

# Data Logger for Cloud Storage

## TR-7wf Series



and Infrared / USB Data Loggers  
**TR-7Ui Series**



# Easy-to-Use Data Loggers for Wide Variety of Measurements

Simultaneous Multi-Channel Measurement with One Device

## TR-73U

- Barometric Pressure
- Temperature • Humidity

## TR-74Ui / 74Ui-H

- Illuminance • UV Intensity
- Temperature • Humidity

## TR-76Ui / 76Ui-H

- CO2 • Temperature
- Humidity

Start Recording upon USB connection



Data Analysis using Graph Tools



Graph Display on a Data Collector



**Simple startup upon connection to PC**

- Monitor multiple channels of data in trend graph

### Transmit Recorded Data to PC via USB Connection

Easy USB connection, for one device or for as many devices as your PC has ports for, makes it easy to gather current readings from the connected device(s) to your computer and view those readings in the computer display.

### Data Loggers for a Variety of Measurements

The TR-7Ui series data loggers are designed to simultaneously measure and record a variety of measurements. In addition to temperature and humidity, TR-73U can record barometric pressure, TR-74Ui models take care of Illuminance and UV intensity, and TR-76Ui models log CO2 concentration.

### Get Temperature and Humidity in a Wider Range with Greater Accuracy

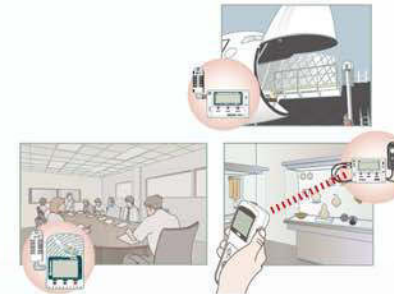
H-type models (model names which include 'H') come with our high precision temperature/humidity sensor. Features include a humidity measurement accuracy of  $\pm 2.5\%$ , as well as the wide range measurement of temperature from  $-30$  to  $80$  °C and humidity from 0 to 99%RH.

### Large Logging Capacity: 8000 Data Sets

One data set consists of readings for all channels in that type of unit. If set at a recording interval of 60 minutes, it gives the user one year's worth of measurements.

### Application Examples

- For managing temperature and humidity in hospitals, museums, and temperature controlled warehouses
- Managing CO2, temperature and humidity in schools: from kindergartens to universities
- For research studies on photosynthesis and growth of plants
- Measuring the degree of air tightness in packaging during transportation
- For management of illuminosity and UV light ( to prevent deterioration of exhibits ) in art museums and other exhibit forums



Temperature (2ch)

Temperature / Humidity



TR-71wf

Measurement Range

Temperature:  
 -40 to 110 °C ( Supplied Sensor )  
 -60 to 110 °C ( Optional Sensor:  
 Fluoropolymer Coated Type )  
 Temperature Sensors ( TR-0106 x 2 ) Included



TR-72wf

Measurement Range

Temperature: 0 to 55 °C  
 Humidity: 10 to 95 %RH  
 Temperature/Humidity Sensor ( THA-3001 )  
 Included



TR-72wf-H

Measurement Range

Temperature: -30 to 80 °C  
 Humidity: 0 to 99 %RH  
 High Precision Temperature/Humidity Sensor  
 ( HHA-3151 ) Included

Temp/Humidity/Barometric-Pressure

Illuminance / UV Intensity / Temperature / Humidity



TR-73U

Measurement Range

Temperature:  
 -10 to 60 °C ( Internal Sensor )  
 0 to 50 °C ( Supplied Sensor )  
 -40 to 110 °C ( Optional Sensor )  
 Humidity: 10 to 95 %RH ( Supplied Sensor )  
 Barometric Pressure:  
 750 to 1100 hPa ( Internal Sensor )  
 Temperature/Humidity Sensor ( TR-3100 )  
 Included



TR-74Ui

Measurement Range

Illuminance: 0 lx to 130 klx  
 UV Intensity: 0 to 30 mW/cm<sup>2</sup>  
 Temperature: 0 to 50 °C  
 Humidity: 10 to 95 %RH  
 Display Range of Cumulative Measurement:  
 Illuminance 0 lxh to 90 Mlxh  
 UV Intensity 0 mW to 62 W/cm<sup>2</sup>h  
 Temperature/Humidity Sensor ( THA-3151 ) and  
 Illuminance UV Sensor ( ISA-3151 ) Included



TR-74Ui-H

Measurement Range

Illuminance: 0 lx to 130 klx  
 UV Intensity: 0 to 30 mW/cm<sup>2</sup>  
 Temperature: -30 to 80 °C  
 Humidity: 0 to 99 %RH  
 Display Range of Cumulative Measurement:  
 Illuminance 0 lxh to 90 Mlxh  
 UV Intensity 0 mW to 62 W/cm<sup>2</sup>h  
 High Precision Temperature/Humidity Sensor  
 ( HHA-3151 ) and Illuminance UV Sensor  
 ( ISA-3151 ) Included

CO2 / Temperature / Humidity

Data Collector



TR-76Ui

Measurement Range

CO2: 0 to 9,999 ppm  
 Temperature: 0 to 50 °C  
 Humidity: 10 to 95 %RH  
 Temperature/Humidity Sensor ( THA-3001 )  
 Included



TR-76Ui-H

Measurement Range

CO2: 0 to 9,999 ppm  
 Temperature: -30 to 80 °C  
 Humidity: 0 to 99 %RH  
 High Precision Temperature/Humidity Sensor  
 ( HHA-3151 ) Included



Infrared Communication Type



TR-57DCi

Compatible Devices

Infrared Communication: TR-74Ui / 76Ui  
 ( Including H Type )  
 Cable Communication: TR-73U / 74Ui / 76Ui  
 ( Including H Type )  
 Storage Capacity: Up to 256,000 readings  
 When downloading units at full logging capacity:  
 10 units of TR-73U, TR-76Ui  
 7 units of TR-74Ui

- When downloading units at non-full logging capacity, it can store and manage up to 250 downloading sessions.
- Not compatible with TR-7wf series loggers.

**Temperature Sensors for TR-71wf / 73U**

Measurement Range: -40 to 110°C, Sensor Temperature Durability: -50 to 115°C, Accuracy: Avg. ±0.3°C [-20 to 80°C], Avg. ±0.5°C [-40 to -20°C / 80 to 110°C]

Materials: ① Thermistor ② TPE resin-shielded sensor ③ TPE resin-shielded wire ④ M3Screw Hole ⑤ Compaction Tube ⑥ Stainless Pipe (SUS304) ⑦ Stainless Pipe (SUS316) \*Only stainless section is water resistant.

<p><b>TR-0106</b> TPE Resin-Shielded Sensor Response Time (90%): Approx. 190 sec. (in air)</p>		<p><b>TR-0206</b> Screw-down Sensor Response Time (90%): Approx. 210 sec. (in air)</p>	
<p><b>TR-0306</b> Stainless Protection Sensor Response Time (90%): Approx. 11 sec. (in agitated water)</p>		<p><b>TR-0406</b> Stainless Protection Sensor Response Time (90%): Approx. 15 sec. (in agitated water)</p>	
<p><b>TR-0506</b> Stainless Protection Sensor Response Time (90%): Approx. 10 sec. (in agitated water)</p>		<p><b>TR-0706</b> Stainless Protection Sensor Response Time (90%): Approx. 11 sec. (in agitated water)</p>	

**Temperature Sensors for TR-71wf (Fluoropolymer Coated Type)**

Measurement Range: -60 to 155°C, Sensor Temperature Durability: -70 to 180°C, Accuracy: Avg. ±0.5°C [-40 to 80°C], Avg. ±1.0°C [-60 to -40°C / 80 to 100°C], Avg. ±2.0°C [100 to 155°C]

Materials: ① Thermistor ② Stainless Pipe (SUS316) ③ Fluoropolymer-Coated Compaction Tube ④ Fluoropolymer-Coated Electrical Wire

<p><b>TR-1106</b> Fluoropolymer Coated Sensor Response Time (90%): Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)</p>		<p><b>TR-1220</b> Stainless Protection Sensor Response Time (90%): Approx. 150 sec. (in air) Approx. 7 sec. (in agitated water)</p>	
<p><b>TR-1320</b> Stainless Protection Sensor Response Time (90%): Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)</p>			

**Temperature / Humidity Sensors for TR-72wf / 74Ui / 76Ui**

Materials: ① Temp/Humidity Sensor ② Polypropylene Resin ③ Polycarbonate ④ Vinyl Chloride Coated Electrical Wire

<p><b>THA-3001</b> Measurement Range : (*1) Temperature: 0 to 55 °C Humidity: 10 to 95 %RH (no condensation) Accuracy: Temperature: ±0.5 °C Humidity: ±5 %RH [ at 25 °C and 50 %RH ] Response Time (90%) : Approx. 7 min.</p>		<p><b>THA-3151</b> Measurement Range : (*1) Temperature: 0 to 55 °C Humidity: 10 to 95 %RH (no condensation) Accuracy: Temperature: ±0.5 °C Humidity: ±5%RH [ at 25 °C and 50 %RH ] Response Time (90%): Approx. 7 min.</p>	
<p><b>HHA-3151 : High Precision Type</b> Measurement Range: (*1) Temperature: -30 to 80 °C Humidity: 0 to 99 %RH Accuracy: Temperature: ±0.3 °C [ 0 to 50 °C ], ±0.5 °C [ at all other temperatures ] Humidity: ±2.5%RH [ at 25°C, 10 to 85 %RH ], ±4%RH [ at 25°C, 0 to 10 %RH or 85 to 99 %RH ] At temperatures other than 25 °C and &gt; 0 °C, add ±0.1%RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*2) Response Time (90%): Temperature: Approx. 7 min. Humidity: Approx. 20 sec. Long Term Stability: ±1 %RH/yr, ±0.1 °C/yr ( under normal operational conditions ) (*1)</p>			

\*1: Do not expose to condensation, dampness, corrosive gases, or organic solvents ( or insecticides for High-Precision Temperature / Humidity Sensors ).  
\*2: When used in environments where temperature and humidity are over the values of 50°C/75%, 60 °C 50%, 70 °C 35%, and 80 °C 25%, sensor hysteresis may fluctuate by values greater than ±1.5 %RH. Under certain circumstances, it may take some time to return to normal measurement capability.

**Temperature / Humidity Sensors for TR-73U**

Measurement Range: Temperature 0 to 50 °C, Humidity 10 to 95 %RH  
Accuracy: Temperature Avg. ± 0.3°C [ 0 to 50 °C ], Humidity ±5%RH [ at 25 °C and 50 %RH ]

Materials: ① Temperature/Humidity Sensor ② Polypropylene Resin ③ Vinyl Coated Electrical Wire

<p><b>TR-3100</b> Response Time (90%): About 7 min.</p>		<p><b>TR-3110</b> Response Time (90%): About 7 min.</p>	
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**Illuminance / UV Sensor for TR-74Ui**

**ISA-3151**  
Measurement Range:  
Illuminance: 0 lx to 130 klx  
UV Intensity: 0 to 30 mW/cm<sup>2</sup>  
Accuracy: (\*1)  
Illuminance: ±5 % [ 10 lx to 100 klx at 25 °C, 50 % RH ]  
UV Intensity: ±5% [ 0.1 to 30 mW/cm<sup>2</sup> at 25 °C, 50 %RH ]  
Relative Spectral Response:  
Illuminance: Approximated to the CIE standard response function V ( λ ).  
UV Intensity: 260 to 400 nm ( UVA / UVB )  
Operating Environment : (\*2)  
Temperature: -10 to 60 °C  
Humidity: 90 %RH or less ( no condensation )  
Materials: ① Polycarbonate ② Glass ③ Vinyl Coated Electrical Wire  
\*1: Compared to the value measured by the T&D standard sensor for calibration under our calibration light source.  
\*2: Do not expose to condensation, dampness, corrosive gases, or organic solvents.

**Data Collector for TR-73U / 74Ui / 76Ui**

**TR-57DCi**  
Accessories:  
Software CD-ROM,  
USB Communication cable ( US-15C ),  
AAA Alkaline Battery x2,  
Serial Communication Cable ( TR-6C10 )

**Wall Attachment**

**TR-07K2**  
Accessories:  
Lock Screw x2,  
Double-sided adhesive tape  
Compatible Unit:  
TR-71wf / 72wf / 73U / 74Ui ( Including H Type )  
Materials: Polycarbonate

Note:  
- Cracking may occur if polycarbonate is exposed to strong impact at temperatures of -30 °C or lower.

**AT-76K1**  
Accessories:  
Lock Screw x 2,  
Double-sided adhesive tape  
Compatible Unit: TR-76Ui ( Including H Type )  
Materials: Aluminum

**Software Set for TR-71wf / 72wf / 72wf-H**

**SO-15C1**  
Contents:  
Software CD-ROM,  
USB Communication cable ( US-15C )

**Sensor Extension Cable**

Materials: ① Vinyl Coated Electrical Wire

**TR-1C30**  
Temperature Durability:  
-25 to 60 °C

Compatible Sensors:  
Temperature / Humidity Sensors ( THA-3001, THA-3151, HHA-3151 ) (\*1)  
Illuminance / UV Sensor ( ISA-3151 ) (\*1),  
Temperature Sensors ( TR-1106, TR-1220, TR-1320, TR-0106, TR-0206, TR-0306, TR-0406, TR-0506, TR-0706 ) (\*2)

\*1: Possible to use up to three cables per sensor.  
\*2: Only one cable per sensor. Using an extension cable with the TR-73U may lead to measurement errors of +0.3 °C at room temperature, and +0.5 °C at -50 °C.

**TR-5C10**  
Temperature Durability:  
-25 to 60 °C  
Compatible Sensors:  
Temperature / Humidity Sensor  
TR-3100 (\*3)

\*3: Only one cable per sensor.

**Communication Cable**

**US-15C : USB Communication Cable**

**TR-6C10 : Serial Communication Cable**  
For communication between TR-57DCi and TR-73U / 74Ui / 76Ui

**TR-07C : Serial Communication Cable**  
Connector Type:  
Specialized Connector D-sub 9 pin  
For communication between PC and TR-73U / 74Ui / 76Ui

Temperature / Humidity Sensor (External)	TR-74Uj		TR-74Uj-H	
	THA-3151		HHA-3151 ( High-Precision Type )	
Measurement Channels	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Units	°C, °F	%RH	°C, °F	%RH
Measurement Range	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH
Accuracy	±0.5 °C	±5 %RH [ at 25 °C, 50 %RH ]	±0.3°C [ 0 to 50 °C ] ±0.5°C [ all other temperatures ]	±2.5 %RH [ at 25 °C, 10 to 85 %RH ] ±4.0 %RH [ at 25 °C, 0 to 10 % or 85 to 99 %RH ] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*1)
Measurement Resolution	0.1 °C		0.1 °C	
Responsiveness	Response Time ( 90% ): Approx. 7 min.		Response Time ( 90% ): Approx. 7 min.	Response Time ( 90% ): Approx. 20 sec.
Illuminance / UV Sensor (External)	ISA-3151			
Measurement Channels	Illuminance: 1ch UV intensity: 1ch			
Measurement Units	Illuminance: lx, klx UV Intensity: mW/cm <sup>2</sup>			
Measurement Range	Illuminance: 0 lx to 130 klx UV Intensity: 0 to 30 mW/cm <sup>2</sup>			
Units of Cumulative Measurement	Cumulative Illuminance: lxh, klxh, Mlxh Cumulative amount of UV Light: mW/cm <sup>2</sup> h, W/cm <sup>2</sup> h			
Display Range of Cumulative Measurement	Illuminance: 0 lxh to 90 Mlxh UV Intensity: 0 mW to 62 W/cm <sup>2</sup> h			
Accuracy	Illuminance: 10 lx to 100 klx: ±5 % [ at 25 °C, 50 %RH ] UV Intensity: 0.1 to 30 mW/cm <sup>2</sup> : ±5 % [ at 25 °C, 50 %RH ] (*2)			
Relative Spectral Response	Illuminance: Approximated to the CIE standard response function V ( λ ) UV Intensity: 260 to 400 nm ( UVA / UVB )			
Measurement Resolution	Illuminance: Minimum of 0.01 lx UV Intensity: Minimum of 0.001 mW/cm <sup>2</sup>			
Response Time ( 90% )	3 sec. ( at recording interval of 1 sec. ) 6 sec. ( at other intervals )			
Logging Capacity	8,000 data sets ( One data set consists of readings for all channels in that type of unit. )			
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.			
Recording Mode	Endless ( Overwrite oldest data when capacity is full ) or One Time ( Stop recording when capacity is full )			
LCD Display Items	Measurements, Battery Life Warning, etc. - Measurements: Illuminance / UV Intensity / Temperature / Humidity / Cumulative Illuminance / Cumulative amount of UV Light - Display Pattern: Alternating or Fixed display - Display Digits: Up to 4 digits			
Communication Interfaces	USB Communication, Serial Communication ( RS-232C ) (*3), Infrared Communication ( IrPHY 1.2 low power )			
Power	AA Alkaline Battery ( LR6 ) x 1			
Battery Life (*4)	Approx. 6 months			
Dimensions	H 55 mm x W 78 mm x D 18 mm			
Weight	Approx. 62 g ( including battery, excluding sensor )			
Operating Environment	Temperature: -10 to 60 °C Humidity: 90 %RH or less ( no condensation )			
Accessories	AA alkaline battery ( LR6 ), USB Communication Cable ( US-15C ), Illuminance/UV Sensor ( ISA-3151 ), Temperature/Humidity Sensor ( THA-3151 or HHA-3151 ), Software ( CD-ROM ), User's Manual Set ( Warranty Included )			
Software Compatible OS (*5)	Microsoft Windows 8 32/64 bit (*6) Microsoft Windows 7 32/64 bit Microsoft Windows Vista 32 bit ( SP1 or later ) Microsoft Windows XP 32 bit ( SP3 or later )			
Display Languages (*7)	English			

\*1: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.  
 \*2: Compared to the value measured by the T&D standard sensor for calibration under our calibration light source.  
 \*3: Customers wishing to write their own software, please contact your local distributor for the serial communications protocol specifications. (Note: Optional serial communication cable TR-07C is also required.)  
 \*4: Battery life varies depending upon the ambient temperature in which it is used, the recording interval, the frequency of communication, and the battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life. When infrared communication function is enabled, battery life may be shortened if the unit is used under the inverter type fluorescent lighting.  
 \*5: For installation, it is necessary to have Administrator (Computer Administrator) rights.  
 \*6: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.  
 \*7: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed.  
 The specifications listed above are subject to change without notice.

Temperature/Humidity Sensor (External)	TR-76Uj		TR-76Uj-H	
	THA-3001		HHA-3151 ( High-Precision Type )	
Measurement Channels	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Units	°C, °F	%RH	°C, °F	%RH
Measurement Range (*1)	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH
Accuracy	±0.5 °C	±5 %RH [ at 25 °C, 50 %RH ]	±0.3°C [ 0 to 50 °C ] ±0.5°C [ all other temperatures ]	±2.5 %RH [ at 25 °C, 10 to 85 %RH ] ±4.0 %RH [ at 25 °C, 0 to 10 % or 85 to 99 %RH ] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*2)
Measurement Resolution	0.1 °C		0.1 °C	
Responsiveness	Response Time ( 90% ): Approx. 7 min.		Response Time ( 90% ): Approx. 7 min.	Response Time ( 90% ): Approx. 20 sec.
CO2 Sensor (Internal)	NDIR			
Measurement Channels	CO2 Concentration 1ch			
Measurement Units	ppm			
Measurement Range	0 to 9,999 ppm			
Accuracy	±( 50 ppm + 5 % of reading ) [ at 5,000 ppm or less ] (*3)			
Measurement Resolution	Minimum of 1 ppm			
Responsiveness	Response Time (90%): Approx. 1 min.			
Logging Capacity	8,000 data sets ( One data set consists of readings for all channels in that type of unit. )			
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.			
Recording Mode	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)			
LCD Display Items	Measurements, Battery Level, etc. - Measurements: CO2 concentration, Temperature or Humidity (fixed or alternating display)			
Communication Interfaces	USB Communication, Serial Communication (RS-232C) (*4), Infrared Communication ( IrPHY 1.2 low power ) (*5)			
External Alarm Terminal (*6)	Output Terminal: Open Drain Output ( Voltage when OFF: DC less than 30V / Current when ON: less than 0.1A / Resistance when ON: about 15Ω )			
Power	AC Adaptor ( AD-0638 or AD-0638-C ), AA Alkaline Battery ( LR6 ) x 4			
Battery Life	Approx. 2 days (batteries only without AC adaptor) (*7)			
Dimensions	H 98 mm x W 66 mm x D 46 mm ( excluding protrusions and sensor )			
Weight	214 g ( including batteries, excluding sensor )			
Operating Environment	Temperature: 0 to 45 °C, Humidity: 90 %RH or less ( no condensation )			
Accessories	AA Alkaline Battery ( LR6 ) x 4, AC Adaptor ( AD-0638 or AD-0638-C ), USB Communication Cable ( US-15C ), Temperature/Humidity Sensor ( THA-3001 or HHA-3151 ), Software ( CD-ROM ), User's Manual Set ( Warranty Included )			
Software Compatible OS (*8)	Microsoft Windows 8 32/64 bit (*9) Microsoft Windows 7 32/64 bit Microsoft Windows Vista 32 bit ( SP1 or later ) Microsoft Windows XP 32 bit ( SP1 or later )			
Display Languages (*10)	English			

\*1: Make sure to use the data logger within the operating environment as listed in the specifications.  
 \*2: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.  
 \*3: Stated value is the measurement accuracy of the CO2 sensor when Auto Calibration is operating properly. A change in atmospheric pressure directly influences the reading of CO2, which can cause measurement errors: a decrease in pressure by 10hPa results in a relative decrease in CO2 by 1.6%. In such a case, we recommend carrying out the Atmospheric Pressure Correction function found in CO2 Recorder for Windows.  
 \*4: Customers wishing to write their own software, please contact your local distributor for the serial communications protocol specifications. (Note: Optional serial communication cable TR-07C is also required.)  
 \*5: If you wish to use infrared communication to download recorded data, it is necessary to purchase the Data Collector TR-57DCI (sold separately).  
 \*6: In order to use the external alarm terminal, please prepare a compatible connector: JST PAP-04V-S.  
 \*7: Battery life varies depending upon the ambient temperature in which it is used, the recording interval, the frequency of communication, and the battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life. Battery life may be shortened if the unit is used under inverter type fluorescent lighting.  
 \*8: For installation, it is necessary to have Administrator (Computer Administrator) rights.  
 \*9: If you are using Windows 8, please note that our software is designed to be used in Desktop mode only.  
 \*10: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed.  
 The specifications listed above are subject to change without notice.