEAFLIGHT HS V2
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### NTB-201A Specifications

<b>Channels</b>	4			
<b>Scanning Speed</b>	Approx. 0.5 s/channel			
<b>Measuring Targets</b>	Voltage, thermocouples			
<b>Voltage-output Measurement</b>				
<b>Range</b>	<b>Measuring range</b>	<b>Resolution</b>	<b>Accuracy</b>	<b>Input resistance</b>
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.

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

Note: TEDS function is unusable.

<b>Standard Accessories</b>	DC power cable P-76 Ground wire P-72
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## 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-20A 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



<b>Power Save Functions</b>	Provided In POWER switch "AUTO" mode (*1)
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<b>Operating Temperature</b>	-10 to 50°C
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<b>Operating Humidity</b>	20 to 85% (Non-condensing)
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<b>Power Supply Input</b>	USB port: 5 VDC External power supply: 11 to 16 VDC (AC adapter, DC power supply)
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<b>Current Consumption</b>	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

<b>Dimensions</b>	150 W × 28 H × 55 D mm (Excluding protrusions)
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<b>Weight</b>	Approx. 260 g
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(\*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.

<b>Optional Accessories</b>	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)
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#### ● 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.

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

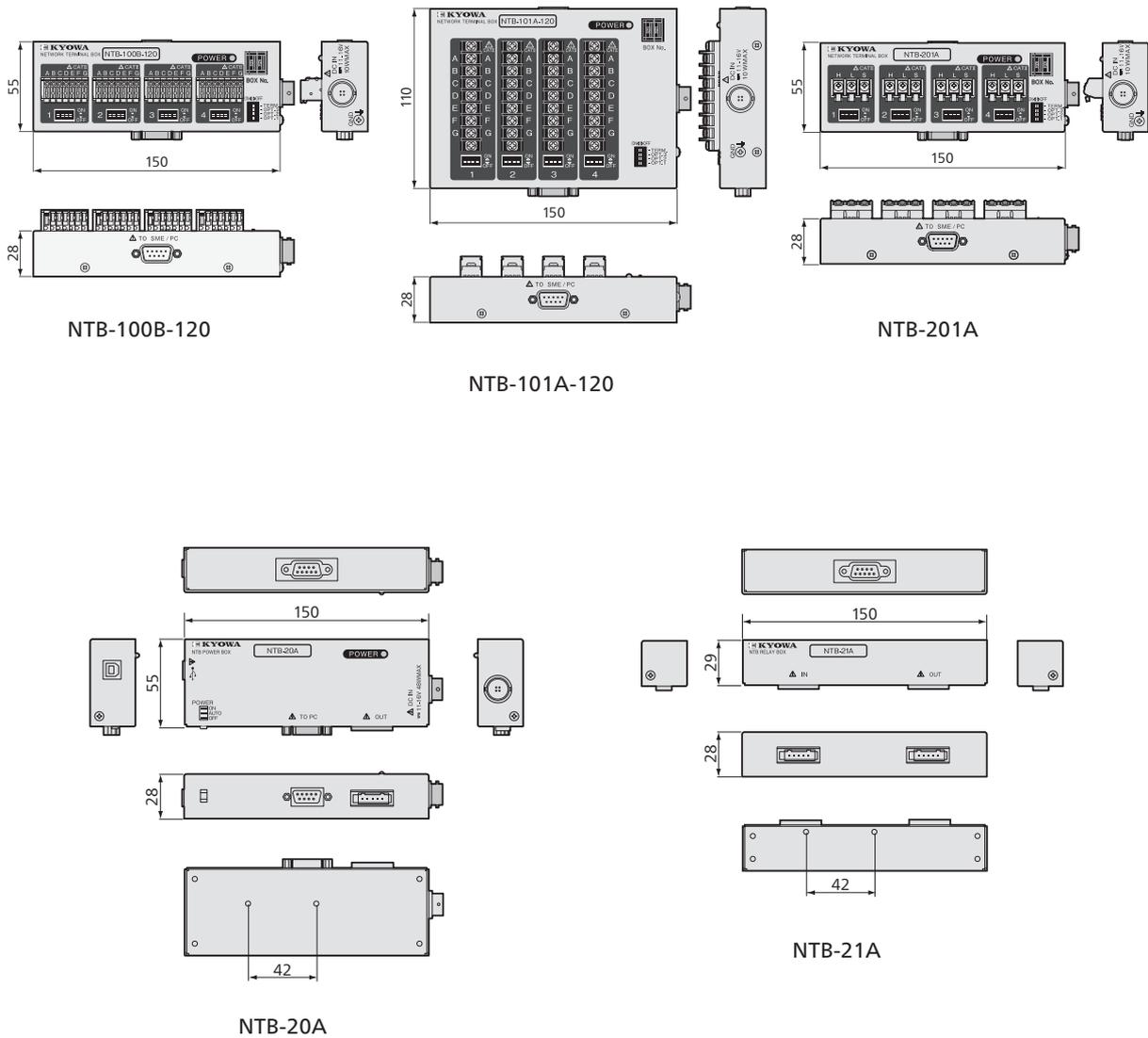


Data Loggers

● Network terminal box control software NTB-10A

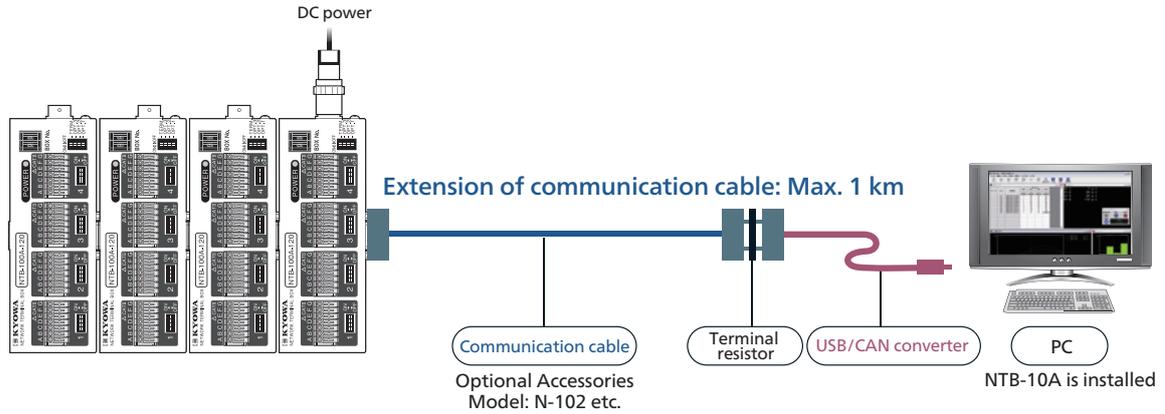
<b>Operating Environment</b>		<b>Measuring Operations</b>
<b>OS</b>	Windows® 8/8.1, Windows® 10 Japanese/English, 32/64 bits support	MONITOR Meas (Measures ZERO value during MONITOR measurement.) One-time measurement Continuous measurements
<b>CPU</b>	Core 2 Duo, 2 GHz or advanced	INTERVAL Meas (To be specified the number of measurements)
<b>Memory</b>	If 32-bit OS, 2 GB or more If 64-bit OS, 4 GB or more	<b>Interval Measurement</b>
<b>Hard Disk</b>	Empty storage 10 MB or more (Excluding the target data file size.)	Interval start time Interval time Repeat 0 to 9999 (0 to infinite) Interval measuring steps: 5
<b>Display</b>	1024x768 pixels or more	<b>Numeric Display</b>
<b>USB/CAN Converter</b>	Manufacture: KVASER Model: LEAFLIGHT HS V2	Available windows: 1 Window switch: List only
<b>Measuring Units</b>	NTB series: 1 to 99 (Max. 396 channels)	<b>Graph Display</b>
<b>Measuring Functions</b>	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 timing.	Y-time, BAR graph Max. 8 channels/graph
<b>Channels Conditions</b>	Meas channel ON/OFF, CAL coefficient calculation ON/OFF, CAL coefficient, Offset, Unit, Dec. digits, resistance at 0°C, CH Name (20 characters)	<b>Measured Data Saving Function</b>
<b>Measuring Condition File</b>	Load and save	The measured data is saved with the CSV format.
		<b>TEDS</b>
		Reads sensor's information and sets to channel condition automatically. Channel name writing
		<b>Data File Destination</b>
		PC hard disk
		<b>File Split</b>
		No split Split every hour Split every day

■ Dimensions

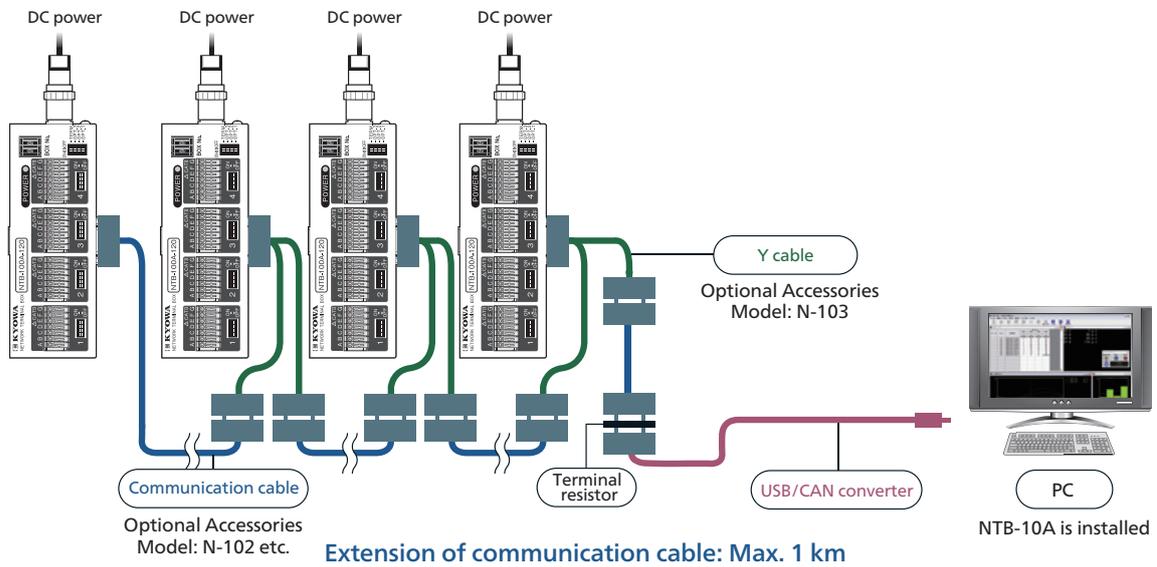


Data Loggers

**Case A** 4-NTB docked connection (\*Up to 8 units are possible)

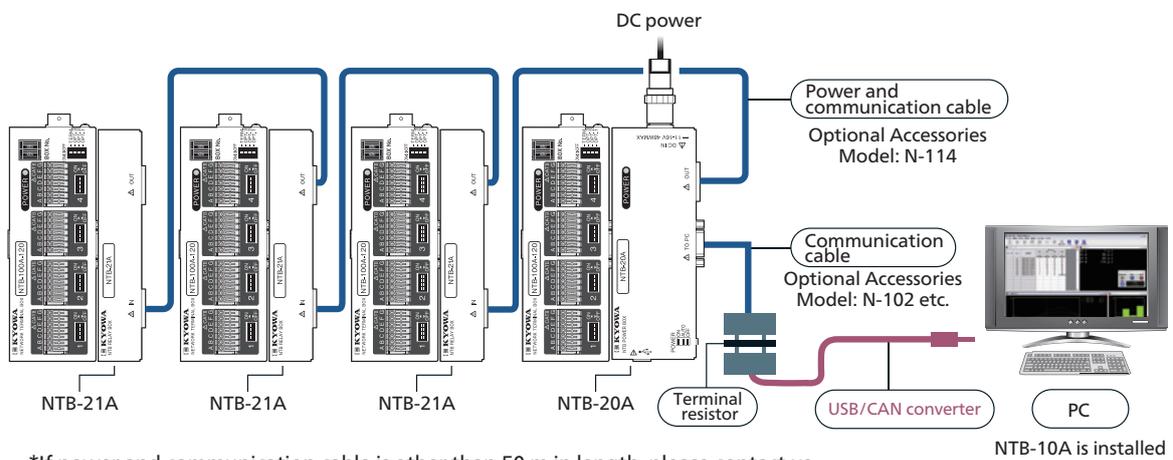


**Case B** 4-NTB distributed connection (\*Up to 99 units are possible)



**Case C** If using an NTB power supply (NTB-20A) and NTB relay boxes (NTB-21A) for dispersed usage

(The diagram below uses 4 units, and the cable length will differ depending on the connected units. See table on page 3-46.)



\*If power and communication cable is other than 50 m in length, please contact us.



Data Loggers